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Next-Gen WAF guides

Category: What's new

Learn about recently released features and products.

Announcements

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New anomaly signal: INSECURE-AUTH

We have introduced an anomaly signal (INSECURE-AUTH) that allows you to detect when insecure authentication methods are used (such as the JSON Web Tokens with the None Algorithm). Want to learn more? For full descriptions of this and all other system signals, check out our system signals documentation.

Next-Gen WAF configuration via the Fastly control panel

Today, Fastly begins offering the ability to configure some of the features of the Fastly Next-Gen WAF from directly within the Fastly control panel. To use the new controls, you must purchase the Next-Gen WAF Security Starter Package and have a Fastly account. The original Next-Gen WAF control panel continues to remain available for existing Next-Gen WAF customers.

The Security controls web interface guides describe where these controls appear in the Fastly control panel. Likewise, we've added instructions to our guides that describe how to use the Fastly Next-Gen WAF with details on how to configure the new Next-Gen WAF starter package features.

For more details about the Next-Gen WAF, including how to purchase it, contact your account manager or email sales@fastly.com.

Protection from CVE-2024-34102 (Adobe Commerce and Magento Open Source unauthenticated XML entity injection)

An unauthenticated XML entity injection has been found in Adobe Commerce and Magento Open Source and has been assigned CVE-2024-34102. Fastly has created a virtual patch for it that is now available within your account. To activate it and add protection to your services:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Templated Rules**.
4. In the search bar, enter `CVE-2024-34102` and then click **View** for the CVE-2024-34102 templated rule.
5. Click **Configure** and then **Add trigger**.
6. Select the **Block requests from an IP immediately if the CVE-2024-34102 signal is observed** checkbox.
7. Click **Update rule**.

Protection from CVE-2024-5806 (Progress MOVEit Transfer Authentication Bypass Vulnerability)

An authentication bypass vulnerability has been found in Progress MOVEit Transfer and has been assigned CVE-2024-5806. Fastly has created a virtual patch for it that is now available within your account. To activate it and add protection to your services:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Templated Rules**.
4. In the search bar, enter `CVE-2024-5806` and then click **View** for the CVE-2024-5806 templated rule.
5. Click **Configure** and then **Add trigger**.
6. Select the **Block requests from an IP immediately if the CVE-2024-5806 signal is observed** checkbox.
7. Click **Update rule**.

Upcoming Code Signing and Repository Key Rotation for RPMs

To continue ensuring the integrity of the software we distribute as well as conform to evolving platform security standards, we are making changes to how we sign software distributed in RPM packages for the core Next-Gen WAF product. Specifically, the repository and code signing keys will be updated from the older SHA-1 algorithm to use the newer and more secure SHA-256 algorithm. This change will impact users who consume the core NGWAF agent as well as any modules that are packaged as RPMs.

We plan to make this change on Monday, September 23rd at 12:00PM EDT (4PM GMT). After this, all RPM packages released as part of the core Next-Gen WAF product will be signed with keys using the SHA-256 algorithm.

Who is impacted by this change?

Users who run the core Next-Gen WAF on Red Hat Enterprise Linux (RHEL) and systems derived from it, such as CentOS or Amazon Linux, are impacted by this change. If the packages you install or update have an extension of `.rpm` then you are affected.

What will I need to do?

After Monday, September 23rd, 2024, at 12:00 PM ET (4PM GMT), you will need to download new public keys for both our repository and our packages. Before then, no changes will be needed to package updates. Take the actions below after the planned change date.

If you delete the existing public keys, the repository tool YUM will download the new ones during update. To delete the code signing and repository keys, execute the following command:

```
$ rpm -e gpg-pubkey-db6249a1-666932d2
$ rpm -e gpg-pubkey-b61c0150-5cf6f75f
```

If you are using a RHEL 7 or earlier system, you will need to take additional steps to delete the keys. Follow these instructions:

1. Check your `/etc/yum.conf` file and note the value of `persistdir`. If `persistdir` is not set, you can assume it is `/var/lib/yum`.
2. Determine which CPU architecture the repository has been installed for: x86_64 for 64-bit x86 systems and aarch64 for 64-bit ARM systems.
3. Determine the version number of the CentOS or Red Hat you are running (7, 8 or 9).
4. Replace `x86_64` and `7` in the following command with your CPU architecture and CentOS or Red Hat version:

```
$ gpg --homedir /var/lib/yum/repos/aarch64/7/sigsci_release/gpgdir --delete-key DB6249A1
$ gpg --homedir /var/lib/yum/repos/aarch64/7/sigsci_release/gpgdir --delete-key B61C0150
```

What will happen if I don’t make any changes?

If you do not make any changes, all of your existing agents will continue to protect your application from attacks; nothing will stop working. However, you will not be able to upgrade to newer versions of the core Next-Gen WAF agent or modules released after Monday, September 23rd at 12:00PM EDT (4PM GMT). If you do not upgrade to newer versions of the core Next-Gen WAF agent or module, you may miss important bug fixes and features.

Who is not impacted by this change?

Users who do not install or update the core Next-Gen WAF using RPMs are not impacted. Specifically, users who install the core Next-Gen WAF using DEB (Debian or Ubuntu) or APK (Alpine Linux) packages are not affected. Windows users are not affected. Users who install our software using a so-called tarball (a packaged file with the .tar.gz extension) are not affected. Users who deploy the Next-Gen WAF using either the Edge or Cloud WAF methods, or users of any other Fastly service are also not affected.

Who can I contact if I need help?

If you have any questions, contact support by visiting https://support.fastly.com/ or sending email to support@fastly.com.

Announcing gRPC proxy deployments

The Next-Gen WAF agent can now act as a proxy for gRPC traffic to allow inspection of protobuf-based gRPC messages (`Content-Type: application/grpc`). For more information, check out our Configuring gRPC proxy deployments guide.

Next-Gen WAF core command line utility

The new Next-Gen WAF core command line utility (`ngwafctl`) is a tool that compiles information about your Next-Gen WAF core installation within your Kubernetes environment and cloud provider. The tool can perform basic troubleshooting and generate a support bundle containing logs and deployment specification details. You can use the utility to help troubleshoot issues with your Kubernetes Next-Gen WAF integration and can optionally send the generated support bundle TAR.GZ file to our Support team for additional help.

Unified Fastly and Signal Sciences Login Experience

Fastly is excited to announce the launch of a unified login experience across Fastly and Signal Sciences control panels. The new experience will make it simpler and easier for you to access Fastly products and services using a single set of login credentials. For more information, check out our complete feature announcement.

Upcoming session timeout standardization

To help you increase your security posture on the Fastly platform, starting Q1 2024 all users will be logged out after 3 hours of inactivity. Session timeouts will also have a default maximum of 12 hours for any organization that hasn't set up single sign-on. If your session timeout was previously set to greater than 12 hours, it will be reduced to 12 hours, and any timeout setting less than 12 hours will remain as is. The minimum timeout for sessions will be 30 minutes.

Protection from CVE-2023-50164 (Apache Struts directory traversal)

A directory traversal vulnerability within file uploads has been found in Apache Struts and has been assigned CVE-2023-50164. Fastly has created a virtual patch for it that is now available within your account. To activate it and add protection to your services:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Templated Rules**.
4. In the search bar, enter `CVE-2023-50164` and then click **View** for the CVE-2023-50164 templated rule.

5. Click **Configure** and then **Add trigger**.

6. Select the **Block requests from an IP immediately if the CVE-2023-50164 signal is observed** checkbox.

7. Click **Update rule**.

Site alert management

System site alerts monitor and handle requests from IP addresses that have been tagged with attack signals by placing a cap on the number of requests that can originate from the same IP address and that contain attack signals. The default caps or thresholds are based on historical patterns that we've seen across all customers. Now, you can raise or lower the attack thresholds via our web interface and API. For example, you can block all requests that contain at least one attack signal by setting the attack thresholds to `1`. This functionality is available for all Next-Gen WAF customers.

We've also improved threshold counting for site alerts. Previously, only the cloud engine handled threshold counting. This meant that the Next-Gen WAF agent had to wait for the cloud engine to tell it when an IP address was flagged. Now, the agent has local counters and is immediately able to determine when a request exceeds a site alert. The agent still uses aggregation from the cloud engine when there are multiple agents deployed. Only Core and Cloud WAF deployments support local counters.

New Anomaly Signal: OOB-DOMAIN

We have introduced an anomaly signal (OOB-DOMAIN) that allows you to detect when known out-of-band domains are observed within a client request. Out-of-Band domains are generally used during penetration testing to identify vulnerabilities in which network access is allowed. Want to learn more? For full descriptions of this and all other system signals, check out our system signals documentation.

Announcing Next-Gen WAF Simulator

We are excited to announce the availability of the Next-Gen WAF Simulator, which allows you to pass sample requests and responses to help with debugging and testing rule creation logic. The Simulator helps you identify whether requests would be blocked or allowed and shows what the WAF would return as response codes for those requests, as well as the signals that would be added. Access the Next-Gen WAF Simulator by selecting **Simulator** from your site's **Rules** menu.

Agent management functionality (GA)

We previously announced a beta release of expanded agent management functionality which included a service that automatically updates agent versions and a plugin for HashiCorp Vault that stores and rotates agent keys. These features are now available for all Next-Gen WAF customers.

Protection from CVE-2023-38218 (insecure direct object reference)

An insecure direct object reference (IDOR) vulnerability has been found in Adobe Commerce and Magento Open Source and has been assigned **CVE-2023-38218**. Fastly has created a virtual patch for it that is now available within your account. To activate it and add protection to your services:

1. Log in to the Next-Gen WAF control panel.

2. From the **Sites** menu, select a site if you have more than one site.

3. From the **Rules** menu, select **Templated Rules**.

4. In the search bar, enter `CVE-2023-38218` and then click **View** for the CVE-2023-38218 templated rule.

5. Click **Configure** and then **Add trigger**.

6. Select the **Block requests from an IP immediately if the CVE-2023-38218 signal is observed** checkbox.

7. Click **Update rule**.

New rule condition operators available

You can now use the greater than or equal to and less than or equal to operators when defining rule conditions. This can be helpful when creating rules such as checking if the response code was greater than or equal to or less than or equal to a specific response code range and much more.

Attack signal thresholds are now aggregated

System site alerts monitor and flag IP addresses that exhibit repeat malicious behavior and then block or log subsequent malicious requests from the flagged IP addresses. Previously, flagging occurred when the number of requests that were tagged with the **same** attack signal and that were from the same IP address reached one of our thresholds. Now, attack signals are counted in aggregate instead of per-signal, meaning that even if attackers rotate their attacks, the total number of requests with attack signals will count towards the thresholds.

This change only applies to the default thresholds for attack signals. It does not affect any attack signals that have had their thresholds adjusted through custom site alerts or are being used in instant blocking rules.

Protection from CVE-2023-34362 (MOVEit Transfer Critical SQL Injection Vulnerability)

A SQL injection vulnerability has been found in the Progress MOVEit Transfer web application and has been assigned CVE-2023-34362 (also known as MOVEit Transfer Critical SQL Injection Vulnerability). Fastly has created a virtual patch for it that is now available within your account. To activate it and add protection to your services:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Templated Rules**.
4. In the search bar, enter `CVE-2023-34362` and then click **View** for the CVE-2023-34362 templated rule.
5. Click **Configure**.
6. Click **Add trigger** and select the **Block requests from an IP immediately if the CVE-2023-34362 signal is observed** checkbox.
7. Click **Update rule**.

Edge deployment now available for the Premier platform

Advanced rate limiting rules and the Site Flagged IP signal have been added for Premier plan customers using edge deployment. Customers who have upgraded from the Professional plan to the Premier plan will now be able to author new site rules that rate limit requests. The Site Flagged IP signal will also be available for use in all types of site rules.

Check out the details about edge deployment and about advanced rate limiting rules to learn more.

Edge deployment setup changes

The setup process for the edge deployment has been changed from custom VCL to dynamic VCL snippets. This change is expected to simplify the onboarding process for all customers using the edge deployment. In particular, if you are using custom VCL for other features of the delivery platform, your setup will become simpler.

This setup change to dynamic VCL snippets applies to new Signal Sciences Corps using the edge deployment and the Edge Deployment documentation has been updated accordingly.

IMPORTANT: Existing edge-deployed sites require a backend configuration change to begin using VCL snippets. Without the configuration change, custom VCL will continue to be used. If you would like to switch to using VCL snippets for your corp and sites reach out to support@fastly.com.

Custom response codes

We've expanded the functionality of our custom response codes feature. Custom response codes allow you to specify the HTTP status code that is returned when a request to your web application is blocked.

Specifically, you can now change the site default blocking response code from `406` to an alternative response code. Blocking actions use the site default blocking response code unless a different response code is specified in a rule.

We also now support the `301` and `302` custom response codes and allow you to specify a redirect URL.

Advanced rate limiting user experience

We've updated the advanced rate limiting user workflow to simplify rate limiting rule configuration. Advanced rate limiting rules put a cap on how often an individual client can send requests that meet set conditions before some or all of the requests from that same client are blocked or logged.

Specifically, the Add form for advanced rate limiting rules has been redesigned. It now includes the **Match type** field. With this field, you can define which requests from the client should be blocked or logged after the threshold has been passed. Options include:

- **Rule conditions:** rate limit requests from the client that match the rule's conditions.
- **Other signal:** rate limit requests from the client that are tagged with a specific signal.
- **All requests:** rate limit all requests from the client.

We've updated and expanded several other areas of the Add form as well. Specifically:

- The **Actions section** now has two subsections: **Tracking** and **Rate Limiting**. In the **Tracking** section, you specify a signal that should be applied to requests that meet the rule's condition set and define the threshold. In the **Rate limiting** section, you define how a client that exceeds the threshold should be rate limited.
- The **Counting signal** field has been renamed to the **Threshold signal**.
- **Action type** menu options have been renamed from **Log request** and **Block signal** to **Log** and **Block**.

Finally, you can use the new `ratelimited` field to search for requests that have been tagged with a specific threshold signal and that have been rate limited.

PHP and Python modules are now open source

As announced, today marks the start of the self-service model for the PHP and Python modules. These modules now have a public-only development workflow. You may continue to use the modules at your own discretion but Fastly will not update or provide technical support for the modules.

Agent management functionality (Beta)

We've expanded our agent management functionality to include:

- a service that automatically updates agent versions.
- a plugin for HashiCorp Vault that stores and rotates agent keys.

When the agent auto-update service is enabled, the service checks the Signal Sciences package downloads site for a new version of the agent and updates the agent when a new version is available. By default, the check for a new version is performed on the second Thursday of the month. The agent auto-update service is only compatible with agents on Debian 8 or higher, Red Hat CentOS 7 or higher, and Ubuntu 18.04 or higher.

With the Signal Sciences plugin for HashiCorp Vault, you can use Vault to store and rotate the Agent Access Key and Agent Secret Key for your site. Vault is an identity-based secrets and encryption management system.

These features are now available for all Signal Sciences customers as part of a beta release.

Professional Plan Edge Deployment Updates

Custom signals, dashboards, lists, templated rules, and custom response codes are now available for Professional plan customers using edge deployment. Customers who have upgraded from the Essential plan to the Professional plan will find that some features now appear in different locations. Specifically:

- Virtual patching (CVE) rules can be found in the Templated Rules menu.
- Threshold functionality can be found in the Rules menu under Site Alerts.

The edge security service includes a health check inside the `edge_security` function. Using the `backend.health` property, this health check will skip security processing entirely if the edge security service is unhealthy for any reason. The edge security service is modeled as an origin using the backend type and uses the same health check feature.

Learn more about the edge deployment by visiting our documentation site.

Protection from CVE-2022-42889 (Text4Shell)

A code execution vulnerability affecting the Apache Commons Text library has recently been identified and assigned **CVE-2022-42889** (also known as Text4Shell). Fastly has created a virtual patch for it that is now available within your account. To activate it and add protection to your services:

1. Navigate to the Signal Sciences control panel and select **Templated Rules** from the **Rules** menu.
2. Search the templated rules for `CVE-2022-42889` and then click **View**.
3. Click **Configure** and then click **Add trigger** to configure the rule's thresholds and actions.
4. Select **Block requests from an IP immediately if the CVE-2022-42889 signal is observed** and then click **Update rule**.

Protection from CVE-2021-44228 (Log4Shell)

SmartParse has been extended to allow for advanced and precise detection of CVE-2021-44228 (also known as Log4Shell) payload attacks with minimal-to-no false positives. SmartParse is our proprietary detection method that analyzes request parameters to determine whether code is actually executable. It requires no manual tuning or configuration because it does not rely on ever-expanding regex pattern matching.

When SmartParse detects Log4Shell attacks, the requests are tagged with the new LOG4J-JNDI attack signal. You should begin seeing requests that match this signal in your requests feed immediately. We've enabled it by default along with default threshold rules. You can adjust these thresholds using site alerts or by creating an instant blocking rule.

To learn more about this new attack signal, check out our blog post.

Agent and module end-of-support plan

Beginning January 31, 2023, agent versions will enter a two year support cycle with versions older than two years being retired or deprecated on a quarterly cadence. Retiring older versions with fewer features will enable us to focus our resources on supporting and developing newer versions that provide more value to our customers. At the end of January, we will support Agent v4.16.0 and above.

Support for our Python and PHP modules will be moving to self-service in March 2023. At that time, you may continue to use the modules at your own discretion, but we will no longer update and provide technical support for the modules. Until the self-service transition occurs, we will fully support both modules. More information about this transition will be posted at a later date.

Reach out to your account manager or securitysupport@fastly.com if you have questions about how to upgrade your agent or about the modules' transition to a self-service model.

AWS Lambda Integration is now GA

We've expanded the Fastly Next-Gen WAF capabilities to include protection for serverless and FaaS traffic. Our support for AWS Lambda can help companies grow their web applications without requiring supporting infrastructure and provisioning servers. This support is now generally available to all Signal Sciences and Fastly Next-Gen WAF customers. For more information, see our install guide.

Additionally, we have received the AWS Service Ready designation for our Lambda support, which means our Fastly Next-Gen WAF has gone through full technical evaluations with the AWS team and has tight integration into the AWS marketplace. You can find us listed as an official AWS Lambda partner.

Enabling and disabling logging via the rule builder

We have introduced a new feature in the site and corp rule builder that allows you to select whether to store the logs for requests that match a rule's criteria.

Historically, when creating a custom site or corp rule without a custom signal attached, requests matching the rule's criteria would not be logged. Not logging matching requests reduced the potential noise in your request logs. In cases where you did want to store the logs for matching requests, you had to create a custom signal for the rule.

Now, you no longer have to create a custom signal to log requests that match a rule's criteria. The new Request Logging menu in the site and corp rule builder allows you to select whether matched requests are logged (data storage policy applies).

For new rules, logging is enabled by default, but you can disable logging for a rule by setting the Request Logging menu to **None**. Existing rules that have a custom signal will continue to log matching requests, and existing rules that do *not* have a custom signal will *not* log them.

Announcing the AWS Lambda Integration (Beta)

We're expanding the Fastly Next-Gen WAF capabilities to include protection for serverless and FaaS traffic. We now support AWS Lambda, which is helping companies grow their web applications without having to worry about supporting infrastructure and provisioning servers.

This feature is available now as part of a beta release and will require a configuration change to enable it via feature flag. It is available for all Signal Sciences and Fastly Next-Gen WAF customers, and you can learn how to set it up in our install guide.

Protection from CVE-2022-26134 (Unauthenticated RCE in Confluence)

A remote code execution vulnerability affecting the Atlassian Confluence product has recently been discovered and assigned the identifier **CVE-2022-26134** (also known as Unauthenticated RCE in Confluence). Fastly has created a virtual patch for it that is now available within your account. To activate it and add protection to your services:

1. Navigate to the Signal Sciences control panel and select **Templated Rules** from the **Rules** menu.
2. Search the templated rules for `CVE-2022-26134` and then click **View**.
3. Click **Configure** and then click **Add trigger** to configure the rule's thresholds and actions.
4. Select **Block requests from an IP immediately if the CVE-2022-26134 signal is observed** and then click **Update rule**.

Essential Plan Updates

Common Vulnerabilities and Exposures (CVE) signals are now supported for Essential plan customers to help protect you against known exploits and threats. The new functionality can be configured through the web interface from the Signals menu or through the templated rules section of the API.

We’ve also included a number of enhancements to the edge cloud deployment for the Fastly Next-Gen WAF: new APIs have been added for deprovisioning, origin syncing has been improved, and a percentage ramp up feature is now supported to control the amount of traffic through the edge security service. Learn more about this by visiting our documentation site.

Announcing Fastly Security Labs

We’re happy to announce the launch of Fastly Security Labs, a new program that empowers customers to continuously innovate by being the first to test new detection and security features — helping shape the future of security.

Fastly Security Labs provides our customers with an open line of communication directly to the Security Product team and bolsters our feedback loops that bring our customers directly into our product lifecycle process for the Fastly Next-Gen WAF, helping us create stronger products. We'll use the program to release a wide range of features from new Signals and Templated Rules to new inspection protocols. You can read more about it in our blog.

Announcing GraphQL Inspection

We are introducing a new GraphQL Inspection feature as a part of Fastly's Next-Gen WAF. With this addition, we can apply our current set of WAF detections to GraphQL requests, which include protection against OWASP-style attacks. The ability to inspect GraphQL requests means you can apply customs rules to specifically handle those requests. We've also added GraphQL-specific attack and anomaly Signals to address certain targeted attacks. With many common attack vectors at play in GraphQL, we've added new signals out of the box so that any specific routing can be applied to them.

To track GraphQL API requests, your agents must be on version 4.33.0 or above and you need to enable the GraphQL API Query templated rule. GraphQL Inspection is available for all Next-Gen WAF customers. Reach out to your account manager or sales@fastly.com to learn more.

Support for ARM Processors

We're expanding the Fastly Next-Gen WAF capabilities to include more deployment models than ever before. We now support processors using ARM architecture, which are gaining popularity in web applications due to the potential speed gains and overall cost-savings compared to other processors.

The new set of ARM-compatible Agent and Module will sit alongside our existing packages made for other processors, which includes a new ARM Agent and a complementary NGINX-native Module that supports NGINX v1.18.0 and above. It is available for all Signal Sciences / Fastly Next-Gen WAF customers, and you can read more about it in our blog.

Custom Response Codes

We've introduced custom response codes for site rules that block requests. This feature provides you with tighter integration between upstream services and your agents. It is especially powerful for connecting the Fastly edge and the Fastly Next-Gen WAF.

You can use this feature to override the default 406 response code from Signal Sciences to enable additional security enforcement in programmable layers. In Fastly, you can use VCL to help you accomplish enhanced enforcement actions such as edge rate limiting or tarpitting.

The feature is available for Professional and Premier platform customers. Learn more about custom response codes by visiting our documentation site.

Renamed - Observed IPs and Rate Limited IPs pages

The Observed IPs page has been renamed to Observed Sources. In addition, the Rate Limited IPs tab has been renamed to Rate Limited Sources. To learn more about Observed Sources, read our announcement or visit our documentation site.

New Identity Provider Integration - Manage users with Okta

We have updated our official Okta integration to support automated provisioning, de-provisioning, and management of users. If you use Okta as your Identity Provider, you can easily install or update the Signal Sciences integration from the Okta Integration Marketplace.

After configuring the integration, any existing Signal Sciences users will be automatically matched to existing Okta users that have identical email accounts.

Customers can use Okta "groups" to assign Signal Sciences roles and site memberships to users in that group.

From Okta, you can:

- Create users in Signal Sciences
- Delete users from Signal Sciences
- Edit users' site memberships

- Edit users' role

Learn more by visiting our official documentation site.

Moved - Rate Limited IPs list

As of February 24, the Rate Limited IPs list, previously available as a tab on the **Events** page (under the **Monitor** menu), is now available on the brand-new **Observed IPs** page (also under **Monitor** menu).

You can also find new Suspicious IP and Flagged IP lists on the Observed IPs page. To learn more about Observed IPs, read our announcement or visit our documentation site.

New Observed IPs page

We've introduced a new Observed IPs page in the Signal Sciences control panel, found underneath the **Monitor** menu.

This page is your one-stop-shop to find information about what we're calling Observed IPs. There are three stateful IP statuses we represented on lists: **Suspicious IPs**, **Flagged IPs**, and **Rate Limited IPs**. Now, you can find all of these lists in one convenient view.

Important note: The Rate Limited IPs tab on the Events page has now moved to the Observed IPs page.

Learn more about Observed IPs by visiting our documentation site.

New Dashboards and Templated Rules Page

We are excited to announce today the launch of API and ATO Protection Dashboards, a new set of features dedicated to identifying, blocking, and analyzing malicious behavior that attackers use against web applications and APIs. Now available on the Signal Sciences control panel, these new dashboards surface security telemetry from over 20 new signals for advanced attack scenarios such as account takeover, credit card validation, and password reset.

To configure and activate your new templated rules, login to the management control panel and select templated rules, or navigate directly to the new dashboards from any site's home dashboard.

New Request Volume Graph

A new Request Volume graph is included in the first position of the default Overview system dashboard on every site. The graph represents the number of requests hitting a site over a given timeframe, along with average RPS. The graph can also be added to any custom dashboard.

To learn more about your site's Overview Page and how to customize dashboards, head over to the relevant docs page.

Deprecated - Weekly Summary Page

The Weekly Summary page is no longer available as of September 9. The summary's information and functionality can now be accessed from site-level dashboards (with the release of the new Request Volume card) Any existing links to the Weekly Summary will be redirected to the site's Overview dashboard with a seven-day look back.

Learn more about dashboards and how to customize them by visiting the relevant docs page.

New Client IP Headers setting

You can now set the real client IP of incoming requests across all agents via the control panel web interface. The new setting replaces the need to update the `/etc/sigsci/agent.conf` file on each agent to specify the real client IP.

To use the new feature, visit site settings > agent configurations in your control panel and scroll down to the Client IP Headers section. Learn more

New request to site rule converter

Our latest introduction to the control panel makes it easier than ever to use data from a request to create a new site rule. To use the tool, click “View request detail” for any request in the requests page, then look for the new “Convert to rule” button. With the new menu, you can select from the available request data to jump-start the process of creating a rule.

API Access Token updates

We've made a number of improvements to API Access Token security, management, and visibility for corp Owners.

Security:

- Corp Owners can set an expiration TTL that applies to all tokens. The expiration countdown is based on the token's creation timestamp.
- Corp Owners can create a list of IP or ranges that all tokens needs to be used from (i.e., a corporate network) otherwise API access will result in a 400-error
- Corp Owners can restrict token usage on a user-by-user basis. See below.
- These restrictions can be enabled or disabled from the **Corp Manage > User Authentication** page

Restrictions by user:

- When per-user restrictions are enabled, globally users cannot create or use tokens unless they are given explicit permission by the corp Owner
- **IMPORTANT:** If users have existing tokens when this feature is enabled, these existing tokens will be disabled (not deleted) until permissions are given to their owners and then they will resume working. Users just need permission once.
- Permission is granted to users from the **Corp Manage > Corp Users > Edit User** page

Visibility and management:

- Corp Owners can see all the tokens created and in use across the corp from the brand new **Corp Manage > API Access Tokens** page
- Corp Owners can view info about the tokens (like creator and IP), as well as info related to the changes above, like expiration, status (Disabled by Owner, Expired, Active)
- When they turn on Restrictions by User, a corp Owner can use this page to see who needs permission and which tokens are disabled
- Corp Owners can delete access tokens
- An individual user's tokens have moved from their account settings page to the new **My Profile > API Access Tokens** page

New rules conditions

We are pleased to announce the introduction of several new rules conditions that will help give you better visibility into abusive or anomalous behavior on your applications.

- **Response Conditions** Use `Response code` or `Response header` as conditions in request rules or signal exclusion rules for finer detail when adding or removing a signal. Combine response conditions with request conditions to gain greater insight into the results of client requests.
- **Custom Signals** Use custom signals as conditions in request rules to improve workflows or create more complex rule logic.

Learn more

SSO Bypass

A couple updates to the feature formerly known as API Users:

1. We're no longer using the term "API Users" in the control panel or the API. Instead, these are now "users with SSO Bypass." The intent of this attribute is to enable organizations to invite third-parties to access their SigSci instance (for example, a contractor who is outside the organizations SSO setup). While users with SSO Bypass can still connect to the API, we recommend users create API Access Tokens to connect services or automations to our API.

2. Users with SSO Bypass can now use Two-Factor Authentication (2FA). Corps with SSO enabled can continue to invite users from outside their organization's SSO, like contractors, now with the added protection of 2FA.

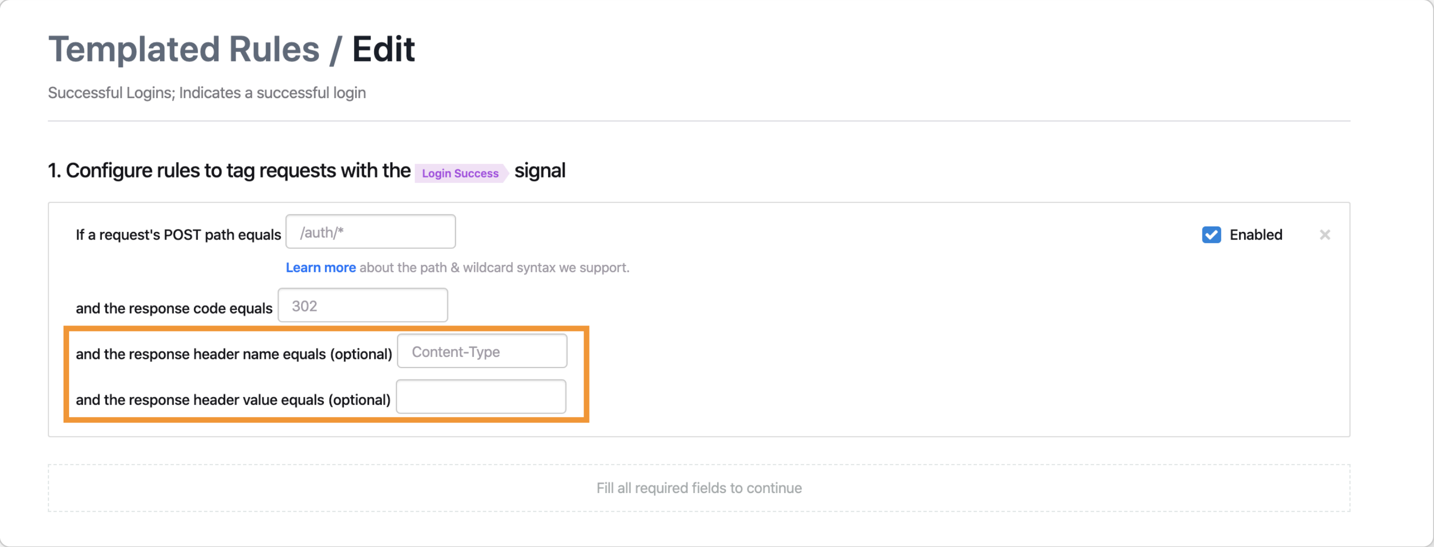
Templated rules response header and value conditions

You can now add optional response header name and value conditions to ATO templated rules, which include:

- `Login Success`
- `Login Failure`
- `Registration Success`
- `Registration Failure`

We're excited to give you these additional levels to protect your apps against ATO and excessive authentication attempts! If you have any questions about these changes, reach out to us at support@fastly.com.

Example for the `Login Success` templated rule:



Templated Rules / Edit

Successful Logins; Indicates a successful login

1. Configure rules to tag requests with the Login Success signal

If a request's POST path equals /auth/*

☑ Enabled

Learn more about the path & wildcard syntax we support.

and the response code equals 302

and the response header name equals (optional) Content-Type

and the response header value equals (optional)

Fill all required fields to continue

Agent 1x and 2x End-of-Life

We will disable all agents older than 3.0 on March 31, so if you have any agents between 1.x to 2.x please upgrade them before March 31. We've improved our newer agent versions to be much more efficient and secure. If you need help upgrading, let us know at support@fastly.com. If you're wondering if this affects you, don't worry! We've been reaching out to anyone this impacts to help them upgrade and we'll make sure that no one is left behind.

Multiple custom dashboards

We are excited to announce that we've introduced the ability for users to create and edit **multiple custom dashboards** for each site. Last year, we introduced the ability for users to edit the dashboard found on each site's overview page, by adding custom signal time series graphs and rearranging the layout of those cards. Today, we've introduced the ability to save multiple custom dashboards, each with their own name and card layout. Every card type is moveable, including default cards like the Flagged IPs card. Owners, Admins, and Users can edit and view all of a site's dashboards, and Observers can view them.

Learn how to create and customize dashboards by visiting our documentation.

Changes to the User API

We've made a few changes to our user roles lately, and we updated the API response for `/api/v0/corps/_/users` to return new values. The new values are already available for use. The old values are still available as well, but they will be deprecated Friday, September 27, 2019.

Old value	New value
`corpOwner`	`owner`
`corpAdmin`	`admin`
`corpUser`	`user`
`corpObserver`	`observer`

Announcing Corp Rules

Take advantage of corp rules in order to create rules that apply to all, or a select number of sites within your corp. In the corp level navigation, simply navigate to Corp Rules > Corp Rules. From this page, manage existing corp rules, or add a new rule with the existing rules builder. Select the global scope to apply the rule to all sites within the corp, or select specific sites that you'd like the rule to apply. Note, this is a corp level feature available to corp owners and admins. For more information on rules look at our documentation

Dashboard navigation changes

We've made some big changes to the dashboard navigation. We've launched a few new features recently, with a focus on elevating some configurations from the site-level to multi-site- or global-level. We wanted to update the nav to make it clearer and more consistent.

We took a look at making sure each navigation item is in the right menu, and that the menu names are parallel at both the corp- and site-level. Think "Corp Rules" versus "Site Rules." You'll also notice a few items and page names have changed as well. For example, "Activity" is now "Audit log." See a full list of changes below:

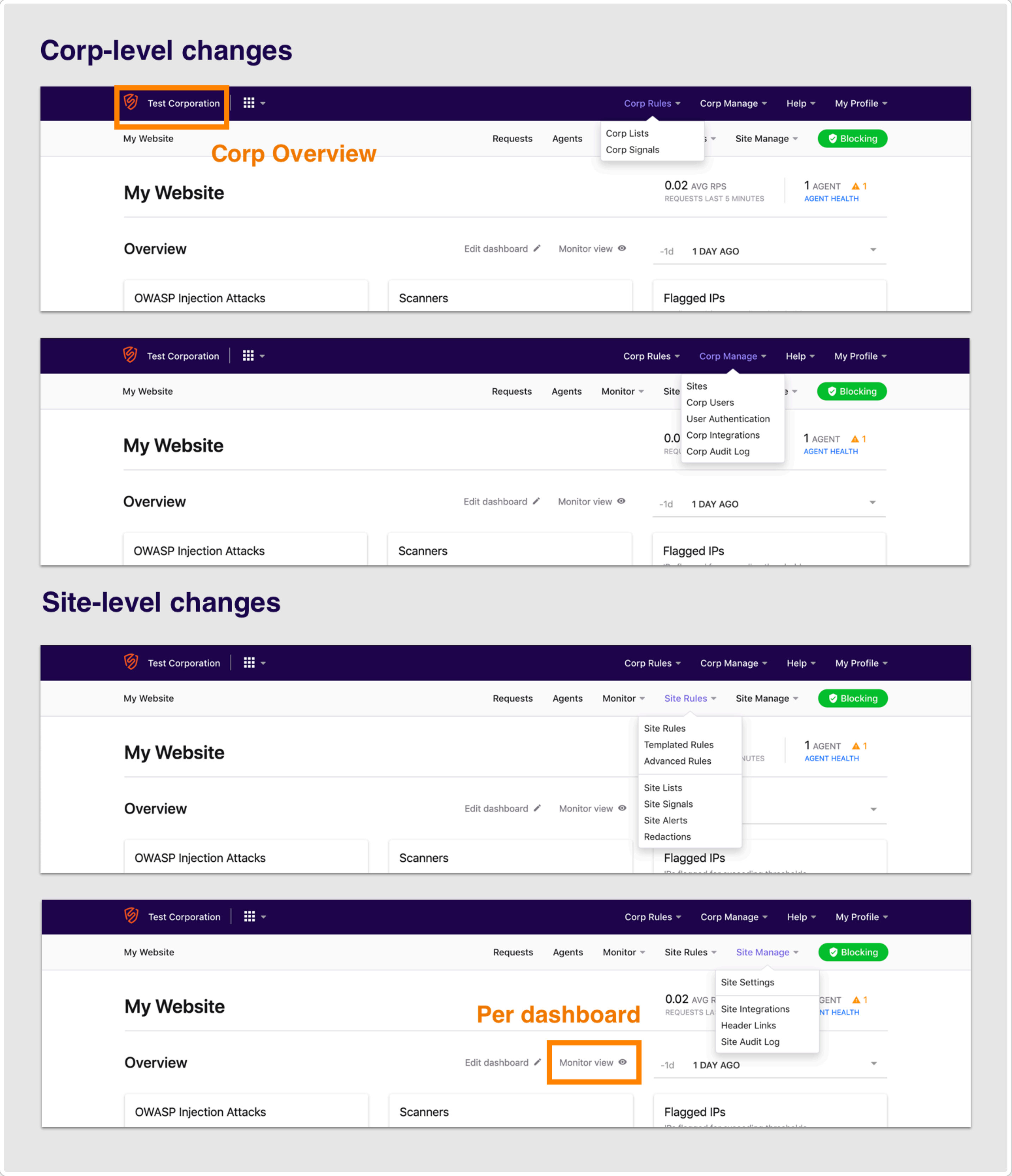
Renamed and reorganized categories:

- Library is now “Corp Rules”
- Corp Tools is now “Corp Manage"
- Configure is now split up into “Site Rules” and “Site Manage”
- Corp Rules and Site Rules categories now only contain pages that directly relate to rules.
- We added the words “Corp” and “Site” in front of pages that have a corp/site equivalent to prevent confusion between corp and site levels (e.g., rules, lists, signals, integrations, audit log).
- We removed 2 pages from the navigation to prevent duplicate access points: Corp Overview and Monitor View. Corp Overview was removed since it can be accessed by clicking on your corp name. Monitor View was removed because it can be accessed on the Site Overview page.
- Site Settings is now underneath Site Manage to prevent overcrowding in the nav.
- Site Audit Log (formerly Activity) was moved to Site Manage to stay consistent with Corp Audit Log being underneath Corp Manage

Page nomenclature changes include:

- "Activity" is now "Audit Log"
- "Settings" is now "User Authentication"

- "Week in Review" is now "Weekly Summary"
- "Data Privacy" is now "Redactions"
- "Dashboards" is now "Signals Dashboards"
- "Custom Alerts" is now "Site Alerts"



Corp-level changes

Corp Overview

Site-level changes

Per dashboard

Event page updates

We have launched some great new improvements to the Events page. Read about the updates below or see them for yourself.

1) We've added filters to the Events page to make it easier to triage and review events. You can filter by IP, signal, and status (Active/Expired).

2) Scrolling and navigation has been improved. First, we've made navigation elements sticky so they follow the user as they scroll up and down the page. Second, we've added a new interaction that automatically scrolls the user to the top of the page when they select a new event, reducing the amount of scrolling you have to do when reviewing multiple events.

3) We also have always-persistent Next Event and Previous Event buttons that make it easy to cycle through and review events. We think this will make it easy to manage the reviewing workflow when there are a lot of events.

4) Copy updates, like to the title of the Event Detail, to make it easier to know which event you're focused on at any time.

Assign multiple users to a site at once

Corp Owners and Admins can now assign multiple existing users to a site at once.

Corp Owners and Admins can now assign multiple existing users to a site at once. This provides business unit leaders and site managers an easy way to add their entire team to a new site at once. This feature can be accessed by Owners from the **Corp Users** page (under the **Corp Tools menu**) or by Owners and Admins from the **Site Settings** page.

> NOTE
>
> The flow is restricted to users that are already existing in the corp. New users can't be invited from the flow.

Check out our documentation to learn more.

User Management Updates

The web interface for the corp-level Users Page has been improved to give Owners a better experience when managing and editing users across their entire corp. We’ve added enhanced filtering so users can now focus on specific sites or roles. This also lays the groundwork for some highly requested user management features.

We have also enhanced the Site Settings page usability with an easier-to-use tabbed layout.

> IMPORTANT
>
> With this update, the legacy Site Users page has been deprecated and moved to the Users tab on the Site Settings page.

Announcing Corp Signals

Corp Signals allow you to centrally manage and report on signals that are specific to your business at the corp-level rather than on individual sites! For example, you can create a single corp-level “OAuth Login” signal that can be used in any site rule which will then show up on the Corp Overview page. Learn more.

Stay on top of your corp activity

With corp integrations, you can receive alerts on activity that happens at the corp level of your account. Events relating to authentication, site and user administration, corp rules, and more can be sent to the tools you use for your day-to-day workflow. These are the same events you see in the Corp Activity section of the dashboard.

The following events are available for notification:

- New releases of our agent and module software
- New feature announcements

- Sites created/deleted
- SSO enabled/disabled on your corp
- Corp Lists created/updated/deleted
- Corp Signals created/updated/deleted
- Users invited
- User MFA enabled/updated/disabled
- Users added/removed
- User email bounced
- API access tokens created/updated/deleted

Currently, we offer integrations with Slack, Microsoft Teams, and email. Please visit the Corp Integrations page to configure one today.

Brand new Corp Overview

We have redesigned the Corp Overview page from the ground up to give you better tools to analyze security trends across your entire organization. It has been enhanced to allow you to:

Visualize attack traffic: New request graphs offer a high-level view of traffic across all of your monitored properties, as well as site-by-site breakdowns down of attack traffic and blocked attack traffic.

View corp-level Signal counts: For the first time in the dashboard, you can view the total number of requests tagged with specific Signals across your whole corp using the Signal Trends table. See what security trends are affecting your properties and adjust your security strategy accordingly.

Filter, filter, filter: We've added filtering and pagination tools to just about every aspect of the Corp Overview, allowing you to specify the data you want to see. Filter by site or Signal to zoom in on request data, or use the powerful new time range selector to report day-, week-, or month-over-month.

Visit the Corp Overview page to see for yourself. It can be accessed by clicking on your corp name in the navigation, or by selecting `Corp Tools > Overview`.

Updated Permissions and Roles

tl;dr: Roles and permissions have been updated. Corp Admin is a brand-new role, and existing Corp Owners and Corp Users with multiple site roles experienced some permission updates. Check out the changes below.

What's new?

We’ve made some changes to our roles and permissions. These changes are designed to make it simpler to manage users across multiple sites at once, and will allow us to introduce some powerful new features in the near future.

Owner has full access and full owner permissions across every site within their corp. This isn’t a substantial change; previously Corp Owners could set themselves as members of any and all sites. We’re just simplifying the process of granting these permissions.

Admin is a brand new role we created to make it simpler for users to manage multiple sites. The Admin has Site Admin permissions on specific sites, meaning they can invite users and can edit configurations and agent mode (blocking/non-blocking). Admins do not have visibility into sites they do not manage and have limited visibility into corp-level or multi-site features.

User manages specific sites, including configurations and agent mode (blocking/non-blocking). Users do not have visibility into sites they do not manage and have limited visibility into corp-level or multi-site features.

Observer views specific sites in a read-only mode and has limited visibility into corp-level or multi-site features.

Role	Site access	User management privileges	Change agent blocking mode	Configure rules and other settings
Owner	All sites	Invite, edit, delete, security policies	Every site	Every site
Admin	Specific sites	Invite to specific sites	Specific sites	Specific sites
User	Specific sites	No	Specific sites	Specific sites
Observer	Specific sites	No	No	No

How was I affected by the update?

If you were previously a **Corp Owner:** you now have access to every site within your corp and are granted Site Owner permissions by default. Previously, Corp Owners could optionally choose to be members of sites. This option is no longer available.

If you were previously a **Corp User:**

- If you were either a Site Owner or Site Admin on any site in your corp, you are now an **Admin** across all your site memberships.
- If you were a Site User or a Site Observer on sites (and *not* a Site Owner or Site Admin) , you are a **User** on those same sites.
- However, if you only had the Site Observer role across *all* of your site memberships, you are an **Observer** with visibility limited to those same sites.

Questions or concerns? Check out our Customer Support portal.

Updated APT and YUM repository signing keys

Due to a change with our package hosting provider, we have updated the GPG keys for our YUM and APT repositories. Updated GPG URLs are now listed in all relevant installation instructions.

If you have scripts for automated deployment, you will need to update the scripts with the new GPG key URL to ensure they continue to work:

Old URL: `https://yum.signalsciences.net/gpg.key` or `https://apt.signalsciences.net/gpg.key` New URL: `https://yum.signalsciences.net/release/gpgkey` or `https://apt.signalsciences.net/release/gpgkey`

Note: If you're using NGINX 1.9 or earlier, then you will instead want to use the legacy URL of: `https://yum.signalsciences.net/nginx/gpg.key`

Introducing Corp Lists!

Corp Lists are a new feature that allow Corp Owners to manage Lists at the corp-level which can be used by any site-level rule. You can find Corp Lists by going to Library > Corp Lists in the corp-level navigation.

For example, you can centrally manage a list of OFAC-sanctioned countries, or scanner IPs that you may want to block or allow across multiple sites.

Customize the Monitor View

Here by popular demand, you can now customize the Monitor View. Previously, the Monitor would display 5-6 default graphs. With the new update, the Monitor now reflects any custom Overview page graphs or arrangements. When displayed as a grid, the Monitor shows the first 6 cards from the Overview page. When displayed as a carousel, the Monitor will cycle through all cards.

Check out the new Custom Signals page!

Custom Signals enable you to gain visibility into traffic that's specific to your application. You can create these signals either on the Custom Signals page (Configure > Custom Signals) or, more commonly, when creating or editing a Rule.

The new Custom Signals page now shows:

- The number of requests tagged with a particular signal in the past 7 days.
- The number of Rules that add that signal.
- The number of Alerts that use that signal.

This additional data makes it easier to determine whether a Custom Signal is working correctly or is no longer used by any Rules or Alerts.

Check out our fresh new status page!

Be sure to subscribe to our new status page at https://www.fastlystatus.com/ so that you can receive alerts in the rare occasion that Signal Sciences has an unexpected event. Please note that you’ll need to resubscribe to this new page if you were previously subscribed to the old status page.

Rules Simplification

Starting today, November 8th, we’ll be rolling out a new unified Rules page.

Previously Request Rules (rules that allow you block, allow, or tag requests) and Signal Rules (rules that allow you to exclude signals for specific criteria) were managed on two distinct pages. Now Request and Signal Rules can be viewed, managed, and filtered from a single page.

Why are we making this change?

In addition to simplifying the number of pages in the product you need to go to manage rules, this change lays the groundwork for future changes to more easily share rules across sites.

How will this change affect me?

From a user-facing perspective, this change should be minimal — existing URLs will be redirected and you will create and manage rules from a single page.

Where can I learn more about rules?

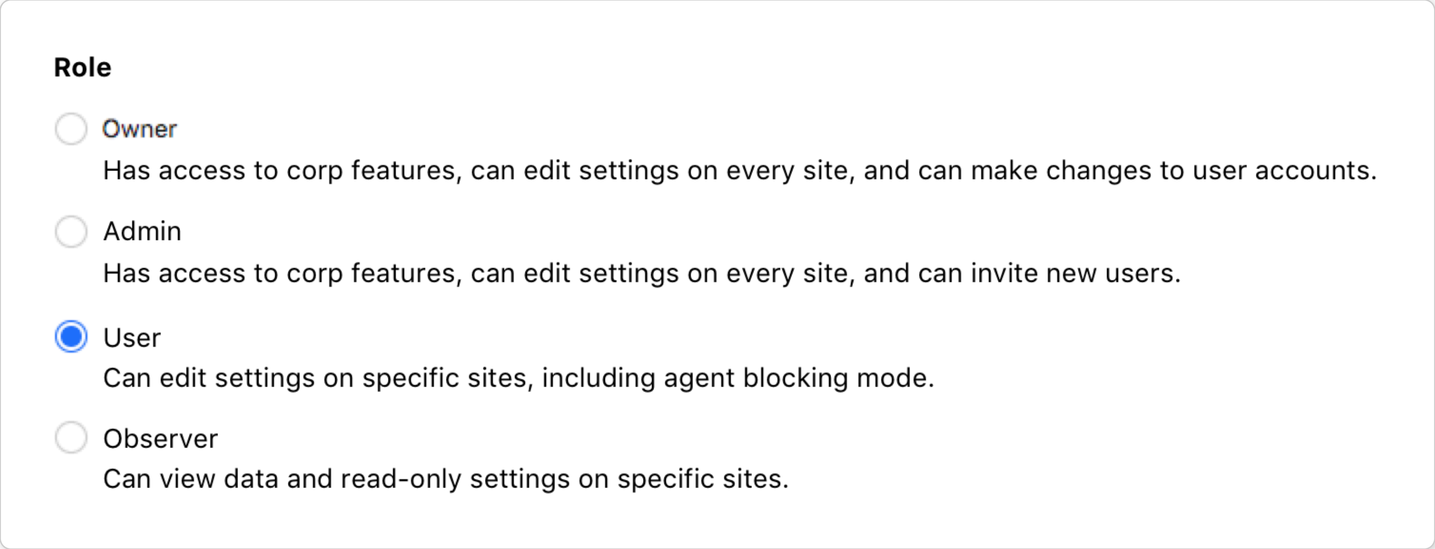
Check out our rules documentation.

Coming soon: Updated roles and permissions

tl;dr: Roles and permissions will be changing in January. Corp Admin is a brand-new role, and existing Corp Owners and Corp Users with multiple site roles will experience permission updates. Review the changes below and prepare your organization.

What's new?

We’re making some changes to our roles and permissions. These changes are designed to make it simpler to manage users across multiple sites at once, and will allow us to introduce some powerful new features in the near future.



Role

○ Owner
Has access to corp features, can edit settings on every site, and can make changes to user accounts.

○ Admin
Has access to corp features, can edit settings on every site, and can invite new users.

● User
Can edit settings on specific sites, including agent blocking mode.

○ Observer
Can view data and read-only settings on specific sites.

Owner will have full access and full owner permissions across every site within their corp. This isn't a substantial change; current Corp Owners can already set themselves as members of any and all sites. We're just simplifying the process of granting these permissions.

Admin is a brand new role we created to make it simpler for users to manage multiple sites. The Admin has Site Admin permissions on specific sites, meaning they can invite users and can edit configurations and agent mode (blocking/non-blocking). Admins will not have visibility into sites they do not manage and will have limited visibility into corp-level or multi-site features.

User will manage specific sites, including configurations and agent mode (blocking/non-blocking). Users will not have visibility into sites they do not manage and will have limited visibility into corp-level or multi-site features.

Observer will view specific sites in a read-only mode and will have limited visibility into corp-level or multi-site features.

Role	Site access	User management privileges	Change agent blocking mode	Configure rules and other settings
Owner	All sites	Invite, edit, delete, security policies	Every site	Every site
Admin	Specific sites	Invite to specific sites	Specific sites	Specific sites
User	Specific sites	No	Specific sites	Specific sites
Observer	Specific sites	No	No	No

How will I be affected when the roles are updated?

If you are currently a **Corp Owner:** you will have access to every site within your corp and will be granted Site Owner permissions by default. Currently, Corp Owners can optionally choose to be members of sites. This option will no longer be available.

If you are currently a **Corp User:**

- If you are either a Site Owner or Site Admin on any site in your corp, you'll become an **Admin** across all your site memberships.
- If you are a Site User or a Site Observer on sites (and *not* a Site Owner or Site Admin) , you will be a **User** on those same sites.
- However, if you only have the Site Observer role across *all* of your site memberships, you will become an **Observer** with visibility limited to those same sites.

Questions or concerns? Check out our Customer Support portal.

Personal API Access Tokens

Personal API Access Tokens are permanent tokens that can be used instead of passwords to authenticate against the API. This allows SSO and 2FA users to easily access the API without the additional workaround. Furthermore, these tokens can be used directly against API endpoints without having to authenticate and obtain a session token.

* * *

Category: Getting started

These articles provide basic information about the Next-Gen WAF product and architecture.

Subcategory: Web interface

These articles describe key features of the Next-Gen WAF control panel.

Viewing agent details

Last updated: 2023-06-07

/en/ngwaf/about-the-agent-details

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

You can access a detailed view of each agent from the Agents page. The agent details provide a summary of the status and performance of the agent.

Viewing the agent details

You can access the agent details from the **Agents** page.

To view agent details:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Agents** in the navigation bar near the top of the screen.
4. From the agents list, click the Agent ID of the agent that you want to view details for.

The following tabs appear in the agents detail:

- Status
- Requests
- Logs
- Charts

About the Charts tab

The Next-Gen WAF provides a number of metrics to understand the performance impact on your infrastructure. You can verify the performance impact on your infrastructure directly in the control panel via the **Charts** tab.

The **Charts** tab contains graphs detailing the requests the agent has processed, any errors observed, memory usage, CPU percentage, decision times, and more. Many of these graphs report percentiles. For example, the Decision time (ms) graph uses percentiles to show the amount of time it takes the agent to process requests. When the 99th percentile line is at 10 ms, the agent took between 0 - 10 ms to process 99% of requests and more than 10 ms to process the remaining 1% of requests.

You can use the time selector in the top left to change the time range being reported on all of the charts.

The following graphs appear on the **Charts** tab:

- **Total requests (req/sec):** the number of requests per second received for your site (workspace).
- **Connections (req/sec):** the total number of connections and the total number of dropped connections per second.
- **Connections open:** the total number of open connections handled by the agent.
- **CPU percentage:** the percentage of CPU used by the host and by the agent.
- **Runtime memory total, heap and stack (bytes):** the total memory being used by the agent.
- **Uptime (seconds):** the agent uptime, in seconds.
- **Decision time (ms):** the amount of time it took for the agent to process requests.
- **Agent queue time (ms):** the amount of time it took for the agent to begin processing requests where there is a backlog of requests.
- **Agent clock skew (seconds):** the difference in time between the agent's clock and the platform's clock.

To view advanced charts, click **Show advanced charts**. The following graphs appear.

- **Requests uploaded (req/sec):** the number of requests per second uploaded by the agent to the platform.
- **Requests after sampling (req/sec):** the number of incoming requests per second handed to the agent.
- **Request size, avg. (bytes):** the average size of web request in bytes. This is calculated by dividing the sum of read and written bytes by the number of requests.
- **RPC PreRequest (req/sec):** the number of incoming requests handed to the agent.
- **RPC UpdateRequest (req/sec):** the number of remote calls to agent to update details of request, post execution. Reported in requests per second.
- **RPC PostRequest (req/sec):** the number of remote calls to the agent to note requests that met one of the following conditions: the server returned an HTTP status of 400 or above, the size of the request was abnormally large, or the request took an abnormal amount of time to process.
- **Goroutines:** the number of goroutines running simultaneously on the agent
- **Garbage collections:** the number of time the garbage collector ran.
- **GC pause time (ms/sec):** the garbage collector pause time in milliseconds.
- **Host memory available (bytes):** the amount of memory available on the host machine in bytes.
- **Rule updates:** the number of times the agent updated its rules.
- **Communication failures:** the number of failed uploads and downloads per agent.
- **Agent latency time (ms):** the total amount of time that requests are in the queue and processed by the agent.
- **Agent post time (ms):** the amount of time since the agent's last data sync with the cloud engine.
- **RPC MissedUpdateRequest (req/sec):** the number of missed remote calls to the agent to update details of the request, post execution. Reported in requests per second.

- **Agent missed update time (ms):** the amount of time that has passed since the agent update timed out.

About the Agents page

Last updated: 2023-05-05

/en/ngwaf/about-the-agents-page

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Agents page provides an at-a-glance view of the agents a site (also known as a workspace) uses and high-level stats for those agents. Agents are small processes which provide the interface between your web server and our analysis platform. They determine how requests should be handled (e.g., block, allow, tag).

Before you begin

Be sure you know how to access the web interface controls.

About the Agents page

To navigate to the Agents page, click **Agents** in the site navigation bar.

The Agents page surfaces relevant information and data about your agents via two tabs:

- **Overview:** a tab featuring agent information (e.g., status, version, module, operating system, and server).
- **Metrics:** a tab highlighting key agent stats (e.g., current requests, connections total, connections open, and connections dropped).

NOTE

Once an agent has been offline for 3 days, it will disappear from the Agents page automatically.

From the Agents page, you can:

- click **Manage alerts** to set up and manage agent alerts. Agent alerts use configured integrations to inform you when thresholds for agents are reached.
- click **View agent keys** to access the agent keys window. From the agent keys window, you can copy the Agent Access key and Agent Secret key for the site. You need these keys to start and update agents.
- use a single set of filters to narrow the list of agents on both the Overview and Metrics tabs.
- use a search bar on the Overview or Metrics tab to narrow the list of agents on the active tab.

About the Corp Manage menu

Last updated: 2024-08-28

/en/ngwaf/about-the-corp-manage-menu

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Corp Manage menu is located on the right side of the corp navigation bar. From the Corp Manage menu, you can access the following pages:

- Sites
- Corp Users
- User Authentication
- API Access Tokens
- Corp Integrations
- Corp Audit Log
- Cloud WAF Certificates
- Could WAF Instances

Before you begin

Be sure you know how to access the web interface controls.

About the Sites page

Selecting **Sites** from the Corp Manage menu displays the Sites page. From this page, you can manage your sites. A site is a single web application, bundle of web applications, API, or microservice that Next-Gen WAF can protect from attacks.

The Sites page lists existing sites and provides controls to filter the list. Specifically, you can filter the list by:

- **Site name:** allows you to filter sites by name.
- **Agent mode:** allows you to filter sites by agent mode. Agent mode options include blocking, not blocking, and off.

When you click the name of a site, the Site Settings page appears. From the Site Settings page, you can update the name of the site, the agent configurations for the site, and who has access to the site.

From the Sites page, you can also add a site by clicking **Add site**.

About the Corp Users page

Selecting **Corp Users** from the Corp Manage menu displays the Corp Users page. From this page, you can control who manages, edits, or observes activity in your corp.

The Corp Users page lists who currently has access to your account and provides controls to filter the list. Specifically, you can filter the list by:

- **Site:** allows you to filter users by site.
- **User:** allows you to filter users by user name, email, or role.
- **Role:** allows you to filter users by assigned role.
- **Status:** allows you to filter users by whether they are active or pending.
- **2FA:** allows you to filter users by whether they have two factor authentication enabled or disabled.

When you click the name of a user, a details page for that user appears. From this page, you can update their information or delete them.

From the Corp Users page, you can also grant access by clicking **Add corp user**.

About the User Authentication page

Selecting **User Authentication** from the Corp Manage menu displays the User Authentication page. From this page, you can:

- set up an authentication method for Corp Users. Methods include password-based authentication and single sign-on authentication methods like SAML 2.0 and Google Apps.
- configure Okta to be your identity provider (IdP).
- specify the duration of a validated session.
- select whether to allow or restrict the creation of API access tokens. When token creation and usage is restricted, you can grant exceptions to this on a person-by-person basis.
- specify when API access tokens expire.
- opt out of specific features if you are enrolled in Fastly Security Labs. Fastly Security Labs is a program that grants your corp access to in-development beta features.

> ⓘ NOTE
>
> Fastly Security Labs is only included with the Professional and Premier platforms. It is not included as part of the Essential platform.

About the API Access Tokens page

Selecting **API Access Tokens** from the Corp Manage menu displays the API Access Tokens page. From the API Access Tokens page, you can view a table that lists all tokens in your corp and use a search bar to filter the table by token creator and name. The table contains these columns:

- **Created by:** the name of the creator of the token.
- **Token Name:** the friendly name of the token.
- **Logged IP:** the IP address of the request.
- **User Agent:** the user agent of the request.
- **Timestamp:** the date the token was used.
- **Status:** the status of the token.
- **Expires:** the date the token expires.

From the API Access Tokens page, you can also delete tokens.

About the Corp Integrations page

Selecting **Corp Integrations** from the Corp Manage menu displays the Corp Integrations page. Corp integrations notify you about activity within your corp (e.g., changes to sites or settings). There are three types of corp integrations:

- Mailing Lists
- Microsoft Teams
- Slack

From the Corp Integrations page, you can:

- manage existing corp integrations by clicking on the name of an existing integration.
- add a new corp integration by clicking **Add corp integration**.

About the Corp Audit Log page

Selecting **Corp Audit Log** from the Corp Manage menu displays the Corp Audit Log page. This page lists corp activity from the last 30 days. You can filter the list by activity type. Types include user activity (e.g., new access token creation) and corp configuration (e.g., new site creation).

The Corp Audit Log page lists connected corp integrations in a side bar. You can click on an integration to view details about that integration or click **Manage corp integrations** to go to the Corp Integrations page.

About the Certificates page

Selecting **Cloud WAF Certificates** from the Corp Manage menu displays the Certificates page. From the Certificates page, you can:

- view a summary table that lists the TLS/SSL certificates for your sites.
- use a search bar to filter the list.
- access a detailed view of a certificate by clicking **View** to the right of the certificate. Additional controls on the detailed view page enable you to edit or delete the certificate.
- create a certificate by clicking **Add certificate**.

About the Cloud WAF Instances page

Selecting **Cloud WAF Instances** from the Corp Manage menu displays the Cloud WAF Instances page. From this page, you can click **Add Cloud WAF Instance** to create an instance, the Instances tab to manage existing instances, and the Routes tab to manage existing routes.

From the Instances tab, you can:

- view a summary table that lists up to 20 Cloud WAF instances running on your corp.
- use a search bar to filter the instances.
- access a detailed view of an instance by clicking **View** to the right of an instance. Additional controls on the detailed view page enable you to edit, delete, or re-deploy the instance.

From the Routes tab, you can:

- view a summary table that lists your routes.
- use a search bar to filter the routes.
- access a detailed view of the instance associated with a route by clicking **View** to the right of a route. Additional controls on the detailed view page enable you to edit, delete, or re-deploy the instance.

About the Corp Overview page

Last updated: 2024-05-16

/en/ngwaf/about-the-corp-overview-page

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Corp Overview page provides an at-a-glance view of all the sites in your corp, including which of your sites:

- is seeing the most traffic.
- is attacked the most.
- is seeing the most blocked traffic.
- has the most flagged, malicious IPs.

In addition to high-level stats, the Corp Overview page provides attack type and source breakdowns, enabling you to better visualize how your sites are being attacked.

Before you begin

Be sure you know how to access the web interface controls.

About the Corp Overview page

The Corp Overview page surfaces relevant data about your corp and its sites. To navigate to the Corp Overview page, click the name of your corp in the upper left corner of the web interface.

The Corp Overview page organizes data about your corp into the following sections:

- **Corp cards:** cards that represent request metrics as graphs.
- **Site Summaries:** a table listing the most frequent attack types and sources for a site.
- **Top Signals:** tables containing signal data.

You can use the Corp Overview page controls to change the time frame over which to display data for the entire page.

Corp cards

The Corp Overview page surfaces request metrics for all of your sites through the following cards:

- **Request Volume**: the number of requests your corp receives, the number of requests that have at least one attack signal, and the number of requests that were blocked.
- **Attack Requests**: the number of malicious requests per site. The card displays a maximum of 10 sites.
- **Blocked Requests**: the number of requests that were blocked. The card displays a maximum of 10 sites.

Hovering over any part of a graph displays a timestamp indictor that updates itself as you move your cursor.

Site Summaries table

The Site Summaries table highlights the most frequent attack types and attack sources (e.g., the regions where the attacks originated) for each site. You can use a search bar to filter the table by site and the site menu to view all sites, sites with attack requests, or sites without attack requests. The table contains these columns:

- **Site**: the name of the site and the total number of requests the site has received.
- **Requests with Attack Signals**: the top number represents the number of requests that were blocked due to threshold configurations (i.e., site alerts or templated rules). The bottom number represents the number of requests that have at least one attack signal.
- **Attack Signals**: the most frequent attack types for that site.

- **Countries**: the top three regions where the attacks originated.
- **Flagged IPs**: the number of IP addresses that were flagged due to exceeding set thresholds in the specified time period.

Top Signals tables

The Top Signals section surfaces signal data from your corp in the following tables:

- **Attack Signals**: displays data related to malicious requests.
- **Anomaly Signals**: displays data related to abnormal requests (e.g., requests containing malformed data and requests originating from known scanners).
- **Corp Signals**: displays data related to signals created at the corp level.

You can use a search bar to filter the tables by signal. The tables contain the following columns:

- **Signal**: the name of the signal.
- **Total Requests**: the number of requests that were tagged with the signal in your corp.
- **Top sites**: the sites that had the highest number of requests with that signal.
- **Requests per Site**: the number of requests tagged with that signal per site.

What's next

Dig deeper into details about the web interface controls.

About the Corp Rules menu

Last updated: 2023-04-17

/en/ngwaf/about-the-corp-rules-menu

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Corp Rules menu is located on the right side of the corp navigation bar. From the Corp Rules menu, you can access the following pages:

- Corp Rules
- Corp Lists
- Corp Signals

Before you begin

Be sure you know how to access the web interface controls.

About the Corp Rules page

Selecting **Corp Rules** from the Corp Rules menu displays the Corp Rules page. From this page, you can manage your corp rules. Corp rules block, allow, and tag requests and exclude system signals for arbitrary sets of conditions.

The Corp Rules page lists existing corp rules and provides controls to filter the list of rules. Specifically, you can filter the list by:

- **Scope:** allows you to filter the list by whether rules apply to select sites or all sites in your corp.
- **Type:** allows you to filter the list by the type of rule. Rule types include request rules and signal exclusion rules.
- **Status:** allows you to filter the list by whether rules are enabled or disabled.
- **Action:** allows you to filter the list by the type of action that occurs when a request matches a rule's criteria. Action types include block request, allow request, add signal, and exclude signal.

From the Corp Rules page, you can also create corp rules by clicking **Add corp rule**.

About the Corp Lists page

Selecting **Corp Lists** from the Corp Rules menu displays the Corp Lists page. From this page, you can manage your corp lists. Corp lists are sets of custom data used in corp rules, such as a list of countries a corp doesn’t do business with.

The Corp Lists page contains a table listing existing corp lists. Each row has a link that takes you to a detailed view of a corp list and additional controls that enable you to edit or delete the corp list.

From the Corp Lists page, you can also create a corp list by clicking **Add corp list**.

About the Corp Signals page

Selecting **Corp Signals** from the Corp Rules menu displays the Corp Signals page. From this page, you can manage your corp signals. Corp signals are tags that describe requests.

The Corp Signals page contains a table listing existing corp signals. Each row has a link that takes you to a detailed view of a corp signal and additional controls that enable you to edit or delete the corp signal.

From the Corp Signals page, you can also create a corp signals by clicking **Add corp signals**.

What's next

Dig deeper into details about all areas of the web interface controls.

📄	**About the Manage menu**
📅	Last updated: 2024-08-28
🔗	/en/ngwaf/about-the-manage-menu

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Manage menu is located on the right site of the site navigation bar. From the Manage menu, you can access the following pages:

- Site Settings
- Header Links
- Site Integrations
- Site Audit Log

Before you begin

Be sure you know how to access the web interface controls.

About the Site Settings controls

Selecting **Site Settings** from the Manage menu displays details associated with your site. The Site Settings details include:

- **Name** settings, where you'll find details about the site display name used throughout the Next-Gen WAF interface and short name used in URLs.
- **Agent Configurations** controls, where you can control agent blocking mode behavior, IP anonymization settings, specify client IP headers, and set a site default blocking response code.
- **Attack Thresholds** controls, where you can adjust the thresholds for system site alerts (also known as system workspace alerts).
- **Users** controls where you can control invitations and configure their roles.

About the Header Links controls

Selecting **Header Links** from the Manage menu displays the Header Links page, where you can connect request data from Next-Gen WAF with your own external data.

From the Header Links page, you can:

- manage existing header links by clicking **View** next to a header link.
- add a new header link by clicking **Add header link**.

About Site Integrations controls

Selecting **Site Integrations** from the Manage menu displays the Site Integrations page, where you can elect to receive notifications about specific activity within your site.

From the Site Integrations page, you can:

- manage existing corp integrations by clicking on the name of an existing integration.
- add a new site integration by clicking **Add site integration**.

About the Site Audit Log

Selecting **Site Audit Log** from the Manage menu displays the Site Audit Log page. This page lists site activity from the last 30 days. You can filter the list by activity type. Types include events and agent alerts and site configuration (e.g., a person created a new integration). You can also choose to exclude agents that are online.

The Site Audit Log page lists connected site integrations in a side bar. You can click on an integration to view details about that integration or click **Manage site integrations** to go to the Site Integrations page.

What's next

Dig deeper into details about all areas of the web interface controls.

	About the Monitor menu
	Last updated: 2024-08-28
	/en/ngwaf/about-the-monitor-menu

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Monitor menu is located on the right side of the site navigation bar. From the Monitor menu, you can access the following pages:

- Events
- Observed Sources
- Signals Dashboard

Before you begin

Be sure you know how to access the web interface controls.

About the Events page

Selecting **Events** from the Monitor menu displays the Events page. Events are actions that the Next-Gen WAF takes as the result of regular threshold-based blocking, templated rules, and site alerts.

The Events page contains a historical record of all flagged IP addresses within the last 30 days. From the Events page, you can:

- filter events by a specific IP address, by status (Active or Expired), or by the signal the event was tagged with.
- view information about an event in the event view area. The event view area is comprised of three sections: details, timeline, and sample request.

Details section

The **Details** section contains detailed information about the event and associated IP address, including:

- **Status:** the status of the event, either Active or Expired.
- **Country:** the country where the request originated.
- **Signal:** the signal tagged to the request.
- **Action:** additional actions taken on the IP address while flagged.
- **Host:** the host where the request originated.
- **User agents:** the user agents seen from this IP address. This list may include web browsers, media players, and other plug-ins.

The **Details** section also provides controls for managing IP addresses that have been flagged. Specifically, you can:

- click **Remove flag now** to remove the IP address from the flag list.
- click **Allow IP** to create a request rule to allow the IP address.
- click **Block IP** to create a request rule to block the IP address.

Timeline section

The **Timeline** section contains a timeline illustrating the actions that occurred during the event. This includes:

- when the IP address was identified as suspicious.
- the number of requests received from the IP address before it was flagged.
- when the IP address was flagged.
- the number of requests that were blocked or logged.
- the current status of the IP address.

Sample request section

The **Sample request** section highlights a single request received during the event, including the request itself and the signals applied to it. Clicking **View this request** takes you to the request details page for that request. Clicking **Edit rule** in the Signals field will take you to the **View** page for the rule where you can edit the request rule.

About the Observed Sources page

Selecting **Observed Sources** from the Monitor menu displays the Observed Sources page. The Observed Sources page provides an overview of all IP addresses that have been or soon will be flagged on your site. The Observed Sources page contains three tabs: Suspicious IPs, Flagged IPs, and Rate Limited Sources.

Suspicious IPs tab

The **Suspicious IPs** tab shows IP addresses that had requests containing attack payloads of a concerning volume but that did not exceed the decision threshold of flagged IPs. Once the threshold is met or exceeded, an IP address will be flagged and added to the Flagged IPs list. The Suspicious IPs tab helps anticipate which IPs may soon be flagged.

The Suspicious IPs tab lists:

- the suspicious IP address
- the country of origin
- the signal for which the IP address is approaching a threshold
- the threshold being approached
- how long ago the IP address was added to the Suspicious IPs list
- if the IP was flagged by another Next-Gen WAF customer

Clicking on an IP address in the Suspicious IPs list will take you to the Requests page with a search for that IP address already applied.

Flagged IPs tab

The **Flagged IPs** tab shows all IP flagging events. IP addresses can be flagged through site alerts and templated rules.

The Flagged IPs tab lists:

- the flagged IP address
- the country of origin
- the signal the IP address was flagged on
- how long ago the IP address was flagged
- if the IP address is still currently flagged

Clicking on an IP address in the Flagged IPs list will take you to the Requests page with a search for that IP address already applied.

Rate Limited Sources tab

> NOTE
>
> Rate Limit rules are only included with the Premier platform and certain packaged offerings. They are not included as part of the Professional or Essential platforms.

The **Rate Limited Sources** tab shows all sources that have been rate limited via the Advanced Rate Limiting feature. Rate limit rules are a type of rule that allow you to define arbitrary conditions and automatically begin to block or tag requests that pass a specifically defined threshold.

The Rate Limited Sources tab lists:

- the source
- the signal the source was rate limited on
- when the source will stop being rate limited

The tab also provides controls for managing sources that have been rate limited, including:

- removing specific sources from the rate limited sources list.
- creating request rules to allow specific sources.
- creating request rules to block specific sources.

About the Signals Dashboard page

NOTE

The Signals Dashboards page is only included with the Professional and Premier platforms. On the Essentials platform, you can monitor signals for a site via the Signals page.

Selecting **Signals Dashboard** from the Monitor menu displays the Signals Dashboard page. A signal is a descriptive tag about a request.

From this page, you can:

- view charts that display time series data for signals.
- use filters to narrow down the charted signals. You can filter by corp signals, site signals, bot detection, OWASP injection attacks, scanners, traffic source anomalies, request anomalies, response anomalies, and virtual patching.
- use the time menu to modify the time frame over which to display data.
- click the chart name to expand a chart and view related target and source details.
- hover your cursor over the information icon on a chart to reveal a description of the signal.

	About the My Profile menu
	Last updated: 2024-08-28
	/en/ngwaf/about-the-my-profile-menu

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

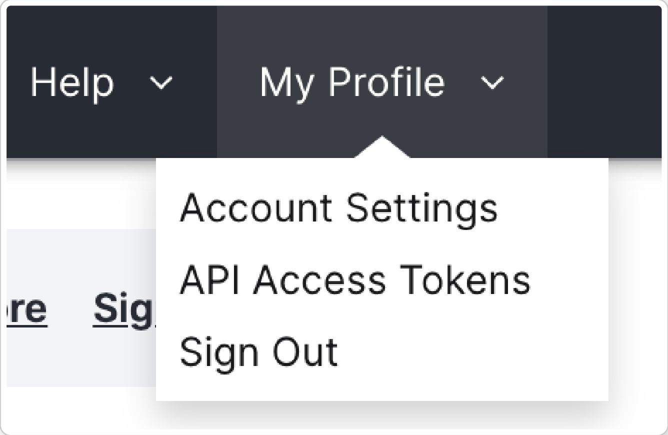
The My Profile menu provides you with access to your personal profile information and settings as determined by the role you have been assigned. The My Profile menu also provides you access to your personal API access tokens for using the Signal Sciences API and a way to log out of the web interface.

Before you begin

Be sure you know how to access the web interface controls before learning about each of the pages you'll encounter there.

About the My Profile menu

The My Profile menu appears at the far right of the corp navigation bar:



About the Account Settings

Selecting **Account Settings** from the My Profile menu displays the name and email address tied to your account as well as specific settings. The settings displayed will vary depending on your assigned role and package. From the Account Settings, you can:

- enable and disable two-factor authentication (2FA)
- subscribe to alerts for your corps and sites
- change your password

IMPORTANT

Looking to change the name or email address associated with your Signal Sciences account? If you only have a Signal Sciences account or if you have both a Fastly account and a Signal Sciences account that share the same email address, you must contact support to change your name or password.

Subscribing to alerts

You can elect to be notified via email about certain corp and site integration activity (e.g., a weekly summary of site activity and the release of CVE virtual patches). Select the checkbox next to the subscription and then click **Update subscriptions** to start receiving email notifications. For a more extensive list of alerts to subscribe to, check out our mailing list integration.

About the API Access Tokens

Selecting **API Access Tokens** from the My Profile menu displays the personal API access tokens associated with your account.

What's next

Dig deeper into details about all areas of the web interface controls.

	About the Requests page
	Last updated: 2024-08-02
	/en/ngwaf/about-the-requests-page

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Requests page features a summary table, which lists individual requests that have been tagged with signals and that fit into either the all or sampled data storage category. The summary table includes general request data (e.g., path, response code, response size) and identifies the specific attacks and anomalies that a request was tagged with.

Before you begin

Be sure you know how to access the web interface controls.

About the Requests page

Selecting **Requests** from the site navigation bar displays the Requests page.

From the Requests page, you can:

- use menus to filter the table by when the requests were made and by the signals and HTTP response codes that the requests are tagged with.
- enter queries into a search bar to filter the table. Clicking **Show search examples** reveals example search queries with valid syntax.
- click on signals and linked data in the table to filter the table's contents. For example, clicking on a source IP will constrain the results to all requests made by that IP.
- view full details for an individual request by clicking **View request detail**. The request details page lists all of the metadata captured about the request, including request and response headers, and all the signals we've identified.

  This page can help you further debug a particular attack or anomaly. For example, you may notice target hosts for domains you do not own, which happens when the requester uses a modified hosts file or forged host header to make it appear as though the target is a foreign host when it has actually been configured to point to one of your IP addresses directly.

  > NOTE
  >
  > You may need additional context to fully investigate an attack or anomaly. To do this, we recommend using a header link to add a link to your internal systems on the request details page via a linking identifier (e.g., an X-Request-Id response header).

- download full details for the first 1,000 requests by clicking the **Download as** menu and selecting **JSON** or **CSV**. To download additional requests, click **Next** to navigate to a subsequent results page and click **Download as** again.

About the Rules menu

Last updated: 2023-12-07

/en/ngwaf/about-the-rules-menu

> IMPORTANT
>
> This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Rules menu is located on the right side of the site navigation bar. From the Rules menu, you can access the following pages:

- Site Rules
- Templated Rules
- Site Lists
- Site Signals

- Site Alerts
- Redactions
- Simulator

Limitations and considerations

The Templated Rules, Site Lists, Site Signals, and Site Alerts pages are only included with the Professional and Premier platforms.

About the Site Rules page

Selecting **Site Rules** from the Rules menu displays the Site Rules page. From this page, you can manage your site rules. With site rules, you can allow, block, rate limit, or tag requests for an arbitrary set of conditions.

The Site Rules page lists existing site rules and provides controls to filter the list of rules. Specifically:

- **Type:** allows you to filter the list by the type of rule. Rule types include request rules, signal exclusion rules, and rate limit rules.
- **Status:** allows you to filter the list by whether rules are enabled or disabled.
- **Action:** allows you to filter the list by the type of action that occurs when a request matches a rule's criteria.

Additional controls on the Site Rules page enable you to:

- create site rules by clicking **Add site rule**.
- access a detailed view of a site rule by clicking **View** to the right of the site rule. Additional controls on the detailed view page allow you to edit and remove the site rule.

About the Templated Rules page

Selecting **Templated Rules** from the Rules menu displays the Templated Rules page. The Templated Rules page lists all templated rules. Templated rules are pre-built rule configurations for registrations, logins, and virtual patches.

From this page, you can:

- view all templated rules.
- filter the templated rules by category (e.g., API, ATO, and CVE), by status, and by whether the rules are recommended or not.
- use a search bar to filter the templated rules by tag name and description.
- access metrics and additional controls for a templated rule by clicking **View** to the right of the templated rule. The detailed view page displays a graph, Event list, and list of requests that are tagged with the signal associated with the templated rule. Controls on this page allow to you enable or edit the templated rule.

About the Site Lists page

Selecting **Site Lists** from the Rules menu displays the Site Lists page. The Site Lists page displays your site's lists. Lists are sets of custom data (e.g., list of countries a site doesn't do business with) that are used in site rules.

From this page, you can:

- view your lists.
- create a site list by clicking **Add site list**.
- access a detailed view of a site list by clicking **View** to the right of the site list. Additional controls on the detailed view page enable you to edit and remove the site list.

About the Site Signals page

Selecting **Site Signals** from the Rules menu displays the Site Signals page. The Site Signals page lists your site's custom signals. A signal is a descriptive tag about a request.

From this page, you can:

- view a list of your custom signals.
- create a custom signal by clicking **Add site signal**.
- access a detailed view of a custom signal by clicking **View** to the right of the custom signal. Additional controls on the detailed view page enable you to edit and remove the custom signal.

About the Site Alerts page

Selecting **Site Alerts** from the Rules menu displays the Site Alerts page. The Site Alerts page lists your site alerts. Site alerts allow you to define thresholds for when to flag, block, or log an IP address.

From this page, you can:

- view a list of your site alerts.
- create a site alert by clicking **Add site alert**.
- access a detailed view of a site alert by clicking the name of the site alert. Additional controls on the detailed view page enable you to edit or remove the site alert.

About the Redactions page

Selecting **Redactions** from the Rules menu displays the Redactions page. The Redactions page lists your site's custom redactions, not system-defined redactions. Redactions remove sensitive data from requests before they reach the platform backend. With custom redactions, you can specify the fields to redact from requests.

From this page, you can:

- view a list of your custom redactions.
- create a custom redaction by clicking **Add redaction**.
- access a detailed view of a redaction by clicking **View** to the right of the redaction. Additional controls on the detailed view page enable you to edit or remove the redaction.

About the Simulator page

Selecting **Simulator** from the Rules menu will display the Simulator page. This page enables you to test sample requests and responses, identifying whether a request would be blocked or allowed. The Simulator page can be helpful for debugging or troubleshooting Corp Rules and Site Rules.

From this page, you can:

- construct and modify sample requests and responses.
- send these sample requests and responses through the Next-Gen WAF detection engine.
- determine whether a request would be blocked or allowed by the WAF.
- identify the specific response code that would be returned for each sample request.
- view the signals that the WAF would add to the request.
- assess whether redaction would occur in any given scenario.

About the Signals page

📅	Last updated: 2024-08-28
🔗	/en/ngwaf/about-the-signals-page

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Signals page lists the system signals that are available to a site. A signal is a descriptive tag about a request.

Before you begin

Be sure you know how to access the web interface controls.

Limitations and considerations

The Signals page is only included with the Essential platform. If you have either the Professional and Premier platform, you can monitor signal activity via the Signals Dashboard page.

About the Signals page

Selecting **Signals** from the site navigation bar displays the Requests page.

From this page, you can:

- view the system signals for a site. Each signal contains a brief description, a status (e.g., enabled, disabled), and the number of requests that have been tagged with the signal.
- use filters to narrow down the signals list. You can filter by signal status and by category (e.g., OWASP attack, scanner, CVE).
- enter text into a search bar to find a signal by tag name or description.
- click **View** for a specific signal to access a detailed overview of the signal's activity and configuration.

About the signal details page

Clicking **View** for a specific signal displays the signal details page. From this page, you can view:

- the **Signal activity** chart, which displays time series data for the signal.
- the **Events** chart, which displays a list of recent IP addresses that were flagged with this signal. Clicking **View events** takes you to the **Events** page, where you can access a historical record of all IP addresses flagged with this signal.
- the **Signal requests** chart, which displays a list of requests that have been tagged with the signal. Clicking the document icon for any request in this list takes you to the **Request details** page.

About the Site Overview page

📅	Last updated: 2024-04-22
🔗	/en/ngwaf/about-the-site-overview-page

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Site Overview page allows you to view metrics for a site via system-generated and custom dashboards.

Before you begin

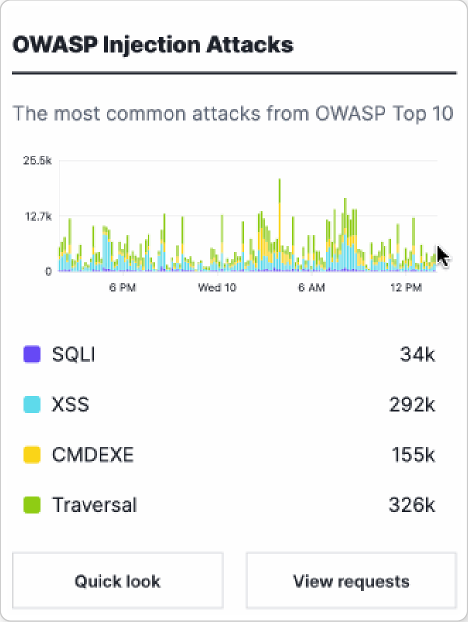
Be sure you know how to access the web interface controls.

About the Site Overview page

The Site Overview page allows you to control:

- the specific system-generated or custom dashboard for which to display metrics
- the time frame over which to display data

Different metrics appear depending on the dashboard you've selected. Hovering over any part of a graph displays a timestamp indictor that updates itself as you move your cursor.



🟪 SQLI	34k
🟦 XSS	292k
🟨 CMDEXE	155k
🟩 Traversal	326k

At the bottom of each card are buttons that provide more details about the data in each graph.

Clicking on **Quick Look** displays a summary view of the data in the graph.

Clicking on **View Requests** takes you to the Requests page with data from the graph applied in the search filter. The Requests page shows individual requests that contain attack or anomaly data.

Overview dashboard

The Overview dashboard provides a high-level, system-generated overview of metrics related to your site. It includes the following cards:

- **Request volume:** a graph displaying the number of requests the site received over time.
- **OWASP Injection Attacks:** a graph displaying the most common OWASP Top 10 attacks the site received over time.
- **What's new:** a list of the latest Next-Gen WAF feature announcements.
- **Scanners:** a graph displaying the number of commercial and open source scanning tools over time.
- **Traffic Source Anomalies:** a graph displaying the number of requests from unusual or suspicious sources over time.

- **Events:** a list of IPs that were flagged for exceeding thresholds. Click **View all events** to open the Events page.
- **Request Anomalies:** a graph displaying the number of anomalous behaviors within request headers over time.
- **Response Anomalies:** a graph displaying the number of client and server error codes over time.
- **Suspicious IPs:** a list of IPs that are approaching thresholds. Once the threshold is met or exceeded, the IP address will be flagged and added to the Events list. If the agent mode is set to blocking, then all malicious requests from flagged IPs are blocked (without blocking legitimate traffic).
- **Authentication:** a graph displaying the number of attempts to log in to application endpoints over time.
- **Top Attacks:** a list of the top URLs containing attack signals.

API Protection dashboard

The API Protection dashboard provides system-generated data about API protection signals. It includes the following cards:

- **Enumeration:** a graph displaying the number of attempts to access enumerated resources over time.
- **Request anomalies:** a graph displaying the number of anomalous behaviors within request headers over time.
- **Injection attacks:** a graph displaying the number of OWASP attacks associated with API abuse over time.
- **Serialization anomalies:** a graph displaying the number of request errors over time. The errors may indicate autonomous clients.
- **Request violations:** a graph displaying the number of requests violating common controls over time.
- **Traffic source anomalies:** a graph displaying the number of requests from unusual or suspicious sources over time.

ATO Protection dashboard

The ATO Protection dashboard provides system-generated data about account takeover (ATO) signals. It includes the following cards:

- **Login:** a graph displaying the number of attempts to log in to application endpoints over time.
- **Password reset:** a graph displaying the number of attempts to reset passwords over time.
- **Account creation:** a graph displaying the number of attempts to create accounts over time.
- **Account changes:** a graph displaying the number of changes to sensitive account information over time.
- **Anomalies:** a graph displaying the number of requests from unusual or suspicious sources over time.
- **Gift card validation:** a graph displaying the number of attempts to validate gift card details over time.
- **Credit card validation:** a graph displaying the number of attempts to validate credit card details over time.
- **Spam:** a graph displaying the number of requests to application messaging features over time.

Bot Management dashboard

The Bot Management dashboard provides system-generated data about suspected bot signals. It includes the following cards:

- **Verified Bot Activity:** a graph displaying verified bots represented on a per-category basis.
- **Bot Activity:** a graph displaying the number of requests made by suspected bots, suspected bad bots, and verified bots over time.
- **Client Challenges:** a graph representing requests that were issued a `Browser Challenge` or verified by the `Verify Token` rule action and labeled as either providing a valid or an invalid challenge token.
- **Authentication:** a graph displaying the number of attempts to log in to application endpoints over time.

- **Traffic Source Anomalies:** a graph displaying the number of requests from unusual or suspicious sources over time.

What's next

Learn how to work with custom dashboards on the Site Overview page.

About the web interface controls

Last updated: 2023-05-04

/en/ngwaf/about-the-web-interface-controls

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

The Next-Gen WAF provides web interface access to all of its features and functions, which are also accessible using the application programming interface (API).

You must have a Next-Gen WAF account to be able to access the web interface controls. Contact sales@fastly.com to create an account. Once your account is set up, you can navigate to the controls via the login page at https://dashboard.signalsciences.net/.

About the corp navigation bar

The corp navigation bar provides access to corp features and functions. It contains the following controls:

- a switcher menu that provides direct access to both the Fastly and Next-Gen WAF applications from a single location. The switcher menu appears as nine squares in a three by three grid.
- the name of your corp which links to the Corp Overview page where you can view relevant data about your corp and its sites
- the Sites menu where you can select the site that you want to work with.
- the Corp Rules menu where you can access corp rules, lists, and signals
- the Corp Manage menu where you can access sites, users, integrations, audit logs, and configurations
- the Help menu where you can access documentation and support tickets
- the My Profile menu where you can access account settings and API access tokens and sign out of the web interface

About the site navigation bar

The site navigation bar provides access to site features and functions. It is only accessible when you are working with a site. To access the site navigation bar, select a site from the Sites menu on the corp navigation bar.

The site navigation bar contains the following controls:

- the name of your site which links to the Site Overview page where you can view metrics for your site
- the Requests page where you can search for requests that were made in the last 30 days
- the Agents page where you can view a list of your agents
- the Signals page where you can monitor site signals

NOTE

The Signals page is only included with the Essential platform.

- the Monitor menu where you can access events, observed sources, and signals
- the Rules menu where you can access site rules, lists, alerts, and redactions
- the Manage menu where you can access site-specific settings, integrations, configurations, and audit logs
- the agent mode indicator which specifies how the Next-Gen WAF agent handles requests that are tagged with attack signals from a flagged IP address. When enabled, the agent can either log and block the requests or log but not block the requests. When disabled, the agent does not log or block requests.

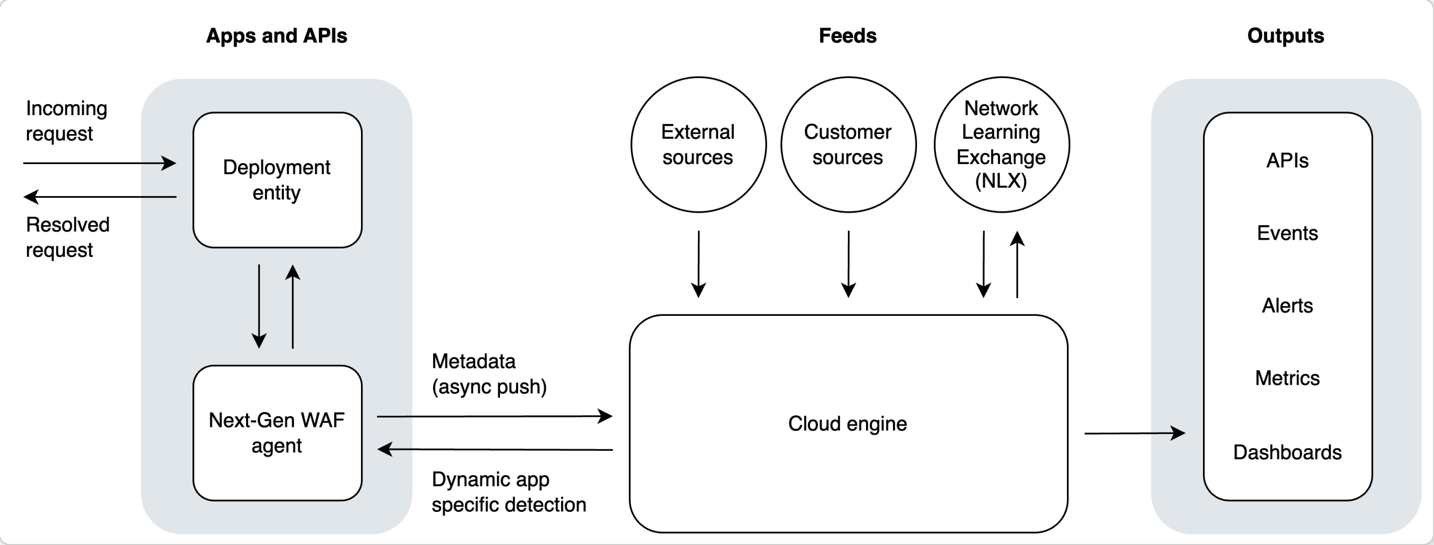
About the architecture

/en/ngwaf/about-the-architecture

The Next-Gen WAF is an application security monitoring system that proactively monitors and protects your web application from malicious traffic. Our entire control panel is built API-first. This means that you can adjust the protection and data privacy of your sites (also known as workspaces) via our web interface and API. You can also use our API to pull your Next-Gen WAF data into other systems.

Three key components make up the Next-Gen WAF architecture:

- **deployment entity:** the component that is responsible for handling requests to, or on, your web application. Your deployment method determines the type of deployment entity (e.g., web server integration module or via a Fastly VCL service).
- **Next-Gen WAF agent:** the component that is responsible for processing requests and communicating with our cloud engine.
- **cloud engine:** the component that is responsible for sending data between the Next-Gen WAF agent and other sources.



About the deployment entity

The deployment entity is the architecture component that is responsible for handling requests to, or on, your web application. It listens for incoming requests and passes them to the Next-Gen WAF agent for a decision. After receiving a decision from the agent, the deployment entity blocks, allows, or rate limits requests in accordance with that decision.

The type of deployment entity used in your deployment process depends on your deployment method. For example, with a Core WAF deployment that uses the optional module, the deployment entity can exist as a plugin to your web servers or a language specific implementation.

About the agent

The Next-Gen WAF agent (formerly known as the Signal Sciences agent) is the architecture component that is responsible for processing requests and communicating with our cloud engine. After receiving a request from the deployment entity, the agent:

- uses your active rules and site alerts (also known as workspace alerts) to determine how the request should be handled (i.e., allow, block, rate limit, or tag).
- performs any tagging decisions.
- redacts sensitive information from the request.
- relays the request and its decision back to the deployment entity.
- uploads redacted request and response data to the cloud engine per our data storage policy.

The agent also downloads new and updated rules and configurations from the cloud engine.

If the agent experiences issues or unavailability, your web application will continue to function because your deployment entity fails open if it doesn't hear back from the agent within a set time limit. Additionally, if the agent loses the ability to communicate with the cloud engine, the agent will continue to function with a few caveats.

About the cloud engine

The cloud engine is the architecture component that serves as the control plane between the Next-Gen WAF agent and other sources. Specifically, the cloud engine:

- forwards corp (also known as account) and site (workspace) configurations (e.g., rules and lists) that were made via the web interface and API to your Next-Gen WAF agent. The agent uses this information to determine how to handle requests.
- forwards anomalous request and response data and performance metrics from the Next-Gen WAF agent to the Next-Gen WAF control panel and any third-party integrations that you have set up.
- forwards attack data from the Next-Gen WAF agent to our Network Learning Exchange (NLX). The NLX is an IP address reputation feed that aggregates and analyzes attack data from our subscriber network to identify potential bad actors.
- forwards the list of potential bad actors from the NLX to your Next-Gen WAF agent. Your agent tags requests that are from the identified IP addresses and that contain at least one signal with the SigSci Malicious IPs (`SIGSCI-IP`) anomaly signal.
- forwards information from external sources to the Next-Gen WAF agent. For example, the cloud engine imports the list of IP addresses that have engaged in malicious activity from SANS Internet Storm Center and sends them to the agent. The agent then tags requests that are from the identified IP address list with the Malicious IP Traffic (`SANS`) anomaly signal.

We host the collection and analysis service in AWS West across multiple availability zones.

Deploying the WAF alongside a CDN

If you already have a Fastly CDN service, you can deploy the Next-Gen WAF alongside your Fastly CDN service via the Edge WAF deployment method. With this method, your deployment will be hosted on Fastly's Edge Cloud platform via our global network of POPs.

If you'd like to use another CDN provider, you can use a header (e.g., `X-Forwarded-For`) to obtain the true client IP address. For more information, check out our Client IP addresses guide.

* * *

Start here (Next-Gen WAF)

/en/ngwaf/start-here

> IMPORTANT
>
> This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Welcome! This guide provides a high-level overview of the steps needed to set up and configure the Next-Gen WAF product. Guided by our Sales and Solutions Engineering staff, you will:

- select the platform tier and deployment method that is right for you.
- *(optional)* add the Next-Gen WAF to your staging website.
- *(optional)* test and adjust the protection of your staging website at increasing blocking levels.
- add the Next-Gen WAF to your production website.
- test and adjust the protection of your production website at increasing blocking levels.
- monitor your production traffic and address issues.

> NOTE
>
> While optional, we recommend adding the Next-Gen WAF to a staging website before a production website. This helps ensure the Next-Gen WAF accounts for your business logic, performs the way you want it to, and allows all legitimate traffic.

> IMPORTANT
>
> We've created this page to help you get started with Fastly's Next-Gen WAF. If you're interested in learning about our Full-Site Delivery, check out our Full-Site Delivery Start here guide.

1. Plan the implementation

To get started with Next-Gen WAF, contact our Sales team. They will help you select the platform tier that's right for your business needs. Platform tiers determine which Next-Gen WAF features are available for you to use. The higher the tier, the more features you can access.

Our Solutions Engineering team will also help you figure out how to integrate the Next-Gen WAF product into your request flow. The Next-Gen WAF can be deployed in the following ways:

- **On Fastly's Edge Cloud platform (Edge WAF).** The Edge WAF deployment method is hosted on Fastly's Edge Cloud platform via our global network of POPs. To use this method, you must have a Fastly delivery account. You'll also need to update your DNS records to point to Fastly and add your Next-Gen WAF instance as an edge security service to your Fastly services.
- **Directly on your web servers within your infrastructure (Core WAF).** The Core WAF deployment method is hosted directly on your web servers within your infrastructure and consists of two components: the agent and the module. The agent is a small process that provides an interface between your web server and our cloud engine. The module can exist as a plugin to your web server or as a language- or framework-specific implementation. You can also use the Core WAF deployment method without a module by running the agent in reverse proxy mode.
- **On Fastly's cloud-hosted infrastructure (Cloud WAF).** The Cloud WAF deployment method is hosted on Fastly's cloud infrastructure and consists of several Cloud WAF instances. Each instance is made up of a load balancer along with a minimum of three Next-Gen WAF agents, each operating in reverse proxy mode. Each agent is installed on separate redundant machines. To use the Cloud WAF deployment method, you must upload a TLS certificate, add an origin server using the Next-Gen WAF hosted dashboard, and update your DNS records to point to the appropriate servers.

After you decide on a tier and a deployment method, our staff will create a Next-Gen WAF corp and at least one site for your use when you log in. A corp is a company hub for managing all sites, users, and corp-level configurations that determine what type of requests should be allowed, logged, or blocked. A site is a single web application, bundle of web applications, API, or microservice that the Next-Gen WAF can protect from attacks. Sites contain various site-level configurations. Users are authenticated against a corp and can be members of different sites in that corp.

2. Install Next-Gen WAF for your staging or production website

Once you have a Next-Gen WAF account, you can set up your deployment method for your staging or production website and verify the Next-Gen WAF is monitoring traffic.

Set up your deployment method

To set up your deployment method for your site, follow the instructions on the appropriate installation guide.

Once your deployment method is in place, the Next-Gen WAF will immediately start monitoring traffic to your website, detecting malicious and anomalous requests, and populating request data to the web interface. To ensure legitimate traffic isn't blocked, the Next-Gen WAF doesn't block any requests initially. In step 3, you will enable blocking via the Agent mode setting.

Temporarily create a request rule to log legitimate traffic

> NOTE
>
> If you're on the Essentials platform, skip to the step where you test your staging or production website at increasing blocking levels. This step requires you to use custom signals, which the Essentials platform doesn't support.

By default and per our storage policy, the Next-Gen WAF only captures request data from malicious and anomalous traffic, not legitimate traffic. While this focused approach to storage can help limit the data in the web interface to attacks and suspicious behavior, you may want to temporarily log request data from a sample of your legitimate traffic to verify that the Next-Gen WAF is monitoring all traffic and to see which requests the Next-Gen WAF allows.

To do this, we're going to leverage the power of signals. Signals are labels that identify an important request property. Depending on the payload, the Next-Gen WAF may tag a single request with multiple signals. The Next-Gen WAF relies on signals to help determine which requests to log and block.

To log request data from a sample of all traffic to your website:

1. Create a custom signal for all traffic.
2. Create a request rule that applies the signal to every request. Request rules are configurations that define when the Next-Gen WAF should allow, block, or tag certain requests on an individual basis.

We recommend disabling this rule once you are more familiar with the Next-Gen WAF's attack detection capabilities.

Verify the Next-Gen WAF is working

To verify the Next-Gen WAF is monitoring your website, make a handful of requests to it. The Next-Gen WAF should log a sample of those requests and make the individual request data available on the Requests page of the web interface.

3. Test your staging or production website at increasing blocking levels

Once you've added the Next-Gen WAF to your website, you can begin testing and adjusting its protection.

Because it is new, the Next-Gen WAF will monitor your website and allow all traffic. It doesn't block it yet. Blocking behavior is controlled by the Agent mode setting. The Agent mode setting determines how request processing is handled. Options include:

- **Blocking:** enables request blocking and logging. This option actively protects your web application and provides visibility into your web traffic. Legitimate traffic is still allowed.
- **Not Blocking:** enables request logging. This option provides visibility into your web traffic but doesn't actively protect your website.
- **Off:** disables request processing. The agent doesn't block or log requests.

By default, the Agent mode for your website will be set to `Not Blocking`.

Test (and understand) attack detection

In `Not Blocking` mode, the Next-Gen WAF detects and captures malicious and anomalous request data and allows all traffic. To verify the Next-Gen WAF is correctly identifying requests with attack payloads, you can use attack tooling to scan your website and simulate attacks. We like Nikto for testing because it can simulate a wide variety of vulnerabilities.

Once scanning is underway, you can use the web interface to see which requests contained attack payloads. Requests that contain attack payloads will be tagged with attack signals (e.g., Directory Traversal and XML Encoding Error).

Because the Nikto IP address sends a high volume of requests containing attacks over a short period of time, the Next-Gen WAF may flag the Nikto IP address. Site alerts define flagging parameters. Specifically, when the number of requests from an IP address meets the signal count threshold for a site alert, the IP address is flagged and select, subsequent requests from the IP address are blocked or logged for a set period of time.

Because your website is in `Not Blocking` mode, subsequent requests from the Nikto IP address will be logged and allowed. In `Blocking` mode, the Next-Gen WAF would block requests that are from the Nikto IP addresses and that contain attack signals. Legitimate traffic from the Nikto IP address would still be allowed. After a set period of time, requests from Nikto IP addresses would no longer be blocked.

Implement threshold blocking

Once you have a better understanding of when IP addresses are flagged, you can change the Agent mode to `Blocking` and run attack tooling to test the behavior. The Next-Gen WAF should block requests sent from flagged IP addresses and that have been tagged with an attack signal.

Implement instant blocking

Although threshold blocking handles attacks from bad actors who target your website with a high volume of attacks, it does not immediately block requests with attack payloads. To immediately block all requests that contain at least one attack signal, set the **Immediate blocking** setting on the Attack Thresholds page.

Alternatively, you can immediately block attacks that are from known bad actors and that have been tagged with an attack signal. How you do this depends on the platform you're on.

If you're on the Professional or Premier platform:

1. Create a list with every attack signal.
2. Create a request rule that is based on the attack signal list and anomaly signals that indicate known bad actors (e.g., Tor Traffic, SigSci IP, and Malicious IP).

If you're on the Essentials platform, create a request rule for each individual attack signal. Each rule should be based on one attack signal and anomaly signals that indicate known bad actors (e.g., Tor Traffic, SigSci IP, and Malicious IP).

Adjust the protection and data privacy

With `Blocking` mode in place, you can use the following features to adjust the protection of your website and make sure the Next-Gen WAF blocks and allows the correct traffic:

- **Custom site alerts.** Raise or lower system site alert thresholds by creating custom site alerts. Thresholds for the system site alerts are based on historical patterns that we've seen across all customers. However, these thresholds may be set too high or low for your site.
- **Templated rules.** You can enable templated rules to help protect against Common Vulnerabilities and Exposures (CVE) and provide visibility into registrations, logins, and API requests. These rules are disabled by default for Premier or Professional platform customers and enabled by default for Essentials customers.
- **Request rules.** You can create request rules to allow, block, or tag certain requests on an individual basis. For example, you could make a rule to block all requests with specific headers, requests to certain paths, or requests originating from specific IP addresses.
- **Advanced rate limiting rules.** You can create advanced rate limiting rules to block or tag requests from individual clients when a specific threshold (e.g., 100 requests in 1 minute) is passed. For example, you could create an advanced rate limiting rule to

block all requests from an individual client after the number of 404s the client receives exceeds the defined cap. This would help prevent scraping and vulnerability scanning.

- **Signal exclusion rules.** You can create signal exclusion rules to prevent requests from being tagged with certain signals. You can use signal exclusion rules to avoid false positives. For example, you may want to prevent requests that are from internal IP addresses and that failed to access an admin page from being tagged with the `FORCEFULBROWSING` signal.

You can also adjust the privacy of your request data. By default, we redact sensitive data from requests before they reach the platform backend. In addition to what we redact by default, you can specify additional fields to redact from requests. For example, you can create a custom redaction for a password field that is named `foobar` instead of `password`. You can also anonymize IP addresses.

4. Monitor your production traffic and address issues

Once the Next-Gen WAF is actively protecting your production website, you can monitor website traffic and any blocking actions the WAF takes via the Next-Gen WAF control panel (e.g., Corp Overview page, Site Overview page, and Events page). If you notice any concerning behavior, you can address the issue by creating a rule or custom site alert or reaching out to our Support team for help.

What’s next

Learn more about Fastly's products and features by exploring our documentation on https://docs.fastly.com. If you have questions, contact our Support team.

* * *

Category: Install guides

These articles explain how to install and configure the Next-Gen WAF.

Subcategory: Edge WAF deployment

These articles describe how to deploy the Next-Gen WAF with the Edge WAF deployment method.

Edge WAF deployment using the Fastly control panel

Last updated: 2024-08-28

/en/ngwaf/edge-waf-deployment-using-the-fastly-control-panel

IMPORTANT

This guide only applies to customers with access to the Next-Gen WAF product in the Fastly control panel. If you have access to the Next-Gen WAF control panel, check out our Edge WAF deployment using the Next-Gen WAF control panel guide.

The Edge WAF deployment method hosts the Next-Gen WAF on Fastly’s Edge Cloud platform via our global network of POPs, integrates with Fastly’s caching layer, and is managed by Fastly. Since security processing happens at the edge, the Next-Gen WAF can inspect all traffic before it enters your origin infrastructure and block attacks close to where they originated. You do not need to make any modifications to your own hosting environment.

Before you begin

The Next-Gen WAF is disabled by default. To purchase and enable the product for your Fastly account, contact sales@fastly.com. Once enabled, users assigned the superuser role can enable the Next-Gen WAF for your CDN services.

Limitations and considerations

When enabling the Next-Gen WAF for your CDN services, keep the following in mind:

- Adding the Next-Gen WAF to an existing CDN service counts against the service chain limit.
- The Edge WAF deployment method is only compatible with CDN services that do not use mutual TLS to the origin.
- Workspaces and CDN services have a one-to-one relationship. A workspace can be linked to only one service, and a service can have only one linked workspace.
- Only users assigned the superuser role can enable and configure the Edge WAF deployment for CDN services.

How it works

When you enable the Next-Gen WAF for a CDN service, Fastly creates an edge security service in the background, which is responsible for inspecting traffic to your CDN service. The edge security service runs in the `vcl_miss` and `vcl_pass` subroutines. Execution priority is set to a high value to enable compatibility with any other VCL snippets that may be in use.

Health checks

The edge security service includes a health check, which skips security processing entirely if the edge security service is unhealthy for any reason. The edge security service is modeled as an origin using the backend type and uses the same health check feature.

The edge security service includes a health check inside the `edge_security` function. Using the `backend.health` property, this health check will skip security processing entirely if the edge security service is unhealthy for any reason. The edge security service is modeled as an origin using the backend type and uses the same health check feature.

The health check works by sending a periodic probe every 15 seconds and checking for HTTP status code 200 as an expected response. Should a check indicate an unhealthy service, all security processing will be skipped until the service becomes healthy again. It may take up to 60 seconds for all security processing to be skipped.

Setting up the deployment

To deploy the Next-Gen WAF on an existing CDN service, complete the following steps:

1. Log in to the Fastly web interface.
2. From the **Home** page, select the appropriate service. You can use the search box to search by ID, name, or domain.
3. Click **Edit configuration** and then **Security**.

   > TIP
   >
   > You do not need to clone the active version of the service to enable the Next-Gen WAF.

4. In the Next-Gen WAF card, click the switch to the **On** position.
5. Click the pencil ✎ to edit the following deployment settings and then click **Submit**:
   - From the **Workspace** menu, select the workspace that you want to link to the service. If your account only has one workspace, this field is read-only.
   - In the **% of traffic** field, enter the percent of traffic that you want the Next-Gen WAF to inspect. When set to `100`, all traffic to your service is inspected. When the value is less than 100, a random sample of the specified percentage is inspected.
6. *(Optional)* Use attack tooling to verify that the Next-Gen WAF is monitoring your web application and identifying malicious and anomalous requests.

> TIP

To deploy the Next-Gen WAF via the Fastly API, you will need the Fastly-Key header for authentication. The Fastly API key must have write access to the relevant service.

1. Using the curl command line tool, call the enable a product API endpoint in a terminal application to enable the Next-Gen WAF on your service and link your service to a workspace:

```
$ curl -H "Fastly-Key: ${FASTLY_API_TOKEN}" -H 'Content-Type: application/json' -X PUT \
-d '{"workspace_id": "${NGWAF_WORKSPACE_ID}"}' \
"https://api.fastly.com/enabled-products/v1/ngwaf/services/${FASTLY_SERVICE_ID}"
```

2. *(Optional)* Using the curl command line tool, call the configure a product API endpoint in a terminal application to change the amount of traffic the Next-Gen WAF inspects. When the value is set to `100`, all traffic (100%) is inspected. When the value is less than `100`, a random sample of the specified percentage is inspected. By default, the Next-Gen WAF inspects all traffic.

```
$ curl -H "Fastly-Key: ${FASTLY_API_TOKEN}" -H 'Content-Type: application/json' -X PATCH \
-d '{"traffic_ramp": 20}' \
"https://api.fastly.com/enabled-products/v1/ngwaf/services/${FASTLY_SERVICE_ID}/configuration"
```

3. *(Optional)* Use attack tooling to verify that the Next-Gen WAF is monitoring your web application and identifying malicious and anomalous requests.

Configuring the deployment

To update your deployment, complete the following steps:

1. Log in to the Fastly web interface.
2. From the **Home** page, select the appropriate service. You can use the search box to search by ID, name, or domain.
3. Click **Edit configuration** and then **Security**.

> TIP
>
> You do not need to clone the active version of the service to edit the Edge WAF deployment.

4. In the Next-Gen WAF card, set the switch to the **On** position to enable the Next-Gen WAF for your service or to the **Off** position to disable the Next-Gen WAF for your service.
5. If the Next-Gen WAF is enabled, click the pencil ✎ to edit the following deployment settings and then click **Submit**:
   - From the **Workspace** menu, select the workspace that you want to link to the service. If your account only has one workspace, this field is read-only.
   - In the **% of traffic** field, enter the percent of traffic that you want the Next-Gen WAF to inspect. When set to `100`, all traffic to your service is inspected. When the value is less than 100, a random sample of the specified percentage is inspected.
6. *(Optional)* Use attack tooling to verify that the Next-Gen WAF is monitoring your web application and identifying malicious and anomalous requests.

Using the curl command line tool, call the configure a product API endpoint in a terminal application to configure your Edge WAF deployment. The endpoint requires that you include the Fastly-Key header for authentication and at least one of the following parameters in the JSON body:

- `workspace_id`: the ID of the workspace that you want to link to the service.
- `traffic_ramp`: the percentage of traffic that the Next-Gen WAF inspects. When the value is set to `100`, all traffic (100%) is inspected. When the value is less than `100`, a random sample of the specified percentage is inspected. By default, the Next-Gen WAF inspects all traffic.

```
$ curl -H "Fastly-Key: ${FASTLY_API_TOKEN}" -H 'Content-Type: application/json' -X PATCH \
-d '{"workspace_id": "${NGWAF_WORKSPACE_ID}", "traffic_ramp": 20}' \
"https://api.fastly.com/enabled-products/v1/ngwaf/services/${FASTLY_SERVICE_ID}/configuration"
```

Disabling the deployment

To disable Edge deployment for your service, complete the following steps:

1. Log in to the Fastly web interface.
2. From the **Home** page, select the appropriate service. You can use the search box to search by ID, name, or domain.
3. Click **Edit configuration** and then **Security**.

   TIP

   You do not need to clone the active version of the service to disable the Next-Gen WAF.

4. In the Next-Gen WAF card, click the switch to the **Off** position.

Using the curl command line tool, call the disable a product API endpoint in a terminal application.

TIP

To disable the Next-Gen WAF via the Fastly API, you will need the Fastly-Key header for authentication. The Fastly API key must have write access to the relevant service.

```
$ curl -H "Fastly-Key: ${FASTLY_API_TOKEN}" -H 'Content-Type: application/json' -X DELETE \
"https://api.fastly.com/enabled-products/v1/ngwaf/services/${FASTLY_SERVICE_ID}"
```

Edge WAF deployment using the Next-Gen WAF control panel

Last updated: 2024-04-12

/en/ngwaf/edge-waf-deployment-using-the-next-gen-waf-control-panel

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our Edge WAF deployment using the Fastly control panel guide.

The Edge WAF deployment method allows you to add the Next-Gen WAF as an edge security service onto Fastly's Edge Cloud platform without needing to make any modifications to your own hosting environment.

Limitations and caveats

Keep in mind the following limitations when working with the Edge WAF deployment method:

- Adding the Next-Gen WAF via the Edge WAF deployment method to an existing Fastly service counts against the service chain limit.
- This feature works with backends defined in VCL services using the API, CLI, or web interface. Backend definitions defined manually in VCL or snippets can be supported by redefining them using the API, CLI, or web interface. This will offer validation and enable a number of features not available to VCL-defined backends, including shielding. Learn more about defining backends in our integration documentation.

- We automatically support VCL directors as long as they are defined using the Fastly API.

Deploying at the edge

To deploy at the edge, you will need a corp (also known as an account) and at least one site (also known as a workspace) to protect. Setup involves making calls to the Signal Sciences API. These API calls will add privileged dynamic VCL snippets to your service that enable inspection.

Creating the edge security service

Create a new edge security service by calling the Edge WAF deployment API endpoint. This API call creates a new edge security service associated with your corp (account) and site (workspace). You will need to replace `${corpName}` and `${siteName}` with those of the corp (account) and site (workspace) you are adding the edge security service to. Your `${corpname}` and `${siteName}` are both present in the address of your Next-Gen WAF control panel, such as `https://dashboard.signalsciences.net/corps/${corpName}/sites/${siteName}`.

```
$ curl -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
-H "Content-Type: application/json" -X PUT \
"https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment"
```

Run this API call again for each site (workspace) you want to deploy on.

If successful, you will receive an HTTP 200 response with a blank response body (`{}`). Once this is returned, wait 1-2 minutes to allow the edge resources to be created.

To confirm the Compute instance resources associated with the site (workspace) have been created, query the `edgeDeployment` endpoint again using the following request:

```
$ curl -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
-H "Content-Type: application/json" \
"https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment"
```

The query should now return the appropriate Compute instance associated with the Next-Gen WAF site (workspace) in the URL path with no services attached. To attach the appropriate service, refer to Mapping to the Fastly service.

```
{"AgentHostName":"se--${corpName}--{SiteUID}.edgecompute.app","ServicesAttached":[]}
```

Mapping to the Fastly service

To map your corp (account) and site (workspace) to an existing Fastly service and synchronize the origins, follow these steps:

1. Using the curl command line tool, call the PUT edgeDeployment/${fastlySID} API endpoint in a terminal application:

   ```
   $ curl -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
   -H "Fastly-Key: ${FASTLY_KEY}" -H 'Content-Type: application/json' -X PUT \
   "https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment/$
   ```

   ```
   $ curl -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
   -H "Fastly-Key: ${FASTLY_KEY}" -H "Content-Type: application/json" -X PUT \
   "https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment/$
   ```

   This API call will create and activate a new service version with dynamic VCL snippets automatically added to the service. By default, the service will be activated and set to 0% traffic ramping. You can override those defaults by providing parameters in the JSON body:

   - `activateVersion` - activate Fastly service version after clone. Possible values are `true` or `false` (unquoted). If not specified, defaults to `true`.
   - `percentEnabled` - percentage of traffic to send to the Next-Gen WAF. Possible values are integers values `0` to `100` (unquoted). If not specified, defaults to `0`. This can be adjusted later. Check out Traffic ramping for details.

   For example, to disable initial activation and set initial traffic ramping to 10%, add the curl parameter `-d '{"activateVersion": false, "percentEnabled": 10}'` to the usual call:

   ```
   $ curl -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
   -H "Fastly-Key: ${FASTLY_KEY}" -H 'Content-Type: application/json' -X PUT \
   -d '{"activateVersion": false, "percentEnabled": 10}' \
   "https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment/${fa
   ```

   This API call requires the Fastly-Key header for authentication. The Fastly API key must have write access to the Fastly service ID. This API call will create and activate a new service version with dynamic VCL snippets automatically added to the service.

2. Optionally, follow these steps again for each additional Fastly service that you want to deploy on.

   If your origins change, you will need to call the PUT edgeDeployment/${fastlySID}/backends API endpoint again to resynchronize the backends.

Re-mapping a Fastly service to a new site (workspace)

To re-assign the Fastly service to a new site (workspace), follow these steps:

1. Using the curl command line tool, call the DELETE edgeDeployment/${fastlySID} API endpoint in a terminal application:

   ```
   $ curl -v -H "x-api-user: ${SIGSCI_EMAIL}" -H "x-api-token: ${SIGSCI_TOKEN}" \
   -H "Fastly-Key: ${FASTLY_KEY}" -H 'Content-Type: application/json' -X DELETE \
   "https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment/${fa
   ```

   This API call requires the Fastly-Key header for authentication. The Fastly API key must have write access to the Fastly service ID. This API call removes all backends from the Edge WAF deployment connected to the Fastly service and detaches the Fastly service from the Edge WAF deployment.

2. Using the curl command line tool, call the `PUT edgeDeployment` API endpoint in a terminal application with the new `${siteName}` to create a new edge security service. For example:

   ```
   $ curl -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
   -H 'Content-Type: application/json' -X PUT \
   "https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment"
   ```

   You can verify if a compute instance resource was successfully created by the above step by referring to Create the edge security service.

3. Using the curl command line tool, call the PUT edgeDeployment/{fastlySID} API endpoint in a terminal application to map the existing Fastly service to the new `${siteName}`. For example:

   ```
   $ curl -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
   -H "Fastly-Key: ${FASTLY_KEY}" -H 'Content-Type: application/json' -X PUT \
   "https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment/${fa
   ```

   This API call will activate a new service version by updating the existing Next-Gen WAF VCL dynamic snippet with the new edge security service ID.

Synchronizing origins

IMPORTANT

Failure to synchronize origins may result in your traffic not being inspected properly. Requests sent to a backend that does not exist in the edge security service will be served a `503 Unknown wasm backend` error. You can correct this issue by running an API call to properly sync origins after any changes.

Some conditions cause origin syncing to occur automatically:

- site (workspace) configuration changes
- Agent mode (also known as Protection mode) changes
- Enabling or disabling IP Anonymization
- Rule changes (e.g., request rules, signal exclusion rules, CVE rules)
- Rule list changes (only if the list is being used by a rule)
- IP addresses flagged

If you change your origins in the Fastly control panel, you will need to take additional action to synchronize your changes using an API call. The API call makes sure origin changes applied in the Fastly control panel are reflected in the edge security service. For example:

```
$ curl -v -H "x-api-user:${SIGSCI_EMAIL}" -H "x-api-token:${SIGSCI_TOKEN}" \
-H "Fastly-Key: $FASTLY_KEY" -H "Content-Type:application/json" -X PUT \
"https://dashboard.signalsciences.net/api/v0/corps/${corpName}/sites/${siteName}/edgeDeployment/${fastly
```

WAF execution

Once both API calls are completed, your service will automatically be set up with dynamic VCL snippets that control the execution of the Next-Gen WAF. A new service version will be created and activated containing the additional VCL snippets.

The edge security service runs in the `vcl_miss` and `vcl_pass` subroutines. Execution priority is set to a high value to enable compatibility with any other VCL snippets that may be in use.

Traffic ramping

You can control the amount of traffic inspected by the edge security service using the `Enabled` dictionary key. This value is available in the `Edge_Security` dictionary and is automatically created when you attach a delivery service.

The default value is 0, with numbers greater than zero representing a percentage of the traffic being inspected. This means that unless you change the value of the `Edge_Security` Edge dictionary, your WAF will be enabled but won't inspect any traffic. If the value is set to 100, all traffic (100%) will be passed through the edge security service. If the value is less than 100, a random sample of the specified percentage will be sent through the edge security service.

NOTE

The `Edge_Security` Edge dictionary no longer uses The `DISABLED` field. To control blocking and logging behavior of an edge security service or turn off agent configurations entirely, use the web interface instead.

Health checks

The edge security service includes a health check inside the `edge_security` function. Using the `backend.health` property, this health check will skip security processing entirely if the edge security service is unhealthy for any reason. The edge security service is modeled as an origin using the backend type and uses the same health check feature.

The health check works by sending a periodic probe every 15 seconds and checking for HTTP status code 200 as an expected response. Should a check indicate an unhealthy service, all security processing will be skipped until the service becomes healthy again. It may take up to 60 seconds for all security processing to be skipped.

Determining if you already use health check logic

You can check if your service already uses health check logic by inspecting the value of the `x-sigsci-edgemodule` HTTP header, which is added to the request prior to being sent to the edge security service. If the value is greater than or equal to `1.6.0`, then your VCL includes the health check logic.

Enabling and testing health check logic

To enable the health check for an existing service, make sure your VCL is updated to the latest version by re-running the steps in our instructions for mapping to the Fastly service. Then, test the health check logic by toggling the Agent mode (Protection mode) to **Off**. This will simulate an unhealthy state for the edge security service and processing will be skipped.

Subcategory: Agent management

These articles describe how to install, configure, and update the Next-Gen WAF agent.

Accessing agent keys

Last updated: 2024-02-20

/en/ngwaf/accessing-agent-keys

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

For each site (also known as workspace), the Next-Gen WAF agent has a set of keys or credentials that authorize it for the site (workspace).

- The **Agent Access Key** (`accesskeyid`) identifies the site (workspace) that the agent is configured for.
- The **Agent Secret Key** (`secretaccesskey`) authenticates and authorizes the agent.

You'll need these keys to start and update the agent.

Viewing agent keys

To view the agent keys for a site (workspace), complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Agents** in the site navigation bar.
4. Click **View agent keys**.
5. *(Optional)* Click **Copy** to copy the Agent Access Key (`accesskeyid`) and Agent Secret Key (`secretaccesskey`).

Agent end-of-support policy

Last updated: 2023-09-08

/en/ngwaf/agent-end-of-support-policy

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Agent versions have a two year support cycle with versions older than two years being retired or deprecated on a quarterly cadence. Retiring older versions with fewer features enables us to focus our resources on supporting and developing newer versions that provide more value to our customers.

Under the agent end-of-support policy:

- **We support agent versions that are under two years old.** Customers who use older versions of the agent are unsupported and don't have access to new features and integrations included with newer versions.
- **We deprecate and remove support from agent versions that are older than two years.** Unsupported agent versions don't receive rule updates and blocking decisions. Deprecation occurs on a quarterly cadence at the end of January, April, July, and October.

  If you are using an older version, you can upgrade your agent to a supported version. Contact securitysupport@fastly.com if you need help upgrading your agent.

The agent end-of-support policy adheres to the Fastly product lifecycle.

Allocating resources for the agent

Last updated: 2024-06-15

/en/ngwaf/allocating-resources-for-the-agent

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF agent requires computational resources to properly function. When setting up and testing your deployment, you must allocate adequate CPU, RAM, and file handles to the agent. The exact amount needed for your web application and anticipated traffic flow depends on multiple factors such as request size and content, application and network latency, and number and type of rules applied. Generally, try to balance allocating sufficient resources for the agent to keep request latency to a minimum.

Average agent resource usage

While the exact computational resources needed for the agent depends on the deployment, you can use aggregate agent resource usage numbers from other users to get an idea of what your deployment will need. Looking at the averages provides a good starting point, and the higher percentile values give an indication of what can be anticipated for high volume deployments.

TIP

For an initial proof of concept, we suggest each agent have access to one full CPU core and at least 500MB of RAM. Once you perform load testing of your unique traffic and web application usages, you can scale these resources up or down as appropriate to accommodate your unique needs.

Average CPU usage

Most deployed agents do not fully use the CPU resources they have available. It is typically desirable to budget more CPU than the agent may need at baseline traffic levels to allow enough headroom to remain performant during traffic spikes.

The table below shows a snapshot in time of deployed agents' CPU usage adjusted to normalize for the number of CPU cores the agent is configured to use.

Percentile	CPU usage
Average	~3%
95th percentile	~20%
99th percentile	~41%
99.9th percentile	~65%

Average RAM usage

The agent memory footprint typically remains fairly stable during its long-term execution. However, Golang is a garbage collected language, so there may be momentary memory spikes above the typical baseline during traffic spikes. To account for these spikes, we recommend leaving additional memory headroom above the normal observed baseline to allow the agent to momentarily burst higher without needing to perform as many garbage collection cycles. Variance in customer configurations, datasets, and rulesets may impact the memory footprint.

The table below shows a snapshot in time of deployed agents' RAM usage.

Percentile	RAM usage
Average	~76 MB
50th percentile	~67 MB
95th percentile	~126 MB
99.9th percentile	~280 MB

Average number of usable CPU cores

To prevent CPU starvation for other processes on the system, the agent defaults to using only half of the available CPU cores on the host. You can use the `max-procs` setting to change this number.

The table below shows a snapshot in time of the number of usable CPU cores provided to deployed agents. Keep in mind the following about the data:

- Some agents have modified `max-procs` configurations above or below the 50% default.
- All deployment types are represented, including Kubernetes deployments. Kubernetes deployments have a higher quantity of lower resourced agents, which causes a strong skew toward the low end of the distribution.

Percentile	Number of usable CPU cores
Average	6
50th percentile	2
75th percentile	8
95th percentile	18
99th percentile	48

Calculating agent resource needs

To understand the infrastructure costs the agent will incur, complete the following steps:

1. Prior to deploying the Next-Gen WAF, measure the computational resources used by your web application, especially during peak usage times. Focus on CPU utilization, memory usage, and file handle counts, both for the web application and for the OS in general.
2. Deploy the Next-Gen WAF and register it with a representative set of rules.
3. Verify that traffic is being inspected, tagged, and blocked when applicable.
4. Perform the same tests that you conducted in step one. If possible, run the tests on the same hosts, with the same resources, at the same time of day, on the same days of the week, and during the same business cycle as before.
5. Compare the results of the tests.

For example, let's say that prior to installing the Next-Gen WAF, you measure 50 percent CPU usage to run your web application. Then, after installing and configuring the Next-Gen WAF alongside your application, you measure 90 percent CPU usage and no adverse latency to your web application. You may want to scale to a larger host system with more CPU cores to have spare capacity for traffic fluctuations. For Kubernetes environments this may mean adapting your replica count, auto scaling, or resource limit configurations.

Hypervisors

Virtual machines run in an environment that shares resources with other virtual machines. Sometimes these groups of VMs are over-subscribed on the hypervisor. The agent is a real-time security solution designed to operate with minimum latency. If the virtual machine has to wait on the hypervisor for CPU cycles, queuing will occur and performance will suffer. In extreme examples, this type of resource starvation can lead to complete failures and application crashes. To avoid this resource scheduling conflict, we recommend running the Next-Gen WAF on a VM that is not over-subscribed or that has resource reservations.

Kubernetes

It is a common practice to request and limit resources in Kubernetes in general. To help place the Next-Gen WAF pods on nodes with sufficient resources, we recommend setting resource requests. However, we generally don’t recommend setting resource limits because if the pod reaches those limits it will be killed, impacting the level of protection and potentially causing disruptions. To restrict the number of CPU cores the agent is permitted to fully use, use the `max-procs` setting.

Getting started with the agent

Last updated: 2024-04-30

/en/ngwaf/getting-started-with-the-agent

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF agent (formerly known as the Signal Sciences agent) is a small process that provides the interface between your web server and our analysis platform. An inbound web request is passed to the agent, which then decides whether the request should be permitted to continue, blocked, rate limited, or tagged with signals. Depending on your deployment method, the agent is typically installed directly on your web server, or as a sidecar extending your existing deployment.

How the agent works

When a request is made to your web application, the deployment entity detects the request and sends it to the agent for processing. The agent uses your active rules and site alerts (also known as workspace alerts) to determine whether to allow, block, rate limit, or tag the request. Next, the agent performs any tagging decisions and redacts sensitive information from the request. Then the agent relays the request and its decision back to the deployment entity. The deployment entity enacts the agent's decision.

In addition to your deployment entity, the agent communicates asynchronously with our cloud engine every 30 seconds. Specifically, the agent:

- uploads redacted request and response data to the cloud engine per our data storage policy.
- downloads new rules and configurations from the cloud engine.

Threshold counting

For Core WAF and Cloud WAF deployments, the agent has local counters and is immediately able to determine when a request exceeds a site alert (workspace alert) or rate limit threshold. The agent uses aggregation from the cloud engine when multiple agents are deployed.

For Edge WAF deployments, the agent checks local counters at the POP-level to determine when a request exceeds a site alert (workspace alert) or rate limit threshold. The agent uses aggregation from the cloud engine when multiple agents are deployed.

Agent reliability

To optimize performance and improve reliability, the Next-Gen WAF architecture is split between the agent and deployment entity. If the agent experiences issues or unavailability, your application will continue to function because your deployment entity fails open if it doesn’t hear back from the agent within a set time limit. The default timeouts vary by module type and are as follows:

Module	Timeout
Windows IIS	200ms
.NET	200ms
.NET Core	200ms
All other modules	100ms

If the agent loses the ability to communicate with the cloud engine, the agent will continue to function with the following caveats:

- The agent will continue to detect attacks, anomalies, and any custom rules or signals based on local configurations at time of communication failure.
- The agent will continue to enforce existing blocking decisions.
- For Core WAF and Cloud WAF deployments, the agent's local counters will continue to tally requests that count towards site alert (workspace alert) and rate limit thresholds. When multiple agents are deployed, aggregation will not occur until communication resumes. Edge WAF deployment agents do not have local counters.
- The agent will not queue request logs and there will be an outage of data shown in the control panel. The ability to look at individual requests or aggregate data will be lost until the connection is reestablished.
- The agent will not receive configuration updates made via the web interface or API.
- The agent will not receive updates for new detections or enforcement decisions.
- The agent will not receive updated geolocation data.

Agent language

The agent is written in Go. We chose Go because of its combination of performance, ease of deployment, and memory safety guarantees. In addition, Go doesn't have the security issues associated with C/C++ (e.g., buffer overflows).

Installing the agent

To install the agent, complete the following steps:

1. Follow the agent installation instructions for your operating system:

    - Alpine
    - Amazon Linux
    - Debian
    - Red Hat
    - Ubuntu
    - Windows

2. *(Optional)* Configure the agent for your environment.
3. *(Optional)* Set up agent alerts to inform you when:
    - the number of online agents reaches a specified threshold.
    - the average number of requests per second (RPS) for all agents across all sites reaches a specified threshold.

Upgrading the agent

Per our agent end-of-support policy, we support agent versions that are under two years old. On a quarterly cadence, we deprecate and no longer support agent versions that are older than two years. If you want to upgrade your agent to a newer version, you can:

- manually upgrade the agent and then restart the agent.
- enable the agent auto-update service. The agent auto-update service checks at regularly occurring intervals for a new version of the agent and updates the agent when a new version is available.

Using agent configuration management systems

The agent can be managed via various configuration management systems (e.g., Chef, Puppet, and Ansible). To use a configuration management system, construct or expand an agent configuration file (typically `agent.conf`) or use environment variables. For a list of values that can be configured, check out our Configuring the agent guide.

Installing the agent on Alpine Linux

Last updated: 2024-02-20

/en/ngwaf/installing-the-agent-on-alpine-linux

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

This guide explains how to install the Next-Gen WAF agent on Alpine Linux. This guide includes instructions for Alpine running in a Docker container, virtual machine (VM), or bare-metal server.

Prerequisites

- If Alpine is being run in a Docker container, you must start the container before following these instructions.
- Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Add the package repository

Begin the agent installation by adding the version of the Alpine package repository that you want to use.

If you are running Alpine in a Docker container, run the following script to add the package repository:

```
$ apk update
$ apk add wget
$ wget -q https://apk.signalsciences.net/sigsci_apk.pub ; mv sigsci_apk.pub /etc/apk/keys/
$ echo https://apk.signalsciences.net/3.19/main | tee -a /etc/apk/repositories && apk update
```

If you are running Alpine in a VM or on a bare-metal server, run the following script to add the package repository:

```
$ sudo apk update
$ sudo apk add wget
$ sudo wget -q https://apk.signalsciences.net/sigsci_apk.pub ; sudo mv sigsci_apk.pub /etc/apk/keys/
$ sudo echo https://apk.signalsciences.net/3.19/main | sudo tee -a /etc/apk/repositories && sudo apk upd
```

Verify the downloaded key

After you've installed the Alpine package repository, verify the downloaded key contains the proper key by running the following command:

```
$ openssl rsa -pubin -in /etc/apk/keys/sigsci_apk.pub -text -noout
```

If the downloaded key contains the proper key, the expected output looks like the following:

```
Public-Key: (2048 bit)
Modulus:
    00:bb:23:1a:ef:0d:61:8f:8d:55:aa:ad:01:84:43:
    6c:46:42:42:ab:5b:ec:4e:4b:e2:e6:b6:e7:3d:45:
    b7:96:70:fe:16:95:aa:09:f1:90:82:40:e4:30:2b:
    9e:2a:03:e9:74:63:55:66:f0:db:8c:b9:5b:f8:45:
    5f:ad:4e:7a:14:da:02:83:c2:36:a0:84:74:a0:bb:
    f9:3f:03:c8:fe:80:6a:95:0c:17:22:55:40:30:18:
    51:d9:30:db:7c:1b:d0:06:4e:a9:51:1a:31:0e:33:
    f0:6e:ad:53:98:31:a5:ac:a3:a1:44:83:72:a1:ca:
    78:e3:24:70:ab:7a:0e:66:32:3b:f6:c9:90:16:dc:
    89:d0:52:7a:50:a8:f8:59:0a:34:12:2e:85:11:f5:
    80:0d:d4:7d:a7:7b:3b:d7:d9:1e:28:ed:bb:f7:08:
    2e:9f:73:a5:23:d8:53:b4:7e:21:dd:ae:92:4a:d0:
    5b:86:21:9c:82:05:21:29:eb:c1:ab:91:cd:1a:7b:
    95:6d:43:d3:1a:a9:62:2b:b0:95:9e:cf:18:82:64:
    02:f9:38:7e:7f:47:9f:d9:f3:ac:fd:2c:30:ff:75:
    b1:11:27:1c:7a:d6:ca:04:19:f8:31:80:42:e9:4a:
    0d:ab:d5:b8:ad:f2:35:31:a5:3f:98:19:99:fc:29:
    e8:4f
Exponent: 65537 (0x10001)
```

Install and configure the Next-Gen WAF agent package

Now that you've downloaded the Alpine package repository and verified that you have the proper key, you can install and configure the Next-Gen WAF agent package:

1. Run the following command to install the Next-Gen WAF agent package:

```
$ sudo apk add sigsci-agent
```

2. Create an empty agent configuration file in the following directory: `/etc/sigsci/agent.conf`.
3. Add the agent keys for your site to the agent configuration file.

```
accesskeyid = "AGENTACCESSKEYHERE"
secretaccesskey = "AGENTSECRETACCESSKEYHERE"
```

4. Save the agent configuration file.

Start the Next-Gen WAF agent

Now that you've installed and configured the agent package, you can start the Next-Gen WAF agent.

If you are running Alpine in a Docker container, run the following command to start the Next-Gen WAF agent:

```
$ /usr/sbin/sigsci-agent
```

If you are running Alpine in a VM or on a bare-metal server, run the following command to allow the agent to start on reboot:

```
$ sudo rc-update add sigsci-agent default
```

Then, start the agent by running any of the following commands:

```
$ sudo service sigsci-agent start
$ sudo rc-service sigsci-agent start
$ sudo /etc/init.d/sigsci-agent start
```

Next steps

Explore our module options and install the Next-Gen WAF module.

Installing the agent on Amazon Linux

Last updated: 2024-02-20

/en/ngwaf/installing-the-agent-on-amazon-linux

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

This guide explains how to install the Next-Gen WAF agent on Amazon Linux.

Prerequisites

Before installing the agent, you need to:

- Determine the version of Amazon Linux you want to use: Amazon Linux 2023, Amazon Linux 2, or Amazon Linux 2015.09.01. Amazon Linux 2 is most similar to CentOS 7 and reuses the same configuration. Amazon Linux 2015.09.01 is most similar to

CentOS 6 and reuses the same configuration.

Amazon Linux 2023 does not mirror CentOS as closely as it did in the past. It is a combination of multiple versions of Fedora and CentOS Stream 9. See Relationship to Fedora. As a result, the `baseurl` of the yum repository will use `amazon/2023` as the distribution name and version number for Amazon Linux 2023.

- Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Add the package repository

Begin the agent installation by adding the version of the Amazon Linux package repository that you want to use. Add the version of the Amazon Linux package repository that you want to use.

Amazon Linux 2023

To add the Amazon Linux 2023 package, run the following script:

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/amazon/2023/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

Amazon Linux 2

To add the Amazon Linux 2 package, run the following script:

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/7/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

Amazon Linux 2015.09.01

To add the Amazon Linux 2015.09.01 package, run the following script:

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/6/$basearch
repo_gpgcheck=1
gpgcheck=1
```

```
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

Install and configure the Next-Gen WAF agent package

Now that you've downloaded the Amazon Linux package repository, you can install and configure the Next-Gen WAF agent package:

1. Run the following command to install the Next-Gen WAF agent package:
   ```
   $ sudo yum install sigsci-agent
   ```
2. Create an empty agent configuration file in the following directory: `/etc/sigsci/agent.conf`.
3. Add the agent keys for your site to the agent configuration file.
   ```
   accesskeyid = "AGENTACCESSKEYHERE"
   secretaccesskey = "AGENTSECRETACCESSKEYHERE"
   ```
4. Save the agent configuration file.

Start the Next-Gen WAF agent

Now that you've installed and configured the agent package, you can start the Next-Gen WAF agent.

If you added the Amazon Linux 2 package, run the following command to start the Next-Gen WAF agent:

```
$ sudo systemctl start sigsci-agent
```

If you added the Amazon Linux 2015.09.01 package, run the following command to start the Next-Gen WAF agent:

```
$ start sigsci-agent
```

Next steps

Explore our module options and install the Next-Gen WAF module.

📄	Installing the agent on Debian
📅	Last updated: 2024-02-20
🔗	/en/ngwaf/installing-the-agent-on-debian

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

This guide explains how to install the Next-Gen WAF agent on Debian.

Prerequisites

Before installing the agent, you need to:

- Determine the version of Debian you want to use.
- Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Add the package repository

Begin the agent installation by adding the version of the Debian package repository that you want to use.

Debian 11 - Bullseye

To add the Debian 11 - Bullseye package, run the following script:

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/keyrings/s
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/debia
$ sudo apt-get update
```

Debian 10 - Buster

To add the Debian 10 - Buster package, run the following script:

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/keyrings/s
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/debia
$ sudo apt-get update
```

Debian 9 - Stretch

To add the Debian 9 - Stretch package, run the following script:

```
$ sudo apt-get install -y apt-transport-https wget gnupg
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo tee /etc/apt/sources.list.d/sigsci-release.list <<-'EOF'
deb https://apt.signalsciences.net/release/debian/ stretch main
EOF
$ sudo apt-get update
```

Debian 8 - Jessie

To add the Debian 8 - Jessie package, run the following script:

```
$ sudo apt-get install -y apt-transport-https wget
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo tee /etc/apt/sources.list.d/sigsci-release.list <<-'EOF'
deb https://apt.signalsciences.net/release/debian/ jessie main
EOF
$ sudo apt-get update
```

Debian 7 - Wheezy

To add the Debian 7 - Wheezy package, run the following script:

```
$ sudo apt-get install -y apt-transport-https wget
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo tee /etc/apt/sources.list.d/sigsci-release.list <<-'EOF'
deb https://apt.signalsciences.net/release/debian/ wheezy main
EOF
$ sudo apt-get update
```

Install and configure the Next-Gen WAF agent package

Now that you've downloaded the Debian package repository, you can install and configure the Next-Gen WAF agent package:

1. Run the following command to install the Next-Gen WAF agent package:

   ```
   $ sudo apt-get install sigsci-agent
   ```

2. Create an empty agent configuration file in the following directory: `/etc/sigsci/agent.conf`.
3. Add the agent keys for your site to the agent configuration file.

   ```
   accesskeyid = "AGENTACCESSKEYHERE"
   secretaccesskey = "AGENTSECRETACCESSKEYHERE"
   ```

4. Save the agent configuration file.

Start the Next-Gen WAF agent

Now that you've installed and configured the agent package, you can start the Next-Gen WAF agent.

For Debian versions 8 and above, run the following command to start the Next-Gen WAF agent:

```
$ sudo systemctl start sigsci-agent
```

For Debian 7, run the following command to start the Next-Gen WAF agent:

```
$ sudo service sigsci-agent start
```

Optionally, enable the agent auto-update service. On a set schedule, the service checks the package downloads site for a new version of the agent and updates the agent when a new version is available.

Next steps

Explore our module options and install the Next-Gen WAF module.

Installing the agent on Red Hat

Last updated: 2024-06-20

/en/ngwaf/installing-the-agent-on-redhat

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

This guide explains how to install the Next-Gen WAF agent on Red Hat.

Prerequisites

Before installing the agent, you need to:

- Determine the version of Red Hat/CentOS you want to use.
- Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Add the package repository

Begin the agent installation by adding the version of the Red Hat/CentOS package repository that you want to use.

Red Hat/CentOS 9

To add the Red Hat/CentOS 9 package, run the following script:

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/9/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

Red Hat/CentOS 8

To add the Red Hat/CentOS 8 package, run the following script:

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/8/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

Red Hat/CentOS 7

To add the Red Hat/CentOS 7 package, run the following script:

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/7/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

Red Hat/CentOS 6

> NOTE
>
> After Q2 2017, RHEL6 and CentOS 6 will exit Production Phase 2 according to the Red Hat Enterprise Linux Life Cycle. Only limited,critical security fixes will be issued. You will need to review the lifecycle document for details and plan appropriately.

To add the Red Hat/CentOS 6 package, run the following script:

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/6/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

Install and configure the Next-Gen WAF agent package

Now that you've downloaded the Red Hat/CentOS package repository, you can install and configure the Next-Gen WAF agent package:

1. Run the following command to install the Next-Gen WAF agent package:

   ```
   $ sudo yum install sigsci-agent
   ```

2. Create an empty agent configuration file in the following directory: `/etc/sigsci/agent.conf`.

3. Add the agent keys for your site to the agent configuration file.

   ```
   accesskeyid = "AGENTACCESSKEYHERE"
   secretaccesskey = "AGENTSECRETACCESSKEYHERE"
   ```

4. Save the agent configuration file.

Start the Next-Gen WAF agent

Now that you've installed and configured the agent package, you can start the Next-Gen WAF agent.

For Red Hat/CentOS versions 7 and above, run the following command to start the Next-Gen WAF agent:

```
$ sudo systemctl start sigsci-agent
```

For Red Hat/CentOS 6, run the following command to start the Next-Gen WAF agent:

```
$ start sigsci-agent
```

Optionally, enable the agent auto-update service. The service checks the Signal Sciences package downloads site for a new version of the agent and updates the agent when a new version is available.

Next steps

Explore our module options and install the Next-Gen WAF module.

Installing the agent on Ubuntu

Last updated: 2024-06-20

/en/ngwaf/installing-the-agent-on-ubuntu

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

This guide explains how to install the Next-Gen WAF agent on Ubuntu.

Prerequisites

Before installing the agent, you need to:

- Determine the version of Ubuntu you want to use.
- Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Add the package repository

Begin the agent installation by adding the version of the Ubuntu package repository that you want to use.

Ubuntu 24.04 - Noble

To add the Ubuntu 24.04 - Noble package, run the following script:

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/keyrings/s
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/ubunt
$ sudo apt-get update
```

Ubuntu 22.04 - Jammy

To add the Ubuntu 22.04 - Jammy package, run the following script:

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/keyrings/s
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/ubunt
$ sudo apt-get update
```

Ubuntu 20.04 - Focal

To add the Ubuntu 20.04 - Focal package, run the following script:

```
$ sudo apt update
$ sudo apt-get install -y apt-transport-https wget
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/ubuntu/ focal main" | sudo tee /etc/apt/sources.
```

Ubuntu 18.04 - Bionic

To add the Ubuntu 18.04 - Bionic package, run the following script:

```
$ sudo apt update
$ sudo apt-get install -y apt-transport-https wget
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/ubuntu/ bionic main" | sudo tee /etc/apt/sources
```

Ubuntu 16.04 - Xenial

To add the Ubuntu 16.04 - Xenial package, run the following script:

```
$ sudo apt-get install -y apt-transport-https wget
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/ubuntu/ xenial main" | sudo tee /etc/apt/sources
```

Ubuntu 14.04 - Trusty

To add the Ubuntu 14.04 - Trusty package, run the following script:

```
$ sudo apt-get install -y apt-transport-https wget
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/ubuntu/ trusty main" | sudo tee /etc/apt/sources
```

Ubuntu 12.04 - Precise

To add the 12.04 - Precise package, run the following script:

```
$ sudo apt-get install -y apt-transport-https wget
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/ubuntu/ precise main" | sudo tee /etc/apt/source
```

Install and configure the Next-Gen WAF agent package

Now that you've downloaded the Ubuntu package repository, you can install and configure the Next-Gen WAF agent package:

1. Run the following command to install the Next-Gen WAF agent package:

```
$ sudo apt-get install sigsci-agent
```

2. Create an empty agent configuration file in the following directory: `/etc/sigsci/agent.conf`.
3. Add the agent keys for your site to the agent configuration file.

```
accesskeyid = "AGENTACCESSKEYHERE"
secretaccesskey = "AGENTSECRETACCESSKEYHERE"
```

4. Save the agent configuration file.

Start the Next-Gen WAF agent

Now that you've installed and configured the agent package, you can start the Next-Gen WAF agent by running the following command:

```
$ sudo systemctl start sigsci-agent
```

Optionally, enable the agent auto-update service. The service checks the Signal Sciences package downloads site for a new version of the agent and updates the agent when a new version is available.

Next steps

Explore our module options and install the Next-Gen WAF module.

📄	**Installing the agent on Windows**
📅	Last updated: 2024-07-11
🔗	/en/ngwaf/installing-the-agent-on-windows

> IMPORTANT
>
> This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF agent is a small process that provides the interface between your web server and our analysis platform. An inbound web request is passed to the agent, the agent then decides whether the requests should be permitted to continue or whether we should take action.

Requirements

Version 4.50 and later of the Next-Gen WAF agent requires Windows 10 or Windows Server 2016 or higher.

Prerequisites

Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Install and configure the Next-Gen WAF agent package

To install and configure the Next-Gen WAF agent on Windows, complete the following steps:

1. Create an empty agent configuration file at `C:\Program Files\Signal Sciences\Agent\agent.conf`.
    - If you need to specify a custom location for the `agent.conf` file, set the absolute file path with the system environment variable `SIGSCI_CONFIG`.
    - If you are deploying the agent in reverse proxy mode, check out the Reverse Proxy Mode configuration page for details on required configuration options.
2. Add the agent keys for your site to the agent configuration file.

    ```
    accesskeyid = "AGENTACCESSKEYHERE"
    secretaccesskey = "AGENTSECRETACCESSKEYHERE"
    ```

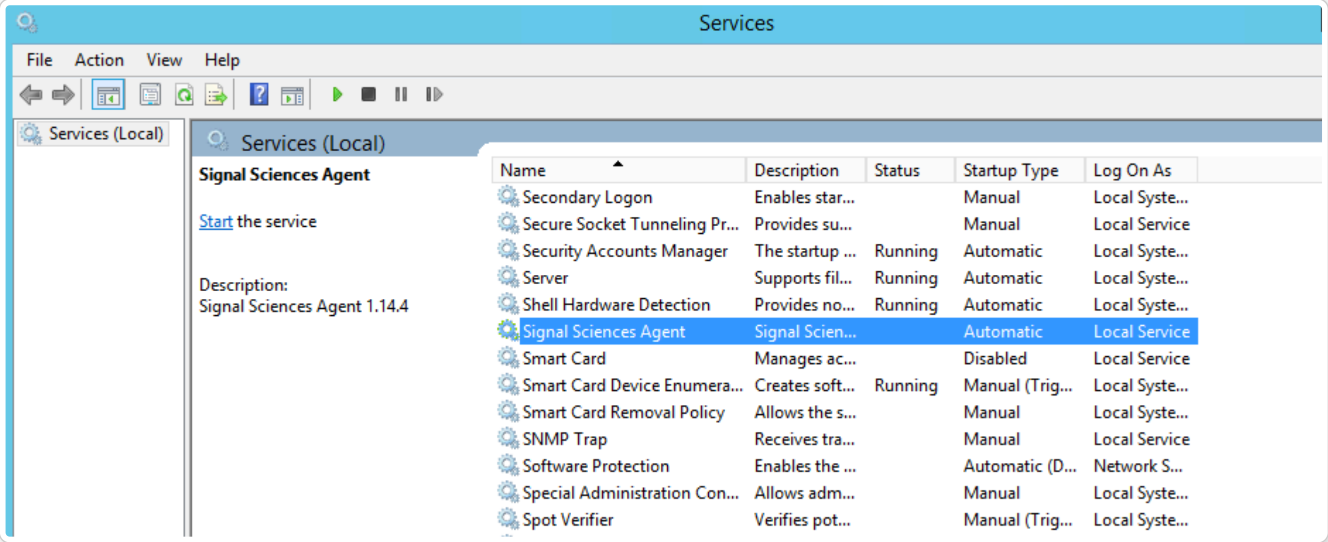
3. Download the latest Next-Gen WAF agent `.msi` from https://dl.signalsciences.net/?prefix=sigsci-agent/.
4. Run the `.msi` to install the Agent automatically with no prompts. It will install the executable in `C:\Program Files\Signal Sciences\Agent`, add a service entry for the Agent, and start the service if the agent configuration file is present with valid `accesskeyid` and `secretaccesskey` settings.

    The installed service name is `sigsci-agent` and can be controlled with PowerShell cmdlets:

    ```
    $ Start-Service sigsci-agent
    $ Restart-Service sigsci-agent
    $ Stop-Service sigsci-agent
    ```

    Alternatively, you can download the latest Next-Gen WAF agent for Windows as a `.zip` file, which contains the agent binary. You can run this from any location you prefer. However, to install the agent in this way, you will need to configure the Service entry and start the service manually.

Example `services.msc` screenshot:



Signal Sciences Agent

Start the service

Description:
Signal Sciences Agent 1.14.4

Name	Description	Status	Startup Type	Log On As
Secondary Logon	Enables star...		Manual	Local Syste...
Secure Socket Tunneling Pr...	Provides su...		Manual	Local Service
Security Accounts Manager	The startup ...	Running	Automatic	Local Syste...
Server	Supports fil...	Running	Automatic	Local Syste...
Shell Hardware Detection	Provides no...	Running	Automatic	Local Syste...
Signal Sciences Agent	Signal Scien...		Automatic	Local Service
Smart Card	Manages ac...		Disabled	Local Service
Smart Card Device Enumera...	Creates soft...	Running	Manual (Trig...	Local Syste...
Smart Card Removal Policy	Allows the s...		Manual	Local Syste...
SNMP Trap	Receives tra...		Manual	Local Service
Software Protection	Enables the ...		Automatic (D...	Network S...
Special Administration Con...	Allows adm...		Manual	Local Syste...
Spot Verifier	Verifies pot...		Manual (Trig...	Local Syste...

Next steps

Explore our module options and install the Next-Gen WAF module.

Managing agent alerts

Last updated: 2024-03-22

/en/ngwaf/managing-agent-alerts

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

With agent alerts, you can be notified via your configured integrations when defined threshold conditions for agents are reached.

Prerequisites

Before enabling an agent alert, you must first have at least one integration configured.

Enabling agent alerts

To enable agent alerting, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Agents** in the site navigation bar.
4. Click **Manage Alerts**.
5. Click the type of alert that you want to enable. Options include:
    - **Average RPS:** sends a notification when the average number of requests per second (RPS) for all agents in your corp meets the defined threshold condition.
    - **Online Agent Count:** sends a notification when the number of online agents meets the defined threshold condition.

    TIP

    You likely don't need to enable both alerts.
6. Click **Edit agent alert**.
7. Fill out the Edit fields as follows:
    - In the **Description** field, modify the description of the alert as needed.
    - Leave the **Metric** menu set to its default.
    - From the **Operator** menu, select an operator for the threshold condition.
    - If the Metric menu is set to **Average RPS (all agents)**, in the **RPS** field, enter the number of requests per second for the threshold condition.
    - If the Metric menu is set to **Online agents**, in the **Count** field, enter the number of online agents for the threshold condition.
    - From the **Interval** menu, select the length of the evaluation interval.
8. Click the **Enabled** switch to **On**.
9. Click **Update agent alert**.

Disabling agent alerts

To disable agent alerting, complete the following steps:

1. Log in to the Next-Gen WAF control panel.

2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Agents** in the site navigation bar.
4. Click **Manage Alerts**.
5. Click the agent alert that you want to disable.
6. Click **Edit agent alert**.
7. Click the **Enabled** switch to **Off**.
8. Click **Update agent alert**.

Upgrading the agent

Last updated: 2023-11-30

/en/ngwaf/upgrading-an-agent

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Our Agent package is distributed in our package repositories. If you haven't already, configure our repository on your system.

Limitations and considerations

When working with the Next-Gen WAF agent, keep the following things in mind:

- Per our agent end-of-support policy, we support agent versions that are under two years old, and on a quarterly cadence, we deprecate and no longer support agent versions that are older than two years.
- Check the Agent Release Notes to see what's new in the agent.

Working with the agent auto-update service

The agent auto-update service checks the package downloads site for a new version of the agent and updates the agent when a new version is available.

Limitations and considerations

When setting up the agent auto-update service, keep the following in mind:

- The agent auto-update service is only compatible with agents on Debian 8 or higher, Red Hat CentOS 7 or higher, and Ubuntu 18.04 or higher.
- The agent auto-update service updates an agent by uninstalling the old package version and installing the latest version. Due to the agent's brief downtime during upgrade, we recommend scheduling the update when your website or web application receives low traffic.

Enable the agent auto-update service

Once the agent is installed, you can enable the agent auto-update service:

1. Enable the agent auto update service.

```
$ sudo systemctl enable --now sigsci-agent-update.timer
```

2. *(Optional)* Customize the agent auto update timer. By default, the check for new versions is performed on the second Thursday of the month.

```
$ sudo systemctl edit sigsci-agent-update.timer

[Timer]
OnCalendar=
OnCalendar=Thu *-*-08,09,10,11,12,13,14 03:00:00
RandomizedDelaySec=8h
```

Disable the agent auto-update service

To disable the agent auto-update service, run the following command:

```
$ sudo systemctl disable --now sigsci-agent-update.timer
```

Other forms of auto-update in Azure

The following are different forms of auto-update you can configure with Azure.

Upgrading the agent on Alpine Linux systems

To manually upgrade agents on Alpine Linux systems, follow these steps:

1. Upgrade the Agent package.

```
$ apk update
$ apk add sigsci-agent
```

2. Restart the agent.

```
$ sudo systemctl start sigsci-agent
```

Upgrading the agent on Red Hat-CentOS systems

To manually upgrade agents on a Red Hat CentOS systems, follow these steps:

1. Upgrade the Agent package.

```
$ yum -q makecache -y --disablerepo=* --enablerepo=sigsci_*
$ yum install sigsci-agent
```

2. Restart the agent.

```
$ sudo systemctl restart sigsci-agent
```

1. Upgrade the Agent package.

```
$ yum -q makecache -y --disablerepo=* --enablerepo=sigsci_*
$ yum install sigsci-agent
```

2. Restart the agent.

```
$ sudo restart sigsci-agent
```

Upgrading the agent on Ubuntu-Debian systems

To manually upgrade agents on Ubuntu or Debian systems, follow these steps:

1. Upgrade the Agent package.

```
$ sudo apt-get update
$ sudo apt-get install sigsci-agent
```

2. Restart the agent.

```
$ sudo systemctl start sigsci-agent
```

1. Upgrade the Agent package.

```
$ sudo apt-get update
$ sudo apt-get install sigsci-agent
```

2. Restart the agent.

```
$ sudo restart sigsci-agent
```

Upgrading the agent on Windows systems

To manually upgrade agents on Windows systems, follow these steps:

1. Download and install the latest agent MSI.
2. Open `services.msc`.
3. Select **Signal Sciences Agent**.
4. Right click and select restart.

1. Download and install the latest agent MSI.
2. Open a DOS prompt.
3. Run `net stop sigsci-agent`.
4. Run `net start sigsci-agent`.

Configuring the agent

/en/ngwaf/agent-config

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

For most installations, the agent keys (`accesskeyid` and `secretaccesskey`) will be the only fields that require configuring; the default agent configuration will suffice for everything else. However, some environments will want to use additional options to better suit their environment.

The agent configuration is flexible enough to work in all environments. Most configuration options are available in three forms: config file, command line, and by setting environment variables.

IMPORTANT

Agent configuration options listed as "experimental" are not fully developed and are subject to change. Use caution when building automated processes involving these options as their functionality may change as they mature.

Configuration Options

The following are the current configuration options (as of v4.57.0 on the linux platform). You can view these options on the installed Agent version by running with the `--usage` command line option.

Agent Configuration Options
`accesskeyid`*=string* Set access key ID, required in most cases
`anonymous-ip-secret-key`*=string* Set anonymous IP secret key. Default is to use `secretaccesskey` when generating anonymous IP addresses
`bypass-egress-proxy-for-upstreams` *[=true|false]* [EXPERIMENTAL] Exclude all upstream traffic from using the egress proxy *Default: "false"*
`cleaner-interval`*=time-duration* How often to run cleanup routine *Default: "10s"*
`client-ip-header`*=string* Specify the request header containing the client IP address *Default: "X-Forwarded-For"*
`config`*=string* Specify the configuration file *Default: "/etc/sigsci/agent.conf"*
`context-expiration`*=time-duration* How long to keep request context to match with response before cleanup *Default: "10s"*
`custom-request-headers`*=string* [EXPERIMENTAL] Add custom headers to the RPC response, which will be added to the HTTP request by the module [format is CSV if name:val pairs with $AgentResponse, $RequestID, $TagList dynamic values]
`debug-log-all-the-things` *[=true|false]* [EXPERIMENTAL] Log all the things *Default: "false"*
`debug-log-blocked-requests` *[=true|false]* [EXPERIMENTAL] Log when a request is blocked *Default: "false"*

Agent Configuration Options
`debug-log-config-updates`*=integer* [EXPERIMENTAL] Log when config updated or checked, 0=off, 1=updated, 2=more details *Default: "0"*
`debug-log-connection-errors`*=integer* [EXPERIMENTAL] Log when connections are dropped due an error. 0=off,1=on *Default: "0"*
`debug-log-engine-errors`*=integer* [EXPERIMENTAL] Log WAF engine errors: 0=off, 1=on, 2=verbose *Default: "1"*
`debug-log-proxy-requests`*[=true|false]* [EXPERIMENTAL] Generates debug output of proxied requests *Default: "false"*
`debug-log-rpc-data`*=string* [EXPERIMENTAL] Log (hexdump) raw RPC data to the given file
`debug-log-uploads`*=integer* [EXPERIMENTAL] Log what is being sent to Signal Sciences: 0=off, 1=json, 2=json-pretty *Default: "0"*
`debug-log-web-inputs`*=integer* [EXPERIMENTAL] Log web inputs coming from the module: 0=off, 1=json, 2=json-pretty *Default: "0"*
`debug-log-web-outputs`*=integer* [EXPERIMENTAL] Log web outputs going back to the module: 0=off,1=json,2=json-pretty *Default: "0"*
`debug-standalone`*=integer* [EXPERIMENTAL] Bitfield: 0=normal, 1=no upload, 2=no download, 3=no networking, 4=use empty rules, 7=no net+empty rules *Default: "0"*
`download-cdn-url`*=string* [EXPERIMENTAL] CDN URL to check and download new configurations before checking download-url, empty string disables CDN fetch *Default: "https://wafconf.signalsciences.net"*
`download-config-cache`*=string* Filename to cache latest downloaded config (if relative, then base it on shared-cache-dir)
`download-config-version`*=integer* [EXPERIMENTAL] Force the downloader to download a specific config version: 0=auto versioning *Default: "0"*
`download-failover-url`*=string* [EXPERIMENTAL] URL to check and download new configurations if download-url is not available *Default: "https://sigsci-agent-wafconf-us-west-2.s3.amazonaws.com"*
`download-interval`*=time-duration* [EXPERIMENTAL] How often to check for a new configuration *Default: "30s"*
`download-url`*=string* [EXPERIMENTAL] URL to check and download new configurations *Default: "https://sigsci-agent-wafconf.s3.amazonaws.com"*
`envoy-expect-response-data`*=integer* [EXPERIMENTAL] Expect response data from envoy: 0=response data is not expected and some dependent product features will not be

Agent Configuration Options

available, 1=agent will wait for response data via http_grpc_access_log gRPC API
Default: "0"

`envoy-grpc-address`=*string* [EXPERIMENTAL]
Envoy gRPC address to listen on (unix domain socket path or host:port)

`envoy-grpc-cert`=*string* [EXPERIMENTAL]
Envoy gRPC optional TLS cert file (PEM format)

`envoy-grpc-key`=*string* [EXPERIMENTAL]
Envoy gRPC optional TLS key file (PEM format)

`haproxy-spoa-address`=*string* [EXPERIMENTAL]
Haproxy SPOA address to listen on (unix domain socket path or host:port)
Default: "unix:/var/run/sigsci-ha.sock"

`--help` (commandline only option)
Dump basic help text

`inspection-alt-response-codes`=*csv-integer* [DEPRECATED]
DO NOT USE: the alternative response code concept is deprecated - all codes 300-599 are now considered blocking codes and this option will be removed

`inspection-anomaly-duration`=*time-duration* [EXPERIMENTAL]
Envoy/revproxy global duration after which the request will be considered an anomaly and the response will be inspected even if nothing else was found in the request during inspection
Default: "1s"

`inspection-anomaly-size`=*integer* [EXPERIMENTAL]
Envoy/revproxy global response size limit which the request will be considered an anomaly and the response will be inspected even if nothing else was found in the request during inspection
Default: "524288"

`inspection-debug`*[=true|false]* [EXPERIMENTAL]
Envoy/revproxy global enable/disable inspection debug logging
Default: "false"

`inspection-max-content-length`=*integer* [EXPERIMENTAL]
Envoy/revproxy global max request content length that is allowed to be inspected
Default: "307200"

`inspection-timeout`=*time-duration* [EXPERIMENTAL]
Envoy/revproxy global inspection timeout after which the system will fail open
Default: "100ms"

`jaeger-tracing`*[=true|false]* [EXPERIMENTAL]
Enables jaeger tracing - configured with `JAEGER\_\*` environment variables (currently for envoy only)
Default: "false"

`--legal` (commandline only option)
Show legal information and exit

`local-networks`=*string*
Set local networks for determining the real client IP (CSV of CIDR, 'all', 'none', or 'private'). These are the networks trusted to set the client IP header.
Default: "all"

`log-out`=*string*
Log output location, 'stderr', 'stdout', or file name (NOTE: on Windows, important logs will be sent to the eventlog)

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`max-backlog`*=integer*
Maximum RPC requests in queue (by default scaled with rpc-workers)
Default: "0"

`max-connections`*=integer*
Maximum in-flight RPC connections (by default scaled with rpc-workers)
Default: "0"

`max-inspecting`*=integer* [DEPRECATED]
Reverse proxy only - maximum in-flight transactions that the engine can be inspecting, 0=unlimited
Default: "0"

`max-logs`*=integer*
Maximum number of log lines held while waiting to send upstream
Default: "1000"

`max-procs`*=string*
Maximum number or percentage of CPUs (cores) to use e.g max-procs=4 or max-procs="100%".

`max-records`*=integer*
Maximum number of records held while waiting to send (by default scaled with rpc-workers)
Default: "0"

`reverse-proxy`*[=true|false]* [DEPRECATED]
Enable the reverse proxy, which requires setting a listener and upstream
Default: "false"

`reverse-proxy-tls-min-version`*=string* [DEPRECATED]
Reverse proxy TLS listener min version
Default: "1.0"

`revproxy-reload-on-update`*[=true|false]* [EXPERIMENTAL]
Reload the reverse proxy service config on agent config updates to support dynamic reconfiguration (only functions on OSes that support zero downtime restarts such as Linux >= 3.9 kernel)
Default: "false"

`rpc-address`*=string*
RPC address to listen on and serve modules from
Default: "unix:/var/run/sigsci.sock"

`rpc-version`*=integer* [DEPRECATED]
RPC protocol version
Default: "0"

`rpc-workers`*=integer* [EXPERIMENTAL]
RPC workers to use. If unset, then the `max-procs` value will be used
Default: "0"

`sample-percent`*=integer*
Sample input, 100=process everything, 0=ignore everything
Default: "100"

`secretaccesskey`*=string*
Set secretaccesskey, required along with accesskeyid in most cases

`server-flavor`*=string* [EXPERIMENTAL]
Server-flavor, allow distinguishing this revproxy install as a buildpack or other flavor.

Agent Configuration Options

`server-hostname`=*string*
Server hostname. By default, the agent asks the OS for the hostname configuration unless a value is configured here.

`service-shutdown-timeout`=*time-duration*
Timeout waiting for pending transactions to complete during service shutdown
Default: "2s"

`shared-cache-dir`=*string* [EXPERIMENTAL]
Base directory for any cache files
Default: "/tmp/sigsci-agent.cache"

`--show-tls-cipher-suites` (commandline only option)
Show available TLS cipher suites and exit

`startup-probe-filepath`=*string* [EXPERIMENTAL]
Filepath to create file checked by startup probes. Creates the file once the agent has loaded a ruleset. Ex: /sigsci/tmp/startup

`startup-probe-listener`=*string* [EXPERIMENTAL]
HTTP listener for responding to startup probes. Returns HTTP 200 once the agent has loaded a ruleset. Ex: 0.0.0.0:2024

`statsd-address`=*string*
Set the statsd address to send metrics to (e.g., `hostname:port` or `unix:///path/socket`)

`statsd-metrics`=*csv-string* [EXPERIMENTAL]
Set the statsd metrics filter (glob patterns allowed - assumed prefix if no patterns used)
Default: ""*

`statsd-type`=*string* [EXPERIMENTAL]
Set the statsd server type to enable advanced features (e.g., `statsd` or `dogstatsd`)
Default: "statsd"

`upload-log`=*string* [EXPERIMENTAL]
Log filename to write agent event data

`upload-log-header-map`*[=true|false]* [EXPERIMENTAL]
HTTP request,response header data in map format
Default: "false"

`upload-syslog`*[=true|false]* [EXPERIMENTAL]
Write agent event data to syslog
Default: "false"

`upload-url`=*string* [EXPERIMENTAL]
URL to upload agent data
Default: "https://c.signalsciences.net/0/push"

`--usage` (commandline only option)
Dump full usage text

`validate-config`*[=true|false]*
Validate the config entries provided to warn against potentially invalid entries
Default: "true"

`--version` (commandline only option)
Show version information and exit

`waf-data-log`=*string* [EXPERIMENTAL]
Filename to log WAF inspection data (currently JSON format). Using "eventlog" on Windows will send these to the eventlog. Requests are logged to the provided location if they have at least one signal added by default inspectors or if they have at least one signal added by a request rule with a Request logging value of Sampled.

Agent Configuration Options

`waf-data-log-all` *[=true|false]* [EXPERIMENTAL]
When logging WAF inspection data, log every request not just those with signals.
Default: "false"

`windows-eventlog-level` *=integer* [EXPERIMENTAL]
Set the windows eventlog level (use names that will be converted to integers: `debug`, `info`, `warning`, `error`, or `none`).
Default: "3"

Block Based Options

The following block based options are only available
as such in a configuration file. In the configuration file,
they must be after all other regular options in the file.

As an alternative to a configuration file these can be
configured from a command-line option or environment variable
in the following format:

```
  --option='name1:{opt=val,...};name2:{opt=val,...}'
OR
  SIGSCI_OPTION='name1:{opt=val,...};name2:{opt=val,...}'
```

`[revproxy-listener.NAME]`
Define named reverse proxy listener(s) with options (block or revproxy-listener="name1:{opt=val,...};name2:{opt=val,...};...")

revproxy-listener options:

`access-log` *=string*
Access log filename

`close-conn-on-request-smuggling` *[=true|false]* [DEPRECATED]
'Connection: close' header will be added to requests that appear to be HTTP Request Smuggling attacks
Default: "false"

`conn-idle-max` *=integer*
Max idle connections in the upstream connection pool (0 will disable connection pooling)
Default: "100"

`conn-idle-timeout` *=time-duration*
Idle connection timeout for the upstream connection pool
Default: "1m30s"

`conn-keepalive` *=time-duration*
Connection keepalive interval for upstream connections
Default: "30s"

`conn-max-per-host` *=integer*
Maximum total number of upstream connections in any state per host (0 is unlimited). Connections over the limit will block until more are available
Default: "0"

`conn-timeout` *=time-duration*
Connection timeout for upstream connections
Default: "30s"

`enabled` *[=true|false]*
Enable/disable the reverse proxy listener
Default: "true"

`expect-continue-timeout` *=time-duration*
Timeout waiting for 'continue' after 'expect' for upstream traffic
Default: "1s"

`expose-raw-headers` *[=true|false]* [DEPRECATED]
This experimental option replaces 'close-conn-on-request-smuggling' functionality. The option will need to be enabled per

Agent Configuration Options

each reverse proxy listener.

Default: "true"

`extend-content-types` *[=true|false]*

Enables extended content inspection while running in reverse proxy mode

Default: "false"

`grpc` *[=true|false]*

Enable proxying and inspection of gRPC traffic

Default: "false"

`http2` *[=true|false]*

Enable HTTP/2 support for the listener

Default: "true"

`http2-upstreams` *[=true|false]*

Prefer HTTP/2 for the upstreams

Default: "true"

`idle-timeout` *=time-duration*

Network idle timeout for the listener

Default: "0s"

`inspect-websocket` *[=true|false]*

Enable/disable websocket inspection

Default: "false"

`inspection-alt-response-codes` *=csv-integer* [DEPRECATED]

DO NOT USE: the alternative response code concept is deprecated - all codes 300-599 are now considered blocking codes and this option will be removed

`inspection-anomaly-duration` *=time-duration*

Duration after which the request will be considered an anomaly and the response will be inspected even if nothing else was found in the request during inspection

Default: "1s"

`inspection-anomaly-size` *=integer*

Response size limit which the request will be considered an anomaly and the response will be inspected even if nothing else was found in the request during inspection

Default: "524288"

`inspection-debug` *[=true|false]*

Enable/disable inspection debug logging

Default: "false"

`inspection-max-content-length` *=integer*

Max request content length that is allowed to be inspected

Default: "307200"

`inspection-timeout` *=time-duration*

Inspection timeout after which the system will fail open

Default: "100ms"

`listener` *=string*

Listener URL [scheme://address:port]

`log-all-errors` *[=true|false]*

Log all errors, not just common

Default: "false"

`minimal-header-rewriting` *[=true|false]*

Minimal header rewriting. If enabled, then only hop-by-hop headers will be removed as required by RFC-2616 sec 13.5.1. No proxy headers will be added/modified, though they will be passed through if trust-proxy-headers is set

Default: "false"

`pass-host-header` *[=true|false]*

Pass the client supplied host header through to the upstream (including the upstream TLS handshake for use with SNI and certificate validation)

Default: "true"

`read-timeout` *=time-duration*

Network read timeout for the listener

Default: "0s"

Agent Configuration Options

`remove-hop-header` *[=true|false]*
Unused hop headers will be removed from forwarded requests
Default: "true"

`request-timeout` *=time-duration*
Overall request timeout (will enable buffering, which may cause issues with streaming services)
Default: "0s"

`response-flush-interval` *=time-duration*
Interval to flush any buffered/streaming response data (0 disables forced flushes; -1 forces flushes after every write; interval values force flushes on a fixed time interval)
Default: "0s"

`response-header-timeout` *=time-duration*
Response header timeout waiting for upstream responses
Default: "0s"

`shutdown-timeout` *=time-duration*
Timeout waiting for pending transactions to complete during server shutdown
Default: "30s"

`tls-ca-roots` *=string*
TLS trusted certificate authority certificates file (PEM format)

`tls-cert` *=string*
TLS certificate file (PEM format)

`tls-cipher-suites` *=csv-string*
TLS listener cipher suites. Only affects TLS 1.2 and below. [use --show-tls-cipher-suites for a list]
Default: "TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA,TLS_RSA_WITH_AES_128_CBC_SHA"

`tls-handshake-timeout` *=time-duration*
TLS handshake timeout for upstream connections
Default: "10s"

`tls-insecure-skip-verify` *[=true|false]*
Insecurely skip upstream TLS verification (for self signed certs, etc.)
Default: "false"

`tls-key` *=string*
TLS private key file (PEM format)

`tls-key-passphrase` *=string*
TLS private key passphrase in the format `type:data`, where type is one of: `pass` or `file` (EX: `pass:mypassword` or `file:/etc/secrets/tls-key-passphrase`)

`tls-min-version` *=string*
TLS listener min version
Default: "1.0"

`tls-verify-servername` *=string*
Force the servername used in upstream TLS verification; consider using pass-host-header first, but this may be required if neither the hostname used by the downstream client nor the hostname/ip used in the upstream URL is listed in the upstream TLS certificate

`trust-proxy-headers` *[=true|false]*
Trust the incoming proxy (X-Forwarded-For*) header values. If not trusted, then incoming proxy headers are removed before any additions are made
Default: "true"

`upstreams` *=csv-string*
Upstream, comma separated upstream URLs [scheme://address:port]

`write-timeout` *=time-duration*
Network write timeout for the listener
Default: "0s"

System Environment Options

These system level environment variable based options will also affect processing.

Environment Variables

`HTTP_PROXY` or `http_proxy` *=url* [DEPRECATED]
Proxy outbound HTTP requests through the proxy at the defined URL

`HTTPS_PROXY` or `https_proxy` *=url*
Proxy outbound HTTPS requests through the proxy at the defined URL (takes precedence over HTTP_PROXY for HTTPS requests)

`NO_PROXY` or `no_proxy` *=csv-url*
Comma separated list of URLs NOT to proxy or '*' for all URLs

The options are generally available in three forms, overridden in the following order:

1. In the configuration file (default: `/etc/sigsci/agent.conf`)
2. On the command line, prefixed with a double dash (--) (e.g., `--help`)
3. As an environment variable, all capitalized, prefixed with `SIGSCI_` and dashes changed to underscores (_) (e.g., the `max-procs` option would become the `SIGSCI_MAX_PROCS` environment variable)

There are a few exceptions:

- Informational options such as `--help`, `--legal`, and `--version` only make sense as command line options as noted.
- The `HTTP_PROXY` environment variable is deprecated and will no longer be honored for https connections. `HTTPS_PROXY` must be used.
- The agent will honor the system `HTTPS_PROXY` environment variable allowing configuration of an egress HTTPS proxy URL for those sites where outbound access must be through a proxy (e.g., `HTTPS_PROXY=http://10.0.0.1:8080`).

Configuring HTTPS proxy for the agent

If the system the agent is running on does not have direct internet access, it may need to be configured to access the internet via a HTTPS proxy. To do this, one or more of the `HTTPS_PROXY`, or `NO_PROXY` system environment variables will need to be configured.

While some systems may set this system wide, we recommend using the proxy for only the Next-Gen WAF agent.

Also, note that the package the agent relies on to determine the proxy URL from `HTTPS_PROXY`, `NO_PROXY` variables, ignores `localhost` or loopback addresses (e.g., `127.0.0.1`, `0.0.0.0`) with or without the port number. If you are relying on `HTTPS_PROXY` or `NO_PROXY` environment variables to be set with either of the aforementioned addresses, use a fully qualified domain name (FQDN) via the operating systems host file (e.g., `c:\Windows\System32\Drivers\etc\hosts` or `/etc/hosts`) and use it as the value.

Linux package-based systems

On Linux and similar systems, the sigsci-agent service (e.g., systemd, upstart, init.d) will source in the `/etc/default/sigsci-agent` file containing `var=value` pairs. To set the proxy for the agent, add the environment variable configurations into this file, one per line.

For example, to use the HTTPS proxy at `10.0.0.1` on port 8080, add the following to `/etc/default/sigsci-agent`:

```
HTTPS_PROXY=http://10.0.0.1:8080
```

On distributions using upstart, the `export` function needs to be prefixed:

```
$ export HTTPS_PROXY=http://10.0.0.1:8080
```

The `sigsci-agent` service will then need to be restarted.

Windows-based systems

On Windows-based system where the agent is run as a service, the environment variables can be set system wide. However, this may require a system reboot for the services to acknowledge the change.

If the change only needs to be set for the Next-Gen WAF agent, then set the following registry entry to update the environment settings for only the `sigsci-agent` service:

1. Add a Multi-String Value (REG_MULTI_SZ) registry entry if it does not already exist:

   ```
   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\sigsci-agent\Environment
   ```

2. Edit the `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\sigsci-agent\Environment` value adding an environment variable and value in `var=value` form, one per line. For example:

   ```
   HTTPS_PROXY=http://10.0.0.1:8080
   ```

3. Restart the `sigsci-agent` service. This can be done manually using `regedit.exe` or a similar utility or via the command line with something like the following, replacing the URLs with the correct proxy URLs:

   ```
   $ reg add HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\sigsci-agent /v Environment /t REG_MU
   ```

   If more than one variable needs to be set, be sure to separate each `var=value` with a NULL (`\0`) character in the restart command (e.g., `"HTTPS_PROXY=http://10.0.0.1:8080\0NO_PROXY=http://localhost"`).

Configuring the agent to use a proxy for egress traffic

The agent can be configured to use a local proxy for egress traffic to the Fastly cloud infrastructure by setting the `HTTPS_PROXY` environment variable. Add the following line to `/etc/default/sigsci-agent`, replacing `IP-OR-HOST-NAME` with the IP address or hostname to proxy traffic to:

```
export HTTPS_PROXY=IP-OR-HOSTNAME
```

Restart the agent and verify the configuration.

Reverse proxy configuration

The agent may be configured to run as a reverse proxy. To learn more, check out the reverse proxy configuration documentation.

NOTE

Updating the `sigsci-agent` will remove all environment settings from the registry, therefore if one wishes to preserve any settings, consider downloading the `sigsci-agent_latest.zip` from Windows Agent Installation and replacing the executables.

Next steps

Explore our module options and install the Next-Gen WAF module.

Subcategory: Agent-only deployment

These articles describe the agent-only deployment options.

About agent-only deployment

	Last updated: 2024-03-14
	/en/ngwaf/about-agent-only-deployment

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Core WAF deployment method includes both agent-only and module-agent deployment options. With an agent-only deployment, you're responsible for managing your Next-Gen WAF deployment in your hosting environment and the agent performs the following functions:

- decides how requests should be handled and executes the decisions (e.g., blocks, allows, and tags requests).
- acts as a proxy to the web application that you're protecting.
- provides an interface between your web server and our cloud engine.

While setting up an agent-only deployment, you'll install the Next-Gen WAF agent component. You will not install the optional module component.

Agent reverse proxy mode

The Next-Gen WAF agent can be configured to run as a reverse proxy. In reverse proxy mode, the agent interacts directly with requests and responses without the need for a module. Running the agent in reverse proxy mode is ideal when a module for your web service does not yet exist or you do not want to modify your web service configuration (e.g., while testing the product). In this mode, the agent sits inline as a service in front of your web service. For more information, check out our Configuring Agent reverse proxy deployments guide.

Envoy proxy integration

The Next-Gen WAF agent can integrate directly with Envoy, a cloud-native reverse proxy, to inspect and protect web traffic. For more information, check out our Configuring Envoy proxy deployments guide.

gRPC proxy deployments

The Next-Gen WAF agent can act as a proxy for gRPC traffic to allow inspection of protobuf-based gRPC messages (`Content-Type: application/grpc`). For more information, check out our Configuring gRPC proxy deployments guide.

Istio service mesh integration

The Next-Gen WAF agent can integrate with Istio service mesh to inspect and protect north-south and east-west traffic in microservices architecture applications. For more information, check out our guide on Istio and Kubernetes.

AWS Lambda integration

The Next-Gen WAF agent can integrate with AWS Lambda. To provide on-demand protection, the agent can be set up to initialize with each function and close out upon function completion. For more information, check out our guide on AWS Lambda.

Egress HTTP proxies

You can configure the Next-Gen WAF agent to use a proxy for egress traffic.

Configuring agent reverse proxy deployments

Last updated: 2024-08-02

/en/ngwaf/configuring-agent-reverse-proxy-deployments

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF agent can be configured to run as a reverse proxy allowing it to interact directly with requests and responses without the need for a module. Running the agent in reverse proxy mode is ideal when a module for your web service does not yet exist or you do not want to modify your web service configuration - for example, while testing the product. In this mode, the agent sits inline as a service in front of your web service.

In reverse proxy mode, the agent will start one or more listeners and proxy all traffic received on them to the configured upstream server. Both HTTP, HTTPS (TLS) listeners can be enabled. Note that configuring the agent in reverse proxy mode will disable the RPC listener and the agent will not function with any modules.

Reverse proxy listener configuration

The reverse proxy mode supports multiple listeners. Each listener is defined in a `revproxy-listener` block that has its own set of directives. Each block *must*:

- have a unique name in the format `[revproxy-listener.NAME]`.
- be located at the end of the configuration after all other global options.

For example, to configure a simple HTTP (no encryption) listener, update the agent.conf file (default: `/etc/sigsci/agent.conf`) to include the following configuration block as shown below that creates an HTTP reverse proxy listener named `example1`:

```
[revproxy-listener.example1]
listener = "http://203.0.113.13:80"
upstreams = "http://192.168.1.2:80"
```

The `listener` option is the address the agent will listen on in the form of a URL. In the example above, `203.0.113.13` is an example IP address and you will need to set an appropriate address for your network. If you are unsure, restricting to the loopback address (`127.0.0.1`) will allow local testing without allowing external access. The `0.0.0.0` meta-address can be used to listen across all addresses on the host.

The `upstreams` option defines the upstream hosts that the agent will proxy requests to. The upstream hosts are a comma-separated list of URLs. The scheme of the URLs specify the protocol that will be used for listening and proxying to the upstreams.

NOTE

When you add more than one host in a listener's `upstreams` option, requests are dynamically distributed between upstream hosts via round-robin load balancing. If your load balancer is configured for sticky sessions (session affinity), you will need to create a separate listener for every upstream host.

To configure a TLS encrypted listener, use the `https` scheme for the `listener` option and configure the `tls-key` and `tls-cert` options to point to files containing the key and cert. The `upstreams` scheme determines the protocol used to proxy to the upstream hosts.

Encrypt traffic to Upstream

```
[revproxy-listener.example2]
listener = "https://203.0.113.13:8080"
upstreams = "https://192.168.1.2:8443,https://192.168.1.3:8443"
tls-cert = "/etc/sigsci/server-cert.pem"
tls-key = "/etc/sigsci/server-key.pem"
```

Terminating TLS at the agent

This option is similar to the above with the only difference being the scheme used in the `upstreams`.

```
[revproxy-listener.example3]
listener = "https://203.0.113.13:8443"
upstreams = "http://192.168.1.2:8001,http://192.168.1.2:8002"
tls-cert = "/etc/sigsci/server-cert.pem"
tls-key = "/etc/sigsci/server-key.pem"
```

> NOTE
>
> In both options, the cert and key files can be the same file provided you concatenate both key and cert into one file.

After you have completed the desired configuration, reload the `sigsci-agent` configuration for the changes to take effect. On most systems this can be done by sending a SIGHUP signal to the agent process ID (e.g., `kill -HUP 12345` where 12345 is the PID) or just restarting the agent.

The `[revproxy-listener.NAME]` configuration and its available options are documented on the agent configuration page.

Alternative configuration without a configuration file

If you are not using a configuration file, then you cannot use the new block format above and you must instead use an alternative format. This format can be used with a single `--revproxy-listener` command line option or via a single `SIGSCI_REVPROXY_LISTENER` environment variable.

Generic format for the alternative revproxy-listener value

```
listener1:{opt=val,...}; listener2:{...}; ...
```

Some example from above are repeated here in the alternative format.

Simple HTTP listener

```
SIGSCI_REVPROXY_LISTENER="example1:{listener=http://203.0.113.13:80,upstreams=http://192.168.1.2:80}
```

Simple HTTPS listener

```
SIGSCI_REVPROXY_LISTENER="example2:{listener=https://203.0.113.13:443,upstreams=https://192.168.1.2: 43
```

Multiple listeners can be specified in a single option by separating each listener definition with a semicolon (`;`).

Multiple listeners

```
SIGSCI_REVPROXY_LISTENER="example1:{...}; example2:{...}"
```

Side effects and limitations

HTTP header names are normalized

The agent in reverse proxy mode will normalize all header names by capitalizing the first letter in each word. For example, `example-header` becomes `Example-Header`.

HTTP header order may not be maintained

Due to technical limitation, the agent in reverse proxy mode does not allow for tracking and maintaining the order of headers. The order of headers may change when sent to the upstream server. For example:

```
GET /test HTTP/1.1
Host: example.com
X-Example-Header: example
X-Test-Header: test
X-Other-Header: other
Accept: */*
```

This request may arrive at the upstream server as:

```
GET /test HTTP/1.1
Host: example.com
Accept: */*
X-Test-Header: test
X-Other-Header: other
X-Example-Header: example
```

Added headers

By default, the following headers are added to the upstream request:

- `X-Forwarded-For`
- `X-Forwarded-Host`
- `X-Forwarded-Proto`
- `X-Forwarded-Server`

In agent v3.7+, each listener can be configured with `minimal-header-rewriting = true` and these additional headers will not be added/modified. These headers will still be passed through if they exist in the request. Additionally, configuring a listener to not trust the proxy headers with `trust-proxy-headers = false` will strip these headers before sending to the upstream.

Additionally, the following headers will be added regardless of the above configurations:

- `X-Sigsci-Agentresponse`
- `X-Sigsci-Tags` (only if there were signals added)

HTTP/1.0 to upstream is upgraded to HTTP/1.1

Any HTTP/1.0 requests processed by the agent in reverse proxy mode will be upgraded to HTTP/1.1 when sent to the upstream. This means:

- HTTP keepalives are enabled by default
- HTTP/1.1 version is used in the request line
- The HTTP Host header is added
- The `Accept-Encoding: gzip` header is added

HTTP/0.9 is not supported

Go (which the agent is written in) does not support HTTP versions prior to HTTP/1.0. Any requests in the HTTP/0.9 format will result in a `400 Bad Request` error response. This may affect some simple monitoring from older monitors and load balancers.

For example, `GET /` is a request in HTTP/0.9 format and would result in a `400` error. By contrast, `GET / HTTP/1.0` is in the supported HTTP/1.0 format, which specifies the HTTP version.

Failing open

When the agent is running in reverse proxy mode, requests that have failed open are not sent to the cloud backend and therefore won't be visible on the requests page of the control panel.

F5 load balancer health checks

F5 load balancer health checks use HTTP/0.9 by default. However, the Next-Gen WAF reverse proxy does not support HTTP/0.9 because Go, which the Next-Gen WAF agent is written in, does not support it. This results in the F5 health checks failing with `400 Bad Request` response codes.

To resolve this, force the F5 health checks to use HTTP/1.0 or HTTP/1.1 instead. Specify the HTTP version in the send string, which will force the monitor to send an HTTP/1.0 or 1.1 request instead.

Below is an example of an HTTP/0.9 GET request:

```
GET /index.html
```

By specifying `HTTP/1.0`, it will instead become an HTTP/1.0 GET request:

```
GET /index.html HTTP/1.0
```

For additional information about altering the F5 health check requests, see F5's official documentation.

Next steps

Verify the agent and module installation and explore module options.

Configuring Envoy proxy deployments

Last updated: 2023-03-29

/en/ngwaf/configuring-envoy-proxy-deployments

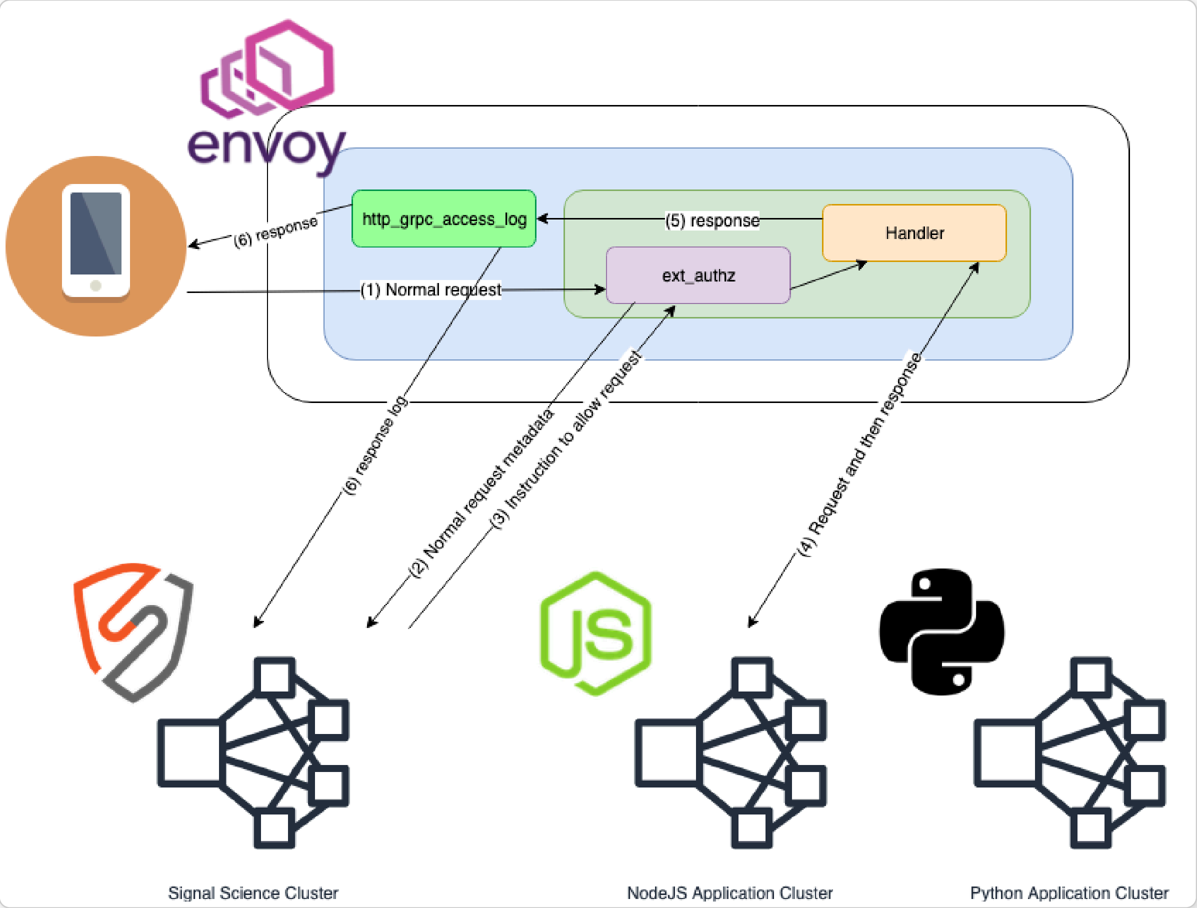
IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Support is available for the Envoy Proxy via builtin Envoy gRPC APIs implemented in the `sigsci-agent` running as a gRPC server. Envoy v1.11.0 or later is recommended, however, Envoy v1.8.0 or later is supported with limited functionality as noted in the documentation below.

Envoy (as of v1.11) does not support a bidirectional gRPC API for inspecting traffic. There are instead two separate gRPC APIs available to inspect traffic. The External Authorization HTTP filter (`envoy.ext_authz`) gRPC API allows the request to be held while waiting inbound request inspection, which allows for a request to be blocked if required. An additional gRPC AccessLog Service gRPC API can then be used to inspect the outbound request data. Using these two APIs together with the `sigsci-agent` running as a gRPC server allows for inspection in both directions using only Envoy builtin APIs. This allows web application inspection without installing a module for every upstream application. In this case the `sigsci-agent` is acting as the module.

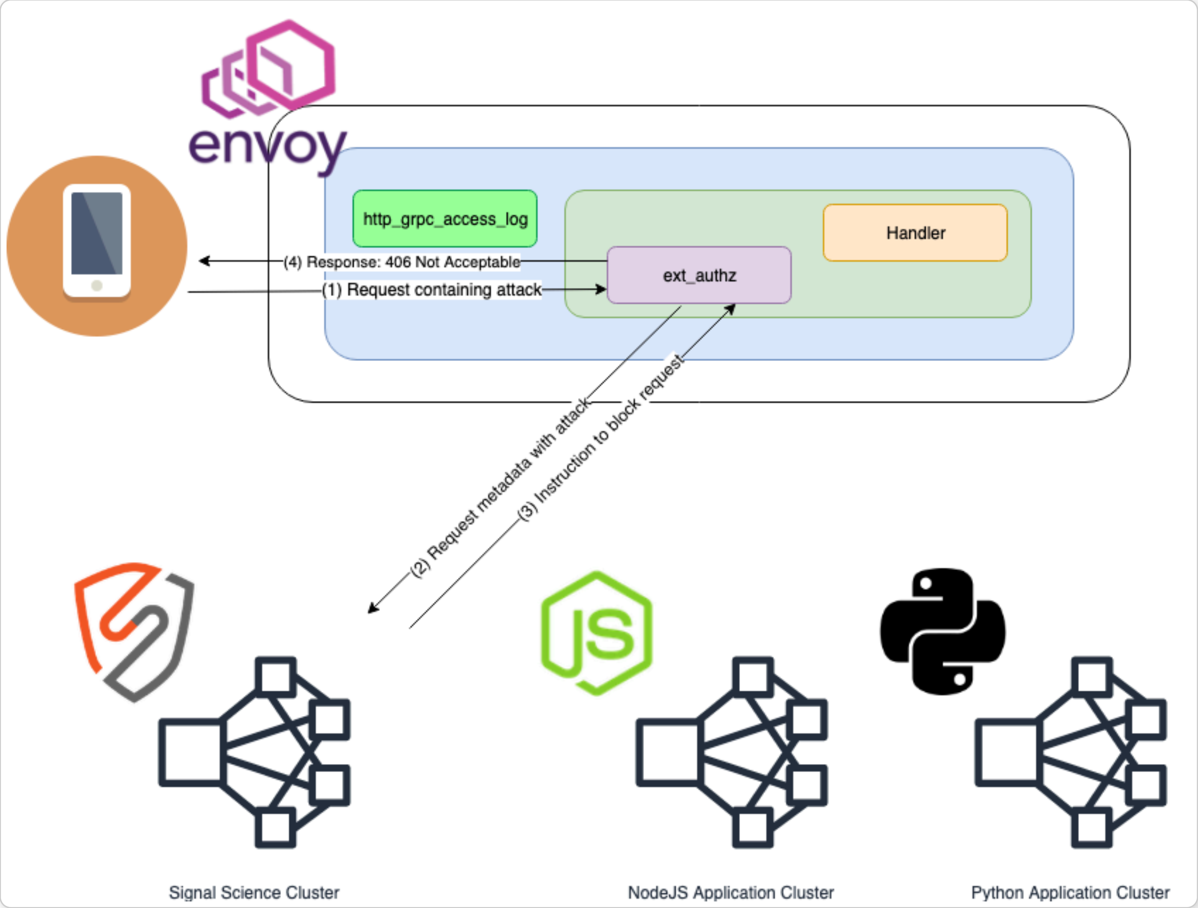
Request allowed (normal) processing


envoy
http_grpc_access_log
(5) response
Handler
ext_authz
(6) response
(1) Normal request
(6) response log
(2) Normal request metadata
(3) Instruction to allow request
(4) Request and then response
Signal Science Cluster
NodeJS Application Cluster
Python Application Cluster

This is the flow for normal requests that the `sigsci-agent` allows through Envoy.

1. Client request received by Envoy and routed to the Envoy `External Authorization (ext_authz)` HTTP filter where request metadata is extracted for processing via the `sigsci-agent`.
2. Request metadata is sent to the `sigsci-agent` via gRPC `ext_authz` API
3. The `sigsci-agent` sends back an 'allow request' response allowing the request through the `ext_authz` HTTP filter to continue normal Envoy request processing.
4. Request makes it through any additional HTTP filters to the Handler, which processes the request and generates the response.
5. Request/Response metadata is extracted via the Envoy `gRPC AccessLog Service (als)` asynchronously for processing via the `sigsci-agent`.
6. In parallel, additional metadata, such as response headers and the HTTP status code, is sent to the `sigsci-agent` via gRPC `als` API for further processing while the response data is sent back to the originating client.

Request blocked processing


envoy
http_grpc_access_log
Handler
ext_authz
(4) Response: 406 Not Acceptable
(1) Request containing attack
(2) Request metadata with attack
(3) Instruction to block request
Signal Science Cluster
NodeJS Application Cluster
Python Application Cluster

This is the flow if the `sigsci-agent` blocks a request from being processed through Envoy.

1. Client request received by Envoy and routed to the Envoy `External Authorization (ext_authz)` HTTP filter where request metadata is extracted for processing via the `sigsci-agent`.
2. Request metadata is sent to the `sigsci-agent` via gRPC `ext_authz` API
3. The `sigsci-agent` sends back a 'block request' response, disallowing the request to continue being processed by the HTTP filter chain.
4. This triggers the `ext_authz` filter to generate a HTTP 406 response, blocking the request from any further processing.

Next-Gen WAF agent configuration

The `sigsci-agent` is normally installed as a sidecar via Kubernetes with a slightly different configuration than a normal install.

The `sigsci-agent` must be configured to run with an Envoy gRPC listener instead of the normal RPC listener. To do this, configure the Envoy gRPC listener via the `envoy-grpc-address` agent configuration option, which will then start instead of the default RPC listener.

Setting the configuration value in the `sigsci-agent` config file:

```
envoy-grpc-address = "0.0.0.0:8000"
```

Or setting the configuration value in the `sigsci-agent` environment:

```
SIGSCI_ENVOY_GRPC_ADDRESS=0.0.0.0:8000
```

Optionally, the `sigsci-agent` can be configured with TLS enabled. To do this, set the certificate and key files in the `sigsci-agent` configuration.

```
envoy-grpc-cert = "/path/to/cert.pem"
envoy-grpc-key = "/path/to/key.pem"
```

Or

```
SIGSCI_ENVOY_GRPC_CERT=/path/to/cert.pem
SIGSCI_ENVOY_GRPC_KEY=/path/to/key.pem
```

Additionally, it is recommended to enable response data processing. To do this, the `sigsci-agent` must be configured to expect response data from Envoy by setting the `envoy-expect-response-data` agent configuration option. By default, response data is ignored in the `sigsci-agent` as this is an optional Envoy configuration option in order to better support older versions of Envoy. If you are running Envoy v1.10 or higher, then you should enable this option.

Setting the configuration value in the `sigsci-agent` config file:

```
envoy-expect-response-data = 1
```

Or setting the configuration value in the `sigsci-agent` environment:

```
SIGSCI_ENVOY_EXPECT_RESPONSE_DATA=1
```

Some aspects of inspection in the `sigsci-agent` can be configured but generally should be left as the default. Check out `inspection-*` agent configuration for more details.

Envoy configuration

Envoy must to be configured with an External Authorization HTTP filter (`envoy.ext_authz`) before the main handler filter to process request data and (optionally, though recommended) a gRPC AccessLog Service to process response data. To do this, multiple configuration items must to be added to the Envoy configuration: a cluster to handle the gRPC calls via the `sigsci-agent`, the `envoy.ext_authz` HTTP filter before the main handler, and the `envoy.http_grpc_access_log` service added to the `access_log` section of the HTTP listener filter if response data is to be enabled.

Adding the Next-Gen WAF agent cluster

A cluster must be added which is configured with the Envoy gRPC address used in the `sigsci-agent` configuration. Currently load balancing will not work correctly if response data is enabled as there is not a way to enable consistent hashing for gRPC services in Envoy (yet), so it is recommended not to configure load balancing at this time unless only the `envoy.ext_authz` API is being used without response data inspection.

```
clusters:
  - name: sigsci-agent-grpc
    connect_timeout: 0.2s
    type: strict_dns
    #lb_policy: LEAST_REQUEST
    http2_protocol_options: {}
    #tls_context: {}
    ### You can also use 'hosts' below, but this is deprecated
    load_assignment:
      cluster_name: sigsci-agent-grpc
      endpoints:
      - lb_endpoints:
        - endpoint:
            address:
              socket_address:
                address: sigsci-agent
```

```
                    port_value: 8000
```

The `address` is a resolvable hostname or IP for the `sigsci-agent` and the `port_value` must match that configured in the `sigsci-agent` configuration for the `envoy-grpc-address` option.

NOTE

The `connect_timeout` is the timeout to connect to the `sigsci-agent` (but not to process the data) and can be adjusted if required. The `tls_context` option must be defined if TLS is to be used. TLS can be configured in the `sigsci-agent` config via `envoy-grpc-cert` and `envoy-grpc-key`. If TLS is configured in the `sigsci-agent`, then just the empty `tls_context` must be configured (e.g., `tls_context:) to let Envoy know to connect via TLS. If certificate validation is desired, then validation_context must be configured in the tls_context to specify a trusted_ca filename to use for validation. As gRPC services are HTTP/2 based, the http2_protocol_options: option is required so that traffic is sent to the sigsci-agent` cluster as HTTP/2.

Adding the Envoy External Authorization HTTP filter

The listener must have an External Authorization HTTP filter (`envoy.ext_authz`) added before the main handler which points at the `sigsci-agent` cluster.

```
http_filters:
- name: envoy.filters.http.ext_authz
  typed_config:
    "@type": type.googleapis.com/envoy.extensions.filters.http.ext_authz.v3.ExtAuthz
    transport_api_version: V3
    grpc_service:
        envoy_grpc:
            cluster_name: sigsci-agent-grpc
        timeout: 0.2s
    failure_mode_allow: true
    with_request_body:
      # Maximum request body bytes buffered and sent to the sigsci-agent
      max_request_bytes: 8192
      # NOTE: If allow_partial_message is set false, then any request over
      # the above max bytes will fail with an HTTP "413 Payload Too Large"
      # so it is recommended to set this to true.
      allow_partial_message: true
      # NOTE: By default, envoy carries the HTTP request body as a UTF-8 string
      # and it fills the body @ # field. To pack the request body as raw bytes,
      # set pack_as_bytes to true.
      pack_as_bytes: true
- name: envoy.filters.http.router
    typed_config:
      "@type": type.googleapis.com/envoy.extensions.filters.http.router.v3.Router
```

NOTE

`failure_mode_allow: true` is so that this will fail open, which is recommended. And `timeout` allows failing *with the defined failure mode* (true for fail open, false for fail closed) after a given time duration. Once this is done, all HTTP requests will be first sent to the `envoy.ext_authz` filter handled by the `sigsci-agent` cluster. The `sigsci-agent` will then process requests and deny auth with a 406 HTTP status code if the request is to be blocked or allow the request through to the next HTTP filter if it is allowed. Any additional HTTP request headers are also added to the request as they are in other modules.

Adding the Envoy gRPC AccessLog Service

NOTE

This is a recommended, but optional step. If it is configured in Envoy, then the agent *must* also be configured to expect response data by setting the `envoy-expect-response-data` agent configuration option as noted in the Next-Gen WAF agent configuration section. The Envoy External Authorization (`envoy.ext_authz`) HTTP Filter can only process request data. As the `sigsci-agent` needs the response data for full functionality, a gRPC AccessLog Service must be set up to send the response data to the `sigsci-agent`. To do this an `access_log` section must be added to the Envoy configuration under the listener filter (typically under the `envoy.http_connection_manager` filter) if it does not already exist. If it does exist, then it must be appended to.

Refer to the `access_log` configuration option of the HTTP Connection Manager for more details. An `envoy.http_grpc_access_log` entry must be added here (in addition to any other existing access log entries).

Recommended Configuration (see Limitations and considerations for further customizations to minimize limitations):

```
access_log:
- name: envoy.http_grpc_access_log
   typed_config:
    "@type": type.googleapis.com/envoy.extensions.access_loggers.grpc.v3.HttpGrpcAccessLogConfig
    common_config:
      log_name: "sigsci-agent-grpc"
      transport_api_version: V3
      grpc_service:
        envoy_grpc:
          cluster_name: sigsci-agent-grpc
        timeout: 0.2s
    additional_request_headers_to_log:
    # These sigsci-agent headers are required for correct processing:
    - "x-sigsci-request-id"
    - "x-sigsci-waf-response"
    # Optionally, additional headers can be added that should be recorded:
    - "accept"
    - "content-type"
    - "content-length"
    additional_response_headers_to_log:
    - "date"
    - "server"
    - "content-type"
    - "content-length"
```

Limitations and considerations

Here are the current limitations when using the `sigsci-agent` with Envoy Proxy. As support for Envoy Proxy improves in the future, these limitations will be addressed and should be reduced.

No request bodies are processed by default

Prior to Envoy v1.10.0, the Envoy External Authorization did not send the request body. In all versions of Envoy, the request body is not included in the `ext_authz` call by default and it will not be inspected by the `sigsci-agent` unless configured.

For Envoy v1.10.0 or higher, support to include the request body is built in to the `envoy.ext_authz` configuration and it is now possible to configure the `with_request_body` in this section of the Envoy configuration as noted above.

For Envoy v1.11.0 or higher, support was extended to be able to detect partial bodies more accurately.

For HTTP/2 (and gRPC) support Envoy must be running a version later than v1.12.1. In Envoy v1.10.0 - v1.12.1 Envoy is not properly sending the request body using `with_request_body`.

However, it is possible to work around this Envoy limitation using Lua until an Envoy upgrade is possible. The following is an example Lua filter that can be used to pass on gRPC based bodies to the `sigsci-agent` for inspection:

To do this, the Lua HTTP filter (`envoy.lua`) HTTP filter can be configured before the `envoy.ext_authz` filter to add an internal `x-sigsci-encoded-body` header with this data. A small snippet of Lua code must be added to extract the body and add it to the request as follows:

```
http_filters:
          - name: envoy.lua
            config:
              inline_code: |
                -- Add a special header to pass the encoded body
                function envoy_on_request(req)
                  local len = 0
                  local reqbody
                  -- Determine the body length
                  local cl = req:headers():get("content-length")
                  if cl ~= nil then
                    len = tonumber(cl)
                  end
                  -- gRPC does not have a content-length header to limit the body before buffering
                  if len == 0 and req:headers():get("content-type") == "application/grpc" then
                    -- Triggers buffering
                    len = req:body():length()
                  end
                  -- Limit body length sent to the agent (adjust as needed)
                  if len > 0 and len <= 8192 then
                    -- Triggers buffering
                    reqbody = req:body():getBytes(0, len)
                    -- Encode the body for use in a header value
                    local enc, t = string.gsub(reqbody, "[^%w]", function(chr)
                      return string.format("%%%02X",string.byte(chr))
                    end)
                    req:headers():add("x-sigsci-encoded-body", enc)
                  end
                end
          - name: envoy.ext_authz
            config:
              grpc_service:
                envoy_grpc:
                  cluster_name: sigsci-agent-grpc
                timeout: 0.2s
              failure_mode_allow: true
#               with_request_body:
#                 max_request_bytes: 8192
#                 allow_partial_message: true
          - name: envoy.router
            config: {}
```

No TLS handshake metadata is extracted

There is not currently a means for the `sigsci-agent` to see the TLS handshake metadata (e.g., cipher and protocol version) used in the originating request as this is not (yet) available in Envoy. Any TLS handshake metadata based signals will not be seen in the product for this site (also known as a workspace).

The following system signals are currently not supported due to this limitation:

- WEAKTLS

Only minimal request headers are recorded by default if there were only response-based signals

If the request was inspected by the `envoy.ext_authz` filter and no signals were issued, then the response will be processed by the `envoy.http_grpc_access_log` service. If a signal is found in the response data, then only minimal request headers will be recorded with the signal due to the API not being sent all request headers by default. However, if additional request headers are desired to be recorded, then these should be added via the `additional_request_headers_to_log` option of the `access_log` configuration in Envoy.

Currently these headers will automatically be added:

- `Host`
- `User-Agent`
- `Referer`
- `X-Forwarded-For`

Two `sigsci-agent` specific headers must be added. Additionally any additional request headers can be added explicitly via `additional_request_headers_to_log`:

```
additional_request_headers_to_log:
# These sigsci-agent headers are required for correct processing:
- "x-sigsci-request-id"
- "x-sigsci-waf-response"
# Optionally, additional headers can be added that should be recorded:
- "accept"
- "content-type"
- "content-length"
- "x-real-ip"
```

No response headers are processed by default

Similar to above with minimal request headers not being processed by the `envoy.http_grpc_access_log` service, there are no response headers sent to this API by default. Any headers that are desired to be recorded must be explicitly listed in the `additional_response_headers_to_log` option of the `access_log` configuration in Envoy as there is not currently any means to wildcard this. The following are recommended.

```
additional_response_headers_to_log:
- "date"
- "server"
- "content-type"
- "content-length"
```

Next steps

Verify the agent and module installation and explore module options.

Configuring gRPC proxy deployments

Last updated: 2024-03-14

/en/ngwaf/configuring-grpc-deployments

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment

method.

You can configure the Next-Gen WAF agent as a proxy for gRPC traffic to allow inspection of protobuf-based gRPC messages (`Content-Type: application/grpc`). You can create rules for gRPC traffic.

Configuring the agent

To configure `sigsci-agent` as a proxy for gRPC traffic, you'll need to edit the agent configuration.

Setting the maximum gRPC message length

You should adjust the maximum gRPC message length to limit the size of messages that are proxied.

```
inspection-max-content-length = 307200
```

The reverse proxy returns a `Received message larger than maxsize` error if the gRPC message size exceeds the configured value.

Creating the reverse proxy gRPC listener

NOTE

The reverse proxy listener for gRPC will only proxy gRPC traffic.

Here's an example reverse proxy listener proxying gRPC from port 9000 to 9001 with TLS.

```
[revproxy-listener.9000]
inspection-debug = true
listener = "https://127.0.0.1:9000"
upstreams = "https://127.0.0.1:9001"
tls-key = "/etc/sigsci/key.pem"
tls-cert = "/etc/sigsci/cert.pem"
tls-ca-roots = "/etc/sigsci/cert.pem"
grpc = true
tls-verify-servername = "test.signalsciences-dev.net"
#tls-insecure-skip-verify = true
```

You can enable gRPC mode by setting `grpc` to `true`.

```
grpc = true
```

Only one upstream is supported for gRPC. The upstream server should support HTTP/2.

Both HTTPS and HTTP are supported for the listener and upstream, but we recommend using HTTPS. If you use HTTPS for the listener, you must specify tls-key and tls-cert. If you want to verify the HTTPS certificate of the upstream, you must specify tls-ca-roots.

Troubleshooting configuration errors

Try using the following troubleshooting tips if you run into errors:

- `certificate signed by unknown authority`: If the request hostname doesn't match the one specified in the upstream certificate, then the connection will fail (e.g., you connected with an IP address instead of a hostname). Set tls-verify-servername to a hostname that's valid for the certificate. If all else fails, try using `tls-insecure-skip-verify = true` to get TLS validation working.

- `remote error: tls: bad certificate` or `cannot validate certificate for [ip address] because it doesn't contain any IP SANs`: If you're having issues, you can enable HTTP/2 debug output. Start the agent with the `GODEBUG` variable set to one of the following: `GODEBUG="http2debug=1"` provides basic connection and frame debugging information, and `GODEBUG="http2debug=2"` provides verbose data.

Using rules

You can create rules for gRPC traffic. For gRPC traffic that uses protobuf-encoding, PostArgs will be populated with a set of key-value pairs representing the arguments. The key will be an index (`1-N`) for the message field assigned in the proto file. Only string types are added to PostArgs.

For example, consider this `proto` file:

```
syntax = "proto3";
package grpctest;
service TestService {
    rpc Send (Request) returns (Response) {}
}
message Request {
    string message = 1;
    bool test = 2;
    int32 int1 = 3;
    float float1 = 4;
    uint64 uint1 = 5;
    message EmbeddedMessage {
        string message = 1;
    }
    EmbeddedMessage emsg = 6;
    SubRequest submsg = 7;
}
message SubRequest {
    repeated string message = 1;
    uint64 uint1 = 3;
}
message Response {
    string message = 1;
    bool test = 2;
}
```

For every Send call, there is a Request message that will be parsed. Only string types are extracted. Repeated fields will appear as duplicate named entries. Embedded and sub-messages will be appended to the path based indexes. Only indexes will be used as field names don't appear in the wire protocol.

Example parser extractions

Here's an example of how name-based path fields (similar to JSON/XML) are translated to index parsed for gRPC.

- **/message = "test"**: `/1 = "test"`
- **/emsg/message = "test 2"**: `/6/1 = "test 2"`
- **/submsg/message = "test 3"**: `/7/1 = "test 3"`

These extracted PostArgs fields will be inspected with SmartParse, but can also be inspected with custom rules like JSON/XML values. Additionally, the `Path` field will contain the gRPC path (typically `/package.ServiceName/Method`).

Example rule

```
Type: request

Conditions:
* all of
  * Path equals `/grpctest.TestService/Send`
  * Post Parameter exists where
    * all of
      * Name equals: `/1/6/1`
      * Value equals: `block me`

Actions: Block request
```

Subcategory: Module-agent deployment

These articles describe the module-agent deployment options.

About module-agent deployment

Last updated: 2024-06-10

/en/ngwaf/about-module-agent-deployment

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Core WAF deployment method includes both module-agent and agent-only deployment options. With a module-agent deployment, you're responsible for managing your Next-Gen WAF deployment in your hosting environment.

The module-agent topology includes both the Next-Gen WAF module and the Next-Gen WAF agent components. The module listens for incoming requests and passes them to the agent for a decision. The agent decides whether the request should be permitted to continue, blocked, rate limited, or tagged with signals. After receiving a decision from the agent, the module then blocks, allows, or rate limits requests in accordance with that decision.

To set up a module-agent deployment, complete the following steps:

1. Install the agent.
2. Install the module.
3. Verify the installation.

Installing the module

After installing the Next-Gen WAF agent, install the variation of the Next-Gen WAF module that is appropriate for your hosting environment. The module can exist as a plugin to your web server or as a language or framework specific implementation.

Web server module options

Web server module variations are installed to extend the request handling logic and communicate with the agent for subsequent advice. The web server module options are as follows:

- Apache module

- HAProxy module
- HAProxy SPOE module
- IIS module
- Kong plugin
- NGINX module

Language and framework specific module (RASP) options

The language and framework specific module variations are installed at the application layer. The language and framework specific module options are as follows:

- .Net Core module
- .Net module
- IBM HTTP server
- Java module
- Node.js module

Open source module options

Our open source modules follow either a Fastly-service or self-service model.

- **Fastly-service model:** modules that Fastly updates and provides technical support for.
- **self-service model:** modules that have a public-only development workflow and that Fastly will not update or provide technical support for.

Module	Fastly-service model	Self-service model	License
Golang module	✔		MIT
PHP module		✔	MIT
Python module		✔	MIT

TIP

Per the MIT license included in the repositories for our open source modules, you may use our open source modules without restriction.

Verifying your installation

After installing the agent and module, verify your installation:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Agents** in the navigation bar near the top of the screen.
4. Check the module version under **Module** to confirm the correct version is listed.

NOTE

Until there has been at least one request since the agent and module were installed, the module information won't be listed. Once there is traffic the module information will be populated.

About the NGINX module

Last updated: 2024-06-21

/en/ngwaf/about-the-nginx-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

You can use our NGINX module to deploy the Next-Gen WAF directly onto your hosting environment. In the module-agent deployment topology, the NGINX module accesses request data from incoming requests via the NGINX API. Then, the module passes the data to the Next-Gen WAF agent for inspection via remote procedure calls (RPC) through a Unix domain socket (UDS) or over transmission control protocol (TCP). The agent then tells the module how to handle the requests, and the module blocks, allows, or rate limits requests per the agent's direction.

Choosing an NGINX module variation

Our NGINX module has two variations:

- The **NGINX dynamic module** variation is compiled and then dynamically loaded into NGINX at runtime without recompiling the entire NGINX binary. This module is written in C and can be integrated with NGINX Open Source and NGINX Plus.
- The **NGINX Lua module** variation leverages OpenResty's Lua module for NGINX (often referred to as `ngx_http_lua_module`), which allows for embedded Lua code directly in your NGINX configuration. This module is written in the Lua scripting language and can be integrated with NGINX Open Source, NGINX Plus, and OpenResty.

Both module variations implement similar request handling logic to pass the request to the Next-Gen WAF agent for inspection.

The NGINX module variation you install depends on your business and hosting environment requirements.

TIP

If you're unsure which module variation to install and aren't already using OpenResty or NGINX Plus, we recommend installing the dynamic module for NGINX Open Source because it doesn't have dependencies outside of NGINX itself.

Module variation	NGINX model	Module package name	Notes
Dynamic	NGINX Open Source	`nginx-module-sigsci-nxo`	This package is compiled against the appropriate NGINX releases. Certain upstream repositories that maintain their own NGINX releases may deviate from these builds and cause issues installing.
Dynamic	NGINX Plus	`nginx-module-sigsci-nxp`	
Lua	OpenResty	`sigsci-module-nginx`	
Lua	NGINX Open Source	`sigsci-module-nginx`	`ngx_http_lua_module` must be installed.

Module variation	NGINX model	Module package name	Notes
Lua	NGINX Plus	`sigsci-module-nginx`	`nginx-plus-module-lua` must be installed.

Supported versions

Our Compatibility and requirements guide lists the distributions our NGINX module has packages available for. We update our NGINX module after a mainline NGINX release occurs. We will expedite a release when there are exceptions (e.g., critical vulnerability).

> WARNING
>
> NGINX and various other upstreams that supply NGINX builds often stop releasing or updating NGINX packages for certain distribution release repositories after a certain period of time, often coinciding with distribution end of life dates, which is outside of our control. This may mean that for certain distribution releases, certain versions of the module may not be available or the appropriate package may be outdated for your release. If you believe a package should be made available for your version on your platform, contact support@fastly.com.

Alpine Apache Module Install

Last updated: 2023-12-04

/en/ngwaf/alpine-apache-module

> IMPORTANT
>
> This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Prerequisites

If you haven't already, add the Alpine package repository on the host that will contain the module.

Install the Apache module

1. Install the Apache module.

   ```
   $ sudo apk add sigsci-module-apache
   ```

2. Add the following line to your Apache configuration file (`apache2.conf` or `httpd.conf`) after the **Dynamic Shared Object (DSO) Support** section to enable the Next-Gen WAF Apache module only if `mod_signalsciences.conf` is not present under `/etc/apache2/conf.d/*.conf`.

   ```
   LoadModule signalsciences_module modules/mod_signalsciences.so
   ```

3. Restart the Apache web service.

   ```
   $ sudo rc-service apache2 restart
   ```

Next steps

Verify the agent and module installation and explore module options.

Amazon Linux Apache Module Install

Last updated: 2023-10-03

/en/ngwaf/amazon-apache-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF Apache module supports Amazon Linux 2015.09.01 or higher.

Prerequisites

If you haven't already, add the Amazon Linux package repository on the host that will contain the module.

Install the Apache module

1. Install the Next-Gen WAF Apache Module.

   - Amazon Linux 2

     ```
     $ sudo yum install sigsci-module-apache
     ```

   - Amazon Linux 2015.09.01 with Apache 2.4

     ```
     $ sudo yum install sigsci-module-apache24
     ```

   - Amazon Linux 2015.09.01 with Apache 2.2

     ```
     $ sudo yum install sigsci-module-apache
     ```

2. Add the following line to your Apache configuration after the **Dynamic Shared Object (DSO) Support** section to enable the Next-Gen WAF Apache module:

   ```
   LoadModule signalsciences_module /etc/httpd/modules/mod_signalsciences.so
   ```

3. Restart Apache.

   - Amazon Linux 2

     ```
     $ sudo systemctl restart httpd
     ```

   - Amazon Linux 2015.09.01

```
$ sudo service httpd restart
```

Next steps

Verify the agent and module installation and explore module options.

Apache Module Overview

Last updated: 2023-12-04

/en/ngwaf/apache-module-overview

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Our Apache module is distributed in binary form as an Apache shared module and supports Apache version 2.2 and 2.4. Choose your operating system:

- Ubuntu
- Alpine
- Red Hat
- Debian
- Amazon Linux
- Windows

Debian Apache Module Install

Last updated: 2024-02-13

/en/ngwaf/debian-apache-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Prerequisites

If you haven't already, add the Debian package repository on the host that will contain the module.

Install the Apache module

1. Install the Apache module.

```
$ sudo apt-get install sigsci-module-apache
```

2. Enable the Apache module.

```
$ sudo a2enmod signalsciences
```

If `a2enmod` is not available, add the following line to your Apache configuration file (`apache2.conf` or `httpd.conf`) after the **Dynamic Shared Object (DSO) Support** section to enable the Next-Gen WAF Apache module:

```
LoadModule signalsciences_module /usr/lib/apache2/modules/mod_signalsciences.so
```

3. Restart the Apache web service.

```
$ sudo service apache2 restart
```

Next steps

Verify the agent and module installation and explore module options.

📄	**.Net Core module install**
📅	Last updated: 2023-04-05
🔗	/en/ngwaf/dotnet-core

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Requirements

- .NET Core 2.1 or later.
- Verify you have installed the Next-Gen WAF agent for your platform (e.g., Linux or Windows). Check out our Getting started with the agent guide.

Installation

1. Download the latest Signal Sciences HTTP middleware using one these methods:
   - Directly from https://dl.signalsciences.net/?prefix=sigsci-module-dotnetcore/
   - Via Nuget
2. Add the Signal Sciences HTTP middleware to your project. Replace `<packagePath>` with the path to `SignalSciences.HttpMiddleware.<version>.nupkg` and `<sourcePath>` with the folder-based package source to which the package will be added:

```
nuget add <packagePath> -Source <sourcePath> -Expand
dotnet add package SignalSciences.HttpMiddleware -s <sourcePath>
```

3. Add the following sections to your application's `appsettings.json` file:

```
{
    "SigsciOptions": {
        "AgentEndPoint": "127.0.0.1:2345"
    }
}
```

4. Configure the HTTP request pipeline with `Configure`:

```
Configure(IApplicationBuilder app, IHostingEnvironment env) {
    var sigsciOptions = Configuration.GetSection("SigsciOptions").Get<SigSciOptions>();
    app.UseSigSciHandler(sigsciOptions);
}
```

5. Restart the web site service.

NOTE

Ensure the `AgentEndPoint` value is set to the same IP and port configured with the Next-Gen WAF agent's `rpc-address` value. See the Windows agent installation documentation for additional information about Windows agent configuration options.

.NET Core module configuration

Option	Default	Description
`AgentEndPoint`	required, no default	The TCP endpoint (`host:port`) that the Agent is listening on. `host` can be either a hostname or an IPv4 or IPv6 address.
`AgentRpcTimeoutMillis`	optional, default: 200	Maximum number of milliseconds allowed for each RPC call to the Agent.
`MaxPostSize`	optional, default: 100000	A request body above this size will not be sent to the Agent.
`AnomalySize`	optional, default: 524288	If the HTTP response is this size or larger, log it with the Agent.
`AnomalyDurationMillis`	optional, default: 1000	If the response took longer than this number of milliseconds, log it with the Agent.
`ExpectedContentTypes`	optional, no default	Adds custom types that allow inspection to the conditional content-type list.

Sample advanced .NET Core module configuration

```
{
    "SigsciOptions": {
        "AnomalySize": 200000,
        "AgentRPCTimeoutMillis": 200,
        "MaxPostSize": 50000,
        "AnomalyDurationMillis": 1000,
        "AgentEndPoint": "127.0.0.1:2345",
        "ExpectedContentTypes": "application/custom-abc application/hal-test"
    }
}
```

.Net module install

Last updated: 2023-03-29

/en/ngwaf/dotnet

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Requirements

- .NET Framework 4.5 or higher.
- Verify you have installed the Next-Gen WAF agent for Windows. This will ensure the appropriate folder structure is in place on your file system.
- Download the latest .NET Module, or get it via Nuget.

Install

1. Download the latest Next-Gen WAF module for .Net via one of these methods:
   - Directly from https://dl.signalsciences.net/sigsci-module-dotnet/sigsci-module-dotnet_latest.zip
   - Via Nuget
2. Extract the contents of `sigsci-module-dotnet-x.x.x.zip` to your application's `bin` directory.
3. Add the following sections to your application's `web.config` file:

```
<configuration>
    ...
    <configSections>
        <section name="SignalSciencesModule" type="SignalSciences.ModuleConfiguration"/>
    </configSections>

    ...
    <system.webServer>
        <modules>
            <add name="SignalSciencesModule" type="SignalSciences.HttpModule"/>
        </modules>
    </system.webServer>
    ...

    <SignalSciencesModule agentEndPoint="127.0.0.1:737" />
    ...
</configuration>
```

4. Restart the web site service.

NOTE

Ensure the `AgentEndPoint` value is set to the same IP and port configured with the Next-Gen WAF agent's `rpc-address` value. See the Windows agent installation documentation for additional information about Windows agent configuration options.

.NET module configuration

Option	Default	Description
`agentEndPoint`	required, no default	The TCP endpoint (`host:port`) that the Agent is listening on. `host` can be either a hostname or an IPv4 or IPv6 address.
`filterHeaders`	optional, no default	Comma-separated list of request and response headers that should not be sent to the Agent. Case insensitive. Regardless of configuration, it always includes `Cookie`, `Set-Cookie`, `Authorization` and `X-Auth-Token`.
`agentRpcTimeoutMillis`	optional, default: 200	Maximum number of milliseconds allowed for each RPC call to the Agent.
`agentConnectionPoolSize`	optional, default: 10	Number of connections that, once opened, will be retained in a pool.
`maxPostSize`	optional, default: 100000	A request body above this size will not be sent to the Agent.
`anomalySize`	optional, default: 524288	If the HTTP response is this size or larger, log it with the Agent.
`anomalyDurationMillis`	optional, default: 1000	If the response took longer than this number of milliseconds, log it with the Agent.

Sample advanced .NET module configuration

```
<SignalSciencesModule
            agentEndPoint="127.0.0.1:737"
            filterHeaders="X-My-Private-Header, X-My-Other-Header"
            agentRpcTimeoutMillis="200"
            agentConnectionPoolSize="10"
            maxPostSize="100000"
            anomalySize="524288"
            anomalyDurationMillis="1000"
            />
```

Golang module install

Last updated: 2023-03-29

/en/ngwaf/golang-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment

method.

Download and install prerequisites

The Golang module requires two prerequisite packages to be installed: MessagePack Code Generator and the Signal Sciences custom tlstext package.

Install these packages using the `go get` command to download and install these packages directly from their GitHub repositories:

```
$ go get -u -t github.com/tinylib/msgp/msgp
$ go get -u -t github.com/signalsciences/tlstext
```

Download and extract the Golang module

1. Download the latest version of the Golang module:

```
$ curl -O -L https://dl.signalsciences.net/sigsci-module-golang/sigsci-module-golang_latest.tar
```

2. Extract the Golang module to `$GOPATH/src/github.com/signalsciences`:

```
$ sudo mkdir -p $GOPATH/src/github.com/signalsciences
$ sudo tar -xf sigsci-module-golang_latest.tar.gz -C $GOPATH/src/github.com/signalsciences
```

Wrap your application

You will need to wrap your application in the Next-Gen WAF Golang module handler for the module to process requests and secure your application.

> NOTE
>
> How to best wrap your application will depend on how your application is designed. The steps listed below are provided as an example, but the methods listed may not be ideal for your specific application. More information about the Golang `http` package can be found in the Golang documentation.

1. In the `import` section of your Golang application, add the following line to import the Golang module:

```
sigsci "github.com/signalsciences/sigsci-module-golang"
```

2. Create a new ServeMux in your `main()` function to be used with the module:

```
muxname := http.NewServeMux()
```

3. Add functions to the ServeMux by adding `mux.handleFunc` lines. For example, functions named `hellofunc` and `examplefunc` can be added with lines such as these:

```
muxname.HandleFunc(“/hello“, hellofunc)
muxname.HandleFunc(“/example”, examplefunc)
```

4. Wrap your ServeMux in the Next-Gen WAF Golang module by adding lines similar to this example:

```
wrappername, err := sigsci.NewModule(muxname)
if err != nil {
    log.Fatal(err)
}
```

5. Call the wrapper in the method your application uses to serve HTTP requests. For example, if you're using the `ListenAndServe` method, then you would use call the wrapper with:

```
http.ListenAndServe(“127.0.0.1:80”, wrappername)
```

Example Application

Below is an example hello world application with the Next-Gen WAF Golang module successfully integrated:

```
package main

import (
    "fmt"
    "log"
    "net/http"

    sigsci "github.com/signalsciences/sigsci-module-golang"
)

func hellofunc(w http.ResponseWriter, r *http.Request) {
    fmt.Fprintf(w, "Hello, world")
}

func examplefunc(w http.ResponseWriter, r *http.Request) {
    fmt.Fprintf(w, "Example function output")
}

func main() {
    muxname := http.NewServeMux()
    muxname.HandleFunc("/hello", hellofunc)
    muxname.HandleFunc("/example", examplefunc)

    wrappername, err := sigsci.NewModule(muxname)
    if err != nil {
        log.Fatal(err)
    }

    http.ListenAndServe("127.0.0.1:80", wrappername)
}
```

HAProxy module install

Last updated: 2024-08-28

/en/ngwaf/haproxy-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment

method.

Requirements

- HAProxy 1.7 or higher
- Lua module enabled on host
- Next-Gen WAF agent

NOTE

The HAProxy module can be used with any operating system because it is Lua code.

Installation

Follow these steps to install the HAProxy module.

Configure the agent

NOTE

This section may not be required for your installation. If you have set HAProxy's chroot directory, you will need to modify the commands below to reflect your custom chroot directory by following the instructions in this section.

If your HAProxy configuration has been modified to set a chroot directory for HAProxy, you will need to update your Next-Gen WAF agent configuration to reflect this. The default location of the agent socket file (`/var/run/sigsci.sock`) will be inaccessible to the HAProxy module outside of your specified chroot directory.

1. Create the directory structure for the Unix domain socket by running the following command, replacing `HAPROXY-CHROOT-DIRECTORY` with your HAProxy chroot directory:

```
$ sudo mkdir -p /HAPROXY-CHROOT-DIRECTORY/var/run/
```

2. Add the following line to your agent configuration file (located by default at `/etc/sigsci/agent.conf`) to specify the new socket file location under chroot:

```
rpc-address="unix:/haproxy-chroot-directory/var/run/sigsci.sock"
```

Module installation

Install the HAProxy module using a package manager or manually.

Install with Package Manager

The HAProxy module can be installed via the package manager of most major operating system versions:

- Alpine: `sudo apk add sigsci-module-haproxy`
- CentOS: `sudo yum install sigsci-module-haproxy`
- Debian: `sudo apt-get install sigsci-module-haproxy`
- Ubuntu: `sudo apt-get install sigsci-module-haproxy`

Install manually

Alternatively, the HAProxy module can be manually installed.

1. Download the latest version of the HAProxy module.

```
$ wget https://dl.signalsciences.net/sigsci-module-haproxy/sigsci-module-haproxy_latest.tar.gz
```

2. Create the directory the HAProxy module will be moved to.

```
$ sudo mkdir -p /usr/local/lib/lua/5.3/sigsci/
```

3. Extract the HAProxy archive to the new directory.

```
$ tar xvzf sigsci-module-haproxy_latest.tar.gz -C /usr/local/lib/lua/5.3/sigsci/
```

HAProxy configuration changes

After installing the HAProxy module, edit your HAProxy configuration file (located by default at `/etc/haproxy/haproxy.cfg`) to add the following lines:

```
global
    ...
    #Signal Sciences
    lua-load /usr/local/lib/lua/5.3/sigsci/SignalSciences.lua
    pidfile /var/run/haproxy.pid
    ...

frontend http-in
    ...
    #Signal Sciences
    #Required for buffering request body to ensure inspection is performed
    #Can also be set in the defaults section
    option http-buffer-request

    #Signal Sciences
    http-request lua.sigsci_prerequest
    http-response lua.sigsci_postrequest
    ...
```

HAProxy 1.9+

If you are running HAProxy 1.9 or higher, in addition to the HAProxy configuration file edits above, you will also need to add the following line to the `frontend http-in` context:

```
...
    # for haproxy-1.9 and above add the following:
    http-request use-service lua.sigsci_send_block if { var(txn.sigsci_block) -m bool }
    ...
```

Configuration

Configuration changes are typically not required for the HAProxy module to work. However, it is possible to override the default settings if needed. To do so, you must create an `override.lua` file in which to add these configuration directives. Then, update the `global` section of your HAProxy config file (`/usr/local/etc/haproxy/haproxy.cfg`) to load this over-ride config file.

Example of configuration

```
global
   ...
   lua-load /path/to/override.lua
   ...
```

Over-ride Directives

These directives may be used in your override config file.

Name	Description
`sigsci.agenthost`	The IP address or path to unix domain socket the SignalSciences Agent is listening on, default: `/var/run/sigsci.sock` (unix domain socket).
`sigsci.agentport`	The local port (when using TCP) that the agent listens on, default: `nil`
`sigsci.timeout`	Agent socket timeout (in seconds), default: `1` (`0` means off).
`sigsci.maxpost`	Maximum POST body size in bytes, default: `100000`
`sigsci.extra\_blocking\_resp\_hdr`	A response header to be added upon 406 responses, default: `""`

Example of over-ride configuration

```
sigsci.agenthost = "192.0.2.243"
sigsci.agentport = 9090
sigsci.extra_blocking_resp_hdr = "Access-Control-Allow-Origin: https://example.com"
```

Upgrading

To upgrade the HAProxy module, download and install the latest version of the module.

After installing, restart HAProxy for the new module version to be detected.

HAProxy SPOE module install

Last updated: 2023-07-31

/en/ngwaf/haproxy-spoe-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Stream Processing Offload Engine (SPOE) enables HAProxy to send traffic to external programs for out-of-band processing. The HAProxy SPOE Module communicates with the Next-Gen WAF agent via SPOE, enabling the module to block requests using HAProxy Access Control Lists (ACLs) based on the agent response.

Requirements

- HAProxy 1.8 or higher
- Next-Gen WAF agent

Installation

Follow these steps to install the HAProxy SPOE module.

Download via package manager

The HAProxy SPOE module can be installed via the package manager of most major operating system versions:

- Alpine: `sudo apk add sigsci-module-haproxy`
- CentOS: `sudo yum install sigsci-module-haproxy`
- Debian: `sudo apt-get install sigsci-module-haproxy`
- Ubuntu: `sudo apt-get install sigsci-module-haproxy`

Configure the agent

Add the following line to your agent configuration file (located by default at `/etc/sigsci/agent.conf`) to enable HAProxy SPOE support:

```
haproxy-spoa-enabled=true
```

Chroot directory configuration

> NOTE
>
> This section may not be required for your installation. If you have set HAProxy's chroot directory, you will need to modify the commands below to reflect your custom chroot directory by following the instructions in this section.

If your HAProxy configuration has been modified to set a chroot directory for HAProxy, you will need to update your Next-Gen WAF agent configuration to reflect this. The default location of the agent socket file (`/var/run/sigsci.sock`) will be inaccessible to the HAProxy module outside of your specified chroot directory.

1. Create the directory structure for the Unix domain socket by running the following command, replacing `HAPROXY-CHROOT-DIRECTORY` with your HAProxy chroot directory:

```
$ sudo mkdir -p /HAPROXY-CHROOT-DIRECTORY/var/run/
```

2. Add the following line to your agent configuration file (located by default at `/etc/sigsci/agent.conf`) to specify the new socket file location under chroot:

```
rpc-address="unix:/haproxy-chroot-directory/var/run/sigsci.sock"
```

Configure HAProxy

Follow these steps to configure HAProxy.

Add SPOA backend

Append the content of `/opt/signalsciences/haproxy-spoe/backend.txt` to your HAProxy configuration file:

```
$ sed "-i.`date +%F`" -e '$r/opt/signalsciences/haproxy-spoe/backend.txt' /etc/haproxy/haproxy.cfg
```

Update frontend section

For HAProxy v2.2 and above, copy the content of `/opt/signalsciences/haproxy-spoe/frontend-2.2.txt` to each HTTP frontend section of your HAProxy configuration file:

```
$ sed -i -e '/^\s*frontend/r/opt/signalsciences/haproxy-spoe/frontend-2.2.txt' /etc/haproxy/haproxy
```

For HAProxy v1.8 and v2.0, copy the content of `/opt/signalsciences/haproxy-spoe/frontend-1.8.txt` to each HTTP frontend section of your HAProxy configuration file:

```
$ sed -i -e '/^\s*frontend/r/opt/signalsciences/haproxy-spoe/frontend-1.8.txt' /etc/haproxy/haproxy
```

Upgrading

To upgrade the HAProxy SPOE module:

1. Download and install the latest version of the module.
2. Configure the HAProxy module.
3. Restart HAProxy for the new module version to be detected.

IBM HTTP Server

Last updated: 2023-03-29

/en/ngwaf/ihs

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Limitations and considerations

To install the IBM HTTP Server (IHS):

- IHS must be installed in `/opt/IBM/HTTPServer`. If IHS is installed in a different path, use the appropriate path for your IHS installation.
- IHS must be installed on CentOS. If assistance is needed with another platform, contact support.

Installation

1. Install the Next-Gen WAF agent for your operating system.
2. If you're on IHS 9.0.0 or higher, download the Next-Gen WAF module package:

   NOTE

   Replace `<VERSION>` with the latest module version found here: https://dl.signalsciences.net/?prefix=sigsci-module-apache/

   If using IBM HTTP Server (IHS), the Next-Gen WAF Apache module is the appropriate module to install as IHS is based on Apache HTTP Server.

1. Download the Apache module.

```
$ wget https://dl.signalsciences.net/sigsci-module-apache/<VERSION>/centos/el6/sigsci-modul pa
```

2. Extract the Apache module.

```
$ tar -xzf sigsci-module-apache-<VERSION>.el6-1.x86_64.tar.gz
```

3. If you're on IHS 8.5* or lower, download the Next-Gen WAF module package:

NOTE

Replace `<VERSION>` with the latest module version found here: https://dl.signalsciences.net/?prefix=sigsci-module-apache/

If using IBM HTTP Server (IHS), the Next-Gen WAF Apache module is the appropriate module to install as IHS is based on Apache HTTP Server.

1. Download the Apache module.

```
$ wget https://dl.signalsciences.net/sigsci-module-apache/<VERSION>/centos/el7/sigsci-modul pa
```

2. Extract the Apache module.

```
$ tar -xzf sigsci-module-apache-<VERSION>.el7-1.x86_64.tar.gz
```

4. Copy the module to the IBM HTTP Server modules directory.

```
$ cp mod_signalsciences.so /opt/IBM/HTTPServer/modules
```

5. In `/opt/IBM/HTTPServer/conf/httpd.conf`, add the `LoadModule` directive.

```
LoadModule signalsciences_module modules/mod_signalsciences.so
```

6. Restart the IBM HTTP Server.

```
$ /opt/IBM/HTTPServer/bin/apachectl restart
```

IIS module install

Last updated: 2023-12-19

/en/ngwaf/iis

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Requirements

- Windows Server 2008R2 (Windows 7) or higher (64-bit)
- IIS 7 or higher
- Verify you have installed the Next-Gen WAF agent for Windows. This will ensure the appropriate folder structure is in place on your file system.

Before you begin

- We only support 64-bit and 32-bit application pools on Windows 2012 or higher. We only support 64-bit application pools on Windows Server 2008R2.
- We only support 64-bit OSes. For older or 32-bit versions of Windows, it is possible to deploy the Next-Gen WAF agent as a reverse proxy. If you have questions or require assistance with older or 32-bit versions of Windows, reach out to our support team.
- IIS Module v2.0 and higher includes the utility `sigscictl.exe` which outputs diagnostic information. The information provided by this utility is useful for troubleshooting issues and checks, among other things, whether or not 32-bit app pools are enabled on your server.

Download

The latest version of the IIS module can be downloaded as an MSI installer or a legacy ZIP archive from https://dl.signalsciences.net/?prefix=sigsci-module-iis/.

Alternatively, the IIS module is also downloadable via Nuget.

Installation

The IIS Module is available as an MSI installer or as a legacy ZIP archive. The install packages contain a DLL that must be configured as an IIS native module and a configuration schema that must be registered with IIS. This configuration and registration with IIS is done automatically by the MSI package, or must be done manually if using the legacy ZIP archive.

Install using the MSI

Double-click (or right-click and select install) the MSI file to install it.

Alternatively, for unattended installation, use the following command. This command will not display any output, but will install into `%PROGRAMFILES%\Signal Sciences\IIS Module` by default. It will also register the Next-Gen WAF module and configuration with IIS:

NOTE
You may be prompted for Administrator credentials if the login session is not already running as an Administrator.

```
$ msiexec /qn /i sigsci-module-iis_latest.msi
```

If you require an alternative install location, specify it with the `INSTALLDIR=path` option to the `msiexec.exe` command above. For example:

```
$ msiexec /qn /i sigsci-module-iis_latest.msi INSTALLDIR=D:\Program Files\Signal Sciences\IIS Module
```

Legacy install using the ZIP archive

NOTE

This method may not be supported in the future. It is recommended to install via MSI even if you previously used the ZIP archive.

1. Extract the ZIP archive contents to the IIS Module install directory (`C:\Program Files\Signal Sciences\IIS Module`).
2. Open a terminal running as Administrator.
3. Configure IIS to load the Next-Gen WAF module and register the configuration schema.

```
$ cd "%PROGRAMFILES%\Signal Sciences\IIS Module"
$ .\SigsciCtl.exe Install
```

If you need to install into an alternative location, then you will need to run the `Register-Module -file DLL-path`, `Register-Config -file XML-path` and optional `Configure-Module` commands with the `SigsciCtl.exe` utility (see `SigsciCtl.exe Help` for more information). Ensure the `SigSciIISModule.dll` is not located under the `C:\Users\` directory or its sub-directories. For security, Windows prevents DLL files from being loaded from any location under `C:\Users\`.

Verify installation

To confirm the module DLL has been registered with IIS, run the following from a terminal running as Administrator to verify the SignalSciences module is listed:

```
$ "%PROGRAMFILES%\Signal Sciences\IIS Module\SigsciCtl.exe" Get-Modules
```

The output should look similar to the following:

```
IIS Global Modules:

                            Name Image
-------------------------------- -----------------------------------------------------------------------
               HttpLoggingModule %windir%\System32\inetsrv\loghttp.dll
                  UriCacheModule %windir%\System32\inetsrv\cachuri.dll
                 FileCacheModule %windir%\System32\inetsrv\cachfile.dll
                TokenCacheModule %windir%\System32\inetsrv\cachtokn.dll
                 HttpCacheModule %windir%\System32\inetsrv\cachhttp.dll
         StaticCompressionModule %windir%\System32\inetsrv\compstat.dll
           DefaultDocumentModule %windir%\System32\inetsrv\defdoc.dll
          DirectoryListingModule %windir%\System32\inetsrv\dirlist.dll
           ProtocolSupportModule %windir%\System32\inetsrv\protsup.dll
                StaticFileModule %windir%\System32\inetsrv\static.dll
   AnonymousAuthenticationModule %windir%\System32\inetsrv\authanon.dll
          RequestFilteringModule %windir%\System32\inetsrv\modrqflt.dll
               CustomErrorModule %windir%\System32\inetsrv\custerr.dll
 ApplicationInitializationModule %windir%\System32\inetsrv\warmup.dll
                  SignalSciences C:\Program Files\Signal Sciences\IIS Module\SigsciIISModule.dll
```

To confirm that the module configuration has been registered, run the following from a terminal running as Administrator to output the current configuration:

```
$ "%PROGRAMFILES%\Signal Sciences\IIS Module\SigsciCtl.exe" Get-Configs
```

The output should look similar to the following but may also list sites individually:

```
C:\WINDOWS\system32\inetsrv\config\schema:
```

```
Date                         Size Name
-------------------- ------------ --------------------------------
2020-02-13 03:12:56Z          677 SignalSciences_schema.xml

"SignalSciences" Configuration Section (Global):

                       Attribute Value
-------------------------------- ----------------------------------------------------------------
                       agentHost
                       agentPort 737
                  statusPagePath
                           Debug False
                ReuseConnections False
                     MaxPostSize 100000
                     AnomalySize 524288
           AnomalyDurationMillis 1000
                   TimeoutMillis 200
```

Full diagnostics information can be displayed with the following command:

```
$ "%PROGRAMFILES%\Signal Sciences\IIS Module\SigsciCtl.exe" Info
```

Configure

Configuration changes are typically not necessary. By default, the module will use port 737 to communicate with the agent (or in v2.0.0+, if the agent was configured to use an alternate port, it will use that port). The configuration can be set via the MSI installer, the new `SigsciCtl.exe` utility in v2.0.0+, IIS Manager UI, via PowerShell, or using the `appcmd.exe` utility.

> NOTE
>
> Ensure that the same port number is used by the both the module and the agent configurations.

Using the MSI

To set a configuration option when installing the MSI, specify the option on the command line in `option=value` format. For example:

```
$ msiexec /qn /i sigsci-module-iis_latest.msi agentHost=203.0.113.182 agentPort=737
```

Using SigsciCtl.exe

To set a configuration option via `SigsciCtl.exe` utility after install, use the `Configure-Module` command. For example:

```
$ "%PROGRAMFILES%\Signal Sciences\IIS Module\SigsciCtl.exe" Configure-Module agentHost=203.0.113.182 ge
```

To view the active configuration via the `SigsciCtl.exe` utility the `Get-Configs` command:

```
$ "%PROGRAMFILES%\Signal Sciences\IIS Module\SigsciCtl.exe" Get-Configs
```

This should output something similar to the following:

```
C:\WINDOWS\system32\inetsrv\config\schema:

Date                         Size Name
```

```
-------------------- ------------ --------------------------------
2020-02-13 03:12:56Z          677 SignalSciences_schema.xml

"SignalSciences" Configuration Section (Global):

                        Attribute Value
-------------------------------- ------------------------------------------------------------
                        agentHost
                        agentPort 737
                  statusPagePath
                           Debug False
                  ReuseConnections False
                     MaxPostSize 100000
                     AnomalySize 524288
            AnomalyDurationMillis 1000
                     TimeoutMillis 200
```

Using PowerShell

To set a configuration option via PowerShell (modern Windows only) use the `-SectionPath "SignalSciences"` option such as follows:

```
$ Set-IISConfigAttributeValue -ConfigElement (Get-IISConfigSection -SectionPath "SignalSciences") -A ri
```

To list the configuration using PowerShell, run the following:

```
$ (Get-IISConfigSection -SectionPath "SignalSciences").RawAttributes
```

To reset the configuration to defaults using PowerShell, run the following:

```
$ Clear-WebConfiguration -Filter SignalSciences -PSPath 'IIS:\'
```

Using the appcmd.exe

To set a configuration option via the `appcmd.exe` command line tool use the `-section:SignalSciences` option. For example:

```
$ "%SYSTEMROOT%\system32\inetsrv\appcmd.exe" set config -section:SignalSciences -agentPort:737
```

To list the configuration using `appcmd.exe`, run the following. Default values will not be shown:

```
$ "%SYSTEMROOT%\system32\inetsrv\appcmd.exe" list config -section:SignalSciences
```

To reset the configuration to defaults using `appcmd.exe`, run the following:

```
$ "%SYSTEMROOT%\system32\inetsrv\appcmd.exe" clear config -section:SignalSciences
```

Uninstall

1. Open a terminal running as Administrator.
2. Run the following in the terminal:

```
$ cd "\%PROGRAMFILES%\Signal Sciences\IIS Module"
$ .\SigsciCtl.exe Uninstall
```

Upgrade

To upgrade the IIS module, download and install the latest version of the IIS module and then verify that the module configuration is still valid.

> NOTE
>
> If you previously used the ZIP archive to install the module, we recommend upgrading the module via the MSI package. MSI v1.10.0 or later can be installed over top of an older ZIP file installation.

> TIP
>
> Check the IIS module release notes to see what's new in the IIS module.

1. Download the latest IIS Module MSI.
2. Install the IIS module.
3. Verify the module configuration is still valid.

1. Download the latest IIS module ZIP.
2. Install the IIS module.
3. Verify the module configuration is still valid.

Installing the NGINX dynamic module

Last updated: 2024-06-21

/en/ngwaf/installing-the-nginx-dynamic-module

> IMPORTANT
>
> This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The NGINX dynamic module is compiled and then dynamically loaded into NGINX at runtime without recompiling the entire NGINX binary. This module is written in C and can be integrated with NGINX Open Source and NGINX Plus.

To install the module, complete the following steps:

1. Add the package repositories.
2. Install the module.
3. Load the module.

Adding our package repositories

Before installing the NGINX dynamic module, you must configure your package management system to pull from our repositories.

Alpine Linux 3.11+

```
$ apk update && apk add wget
$ wget -q https://apk.signalsciences.net/sigsci_apk.pub ; mv sigsci_apk.pub /etc/apk/keys
$ echo https://apk.signalsciences.net/$(grep -oE '[0-9]+\.[0-9]{2}' /etc/alpine-release)/main | tee -a /
```

Amazon Linux

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.k
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

NGINX versions `1.18.0` and above:

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/7/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.k
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

NGINX versions below `1.16.1`:

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/7/$basearch
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.k
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

NGINX versions `1.18.0` and above:

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/7/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.k
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

NGINX versions below `1.16.1`:

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/6/$basearch
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

Debian

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg lsb-release
$ sudo wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/key
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/deb
$ sudo apt-get update
```

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget lsb-release
$ sudo wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/debian/ `lsb_release -cs` main" | sudo tee /e
$ sudo apt-get update
```

RHEL and derivatives

The following commands apply to Red Hat Enterprise Linux (RHEL) and its derivatives (e.g., CentOS). Tab names refer to the base RHEL source version.

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/9/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

WARNING

Red Hat's full support of RHEL 8 ended in May 2024. We recommend reviewing the Red Hat Enterprise Linux Life Cycle before installing RHEL 8.

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
```

```
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

WARNING

Red Hat's full support of RHEL 7 ended in August 2019. We recommend reviewing the Red Hat Enterprise Linux Life Cycle before installing RHEL 6.

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

WARNING

Red Hat's full support of RHEL 6 ended in May 2016. We recommend reviewing the Red Hat Enterprise Linux Life Cycle before installing RHEL 6.

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

Ubuntu

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg lsb-release
$ sudo wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/key
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/ubu
$ sudo apt-get update
```

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget lsb-release
$ sudo wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/ubuntu/ `lsb_release -cs` main" | sudo tee /e
$ sudo apt-get update
```

Installing the NGINX dynamic module

After adding our package repositories, you can install the NGINX dynamic module for NGINX Open Source or NGINX Plus.

Limitations and considerations

Keep the following things in mind when installing the NGINX dynamic module:

- Before installing the NGINX dynamic module, you must add our package repositories for your distribution and update repository metadata.
- The NGINX dynamic module version that you install must mirror the core version of your NGINX installation. For instance, if you have NGINX `1.18.0` installed, you must install version `1.18.0` of the module.
- File names of our NGINX module package versions include the NGINX version that they're compiled against, and in some cases, a build prefix and distribution release (e.g., `1.25.3-715~jammy`). When build numbers exist for the same NGINX version, we recommend installing the package with the highest build number.

  Appending a wildcard (`*`) to the installation command ensures you install the latest version available for the specified NGINX version. You may need to update your repository metadata (e.g., `apt update`) for newer versions.

Installing the NGINX dynamic module for NGINX Open Source

Our NGINX dynamic module for NGINX Open Source is compiled for NGINX Open Source. To install this module:

1. Find your NGINX binary version:

   ```
   $ nginx -v
   ```

   NOTE

   If nothing is returned or you get a `nginx: not found` error, make sure NGINX is correctly installed and available on the applicable shell path. If NGINX has not been installed as a package (e.g., extracted from a tarball), subsequent commands to install packages may fail due to NGINX package dependencies not being met.

2. Use your distributions package manager to install the NGINX dynamic module (`nginx-module-sigsci-nxo`) package for your specific NGINX Open Source release. The version you install must mirror the core version of your NGINX installation.

   To install the lastest version of our module, run the following command:

   ```
   $ sudo apt-get install nginx-module-sigsci-nxo
   ```

   To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

   ```
   $ sudo apt-get install nginx-module-sigsci-nxo=<nginx-core-version>\*
   ```

   For example, if your installed NGINX core version is `1.18.0`, the command would be the following:

   ```
   $ sudo apt-get install nginx-module-sigsci-nxo=1.18.0\*
   ```

   To install the lastest version of our module, run the following command:

   ```
   $ sudo yum install nginx-module-sigsci-nxo
   ```

   To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

   ```
   $ sudo yum install nginx-module-sigsci-nxo-<nginx-core-version>\*
   ```

   For example, if your installed NGINX core version is `1.18.0`, the command would be the following:

   ```
   $ sudo yum install nginx-module-sigsci-nxo-1.18.0\*
   ```

   For NGINX versions `1.15.3` and above, run the following command to install the latest version of our module that is compatible with your NGINX core version:

```
$ sudo apk add nginx-module-sigsci-nxo
```

To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

```
$ sudo apk add nginx-module-sigsci-nxo-<nginx-core-version>
```

For example, if your installed NGINX core version is `1.18.0`, the command would be the following:

```
$ sudo apk add nginx-module-sigsci-nxo-1.18.0
```

For NGINX versions `1.18.0` and above:

- To install the latest version of our module that is compatible with your NGINX core version, run the following command:

  ```
  $ yum install nginx-module-sigsci-nxo
  ```

- To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

  ```
  $ yum install nginx-module-sigsci-nxo-<nginx-core-version>\*
  ```

  For example, if your installed NGINX core version is `1.18.0`, the command would be the following:

  ```
  $ yum install nginx-module-sigsci-nxo-1.18.0\*
  ```

For NGINX versions `1.16.1` and below:

- To install the latest version of our module that is compatible with your NGINX core version, run the following command:

  ```
  $ yum install nginx-module-sigsci-nxo-amzn
  ```

- To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

  ```
  $ yum install nginx-module-sigsci-nxo-amzn-<nginx-core-version>*
  ```

  For example, if your installed NGINX core version is `1.16.1`, the command would be the following:

  ```
  $ yum install nginx-module-sigsci-nxo-amzn-1.16.1*
  ```

Installing the NGINX dynamic module for NGINX Plus

Our NGINX dynamic module for NGINX Plus is compiled for the NGINX Plus web server maintained by F5. The version of the module you install is based on the core NGINX that NGINX Plus is based on. To install this module:

1. Find your NGINX core version:

   ```
   nginx -v
   ```

   For example, in the response below, NGINX Plus version `R30` correlates to NGINX core version `1.25.1`:

   ```
   nginx version: nginx/1.25.1 (nginx-plus-r30-p1)
   ```

> NOTE
>
> If nothing is returned or you get a `nginx: not found` error, make sure NGINX is correctly installed and available on the applicable shell path. If NGINX has not been installed as a package (e.g., extracted from a tarball), subsequent commands to install packages may fail due to NGINX package dependencies not being met.

Alternatively, if you know your NGINX Plus version, you can source the correlative NGINX core version it is based on from the NGINX Plus release notes.

2. Use your distributions package manager to install the NGINX dynamic module (`nginx-module-sigsci-nxp`) package for your specific NGINX Plus release. The version you install must mirror the core version of your NGINX installation.

To install the lastest version of our module that is compatible with your NGINX core version, run the following command:

```
$ sudo apt-get install nginx-module-sigsci-nxp=$(nginx -v 2>&1 | grep -oP 'nginx/\K[0-9.]+')\
```

To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

```
$ sudo apt-get install nginx-module-sigsci-nxp=<nginx-core-version>\*
```

For example, if your installed NGINX Plus version is `R30`, the command would be the following:

```
$ sudo apt-get install nginx-module-sigsci-nxp=1.25.1\*
```

To install the lastest version of our module that is compatible with your NGINX core version, run the following command:

```
$ sudo yum install nginx-module-sigsci-nxp=$(nginx -v 2>&1 | grep -oP 'nginx/\K[0-9.]+')\*
```

To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

```
$ sudo yum install nginx-module-sigsci-nxp-<nginx-core-version>\*
```

For example, if your installed NGINX Plus version is `R30`, the command would be the following:

```
$ sudo yum install nginx-module-sigsci-nxp-1.25.1\*
```

For NGINX core versions `1.15.3` and above, run the following command to install the latest version of our module that is compatible with your NGINX core version:

```
$ sudo apk add nginx-module-sigsci-nxp
```

To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

```
$ sudo apk add nginx-module-sigsci-nxp-<nginx-core-version>
```

For example, if your installed NGINX Plus version is `R30`, the command would be the following:

```
$ sudo apk add nginx-module-sigsci-nxp-1.25.1
```

For NGINX core versions `1.18.0` and above, run the following command to install the latest version of our module that is compatible with your NGINX core version:

```
$ sudo yum install nginx-module-sigsci-nxp=$(nginx -v 2>&1 | grep -oP 'nginx/\K[0-9.]+')\*
```

To install a specific version of our module, run the following command, being sure to replace `<nginx-core-version>` with the NGINX core version you have installed:

```
$ sudo yum install nginx-module-sigsci-nxp-<nginx-core-version>\*
```

For example, if your installed NGINX Plus version is `R30`, the command would be the following:

```
$ sudo yum install nginx-module-sigsci-nxp-1.25.1\*
```

Loading the NGINX dynamic module

After installing the NGINX dynamic module, you need to declare the NGINX dynamic module in your NGINX configuration so that the module loads into NGINX at runtime:

1. In your NGINX configuration file (often located by default at `/etc/nginx/nginx.conf`), use the NGINX `load_module` directive to load the NGINX dynamic module into NGINX's `main` context (for instance, under the `pid` directive).

```
load_module /etc/nginx/modules/ngx_http_sigsci_module.so;
```

2. Run the following command to make sure your changes are valid:

```
$ nginx -t
```

The output will look something like this:

```
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
```

3. Restart NGINX:

```
$ service nginx restart
```

For servers that are not running an init system (e.g., an Alpine container), the following command will reload the configuration:

```
$ nginx -s reload
```

4. *(Optional)* Verify the module was successfully loaded:

```
$ cat /var/log/nginx/error.log | grep 'sigsci:'
```

The `error.log` will look something like this when the module is loaded:

```
1970/01/01 00:00:00 [notice] 4242#4242: sigsci_init_main_conf: Using default UDS socket: /var/r  si
1970/01/01 00:00:00 [notice] 4242#4242: sigsci:init: setting phase REWRITE: ngx-phase=3
1970/01/01 00:00:00 [notice] 4242#4242: sigsci:sigsci_create_random: initialized random checking
1970/01/01 00:00:00 [notice] 4242#4242: signal process started
```

Scripting the installation

You can also use a sequence of shell commands to install the NGINX dynamic module. Each command in the sequence sources the output from the previous command as a variable. This can be useful within scripted installations, such as a Dockerfile `RUN` directive.

```
$ module_version=$(apt-cache madison nginx-module-sigsci-nxo | grep $(nginx -v 2>&1 | grep -oP 'nginx/
$ apt-get install -y nginx-module-sigsci-nxo=$module_version
$ unset module_version
```

```
$ module_version=$(yum list nginx-module-sigsci-nxo --showduplicates | grep $(nginx -v 2>&1 | grep -oP
$ yum install -y nginx-module-sigsci-nxo-$module_version
$ unset module_version
```

```
$ nginx_version=$(nginx -v 2>&1 | sed 's/.*nginx\///' | cut -d ' ' -f1)
$ apk add nginx-module-sigsci-nxo-$nginx_version
$ unset module_version
```

Installing the NGINX Lua module

Last updated: 2024-06-21

/en/ngwaf/installing-the-nginx-lua-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The NGINX Lua module leverages OpenResty's Lua module for NGINX (often referred to as `ngx_http_lua_module`), which allows for embedded Lua code directly in your NGINX configuration. This module is written in the Lua scripting language and can be integrated with NGINX Open Source, NGINX Plus, and OpenResty.

TIP

If Lua support is not one of your hosting environment requirements, we recommend installing the NGINX dynamic module instead of the NGINX Lua module. The NGINX dynamic module has fewer dependencies.

Prerequisites

Before installing our NGINX Lua Module, your NGINX installation **must** be compiled with Lua support or be loaded via the OpenResty Lua module. When determining how to add Lua, keep the following things in mind:

- Since availability around the Lua module varies between distributions and vendors, we recommended using OpenResty or using a distribution and third-party repository that provides the appropriate Lua dependencies and modules.
- As of May 2019, OpenResty's Lua module requires `resty.core`. Due to this change, certain NGINX package maintainers stopped providing Lua packages for NGINX (e.g., Ubuntu 22.04 and above) and certain packages may no longer include Lua (e.g., `nginx-full` or `nginx-extras`).
- After September 2019, we stopped releasing new versions of our Lua module (`nginx-module-lua`). Existing installations that depend on this module are supported until the module reaches its end of life.

Once you've added Lua, check that it is loaded correctly.

Adding our package repositories

After completing the prerequisites, configure your package management system to pull from our repositories.

Amazon Linux

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

NGINX versions `1.18.0` and above:

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/7/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

NGINX versions `1.18.0` and above:

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/7/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

Debian

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg lsb-release
$ sudo wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/key
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/deb
$ sudo apt-get update
```

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget lsb-release
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/debian/ `lsb_release -cs` main" | sudo tee /et
$ sudo apt-get update
```

RHEL and derivatives

This refers to Red Hat Enterprise Linux (RHEL) and its derivatives such as CentOS. Tab names refer to the base RHEL source version.

```
$ sudo tee /etc/yum.repos.d/sigsci.repo <<-'EOF'
[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
repo_gpgcheck=1
gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/g
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
EOF
```

WARNING

Red Hat's full support of RHEL 8 ended in May 2024. We recommend reviewing the Red Hat Enterprise Linux Life Cycle before installing RHEL 8.

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

WARNING

Red Hat's full support of RHEL 7 ended in August 2019. We recommend reviewing the Red Hat Enterprise Linux Life Cycle before installing RHEL 7.

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

WARNING

Red Hat's full support of RHEL 6 ended in May 2016. We recommend reviewing the Red Hat Enterprise Linux Life Cycle before installing RHEL 6.

```
$ echo '[sigsci_release]
name=sigsci_release
baseurl=https://yum.signalsciences.net/release/el/$releasever/$basearch
gpgcheck=1
repo_gpgcheck=1
enabled=1
gpgkey=https://yum.signalsciences.net/release/gpgkey https://dl.signalsciences.net/sigsci-agent/gpg.ke
```

```
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt' | sudo tee /etc/yum.repos.d/sigsci.repo
```

Ubuntu

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget gnupg lsb-release
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo gpg --dearmor -o /usr/share/keyring
$ sudo echo "deb [signed-by=/usr/share/keyrings/sigsci.gpg] https://apt.signalsciences.net/release/ub
$ sudo apt-get update
```

```
$ sudo apt-get update
$ sudo apt-get install -y apt-transport-https wget lsb-release
$ wget -qO - https://apt.signalsciences.net/release/gpgkey | sudo apt-key add -
$ sudo echo "deb https://apt.signalsciences.net/release/ubuntu/ `lsb_release -cs` main" | sudo tee /e
$ sudo apt-get update
```

Installing the NGINX Lua module

Once you've configured your package management system to pull from our repositories, install the NGINX Lua module:

1. Install the appropriate module package for your distribution:

   ```
   $ sudo apt install sigsci-module-nginx
   ```

   ```
   $ sudo yum install sigsci-module-nginx
   ```

2. Add the following line to your NGINX configuration file (located by default at `/etc/nginx/nginx.conf`) in the `http` context:

   ```
   include "/opt/sigsci/nginx/sigsci.conf";
   ```

3. Restart the NGINX service to initialize the new module:

   - `systemd` based systems:

     ```
     $ sudo systemctl restart nginx
     ```

   - `upstart` based systems:

     ```
     $ sudo restart nginx
     ```

   - no `init` system or service file:

     ```
     $ sudo nginx -s reload
     ```

Checking that Lua is loaded correctly

After installing the NGINX Lua module, verify that Lua is working and that the NGINX Lua module is running correctly:

1. Run the following script to add the following file to the installation directly:

```
cat <<'EOF' >/opt/sigsci/nginx/sigsci_check_lua.conf
# If you installed Lua as a dynamic module, uncomment the following load_module directives. This is
# load_module modules/ndk_http_module.so;
# load_module modules/ngx_http_lua_module.so;

events {
   worker_connections 768;
   # multi_accept on;
}

http {
init_by_lua '
local m = {}
local ngx_lua_version = "dev"

if ngx then
-- if not in testing environment
ngx_lua_version = tostring(ngx.config.ngx_lua_version)
ngx.log(ngx.STDERR, "INFO:", " Check for jit: lua version: ", ngx_lua_version)
end

local r, jit = pcall(require, "jit")
if not r then
error("ERROR: No lua jit support: No support for NGWAF Lua module")
else

if jit then
   m._SERVER_FLAVOR = ngx_lua_version .. ", lua=" .. jit.version
   if os.getenv("SIGSCI_NGINX_DISABLE_JIT") == "true" then
      nginx.log(ngx.STDERR, "WARNING:", "Disabling lua jit because env var: SIGSCI_NGINX_DISABLE_JIT
   end
   ngx.log(ngx.STDERR, "INFO:", " Bravo! You have lua jit support=", m._SERVER_FLAVOR)
else
   error("ERROR: No luajit support: No support for NGWAF module")
end
end
';
}
EOF
```

2. Run the following command to test if Lua is loaded correctly:

```
$ nginx -t -c /opt/sigsci/nginx/sigsci_check_lua.conf
```

The output will look something like this:

```
nginx: [] [lua] init_by_lua:9: INFO: Check for jit: lua version: 10000
nginx: [] [lua] init_by_lua:22: INFO: Bravo! You have lua jit support=10000, lua=LuaJIT 2.0.4
nginx: the configuration file <your explicit path>/sigsci_check_lua.conf syntax is ok
nginx: configuration file <your explicit path>/sigsci_check_lua.conf test is successful
```

Working with multiple Lua scripts in NGINX

NGINX supports one `init_by_lua` or `init_by_lua_file`, which is used by the our NGINX Lua module. If you have your own Lua scripts embedded within NGINX, you will need to splice the NGINX Lua module into your custom Lua code.

NOTE

If you don't use the `sigsci.conf` configuration file, you will need to review your Lua module when the NGINX Lua module is upgraded because your configuration file won't get updated.

To add the NGINX Lua module into your existing Lua code:

1. Remove all `sigsci` references from your NGINX configuration. References may look something like this:

```
include /opt/sigsci/nginx/sigsci.conf;
```

2. Add the following lines to your NGINX configuration:

```
lua_shared_dict sigsci_conf 12k;
lua_use_default_type off;
```

3. Within your `init_by_lua` or the file specified by `init_by_lua_file`, include the following snippet:

```
package.path = "/opt/sigsci/nginx/?.lua;" .. package.path
sigsci = require("SignalSciences")
```

4. Add an `access_by_lua` and `log_by_lua` into your NGINX configuration. If you already have these directives defined, copy the `sigsci.prerequest()` and `sigsci.postrequest()` statements to their respective Lua callers.

```
access_by_lua 'sigsci.prerequest()';
log_by_lua    'sigsci.postrequest()';
```

5. Restart NGINX.

Installing the Java Module with Dropwizard

Last updated: 2023-01-20

/en/ngwaf/java-module-dropwizard

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF Java module can be deployed through Dropwizard.

Download

Download the Next-Gen WAF Java module manually or access it with Maven.

Download manually

1. Download the Java module archive from https://dl.signalsciences.net/sigsci-module-java/sigsci-module-java_latest.tar.gz.

2. Extract `sigsci-module-java_latest.tar.gz`.

3. Deploy the jars using one of the following options:

  - Copy `sigsci-module-java-{version}-shaded.jar` (an uber jar with all the dependencies bundled) to your application’s classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`).
  - Copy `sigsci-module-java-{version}.jar` and its dependencies in the `lib` folder to your application’s classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`). If you already have any of the dependency jar files in your application classpath folder (i.e., for Tomcat in the `WEB-INF\lib`) then it is not necessary to copy them, even if the version numbers are different. The logging jars are optional based on how `slf4j` is configured.

Access with Maven

For projects using Maven for build or deployment, the latest version of Next-Gen WAF Java modules can be installed by adding XML to the project `pom.xml` file. For example:

```
<repositories>
   <repository>
      <id>sigsci-stable</id>
      <url>https://packages.signalsciences.net/release/maven2</url>
   </repository>
</repositories>

<dependency>
   <groupId>com.signalsciences</groupId>
   <artifactId>sigsci-module-java</artifactId>
   <version>LATEST_MODULE_VERSION</version>
</dependency>
```

Be sure to replace `LATEST_MODULE_VERSION` with the latest release of the Java module. You can find the latest version in our version file at https://dl.signalsciences.net/sigsci-module-java/VERSION.

Install and configure

Dropwizard supports standard Java servlet filters, but you will need to register the filter class.

Additional information about Dropwizard servlet filter support can be found in the Dropwizard documentation.

The Dropwizard framework internally uses the Jetty servlet engine. The Next-Gen WAF Java module provides `servlet filters`.

Example run method inside class extending Dropwizard Application class

```
import com.signalsciences.servlet.filter.SigSciFilter;
@Override
public void run(final DwizExampleConfiguration configuration, final Environment environment) {
    environment.servlets().addFilter("SigSciFilter", new SigSciFilter()).addMappingForUrlPatterns(E
    final HelloWorldResource resource = new HelloWorldResource(
        "%s",
        "Demo value"
    );
    environment.jersey().register(resource);
}
```

Java module overview

Last updated: 2021-04-12

/en/ngwaf/java-module-intro

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF Java module can be deployed in several ways:

- As a Servlet filter
- As a Jetty handler
- As a Netty handler
- With Dropwizard
- On WebLogic servers

Installing the Java Module as a Jetty Handler

Last updated: 2023-01-20

/en/ngwaf/java-module-jetty

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Requirements

Jetty 9.2 or higher

Supported Application Types

For Jetty specific implementations, we support a HandlerWrapper-based install on Jetty 9.2 or higher.

We also provide a lower-level agent RPC communication API if you are interested in writing an implementation for another Java platform. If you are interested in writing an implementation for another Java platform, please reach out to our support team.

Agent Configuration

Like other Next-Gen WAF modules, the Jetty Handler supports both Unix domain sockets and TCP sockets for communication with the Next-Gen WAF agent. By default, the agent uses Unix domain sockets with the address set to `unix:/var/run/sigsci.sock`. It is possible to override this or specify a TCP socket instead by configuring the `rpc-address` parameter in the Agent.

Additionally, ensure the agent is configured to use the default RPC version: `rpc-version=0`. This can be done by verifying the parameter `rpc-version` is not specified in the agent configuration or if it is specified, ensure that is specified with a value of `0`. Below is an example Agent configuration that overrides the default Unix domain socket value:

```
accesskeyid = "YOUR AGENT ACCESSKEYID"
secretaccesskey = "YOUR AGENT SECRETACCESSKEY"
rpc-address = "127.0.0.1:9999"
```

Download

Download the Next-Gen WAF Java module manually or access it with Maven.

Download manually

1. Download the Java module archive from https://dl.signalsciences.net/sigsci-module-java/sigsci-module-java_latest.tar.gz.
2. Extract `sigsci-module-java_latest.tar.gz`.
3. Deploy the jars using one of the following options:
   - Copy `sigsci-module-java-{version}-shaded.jar` (an uber jar with all the dependencies bundled) to your application's classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`).
   - Copy `sigsci-module-java-{version}.jar` and its dependencies in the `lib` folder to your application's classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`). If you already have any of the dependency jar files in your application classpath folder (i.e., for Tomcat in the `WEB-INF\lib`) then it is not necessary to copy them, even if the version numbers are different. The logging jars are optional based on how `slf4j` is configured.

Access with Maven

For projects using Maven for build or deployment, the latest version of Next-Gen WAF Java modules can be installed by adding XML to the project `pom.xml` file. For example:

```
<repositories>
  <repository>
      <id>sigsci-stable</id>
      <url>https://packages.signalsciences.net/release/maven2</url>
  </repository>
</repositories>

<dependency>
  <groupId>com.signalsciences</groupId>
  <artifactId>sigsci-module-java</artifactId>
  <version>LATEST_MODULE_VERSION</version>
</dependency>
```

Be sure to replace `LATEST_MODULE_VERSION` with the latest release of the Java module. You can find the latest version in our version file at https://dl.signalsciences.net/sigsci-module-java/VERSION.

Install

The installation of the Jetty module varies slightly depending upon whether you deployed Jetty as an embedded or stand alone application.

If you are embedding Jetty within your web application, follow the instructions for Embedded Jetty.

Alternatively, if you are deploying your web application to a Jetty instance, follow the instructions for Standalone Jetty.

Embedded Jetty

The Next-Gen WAF Jetty module is currently implemented as a Handler. Edit your application to wrap your existing Handlers with the Next-Gen WAF Handler.

A typical Jetty based application will add all of the Handlers to a HandlerList, similar to this:

```
Server server = new Server(InetSocketAddress.createUnresolved("0.0.0.0", 8800));
ServletContextHandler context = new ServletContextHandler();
ServletHolder defHolder = new ServletHolder("default", DefaultServlet.class);
HandlerList handlers = new HandlerList();

```

```
// Servlet: /
defHolder.setInitParameter("pathInfoOnly", "true");
defHolder.setInitParameter("dirAllowed", "true");
defHolder.setInitParameter("acceptRanges", "true");
context.addServlet(defHolder, "/*");
context.addServlet(defHolder, "/");

// Existing App Handlers
handlers.addHandler(context);
handlers.addHandler(new DefaultHandler());

// Add the existing handlers as the server handler
server.setHandler(handlers);

try {
server.start();
server.join();
} catch (Exception e) {
e.printStackTrace();
} finally {
server.stop();
}
```

Add the Next-Gen WAF Handler around your primary handler. For example:

```
Server server = new Server(InetSocketAddress.createUnresolved("0.0.0.0", 8800));
ServletContextHandler context = new ServletContextHandler();
ServletHolder defHolder = new ServletHolder("default", DefaultServlet.class);
HandlerList handlers = new HandlerList();

// Servlet: /
defHolder.setInitParameter("pathInfoOnly", "true");
defHolder.setInitParameter("dirAllowed", "true");
defHolder.setInitParameter("acceptRanges", "true");
context.addServlet(defHolder, "/*");
context.addServlet(defHolder, "/");

// Existing App Handlers
handlers.addHandler(context);
handlers.addHandler(new DefaultHandler());

// REMOVED: This is replaced by wrapping with the sigsci handler below
//server.setHandler(handlers);

//////////////////////////////////////////////////////////////////////////
// BEGIN ADDITION: Next-Gen WAF Handler
// Need to also add these imports for SignalSciencesHandler and Timeout:
//   import com.signalsciences.jetty.SignalSciencesHandler;
//   import com.signalsciences.rpc.util.Timeout;
//////////////////////////////////////////////////////////////////////////
// 1. Create a new SignalSciencesHandler
SignalSciencesHandler sigsciHandler = new SignalSciencesHandler();
// 2. Specify the URI of the sigsci-agent rpc-address (Unix)
sigsciHandler.getSigSciConfig().setRpcServerURI(URI.create("unix:/var/run/sigsci.sock"));
// 3. Specify a timeout
sigsciHandler.getSigSciConfig().setRpcTimeout(new Timeout(300, TimeUnit.MILLISECONDS));
// 4. Set rpcVersion to 0
```

```
sigsciHandler.getSigSciConfig().setRpcVersion(0);
// 5. Wrap the other handlers
sigsciHandler.setHandler(handlers);
// 6. Set the SignalSciencesHandler (wrapper) as the server handler
server.setHandler(sigsciHandler);
///////////////////////////////////////////////////////////////////////////
// END ADDITION
///////////////////////////////////////////////////////////////////////////

try {
server.start();
server.join();
} catch (Exception e) {
e.printStackTrace();
} finally {
server.stop();
}
```

Standalone Jetty

The Next-Gen WAF Jetty module is currently implemented as a handler. To use this, you will need to follow the steps below to update your server configuration.

Update Jetty Server Configuration File

In a default Jetty installation, the server configuration file can be found under `{jetty.base}/etc/jetty.xml`. You will need to update the configuration file to wrap the existing Handlers with the Next-Gen WAF Handler. Modify the stanza in the file that specifies the handler collection to include the Next-Gen WAF Handler. Below is an example using the out of the box `jetty.xml` file:

```
<Set name="handler">
  <New id="Wrapper" class="com.signalsciences.jetty.SignalSciencesHandler">
    <Call name="setRpcServerURI">
      <Arg>
        <New class="java.net.URI">
          <Arg>unix:/var/run/sigsci.sock</Arg>
         </New>
      </Arg>
     </Call>
     <Call name="setRpcTimeout">
       <Arg>
         <New class="com.signalsciences.rpc.util.Timeout">
           <Arg type="long">300</Arg>
             <Arg>
               <Get class="java.util.concurrent.TimeUnit" name="MILLISECONDS"/>
             </Arg>
         </New>
       </Arg>
     </Call>
     <Set name="handler">
       <New id="Handlers" class="org.eclipse.jetty.server.handler.HandlerCollection">
         <Set name="handlers">
           <Array type="org.eclipse.jetty.server.Handler">
             <Item>
               <New id="Contexts" class="org.eclipse.jetty.server.handler.ContextHandlerCollection"
             </Item>
             <Item>
               <New id="DefaultHandler" class="org.eclipse.jetty.server.handler.DefaultHandler"/>
             </Item>
           </Array>
         </Set>
       </New>
     </Set>
  </New>
</Set>
```

Deploy Signal Sciences Library to the Server ClassPath

There are two options for deploying the jars:

- Copy `sigsci-module-java-{version}-shaded.jar` (an uber jar with all the dependencies bundled) to your server classpath.
- Copy `sigsci-module-java-{version}.jar` and its dependencies in the `lib` folder to your server classpath.

Although optional, we recommended adding this library to `{jetty.base}/lib/ext`, as Jetty automatically loads libraries in this path to the server classpath.

Simple Example Server

For a more complete example, see the `sigsci-jetty-simple-example` JAR files included in the distribution. This consists of the binaries, source, and javadoc for a simple working example. The binary JAR is executable and can be run with commands similar to the following. These commands will start the simple server and point it at an agent running on TCP port 5000 on the local host, which require an agent started with `rpc-address = "127.0.0.1:5000"`:

```
$ java -jar examples/sigsci-jetty-simple-example-{version}.jar
```

That command will produce the following output:

```
tcp://127.0.0.1:5000
00:00:00.384 [main] INFO  c.s.example.SimpleExampleServer - WebRoot is jar:file:/x/sigsci-jetty-simple-e
00:00:00.403 [main] INFO  c.s.example.SimpleExampleServer - Signal Sciences WAF: enabled
00:00:00.501 [main] INFO  c.s.example.SimpleExampleServer - Signal Sciences Simple Example Server starte
00:00:00.986 [qtp123456789-12] INFO  c.s.example.RequestLogger - "GET /test/ HTTP/1.1" 302
```

This example test server will respond with a simple HTML page on the root directory. It can also be used to do basic tests using the `/test/` context. In this test context the following parameters are interpreted:

- `response_time`: Time in milliseconds to delay the response - to test timeouts.
- `response_code`: The HTTP response code to return in the response.
- `size`: The size of the response body in bytes.

For example:

```
$ curl -D- "http://127.0.0.1:8800/test/?response_code=302&response_time=10&size=86"
```

That command will produce the following output:

```
HTTP/1.1 302 Found
Date: Sat, 01 Sep 2016 00:00:00 GMT
Location: /
Content-Length: 86
```

```
Server: Jetty(9.2.z-SNAPSHOT)
```

Installing the Java Module as a Netty Handler

Last updated: 2023-01-20

/en/ngwaf/java-module-netty

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF Netty module is implemented as a handler which inspects `HttpRequest` events before forwarding the event to the next handler in the pipeline.

Download

Download the Next-Gen WAF Java module manually or access it with Maven.

Download manually

1. Download the Java module archive from https://dl.signalsciences.net/sigsci-module-java/sigsci-module-java_latest.tar.gz.
2. Extract `sigsci-module-java_latest.tar.gz`.
3. Deploy the jars using one of the following options:
   - Copy `sigsci-module-java-{version}-shaded.jar` (an uber jar with all the dependencies bundled) to your application’s classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`).
   - Copy `sigsci-module-java-{version}.jar` and its dependencies in the `lib` folder to your application’s classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`). If you already have any of the dependency jar files in your application classpath folder (i.e., for Tomcat in the `WEB-INF\lib`) then it is not necessary to copy them, even if the version numbers are different. The logging jars are optional based on how `slf4j` is configured.

Access with Maven

For projects using Maven for build or deployment, the latest version of Next-Gen WAF Java modules can be installed by adding XML to the project `pom.xml` file. For example:

```
<repositories>
   <repository>
      <id>sigsci-stable</id>
      <url>https://packages.signalsciences.net/release/maven2</url>
   </repository>
</repositories>

<dependency>
   <groupId>com.signalsciences</groupId>
   <artifactId>sigsci-module-java</artifactId>
   <version>LATEST_MODULE_VERSION</version>
</dependency>
```

Be sure to replace `LATEST_MODULE_VERSION` with the latest release of the Java module. You can find the latest version in our version file at https://dl.signalsciences.net/sigsci-module-java/VERSION.

Install and configure

Create a new instance of `WafHandler` for every new connection.

- `WafHandler` must be added after `FlowControlHandler`.
- `HttpObjectAggregator` handler should be added before `FlowControlHandler` to inspect HTTP Post body.
- `WafHandler` may send `HttpResponse` for blocked request.

Example deployment

```
// Update configuration
WafHandler.getSigSciConfig().setMaxPost(40000);

// start server and handle requests
new ServerBootstrap()
.group(bossGroup, workerGroup)
.channel(NioServerSocketChannel.class)
.childHandler(
  new ChannelInitializer<SocketChannel>() {
      @Override
      public void initChannel(SocketChannel ch) throws Exception {
    ch.pipeline()
    .addLast(new HttpServerCodec())
    .addLast(new HttpObjectAggregator(6 * (1 << 20)))
    .addLast(new FlowControlHandler())
    .addLast("waf", new WafHandler())
    .addLast(new SimpleChannelInboundHandler<FullHttpRequest>() {

      // send response

    });
      }
  })
.bind(8080)
.sync();
```

Installing the Java Module as a Servlet Filter

Last updated: 2023-09-05

/en/ngwaf/java-module-servlet-filter

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Requirements

- A Servlet 3.x compliant Java servlet container (e.g., Tomcat 7.0.x.+, Jetty 9+, GlassFish 3.0+).

Supported Application Types

The Next-Gen WAF Java servlet filter module can be deployed to a variety of Servlet 3.0+ Java application servers (e.g., Apache Tomcat, Jetty, Glassfish, Resin).

The module is compatible with application servers deployed on both Linux and Windows servers running the Next-Gen WAF agent.

Agent Configuration

Like other Next-Gen WAF modules, the servlet filter supports both Unix domain sockets and TCP sockets for communication with the Next-Gen WAF agent. By default, the agent uses Unix domain sockets with the address set to `unix:/var/run/sigsci.sock`. It is possible to override this or specify a TCP socket instead by configuring the `rpc-address` parameter in the Agent.

Additionally, ensure the agent is configured to use the default RPC version: `rpc-version=0`. This can be done by verifying the parameter `rpc-version` is not specified in the agent configuration or if it is specified, ensure that is specified with a value of `0`. Below is an example Agent configuration that overrides the default Unix domain socket value:

```
accesskeyid = "YOUR AGENT ACCESSKEYID"
secretaccesskey = "YOUR AGENT SECRETACCESSKEY"
rpc-address = "127.0.0.1:9999"
```

Download

Download the Next-Gen WAF Java module manually or access it with Maven.

Access with Maven

For projects using Maven for build or deployment, the latest version of Next-Gen WAF Java modules can be installed by adding XML to the project `pom.xml` file. For example:

```
<repositories>
   <repository>
      <id>sigsci-stable</id>
      <url>https://packages.signalsciences.net/release/maven2</url>
   </repository>
</repositories>

<dependency>
   <groupId>com.signalsciences</groupId>
   <artifactId>sigsci-module-java</artifactId>
   <version>LATEST_MODULE_VERSION</version>
</dependency>
```

Be sure to replace `LATEST_MODULE_VERSION` with the latest release of the Java module. You can find the latest version in our version file at https://dl.signalsciences.net/sigsci-module-java/VERSION.

Download manually

If you aren't using Maven to build or deploy your Java projects, follow these steps to manually download the Next-Gen WAF Java module:

1. Download the Java module archive from https://dl.signalsciences.net/sigsci-module-java/sigsci-module-java_latest.tar.gz.
2. Extract `sigsci-module-java_latest.tar.gz`.
3. Deploy the jars using one of the following options:

- Copy `sigsci-module-java-{version}-shaded.jar` (an uber jar with all the dependencies bundled) to your application's classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`).
- Copy `sigsci-module-java-{version}.jar` and its dependencies in the `lib` folder to your application's classpath (e.g., `%CATALINA_HOME%\webbapps\<APP_FOLDER>\WEB-INF\lib`). If you already have any of the dependency jar files in your application classpath folder (i.e., for Tomcat in the `WEB-INF\lib`) then it is not necessary to copy them, even if the version numbers are different. The logging jars are optional based on how `slf4j` is configured.

> NOTE
>
> If you want coverage across all web applications in your Application Server instance, the jar files must be placed in the server classpath. For example, in Tomcat that would be `%CATALINA_HOME%/lib`.

Installation

1. Determine the appropriate `filter-class` for your installation:

   - For systems using Jakarta EE (Servlet API 5+):

     ```
     <filter-class>com.signalsciences.jakartafilter.SigSciFilter</filter-class>
     ```

   - For Java EE:

     ```
     <filter-class>com.signalsciences.servlet.filter.SigSciFilter</filter-class>
     ```

> NOTE
>
> Failure to specify the appropriate servlet API may result in errors such as `package javax.servlet.x does not exist`.

Example minimal configuration using the Java EE servlet filter class:

```
<web-app>
   <filter>
      <filter-name>SigSciFilter</filter-name>
      <filter-class>com.signalsciences.servlet.filter.SigSciFilter</filter-class>
      <async-supported>true</async-supported>
      <init-param>
         <param-name>rpcServerURI</param-name>
         <param-value>unix:/var/run/sigsci.sock</param-value>
      </init-param>
      <init-param>
         <param-name>expectedContentTypes</param-name>
         <param-value>application/x-java-serialized-object</param-value>
      </init-param>
      <init-param>
         <param-name>extendContentTypes</param-name>
         <param-value>true</param-value>
      </init-param>
   </filter>
   <filter-mapping>
      <filter-name>SigSciFilter</filter-name>
      <url-pattern>/*</url-pattern>
   </filter-mapping>
</web-app>
```

NOTE

The filter supports the use of either Unix domain sockets or TCP sockets for the `rpcServerURI` parameter. Ensure that the value specified here matches the address specified in your Agent configuration to avoid communication failures. The module configuration below provides more details.

2. Restart the Application Server.

Module Configuration

Option	Default	Description
`rpcServerURI`	Required, `tcp://127.0.0.1:9999`	The Unix domain socket or TCP connection to communicate with the agent. Use the appropriate prefix to specify either Unix Domain Sockets or a TCP connection: `unix:/<file path>` or `tcp://<host>:<port>`
`rpcTimeout`	Required, 300ms	The timeout in milliseconds that the RPC client waits for a response back from the agent.
`maxResponseTime`	Optional, no default	The maximum time in seconds that the server response time will be evaluated against (i.e. to see if it exceeds this value) to determine if the module should send a post request to the agent.
`maxResponseSize`	Optional, no default	The maximum size in bytes that the server response size will be evaluated against (i.e. to see if it exceeds this value) to determine if the module should send a post request to the agent.
`maxPost`	Optional, no default	The maximum POST body size in bytes that can be sent to the Next-Gen WAF agent. For any POST body size exceeding this limit, the module will not send the request to the agent for detection.
`asyncStartFix`	Optional, false	This can be set to `true` to workaround missing request body when handling requests asynchronously in servlets.
`altResponseCodes`	Optional, no default	Space separated alternative agent response codes used to block the request in addition to 406. For example "403 429 503".
`excludeCidrBlock`	Optional, no default	A comma-delimited list of CIDR blocks or specific IP addresses to be excluded from filter processing.
`excludeIpRange`	Optional, no default	A comma-delimited list of IP ranges or specific IP addresses to be excluded from filter processing.
`excludePath`	Optional, no default	A comma-delimited list of paths to be excluded from filter processing. If the URL starts with the specified value it will be excluded. Matching is case-insensitive.
`excludeHost`	Optional, no default	A comma-delimited list of host names to be excluded from filter processing. Matching is case-insensitive.
`extendContentTypes`	Optional, false	This can be set to true to enable extended content inspection.

Example configuration

The configuration shown here provides an example using all the parameters noted earlier in this guide:

```
<!-- Signal Sciences Filter -->
  <web-app>
    <filter>
```

```
      <filter-name>SigSciFilter</filter-name>
      <filter-class>com.signalsciences.servlet.filter.SigSciFilter</filter-class>
      <async-supported>true</async-supported>
      <init-param>
         <param-name>rpcServerURI</param-name>
         <param-value>unix:/var/run/sigsci.sock</param-value>
      </init-param>
      <init-param>
         <param-name>expectedContentTypes</param-name>
         <param-value>application/x-java-serialized-object</param-value>
      </init-param>
      <init-param>
         <param-name>excludeIpRange</param-name>
         <param-value>192.168.0.1-192.168.0.5,192.169.0.10-192.169.0.12,193.168.0.1,192.168.10.1
      </init-param>
      <init-param>
         <param-name>excludeCidrBlock</param-name>
         <param-value>192.168.14.0/24,193.165.0.0/28,192.168.11.0/24</param-value>
      </init-param>
      <init-param>
         <param-name>excludePath</param-name>
         <param-value>/test/exit,/hello,/bonus</param-value>
      </init-param>
      <init-param>
         <param-name>excludeHost</param-name>
         <param-value>localhost,127.0.0.2</param-value>
      </init-param>
      <init-param>
         <param-name>extendContentTypes</param-name>
         <param-value>true</param-value>
      </init-param>
   </filter>
   <filter-mapping>
      <filter-name>SigSciFilter</filter-name>
      <url-pattern>/*</url-pattern>
      </filter-mapping>
</web-app>
<!-- end Signal Sciences Filter -->
```

Installing the Java Module on Weblogic

Last updated: 2022-04-11

/en/ngwaf/java-module-weblogic

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Compatibility

The Next-Gen WAF Java module is compatible with WebLogic version 12c (12.2.1) or higher.

Installation

To deploy the Next-Gen WAF Java module on WebLogic servers, you must first add it to your application as a servlet filter.

Then, deploy your application to your WebLogic server through the same process you would deploy any other Web Application.

Module Configuration

Option	Default	Description
`rpcServerURI`	Required, `tcp://127.0.0.1:9999`	The Unix domain socket or TCP connection to communicate with the agent.
`rpcTimeout`	Required, 300ms	The timeout in milliseconds that the RPC client waits for a response back from the agent.
`maxResponseTime`	Optional, no default	The maximum time in seconds that the server response time will be evaluated against (i.e., to see if it exceeds this value) to determine if the module should send a post request to the agent.
`maxResponseSize`	Optional, no default	The maximum size in bytes that the server response size will be evaluated against (i.e. to see if it exceeds this value) to determine if the module should send a post request to the agent.
`maxPost`	Optional, no default	The maximum POST body size in bytes that can be sent to the Next-Gen WAF agent. For any POST body size exceeding this limit, the module will not send the request to the agent for detection.
`asyncStartFix`	Optional, false	This can be set to `true` to workaround missing request body when handling requests asynchronously in servlets.
`altResponseCodes`	Optional, no default	Space separated alternative agent response codes used to block the request in addition to 406. For example `403 429 503`.
`excludeCidrBlock`	Optional, no default	A comma-delimited list of CIDR blocks or specific IP addresses to be excluded from filter processing.
`excludeIpRange`	Optional, no default	A comma-delimited list of IP ranges or specific IP addresses to be excluded from filter processing.
`excludePath`	Optional, no default	A comma-delimited list of paths to be excluded from filter processing. If the URL starts with the specified value it will be excluded. Matching is case-insensitive.
`excludeHost`	Optional, no default	A comma-delimited list of host names to be excluded from filter processing. Matching is case-insensitive.

Sample module configuration:

Module configuration changes must be made in the `<!-- Signal Sciences Filter -->` section of your application's `web.xml` file:

```
<!-- Signal Sciences Filter -->
<filter>
    <filter-name>sigSciFilter</filter-name>
    <filter-class>com.signalsciences.servlet.filter.SigSciFilter</filter-class>
     <async-supported>true</async-supported>
<init-param>
   <param-name>rpcTimeout</param-name>
   <param-value>500</param-value>
```

```
</init-param>
  <init-param>
   <param-name>asyncStartFix</param-name>
   <param-value>true</param-value>
</init-param>
</filter>
<filter-mapping>
    <filter-name>sigSciFilter</filter-name>
    <url-pattern>/*</url-pattern>
</filter-mapping>
<!-- end Signal Sciences Filter -->
```

Kong plugin install

Last updated: 2023-04-20

/en/ngwaf/kong

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Kong plugin is a feature of the NGINX module, which allows it to function as a Kong plugin. Accordingly, the process for installing the Kong plugin involves installing the Next-Gen WAF agent and NGINX module, and modifying the NGINX module configuration to enable it for use with Kong.

Installation

1. Install the Next-Gen WAF agent for your environment.
2. Edit the agent configuration file located at `/etc/sigsci/agent.conf` to add the following lines. Replace `<AGENT-LISTENER-IP>` with the host IP address (usually `127.0.0.1`) and `<AGENT-LISTENER-PORT>` with the TCP port on which the agent will listen for connections from the module. There is no default, but we suggest port `737` to minimize the chance of conflicts with other services:

   ```
   rpc-address=<AGENT-LISTENER-IP>:<AGENT-LISTENER-PORT>
   ```

3. Download and extract the latest Next-Gen WAF NGINX module.

   ```
   $ curl -O  https://dl.signalsciences.net/sigsci-module-nginx/sigsci-module-nginx_latest.tar.gz
   $ sudo mkdir -p /opt/sigsci/nginx
   $ sudo tar -xf sigsci-module-nginx_latest.tar.gz -C /opt/sigsci/nginx
   ```

4. If you are on Kong 3.0.x, override the `handler.lua` and `schema.lua` files in `/opt/sigsci/nginx/sigsci-module-nginx/kong/plugins/signalsciences` with the `handler.lua` and `schema.lua` files in `/opt/sigsci/sigsci-module-nginx/nginx/kong/plugins/signalsciences-3.0.x`.
5. Edit the following lines in `/opt/sigsci/nginx/sigsci-module-nginx/kong/plugins/signalsciences/handler.lua` to reflect the host IP address and the port used for communication with the agent. Replace `"localhost"` and `12345` with the host IP address and port:

   ```
   sigsci.agenthost = "localhost"
   ```

```
sigsci.agentport = 12345
```

6. In the Kong configuration file at `/etc/kong/kong.conf`, add the following lines:

```
plugins=signalsciences
lua_package_path=/opt/sigsci/nginx/sigsci-module-nginx/?.lua
```

7. Enable the Kong plugin by running the following command. Replace `<KONG-GATEWAY-IP:PORT>` with the Kong IP address and port (for example, `127.0.0.1:1234`):

```
$ curl -i -X POST --url http://<KONG-GATEWAY-IP:PORT>/plugins/ --data 'name=signalsciences'
```

Module configuration

Last updated: 2024-01-23

/en/ngwaf/module-config

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

We provide the ability to configure the Next-Gen WAF module. The following attributes are set by default, but may need to be modified to provide support for different environments. In the majority of cases modifying module configuration is not necessary. **Contact support if you need assistance or have questions regarding modifying module configuration.**

Apache

To modify the Next-Gen WAF module configuration in Apache you will need to add directives to your Apache configuration file (e.g., for CentOS it is httpd.conf, for Debian or Ubuntu it is apache.conf or apache2.conf). Note, these directives must be set after the Next-Gen WAF module is loaded.

Starting with release 1.6.0, the following directives replace any earlier ones. These directives are a renaming of the earlier ones but with the addition of the prefix `SigSci`.

Name	Description
`SigSciAgentTimeout`	Agent socket timeout (in milliseconds), default: `100`.
`SigSciAgentPostLen`	Maximum POST body size in bytes, default: `100000`
`SigSciAgentInspection`	Enable or disable the module, default: `On`
`SigSciAgentPort`	The local port (when using TCP) that the agent listens on, default: none. Note, if AgentPort is set then `AgentHost` must be a IP or hostname.
`SigSciAgentHost`	Host or IP Address, otherwise use `AgentHost` to specify the domain socket file. `/foo/bar.sock`
`SigSciEnableFixups`	Fixups is the phase in request processing after authorization but before the content handler. This setting toggles Signal Sciences fixups priority over post read request handling to allow the request to be seen before it's modified. (`On` or `Off`) - default is `Off`

Name	Description
`SigSciRunBeforeModulesList`	Next-Gen WAF module runs before the list of specified modules. Example: `mod_example.c mod_something.c`
`SigSciRunAfterModulesList`	Next-Gen WAF module runs after the list of specified modules. Example: `mod_example.c mod_something.c`
`SigSciExpectedContentTypes`	A space-delimited list of custom content-types to support.
`SigSciExtendContentTypes`	Enables extended content inspection. Default value is `false`.

NOTE

The `SigSciRunBeforeModulesList` and `SigSciRunAfterModulesList` directives are currently not supported on ARM64-based Linux distributions.

The following directives will be deprecated in favor of the new ones above with the `SigSci` prefix but are backwards compatible and will continue to work.

Name	Description
`AgentTimeout`	Agent socket timeout (in milliseconds), default: `100`.
`AgentPostLen`	Maximum POST body size in bytes, default: `100000`
`AgentInspection`	Enable or disable the module, default: `On`
`AgentPort`	The local port (when using TCP) that the agent listens on, default: none. Note, if AgentPort is set then `AgentHost` must be a IP or hostname.
`AgentHost`	Host or IP Address, otherwise use `AgentHost` to specify the domain socket file. `/foo/bar.sock`

The following directives are deprecated and will be ignored.

Name	Description
`SigSciAltResponseCodes`	Specifying alternative codes on which to block is deprecated. Instead we now block on any response code within the range 300-599.

NGINX C Binary Module

IMPORTANT

To use the NGINX C binary module, your NGINX must have been compiled with the `--with-compat` flag. If your NGINX was not compiled with that flag, you must use the NGINX Lua module.

To modify the Next-Gen WAF NGINX module configuration, you will need to add directives to the NGINX configuration file, located by default at `/etc/nginx/nginx.conf`.

In the global section, for example after the `pid /run/nginx.pid;` line:

```
load_module /etc/nginx/modules/ngx_http_sigsci_module.so;
```

For the NGINX Open Source package (`nxo`) only, add the following line:

```
load_module /etc/nginx/modules/ndk_http_module.so;
```

NOTE

For the NGINX Plus package, there is no `load_module ndk_http_module.so` config required. The `ndk` module should be installed by the package `nginx-plus-module-ndk`.

Name	Description	Values	Default Value	Section
`sigsci_enabled`	Enable or disable the module	`on`, `off`	`on`	http, server or per location
`sigsci_debug`	Enable `sigsci_debug` only, doesn't affect other modules	`on`, `off`	`off`	http
`sigsci_handler_phase`	Phase in which the module processes request	`preaccess`, `access`, `precontent`, `rewrite`	`rewrite`	http
`sigsci_agent_max_post_len`	Maximum POST body size in bytes to be sent to agent	0 ⇒ don't send post body; else number bytes > 0	`100000`	http
`sigsci_agent_timeout`	Agent communication socket timeout in milliseconds	Milliseconds > 0	`100`	http
`sigsci_anomaly_resp_size`	Maximum response size in bytes. Larger than this is considered anomalous.	Bytes > 0	`524288`	http
`sigsci_anomaly_resp_time`	Maximum response time in milliseconds. Larger than this is considered anomalous.	Milliseconds > 0	`1000`	http
`sigsci_agent_host`	The IP address or a path to Unix domain socket the SignalSciences Agent listens on	Example: `tcp:localhost`	`unix:/var/run/sigsci.sock`:	http
`sigsci_agent_port`	The TCP port that the agent listens on. Note: use only when `sigsci_agent_host` set to be an IP or hostname.	valid TCP port number	none	http
`sigsci_websocket_enabled`	Enable or disable WebSocket inspection	`on`, `off`	`off`	http, server or per location

NOTE

`sigsci_websocket_enabled` is `off` by default. To enable it, it must be specified in the `http` section. Thereafter, it may be turned `off` and `on` in the `server` and `location` sections as needed.

Examples of configuration

Following is an example of setting SignalSciences module parameters in the `http` section:

```
# sigsci module settings
##
sigsci_debug         on;
sigsci_agent_timeout  200;
```

These examples show using `location` sections with the `sigsci_enabled` parameter:

```
# sigsci_enabled set to "on"
location /inspect/ {
   sigsci_enabled  on;
   proxy_pass      http://127.0.0.1:80/inspect/;
}
```

```
# sigsci_enabled set to "off"
location /noinspect/ {
   sigsci_enabled  off;
   proxy_pass      http://127.0.0.1:80/noinspect/;
}
```

Detailed example using `server` and `location` sections for the `sigsci_websocket_enabled` parameter:

```
http {

    # must be turned on in global section
    sigsci_websocket_enabled on;

    server {
        ...
        # turned off for this server section
        sigsci_websocket_enabled off;

        # websocket turned on for this location
        location /websenabled {
            sigsci_websocket_enabled on;
            proxy_pass http://websocket;
            ...
        }

        # websocket off for this location since it is off in server
        location /websdisabled {
            proxy_pass http://websocket;
            ...
        }
```

NGINX Lua Module

IMPORTANT

We strongly recommend that you use the more performant NGINX C binary module if possible. The NGINX Lua module takes advantage of OpenResty and has more installation dependencies as a result.

To modify the Next-Gen WAF Lua module for NGINX, changes can be made in the Next-Gen WAF Lua script, which by default is at `/opt/sigsci/nginx/sigsci.conf`.

Name	Description
`agenthost`	The IP address or path to Unix domain socket the SignalSciences Agent is listening on, default: `unix:/var/run/sigsci.sock`.
`agentport`	The local port (when using TCP) that the agent listens on, default: `12345`
`timeout`	Agent socket timeout (in milliseconds), default: `100`.
`maxpost`	Maximum POST body size in bytes, default: `100000`

Example configuration

```
sigsci.agenthost = "unix:/var/run/sigsci.sock"
sigsci.agentport = 12345
sigsci.timeout = 100
sigsci.maxpost = 1000000
```

HAProxy

Configuration changes are typically not required for the HAProxy module to work. However, it is possible to override the default settings if needed. To do so, you must create an `override.lua` file in which to add these configuration directives. Then, update the `global` section of your HAProxy config file (`/usr/local/etc/haproxy/haproxy.cfg`) to load this over-ride config file.

Example of configuration

```
global
   ...
   lua-load /path/to/override.lua
   ...
```

Over-ride Directives

These directives may be used in your over-ride config file.

Name	Description
`sigsci.agenthost`	The IP address or path to unix domain socket the SignalSciences Agent is listening on, default: `/var/run/sigsci.sock` (unix domain socket).
`sigsci.agentport`	The local port (when using TCP) that the agent listens on, default: `nil`
`sigsci.log_debug`	Enable verbose logging, default: `false`
`sigsci.log_network_errors`	Enable logging of socket connection errors, default: `false`
`sigsci.timeout`	Agent socket timeout (in seconds), default: `1` (`0` means off).
`sigsci.maxpost`	Maximum POST body size in bytes, default: `100000`

Name	Description
`sigsci.extra_blocking_resp_hdr`	User may supply a response header to be added upon 406 responses, default: ""
`sigsci.expected_content_types`	A list of custom content-types to support
`sigsci.extend_content_types`	Enables extended content inspection. Default value is `false`.

Example of over-ride configuration

```
sigsci.agenthost = "192.0.2.243"
sigsci.agentport = 9090
sigsci.extra_blocking_resp_hdr = "Access-Control-Allow-Origin: https://example.com"
```

IIS

You can set the configuration for the IIS module using the MSI installer, the `SigsciCtl.exe` utility in v2.0.0+, IIS Manager UI, PowerShell, or the `appcmd.exe` utility. See Configuration Usage for more information on configuring the IIS module.

Name	Default Value	Description
`agentHost`	127.0.0.1	
`agentPort`	737	
`Debug`	False	Enable Module debugging; sends to event-viewer.
`ReuseConnections`	False	Use a socket pool with the maximum number of sockets based on hardware concurrency.
`MaxPostSize`	100000	
`AnomalySize`	524288	
`AnomalyDurationMillis`	1000	
`TimeoutMillis`	200	Agent socket timeout in milliseconds.
`ExpectedContentTypes`		A space delimited list of custom content-types to support.
`ExtendContentTypes`	false	This can be set to true to enable extended content inspection.

Language Modules

See language specific module pages for configuration details.

- Java
    - As a Servlet filter
    - As a Jetty handler
    - As a Netty handler
    - With Dropwizard
    - On WebLogic servers
- Node.js
- .NET

Node.js module install

Last updated: 2023-06-27

/en/ngwaf/nodejs-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF Node.js module is compatible with Node 0.10 through 18.X. All dependencies are specified in the `npm-shrinkwrap.json` file.

Installation

Install the latest version from npmjs.com:

```
$ npm install sigsci-module-nodejs
```

For specific releases prior to 1.5.3, installation can be performed from the release archive. Replace `<VERSION>` with the specific version number:

```
$ npm install https://dl.signalsciences.net/sigsci-module-nodejs/<VERSION>/sigsci-module-nodejs-<VERSION
```

See the package archive for a list of available versions.

Usage

How to incorporate the Next-Gen WAF Node.js module will depend on your application.

Native applications

If your application invokes `http.createServer` directly, use the native API.

1. Above your application code, import the Next-Gen WAF Node.js module by adding the following lines:

```
var Sigsci = require('sigsci-module-nodejs')

// Your application code
```

2. Below your application code, create a `Sigsci` object:

```
// Your application code

var sigsci = new Sigsci({
 path: '/var/run/sigsci.sock'
 // Other parameters here
})
```

3. Wrap the dispatcher with `sigsci.wrap`. Replace the `http.createServer(dispatcher).listen(8085, '127.0.0.1')` line with:

```
http.createServer(sigsci.wrap(dispatcher)).listen(8085, '127.0.0.1')
```

Example

```
var Sigsci = require('sigsci-module-nodejs')

// Your application code

var sigsci = new Sigsci({
 path: '/var/run/sigsci.sock'
 // Other parameters here
})

http.createServer(sigsci.wrap(dispatcher)).listen(8085, '127.0.0.1')
```

Node.js Express

The Node.js Express module is exposed as Express middleware and is typically inserted as the first middleware, immediately below the `var app = express()` statement. See the Express Using Middleware documentation for more details.

1. Above your application code, import the Next-Gen WAF Node.js module by adding the following lines:

```
var Sigsci = require('sigsci-module-nodejs')

// Your application code
```

2. Below your application code, create a `Sigsci` object:

```
// Your application code

var sigsci = new Sigsci({
path: '/var/run/sigsci.sock'
// other parameters here
})
```

3. Below the `var app = express()` line, insert the Node.js module middleware:

```
var app = express()
app.use(sigsci.express())

// You can still call other middleware and routes
app.use(...)
app.get('/route', ...)
```

Example

```
var Sigsci = require('sigsci-module-nodejs')

// Your application code

var sigsci = new Sigsci({
path: '/var/run/sigsci.sock'
// other parameters here
})

var app = express()
app.use(sigsci.express())

// You can still call other middleware and routes
app.use(...)
app.get('/route', ...)
```

Node.js Restify

Installing the Next-Gen WAF module for Restify is similar to Node.js, except that 404 errors are handled differently in Restify. For best results, Signal Sciences should hook into the `NotFound` event. See the Restify node server api for more details.

Node.js Hapi v17 & v18

At the top of your application, add the following:

```
var Sigsci = require('sigsci-module-nodejs')
const Hapi = require('@hapi/hapi')

var sigsci = new Sigsci({
    path: '/var/run/sigsci.sock'
    // see other options below
})
const init = async() => {
 // Creating a server
 const server = Hapi.Server({
   port: 8085
 });

 server.ext('onRequest', sigsci.hapi17())
 server.events.on('response', sigsci.hapiEnding())
 // Add SigSci request lifecycle methods, e.g.
 // server.route({
 //   method: ['POST', 'PUT', 'PATCH', 'DELETE'],
 //   config: {
 //     payload: {
 //       parse: false,
 //       maxBytes: 10 * 1024 * 1024,
 //       output: 'data'
 //     }
 //   },
 //   path: '/response',
 //   handler: responseHandler
 // })
};
init();
```

Node.js Hapi v14

At the top of your application, add the following:

```
var Sigsci = require('sigsci-module-nodejs')

var sigsci = new Sigsci({
    path: '/var/run/sigsci.sock'
    // see other options below
})
// Creating a Server
const Hapi = require('hapi')
const server = Hapi.Server({
    port: 8085
});
// Add SigSci request lifecycle methods, e.g.
// server.route({
//  method: ['GET', 'POST', 'PUT', 'PATCH', 'DELETE'],
//  path: '/dynamic/response',
//  handler: responseHandler
// })

server.ext('onRequest', sigsci.hapi14())
server.on('response', sigsci.hapiEnding())
server.start((err) => {
 if (err) {
   throw err
 }
 console.log('Server running at:', server.info.uri)
})
```

Node.js KOA

At the top of your application, add the following:

```
const Koa = require('koa');
const Router = require('koa-router');
var Sigsci = require('sigsci-module-nodejs')
const server = new Koa();
const router = new Router();
var sigsci = new Sigsci({
    path: '/var/run/sigsci.sock'
// see other options below
})

// add lifecycle methods here
// var dispatcher = async function (ctx) {
//     let req = ctx.req
//     let res = ctx.res
       // add your code here
// }

// setup your endpoints here
// router.all('/response', dispatcher)

server.use(sigsci.koa())
server.use(router.routes())

server.listen(8085);
```

Configuration

You can module configuration options directly in the `Sigsci` object:

```
var sigsci = new Sigsci({
path: '/var/run/sigsci.sock'
...
})
```

Name	Description
`port`	Specifies the port to connect to the agent via TCP. If this is set, the `path` parameter is ignored.
`host`	Specifies the IP address to connect to the agent via TCP (optional). Default: `localhost`
`path`	Specifies the Unix Domain Socket to connect to the agent via UDS.
`socketTimeout`	Number of milliseconds to wait for a response from the agent. After this time the module allows the original request to pass (i.e. fail open).
`maxPostSize`	Controls the maximum size in bytes of a POST body that is sent to the agent. If the body is larger than this value, the post body is not sent to the agent. This allows control over performance (larger POST bodies take longer to process) and to prevent DoS attacks.
`log`	The function to use to log error messages. By default it will be something to the effect of: `function (msg) { console.log(util.format('SIGSCI %s', msg))`
`anomalySize`	Threshold between calculated and reported context response size. Default: `524288`
`anomalyDurationMillis`	Internal post processing duration limit. Default: `1000`
`timeoutMillis`	Fail open timeout for Agent decision engine. Default: `200`
`expectedContentTypes`	A space delimited list of custom content-types to support.
`extendContentTypes`	A boolean, enables extended content inspection. Default: `false`

Additional details and default values are available in the `SigSci.js` file.

Next Steps

Verify the agent and module installation and explore module options.

📄	**Red Hat Apache Module Install**
📅	Last updated: 2024-08-02
🔗	/en/ngwaf/redhat-apache-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Prerequisites

If you haven't already, add the Red Hat package repository on the host that will contain the module.

Install the Apache module

1. Install the Next-Gen WAF Apache module.
   - Red Hat CentOS 9 / RHEL 9

     ```
     $ sudo yum install sigsci-module-apache
     ```

   - Red Hat CentOS 8 / RHEL 8

     ```
     $ sudo yum install sigsci-module-apache
     ```

   - Red Hat CentOS 7 / RHEL 7

     ```
     $ sudo yum install sigsci-module-apache
     ```

   - Red Hat CentOS 6 / RHEL 6 with Apache 2.4

     ```
     $ sudo yum install sigsci-module-apache24
     ```

   - Red Hat CentOS 6 / RHEL 6 with Apache 2.2 64-bit

     ```
     $ sudo yum install sigsci-module-apache
     ```

   - Red Hat CentOS 6 / RHEL 6 with Apache 2.2 32-bit

     ```
     $ sudo yum install sigsci-module-apache22
     ```

2. Add the following line to your Apache configuration file (`apache2.conf` or `httpd.conf`) after the **Dynamic Shared Object (DSO) Support** section to enable the Next-Gen WAF Apache module:

   ```
   LoadModule signalsciences_module /etc/httpd/modules/mod_signalsciences.so
   ```

3. Restart Apache.
   - Red Hat CentOS 9 / RHEL 9

     ```
     $ sudo systemctl restart httpd
     ```

   - Red Hat CentOS 8 / RHEL 8

     ```
     $ sudo systemctl restart httpd
     ```

   - Red Hat CentOS 7 / RHEL 7

     ```
     $ sudo systemctl restart httpd
     ```

   - Red Hat CentOS 6 / RHEL 6

     ```
     $ sudo service httpd restart
     ```

4. Verify the agent and module installation.

Apache module fails to load

NOTE

The following information has been confirmed for RHEL/CentOS deployments using the default yum module installation.

The default install location for the SigSci Apache module is `/etc/httpd/modules` but some systems may have Apache loading it's config from a non-standard directory. When this happens the `yum` installer will not install `mod_signalsciences.so` to `/etc/httpd/modules` but instead to the following path:

`/usr/lib64/httpd/modules/mod_signalsciences.so`

If Apache fails to restart after the module installation because it cannot locate `mod_signalsciences.so` change the LoadModules line in `httpd.conf` to reflect the correct location on the target system.

Next steps

Once you've installed the Apache module, you can explore different module configuration options.

SELinux support

Last updated: 2023-01-19

/en/ngwaf/selinux

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Security-Enhanced Linux (SELinux) is a Linux kernel security module that provides a mechanism for supporting access control security policies, including United States Department of Defense-style mandatory access controls (MAC).

All official CentOS Linux builds come pre-configured with SELinux enabled and set to enforcement mode. There are two approaches to running the agent on a system with SELinux enabled:

- Set SELinux to Permissive mode or disable SELinux completely
- Configure SELinux to allow the module and agent to communicate

Determine if SELinux is enabled in enforcement mode

System administrators may not be aware that SELinux is installed until they encounter an error similar to the following when trying to connect the module to the agent:

```
2016/05/11 22:16:29 [crit] 3193#3193: *10 connect()
to unix:/var/run/sigsci.sock failed
(13: Permission denied), client: 192.0.2.209,
server: localhost, request: "GET /ping HTTP/1.1",
host: "192.0.2.209"
```

To check the status of SELinux, run the command `sestatus`, which produces output similar to the following:

```
$ sestatus
SELinux status: enabled
SELinuxfs mount: /sys/fs/selinux
SELinux root directory: /etc/selinux
```

```
Loaded policy name: targeted
Current mode: enforcing
Mode from config file: enforcing
Policy MLS status: enabled
Policy deny_unknown status: allowed
Max kernel policy version: 28
```

Set SELinux to Permissive mode or disable SELinux completely

The main configuration file for SELinux is `/etc/selinux/config`. Run the following command to view its contents:

```
$ cat /etc/selinux/config
```

The output will look something like this:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
# enforcing - SELinux security policy is enforced.
# permissive - SELinux prints warnings instead of enforcing.
# disabled - No SELinux policy is loaded.
SELINUX=enforcing
# SELINUXTYPE= can take one of these two values:
# targeted - Targeted processes are protected,
# minimum - Modification of targeted policy. Only selected processes are protected.
# mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

You want to either disable or switch to permissive (logging) mode. A conservative first step may be changing the configuration line to `SELINUX=permissive` if you want to preserve the logging. You will then need to reboot the system entirely for this change to be applied and then verify the new status for SELinux with another `sestatus` command.

Configure SELinux to allow the module and agent to communicate

Assuming the system has SELinux in permissive or enforced mode and assuming the SELinux writes to the `/var/log/audit/audit.log` file (other Unix flavors potentially write it elsewhere):

1. Log in as root to install the Next-Gen WAF agent and module.
2. Restart the web server and start the agent.
3. Browse the website to cause the module to invoke communications with the agent.
    - If in permissive mode, the audit log will get populated with messages of what would be blocked.
    - If in enforced mode, the same log messages will be appended to the audit log.
4. From your home directory, run the following command to create a `.te` file and a `.pp` (policy package) file: `cat /var/log/audit/audit.log | audit2allow -M sigsci > sigsci.te`.
5. Install the policy package file with `semodule -i sigsci.pp`.
6. Verify the policy was installed and loaded by running the following command: `semodule -l`. The output will look something like this:

    ```
    ## Policy definition for SigSci Agent package on Rocky Linux 8
    ## Use make sigsci.pp (with a link to the SELinux policy devel Makefile)
    ## Requires policycoreutils-devel package
    ```

```
## make -f /usr/share/selinux/devel/Makefile sigsci.pp
## to create a module. Then run semodule -i sigsci.pp to install it

policy_module(sigsci, 1.0)
require {
type httpd_t;
}
#============= httpd_t =============
files_write_generic_pid_sockets(httpd_t)
```

7. Restart the web server and Next-Gen WAF agent.

Upgrading the Apache module

Last updated: 2023-01-10

/en/ngwaf/upgrading-apache

IMPORTANT

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TIP

Check the Apache changelog to see what's new in the Apache Module.

Our Module package is distributed in our package repositories. If you haven't already, configure our repository on your system.

Upgrading the Apache module on Ubuntu/Debian systems

1. Upgrade the Apache module package.

```
$ sudo apt-get update
$ sudo apt-get install sigsci-module-apache
```

2. Restart your Apache service.

Upgrading the Apache module on Red Hat/CentOS systems

1. Upgrade the Apache module package

RHEL 6/CentOS 6

```
$ sudo yum update
```

Apache 2.2:

```
$ sudo yum install sigsci-module-apache
```

Apache 2.4:

```
$ sudo yum install sigsci-module-apache24
```

RHEL 7/CentOS 7

```
$ sudo yum update
$ sudo yum install sigsci-module-apache
```

2. Restart your Apache service.

Upgrading the NGINX module

Last updated: 2024-06-21

/en/ngwaf/upgrading-nginx

IMPORTANT

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We update our NGINX module after a mainline NGINX release occurs. We will expedite a release when there are exceptions (e.g., critical vulnerability). Our Compatibility and requirements guide lists the distributions our NGINX module has packages available for.

TIP

Check the NGINX module release notes to see what's new in the NGINX module.

Upgrading the module on Alpine Linux systems

To upgrade the Next-Gen WAF NGINX module on Alpine Linux systems, follow these steps:

1. Upgrade the NGINX Alpine Linux module package.

```
$ apk update
$ apk add nginx-module-sigsci-nxo-<nginx-version>
```

Be sure to replace `<nginx-version>` with your NGINX version.

2. Restart your NGINX service.

Upgrading the module on RHEL and derivative systems

To upgrade the Next-Gen WAF NGINX module on Red Hat Enterprise Linux (RHEL) and its derivative (e.g., CentOS) systems, follow these steps:

1. Upgrade the NGINX Lua module package.

```
$ sudo yum update
$ sudo yum install sigsci-module-nginx nginx-module-lua
```

2. Restart your NGINX service.

1. Upgrade the NGINX Lua module package.

```
$ sudo yum update
$ sudo yum install sigsci-module-nginx nginx111-lua-module
```

2. Restart your NGINX service.

1. Upgrade the NGINX Lua module package.

```
$ sudo yum update
$ sudo yum install sigsci-module-nginx nginx110-lua-module
```

2. Restart your NGINX service.

1. Upgrade the NGINX Lua module package.

```
$ sudo yum update
$ sudo yum install sigsci-module-nginx
```

2. Restart your NGINX service.

Upgrading the module on Ubuntu and Debian systems

To upgrade the Next-Gen WAF NGINX module on Ubuntu and Debian systems, follow these steps:

1. Upgrade the NGINX Lua module package.

```
$ sudo apt-get update
$ sudo apt-get install sigsci-module-nginx nginx-module-lua
```

2. Restart your NGINX service.

1. Upgrade the NGINX Lua module package.

```
$ sudo apt-get update
$ sudo apt-get install sigsci-module-nginx nginx111-lua-module
```

2. Restart your NGINX service.

1. Upgrade the NGINX Lua module package.

```
$ sudo apt-get update
$ sudo apt-get install sigsci-module-nginx nginx110-lua-module
```

2. Restart your NGINX service.

1. Upgrade the NGINX Lua module package.

```
$ sudo apt-get update
$ sudo apt-get install sigsci-module-nginx
```

2. Restart your NGINX service.

Windows Apache Module Install

Last updated: 2023-12-06

/en/ngwaf/windows-apache-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Requirements

- Windows 10, Windows Server 2016, or higher (64-bit)
- Apache 2.4 (64-bit)
- Verify you have installed the Next-Gen WAF Windows Agent. This will ensure the appropriate folder structure is in place on your file system.

Installation

1. Download the Apache module from:

   https://dl.signalsciences.net/sigsci-module-apache/sigsci-module-apache_latest.zip

2. Extract the Next-Gen WAF Apache Module from the `.zip` archive to your Apache modules directory, replacing `PATH-TO-APACHE` with the path to your Apache installation:

   ```
   $ unzip sigsci-module-apache_latest.zip
   $ copy mod_sigsci.so PATH-TO-APACHE\modules\
   ```

3. Add the following line to your Apache configuration file (`httpd.conf`) after the **Dynamic Shared Object (DSO) Support** section to enable the Next-Gen WAF Apache module:

   ```
   LoadModule signalsciences_module modules/mod_sigsci.so
   ```

4. Test to confirm the configuration is correct, replacing `MY-SERVICE-NAME` with the name of your service:

   ```
   $ httpd.exe -n "MY-SERVICE-NAME" -t
   ```

5. Start the Apache service as normal, for example:

   ```
   $ net start Apache2.4
   ```

   Or restart the Apache service with the following example command, replacing `MY-SERVICE-NAME` with the name of your service:

   ```
   $ httpd.exe -k restart -n "MY-SERVICE-NAME"
   ```

Next Steps

Verify the agent and module installation and explore module options.

Ubuntu Apache Module Install

Last updated: 2024-02-13

/en/ngwaf/ubuntu-apache-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Prerequisites

If you haven't already, add the Ubuntu package repository on the host that will contain the module.

Install the Apache module

1. Install the Next-Gen WAF Apache module.

```
$ sudo apt-get install sigsci-module-apache
```

2. Enable the Apache module.

```
$ sudo a2enmod signalsciences
```

If `a2enmod` is not available, add the following line to your Apache configuration file (`apache2.conf` or `httpd.conf`) after the **Dynamic Shared Object (DSO) Support** section to enable the Next-Gen WAF Apache module:

```
LoadModule signalsciences_module /usr/lib/apache2/modules/mod_signalsciences.so
```

3. Restart the Apache web service.

```
$ sudo service apache2 restart
```

Next steps

Verify the agent and module installation and explore module options.

Troubleshooting module-agent deployments

Last updated: 2024-08-02

/en/ngwaf/troubleshooting-module-agent-deployments

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Agent or module is not detected

When the module and agent have been successfully installed you will be able to see them reporting within the Agents page of the control panel. In many cases, customers first realize there may be a problem with their configuration when they have started the agent and everything appears to be running normally but the agent or module are not listed correctly.

Agent is not detected

Although the agent appears to be running, it's possible for the agent to not be listed in the Agents page of the control panel. This is typically due to either the agent being misconfigured or a connection issue between the agent and our cloud-hosted backend. Run through the following troubleshooting steps:

1. Check if the agent is running:

   ```
   $ ps -aef | grep sigsci-agent
   ```

2. Try restarting the agent with:

   ```
   $ sudo restart sigsci-agent
   ```

3. If the agent is running, ensure communication between the agent and the cloud-hosted backend isn't blocked by your firewall. The Next-Gen WAF agent communicates with the following endpoints outbound via port 443/TCP:

   - `c.signalsciences.net`
   - `wafconf.signalsciences.net`
   - `sigsci-agent-wafconf.s3.amazonaws.com`
   - `sigsci-agent-wafconf-us-west-2.s3.amazonaws.com`

   Additional information about firewall restrictions can be found in our network requirements guide.

4. Review any log files for error messages:

   ```
   $ ls -l /var/log/sigsci-agent
   ```

   ```
   $ tail -n 20 /var/log/sigsci-agent
   ```

5. If the agent is not starting and nothing is written to the log files, run the agent manually and check what messages are displayed:

   ```
   $ stop sigsci-agent
   $ /usr/sbin/sigsci-agent
   ```

6. Run the debug tool and send the output, along with a detailed description of the issue and all log files, to our Support team.

   ```
   $ /usr/sbin/sigsci-agent-diag
   ```

Module is not detected

Alternatively, although the control panel may show that the agent is reporting, the module may be listed as "undetected". There are a few possible causes to this scenario and the following steps are intended to help troubleshoot this condition:

1. It is necessary to send a request through the system in order for the module to report to the agent. Generating a manual 404 to the server in question by requesting a page that doesn't exist is the easiest way to start seeing traffic validated on the control panel. Allow up to 30 seconds from the time of the request for the module to report and the control panel to display the anomaly.

2. Confirm the steps for module installation specific to your web server, and any optional configuration changes, have been made correctly.

3. Restart the web server after module installation.

4. If the module is still not reporting and no data is showing in the control panel, check for issues related to domain socket permissions. By default, the agent and module are configured to use `/var/run/sigsci.sock` as the local domain socket under Linux operating systems and will require sufficient privileges to run properly:

    - If using Red Hat/CentOS, check for SELinux:

      ```
      $ sestatus
      ```

      If SELinux is enabled, refer to the SELinux support guide.

    - If using Ubuntu, check for AppArmor and adjust security profiles if necessary:

      ```
      $ sudo apparmor_status
      ```

5. If the module is still not reporting, reach out to our Support team with a detailed description of the issue and the following logs:

    - NGINX or Apache `error.log`, IIS error logs (default `%SystemDrive%\inetpub\logs\LogFiles`)

    - If NGINX is your web server, capture the output of:

      ```
      $ /opt/sigsci/bin/check-nginx
      ```

    - Collect the configuration files `/etc/sigsci/agent.conf` and if running NGINX `/etc/nginx/nginx.conf` or if running Apache your `httpd.conf` normally located in `/etc/httpd/conf/httpd.conf`.

Data is not showing in the control panel but the agent and module are running

If both the agent and module are reporting as active within the control panel, but no data is displayed when requests are processed, then the system time on the agent is likely out of sync. This can cause events to be reported at times significantly in the past or future. This is especially likely in a dev environment using a VM or container that gets in a paused state and is not updated via cron.

To determine whether this condition is occurring:

1. Log in to the Next-Gen WAF control panel.

2. From the **Sites** menu, select a site if you have more than one site.

3. Click **Agents** in the navigation bar.

4. Click on the name of the agent.

5. Inspect the graph for **Agent clock skew (seconds)**. The agent clock skew should not be more than a few seconds. If this is a large value updating the system time and maintaining ntpd should rectify the issue.

Requests in the control panel aren't reporting any signals

Confirm your operating system and web server are supported

Check out our supported versions to confirm which operating system and web server versions are supported.

Confirm your agent and module are running correctly

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Agents** in the navigation bar.
4. In the **Status** column, confirm the agent is listed as online.
5. In the **Module** column, confirm the module is listed as detected.
6. Click on the name of the agent.
7. Review the listed agent metrics to confirm the control panel is receiving telemetry from the agent. If the control panel is not receiving telemetry from the agent, some metrics will be listed as `Unknown` or `0 ms`.
8. Confirm agent clock skew.

Check NGINX

If NGINX is your web server, you can confirm that NGINX, the agent, and the module are configured correctly by running the following:

```
$ /opt/sigsci/bin/check-nginx
```

Contact Support

If you have confirmed any issues with the previous steps, gather any necessary data and reach out to our Support team for assistance.

1. Enable verbose debug logging by adding the following line to your agent configuration file (by default at `/etc/sigsci/agent.conf`):

   ```
   debug-log-all-the-things = true
   ```

2. Restart the agent and collect the verbose log entries.
3. Generate an agent diagnostic package by running the following command:

   ```
   $ sigsci-agent-diag
   ```

4. Collect the agent configuration file located by default at `/etc/sigsci/agent.conf`.
5. Collect server configuration files:
   - NGINX: `/etc/nginx/nginx.conf`
   - Apache: `/etc/httpd/conf/httpd.conf`
   - IIS: `%SystemDrive%\System32\inetsrv\config\applicationHost.config`
6. Collect server error log files (if applicable):
   - NGINX: `/var/log/nginx/error`
   - Apache: `/var/log/apache2/error.log`
   - IIS: `%SystemDrive%\inetpub\logs\LogFiles`

7. If NGINX is your web server, collect the output of:

```
$ /opt/sigsci/bin/check-nginx
```

8. Reach out to our Support team with a detailed description of the issue and all collected logs and configuration files.

Subcategory: PaaS deployment

These articles describe set up and deployment of the Next-Gen WAF agent using one of our compatible Platform as a Service (PaaS) platforms.

AWS Lambda

Last updated: 2024-06-11

/en/ngwaf/aws-lambda

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Fastly's Next-Gen WAF supports any Lambda function on Amazon Web Services (AWS). Our Lambda extension acts as an HTTP proxy between the AWS Lambda service and runtime and will allow or block traffic after inspecting the JSON payload of the web API event used by the Lambda runtime.

The Fastly WAF Lambda extension is configured by using the AWS Secrets Manager. You can download Fastly's WAF binaries to create a layer that a Lambda function can use.

Prerequisites

Copy the agent keys for your site (also known as workspace). You will need them when configuring the AWS Secrets Manager.

Recommendations

For reduced latency and improved performance, we recommend setting the memory for your Lambda function to at least 512 MB.

How the Fastly WAF extension works

The Lambda function invokes the Fastly WAF extension, which then follows the life cycle of the execution environment.

Life cycle phase	Description
`init`	The Lambda function creates or unfreezes the execution environment.
`restore`	Not applicable. The SnapStart function is never invoked.
`invoke`	The Lambda function invokes the Fastly WAF extension and then the Next-Gen WAF agent: • uses your active rules and site alerts to determine whether to allow, block, rate limit, or tag requests. • tags requests and redacts sensitive information from requests. • allows, blocks, and rate limits requests.

Life cycle phase	Description
	• uploads redacted request and response data to the cloud engine per our data storage policy and downloads new rules and configurations from the cloud engine every 30 seconds.
`shutdown`	The Lambda function shuts down the runtime and alerts the Fastly WAF extension so it can stop cleanly. The Next-Gen WAF agent uploads redacted request and response data to the cloud engine per our data storage policy.

Configure the AWS Secrets Manager

1. Log in to the AWS Management Console.

2. From the **Services** menu, select **Security, Identify, & Compliance** and then select **Secrets Manager**.

3. Click **Store a new secret**.

4. For the Secret type, select **Other type of secret**. This option allows you to create a secret that can store credentials or other information by defining key-value strings.

5. In the **Key/value pairs** fields, enter your agent keys:

Key	Value
`SIGSCI_ACCESSKEYID`	`accesskeyid` from the Next-Gen WAF control panel
`SIGSCI_SECRETACCESSKEY`	`secretaccesskey` from the Next-Gen WAF control panel

6. Click **Next**.

7. In the **Secret name** and **Description** fields, enter a human-readable name and description for the secret (e.g., `Fastly secret for Lambda extension`).

8. Locate the **Execute role** of your Lambda function:

   - In another tab, log in to the AWS Management Console.
   - From the **Services** menu, select **Compute** and then select **Lambda**.
   - Select your Lambda function.
   - Click **Configuration**.
   - From the sidebar, click **Permissions** and then click the role name for your Lambda function in the Execution role area.
   - From the Identity and Access Management (IAM) page that appears, copy the ARN displayed on the page.

9. Back on the Configure secret page in the AWS Management Console, click **Edit permissions**.

10. Modify the configuration shown below to allow your Lambda function role to access this secret.

```
{
    "Version" : "2012-10-17",
    "Statement" : [ {
        "Effect" : "Allow",
        "Principal" : {
            "AWS" : "arn:aws:iam::role/service-role/YOUR_LAMBDA_FUNCTION_ROLE"
        },
        "Action" : "secretsmanager:GetSecretValue",
        "Resource" : "*"
    } ]
}
```

11. Click **Save** and then click **Next**.

12. Click **Next**.

13. Review the secret and then click **Store**.

Configure the Fastly WAF Lambda extension

1. Log in to the AWS Management Console.

2. Click **Services**. Select **Compute**, then select **Lambda**.

3. Select your Lambda function.

4. Click **Configuration**.

5. Click **Environment variables**.

6. Click **Edit.**

7. Add the following variables in the **Key/value pairs** fields:

Key	Value
`SECRET_ARN`	Secret ARN of the newly created secret Example: arn:aws:secretsmanager:us-west-2:secret:lambda_secrets-kMxqBg
`SECRET_REGION`	Region where the newly created secret resides Example: us-west-2
`AWS_LAMBDA_EXEC_WRAPPER`	`/opt/sigsci-wrapper`
`SIGSCI_KEYSTORE_WRAPPER`	`/opt/fetch-aws-secrets` Only needed if using AWS Secrets Manager

8. Click **Save**.

Install the Fastly WAF Lambda extension

1. Download the latest version of the Agent for your particular architecture or use the public regional layer.

   x86_64

   ```
   AGENT_VER=`curl --fail  -Ss https://dl.signalsciences.net/sigsci-agent/VERSION`
   curl --fail -O -Ss https://dl.signalsciences.net/sigsci-agent/${AGENT_VER}/linux/sigsci-agent_${AGEN
   ```

   arm64

   ```
   AGENT_VER=`curl --fail  -Ss https://dl.signalsciences.net/sigsci-agent/VERSION`
   curl --fail -O -Ss https://dl.signalsciences.net/sigsci-agent/${AGENT_VER}/linux/sigsci-agent_${AGEN
   ```

   Lambda Layers

   `arn:aws:lambda:us-east-1:303561444828:layer:sigsci-agent-lambda_amd64:16` `arn:aws:lambda:us-east-1:303561444828:layer:sigsci-agent-lambda_arm64:25`

`arn:aws:lambda:us-east-2:303561444828:layer:sigsci-agent-lambda_amd64:16`

`arn:aws:lambda:us-east-2:303561444828:layer:sigsci-agent-lambda_arm64:16`

`arn:aws:lambda:us-west-1:303561444828:layer:sigsci-agent-lambda_amd64:16`

`arn:aws:lambda:us-west-1:303561444828:layer:sigsci-agent-lambda_arm64:16`

`arn:aws:lambda:us-west-2:303561444828:layer:sigsci-agent-lambda_amd64:16`

`arn:aws:lambda:us-west-2:303561444828:layer:sigsci-agent-lambda_arm64:16`

2. If the Lambda Agent is configured to retrieve secrets from the AWS Secrets Manager, add the appropriate regional layer, making sure this layer is ordered before the lambda extension.

`arn:aws:lambda:us-east-1:303561444828:layer:sigsci-get-aws-secrets_amd64:1`

`arn:aws:lambda:us-east-1:303561444828:layer:sigsci-get-aws-secrets_arm64:1`

`arn:aws:lambda:us-east-2:303561444828:layer:sigsci-get-aws-secrets_amd64:1`

`arn:aws:lambda:us-east-2:303561444828:layer:sigsci-get-aws-secrets_arm64:1`

`arn:aws:lambda:us-west-1:303561444828:layer:sigsci-get-aws-secrets_amd64:1`

`arn:aws:lambda:us-west-1:303561444828:layer:sigsci-get-aws-secrets_arm64:1`

`arn:aws:lambda:us-west-2:303561444828:layer:sigsci-get-aws-secrets_amd64:1`

`arn:aws:lambda:us-west-2:303561444828:layer:sigsci-get-aws-secrets_arm64:1`

3. Publish the Lambda agent zip file as a layer *if downloaded*.

> NOTE
>
> An example is shown below using the AWS Command Line Interface. The layer name and compatible-runtimes are at your discretion.

```
$ aws lambda publish-layer-version --layer-name "my-sigsci-lambda-layer" --zip-file "fileb://si
```

4. Once the layer is successfully published, return to your Lambda function page within AWS.

5. Click **Add a layer** towards the bottom of the page in the **Layers** pane.

6. Add the layer that matches the published layer-name in the previous steps.

7. Click **Save**.

Troubleshooting

Take note of the ordering of the layers. If using the `sigsci-get-aws-secrets` layer, make sure it's ordered before the Lambda extension.

All of our agent logging can be found in the Lambda logs in AWS' CloudWatch. On the Lambda function page, select **Monitor**, then **View logs in CloudWatch**. Logs can be viewed and captured here.

In development environments, the Fastly WAF Lambda extension can use the `SIGSCI_ACCESSKEYID` and `SIGSCI_SECRETACCESSKEY` key/value pairs as environment variables in the Lambda function configuration to avoid using the AWS Secrets Manager. However, this is not recommended for production environments.

Azure App Service Site Extension

Last updated: 2024-02-20

/en/ngwaf/azure-app-service

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

NOTE

The Next-Gen WAF site extension for Azure App Service does not support Azure Functions.

The Azure site extension adds the Next-Gen WAF to any IIS web application hosted on Azure App Service.

The Azure site extension downloads and installs the Next-Gen WAF agent and IIS module. The extension also registers the IIS module to the IIS web server in Azure App Service by generating the XML transformation file, `applicationHost.xdt`. XML transformations are currently the only way to edit the IIS configuration file, `applicationHost.config`.

The Next-Gen WAF agent and module for IIS are configured by using environment variables. Environment variables are set in the web app configuration in the Azure Portal.

Module and agent binaries are extracted into a directory in the App Service environment with the name derived from the downloaded zip file. Agent and module binaries may not be deleted if the site is running.

Prerequisites

Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Access Keys configuration

Before adding the Next-Gen WAF site extension, you must first set the Access Key and Secret Key for the Next-Gen WAF agent by setting environment variables in the application settings on https://portal.azure.com/.

1. Log in to the Azure Portal.
2. Click **App Services**.
3. Select your web app.
4. Click **Configuration**.
5. Click **Application settings**.
6. Click **New application setting**.
7. In the New Application Setting menu page, add your site's agent keys as two name/value pairs:

   ```
   $ Name: SIGSCI_ACCESSKEYID
   $ Value: <accesskeyid from the Next-Gen WAF control panel>

   $ Name: SIGSCI_SECRETACCESSKEY
   $ Value:<secretaccesskey from the Next-Gen WAF control panel>
   ```

8. Click **Save**.

9. Click on **Overview** in the side bar.

10. Click **Stop** and then **Start** to restart the web app.

Install the WAF site extension

> NOTE
>
> The site extension will take a few minutes to download and install. During this time, the web application may be unavailable or display a `502` error until the site extension is installed.

1. Log in to the Azure Portal.

2. Click **App Services**.

3. Select your web app.

4. Click **Overview** in the side bar.

5. Click **Stop** to stop the web app.

6. Click **Extensions** in the sidebar.

7. Click **Add**.

8. Click **Choose Extension**.

9. Select the **Signal Sciences WAF**.

10. Click **OK**.

11. Click **Overview** in the side bar.

12. Click **Start** to start your web app.

Managing the WAF site extension

Follow these steps when managing the WAF site extension.

Uninstalling the WAF site extension

1. Log in to the Azure Portal.

2. Click **App Services**.

3. Select your web app.

4. Click **Overview** in the side bar.

5. Click **Stop** to stop the web app.

6. Click **Extensions** in the sidebar.

7. Select the **Signal Sciences WAF**.

8. Click **Delete**.

Upgrading the Next-Gen WAF agent and module

There are two methods for upgrading the Next-Gen WAF agent and module:

- reinstalling the extension

- using the Azure CLI

Reinstalling the WAF site extension

In the Azure Portal, uninstall and reinstall the WAF site extension. When the extension is reinstalled, the latest version of the Next-Gen WAF agent and IIS module will be downloaded and installed.

Using the Azure CLI

Open the Azure CLI and run the `install.cmd` script in the site extension directory. This method can also be used in a PowerShell script for automating the upgrade of multiple agents.

1. Log in to the Azure Portal.
2. Click **App Services**.
3. Select your web app.
4. Click on **Console** in the sidebar.
5. In the Windows `cmd` shell run the install script:

   ```
   cd D:\home\SiteExtensions\SignalSciences.Azure.Site.Extension
   install.cmd
   ```

Enabling agent auto-update

Create a WebJob and an Azure Automation runbook to look for a new version of the agent and update the agent when a new version is available.

To create the WebJob:

1. Using command prompt, copy the following commands to locally create a bash script with extension (*.sh) that will be uploaded to the Azure Portal.

   ```
   cd D:\\home\\SiteExtensions\\SignalSciences.Azure.Site.Extension
   ./install.bash
   ```

2. Navigate to the Azure portal.
3. Under **Settings**, click **WebJobs**
4. From the WebJobs page, click **Add**.
5. Fill out the fields to create a new WebJob as follows:
   - **Name** - enter a name for the WebJob.
   - **File Upload** - click **Browse** to browse to navigate to the bash script you created on your system using the file picker.
   - **Type** - select **Triggered**.
   - **Triggers** - enter **Manual**.
6. Click **Create WebJob**.
7. Run the WebJob to ensure successful execution.

To create an Azure Automation runbook:

1. Using the Azure portal, navigate to your Azure Automation account or create an account if you don't already have one.
2. Under **Account Settings**, click **Identity**.
3. Click **Azure role assignments**.

4. Click **Add role assignment**.
5. Fill out the fields to create a new role assignment as follows:
    - **Scope** - select **Resource group**
    - **Resource group** - select a resource group.
    - **Role** - select **Contributor**.
6. Click **Save**.
7. Under **Automation**, click **Runbooks**.
8. Click **Create a runbook**.
9. Fill out the fields to create a new runbook as follows:
    - **Name** - enter a name for the runbook.
    - **Runbook type** - select **PowerShell**.
    - **Runtime version** - select version 5.1.
10. Click **Create**.
11. Copy the code below and paste in the editor pane, being sure to update with your resource group and web app names:

```
Connect-AzAccount -Identity
Start-AzWebAppTriggeredWebJob -ResourceGroupName MyResourceGroupName -AppName MyWebAppName -Nam
Restart-AzWebApp -ResourceGroupName MyResourceGroupName -Name MyWebAppName
```

12. *(Optional)* Open the Test pane to run a test.
13. Click **Publish**.
14. Under **Shared Resources**, click **Schedules**.
15. Click **Add a schedule**.
16. To link a schedule to your runbook, click **Add a schedule**.
17. Fill out the fields to create a schedule as follows:
    - **Name** - enter a name for the schedule.
    - **Field name** - set the time you want it to run each month
    - Click **Recurring** and select **Day** from the menu.
18. Click **Create**.

Troubleshooting

- All private site extensions can be disabled by setting **WEBSITE_PRIVATE_EXTENSIONS** to `0` in Application Settings.

    NOTE

    Restart the web app after saving the setting to reflect the changes.

- Windows event log can be viewed at `https://APP.scm.azurewebsites.net/DebugConsole/?shell=powershell`, replacing `APP` with the name of your web app.

    Click on **LogFiles** and select **eventlog.xml**.

Heroku installation

Last updated: 2024-02-20

/en/ngwaf/heroku

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF agent can be deployed with Heroku. The installation process is compatible with any of the language buildpacks.

Prerequisites

Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Installation

1. Log in to Heroku.

```
$ heroku login
```

2. Add the Signal Sciences buildpack to your application settings.

```
$ heroku buildpacks:add --index 1 https://dl.signalsciences.net/sigsci-heroku-buildpack/sigsci-herok
```

NOTE

The Signal Sciences buildpack must run first or before your application's primary buildpack.

3. In your `Procfile` file, add `sigsci/bin/sigsci-start` so it precedes your existing start command:

```
web: sigsci/bin/sigsci-start YOUR-APPLICATION'S-START-COMMAND
```

Example:

```
web: sigsci/bin/sigsci-start node index.js
```

4. Add the Next-Gen WAF agent keys to your application's environment variables.

```
$ heroku config:set SIGSCI_ACCESSKEYID=access-key-goes-here
$ heroku config:set SIGSCI_SECRETACCESSKEY=secret-key-goes-here
```

5. Deploy your application. Heroku applications are typically deployed with the following commands:

```
$ git add .
$ git commit -m "my comment here"
$ git push heroku main
```

Configuration

- Each time you deploy your application, Heroku will automatically assign a new random name for the agent. An agent name for each deployment can be specified by setting the `SIGSCI_SERVER_HOSTNAME` environment variable:

  ```
  $ heroku config:set SIGSCI_SERVER_HOSTNAME=agent-name
  ```

- Agent access logging can be enabled by setting the `SIGSCI_REVERSE_PROXY_ACCESSLOG` environment variable:

  ```
  $ heroku config:set SIGSCI_REVERSE_PROXY_ACCESSLOG /tmp/sigsci_access.log
  ```

- The buildpack will install the latest version of the Next-Gen WAF agent by default. You can specify which agent version to install by setting the `SIGSCI_AGENT_VERSION` environment variable:

  ```
  $ heroku config:set SIGSCI_AGENT_VERSION=1.15.3
  ```

Additional configuration options are listed on the agent configuration page.

IBM Cloud installation

Last updated: 2024-02-20

/en/ngwaf/ibm-cloud

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The Next-Gen WAF agent can be deployed with IBM Cloud application runtimes. The installation process is compatible with any of the language buildpacks.

This is a supply-buildpack for Cloud Foundry that provides integration with the Next-Gen WAF agent for any programming language supported by the platform, and requiring zero application code changes.

Prerequisites

Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Installation

1. Application developers will need to specify the buildpack with the `cf push` command:

   ```
   $ cf push YOUR-APP -b https://github.com/signalsciences/sigsci-cloudfoundry-buildpack.git -b AP UI
   ```

2. Set your agent's access key and secret using the `cf set-env` command. Replace `your-application-name` with the name of your application and replace `access-key-goes-here` and `secret-key-goes-here` with your agent keys:

   ```
   $ cf set-env your-application-name SIGSCI_ACCESSKEYID access-key-goes-here
   ```

```
$ cf set-env your-application-name SIGSCI_SECRETACCESSKEY secret-key-goes-here
```

3. Run `cf push` as you normally would to deploy your application.

Additional configuration options

The Next-Gen WAF agent can be configured with environment variables using the `cf` command, replacing `OPTION` and `VALUE` with the agent configuration option and its value:

```
$ cf set-env your-application-name OPTION "VALUE"
```

To have these changes take effect, you must at least re-stage your app:

```
$ cf restage your-application-name
```

Server hostname

Each time you deploy your application, IBM Cloud will automatically assign a new random name for the agent. To specify an agent name for each deployment, set the `SIGSCI_SERVER_HOSTNAME` environment variable:

```
$ cf set-env your-application-name SIGSCI_SERVER_HOSTNAME agent-name
```

Reverse proxy upstream

To define upstream hosts that the Agent will proxy requests to, use the `SIGSCI_REVERSE_PROXY_UPSTREAM` option, replacing `ip:port` with the upstream host IP address and port. This variable is optional with a default value of `127.0.0.1:8081`:

```
$ cf set-env your-application-name SIGSCI_REVERSE_PROXY_UPSTREAM ip:port
```

Access logs

To enable the agent's access logging, set the `SIGSCI_REVERSE_PROXY_ACCESSLOG` environment variable:

```
$ cf set-env your-application-name SIGSCI_REVERSE_PROXY_ACCESSLOG /tmp/sigsci_access.log
```

Agent version

By default the buildpack will install the latest version of the Next-Gen WAF agent. To specify which agent version to install, set the `SIGSCI_AGENT_VERSION` environment variable, replacing `version-number` with the specific version number to install:

```
$ cf set-env <application name> SIGSCI_AGENT_VERSION version-number
```

Health checks

Currently, IBM Cloud does not support HTTP health checks native to Cloud Foundry. If the application process crashes while the Next-Gen WAF agent is still running, IBM Cloud may not detect that the application is in an unhealthy state. The latest release of the Signal Sciences Cloud Foundry installer script can be configured to implement health checking that will stop the agent process if the application process is in an unhealthy state.

There are two environment variables that enable/configure health checking:

Set `SIGSCI_HC` to `true` to enable health checking:

```
$ cf set-env your-application-name SIGSCI_HC true
```

Set `SIGSCI_HC_CONFIG` to configure the health check. If you do not set this environment variable the default settings will be used.

The default settings configure the health check to:

- Check the `/` path every 5 seconds.
- If the agent listener returns a `502` for 5 sequential checks, then the health check fails.
- If the application process does not return a `200` response for 3 sequential tries, then the health check fails.

To specify custom health check settings, the `SIGSCI_HC_CONFIG` value is a string that consists of several fields delimited by `:`.

`SIGSCI_HC_CONFIG` fields:

```
<frequency>:<endpoint>:<listener status>:<listener warning>:<upstream status>:<upstream warning>
```

Field	Description
`frequency`	How often to perform the check in seconds (e.g., every 5 seconds)
`endpoint`	Which endpoint to check for both the listener and upstream process
`listener status`	The status code that not healthy and will trigger stopping the agent
`listener warning`	The number of times the check can fail before stopping the agent
`upstream status`	The status code that is healthy, any other code will trigger stopping the agent
`upstream warning`	The number of times the check can fail before stopping the agent

As an example, the default settings looks like:

```
5:/:502:5:200:3
```

Example custom health check settings

These example settings configure the health check to:

- Check the `/health.html` path every 10 seconds.
- If the agent listener returns a `502` for 10 sequential tries the health check fails.
- If the application process does not return a `200` for 5 sequential tries, the health check fails.

```
10:/health.html:502:10:200:5
```

Require agent

By default the installer script will allow the application to start even if the Next-Gen WAF agent fails to start. To ensure that your application never starts without being protected by the Next-Gen WAF agent, use the `SIGSCI_REQUIRED` environment variable:

```
$ cf set-env your-application-name SIGSCI_REQUIRED true
```

Additional configuration options

Additional configuration options are listed on the agent configuration page.

	OpenShift installation
	Last updated: 2023-03-29
	/en/ngwaf/openshift

IMPORTANT

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The Next-Gen WAF agent can be deployed on the Red Hat OpenShift Container Platform.

Installation

Installing the Next-Gen WAF module and agent in an OpenShift container is similar to a typical Red Hat installation. However, the primary difference for an OpenShift container installation is all processes must run under a *non root* account. To meet this requirement, the only extra step is configuring the module and agent to use a socket file that the non root account has read/write access to.

Installing the agent

Follow the Red Hat agent installation instructions.

Configuring the agent

There are three options for configuring the socket file location. Use the option that works best for your container build process. The examples below use a directory that a non root user would have access to. You can specify a different location, but ensure your non root user account has the read/write permissions to that location.

- You can set the `SIGSCI_RPC_ADDRESS` environment variable in your Dockerfile:

  ```
  ENV SIGSCI_RPC_ADDRESS unix:/tmp/sigsci.sock
  ```

- You can export the `SIGSCI_RPC_ADDRESS` environment variable in a script when your container starts:

  ```
  $ export SIGSCI_RPC_ADDRESS=unix:/tmp/sigsci.sock
  ```

- You can set the `rpc-address` configuration option in your agent configuration file (by default at `/etc/sigsci/agent.conf`):

  ```
  rpc-address="unix:/tmp/sigsci.sock"
  ```

Additional agent configuration options are listed on the agent configuration page.

Installing and configuring the module

Install and configure your module following one of these sets of instructions.

Apache module install

Follow the Apache module installation instructions for Red Hat.

In your Apache configuration file (`httpd.conf`), add the `AgentHost` directive after the Next-Gen WAF module is called:

```
AgentHost "/tmp/sigsci.sock"
```

NGINX module install

Follow the NGINX module installation instructions for Red Hat.

Update the `sigsci.agenthost` directive in the module's configuration file located at `/opt/sigsci/nginx/sigsci.conf`. You will need to remove `--` to uncomment the line:

```
sigsci.agenthost = "unix:/tmp/sigsci.sock"
```

Example Dockerfile

Below is an example section of a Dockerfile that installs the Next-Gen WAF agent and module (for Apache HTTPD Server) and configures them to use a socket file location accessible to a non root account.

```
...

# Add the package repository
RUN echo "[sigsci_release]" > /etc/yum.repos.d/sigsci.repo && \
    echo "name=sigsci_release" >> /etc/yum.repos.d/sigsci.repo && \
    echo "baseurl=https://yum.signalsciences.net/release/el/7/\$basearch" >> /etc/yum.repos.d/sigsc
    echo "repo_gpgcheck=1" >> /etc/yum.repos.d/sigsci.repo && \
    echo "gpgcheck=0" >> /etc/yum.repos.d/sigsci.repo && \
    echo "enabled=1" >> /etc/yum.repos.d/sigsci.repo && \
    echo "gpgkey=https://yum.signalsciences.net/release/gpgkey" >> /etc/yum.repos.d/sigsci.repo &&
    echo "sslverify=1" >> /etc/yum.repos.d/sigsci.repo && \
    echo "sslcacert=/etc/pki/tls/certs/ca-bundle.crt" >> /etc/yum.repos.d/sigsci.repo

# Install the Next-Gen WAF agent
RUN yum -y install sigsci-agent

# Configure the Next-Gen WAF agent
ENV SIGSCI_RPC_ADDRESS=unix:/tmp/sigsci.sock

# Install the Next-Gen WAF module
RUN yum install -y sigsci-module-apache

# Configure your web server with the Next-Gen WAF module
# In this example, we enable the module with Apache
RUN echo "LoadModule signalsciences_module /etc/httpd/modules/mod_signalsciences.so" >> /etc/httpd/
    echo 'AgentHost "/tmp/sigsci.sock"' >> /etc/httpd/conf/httpd.conf

...
```

PaaS overview

Last updated: 2022-10-26

/en/ngwaf/paas-install-intro

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About Platform as a Service (PaaS)

The Next-Gen WAF agent can be easily deployed by the PaaS platforms listed below. The installation process is compatible with any of the language buildpacks.

Platforms

- VMware Tanzu
- Heroku
- IBM Cloud
- OpenShift
- Azure App Service
- AWS Lambda

If you prefer to install the agent by OS, check out our Getting started with the agent guide.

	VMware Tanzu installation
	Last updated: 2024-02-20
	/en/ngwaf/vmware-tanzu

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You can deploy the Next-Gen WAF product within your VMware Tanzu Application Service by installing the Signal Sciences Service Broker service tile and then enabling the Next-Gen WAF agent.

Fastly services interoperate with non-Fastly services only when you configure them that way. We do not provide direct support for non-Fastly services. Software or services that enable integration with non-Fastly services (such as plug-ins, extensions, and add-ons) are available under their own terms. Read Fastly's Terms of Service for more information.

Prerequisites

Prior to installing the Signal Sciences Service Broker for VMware Tanzu, you must:

- Have a VMware Tanzu license and the following products installed:

Product	Supported versions
VMware Tanzu Application Service for VMs	2.3.3 and above
VMware Tanzu Operations Manager	2.3.0 and above
Stemcells (Windows)	2019.x

Product	Supported versions
Pivotal Stemcells (Ubuntu Xenial)	621.x
Stemcells (Ubuntu Jammy)	1.44.x

- Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Installing the Signal Sciences Service Broker

To install and configure the Signal Sciences Service Broker for VMware Tanzu, complete the following steps:

1. Download the product file from Pivotal Network.
2. In Tanzu Operations Manager, install and configure the Signal Sciences Service Broker tile. Be sure to set the `sigsci_buildpack_decorator` Buildpack Order to zero. This setting is located in the **Buildpack Settings** tab.

Enabling the Next-Gen WAF agent

After installing the Signal Sciences Service Broker tile, embed the Next-Gen WAF agent in your app code and bind the service to your Tanzu app via the Cloud Foundry Command Line Interface (cf CLI):

1. Run the `cf set-env` command in the cf CLI to set the `SIGSCI_ACCESSKEYID` environment variable:

   ```
   cf set-env tanzu-app-name "SIGSCI_ACCESSKEYID" "environment-variable-value"
   ```

   Be sure to replace `tanzu-app-name` with the name of your Tanzu app and `environment-variable-value` with your site's (also known as workspace's) Agent Access Key (`accesskeyid`).

2. Run the `cf set-env` command again to set the `SIGSCI_SECRETACCESSKEY` environment variable, being sure to update `tanzu-app-name` and to replace `environment-variable-value` with your site's (workspace's) Agent Secret Key (`secret-access-key`):

   ```
   cf set-env tanzu-app-name "SIGSCI_SECRETACCESSKEY" "environment-variable-value"
   ```

3. *(Optional)* Run the `cf set-env` command again to set additional environment variables, being sure to replace `tanzu-app-name`, `environment-variable-name`, and `environment-variable-value` with the appropriate information:

   ```
   cf set-env tanzu-app-name "environment-variable-name" "environment-variable-value"
   ```

   The environment variables that you can configure are as follows:

   - `SIGSCI_SERVER_HOSTNAME`: the hostname for each agent. This is what gets displayed in the Signal Sciences web interface. The hostname must be a unique name per instance.
   - `SIGSCI_AGENT_VERSION`: the version of the Next-Gen WAF agent. By default, the latest version of the Next-Gen WAF agent is installed. To specify a specific version, set the variable to the desired version number.
   - `SIGSCI_REQUIRED`: whether or not the app will start when the Next-Gen WAF agent fails to start. By default, the app can start when the Next-Gen WAF agent fails to start (e.g. invalid agent keys). To ensure your app doesn't start without the agent, set the variable to `true`.

4. Ensure your app process obtains its listening port from the `$PORT` environment variable.
5. Run the following command in the cf CLI to push the Signal Sciences buildpack and the final buildpack:

```
cf push tanzu-app-name -b sigsci_cloudfoundry_buildpack -b final_buildpack
```

Be sure to replace `tanzu-app-name` with the name of your app and `final_buildpack` with the name of your final buildpack.

> IMPORTANT
> In the command, the Signal Sciences buildpack must come before the final buildpack.

Subcategory: Kubernetes

These articles describe how to install the Next-Gen WAF on Kubernetes.

AWS Elastic Container Service (ECS) setup

Last updated: 2024-02-20

/en/ngwaf/aws-ecs

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You can deploy the Next-Gen WAF as a sidecar into AWS Elastic Container Service (ECS). This deployment option is compatible with both Fargate and EC2 launch types.

Prerequisites

Copy the agent keys for your site (also known as workspace). You will use these keys when setting up the Next-Gen WAF as a sidecar for AWS ECS.

Setting up AWS ECS

To set up the Next-Gen WAF as a sidecar for AWS ECS, consult Amazon's ECS tutorial and sidecar documentation. Be sure to:

- set the storage volume type for the task definition to **Bind Mount**.
- add a dedicated container for the Next-Gen WAF agent, being sure to set:
  - the **Name** field to `sigsci-agent`.
  - the **Image URI*** field to `signalsciences:sigsci-agent:<agent-version>`. You will need to replace `<agent-version>` with a specific agent version. If you set the variable to `latest`, AWS may upgrade the Next-Gen WAF agent at inconvenient times.
- set resource limits (`ulimits`) for the Next-Gen WAF agent container. The `nofile` soft and hard limits should be `65335`. Setting these limits too low (the default is `1024`) will cause more harm than if you set them too high.
- create an environment variable for the Agent Secret Key, being sure to set:
  - the **Key** field to `SIGSCI_SECRETACCESSKEY`.
  - the **Value** field to the `secretaccesskey` value that you copied while completing the installation prerequisites.
- create an environment variable for the Agent Access Key, being sure to set:
  - the **Key** field to `SIGSCI_ACCESSKEYID`.

  - the **Value** field to the `accesskeyid` value that you copied while completing the installation prerequisites.

- set the mount point path for the Next-Gen WAF agent container to `/var/run`. This is the default path for the Next-Gen WAF agent, but you can configure an alternative path.

Example JSON configuration

> NOTE
>
> You will need to replace all instances of `REPLACEME` in this example JSON.

```
{
    "ipcMode": null,
    "executionRoleArn": "arn:aws:iam::REPLACEME:role/ecsTaskExecutionRole",
    "containerDefinitions": [
        {
            "dnsSearchDomains": null,
            "logConfiguration": {
                "logDriver": "awslogs",
                "secretOptions": null,
                "options": {
                    "awslogs-group": "/ecs/sigsci-example",
                    "awslogs-region": "us-west-1",
                    "awslogs-stream-prefix": "ecs"
                }
            },
            "entryPoint": null,
            "portMappings": [
                {
                    "hostPort": 8080,
                    "protocol": "tcp",
                    "containerPort": 8080
                }
            ],
            "command": null,
            "linuxParameters": null,
            "cpu": 0,
            "environment": [
                {
                    "name": "apache_port",
                    "value": "8080"
                },
                {
                    "name": "sigsci_rpc",
                    "value": "/var/run/sigsci.sock"
                }
            ],
            "dnsServers": null,
            "mountPoints": [
                {
                    "readOnly": null,
                    "containerPath": "/var/run",
                    "sourceVolume": "run"
                }
            ],
            "workingDirectory": null,
            "secrets": null,
            "dockerSecurityOptions": null,
            "memory": null,
            "memoryReservation": null,
            "volumesFrom": [],
            "stopTimeout": null,
            "image": "signalsciences/sigsci-agent:latest",
            "startTimeout": null,
            "firelensConfiguration": null,
            "dependsOn": null,
            "disableNetworking": null,
            "interactive": null,
            "healthCheck": null,
            "essential": true,
            "links": null,
            "hostname": null,
            "extraHosts": null,
            "pseudoTerminal": null,
            "user": null,
            "readonlyRootFilesystem": null,
            "dockerLabels": null,
            "systemControls": null,
            "privileged": null,
            "name": "apache"
        },
        {
            "dnsSearchDomains": null,
            "logConfiguration": {
                "logDriver": "awslogs",
                "secretOptions": null,
                "options": {
                    "awslogs-group": "/ecs/sigsci-example",
                    "awslogs-region": "us-west-1",
                    "awslogs-stream-prefix": "ecs"
                }
            },
            "entryPoint": null,
            "portMappings": [],
            "command": null,
            "linuxParameters": null,
            "cpu": 0,
            "environment": [
                {
                    "name": "SIGSCI_ACCESSKEYID",
                    "value": "REPLACEME"
                },
                {
                    "name": "SIGSCI_SECRETACCESSKEY",
                    "value": "REPLACEME"
                }
            ],
            "ulimits": [
                {
                    "name": "nofile",
                    "softLimit": 65335,
                    "hardLimit": 65335
                }
            ],
            "dnsServers": null,
            "mountPoints": [
                {
                    "readOnly": null,
                    "containerPath": "/var/run",
                    "sourceVolume": "run"
                }
            ],
            "workingDirectory": null,
            "secrets": null,
            "dockerSecurityOptions": null,
            "memory": null,
            "memoryReservation": null,
            "volumesFrom": [],
            "stopTimeout": null,
            "image": "signalsciences/sigsci-agent:latest",
            "startTimeout": null,
            "firelensConfiguration": null,
            "dependsOn": null,
            "disableNetworking": null,
            "interactive": null,
            "healthCheck": null,
            "essential": true,
            "links": null,
            "hostname": null,
            "extraHosts": null,
            "pseudoTerminal": null,
            "user": null,
            "readonlyRootFilesystem": null,
            "dockerLabels": null,
            "systemControls": null,
            "privileged": null,
            "name": "agent"
        }
    ],
    "memory": "4096",
    "taskRoleArn": "arn:aws:iam::REPLACEME:role/EcsServiceRole2",
    "family": "sigsci-example",
    "pidMode": null,
    "requiresCompatibilities": [
        "FARGATE"
    ],
    "networkMode": "host",
    "cpu": "2048",
    "inferenceAccelerators": null,
    "proxyConfiguration": null,
    "volumes": [
        {
            "efsVolumeConfiguration": null,
            "name": "run",
            "host": {
                "sourcePath": null
            },
            "dockerVolumeConfiguration": null
        }
    ],
    "tags": []
```

```
}
```

Example helloworld test web application

Last updated: 2023-02-24

/en/ngwaf/example-helloworld

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This uses the `helloworld` example included with the Next-Gen WAF Golang module as a test web application named `helloworld`.

See `main.go` in the `sigsci-module-golang` `helloworld` example.

Dockerfile

Dockerfile to build the `signalsciences/example-helloworld` container:

```
$ docker build . -t signalsciences/example-helloworld:latest
```

```
FROM golang:1.13

# Image metadata
LABEL com.signalsciences.sigsci-module-golang.examples="helloworld"
LABEL maintainer="Signal Sciences <support@fastly.com>"

# Install sigsci golang module (with examples)
RUN go get github.com/signalsciences/sigsci-module-golang

# Use the helloworld example as the test app
WORKDIR /go/src/github.com/signalsciences/sigsci-module-golang/examples

ENTRYPOINT [ "go", "run", "./helloworld" ]
```

Kubernetes deployment file

Kubernetes `example-helloworld` deployment file (without the Next-Gen WAF agent):

```
$ kubectl apply -f example-helloworld.yaml
```

```
apiVersion: v1
kind: Service
metadata:
  name: helloworld
  labels:
    app: helloworld
spec:
  ports:
  - name: http
    port: 8000
    targetPort: 8000
  selector:
    app: helloworld
  type: LoadBalancer
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: helloworld
  labels:
    app: helloworld
spec:
  replicas: 2
  selector:
    matchLabels:
      app: helloworld
  template:
    metadata:
      labels:
        app: helloworld
    spec:
      containers:
      - name: helloworld
        image: signalsciences/example-helloworld:latest
        imagePullPolicy: IfNotPresent
        args:
        # Address for the app to listen on
        - localhost:8000
        ports:
        - containerPort: 8000
```

Kubernetes Agent + Ingress Controller + Module

Last updated: 2024-03-14

/en/ngwaf/kubernetes-agent-ingress-controller-module

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In this example, the Next-Gen WAF agent is installed as a Docker sidecar, communicating with a Next-Gen WAF native module for NGINX installed on an `ingress-nginx` Kubernetes ingress controller.

Integrating the Next-Gen WAF agent into an ingress controller

In addition to installing the Next-Gen WAF per application, it is also possible to install the Next-Gen WAF into a Kubernetes ingress controller that will receive all external traffic to your applications. Doing this is similar to installing into an application with a Next-Gen WAF module:

- Install and configure the Next-Gen WAF module into the ingress controller.
- Add the `sigsci-agent` container to the ingress pod and mount a sigsci-agent volume.
- Add an `emptyDir{}` volume as a place for the `sigsci-agent` to write temporary data.

Kubernetes NGINX ingress controller

The Kubernetes NGINX Ingress Controller is an NGINX based implementation for the ingress API. Next-Gen WAF supports a native module for NGINX. This enables you to easily wrap the existing `ingress-nginx` controller to install the Next-Gen WAF module.

Wrap the base `nginx-ingress-controller` to install the Next-Gen WAF module

Wrapping the `nginx-ingress-controller` is done by using the base controller and installing the Next-Gen WAF native NGINX module. Our `sigsci-nginx-ingress-controller` repository contains two examples of this.

A prebuilt container can be pulled from Docker Hub with: `docker pull signalsciences/sigsci-nginx-ingress-controller:latest`

Installation

There are two methods for installing:

- Install via Helm Using Overrides
- Install with Custom File

Prerequisites

Copy the agent keys for the site that you want the agent to be able to access. You will use the agent keys when configuring the Next-Gen WAF agent package.

Install via Helm using overrides

The following steps cover installing `sigsci-nginx-ingress-controller` + `sigsci-agent` via the official `ingress-nginx` charts with an override file.

1. Add the `ingress-nginx` repository:

   ```
   $ helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx
   ```

2. In the sigsci-values.yaml file, add the agent keys as `SIGSCI_ACCESSKEYID` and `SIGSCI_SECRETACCESSKEY`.

3. Install with the release name `my-ingress` in the `default` namespace:

   ```
   $ helm install -f values-sigsci.yaml my-ingress ingress-nginx/ingress-nginx
   ```

   You can specify a namespace with `-n` flag:

   ```
   $ helm install -n NAMESPACE -f values-sigsci.yaml my-ingress ingress-nginx/ingress-nginx
   ```

4. After a few minutes, the agent will be listed in your Next-Gen WAF control panel.

5. Create an Ingress resource. This step will vary depending on setup and supports a lot of configurations. Official documentation can be found regarding Basic usage - host based routing.

   Here is an example Ingress file:

```yaml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  annotations:
    kubernetes.io/ingress.class: nginx
    nginx.ingress.kubernetes.io/rewrite-target: /
  name: hello-kubernetes-ingress
  #namespace: SET THIS IF NOT IN DEFAULT NAMESPACE
spec:
  rules:
  - host: example.com
    http:
      paths:
      - pathType: Prefix
        path: /testpath
        backend:
          service:
            name: NAME OF SERVICE
            port:
              number: 80
```

Helm upgrade with override file

1. In the sigsci-values.yaml file, update the `sigsci-nginx-ingress-controller` to the latest version to update the `ingress-nginx` charts:

   ```yaml
   controller:
       # Replaces the default nginx-controller image with a custom image that contains the Next-Ge
       image:
         repository: signalsciences/sigsci-nginx-ingress-controller
         tag: "latest"
         pullPolicy: IfNotPresent
   ```

2. Run `helm upgrade` with the override file. This example is running helm upgrade against the `my-ingress` release created in the previous section:

   ```
   $ helm upgrade -f sigsci-values.yaml my-ingress ingress-nginx/ingress-nginx
   ```

   or

   ```
   $ helm upgrade -f sigsci-nginxinc-values.yaml my-ingress ingress-nginx/ingress-nginx
   ```

   If ingress is not in default namespace, use `-n` to specify namespace:

   ```
   $ helm upgrade -n NAMESPACE -f sigsci-values.yaml my-ingress ingress-nginx/ingress-nginx
   ```

   or

   ```
   $ helm upgrade -n NAMESPACE -f sigsci-nginxinc-values.yaml my-ingress ingress-nginx/ingress-ngi
   ```

Uninstall release

1. Uninstall release `my-ingress`.

```
$ helm uninstall my-ingress
```

2. If it's not in the default namespace, use `-n` to specify the namespace:

```
$ helm uninstall -n NAMESPACE my-ingress
```

Install with custom file

Integrating the Next-Gen WAF agent

The Next-Gen WAF agent can be installed as a sidecar into each pod or as a service for some specialized needs.

The recommended way of installing the Next-Gen WAF agent in Kubernetes is by integrating the `sigsci-agent` into a pod as a sidecar. This means adding the `sigsci-agent` as an additional container to the Kubernetes pod. As a sidecar, the agent will scale with the app/service in the pod instead of having to do this separately. However, in some situations, it may make more sense to install the `sigsci-agent` container as a service and scale it separately from the application.

The `sigsci-agent` container can be configured in various ways depending on the installation type and module being used.

You can use the `preStop` container hook to slow the pod's shutdown and ensure drain timeouts are met.

```
preStop:
  exec:
    command:
      - sleep
      - "30"
```

By default, the agent prioritizes quick start up and performance readiness for preliminary inspection. However, quick startup isn't always desirable if you only want the agent to inspect traffic after loading your rules and configuration data. If you want to delay agent startup, consider configuring a startup probe.

Getting and updating the agent container image

An official `signalsciences/sigsci-agent` container image is available on Docker Hub.

Alternatively, if you want to build your own image or need to customize the image, then follow the sigsci-agent build instructions.

These instructions reference the `latest` version of the agent with `imagePullPolicy: Always`, which will pull the latest agent version even if one already exist locally. This is so the documentation does not fall out of date and anyone using this will not have an agent that stays stagnant. However, this may not be what if you need to keep installations consistent or on a specific version of the agent. In these cases, you should specify an agent version. Images on Docker Hub are tagged with their versions and a list of versions is available on Docker Hub.

Whether you choose to use the `latest` image or a specific version, there are a few items to consider to keep the agent up-to-date:

Using the `latest` container image

If you do choose to use the `latest` image, then you will want to consider how you will keep the agent up to date.

- If you have used the `imagePullPolicy: Always` option, then the latest image will be pulled on each startup and your agent will continue to get updates.
- Alternatively, you may instead choose to manually update the local cache by periodically forcing a pull instead of always pulling on startup:

```
$ docker pull signalsciences/sigsci-agent:latest
```

Then, use `latest` with `imagePullPolicy: Never` set in the configuration so that pulls are never done on startup (only manually as above):

```
- name: sigsci-agent
  image: signalsciences/sigsci-agent:latest
  imagePullPolicy: Never
  ...
```

Using a versioned container image

To use a specific version of the agent, replace `latest` with the agent version (represented here by `x.xx.x`). You may also want to change `imagePullPolicy: IfNotPresent` in this case as the image should not change.

```
- name: sigsci-agent
  image: signalsciences/sigsci-agent:x.xx.x
  imagePullPolicy: IfNotPresent
  ...
```

This will pull the specified agent version and cache it locally. If you use this method, then it is recommended that you parameterize the agent image, using Helm or similar, so that it is easier to update the agent images later on.

Using a custom tag for the container image

It is also possible to apply a custom tag to a local agent image. To do this, pull the agent image (by version or use `latest`), apply a custom tag, then use that custom tag in the configuration. You will need to specify `imagePullPolicy: Never` so local images are only updated manually. After doing so, you will need to periodically update the local image to keep the agent up-to-date.

For example:

```
$ docker pull signalsciences/sigsci-agent:latest
$ docker tag signalsciences/sigsci-agent:latest signalsciences/sigsci-agent:testing
```

Then use this image tag in the configuration:

```
- name: sigsci-agent
  image: signalsciences/sigsci-agent:testing
  imagePullPolicy: Never
...
```

Configuring the agent container

Agent configuration is normally done via the environment. Most configuration options are available as environment variables. Environment variables names have the configuration option name all capitalized, prefixed with `SIGSCI_` and any dashes (-) changed to underscores (_). For example, the max-procs option would become the `SIGSCI_MAX_PROCS` environment variable. For more details on what options are available, see the Agent Configuration documentation.

The `sigsci-agent` container has a few required options that need to be configured:

- Agent credentials (**Agent Access Key** and **Agent Secret Key**).
- A volume to write temporary files.

Agent credentials

The `sigsci-agent` credentials are configured with two environment variables. These variables must be set or the agent will not start.

- **SIGSCI_ACCESSKEYID**: The **Agent Access Key** identifies which site (also known as workspace) in the Next-Gen WAF control panel that the agent is configured for.
- **SIGSCI_SECRETACCESSKEY**: The **Agent Secret Key** is the shared secret key to authenticate and authorize the agent.

Because of the sensitive nature of these values, we recommend you use the built in `secrets` functionality of Kubernetes. With this configuration, the agent will pull the values from the secrets data instead of reading hardcoded values into the deployment configuration. This also makes any desired agent credential rotation easier to manage by having to change them in only one place.

Use the `valueFrom` option instead of the `value` option to use the `secrets` functionality. For example:

```yaml
env:
  - name: SIGSCI_ACCESSKEYID
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: accesskeyid
  - name: SIGSCI_SECRETACCESSKEY
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: secretaccesskey
```

The `secrets` functionality keeps secrets in various stores in Kubernetes. This guide uses the generic secret store in its examples, however any equivalent store can be used. Agent secrets can be added to the generic secret store using YAML similar to the following example:

```yaml
apiVersion: v1
kind: Secret
metadata:
  name: sigsci.my-site-name-here
stringData:
  accesskeyid: 12345678-abcd-1234-abcd-1234567890ab
  secretaccesskey: abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

This can also be created from the command line with `kubectl` such as with the following example:

```
$ kubectl create secret generic sigsci.my-site-name-here \
  --from-literal=accesskeyid=12345678-abcd-1234-abcd-1234567890ab \
  --from-literal=secretaccesskey=abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

Additional information about Kubernetes `secrets` functionality can be found in the Kubernetes documentation.

Agent temporary volume

For added security, we recommended the `sigsci-agent` container be executed with the root filesystem mounted as read only. However, the agent still needs to write some temporary files such as the socket file for RPC communication and some periodically updated files such as geolocation data.

To accomplish this with a read only root filesystem, there needs to be a writeable volume mounted. This writeable volume can also be shared to expose the RPC socket file to other containers in the same pod.

The recommended way of creating a writeable volume is to use the builtin `emptyDir` volume type. This is typically configured in the `volumes` section of a deployment, as shown in the following example:

```
volumes:
  - name: sigsci-tmp
    emptyDir: {}
```

Containers will then mount this volume at `/sigsci/tmp`:

```
volumeMounts:
  - name: sigsci-tmp
    mountPath: /sigsci/tmp
```

The default in the official agent container image is to have the temporary volume mounted at `/sigsci/tmp`. If this needs to be moved for the agent container, then the following agent configuration options should also be changed from their defaults to match the new mount location:

- `rpc-address` defaults to `/sigsci/tmp/sigsci.sock`
- `shared-cache-dir` defaults to `/sigsci/tmp/cache`

The NGINX ingress controller is installed with the mandatory.yaml file. This file contains a modified template of the Generic Ingress Controller Deployment. The main additions are:

1. Change the ingress container to load the custom ingress container and add Volume mounts for socket file communication between the Module/ingress container and Agent sidecar container:

```
...
    containers:
      - name: nginx-ingress-controller
        image: signalsciences/sigsci-nginx-ingress-controller:latest
        ...
        volumeMounts:
          - name: sigsci-tmp
            mountPath: /sigsci/tmp
...
```

2. Load the Next-Gen WAF module in the NGINX configuration file (`nginx.conf`) via `ConfigMap`:

```
kind: ConfigMap
apiVersion: v1
data:
  main-snippet: load_module /usr/lib/nginx/modules/ngx_http_sigsci_nxo_module-1.17.7.so;
  http-snippet: sigsci_agent_host unix:/sigsci/tmp/sigsci.sock;
metadata:
  name: nginx-configuration
  namespace: ingress-nginx
  labels:
    app.kubernetes.io/name: ingress-nginx
    app.kubernetes.io/part-of: ingress-nginx
```

3. Add a container for the Next-Gen WAF agent:

```
...
    containers:
    ...
      # Next-Gen WAF agent running in default RPC mode
      - name: sigsci-agent
```

```
        image: signalsciences/sigsci-agent:latest
        imagePullPolicy: IfNotPresent
        env:
        - name: SIGSCI_ACCESSKEYID
          valueFrom:
            secretKeyRef:
              # This secret needs added (see docs on sigsci secrets)
              name: sigsci.my-site-name-here
              key: accesskeyid
        - name: SIGSCI_SECRETACCESSKEY
          valueFrom:
            secretKeyRef:
              # This secret needs added (see docs on sigsci secrets)
              name: sigsci.my-site-name-here
              key: secretaccesskey
        securityContext:
          # The sigsci-agent container should run with its root filesystem read only
          readOnlyRootFilesystem: true
        volumeMounts:
        # Default volume mount location for sigsci-agent writeable data (do not change mount pa
        - name: sigsci-tmp
          mountPath: /sigsci/tmp
...
```

4. Define the volume used above:

```
...
      volumes:
      # Define a volume where sigsci-agent will write temp data and share the socket file,
      # which is required with the root filesystem is mounted read only
      - name: sigsci-tmp
        emptyDir: {}
...
```

Setup

The `mandatory.yaml` file creates the resources in the `ingress-nginx` namespace. If using Kubernetes Secrets to store the agent access keys, you will need to create the namespace and access keys before running the mandatory.yaml file.

1. Set the name for the secrets for the agent keys in `mandatory.yaml`.

```
...
    env:
    - name: SIGSCI_ACCESSKEYID
      valueFrom:
        secretKeyRef:
          # This secret needs added (see docs on sigsci secrets)
          name: sigsci.my-site-name-here
          key: accesskeyid
    - name: SIGSCI_SECRETACCESSKEY
      valueFrom:
        secretKeyRef:
          # This secret needs added (see docs on sigsci secrets)
          name: sigsci.my-site-name-here
          key: secretaccesskey
...
```

2. Pull or build the **NGINX ingress + Signal Sciences Module** container. Set any preferred registry and repository name, and set the image to match in `mandatory.yaml`:

   ```
   $ docker pull signalsciences/sigsci-nginx-ingress-controller:latest
   ```

3. Deploy using modified Generic Deployment:

   ```
   $ kubectl apply -f mandatory.yaml
   ```

4. Create the service to expose the Ingress Controller. The steps necessary are dependent on your cloud provider. Official instructions can be found at https://kubernetes.github.io/ingress-nginx/deploy/#environment-specific-instructions.

   Below is an example `service.yaml` file:

   ```
   kind: Service
   apiVersion: v1
   metadata:
     name: ingress-nginx
     namespace: ingress-nginx
   spec:
     externalTrafficPolicy: Cluster
     selector:
       app.kubernetes.io/name: ingress-nginx
     type: LoadBalancer
     ports:
       - name: http
         port: 80
         targetPort: http
       - name: https
         port: 443
         targetPort: https
   ```

5. Create the Ingress Resource. Below is an example Ingress Resource:

   ```
   apiVersion: extensions/v1
   kind: Ingress
   metadata:
     name: test-ingress
     namespace: ingress-nginx
     annotations:
       nginx.ingress.kubernetes.io/rewrite-target: /
   spec:
     rules:
     - http:
         paths:
         - path: /testpath
           backend:
             serviceName: nginx
             servicePort: 80
   ```

Agent scaling and running as a service

Last updated: 2023-03-29

/en/ngwaf/kubernetes-agent-scaling

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

If the `sigsci-agent` is installed as a sidecar into a pod, the agent will scale however you have chosen to scale the application in the pod. This is the recommended method of installing the agent as it does not require a different means of scaling your application. However, for some installations the agent may need to be scaled at a different rate than the application. In these cases you can install the agent as a service to be used by the application pods. However, there are limitations when installing the agent as a service.

Limitations

- The `sigsci-agent` can only be configured for a single site (also known as workspace). This means that any agent service would only be able to send to a single site (workspace). All of the agents in the service will have the same configuration.
- The `sigsci-agent` keeps some request states when processing the responses. This means that the agent that processed the request data needs to be the same agent that processes the response data. Therefore, load balancing agents require affinity, which makes the service more complex to scale.
- Using the `sigsci-agent` as a service means configuring the communication channel as TCP instead of a Unix domain socket and this is slightly less efficient.

Installing the Next-Gen WAF agent as a service

The `sigsci-agent` can be installed as a service, but care must be taken when configuring the service due the above limitations. The service will be tied to a single site (workspace). If you will have multiple sites (workspaces), then you should name the service based on the site (workspace) name. To scale the service, it must be configured so that the same agent will process both the request and response data for a transaction. To do this, you need to configure the service to use affinity based on the pod that is sending data to the agent. This is done by setting the affinity to use the Client IP.

Below is an example service tied to a site (workspace) named my-site-name using Client IP affinity:

```
apiVersion: v1
kind: Service
metadata:
  name: sigsci-agent-my-site-name
  labels:
    app: sigsci-agent-my-site-name
spec:
  ports:
  # Port names and numbers are arbitrary
  #  737 is the default RPC port
  #  8000 may be more appropriate for gRPC used with Envoy
  - name: rpc
    port: 737
    targetPort: 737
  selector:
    app: sigsci-agent-my-site-name
  sessionAffinity: ClientIP
  sessionAffinityConfig:
    clientIP:
      timeoutSeconds: 60
```

The service must then be backed by a deployment with any number of replicas. The `sigsci-agent` container must be configured as in a typical sidecar install, but must use TCP instead of a shared Unix domain socket. This is done by setting the `SIGSCI_RPC_ADDRESS` configuration option. Note that if using this with Envoy, you must use `SIGSCI_ENVOY_GRPC_ADDRESS` instead.

Example deployment corresponding with the service above:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: sigsci-agent-my-site-name
  labels:
    app: sigsci-agent-my-site-name
spec:
  replicas: 2
  selector:
    matchLabels:
      app: sigsci-agent-my-site-name
  template:
    metadata:
      labels:
        app: sigsci-agent-my-site-name
    spec:
      containers:
      - name: sigsci-agent
        image: signalsciences/sigsci-agent:latest
        imagePullPolicy: IfNotPresent
        env:
        - name: SIGSCI_ACCESSKEYID
          valueFrom:
            secretKeyRef:
              name: sigsci.my-site-name
              key: accesskeyid
        - name: SIGSCI_SECRETACCESSKEY
          valueFrom:
            secretKeyRef:
              name: sigsci.my-site-name
              key: secretaccesskey
        # Use RPC via TCP instead of default Unix Domain Socket
        - name: SIGSCI_RPC_ADDRESS
          value: "0.0.0.0:737"
        # Use all available resources.limits.cpu cores
        - name: SIGSCI_MAX_PROCS
          value: "100%"
        securityContext:
          readOnlyRootFilesystem: true
        volumeMounts:
        - name: sigsci-tmp
          mountPath: /sigsci/tmp
        # Set CPU resource limits (required for autoscaling)
        resources:
          limits:
            cpu: 4
          requests:
            cpu: 1
      volumes:
      - name: sigsci-tmp
        emptyDir: {}
```

The above example will deploy two `sigsci-agent` pods for the `sigsci-agent-my-site-name` service to use for the `my-site-name` site (workspace). Each agent will see up to 4 CPU cores, requiring resources for at least one core.

Each application pod must then have its module configured to send to a `sigsci-agent` at the service name and port defined by the service. In this example the module would be configured to sent to host `sigsci-agent-my-site-name` and port `737`. These values are defined by the service as well as the `SIGSCI_RPC_ADDRESS` configuration option (or `SIGSCI_ENVOY_GRPC_ADDRESS` if Envoy is being used).

As for scaling, each pod that connects to this service will be assigned a `sigsci-agent` running in the service and affinity will be locked to this agent. If the agent is then updated or otherwise removed from the service (such as due to an autoscaling down event) the agent will be reassigned to the client application pod. Because of how agents are assigned to pods with affinity, the maximum number of active agents will not be more than the number of pods connecting to the service. This should be considered when determining the number of replicas and autoscaling parameters.

The deployment can be autoscaled. As an example, it is possible to autoscale with a Horizontal Pod Autoscaler via `kubectl autoscale`. In the example below, the deployment will use a minimum of 2 agents and be scaled up to 6 agents whenever the overall CPU usage reaches 60%. Note again, however, that all of these agents will only be handling a single site (workspace).

```
$ kubectl autoscale deployment sigsci-agent-my-site-name --cpu-percent=60 --min=2 --max=6
```

The status of the Horizontal Pod Autoscaler can be viewed via the `kubectl get hpa` command:

```
$ kubectl get hpa
```

That command will produce the following output:

```
NAME                      REFERENCE                            TARGETS   MINPODS   MAXPODS   REPLICAS
sigsci-agent-my-site-name Deployment/sigsci-agent-my-site-name 42%/60%   2         6         2
```

There are some limitations to this type of scaling. When scaling (by manually setting the replica number or autoscaling), the `sigsci-agent` pod count will change for the service. When an agent is added, new connections to the service may get assigned affinity to new agent pods, but note that application pods that already have their affinity set to a specific agent pod will not be rebalanced unless the service setting for the affinity timeout (`sessionAffinityConfig.clientIP.timeoutSeconds`) is hit. Because of this, this scaling works best when the application pods are also scaled so that new application pods will get balanced to new agent pods. Similarly, when an agent pod is removed from the service due to scaling down, the application pods that were assigned to this agent will be reassigned to another agent and affinity set. When scaling back up, these *will not get rebalanced*. If this occurs often, then you may consider reducing the affinity timeout (`sessionAffinityConfig.clientIP.timeoutSeconds`) to allow for rebalancing if there is some idle time.

Kubernetes Agent + Module

Last updated: 2024-03-14

/en/ngwaf/kubernetes-agent-module

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

In this example, the Next-Gen WAF agent is deployed in a docker sidecar, communicating with a module deployed on the application.

Integrating the Next-Gen WAF agent

The Next-Gen WAF agent can be installed as a sidecar into each pod or as a service for some specialized needs.

The recommended way of installing the Next-Gen WAF agent in Kubernetes is by integrating the `sigsci-agent` into a pod as a sidecar. This means adding the `sigsci-agent` as an additional container to the Kubernetes pod. As a sidecar, the agent will scale with the app/service in the pod instead of having to do this separately. However, in some situations, it may make more sense to install the `sigsci-agent` container as a service and scale it separately from the application.

The `sigsci-agent` container can be configured in various ways depending on the installation type and module being used.

You can use the `preStop` container hook to slow the pod's shutdown and ensure drain timeouts are met.

```yaml
preStop:
  exec:
    command:
      - sleep
      - "30"
```

By default, the agent prioritizes quick start up and performance readiness for preliminary inspection. However, quick startup isn't always desirable if you only want the agent to inspect traffic after loading your rules and configuration data. If you want to delay agent startup, consider configuring a startup probe.

Getting and updating the agent container image

An official `signalsciences/sigsci-agent` container image is available on Docker Hub.

Alternatively, if you want to build your own image or need to customize the image, then follow the sigsci-agent build instructions.

These instructions reference the `latest` version of the agent with `imagePullPolicy: Always`, which will pull the latest agent version even if one already exist locally. This is so the documentation does not fall out of date and anyone using this will not have an agent that stays stagnant. However, this may not suit your needs if you need to keep installations consistent or on a specific version of the agent. In these cases, you should specify an agent version. Images on Docker Hub are tagged with their versions and a list of versions is available on Docker Hub.

Whether you choose to use the `latest` image or a specific version, there are a few items to consider to keep the agent up-to-date.

Using the `latest` container image

If you do choose to use the `latest` image, then you will want to consider how you will keep the agent up to date.

- If you have used the `imagePullPolicy: Always` option, then the latest image will be pulled on each startup and your agent will continue to get updates.
- Alternatively, you may instead choose to manually update the local cache by periodically forcing a pull instead of always pulling on startup:

  ```
  $ docker pull signalsciences/sigsci-agent:latest
  ```

  Then, use `latest` with `imagePullPolicy: Never` set in the configuration so that pulls are never done on startup (only manually as above):

  ```yaml
  - name: sigsci-agent
      image: signalsciences/sigsci-agent:latest
      imagePullPolicy: Never
      ...
  ```

Using a versioned container image

To use a specific version of the agent, replace `latest` with the agent version (represented here by `x.xx.x`). You may also want to change `imagePullPolicy: IfNotPresent` in this case as the image should not change.

```
- name: sigsci-agent
  image: signalsciences/sigsci-agent:x.xx.x
  imagePullPolicy: IfNotPresent
  ...
```

This will pull the specified agent version and cache it locally. If you use this method, then it is recommended that you parameterize the agent image, using Helm or similar, so that it is easier to update the agent images later on.

Using a custom tag for the container image

It is also possible to apply a custom tag to a local agent image. To do this, pull the agent image (by version or use `latest`), apply a custom tag, then use that custom tag in the configuration. You will need to specify `imagePullPolicy: Never` so local images are only updated manually. After doing so, you will need to periodically update the local image to keep the agent up-to-date.

For example:

```
$ docker pull signalsciences/sigsci-agent:latest
$ docker tag signalsciences/sigsci-agent:latest signalsciences/sigsci-agent:testing
```

Then use this image tag in the configuration:

```
- name: sigsci-agent
  image: signalsciences/sigsci-agent:testing
  imagePullPolicy: Never
...
```

Configuring the agent container

Agent configuration is normally done via the environment. Most configuration options are available as environment variables. Environment variables names have the configuration option name all capitalized, prefixed with `SIGSCI_` and any dashes (-) changed to underscores (_). For example, the max-procs option would become the `SIGSCI_MAX_PROCS` environment variable. For more details on what options are available, see the Agent Configuration documentation.

The `sigsci-agent` container has a few required options that need to be configured:

- Agent credentials (**Agent Access Key** and **Agent Secret Key**).
- A volume to write temporary files.

Agent credentials

The `sigsci-agent` credentials are configured with two environment variables. These variables must be set or the agent will not start.

- **SIGSCI_ACCESSKEYID**: The **Agent Access Key** identifies which site (also known as workspace) in the Next-Gen WAF control panel that the agent is configured for.
- **SIGSCI_SECRETACCESSKEY**: The **Agent Secret Key** is the shared secret key to authenticate and authorize the agent.

Because of the sensitive nature of these values, we recommend you use the built in `secrets` functionality of Kubernetes. With this configuration, the agent will pull the values from the secrets data instead of reading hardcoded values into the deployment configuration. This also makes any desired agent credential rotation easier to manage by having to change them in only one place.

Use the `valueFrom` option instead of the `value` option to use the `secrets` functionality. For example:

```
env:
  - name: SIGSCI_ACCESSKEYID
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: accesskeyid
  - name: SIGSCI_SECRETACCESSKEY
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: secretaccesskey
```

The `secrets` functionality keeps secrets in various stores in Kubernetes. This guide uses the generic secret store in its examples, however any equivalent store can be used. Agent secrets can be added to the generic secret store using YAML similar to the following example:

```
apiVersion: v1
kind: Secret
metadata:
  name: sigsci.my-site-name-here
stringData:
  accesskeyid: 12345678-abcd-1234-abcd-1234567890ab
  secretaccesskey: abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

This can also be created from the command line with `kubectl` such as with the following example:

```
$ kubectl create secret generic sigsci.my-site-name-here \
  --from-literal=accesskeyid=12345678-abcd-1234-abcd-1234567890ab \
  --from-literal=secretaccesskey=abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

Additional information about Kubernetes `secrets` functionality can be found in the Kubernetes documentation.

Agent temporary volume

For added security, we recommended the `sigsci-agent` container be executed with the root filesystem mounted as read only. However, the agent still needs to write some temporary files such as the socket file for RPC communication and some periodically updated files such as geolocation data.

To accomplish this with a read only root filesystem, there needs to be a writeable volume mounted. This writeable volume can also be shared to expose the RPC socket file to other containers in the same pod.

The recommended way of creating a writeable volume is to use the builtin `emptyDir` volume type. This is typically configured in the `volumes` section of a deployment, as shown in the following example:

```
volumes:
  - name: sigsci-tmp
    emptyDir: {}
```

Containers will then mount this volume at `/sigsci/tmp`:

```
volumeMounts:
  - name: sigsci-tmp
    mountPath: /sigsci/tmp
```

The default in the official agent container image is to have the temporary volume mounted at `/sigsci/tmp`. If this needs to be moved for the agent container, then the following agent configuration options should also be changed from their defaults to match the new mount location:

- `rpc-address` defaults to `/sigsci/tmp/sigsci.sock`
- `shared-cache-dir` defaults to `/sigsci/tmp/cache`

Next-Gen WAF agent with a web application and Next-Gen WAF module installed

This deployment example configures the example `helloworld` application to use the `sigsci-agent` via RPC and deploys the `sigsci-agent` container as a sidecar to process these RPC requests.

To configure Next-Gen WAF with this deployment type you must:

- Modify your application to add the appropriate Next-Gen WAF module, configured it to communicate with a `sigsci-agent` via RPC.
- Add the sigsci-agent container to the pod, configured in RPC mode.
- Add an `emptyDir{}` volume as a place for the `sigsci-agent` to write temporary data and share the RPC address.

Modifying and configuring the application container

The `helloworld` example is a language based module (Golang) that has already been modified to enable communication to the `sigsci-agent` via RPC if configured to do so. This configuration is done via arguments passed to the `helloworld` example application as follows:

- Listening address (defaults to `localhost:8000`).
- Optional Next-Gen WAF agent RPC address (default is to not use the `sigsci-agent`). Other language based modules are similar. Web server based modules must have the Next-Gen WAF module added to the container.

For this `helloworld` application to work with the `sigsci-agent` it must have the `sigsci-agent` address configured as the second program argument and the `sigsci-tmp` volume mounted so that it can write to the socket file:

```
...
      containers:
      # Example helloworld app running on port 8000 against sigsci-agent via UDP /sigsci/tmp/sigsci
      - name: helloworld
        image: signalsciences/example-helloworld:latest
        imagePullPolicy: IfNotPresent
        args:
          # Address for the app to listen on
          - localhost:8000
          # Address sigsci-agent RPC is listening on
          - /sigsci/tmp/sigsci.sock
        ports:
        - containerPort: 8000
        volumeMounts:
        # Shared mount with sigsci-agent container where the socket is shared via emptyDir volume
        - name: sigsci-tmp
          mountPath: /sigsci/tmp
```

Adding and configuring the agent container as a sidecar

The `sigsci-agent` container will default to RPC mode with a Unix Domain Socket (UDS) file at `/sigsci/tmp/sigsci.sock`. There must be a temp volume mounted at `/sigsci/tmp` to capture this socket file and must be shared with the pod. The web application must be configured to communicate with the `sigsci-agent` via this UDS socket. The deployment YAML must be modified from the example above by adding a second argument to specify the `sigsci-agent` RPC address of `/sigsci/tmp/sigsci.sock`.

> NOTE
>
> It is possible to use a TCP based listener for the `sigsci-agent` RPC, but this is not recommended for performance reasons. If TCP is needed (or UDS is not available, such as in Windows), then the RPC address can be specified as `ip:port` or `host:port` instead of a UDS path. In this case, the volume does not have to be shared with the app, but it does need to be created for the `sigsci-agent` container to have a place to write temporary data such as geodata.

Adding the `sigsci-agent` container as a sidecar:

```
...
   containers:
   # Example helloworld app running on port 8000 against sigsci-agent via UDP /sigsci/tmp/sigsci
   - name: helloworld
     image: signalsciences/example-helloworld:latest
     imagePullPolicy: IfNotPresent
     args:
       # Address for the app to listen on
       - localhost:8000
       # Address sigsci-agent RPC is listening on
       - /sigsci/tmp/sigsci.sock
     ports:
     - containerPort: 8000
     volumeMounts:
     # Shared mount with sigsci-agent container where the socket is shared via emptyDir volume
     - name: sigsci-tmp
       mountPath: /sigsci/tmp
   # Next-Gen WAF agent running in default RPC mode
   - name: sigsci-agent
     image: signalsciences/sigsci-agent:latest
     imagePullPolicy: Always
     env:
     - name: SIGSCI_ACCESSKEYID
       valueFrom:
         secretKeyRef:
           # This secret needs added (see docs on sigsci secrets)
           name: sigsci.my-site-name-here
           key: accesskeyid
     - name: SIGSCI_SECRETACCESSKEY
       valueFrom:
         secretKeyRef:
           # This secret needs added (see docs on sigsci secrets)
           name: sigsci.my-site-name-here
           key: secretaccesskey
     # If required (default is /sigsci/tmp/sigsci.sock for the container)
     #- name: SIGSCI_RPC_ADDRESS
     #  value: /path/to/socket for UDS OR host:port if TCP
     securityContext:
       # The sigsci-agent container should run with its root filesystem read only
       readOnlyRootFilesystem: true
     volumeMounts:
     # Default volume mount location for sigsci-agent writeable data
     # NOTE: Also change `SIGSCI_SHARED_CACHE_DIR` (default `/sigsci/tmp/cache`)
```

```
          #       if mountPath is changed, but best not to change.
          - name: sigsci-tmp
            mountPath: /sigsci/tmp
```

NOTE

The above `sigsci-agent` configuration assumes that `sigsci` secrets were added to the system section above.

Adding the agent temp volume definition to the deployment

Finally, the agent temp volume needs to be defined for use by the other containers in the pod. This uses the builtin `emptyDir: {}` volume type.

```
...
      volumes:
      # Define a volume where sigsci-agent will write temp data and share the socket file,
      # which is required with the root filesystem is mounted read only
      - name: sigsci-tmp
        emptyDir: {}
```

Agent container image

Last updated: 2022-12-22

/en/ngwaf/kubernetes-agent

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

The official name of the container image for the Next-Gen WAF agent (formerly known as the Signal Sciences agent) is `signalsciences/sigsci-agent`. The `sigsci-agent` container image is available on Docker Hub. You can pull this image with `signalsciences/sigsci-agent:latest` (or replace `latest` with a version tag). If you need to modify this image or want to build it locally, then follow the instructions below.

Custom sigsci-agent Dockerfile

You can build on top of the existing `sigsci-agent` container image using `FROM`. However, some care needs to be taken as the Dockerfile is set up to run commands as the `sigsci` user instead of `root`. If you use the recommended Dockerfile, then you may need to change to the `root` user, then back to the `sigsci` user after any system modifications are done.

Example: Installing an additional package

```
dockerfile
# Start from the official sigsci-agent container
FROM signalsciences/sigsci-agent:latest

# Change to root to install a package
USER root
RUN apk --no-cache add mypackage

# Change back to the sigsci user at the end for runtime
```

```
USER sigsci
```

Build the agent Docker container image

The recommended `sigsci-agent` Dockerfile is included in the `sigsci-agent` distribution `.tar.gz` archive.

To build the image, download and unpack this archive and follow the instructions in the README.md included in the archive.

The following example commands:

- Download the `sigsci-agent_latest.tar.gz` archive.
- Unpack the archive into a `./sigsci-agent` directory.
- Build the image tagged with `signalsciences/sigsci-agent:latest` and `signalsciences/sigsci-agent:<version>`.

```
$ curl -O https://dl.signalsciences.net/sigsci-agent/sigsci-agent_latest.tar.gz
$ mkdir sigsci-agent && tar zxvf sigsci-agent_latest.tar.gz -C sigsci-agent
$ cd sigsci-agent
$ make docker
```

You can use a custom name for the tags by setting `IMAGE_NAME` (e.g., `make IMAGE_NAME=custom-prefix/sigsci-agent docker`).

To build manually, run the following command, replacing `YOUR-TAG` and `YOUR-VERSION`:

```
$ docker build . -t your-tag:your-version
```

Kubernetes Ambassador

Last updated: 2024-03-14

/en/ngwaf/kubernetes-ambassador

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

In this example, the Next-Gen WAF is integrated with Ambassador Edge Stack, a cloud native API gateway and ingress controller for Kubernetes, built upon Envoy proxy.

Integrating the Next-Gen WAF agent

The Next-Gen WAF agent can be installed as a sidecar into each pod or as a service for some specialized needs.

The recommended way of installing the Next-Gen WAF agent in Kubernetes is by integrating the `sigsci-agent` into a pod as a sidecar. This means adding the `sigsci-agent` as an additional container to the Kubernetes pod. As a sidecar, the agent will scale with the app/service in the pod instead of having to do this separately. However, in some situations, it may make more sense to install the `sigsci-agent` container as a service and scale it separately from the application.

The `sigsci-agent` container can be configured in various ways depending on the installation type and module being used.

You can use the `preStop` container hook to slow the pod's shutdown and ensure drain timeouts are met.

```
preStop:
  exec:
    command:
      - sleep
      - "30"
```

By default, the agent prioritizes quick start up and performance readiness for preliminary inspection. However, quick startup isn't always desirable if you only want the agent to inspect traffic after loading your rules and configuration data. If you want to delay agent startup, consider configuring a startup probe.

Getting and updating the agent container image

An official `signalsciences/sigsci-agent` container image is available on Docker Hub.

Alternatively, if you want to build your own image or need to customize the image, then follow the sigsci-agent build instructions.

These instructions reference the `latest` version of the agent with `imagePullPolicy: Always`, which will pull the latest agent version even if one already exist locally. This is so the documentation does not fall out of date and anyone using this will not have an agent that stays stagnant. However, this may not be what if you need to keep installations consistent or on a specific version of the agent. In these cases, you should specify an agent version. Images on Docker Hub are tagged with their versions and a list of versions is available on Docker Hub.

Whether you choose to use the `latest` image or a specific version, there are a few items to consider to keep the agent up-to-date.

Using the `latest` container image

If you do choose to use the `latest` image, then you will want to consider how you will keep the agent up to date.

- If you have used the `imagePullPolicy: Always` option, then the latest image will be pulled on each startup and your agent will continue to get updates.
- Alternatively, you may instead choose to manually update the local cache by periodically forcing a pull instead of always pulling on startup:

  ```
  $ docker pull signalsciences/sigsci-agent:latest
  ```

  Then, use `latest` with `imagePullPolicy: Never` set in the configuration so that pulls are never done on startup (only manually as above):

  ```
  - name: sigsci-agent
    image: signalsciences/sigsci-agent:latest
    imagePullPolicy: Never
    ...
  ```

Using a versioned container image

To use a specific version of the agent, replace `latest` with the agent version (represented here by `x.xx.x`). You may also want to change `imagePullPolicy: IfNotPresent` in this case as the image should not change.

```
- name: sigsci-agent
    image: signalsciences/sigsci-agent:x.xx.x
    imagePullPolicy: IfNotPresent
    ...
```

This will pull the specified agent version and cache it locally. If you use this method, then it is recommended that you parameterize the agent image, using Helm or similar, so that it is easier to update the agent images later on.

Using a custom tag for the container image

It is also possible to apply a custom tag to a local agent image. To do this, pull the agent image (by version or use `latest`), apply a custom tag, then use that custom tag in the configuration. You will need to specify `imagePullPolicy: Never` so local images are only updated manually. After doing so, you will need to periodically update the local image to keep the agent up-to-date.

For example:

```
$ docker pull signalsciences/sigsci-agent:latest
$ docker tag signalsciences/sigsci-agent:latest signalsciences/sigsci-agent:testing
```

Then use this image tag in the configuration:

```yaml
- name: sigsci-agent
    image: signalsciences/sigsci-agent:testing
    imagePullPolicy: Never
...
```

Configuring the agent container

Agent configuration is normally done via the environment. Most configuration options are available as environment variables. Environment variables names have the configuration option name all capitalized, prefixed with `SIGSCI_` and any dashes (-) changed to underscores (_). For example, the max-procs option would become the `SIGSCI_MAX_PROCS` environment variable. For more details on what options are available, see the Agent Configuration documentation.

The `sigsci-agent` container has a few required options that need to be configured:

- Agent credentials (**Agent Access Key** and **Agent Secret Key**).
- A volume to write temporary files.

Agent credentials

The `sigsci-agent` credentials are configured with two environment variables. These variables must be set or the agent will not start.

- **SIGSCI_ACCESSKEYID**: The **Agent Access Key** identifies which site (also known as workspace) in the Next-Gen WAF control panel that the agent is configured for.
- **SIGSCI_SECRETACCESSKEY**: The **Agent Secret Key** is the shared secret key to authenticate and authorize the agent.

Because of the sensitive nature of these values, we recommend you use the built in `secrets` functionality of Kubernetes. With this configuration, the agent will pull the values from the secrets data instead of reading hardcoded values into the deployment configuration. This also makes any desired agent credential rotation easier to manage by having to change them in only one place.

Use the `valueFrom` option instead of the `value` option to use the `secrets` functionality. For example:

```yaml
env:
  - name: SIGSCI_ACCESSKEYID
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: accesskeyid
  - name: SIGSCI_SECRETACCESSKEY
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: secretaccesskey
```

The `secrets` functionality keeps secrets in various stores in Kubernetes. This guide uses the generic secret store in its examples, however any equivalent store can be used. Agent secrets can be added to the generic secret store using YAML similar to the following example:

```
apiVersion: v1
kind: Secret
metadata:
  name: sigsci.my-site-name-here
stringData:
  accesskeyid: 12345678-abcd-1234-abcd-1234567890ab
  secretaccesskey: abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

This can also be created from the command line with `kubectl` such as with the following example:

```
$ kubectl create secret generic sigsci.my-site-name-here \
  --from-literal=accesskeyid=12345678-abcd-1234-abcd-1234567890ab \
  --from-literal=secretaccesskey=abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

Additional information about Kubernetes `secrets` functionality can be found in the Kubernetes documentation.

Agent temporary volume

For added security, we recommended the `sigsci-agent` container be executed with the root filesystem mounted as read only. However, the agent still needs to write some temporary files such as the socket file for RPC communication and some periodically updated files such as geolocation data.

To accomplish this with a read only root filesystem, there needs to be a writeable volume mounted. This writeable volume can also be shared to expose the RPC socket file to other containers in the same pod.

The recommended way of creating a writeable volume is to use the builtin `emptyDir` volume type. This is typically configured in the `volumes` section of a deployment, as shown in the following example:

```
volumes:
  - name: sigsci-tmp
    emptyDir: {}
```

Containers will then mount this volume at `/sigsci/tmp`:

```
volumeMounts:
  - name: sigsci-tmp
    mountPath: /sigsci/tmp
```

The default in the official agent container image is to have the temporary volume mounted at `/sigsci/tmp`. If this needs to be moved for the agent container, then the following agent configuration options should also be changed from their defaults to match the new mount location:

- `rpc-address` defaults to `/sigsci/tmp/sigsci.sock`
- `shared-cache-dir` defaults to `/sigsci/tmp/cache`

Integrating the Next-Gen WAF agent into Ambassador Edge Stack (AES)

The Next-Gen WAF agent can be integrated with Datawire's Ambassador Edge Stack (AES). This integration uses the underlying Envoy integration built into the agent. The agent is configured with an Envoy gRPC Listener and through AES's Filter, FilterPolicy, and LogService Kubernetes resources. Deployment and configuration is flexible. As such, this guide is designed to provide information that can be applied to your own methods of deployment.

Note that the examples in the documentation will refer to installing the latest agent version, but this is only so that the documentation examples do not fall behind. Refer to the documentation on getting and updating the agent for more details on agent versioning and how to keep the agent up-to-date.

Namespaces

By default, AES is installed into the ambassador Kubernetes namespace. The agent and any applications running behind AES do not have to run in this namespace, but you must take care during configuration to use the correct namespaces as this documentation may differ from your configuration. The following namespaces are used in this documentation:

Ambassador

- Used for the ambassador install.
- Used for all ambassador resources (e.g., Filter, FilterPolicy, LogService, Mapping).
- Used for the sigsci-agent when running as a sidecar.

default

- Used for all applications and services running behind AES.
- Used for the agent when run in standalone mode.

Ambassador ID

Ambassador Edge Stack supports running multiple Ambassador Edge Stacks in the same cluster, without restricting a given Ambassador Edge Stack to a single namespace. This is done with the `ambassador_id` setting. When running multiple Ambassador Edge Stacks, care must be taken to include the correct `ambassador_id` value within all ambassador resources (Filter, LogService, Mapping, etc), otherwise the configuration will not be used. AES deployments only running one stack under the `default` ID don't need to set this value. Refer to the Ambassador ID docs for more information.

Running the agent as standalone or sidecar

The agent can run as a standalone deployment service or as a sidecar container within the AES pod. Either is fine, but running as a sidecar is easier if you are using Helm, as this is directly supported in the Helm values file. Running as a sidecar also has the advantage of scaling with AES, so this is the recommended route if you are using scaling via replica counts or autoscaling.

Installation

Installation involves two tasks: Deploying the agent configured in gRPC mode and Configuring AES to send traffic to the agent.

Deploying the agent

Deploying the agent is done by deploying the `signalsciences/sigsci-agent` container as a sidecar to AES or as a standalone service. The agent must be configured with its Agent Access Key and Agent Secret Key. This is typically done via a Kubernetes secret. One important point about secrets is that the secret must be in the same namespace as the pod using the secret. So, if you are running as a sidecar in the ambassador namespace, then the secret must also reside in that namespace. Refer to the agent credentials documentation for more details.

Example Secret in the ambassador namespace:

```
apiVersion: v1
kind: Secret
metadata:
  # Edit `my-site-name-here`
  # and change the namespace to match that which
  # the agent is to be deployed
  name: sigsci.my-site-name-here
  namespace: ambassador
stringData:
  # Edit these `my-agent-*-here` values:
  accesskeyid: my-agent-access-key-id-here
  secretaccesskey: my-agent-secret-access-key-here
```

Sidecar with Helm

Configuring AES with Helm is the easiest way to deploy, as the Ambassador values file already has direct support for this without having to modify an existing deployment YAML file. Refer to the AES documentation for installing with helm.

To install the agent as a sidecar, you will need to add new configuration lines to your custom values file, then install or upgrade AES with this values file. Refer to the Ambassador helm chart documentation for a reference on the values file. This will add the container with the correct configuration to the AES pod as a sidecar.

Add the following to the values YAML file:

```
sidecarContainers:
- name: sigsci-agent
  image: signalsciences/sigsci-agent:latest
  imagePullPolicy: IfNotPresent
  # Configure the agent to use Envoy gRPC on port 9999
  env:
  - name: SIGSCI_ACCESSKEYID
    valueFrom:
      secretKeyRef:
        # This secret needs added (see documentation on sigsci secrets)
        name: sigsci.my-site-name-here
        key: accesskeyid
  - name: SIGSCI_SECRETACCESSKEY
    valueFrom:
      secretKeyRef:
        # This secret needs added (see documentation on sigsci secrets)
        name: sigsci.my-site-name-here
        key: secretaccesskey
  # Configure the Envoy to expect response data
  - name: SIGSCI_ENVOY_EXPECT_RESPONSE_DATA
    value: "1"
  # Configure the Envoy gRPC listener address on any unused port
  - name: SIGSCI_ENVOY_GRPC_ADDRESS
    value: localhost:9999
  ports:
  - containerPort: 9999
    name: grpc
  securityContext:
    # The sigsci-agent container should run with its root filesystem read only
    readOnlyRootFilesystem: true
    # Ambassador uses user 8888 by default, but the sigsci-agent container
    # needs to run as sigsci(100)
    runAsUser: 100
  volumeMounts:
  - name: sigsci-tmp
    mountPath: /sigsci/tmp
```

```
volumes:
- name: sigsci-tmp
  emptyDir: {}
```

Example of upgrading AES with helm:

```
$ helm upgrade ambassador \
  --values /path/to/ambassador-sigsci_values.yaml \
  --namespace ambassador \
  datawire/ambassador
```

Alternatively, you can use Helm to render the manifest files. This makes adding the agent sidecar much easier than manually editing the YAML files. The modified deployment YAML will be in:

```
<output-dir>/ambassador/templates/deployment.yaml
```

Example of rendering the manifests with helm and applying the results:

```
$ helm template \
  --output-dir ./manifests \
  --values ./ambassador-sigsci_values.yaml \
  --namespace ambassador \
  datawire/ambassador
$ kubectl apply \
  --recursive
  --filename ./manifests/ambassador
```

Sidecar manually

Deploying the agent as a sidecar into the AES pod manually requires significantly more work than using Helm to render the manifests and is therefore not recommended.

You will need to modify the `aes.yaml` file, available at https://www.getambassador.io/yaml/aes.yaml. Append the container and volumes as described in the using Helm instructions. Refer to the AES installation guide and the Kubernetes and Envoy documentation for more details.

You will need to modify the following resource:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  labels:
    product: aes
  name: ambassador
  namespace: ambassador
…
  containers:
  …
  volumes:
  …
```

The container will need to be added to the `containers` section and the volume to the `volumes` section.

Standalone

To deploy a standalone agent, you only need to add a `Deployment` and `Service` resource for the agent, as shown in the following example:

```yaml
apiVersion: v1
kind: Service
metadata:
  name: sigsci-agent
  # You may want it running in the ambassador namespace
  #namespace: ambassador
  labels:
    service: sigsci-agent
spec:
  type: ClusterIP
  ports:
  - name: sigsci-agent
    port: 9999
    targetPort: grpc
  selector:
    service: sigsci-agent
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: sigsci-agent
  # You may want it running in the ambassador namespace
  #namespace: ambassador
spec:
  replicas: 1
  selector:
    matchLabels:
      service: sigsci-agent
  template:
    metadata:
      labels:
        service: sigsci-agent
    spec:
      containers:
      - name: sigsci-agent
        image: signalsciences/sigsci-agent:latest
        imagePullPolicy: IfNotPresent
        # Configure the agent to use Envoy gRPC on port 9999
        env:
        - name: SIGSCI_ACCESSKEYID
          valueFrom:
            secretKeyRef:
              # This secret needs added (see documentation on sigsci secrets)
              name: sigsci.my-site-name-here
              key: accesskeyid
        - name: SIGSCI_SECRETACCESSKEY
          valueFrom:
            secretKeyRef:
              # This secret needs added (see documentation on sigsci secrets)
              name: sigsci.my-site-name-here
              key: secretaccesskey
        # Configure the Envoy to expect response data
        - name: SIGSCI_ENVOY_EXPECT_RESPONSE_DATA
          value: "1"
        # Configure the Envoy gRPC listener address on any unused port
        - name: SIGSCI_ENVOY_GRPC_ADDRESS
          value: 0.0.0.0:9999
        ports:
        - containerPort: 9999
          name: grpc
        securityContext:
          # The sigsci-agent should run with its root filesystem read only
          readOnlyRootFilesystem: true
        volumeMounts:
        - name: sigsci-tmp
          mountPath: /sigsci/tmp
      volumes:
      - name: sigsci-tmp
        emptyDir: {}
```

For more information, refer to the Kubernetes and Envoy documentation.

Sending traffic to the agent

You will need to configure three Ambassador resources for AES to send data to the agent. Refer to the Envoy configuration documentation for more detailed information on what each of these configures in the underlying Envoy install. The following guide uses the example `quote` service included with Ambassador.

Filter

The Filter resource is used to add the external authorization (`ext_authz`) filter to Envoy. This will inspect incoming requests that match the FilterPolicy.

The Next-Gen WAF agent requires AuthService to be defined in the Ambassador configuration, otherwise the agent will not receive request data. AuthService should be enabled by default. If requests are not being received by the agent, check that AuthService is enabled by running `kubectl get authservice`.

The namespace used for the `auth_service` configuration is the namespace the agent is deployed to. This guide uses the `ambassador` namespace for sidecar agents and `default` namespace for standalone agents. The format for the `auth_service` URL must be:

`agent-hostname[.namespace]:agent-port`

Examples:

- Sidecar: `auth_service: localhost:9999`
- Standalone: `auth_service: sigsci-agent.default:9999`

Example Filter YAML:

```
# Filter defines an external auth filter to send to the agent
kind: Filter
apiVersion: getambassador.io/v3alpha1
metadata:
  name: sigsci
  namespace: ambassador
  annotations:
    getambassador.io/resource-changed: "true"
spec:
  External:
    # Sidecar agent:
    auth_service: localhost:9999
    # Standalone sigsci-agent service in default namespace:
    #auth_service: sigsci-agent.default:9999
    path_prefix: ""
    tls: false
    proto: grpc
    protocol_version: v3
    include_body:
      max_bytes: 8192
      allow_partial: true
    failure_mode_allow: true
    timeout_ms: 100000
```

FilterPolicy

The FilterPolicy resource maps what paths will be inspected by the agent. You can map this to all traffic (`path: /*`) or subsets (`path: /app1/*`). However, there is a limitation that each subset must map to the same agent. This is due to a limitation on the LogService not having a path based filter like the FilterPolicy. The LogService must route all matching response data to the same agent that handled the request.

Example routing all traffic to the agent:

```
# FilterPolicy defines which requests go to sigsci
kind: FilterPolicy
apiVersion: getambassador.io/v3alpha1
metadata:
  namespace: ambassador
  name: sigsci-policy
  annotations:
    getambassador.io/resource-changed: "true"
spec:
  rules:
    - host: "*"
      # All traffic to the sigsci-agent
      path: "/*"
      filters:
        # Use the same name as the Filter above
        - name: sigsci
          namespace: ambassador
          onDeny: break
          onAllow: continue
          ifRequestHeader: null
          arguments: {}
```

You can route subsets of traffic to the agent with multiple rules. However every rule must go to the same agent due to the limitations described above.

Example routing subsets of traffic to the agent:

```
# FilterPolicy defines which requests go to the sigsci-agent
kind: FilterPolicy
apiVersion: getambassador.io/v3alpha1
metadata:
  namespace: ambassador
  name: sigsci-policy
  annotations:
    getambassador.io/resource-changed: "true"
spec:
  rules:
    # /app1/* and /app2/* to the sigsci-agent
    - host: "*"
      path: "/app1/*"
      filters:
        # Use the same name as the Filter above
        - name: sigsci
          namespace: ambassador
          onDeny: break
          onAllow: continue
          ifRequestHeader: null
          arguments: {}
    - host: "*"
      path: "/app2/*"
      filters:
        # Use the same name as the Filter above
        - name: sigsci
          namespace: ambassador
          onDeny: break
          onAllow: continue
          ifRequestHeader: null
          arguments: {}
```

LogService

The LogService resource is used to add the gRPC Access Log Service to Envoy. This will inspect the outgoing response data and record this data if a signal was detected. It is also used for anomaly signals such as `HTTP_4XX` and `HTTP_5XX`.

The namespace used for the `service` configuration is the namespace the agent is deployed to. This guide uses the `ambassador` namespace for sidecar agents and `default` namespace for standalone agents. The format for the `service` URL must be:

`agent-hostname[.namespace]:agent-port`

Examples:

- Sidecar: `service: localhost:9999`
- Standalone: `service: sigsci-agent.default:9999`

Example:

```
# Configure the access log gRPC service for the response
# NOTE: There is no policy equiv here, so all requests are sent
apiVersion: getambassador.io/v3alpha1
kind: LogService
metadata:
  namespace: ambassador
  name: sigsci-agent
spec:
  # Sidecar agent
  service: localhost:9999
  # Standalone sigsci-agent service in default namespace:
  #service: sigsci-agent.default:9999
  driver: http
  driver_config:
    additional_log_headers:
    ### Request headers:
    # Required:
    - header_name: "x-sigsci-request-id"
```

```yaml
      during_request: true
      during_response: false
      during_trailer: false
    - header_name: "x-sigsci-waf-response"
      during_request: true
      during_response: false
      during_trailer: false
    # Recommended:
    - header_name: "accept"
      during_request: true
      during_response: false
      during_trailer: false
    - header_name: "date"
      during_request: false
      during_response: true
      during_trailer: true
    - header_name: "server"
      during_request: false
      during_response: true
      during_trailer: true
    ### Both request/response headers:
    # Recommended
    - header_name: "content-type"
      during_request: true
      during_response: true
      during_trailer: true
    - header_name: "content-length"
      during_request: true
      during_response: true
      during_trailer: true
  grpc: true
  protocol_version: v3
```

Kubernetes Envoy

Last updated: 2024-03-14

/en/ngwaf/kubernetes-envoy

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

In this example, the Next-Gen WAF agent runs in a Docker sidecar and communicates directly with an Envoy proxy deployed on the application.

Integrating the Next-Gen WAF agent

The Next-Gen WAF agent can be installed as a sidecar into each pod or as a service for some specialized needs.

The recommended way of installing the Next-Gen WAF agent in Kubernetes is by integrating the `sigsci-agent` into a pod as a sidecar. This means adding the `sigsci-agent` as an additional container to the Kubernetes pod. As a sidecar, the agent will scale with the app/service in the pod instead of having to do this separately. However, in some situations, it may make more sense to install the `sigsci-agent` container as a service and scale it separately from the application.

The `sigsci-agent` container can be configured in various ways depending on the installation type and module being used.

You can use the `preStop` container hook to slow the pod's shutdown and ensure drain timeouts are met.

```
preStop:
  exec:
    command:
      - sleep
      - "30"
```

By default, the agent prioritizes quick start up and performance readiness for preliminary inspection. However, quick startup isn't always desirable if you only want the agent to inspect traffic after loading your rules and configuration data. If you want to delay agent startup, consider configuring a startup probe.

Getting and updating the agent container image

An official `signalsciences/sigsci-agent` container image is available on Docker Hub.

Alternatively, if you want to build your own image or need to customize the image, then follow the sigsci-agent build instructions.

These instructions reference the `latest` version of the agent with `imagePullPolicy: Always`, which will pull the latest agent version even if one already exist locally. This is so the documentation does not fall out of date and anyone using this will not have an agent that stays stagnant. However, this may not be what if you need to keep installations consistent or on a specific version of the agent. In these cases, you should specify an agent version. Images on Docker Hub are tagged with their versions and a list of versions is available on Docker Hub.

Whether you choose to use the `latest` image or a specific version, there are a few items to consider to keep the agent up-to-date.

Using the `latest` container image

If you do choose to use the `latest` image, then you will want to consider how you will keep the agent up to date.

- If you have used the `imagePullPolicy: Always` option, then the latest image will be pulled on each startup and your agent will continue to get updates.
- Alternatively, you may instead choose to manually update the local cache by periodically forcing a pull instead of always pulling on startup:

  ```
  $ docker pull signalsciences/sigsci-agent:latest
  ```

  Then, use `latest` with `imagePullPolicy: Never` set in the configuration so that pulls are never done on startup (only manually as above):

  ```
  - name: sigsci-agent
    image: signalsciences/sigsci-agent:latest
    imagePullPolicy: Never
    ...
  ```

Using a versioned container image

To use a specific version of the agent, replace `latest` with the agent version (represented here by `x.xx.x`). You may also want to change `imagePullPolicy: IfNotPresent` in this case as the image should not change.

```
- name: sigsci-agent
```

```
    image: signalsciences/sigsci-agent:x.xx.x
    imagePullPolicy: IfNotPresent
    ...
```

This will pull the specified agent version and cache it locally. If you use this method, then it is recommended that you parameterize the agent image, using Helm or similar, so that it is easier to update the agent images later on.

Using a custom tag for the container image

It is also possible to apply a custom tag to a local agent image. To do this, pull the agent image (by version or use `latest`), apply a custom tag, then use that custom tag in the configuration. You will need to specify `imagePullPolicy: Never` so local images are only updated manually. After doing so, you will need to periodically update the local image to keep the agent up-to-date.

For example:

```
$ docker pull signalsciences/sigsci-agent:latest
$ docker tag signalsciences/sigsci-agent:latest signalsciences/sigsci-agent:testing
```

Then use this image tag in the configuration:

```
- name: sigsci-agent
    image: signalsciences/sigsci-agent:testing
    imagePullPolicy: Never
...
```

Configuring the agent container

Agent configuration is normally done via the environment. Most configuration options are available as environment variables. Environment variables names have the configuration option name all capitalized, prefixed with `SIGSCI_` and any dashes (-) changed to underscores (_). For example, the max-procs option would become the `SIGSCI_MAX_PROCS` environment variable. For more details on what options are available, see the Agent Configuration documentation.

The `sigsci-agent` container has a few required options that need to be configured:

- Agent credentials (**Agent Access Key** and **Agent Secret Key**).
- A volume to write temporary files.

Agent credentials

The `sigsci-agent` credentials are configured with two environment variables. These variables must be set or the agent will not start.

- **SIGSCI_ACCESSKEYID**: The **Agent Access Key** identifies which site (also known as workspace) in the Next-Gen WAF control panel that the agent is configured for.
- **SIGSCI_SECRETACCESSKEY**: The **Agent Secret Key** is the shared secret key to authenticate and authorize the agent.

Because of the sensitive nature of these values, we recommend you use the built in `secrets` functionality of Kubernetes. With this configuration, the agent will pull the values from the secrets data instead of reading hardcoded values into the deployment configuration. This also makes any desired agent credential rotation easier to manage by having to change them in only one place.

Use the `valueFrom` option instead of the `value` option to use the `secrets` functionality. For example:

```
env:
  - name: SIGSCI_ACCESSKEYID
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: accesskeyid
  - name: SIGSCI_SECRETACCESSKEY
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: secretaccesskey
```

The `secrets` functionality keeps secrets in various stores in Kubernetes. This guide uses the generic secret store in its examples, however any equivalent store can be used. Agent secrets can be added to the generic secret store using YAML similar to the following example:

```
apiVersion: v1
kind: Secret
metadata:
  name: sigsci.my-site-name-here
stringData:
  accesskeyid: 12345678-abcd-1234-abcd-1234567890ab
  secretaccesskey: abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

This can also be created from the command line with `kubectl` such as with the following example:

```
$ kubectl create secret generic sigsci.my-site-name-here \
  --from-literal=accesskeyid=12345678-abcd-1234-abcd-1234567890ab \
  --from-literal=secretaccesskey=abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

Additional information about Kubernetes `secrets` functionality can be found in the Kubernetes documentation.

Agent temporary volume

For added security, we recommended the `sigsci-agent` container be executed with the root filesystem mounted as read only. However, the agent still needs to write some temporary files such as the socket file for RPC communication and some periodically updated files such as geolocation data.

To accomplish this with a read only root filesystem, there needs to be a writeable volume mounted. This writeable volume can also be shared to expose the RPC socket file to other containers in the same pod.

The recommended way of creating a writeable volume is to use the builtin `emptyDir` volume type. This is typically configured in the `volumes` section of a deployment, as shown in the following example:

```
volumes:
  - name: sigsci-tmp
    emptyDir: {}
```

Containers will then mount this volume at `/sigsci/tmp`:

```
volumeMounts:
  - name: sigsci-tmp
    mountPath: /sigsci/tmp
```

The default in the official agent container image is to have the temporary volume mounted at `/sigsci/tmp`. If this needs to be moved for the agent container, then the following agent configuration options should also be changed from their defaults to match the new mount location:

- `rpc-address` defaults to `/sigsci/tmp/sigsci.sock`
- `shared-cache-dir` defaults to `/sigsci/tmp/cache`

Integrating the Next-Gen WAF agent into an Envoy Proxy

You can deploy the Next-Gen WAF agent for integration with the Envoy Proxy via the External Authorization (`ext_authz`), HTTP filter. This filter communicates with the `sigsci-agent` via gRPC.

Generic Envoy Proxy

Configuration for Envoy and the Next-Gen WAF agent are documented with the other modules in the Envoy install guide. This guide is for deploying the Next-Gen WAF agent as a sidecar to your existing Envoy configuration. Deploying the `sigsci-agent` container as a sidecar to Envoy is similar to a typical module based deployment, but configuration is slightly different.

To deploy the Next-Gen WAF agent as a sidecar to Envoy, you must:

- Modify your existing Envoy configuration as noted in the Envoy install guide.
- Add the `sigsci-agent` container to the pod, configured in Envoy gRPC listener mode.
- Add an `emptyDir{}` volume as a place for the `sigsci-agent` to write temporary data.

Modifying the Envoy Proxy configuration

Modify your existing Envoy configuration as detailed in the Envoy install guide.

Add the Next-Gen WAF agent as an Envoy gRPC Service:

```
...
   containers:
   # Example Envoy front proxy running on port 8000
   - name: envoy-frontproxy
     image: signalsciences/envoy-frontproxy:latest
     imagePullPolicy: IfNotPresent
     args:
     - -c
     - /etc/envoy/envoy.yaml
     - --service-cluster
     - front-proxy
     - -l
     - info
     ports:
     - containerPort: 8000
   # Example helloworld app running on port 8080 without sigsci configured (accessed via Envoy p
   - name: helloworld
     image: signalsciences/example-helloworld:latest
     imagePullPolicy: IfNotPresent
     args:
     # Address for the app to listen on
     - localhost:8080
     ports:
     - containerPort: 8080
   # Next-Gen WAF agent running in Envoy gRPC mode (SIGSCI_ENVOY_GRPC_ADDRESS configured)
   - name: sigsci-agent
     image: signalsciences/sigsci-agent:latest
     imagePullPolicy: IfNotPresent
     # Configure the agent to use Envoy gRPC on port 9999
     env:
     - name: SIGSCI_ACCESSKEYID
       valueFrom:
         secretKeyRef:
           # This secret needs added (see docs on sigsci secrets)
           name: sigsci.my-site-name-here
           key: accesskeyid
     - name: SIGSCI_SECRETACCESSKEY
       valueFrom:
         secretKeyRef:
           # This secret needs added (see docs on sigsci secrets)
           name: sigsci.my-site-name-here
           key: secretaccesskey
     # Configure the Envoy to expect response data (if using a gRPC access log config for Envoy)
     - name: SIGSCI_ENVOY_EXPECT_RESPONSE_DATA
       value: "1"
     # Configure the Envoy gRPC listener address on any unused port
     - name: SIGSCI_ENVOY_GRPC_ADDRESS
       value: localhost:9999
     ports:
     - containerPort: 9999
     securityContext:
       # The sigsci-agent container should run with its root filesystem read only
       readOnlyRootFilesystem: true
```

Adding the Next-Gen WAF agent temp volume definition to the deployment

The agent temp volume must be defined for use by the other containers in the pod. This example uses the builtin `emptyDir: {}` volume type:

```
...
      volumes:
      # Define a volume where sigsci-agent will write temp data and share the socket file,
      # which is required with the root filesystem is mounted read only
      - name: sigsci-tmp
        emptyDir: {}
```

Kubernetes installation overview

Last updated: 2022-12-07

/en/ngwaf/kubernetes-intro

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

We recommend starting with the most common deployment scenario Agent + Module if you are unsure what module to start with. After installing Agent + Module, try out the other options listed below.

Get Started

To start installing Next-Gen WAF on Kubernetes, choose your deployment option:

- Reverse Proxy
- Agent + Module
- Agent + Ingress Controller + Module
- Envoy
- Istio
- Ambassador
- Pivotal Container Services (PKS)
- AWS Elastic Container Service (ECS)

Kubernetes Istio

Last updated: 2024-04-03

/en/ngwaf/kubernetes-istio

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

In this example, the Next-Gen WAF agent runs in a Docker sidecar and integrates directly with an Istio service mesh deployed on the application. In this configuration, you can configure the Next-Gen WAF to inspect east/west (service-to-service) web requests along with the traditional north/south (client to server) requests.

Integrating the Next-Gen WAF agent

The Next-Gen WAF agent can be installed as a sidecar into each pod or as a service for some specialized needs.

The recommended way of installing the Next-Gen WAF agent in Kubernetes is by integrating the `sigsci-agent` into a pod as a sidecar. This means adding the `sigsci-agent` as an additional container to the Kubernetes pod. As a sidecar, the agent will scale with the app/service in the pod instead of having to do this separately. However, in some situations, it may make more sense to install the `sigsci-agent` container as a service and scale it separately from the application.

The `sigsci-agent` container can be configured in various ways depending on the installation type and module being used.

You can use the `preStop` container hook to slow the pod's shutdown and ensure drain timeouts are met.

```
preStop:
  exec:
    command:
      - sleep
      - "30"
```

By default, the agent prioritizes quick start up and performance readiness for preliminary inspection. However, quick startup isn't always desirable if you only want the agent to inspect traffic after loading your rules and configuration data. If you want to delay agent startup, consider configuring a startup probe.

Getting and updating the agent container image

An official `signalsciences/sigsci-agent` container image is available on Docker Hub.

Alternatively, if you want to build your own image or need to customize the image, then follow the sigsci-agent build instructions.

These instructions reference the `latest` version of the agent with `imagePullPolicy: Always`, which will pull the latest agent version even if one already exist locally. This is so the documentation does not fall out of date and anyone using this will not have an agent that stays stagnant. However, this may not be what if you need to keep installations consistent or on a specific version of the agent. In these cases, you should specify an agent version. Images on Docker Hub are tagged with their versions and a list of versions is available on Docker Hub.

Whether you choose to use the `latest` image or a specific version, there are a few items to consider to keep the agent up-to-date.

Using the `latest` container image

If you do choose to use the `latest` image, then you will want to consider how you will keep the agent up to date.

- If you have used the `imagePullPolicy: Always` option, then the latest image will be pulled on each startup and your agent will continue to get updates.
- Alternatively, you may instead choose to manually update the local cache by periodically forcing a pull instead of always pulling on startup:

  ```
  $ docker pull signalsciences/sigsci-agent:latest
  ```

  Then, use `latest` with `imagePullPolicy: Never` set in the configuration so that pulls are never done on startup (only manually as above):

  ```
  - name: sigsci-agent
      image: signalsciences/sigsci-agent:latest
      imagePullPolicy: Never
      ...
  ```

Using a versioned container image

To use a specific version of the agent, replace `latest` with the agent version (represented here by `x.xx.x`). You may also want to change `imagePullPolicy: IfNotPresent` in this case as the image should not change.

```
- name: sigsci-agent
    image: signalsciences/sigsci-agent:x.xx.x
    imagePullPolicy: IfNotPresent
    ...
```

This will pull the specified agent version and cache it locally. If you use this method, then it is recommended that you parameterize the agent image, using Helm or similar, so that it is easier to update the agent images later on.

Using a custom tag for the container image

It is also possible to apply a custom tag to a local agent image. To do this, pull the agent image (by version or use `latest`), apply a custom tag, then use that custom tag in the configuration. You will need to specify `imagePullPolicy: Never` so local images are only updated manually. After doing so, you will need to periodically update the local image to keep the agent up-to-date.

For example:

```
$ docker pull signalsciences/sigsci-agent:latest
$ docker tag signalsciences/sigsci-agent:latest signalsciences/sigsci-agent:testing
```

Then use this image tag in the configuration:

```
- name: sigsci-agent
```

```
    image: signalsciences/sigsci-agent:testing
    imagePullPolicy: Never
...
```

Configuring the agent container

Agent configuration is normally done via the environment. Most configuration options are available as environment variables. Environment variables names have the configuration option name all capitalized, prefixed with `SIGSCI_` and any dashes (-) changed to underscores (_). For example, the max-procs option would become the `SIGSCI_MAX_PROCS` environment variable. For more details on what options are available, see the Agent Configuration documentation.

The `sigsci-agent` container has a few required options that need to be configured:

- Agent credentials (**Agent Access Key** and **Agent Secret Key**).
- A volume to write temporary files.

Agent credentials

The `sigsci-agent` credentials are configured with two environment variables. These variables must be set or the agent will not start.

- **SIGSCI_ACCESSKEYID**: The **Agent Access Key** identifies which site (also known as workspace) in the Next-Gen WAF control panel that the agent is configured for.
- **SIGSCI_SECRETACCESSKEY**: The **Agent Secret Key** is the shared secret key to authenticate and authorize the agent.

Because of the sensitive nature of these values, we recommend you use the built in `secrets` functionality of Kubernetes. With this configuration, the agent will pull the values from the secrets data instead of reading hardcoded values into the deployment configuration. This also makes any desired agent credential rotation easier to manage by having to change them in only one place.

Use the `valueFrom` option instead of the `value` option to use the `secrets` functionality. For example:

```
env:
  - name: SIGSCI_ACCESSKEYID
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: accesskeyid
  - name: SIGSCI_SECRETACCESSKEY
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: secretaccesskey
```

The `secrets` functionality keeps secrets in various stores in Kubernetes. This guide uses the generic secret store in its examples, however any equivalent store can be used. Agent secrets can be added to the generic secret store using YAML similar to the following example:

```
apiVersion: v1
kind: Secret
metadata:
  name: sigsci.my-site-name-here
stringData:
  accesskeyid: 12345678-abcd-1234-abcd-1234567890ab
  secretaccesskey: abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

This can also be created from the command line with `kubectl` such as with the following example:

```
$ kubectl create secret generic sigsci.my-site-name-here \
  --from-literal=accesskeyid=12345678-abcd-1234-abcd-1234567890ab \
  --from-literal=secretaccesskey=abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

Additional information about Kubernetes `secrets` functionality can be found in the Kubernetes documentation.

Agent temporary volume

For added security, we recommended the `sigsci-agent` container be executed with the root filesystem mounted as read only. However, the agent still needs to write some temporary files such as the socket file for RPC communication and some periodically updated files such as geolocation data.

To accomplish this with a read only root filesystem, there needs to be a writeable volume mounted. This writeable volume can also be shared to expose the RPC socket file to other containers in the same pod.

The recommended way of creating a writeable volume is to use the builtin `emptyDir` volume type. This is typically configured in the `volumes` section of a deployment, as shown in the following example:

```
volumes:
  - name: sigsci-tmp
    emptyDir: {}
```

Containers will then mount this volume at `/sigsci/tmp`:

```
volumeMounts:
  - name: sigsci-tmp
    mountPath: /sigsci/tmp
```

The default in the official agent container image is to have the temporary volume mounted at `/sigsci/tmp`. If this needs to be moved for the agent container, then the following agent configuration options should also be changed from their defaults to match the new mount location:

- `rpc-address` defaults to `/sigsci/tmp/sigsci.sock`
- `shared-cache-dir` defaults to `/sigsci/tmp/cache`

Integrating the Next-Gen WAF agent using external authorization

As of Istio v1.9, support has been added to setup an authorization policy that delegates access control to an external authorization system.

The snippets below follow Istio's example and enhance the process to replace the example `ext-authz` service with the Next-Gen WAF agent. Refer to the Istio documentation for initial namespace and test workloads, as those are referenced in the snippets below. All files are applied to the 'foo' namespace unless otherwise indicated.

Deploy the external authorizer

Assumes the secrets have been applied.

```
apiVersion: v1
kind: Service
metadata:
  name: sigsci-agent
  labels:
    app: sigsci-agent
```

```
spec:
  ports:
  - name: grpc
    port: 9999
    targetPort: 9999
  selector:
    app: sigsci-agent
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: sigsci-agent
spec:
  replicas: 1
  selector:
    matchLabels:
      app: sigsci-agent
  template:
    metadata:
      labels:
        app: sigsci-agent
    spec:
      containers:
      - name: sigsci-agent
        image: signalsciences/sigsci-agent:latest
        imagePullPolicy: IfNotPresent
        # Configure the agent to use Envoy gRPC on port 9999
        env:
        - name: SIGSCI_ACCESSKEYID
          valueFrom:
            secretKeyRef:
              # This secret needs added (see docs on sigsci secrets)
              name: sigsci-agent-accesskey
              key: accesskeyid
        - name: SIGSCI_SECRETACCESSKEY
          valueFrom:
            secretKeyRef:
              # This secret needs added (see docs on sigsci secrets)
              name: sigsci-agent-accesskey
              key: secretaccesskey
        # Configure the Envoy to expect response data (if using a gRPC access log config for Envoy)
        - name: SIGSCI_ENVOY_EXPECT_RESPONSE_DATA
          value: "1"
        - name: SIGSCI_ENVOY_GRPC_ADDRESS
          value: :9999
        ports:
        - containerPort: 9999
        securityContext:
          # The sigsci-agent container should run with its root filesystem read only
          readOnlyRootFilesystem: true
---
```

Verify the Agent is running.

```
$ kubectl logs "$(kubectl get pod -l app=sigsci-agent -n foo -o jsonpath={.items..metadata.name})" -n fo
```

Define the external authorizer

Edit the mesh config with the following command and add the extension provide definitions.

```
$ kubectl edit configmap istio -n istio-system
```

```
data:
  mesh: |-
    # Add the following content to define the external authorizers.
    extensionProviders:
      - name: "sigsci-agent-ext-authz"
        envoyExtAuthzGrpc:
          service: "sigsci-agent.foo.svc.cluster.local"
          port: "9999"
          timeout: 0.2s
          failOpen: true
          includeRequestBodyInCheck:
            packAsBytes: true
            allowPartialMessage: true
            maxRequestBytes: 8192
      - name: "sigsci-agent-access-log"
        envoyHttpAls:
          service: "sigsci-agent.foo.svc.cluster.local"
          port: "9999"
          additionalRequestHeadersToLog:
          - "x-sigsci-request-id"
          - "x-sigsci-waf-response"
          - "accept"
          - "content-type"
          - "content-length"
          additionalResponseHeadersToLog:
          - "date"
          - "server"
          - "content-type"
          - "content-length"
```

Enable with external authorization

Enable the external authorization and apply logging.

```
apiVersion: security.istio.io/v1beta1
kind: AuthorizationPolicy
metadata:
  name: ext-authz
spec:
  selector:
    matchLabels:
      app: httpbin
  action: CUSTOM
  provider:
    # The provider name must match the extension provider defined in the mesh config.
    name: sigsci-agent-ext-authz
  rules:
    # The rules specify when to trigger the external authorizer.
    - to:
      - operation:
          paths: ["/headers"]
```

```
# kubectl apply -f logging.yaml
apiVersion: telemetry.istio.io/v1alpha1
kind: Telemetry
metadata:
  name: mesh-default
  namespace: istio-system
spec:
  accessLogging:
    - providers:
      - name: sigsci-agent-access-log
```

```
# In another terminal curl the httpbin app:
$ kubectl exec "$(kubectl get pod -l app=sleep -n foo -o jsonpath={.items..metadata.name})" -c sleep -n

# tail the logs
$ kubectl logs -f "$(kubectl get pod -l app=sigsci-agent -n foo -o jsonpath={.items..metadata.name})" -n
```

Integrating the Next-Gen WAF agent using EnvoyFilter

Istio uses Envoy proxy under its hood. Because of this, Istio can use the Next-Gen WAF agent in gRPC mode in the same way as with a generic Envoy install. The method of installing and configuring the Next-Gen WAF agent is similar to a generic Envoy install except the Envoy proxy is automatically deployed as a sidecar. Envoy is then configured using Istio's `EnvoyFilter`. Full Istio integration is only possible in Istio v1.3 or later due to the required extensions to `EnvoyFilter`.

To add Next-Gen WAF support to an Istio based application deployment, you will need to:

- Add the `sigsci-agent` container to the pod, configured in Envoy gRPC listener mode.
- Add an `emptyDir{}` volume as a place for the `sigsci-agent` to write temporary data.
- Add an Istio `EnvoyFilter` for the app to allow the required Envoy configuration to be injected into the generated `istio-proxy` config.

Add the Next-Gen WAF agent as an Envoy gRPC service

```
...
      containers:
      # Example helloworld app running on port 8000 without sigsci configured
      - name: helloworld
        image: signalsciences/example-helloworld:latest
        imagePullPolicy: IfNotPresent
        args:
        # Address for the app to listen on
        - localhost:8080
        ports:
        - containerPort: 8080
      # Next-Gen WAF agent running in Envoy gRPC mode (SIGSCI_ENVOY_GRPC_ADDRESS configured)
      - name: sigsci-agent
        image: signalsciences/sigsci-agent:latest
        imagePullPolicy: IfNotPresent
        # Configure the agent to use Envoy gRPC on port 9999
        env:
        - name: SIGSCI_ACCESSKEYID
```

```
          valueFrom:
            secretKeyRef:
              # This secret needs added (see docs on sigsci secrets)
              name: sigsci.my-site-name-here
              key: accesskeyid
        - name: SIGSCI_SECRETACCESSKEY
          valueFrom:
            secretKeyRef:
              # This secret needs added (see docs on sigsci secrets)
              name: sigsci.my-site-name-here
              key: secretaccesskey
        # Configure the Envoy to expect response data (if using a gRPC access log config for Envoy)
        - name: SIGSCI_ENVOY_EXPECT_RESPONSE_DATA
          value: "1"
        # Configure the Envoy gRPC listener address on any unused port
        - name: SIGSCI_ENVOY_GRPC_ADDRESS
          value: localhost:9999
        ports:
        - containerPort: 9999
        securityContext:
          # The sigsci-agent container should run with its root filesystem read only
          readOnlyRootFilesystem: true
```

Adding the Next-Gen WAF agent temp volume definition to the deployment

The agent temp volume needs to be defined for use by the other containers in the pod using the builtin `emptyDir: {}` volume type:

```
...
      volumes:
      # Define a volume where sigsci-agent will write temp data and share the socket file,
      # which is required with the root filesystem is mounted read only
      - name: sigsci-tmp
        emptyDir: {}
```

Adding the Istio EnvoyFilter object to inject the required Envoy config into the Istio proxy

Istio's `EnvoyFilter` object is a feature rich way of customizing the Envoy configuration for the `istio-proxy`.

You will need to set the `EnvoyFilter metadata.name` field and the `spec.workloadSelector.labels.app` field to the application name below. Additional Envoy configuration options are outlined in the Envoy install guide. These sections are highlighted with comments in the example YAML.

Example `example-helloworld_sigsci-envoyfilter.yaml`:

```
# The following adds the required Envoy configuration into the istio-proxy configuration
apiVersion: networking.istio.io/v1alpha3
kind: EnvoyFilter
metadata:
  # This needs adjusted to be the app name protected by sigsci
  name: helloworld
spec:
  workloadSelector:
    labels:
      # This needs adjusted to be the app name protected by sigsci
      app: helloworld

  # Patch the Envoy configuration, adding in the required sigsci config
  configPatches:

  # Adds the ext_authz HTTP filter for the sigsci-agent ext_authz API
  - applyTo: HTTP_FILTER
    match:
      context: SIDECAR_INBOUND
      listener:
        name: virtualInbound
        filterChain:
          filter:
            name: "envoy.http_connection_manager"
    patch:
      operation: INSERT_BEFORE
      value:
        # Configure the envoy.ext_authz here:
        name: envoy.filters.http.ext_authz
        typed_config:
          "@type": "type.googleapis.com/envoy.extensions.filters.http.ext_authz.v3.ExtAuthz"
          transport_api_version: "V3"
          grpc_service:
            # NOTE: *SHOULD* use envoy_grpc as ext_authz can use dynamic clusters and has connectio
            envoy_grpc:
              cluster_name: sigsci-agent-grpc
            timeout: 0.2s
          failure_mode_allow: true
          with_request_body:
            max_request_bytes: 8192
            allow_partial_message: true

  # Adds the access_log entry for the sigsci-agent http_grpc_access_log API
  - applyTo: NETWORK_FILTER
    match:
      context: SIDECAR_INBOUND
      listener:
        name: virtualInbound
        filterChain:
          filter:
            name: "envoy.http_connection_manager"
    patch:
      operation: MERGE
      value:
        name: "envoy.http_connection_manager"
        typed_config:
          "@type": "type.googleapis.com/envoy.extensions.filters.network.http_connection_manager.v3
          access_log:
          # Configure the envoy.http_grpc_access_log here:
          - name: "envoy.http_grpc_access_log"
            typed_config:
              "@type": "type.googleapis.com/envoy.extensions.access_loggers.grpc.v3.HttpGrpcAccessL
              common_config:
                log_name: "sigsci-agent-grpc"
                transport_api_version: "V3"
                grpc_service:
                  # NOTE: *MUST* use google_grpc as envoy_grpc cannot handle a dynamic cluster for
                  google_grpc:
                    # The address *MUST* be 127.0.0.1 so that communication is intra-pod
                    # Configure the sigsci-agent port number here:
```

```
           target_uri: 127.0.0.1:9999
           stat_prefix: "sigsci-agent"
          timeout: 0.2s
        additional_request_headers_to_log:
        # These are required:
        - "x-sigsci-request-id"
        - "x-sigsci-waf-response"
        # These are additional you want recorded:
        - "accept"
        - "content-type"
        - "content-length"
        additional_response_headers_to_log:
        # These are additional you want recorded:
        - "date"
        - "server"
        - "content-type"
        - "content-length"

  # Adds a dynamic cluster for the sigsci-agent via CDS for sigsci-agent ext_authz API
  - applyTo: CLUSTER
   patch:
    operation: ADD
    value:
     name: sigsci-agent-grpc
     type: STRICT_DNS
     connect_timeout: 0.5s
     http2_protocol_options: {}
     load_assignment:
      cluster_name: sigsci-agent-grpc
      endpoints:
      - lb_endpoints:
       - endpoint:
         address:
          socket_address:
           # The address *MUST* be 127.0.0.1 so that communication is intra-pod
           address: 127.0.0.1
           # Configure the agent port here:
           port_value: 9999
```

The application can then be deployed as you normally would with Istio. For example:

```
$ istioctl kube-inject -f example-helloworld-sigsci.yaml | kubectl apply -f -
service/helloworld created
deployment.apps/helloworld created
$ kubectl apply -f example-helloworld-sigsci_envoyfilter.yaml
envoyfilter.networking.istio.io/helloworld created
$ kubectl get pods
NAME                          READY   STATUS    RESTARTS   AGE
helloworld-7954bb57bc-pfr22   3/3     Running   2          33s
$ kubectl get pod helloworld-7954bb57bc-pfr22 -o jsonpath='{.spec.containers[*].name}'
helloworld sigsci-agent istio-proxy
$ kubectl logs helloworld-7954bb57bc-pfr22 sigsci-agent | head
2019/10/01 21:04:57.540047 Signal Sciences Agent 4.39.0 starting as user sigsci with PID 1, Max open fil
2019/10/01 21:04:57.541987 =====================================================
2019/10/01 21:04:57.542028 Agent:    helloworld-7954bb57bc-pfr22
2019/10/01 21:04:57.542034 System:   alpine 3.9.4 (linux 4.9.184-linuxkit)
2019/10/01 21:04:57.542173 Memory:   1.672G / 3.854G RAM available
```

```
2019/10/01 21:04:57.542187 CPU:       6 MaxProcs / 12 CPU cores available
2019/10/01 21:04:57.542257 ================================================
2019/10/01 21:04:57.630755 Envoy gRPC server on 127.0.0.1:9999 starting
```

Note that there are three containers running in the pod: `app=helloworld`, `sigsci-agent`, and the `istio-proxy`.

Kubernetes reverse proxy

Last updated: 2024-03-14

/en/ngwaf/kubernetes-reverse-proxy

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

In this example, the Next-Gen WAF agent runs in a sidecar container and proxies all incoming requests for inspection before sending them upstream to the application container.

Integrating the Next-Gen WAF agent

The Next-Gen WAF agent can be installed as a sidecar into each pod or as a service for some specialized needs.

The recommended way of installing the Next-Gen WAF agent in Kubernetes is by integrating the `sigsci-agent` into a pod as a sidecar. This means adding the `sigsci-agent` as an additional container to the Kubernetes pod. As a sidecar, the agent will scale with the app/service in the pod instead of having to do this separately. However, in some situations, it may make more sense to install the `sigsci-agent` container as a service and scale it separately from the application.

The `sigsci-agent` container can be configured in various ways depending on the installation type and module being used.

You can use the `preStop` container hook to slow the pod's shutdown and ensure drain timeouts are met.

```
preStop:
  exec:
    command:
      - sleep
      - "30"
```

By default, the agent prioritizes quick start up and performance readiness for preliminary inspection. However, quick startup isn't always desirable if you only want the agent to inspect traffic after loading your rules and configuration data. If you want to delay agent startup, consider configuring a startup probe.

Getting and updating the agent container image

An official `signalsciences/sigsci-agent` container image is available on Docker Hub.

Alternatively, if you want to build your own image or need to customize the image, then follow the sigsci-agent build instructions.

These instructions reference the `latest` version of the agent with `imagePullPolicy: Always`, which will pull the latest agent version even if one already exist locally. This is so the documentation does not fall out of date and anyone using this will not have an agent that stays stagnant. However, this may not be what if you need to keep installations consistent or on a specific version of the agent. In these cases, you should specify an agent version. Images on Docker Hub are tagged with their versions and a list of versions is available on Docker Hub.

Whether you choose to use the `latest` image or a specific version, there are a few items to consider to keep the agent up-to-date.

Using the `latest` container image

If you do choose to use the `latest` image, then you will want to consider how you will keep the agent up to date.

- If you have used the `imagePullPolicy: Always` option, then the latest image will be pulled on each startup and your agent will continue to get updates.
- Alternatively, you may instead choose to manually update the local cache by periodically forcing a pull instead of always pulling on startup:

  ```
  $ docker pull signalsciences/sigsci-agent:latest
  ```

  Then, use `latest` with `imagePullPolicy: Never` set in the configuration so that pulls are never done on startup (only manually as above):

  ```
  - name: sigsci-agent
      image: signalsciences/sigsci-agent:latest
      imagePullPolicy: Never
      ...
  ```

Using a versioned container image

To use a specific version of the agent, replace `latest` with the agent version (represented here by `x.xx.x`). You may also want to change `imagePullPolicy: IfNotPresent` in this case as the image should not change.

```
- name: sigsci-agent
    image: signalsciences/sigsci-agent:x.xx.x
    imagePullPolicy: IfNotPresent
    ...
```

This will pull the specified agent version and cache it locally. If you use this method, then it is recommended that you parameterize the agent image, using Helm or similar, so that it is easier to update the agent images later on.

Using a custom tag for the container image

It is also possible to apply a custom tag to a local agent image. To do this, pull the agent image (by version or use `latest`), apply a custom tag, then use that custom tag in the configuration. You will need to specify `imagePullPolicy: Never` so local images are only updated manually. After doing so, you will need to periodically update the local image to keep the agent up-to-date.

For example:

```
$ docker pull signalsciences/sigsci-agent:latest
$ docker tag signalsciences/sigsci-agent:latest signalsciences/sigsci-agent:testing
```

Then use this image tag in the configuration:

```
- name: sigsci-agent
    image: signalsciences/sigsci-agent:testing
    imagePullPolicy: Never
...
```

Configuring the agent container

Agent configuration is normally done via the environment. Most configuration options are available as environment variables. Environment variables names have the configuration option name all capitalized, prefixed with `SIGSCI_` and any dashes (-) changed to underscores (_). For example, the max-procs option would become the `SIGSCI_MAX_PROCS` environment variable. For more details on what options are available, see the Agent Configuration documentation.

The `sigsci-agent` container has a few required options that need to be configured:

- Agent credentials (**Agent Access Key** and **Agent Secret Key**).
- A volume to write temporary files.

Agent credentials

The `sigsci-agent` credentials are configured with two environment variables. These variables must be set or the agent will not start.

- **SIGSCI_ACCESSKEYID**: The **Agent Access Key** identifies which site (also known as workspace) in the Next-Gen WAF control panel that the agent is configured for.
- **SIGSCI_SECRETACCESSKEY**: The **Agent Secret Key** is the shared secret key to authenticate and authorize the agent.

Because of the sensitive nature of these values, we recommend you use the built in `secrets` functionality of Kubernetes. With this configuration, the agent will pull the values from the secrets data instead of reading hardcoded values into the deployment configuration. This also makes any desired agent credential rotation easier to manage by having to change them in only one place.

Use the `valueFrom` option instead of the `value` option to use the `secrets` functionality. For example:

```yaml
env:
  - name: SIGSCI_ACCESSKEYID
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: accesskeyid
  - name: SIGSCI_SECRETACCESSKEY
    valueFrom:
      secretKeyRef:
        # Update my-site-name-here to the correct site (workspace) name or similar identifier
        name: sigsci.my-site-name-here
        key: secretaccesskey
```

The `secrets` functionality keeps secrets in various stores in Kubernetes. This guide uses the generic secret store in its examples, however any equivalent store can be used. Agent secrets can be added to the generic secret store using YAML similar to the following example:

```yaml
apiVersion: v1
kind: Secret
metadata:
  name: sigsci.my-site-name-here
stringData:
  accesskeyid: 12345678-abcd-1234-abcd-1234567890ab
  secretaccesskey: abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

This can also be created from the command line with `kubectl` such as with the following example:

```
$ kubectl create secret generic sigsci.my-site-name-here \
  --from-literal=accesskeyid=12345678-abcd-1234-abcd-1234567890ab \
  --from-literal=secretaccesskey=abcdefg_hijklmn_opqrstuvwxy_z0123456789ABCD
```

Additional information about Kubernetes `secrets` functionality can be found in the Kubernetes documentation.

Agent temporary volume

For added security, we recommended the `sigsci-agent` container be executed with the root filesystem mounted as read only. However, the agent still needs to write some temporary files such as the socket file for RPC communication and some periodically updated files such as geolocation data.

To accomplish this with a read only root filesystem, there needs to be a writeable volume mounted. This writeable volume can also be shared to expose the RPC socket file to other containers in the same pod.

The recommended way of creating a writeable volume is to use the builtin `emptyDir` volume type. This is typically configured in the `volumes` section of a deployment, as shown in the following example:

```
volumes:
  - name: sigsci-tmp
    emptyDir: {}
```

Containers will then mount this volume at `/sigsci/tmp`:

```
volumeMounts:
  - name: sigsci-tmp
    mountPath: /sigsci/tmp
```

The default in the official agent container image is to have the temporary volume mounted at `/sigsci/tmp`. If this needs to be moved for the agent container, then the following agent configuration options should also be changed from their defaults to match the new mount location:

- `rpc-address` defaults to `/sigsci/tmp/sigsci.sock`
- `shared-cache-dir` defaults to `/sigsci/tmp/cache`

Next-Gen WAF agent as a reverse proxy in front of a web application without the Next-Gen WAF module

If your web application does not support a Next-Gen WAF module (or you prefer not to install a module), then you can configure the `sigsci-agent` container to run as a reverse proxy in front of the web application in the same pod.

To configure the Next-Gen WAF agent to run in reverse proxy mode in a sidecar container, you must:

- Add the `sigsci-agent` container to the pod, configured in reverse proxy mode to:
  - listen for incoming requests (on a new port or by reconfiguring your application or Kubernetes service accordingly)
  - proxy requests to your web application container
- Add an `emptyDir{}` volume as a place for the `sigsci-agent` to write temporary data.

The following configuration exposes an example application (`helloworld`) on port `8000`, adding the `sigsci-agent` as a reverse proxy listener on a new port `8001` with an upstream of the example web application port `8000`.

Add the Next-Gen WAF agent as a reverse proxy

```
...
      containers:
      # Example helloworld app running on port 8000 without sigsci configured
      - name: helloworld
        image: signalsciences/example-helloworld:latest
        imagePullPolicy: IfNotPresent
        args:
        - localhost:8000
        ports:
        - containerPort: 8000
      # Next-Gen WAF agent running in reverse proxy mode (SIGSCI_REVPROXY_LISTENER configured)
      - name: sigsci-agent
        image: signalsciences/sigsci-agent:latest
        imagePullPolicy: Always
        env:
        - name: SIGSCI_ACCESSKEYID
          valueFrom:
            secretKeyRef:
              name: sigsci.my-site-name-here
              key: accesskeyid
        - name: SIGSCI_SECRETACCESSKEY
          valueFrom:
            secretKeyRef:
              name: sigsci.my-site-name-here
              key: secretaccesskey
        # Configure the revproxy listener to listen on a new port 8001
        # forwarding to the app on the original port 8000 as the upstream
        - name: SIGSCI_REVPROXY_LISTENER
          value: "http:{listener='http://0.0.0.0:8001',upstreams='http://0.0.0.0:8000',access-log='
        ports:
        - containerPort: 8001
        securityContext:
          # The sigsci-agent container should run with its root filesystem read only
          readOnlyRootFilesystem: true
        volumeMounts:
        # Default volume mount location for sigsci-agent writeable data
        # NOTE: Also change `SIGSCI_SHARED_CACHE_DIR` (default `/sigsci/tmp/cache`)
        #       if mountPath is changed, but best not to change.
        - name: sigsci-tmp
          mountPath: /sigsci/tmp
```

NOTE

The above modification assumes that `sigsci` secrets were added to the system.

Adding the Next-Gen WAF agent temp volume definition to the deployment

You must define the agent temp volume for use by the other containers in the pod. This example uses the builtin `emptyDir: {}` volume type.

```
...
      volumes:
      # Define a volume where sigsci-agent will write temp data and share the socket file,
      # which is required with the root filesystem is mounted read only
      - name: sigsci-tmp
        emptyDir: {}
```

Changing the service definition and adding the Next-Gen WAF agent as a reverse proxy

In the example above, the `sigsci-agent` reverse proxy listens on a new port, leaving the original application listener in place. You may wish for requests to be routed to the `sigsci-agent` at the original application port to make the agent addition as seamless as possible. One way to do this is to modify the Kubernetes *service definition* to route traffic to the `sigsci-agent` reverse proxy listener port instead of directly to the web application.

Change the service definition to point to the Next-Gen WAF agent port

Change the service `targetPort` from pointing directly to the application, to instead point to the `sigsci-agent` reverse proxy listener port. The `sigsci-agent` will then proxy to the application port:

```yaml
apiVersion: v1
kind: Service
metadata:
  name: helloworld
  labels:
    app: helloworld
spec:
  ports:
  - name: http
    port: 8000
    # Target is now sigsci-agent on port 8001
    targetPort: 8001
  selector:
    app: helloworld
  type: LoadBalancer
```

Kubernetes startup probe

Last updated: 2024-03-14

/en/ngwaf/kubernetes-startup-probe

IMPORTANT

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By default, the agent prioritizes quick start up and performance readiness for preliminary inspection. However, quick startup isn't always desirable if you only want the agent to inspect traffic after loading your rules and configuration data. Within Kubernetes environments, you can use startup probes to delay the agent container's startup so that the container is only marked ready after the agent has loaded rules and configuration data.

Limitations and considerations

- Startup probes are available in agent versions `4.51.0` and above.
- For detailed information about tuning startup probes, see the Kubernetes documentation for configuring probes.

Configuring a startup probe

You can configure a startup probe in one of two ways: using an `httpGet` check or using a file-based startup probe.

Configuring an HTTP startup probe

To configure the agent endpoint to respond to `httpGet` checks, set the `SIGSCI_STARTUP_PROBE_LISTENER` environment variable to the desired address. Then, on the same prompt, add a `startupProbe` `httpGet` definition configured for path `/startup`.

The agent endpoint will send an `HTTP 503 (Service Unavailable)` response until the agent has loaded rules. After loading rules, the agent endpoint will send an `HTTP 200` response.

Example diff using port `2024` for the startup probe:

```
containers:
 - name: sigsci-agent
  image: signalsciences/sigsci-agent:latest
  ports:
+  - name: "startup-port"
+   containerPort: 2024
  env:
+  - name: SIGSCI_STARTUP_PROBE_LISTENER
+   value: "0.0.0.0:2024"
+ startupProbe:
+  httpGet:
+   path: /startup
+   port: startup-port
+  failureThreshold: 90
+  periodSeconds: 2
```

Configuring a file-based startup probe

If you want to avoid using an HTTP-based probe, you can configure the agent to create a file within the container and use an `exec` check to test for the existence of the file to indicate a ready state.

To configure a file-based startup probe, set the `SIGSCI_STARTUP_PROBE_FILEPATH` environment variable to the file path where you want the agent to create a file once rules are loaded. Then, use an `exec` command to check the existence of the file.

The file will be created once the agent has completed loading it's configuration data. The startup probe may generate Kubernetes warning events with a message of `Startup probe failed: cat: can't open '/sigsci/tmp/startup': No such file or directory` until the agent has finished loading configuration data. This is expected behavior when using the file-based startup probe.

Example diff to use `/sigsci/tmp/startup` for the startup probe:

```
containers:
 - name: sigsci-agent
  image: signalsciences/sigsci-agent:latest
  env:
+  - name: SIGSCI_STARTUP_PROBE_FILEPATH
+   value: "/sigsci/tmp/startup"
+ startupProbe:
+  exec:
+   command:
+    - cat
+    - /sigsci/tmp/startup
+  failureThreshold: 90
+  periodSeconds: 2
```

Pivotal Container Services (PKS) setup

Last updated: 2022-12-05

/en/ngwaf/pks

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Integration with Pivotal Container Service (PKS) is set up in almost the same manner as a generic Kubernetes install. The main difference is access to the Kubernetes cluster for PKS is done by logging in via the provided `pks` client binaries from the PKS install.

Installation

There is nothing specific to do to integrate with PKS. Integration is the same as a generic Kubernetes install. The only difference is access to the Kubernetes cluster for PKS which is done by logging in via the provided `pks` client binaries from the PKS install. For additional information about PKS, check out the VMware documentation.

1. Set up your environment.

   ```
   # Credentials filename
   $ export KUBECONFIG=pks-creds.yaml
   ```

2. Log in to PKS using your URL and your username and password.

   ```
   $ pks login -a <your-url> -u <user> -p <password> -k
   ```

3. Create the credentials file (from KUBECONFIG).

   ```
   $ pks get-credentials <cluster-name>
   ```

4. Set the context to the remote cluster so all local commands are run on that remote cluster.

   ```
   $ kubectl config use-context <cluster-name>
   ```

5. Deploy your application following normal Kubernetes instructions. Confirm the configuration has been set up correctly by running commands on the remote cluster, such as listing the pods:

   ```
   $ kubectl get pods
   ```

6. Install Next-Gen WAF by following the instructions for integrating with Kubernetes.

Using the Next-Gen WAF core command line utility

Last updated: 2024-03-05

/en/ngwaf/using-the-ngwaf-core-command-line-utility

IMPORTANT

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The Next-Gen WAF core command line utility (`ngwafctl`) can help troubleshoot Next-Gen WAF Core WAF installations within Kubernetes environments. Much like Kubernetes `kubectl`, our utility reads from your cluster's Kubernetes API. It then collects infrastructure information about your Kubernetes environment and cloud provider as they relate to your Next-Gen WAF Core WAF installation, performs local analysis of the configuration, and writes the information to a local archive file on disk.

You can use the collected information and suggestions from `ngwafctl` to help diagnose issues with your Kubernetes Next-Gen WAF installation. You can also send the collected information to our Support team for additional help.

About the utility

`ngwafctl` collects information about how your Next-Gen WAF Core WAF deployment is integrated with your Kubernetes cluster and cloud provider. The utility doesn't fetch Kubernetes secrets, and it redacts environment variables that don't have a `SIGSCI` prefix.

The gathered information is temporarily held in program memory and then written to disk as a TAR.GZ archive file. The utility doesn't send any of the gathered information to Fastly. You can inspect the type of information the utility collects by opening the generated TAR.GZ file prior to submitting the archive to Fastly.

In some cases the utility may be able to automatically detect simple misconfigurations in the Next-Gen WAF deployment, which would be reported during the utility's execution. In addition to these automated checks, submitting the generated support bundle archive to the Fastly Support team can simplify the troubleshooting process for more complex situations.

Prerequisites

For `ngwafctl` to access and fetch information about your Kubernetes environment, the computer running the utility needs read access to your cluster's Kubernetes API. If you have a working `kubectl` CLI, the `ngwafctl` utility should be able to connect to your cluster.

If you want the utility to collect information from your cloud provider, such as load balancer information, the computer running the utility needs a working CLI for the cloud provider (e.g., AWS CLI, Google Cloud CLI, or Azure CLI).

Installing the utility

To install `ngwafctl`, complete the following steps:

1. Download the utility from the package downloads site.
2. Extract the contents of the downloaded file by running the following command, being sure to replace `<utility-file-name>` with the file name (including the extension) of the downloaded file:

```
$ tar -xzvf <utility-file-name>
```

3. If you use Linux, make the downloaded file executable by running the following command, being sure to replace `<utility-file-name>` with the file name (including the extension) of the downloaded file:

```
$ chmod +x <utility-file-name>
```

4. If you use macOS, remove the `com.apple.quarantine` extended attribute from the utility by running the following command:

```
$ xattr -d com.apple.quarantine ngwafctl
```

5. Verify that the utility can connect to your Kubernetes cluster by running the following command:

```
$ ngwafctl diagnose
```

If you have a working `kubectl` CLI, our utility can likely find the credentials it may need. If the credentials for your `kubectl` CLI aren't in a standard location or you don't have a working `kubectl` CLI, provide `ngwafctl` with the location of the

Kubernetes cluster credentials. Check out Kubernetes' Accessing Clusters guide for more information.

Configuring the utility

After installing the utility, you can optionally change the default value of the following configuration options by specifying the flags on the command line, setting the corresponding environment variable, or creating a config file in `~/.ngwafctl-diagnose`:

CLI config option	Environment variable	Description
`--debug`	`NGWAFCTL_DEBUG`	Whether debug level logging is enabled. By default, debug logging is disabled (`false`).
`--namespaces`	`NGWAFCTL_NAMESPACES`	Comma separated list of namespaces to collect. Unless changed, the `default` namespace is used.
`--out`	`NGWAFCTL_OUT`	Location to output the support bundle. The default location is `./fastly-support-bundle_<timestamp>.tar.gz`.
`--trace`	`NGWAFCTL_TRACE`	Whether trace level logging is enabled. By default, trace logging is disabled (`false`).

Running the utility

To gather information about your Kubernetes environment, complete the following steps:

1. Run the `diagnose` command:

   ```
   $ ngwafctl diagnose
   ```

2. Retrieve the support bundle. By default, the support bundle will be located in the same directory as the utility and will be named `fastly-support-bundle_<timestamp>.tar.gz` (e.g., `fastly-support-bundle_2024-03-05T16-07-05Z.tar.gz`).

3. *(Optional)* Send the support bundle, along with a detailed description of the issue to our Support team.

Subcategory: Cloud WAF deployment

These articles describe how to use Cloud WAF.

📄	**Cloud WAF certificate management**
📅	Last updated: 2022-12-05
🔗	/en/ngwaf/cloud-waf-certificate-management

IMPORTANT

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Before you begin

Before uploading your TLS/SSL certificate, ensure that your private key is not password protected and your certificate information is PEM formatted. Any number of certificates can be uploaded, but no more than 48 unique certificates can be applied to a single

Cloud WAF instance.

Viewing certificates and their details

To view a summary of all TLS certificates protecting your site (also known as workspace) with Cloud WAF:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Cloud WAF Certificates**. The Certificates page for your site's Cloud WAF appears displaying a summary table that lists the name, domains, status, and expiration details for all certificates at your site.
3. *(Optional)* Click **View** at the right of a specific site in the summary table to view additional details for a particular TLS certificate.

Adding certificates

NOTE

If TLS connections terminate at the Edge before requests are sent to Cloud WAF, then uploading a TLS certificate is optional. Always upload and use certificates if traffic is direct to the Cloud WAF using HTTPS.

To add a certificate, upload it by following the steps below:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Cloud WAF Certificates**.
3. Click **Add certificate**. A page where you can add certificate details appears.
4. Fill out the certificate details as follows:
   - In the **Name** field, enter a meaningful name that can help you manage the certificate and distinguish it from any others that may exist.
   - In the **Certificate body** field, enter the body of the unencrypted, PEM-formatted server certificate provided by your certification authority. RSA 2048 and 4096 certificates can be used.
   - In the **Certificate chain** field, enter the certificate chain, which is also known as the *intermediate certificate*. The certificate chain is not required for self-signed certificates.
   - In the **Private key** field, enter your certificate's private key.
5. Click **Upload certificate**. The newly uploaded certificate appears on the Certificates page in the summary table.

After uploading your certificate, be sure to create a Cloud WAF instance to protect your origin. Keep in mind that, for requests coming from Fastly's Edge, you can use a Fastly-managed TLS certificate instead when you create a Cloud WAF instance. In this case, uploading a TLS certificate is optional.

Deleting a certificate

Certificates that aren't in use can be deleted as long as your Cloud WAF is not actively being provisioned.

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Cloud WAF Certificates**.
3. Click **View** to the right of the certificate that you want to delete. The view certificate page appears.
4. Click **Remove certificate** in the upper-right corner of the page.

Cloud WAF instance management

Last updated: 2022-12-05

/en/ngwaf/cloud-waf-instance-management

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Before you begin

To save time before creating a Cloud WAF instance, ensure you have uploaded a TLS certificate. If requests will be coming from Fastly's Edge, you can use a Fastly-managed TLS certificate instead by disabling uploaded certificates.

Viewing Cloud WAF instances

Cloud WAF instances are created and managed directly in the Next-Gen WAF control panel. To view an instance:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Cloud WAF Instances**.

The Cloud WAF Instances page provides a summary table that lists all Cloud WAF instances running on your corp, including names, regions, and statuses. You can view additional details about each Cloud WAF instance by clicking **View** to the right of the summary table. Of particular note when viewing these additional details are the DNS entry and Health Check details.

Using health checks

Health checks can be used to assess whether or not the Cloud WAF, or a particular route within the Cloud WAF instance, is up or down. The checks can be used within Fastly or other systems to achieve a redirect failover. There are two methods available for accessing health check endpoints:

- View the details of your Cloud WAF instance and click **Copy** to the right of the **Health Check** field. This URL is specific to your Cloud WAF instance and you can use it make health check HTTPS requests.
- Make HTTPS requests to the `/sigsci-healthcheck` path of the fully qualified domain name used in a route for your Cloud WAF instance. For example, if one of your routes uses the domain name `example.com`, you could make a health check request to `https://example.com/sigsci-healthcheck`.

Creating a Cloud WAF instance

Cloud WAF instances contain basic server configuration details and workspace (also known as site) details about the web application that those instances will be deployed on. Workspace (site) details specifically include routes information for the paths that requests take from clients to upstream origins.

To create a Cloud WAF instance, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Cloud WAF Instances**.
3. Click **Add Cloud WAF Instance**.
4. In the **Server configs** area, supply the following information:
    - In the **Name** field, enter a name for the Cloud WAF instance.
    - In the **Description** field, enter a description for the Cloud WAF instance to make identifying and managing the instance easier.

- From the **Region** menu, select the geographic region in which the Cloud WAF instance will be deployed. To minimize latency, select the region geographically closest to the location of your origin. The region can't be changed after the Cloud WAF instance is provisioned.
- From the **Min TLS version** menu, select the minimum TLS version your Cloud WAF instance will use. The minimum TLS version pertains to requests from the client to the Cloud WAF instance. If a request is received with a TLS version lower than the selected minimum TLS version, that request will be dropped.
- Leave the **Use uploaded certificates** switch enabled if you uploaded a TLS certificate. If your requests are coming from Fastly's edge, you can optionally set this to **disabled** to use a Fastly-owned certificate instead.

5. In the **Workspaces** section, enter the following information:
   - From the **Site** menu, select the site on which to deploy the Cloud WAF instance.
   - From the **Instance location** controls, select **Direct** if the Cloud WAF instance will send traffic directly to the upstream origin. In this mode, the source IP address is read from the `X-Forwarded-For` header by default. If the Cloud WAF instances will send traffic to a CDN in the path of the upstream origin, select **Advanced** instead and enter a value for the **Client IP header**.
   - From the **Pass-through protocol** controls, select **HTTPS only** to only allow requests sent over HTTPS through to your origin or select **HTTP and HTTPS** to allow requests sent over either HTTP or HTTPS through to your origin.
6. In the **Routes** section of the **Workspaces** area, enter the following information:
   - In the **Request** field, enter the fully qualified domain name of the property that you'd like to protect with Cloud WAF (e.g., `example.com`). You may include subdomains and paths. The wildcard asterisk (*) can be used to match an entire single path segment between two forward slashes but cannot be used to match partial strings. For example, `www.example.com/foo/*/bar` is valid, but `www.example.com/foo/foo*/bar` is invalid.
   - In the **Origin** field, enter the origin address of the domain name entered in the Request field. Include the protocol (e.g., `https://`) as the first part of the origin address even if you're providing an IP address.
   - From the **Certificates to deploy** menu, select a TLS certificate associated with the request URI. If the appropriate certificate doesn't appear in the list, add it by clicking **Add certificate** and filling out the fields of the window that appears. If you disabled certificate uploads in the **Server configs** area, this section won't be configurable.
   - Leave the **Pass host header** switch disabled if using Server Name Indication (SNI). Enable this setting for the agent to pass the host header to the upstream origin to be used in the TLS handshake. The host header value will take precedence over set values for the host.
   - Leave the **Connection pooling** switch enabled to allow open TCP connections to the origin to be reused. Disable this setting if open TCP connections should not be reused.
   - Leave the **Trust proxy headers** switch disabled to have an agent ignore and drop incoming proxy headers. Enable this setting to allow the agent to trust incoming proxy headers (such as the `X-Forwarded-For` header).
7. Decide whether or not to add more routes to this site. To add another route to this site, click **Add route** and an additional **Routes** section will appear that you can fill out by repeating the above steps.
8. Decide whether or not to add an additional site for this Cloud WAF instance. To add a route to a different site, click **Add workspace** and an additional **Workspaces** area will appear that you can fill out by repeating the above steps.
9. Click **Create instance** to create the Cloud WAF instance. The Cloud WAF Instances page appears with the new Cloud WAF instance listed with a status of `In progress`. Wait a few minutes for the Cloud WAF instance to be deployed, at which point the status will change to "Deployed".
10. Click **View** to the right of the Cloud WAF instance. The details page for that Cloud WAF instance will appear.
11. Make note of the DNS entry and the egress IP addresses listed. You'll need this information to create a CNAME record for the DNS entry with your DNS registrar. If your origin is not accessible to the public internet, you will also need to configure your origin to allow access from the egress IP addresses provided.

Editing a Cloud WAF instance

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Cloud WAF Instances**.
3. Click **View** to the right of the Cloud WAF instance.
4. Click **Edit Cloud WAF Instance.**
5. Make any changes necessary to the Cloud WAF instance.
6. Click **Update instance.**

Deleting a Cloud WAF instance

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Cloud WAF Instances**.
3. Click **View** to the right of the Cloud WAF instance.
4. Click **Remove Cloud WAF Instance.**
5. Click **Delete.**

Cloud WAF overview

Last updated: 2024-08-28

/en/ngwaf/cloud-waf-overview

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

What is Cloud WAF?

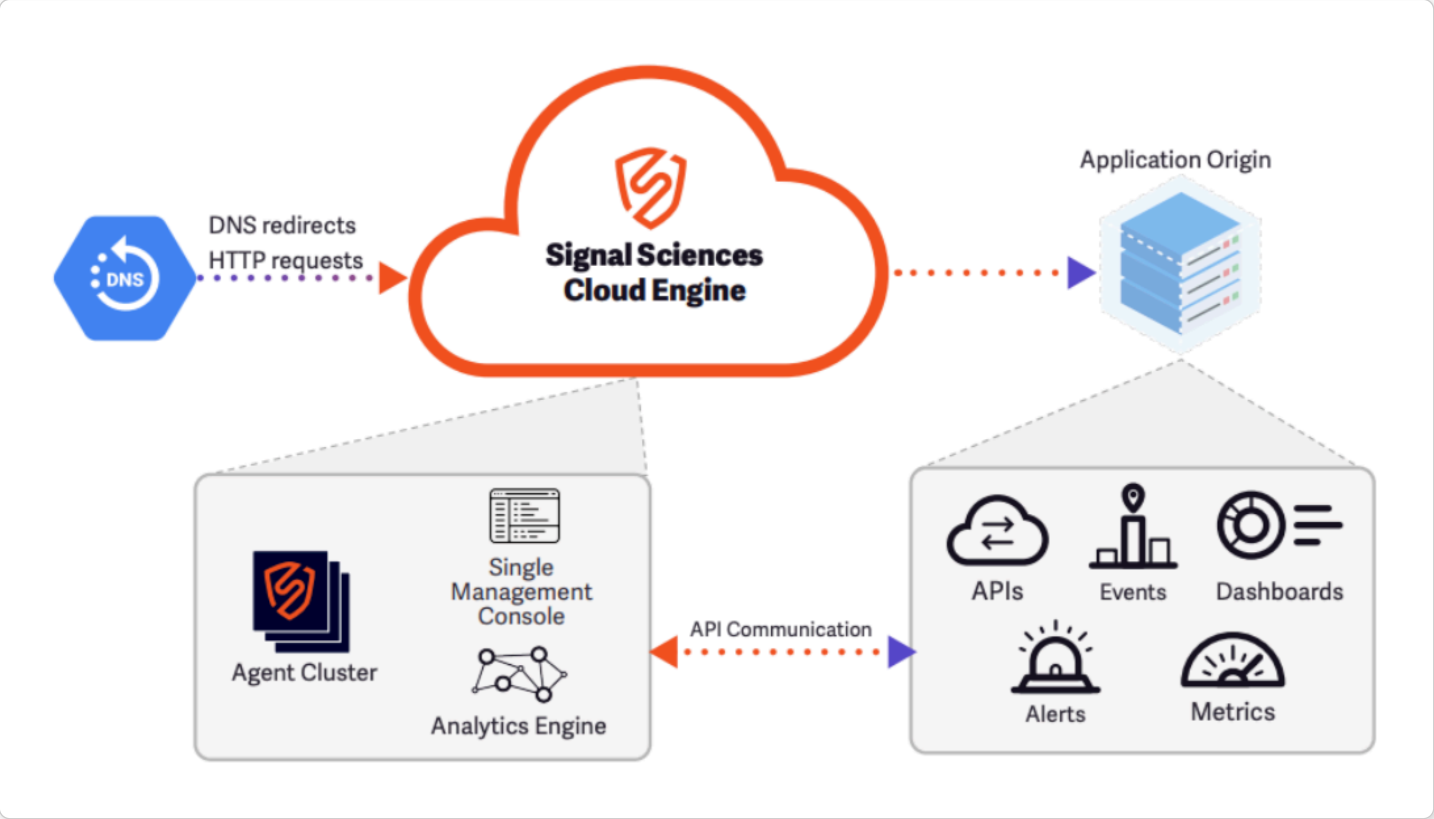
Cloud WAF is a hosted solution designed for customers that may not have full autonomy over their infrastructure and therefore do not wish to install a Next-Gen WAF agent and module into their respective environments.

For environments such as these, Cloud WAF is an easily deployable option that provides the same security capabilities of other Next-Gen WAF agent-based deployment options.

Cloud WAF shares a unified management control panel with all other deployment options thus providing actionable information and key metrics quickly in a single centralized interface for your entire organization.

How does it work?

Cloud WAF uses the same technology as our other agent-based deployment options under the hood, which means that as a customer, you have full flexibility to deploy wherever your application operates.



Getting started

To deploy a Cloud WAF instance:

1. **Secure communication between Cloud WAF and the client.** Upload a TLS certificate for the domain you are protecting with Cloud WAF to ensure communication between the Cloud WAF instance and the client is encrypted and secure. If your requests will be coming from Fastly's Edge, you can use a Fastly-managed TLS certificate instead and uploading a TLS certificate is optional.
2. **Create the Cloud WAF instance.** Create a new Cloud WAF instance in a geographic location close to the location of your origin. Only users assigned the role of owner (superuser) can create and edit Cloud WAF instances. All other roles will have visibility into your Cloud WAF instances but will not be able to create or edit Cloud WAF instances.
3. **Point DNS to your Cloud WAF instance.** After the DNS change propagates, confirm that Cloud WAF is protecting your applications by viewing the request data populated in the control panel.

> NOTE
>
> Ensure that your DNS registrar has the ability to create aliases or CNAME records at the apex (or root) of the domain. If your DNS provider does not support this, we can recommend several DNS providers based on your implementation. Reach out to our support team for more information.

About deploying the Next-Gen WAF

/en/ngwaf/about-deploying-the-next-gen-waf

To deploy the Next-Gen WAF, you need to integrate the Next-Gen WAF product into your request flow by:

1. Choosing a deployment method. A deployment method outlines how the integration is set up. All of our deployment methods rely on the same architecture components but have different host locations (e.g., Fastly's Edge Cloud platform and customer's local environment) and parties who maintain the active deployments.

> TIP
>
> You can use more than one deployment method. For example, you may want to use the Edge WAF deployment method to protect your web applications that are behind the Fastly CDN and the Core WAF deployment method for your other web applications.

2. Setting up your deployment by following the appropriate guide for your selected deployment method.
3. *(Optional)* Using attack tooling to verify that the Next-Gen WAF is monitoring your web application and identifying malicious and anomalous requests.

Before you begin

The Next-Gen WAF can be purchased for an account by contacting sales@fastly.com. Once purchased, our staff will create a Next-Gen WAF corp and at least one site for your use when you log in.

Choosing a deployment method

The key differences between our deployment methods are where the deployment is located and who maintains the deployment.

Deployment method	Location	Fastly managed	Customer managed
Edge WAF	Fastly's Edge Cloud platform via our global network of POPs	✔	
Core WAF	Customer's local environment		✔
PaaS	Supported vendor platform		✔
A10 Networks	A10 Networks		✔
Cloud WAF	Fastly's cloud infrastructure	✔	

About Edge WAF deployment

> TIP
>
> Any Next-Gen WAF customer can use this solution.

The Edge WAF deployment method hosts the Next-Gen WAF on Fastly's Edge Cloud platform via our global network of POPs and integrates with Fastly's caching layer, Varnish. Since security processing happens at the edge, the Next-Gen WAF can inspect all traffic before it enters your origin infrastructure and block attacks close to where they originated.

To use this option, you must have a Fastly delivery account. For full instructions, check out our Edge WAF deployment guides:

- Edge WAF deployment using the Next-Gen WAF control panel
- Edge WAF deployment using the Fastly control panel

About Core WAF deployment

> IMPORTANT
>
> Only Next-Gen WAF customers with access to the Next-Gen WAF control panel can use this solution.

The Core WAF deployment method hosts the Next-Gen WAF directly on your local environment, which means you are responsible for managing the deployment. By deploying at your origin core, you are able to inspect traffic from any path that it took to your origin infrastructure. This means that you can inspect east-west traffic that hops from one internal server to another within the client origin.

This method includes both module-agent and reverse proxy deployment options.

Deployment option	Components you must install	Considerations
Module-agent	• Next-Gen WAF module • Next-Gen WAF agent	• This option has a fail-open design, meaning the module verifies agent availability and allows all traffic when the agent is down. • The module hooks into the request mechanism on your environment, so you don’t need to change how you're handling TLS termination. • The module can exist as a plugin to your web server or be deployed at the application layer.
Reverse proxy	Next-Gen WAF agent	• This option has a fail-close design, meaning all traffic is blocked when the agent is down. • This option does not require you to make modifications to your web server or code, which is helpful for old and fragile environments. • The agent performs the role of both the deployment entity and agent components.

About Kubernetes deployment patterns

IMPORTANT

Only Next-Gen WAF customers with access to the Next-Gen WAF control panel can use this solution.

The Core WAF deployment method supports multiple deployment patterns in Kubernetes. For the Next-Gen WAF to work in Kubernetes, you will need to customize configurations. Our documentation provides several examples of Kubernetes deployments that use the Docker sidecar container pattern.

About Platform as a Service (PaaS) deployment

IMPORTANT

Only Next-Gen WAF customers with access to the Next-Gen WAF control panel can use this solution.

You can deploy the Next-Gen WAF product within a supported vendor platform by embedding the Next-Gen WAF agent within the selected platform.

Fastly services interoperate with non-Fastly services only when you configure them that way. We do not provide direct support for non-Fastly services. Software or services that enable integration with non-Fastly services (such as plug-ins, extensions, and add-ons) are available under their own terms. Read Fastly's Terms of Service for more information.

About embedded service deployment with A10 Networks

The Next-Gen WAF can be deployed as an embedded service with A10 Networks on select A10 Thunder and vThunder application delivery controller (ADC) form factors. A10 Networks provides support for A10 deployments. To learn more about the A10 ADC Next-Gen WAF deployment option, contact your Fastly account manager or email our Sales team.

NOTE

This deployment option requires an A10 feature license for activation.

Fastly services interoperate with non-Fastly services only when you configure them that way. We do not provide direct support for non-Fastly services. Software or services that enable integration with non-Fastly services (such as plug-ins, extensions, and add-ons) are available under their own terms. Read Fastly's Terms of Service for more information.

About Cloud WAF deployment

IMPORTANT

Only Next-Gen WAF customers with access to the Next-Gen WAF control panel can use this solution.

The Cloud WAF deployment method hosts the Next-Gen WAF on Fastly's cloud infrastructure and consists of several Cloud WAF instances. Each instance is made up of a load balancer along with at least three Next-Gen WAF agents, each operating in reverse proxy mode and installed on separate redundant machines.

To use the Cloud WAF deployment method, you must upload a TLS certificate, add an origin server using the Next-Gen WAF control panel, and update your DNS records to point to the appropriate servers.

What's next

After setting up your deployment, the Next-Gen WAF will immediately start monitoring traffic to your website, detecting requests with malicious and anomalous payloads, and populating request data to the Next-Gen WAF control panel. To ensure legitimate traffic isn't blocked, the Next-Gen WAF allows all requests initially.

To start blocking traffic, set the Agent mode setting to `Blocking`. You can also create rules to adjust the protection of your website and make sure the Next-Gen WAF blocks and allows the correct traffic.

* * *

Compatibility and requirements

/en/ngwaf/compatibility-and-requirements

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Next-Gen WAF agent

Per our agent end-of-support policy, we support agent versions that are under two years old. On a quarterly cadence, we deprecate and no longer support agent versions that are older than two years.

Processors

We support the following processors:

- **Intel.** All agent and module versions are compatible with Intel processors.
- **AMD.** All agent and module versions are compatible with AMD processors.

We do not currently provide ARM agent packages for Amazon Linux or Windows.

You can run the agent on ARM processors with the NGINX C Binary module v1.18.0+ on the following Linux distributions:

- Alpine (3.13 - 3.20)

- CentOS/RHEL (EL7 - EL9)
- Debian (9 - 11)
- Ubuntu (18.04 - 24.04)

Alternatively, you can run the agent on ARM processors without a module in reverse proxy mode on the Linux distributions mentioned above.

Linux

The Next-Gen WAF agent and modules are supported on the following Linux distributions:

Distribution	Code Name	Version
Alpine		3.20
		3.19
		3.18
		3.17
		3.16
		3.15
		3.14
		3.13
		3.12
		3.11
Amazon Linux		2023
		2
CentOS	Enterprise Linux 9	9.x
	Enterprise Linux 8	8.x
	Enterprise Linux 7	7.x
	Enterprise Linux 6	6.x
Debian	Bookworm	12.x
	Bullseye	11.x
	Buster	10.x
	Stretch	9.x
	Jessie	8.x
	Wheezy	7.x
Red Hat	Enterprise Linux 9	9.x
	Enterprise Linux 8	8.x
	Enterprise Linux 7	7.x

Distribution	Code Name	Version
	Enterprise Linux 6	6.x
Ubuntu	Noble	24.04 LTS
	Jammy	22.04 LTS
	Focal	20.04 LTS
	Bionic	18.04 LTS
	Xenial	16.04 LTS
	Trusty	14.04 LTS
	Precise	12.04 LTS

Only 64-bit environments are supported. If you need 32-bit support contact us.

Next-Gen WAF module

The Next-Gen WAF module is a lightweight module that integrates with your web server software or application and is the interface between incoming requests and our agent process. We support NGINX, Apache, and IIS web servers, the HAProxy proxy server, and several application languages (including .NET, Golang, Java, Node.js). Specific details for some of the more commonly deployed platform are listed below:

NGINX Web Servers

The NGINX modules are built specifically for the NGINX Open Source distributions of NGINX and may not be compatible with a custom build of NGINX. If switching to the NGINX Open Source distribution is not an option, reach out to our support team or your Fastly account team for assistance.

The NGINX module is offered in two different variations, depending on the platform and what best meets your needs. We currently support:

C Binary

The NGINX Module is available in a variation built as a C binary, which requires no dependencies. Versions of NGINX Open Source supported by the C binary are:

- 1.27.0
- 1.26.0 - 1.26.1
- 1.25.0 - 1.25.5
- 1.24.0
- 1.23.0 - 1.23.4
- 1.22.0 - 1.22.1
- 1.21.0 - 1.21.6
- 1.20.0 - 1.20.2
- 1.19.0 - 1.19.10
- 1.18.0
- 1.17.0 - 1.17.10
- 1.16.0 - 1.16.1

- 1.15.12
- 1.15.10
- 1.15.9
- 1.15.8
- 1.15.7
- 1.15.3
- 1.14.1
- 1.12.2
- 1.10.3 (on Ubuntu 16.04 only)

Versions of NGINX Plus supported by the C binary are:

- 32-1 (1.25.5)
- 31-1 (1.25.3)
- 30-1 (1.25.1)
- 29-1 (1.23.4)
- 28-1 (1.23.2)
- 27-1 (1.21.6)
- 26-1 (1.21.5)
- 25-1 (1.21.3)
- 24-1 (1.19.10)
- 23-1 (1.19.5)
- 22-1 (1.19.0)
- 21-1 (1.17.9)
- 20-1 (1.17.6)
- 19-1 (1.17.3)
- 18-1 (1.15.10)
- 17-1 (1.15.7)

These C binary versions are kept up-to-date with stable releases and on demand for mainline releases.

Lua

Alternatively, a variation of the NGINX Module as Lua is available, which requires NGINX to be built with Lua and for LuaJIT support.

This version is written in Lua and requires your NGINX binary to be compiled with the third party `ngx_lua` module enabled. We also require the `ngx_lua` module be linked against the LuaJIT just-in-time byte code library for performance.

NGINX deployments vary from organization to organization, and we support two approaches to this installation:

- **Pre-built binary packages** - for all the operating system platforms we support we provide three flavors or pre-built NGINX packages that are built with the required `ngx_lua` module.
- **Source builds** - for those organizations building NGINX internally from source, we have published our reference build guidelines that can be used to review and adapt for your own build process.

If you currently use a pre-built binary package of NGINX, either from the operating system's package collection or from the official NGINX package repositories let us know, and we can provide a suitable replacement package built with our required supporting modules. Contact us for more information.

The Lua variation of the NGINX module is supported on the following versions of NGINX:

Release	Versions
1.12	1.12.x
1.11	1.11.x
1.10	1.10.x
1.9	1.9.x
1.8	1.8.x
1.7	1.7.2, 1.7.4, 1.7.7, 1.7.8, 1.7.9
1.6	1.6.0, 1.6.1, 1.6.2
1.4	1.4.6
1.2	1.2.7, 1.2.9
1.1.19	1.1.19
1.0	1.0.15

Apache Web Servers

Our Apache module is distributed in binary form as an Apache shared module and supports Apache version 2.2 and 2.4.

Microsoft Windows Servers

- IIS 7 or higher, Windows Server 2008R2 (Windows 7) or higher (64-bit)
- .NET 4.5 or higher
- Version 4.50 and later of the Next-Gen WAF agent requires Windows 10 or Windows Server 2016 or higher

We currently only support 64-bit and 32-bit application pools on Windows 2012 or higher. We only support 64-bit application pools on Windows Server 2008R2.

Additionally, we only support 64-bit OSes. For older or 32-bit versions of Windows, it is possible to deploy the Next-Gen WAF agent as a reverse proxy. If you have questions or require assistance with older or 32-bit versions of Windows, reach out to our support team.

HAProxy Servers

HAProxy module. Our HAProxy module is written in Lua and requires your HAProxy binary to be compiled with the `lua` module enabled. The HAProxy module requires HAProxy 1.8 or higher.

NOTE

Although supported, there is a known issue with HAProxy 1.8 that may result in performance issues when the Next-Gen WAF module is installed. HAProxy has fixed this issue with HAProxy 2.2, but the fix will not be backported to 1.8. It is recommended to upgrade to HAProxy 2.2 or higher if possible, or use an alternate deployment method (e.g., reverse proxy agent if HAProxy 1.8 must be used).

HAProxy SPOE module. Our HAProxy SPOE module does not require Lua. The HAProxy SPOE module requires HAProxy 1.8 or higher.

Node.js

0.10 or higher

Java

- Java 1.8 or newer
- Spring version 2.x
- Spring Boot Tomcat Starter 2.x
- Spring Boot Starter WebFlux 2.x
- Tomcat 8

* * *

Network requirements

/en/ngwaf/network-requirements

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

When deployed in a self-hosted deployment, the Next-Gen WAF agent requires egress to multiple external endpoints to facilitate actions (e.g., configuration retrieval, updates to rules, and notifications). If installing the required Next-Gen WAF packages via a package manager, the server must also be able to access our external package repositories to retrieve packages and package updates. The sections below describe the Fully Qualified Domain Names (FQDN), and the functionalities they pertain to, that may need to be added to your egress and firewall policies.

NOTE

CNAME records resolve the endpoints to IP addresses. This means that the IP addresses are subject to change (e.g., when the services behind them scale). For this reason, we recommend allowing traffic to these endpoints by FQDN and not via IP address or IP address range. Allow-listing only IP addresses has the potential to impact the availability of your deployment.

APT installs

For distributions that use Advanced Package Tool (APT) to retrieve our packages, ensure egress to:

FQDN	Port	Protocols	Description
apt.signalsciences.net	443	TCP/HTTPS	Repository URL
dl.signalsciences.net	443	TCP/HTTPS	Used for GPG key verification on upgrade and install
d28dx6y1hfq314.cloudfront.net	443	TCP/HTTPS	Cached package objects via packagecloud

DNF and YUM installs

For distributions that use Dandified Yum (DNF) and Yellowdog Updater (YUM) for packaging, ensure egress to:

FQDN	Port	Protocols	Description
yum.signalsciences.net	443	TCP/HTTPS	Repository URL
dl.signalsciences.net	443	TCP/HTTPS	Used for GPG key verification on upgrade and install
d28dx6y1hfq314.cloudfront.net	443	TCP/HTTPS	Cached package objects via packagecloud

APK installs

For distributions that use Alpine Package Keeper (APK) for packaging, ensure egress to:

FQDN	Port	Protocols	Description
apk.signalsciences.net	443	TCP/HTTPS	Repository URL and GPG key location

Direct download installs and the agent auto-update service

For direct package downloads and the agent auto-update service, ensure egress to:

FQDN	Port	Protocols	Description
dl.signalsciences.net	443	TCP/HTTPS	Repository URL
dl-signalsciences-net.s3-us-west-2.amazonaws.com	443	TCP/HTTPS	Repository URL

Next-Gen WAF endpoints

The Next-Gen WAF endpoints are fronted on the Fastly CDN or on AWS in a configuration failover scenario. If the Next-Gen WAF agent is unable to download from the Fastly CDN, it will fall back to downloading directly from an AWS S3 bucket with an additional fallback to a secondary bucket in a second region until it can download from the Fastly CDN or a primary S3 bucket again.

The agent communicates with the following endpoints:

FQDN	Port	Protocols	Description
c.signalsciences.net	443	TCP/HTTPS	Next-Gen WAF collector endpoint
wafconf.signalsciences.net	443	TCP/HTTPS	Primary configuration endpoint
sigsci-agent-wafconf.s3.amazonaws.com	443	TCP/HTTPS	Failover configuration endpoint
sigsci-agent-wafconf-us-west-2.s3.amazonaws.com	443	TCP/HTTPS	Secondary failover configuration endpoint

* * *

Package downloads

/en/ngwaf/package-downloads

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Agent

The Next-Gen WAF agent supports different combinations of operating systems and architecture types.

> NOTE
>
> Per our agent end-of-support policy, we support agent versions that are under two years old, and on a quarterly cadence, we deprecate and no longer support agent versions that are older than two years.

Download the latest version of the agent or follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the agent that you want to use.
3. Click the name of the operating system you want to use. Options include Alpine, CentOS or RHEL, Debian, Linux, Ubuntu, and Windows.
4. Click the version of the operating system that you want to use.
5. Click the file name of the agent package version that you want to download. The file names are comprised of the following elements:
   - `base-name`: the type of package. The base name for every agent package version is `sigsci-agent`.
   - `package-version`: the version of the Next-Gen WAF agent.
   - `os-version`: the version of the operating system (OS).
   - `architecture-type`: the architecture type. Types include ARM64 and AMD64.
   - `file-type`: the type of file.

   The elements are assembled as follows:

   ```
   [base-name]_[package-version]~[os-version]_[architecture-type].[file-type]
   ```

   For example, you can break down the `sigsci-agent_4.33.0~jammy_amd64.deb` package version as follows:

`base-name`	`package-version`	`os-version`	`architecture-type`	`file-type`
`sigsci-agent`	4.33.0	Jammy	AMD64	DEB

Apache

The Apache module supports different combinations of operating systems for the x86_64 (AMD64) architecture type. Download the latest version or follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the module that you want to use.
3. Click the name of the operating system you want to use. Options include Alpine, CentOS or RHEL, Debian, and Ubuntu.
4. Click the version of the operating system that you want to use.
5. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:
   - `base-name`: the type of package. The base name for every module package version is `sigsci-module-apache`.
   - `package-version`: the version of the Next-Gen WAF module.

- `architecture-type`: the architecture type, which is x86_64 (AMD64) for all Apache module packages.
- `os-version`: the version of the operating system (OS). Alpine packages do not use this element.
- `file-type`: the type of file.

Element delimiters in the file name depend on the OS of the package. File names are assembled as follows:

Operating system	Naming convention
Alpine	`[base-name]_[package-version]_[architecture-type].[file-type]`
CentOS or RHEL	`[base-name]-[package-version].[os-version].[architecture-type].[file-type]`
Debian	`[base-name]_[package-version]-[os-version]_[architecture-type].[file-type]`
Ubuntu	`[base-name]_[package-version]-[os-version]_[architecture-type].[file-type]`

The following table demonstrates how you can break down file names into their elements:

`file-name`	`base-name`	`package-version`	`os-version`	`architecture-type`	`file-type`
`sigsci-module-apache_1.8.0_x86_64.apk`	`sigsci-module-apache`	1.8.0		x86_64	APK
`sigsci-module-apache-1.8.0.el8-1.x86_64.rpm`	`sigsci-module-apache`	1.8.0	el8-1	x86_64	RPM

NGINX

The NGINX module supports different combinations of NGINX versions, operating systems, and architecture types. Download the latest version of the module, download a specific version for CentOS or RHEL, Debian, or Ubuntu, or download a specific version for Alpine.

NGINX for CentOS or RHEL, Debian, or Ubuntu

To download a specific version of the NGINX module for CentOS or RHEL, Debian, or Ubuntu, follow these steps:

1. Navigate to the package downloads site.
2. Click the version of the package that you want to use.
3. Click the name of the operating system you want to use. Options include CentOS or RHEL, Debian, and Ubuntu. If you want to use Alpine, follow the Alpine package download instructions.
4. Click the version of the operating system that you want to use.
5. Click the file name of the NGINX module package version that you want to download. The file names are comprised of the following elements:
   - `base-name`: the type of package. The base name for every NGINX module package version is `nginx-module-sigsci`.
   - `nginx-type`: the type of NGINX server that you're running. Types include open source NGINX (NXO) and NGINX Plus (NXP).
   - `nginx-version`: the version of the NGINX server.
   - `nginx-build-number`: the build number of the NGINX version.
   - `os-version`: the version of the operating system (OS).

- `architecture-type`: the architecture type. Types include ARM64 (AArch64) and AMD64 (x86_64).
- `file-type`: the type of file.

The elements are assembled as follows:

```
[base-name]-[nginx-type]_[nginx-version]-[nginx-build-number]~[os-version]_[architecture-type]. le
```

For example, you can break down the `nginx-module-sigsci-nxp_1.21.5-492~focal_arm64.deb` package version as follows:

`base-name`	`nginx-type`	`nginx-version`	`nginx-build-number`	`os-version`	`architecture-type`	`file-type`
`nginx-module-sigsci`	NGINX Plus	1.21.5	492	Focal	ARM64	DEB

NGINX for Alpine

To download a specific version of the NGINX module for Alpine, follow these steps:

1. Navigate to the download site for Alpine. The NGINX module directory appears.
2. Click the version of Alpine that you want to use.
3. Click the **main/** directory link.
4. Click the architecture type that you use. Options include ARM64 (AArch64) and AMD64 (x86_64).
5. Click the file name of the Alpine NGINX module package version that you want to download. The file names are comprised of the following elements:
    - `base-name`: the type of package. The base name for every NGINX module package version is `nginx-module-sigsci`.
    - `nginx-type`: the type of NGINX server that you're running. Types include open source NGINX (NXO) and NGINX Plus (NXP).
    - `nginx-version`: the version of the NGINX server.
    - `package-version`: the version of the Next-Gen WAF module package.
    - `alpine-build-number`: the build number of the Alpine version.

    The elements are assembled as follows:

    ```
    [base-name]-[nginx-type]-[nginx-version]-[package-version]-[alpine-build-number].[file-type]
    ```

    For example, you can break down the `nginx-module-sigsci-nxp-1.21.6-1.1.6-r0.apk` package version as follows:

`base-name`	`nginx-type`	`nginx-version`	`package-version`	`alpine-build-number`	`file-type`
`nginx-module-sigsci`	NGINX Plus	1.21.6	1.1.6	r0	APK

Heroku

Download the latest version of the Heroku module or follow these steps to download a specific version:

1. Navigate to the package downloads site.

2. Click the version of the module that you want to use.

3. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:

   - `base-name`: the type of package. The base name for every module package version is `sigsci-heroku-buildpack`.
   - `package-version`: the version of the Next-Gen WAF module.
   - `file-type`: the type of file.

   The elements are assembled as follows:

   ```
   [base-name]-[package-version].[file-type]
   ```

   For example, you can break down the `sigsci-heroku-buildpack-0.2.2.tgz` package version as follows:

`base-name`	`package-version`	`file-type`
`sigsci-heroku-buildpack`	0.2.2	TGZ

IBM Cloud

Download the latest version of the IBM Cloud module or follow these steps to download a specific version:

1. Navigate to the package downloads site.

2. Click the version of the module that you want to use.

3. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:

   - `base-name`: the type of package. The base name for every module package version is `sigsci-bluemix-buildpack`.
   - `package-version`: the version of the Next-Gen WAF module.
   - `file-type`: the type of file.

   The elements are assembled as follows:

   ```
   [base-name]-[package-version].[file-type]
   ```

   For example, you can break down the `sigsci-bluemix-buildpack-1.0.2.tgz` package version as follows:

`base-name`	`package-version`	`file-type`
`sigsci-bluemix-buildpack`	1.0.2	TGZ

Pivotal Platform & Pivotal Web Services (PWS)

Download the latest version of the Pivotal Platform and Pivotal Web Services module package or follow these steps to download a specific version:

1. Navigate to the package downloads site. The Pivotal Platform and Pivotal Web Services module directory appears.

2. Click the version of the module that you want to use.

3. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:

   - `base-name`: the type of package. The base name for every module package version is `sigsci-cloudfoundry`.

   - `package-version`: the version of the Next-Gen WAF module.
   - `file-type`: the type of file.

   The elements are assembled as follows:

   ```
   [base-name]-[package-version].[file-type]
   ```

   For example, you can break down the `sigsci-cloudfoundry-0.1.4.tgz` package version as follows:

`base-name`	`package-version`	`file-type`
`sigsci-cloudfoundry`	0.1.4	TGZ

Java

Download the latest version of the Java module package or follow these steps to download a specific version:

1. Navigate to the package downloads site. The Java module directory appears.
2. Click the version of the module that you want to use.
3. Click the file name of the files that you want to download. Relevant files are as follows:
   - **JAR:** a JAR file with the compiled source code for the module. The file name contains the base name (i.e., `sigsci-module-java`), the module version, and the file type. For example, the JAR file name for module version 2.5.1 is `sigsci-module-java-2.5.1.jar`.
   - **Javadoc JAR:** - a JAR file with a documentation static HTML site for the module. The file name contains the base name (i.e., `sigsci-module-java`), the module version, the JAR type (i.e., `javadoc`), and the file type. For example, the Javadoc JAR file name for module version 2.5.1 is `sigsci-module-java-2.5.1-javadoc.jar`.
   - **Shaded JAR:** - a JAR file with the compiled module source code and the code for all library dependencies. The file name contains the base name (i.e., `sigsci-module-java`), the module version, the JAR type (i.e., `shaded`), and the file type. For example, the shaded JAR file name for module version 2.5.1 is `sigsci-module-java-2.5.1-shaded.jar`.
   - **Sources JAR:** a JAR file with the module source code that hasn't been compiled. The file name contains the base name (i.e., `sigsci-module-java`), the module version, the JAR type (i.e., `sources`), and the file type. For example, the sources JAR file name for module version 2.5.1 is `sigsci-module-java-2.5.1-sources.jar`.

.NET

Download the latest version of the .NET module package or follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the module that you want to use.
3. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:
   - `base-name`: the type of package. The base name for every module package version is `SignalSciences.Module.DotNet`.
   - `package-version`: the version of the Next-Gen WAF module.
   - `file-type`: the type of file.

   The elements are assembled as follows:

   ```
   [base-name].[package-version].[file-type]
   ```

For example, you can break down the `SignalSciences.Module.DotNet.1.6.1.nupkg` package version as follows:

`base-name`	`package-version`	`file-type`
`SignalSciences.Module.DotNet`	1.6.1	NUPKG

.NET Core

Follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the module that you want to use.
3. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:

   - `base-name`: the type of package. The base name for every module package version is `SignalSciences.Module.DotNetCore`.
   - `package-version`: the version of the Next-Gen WAF module.
   - `file-type`: the type of file.

   The elements are assembled as follows:

   ```
   [base-name].[package-version].[file-type]
   ```

   For example, you can break down the `SignalSciences.Module.DotNetCore.1.3.0.nupkg` package version as follows:

`base-name`	`package-version`	`file-type`
`SignalSciences.Module.DotNetCore`	1.3.0	NUPKG

Node.js

Download the latest version of the Node.js module package or follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the module that you want to use.
3. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:

   - `base-name`: the type of package. The base name for every module package version is `sigsci-module-nodejs`.
   - `package-version`: the version of the Next-Gen WAF module.
   - `file-type`: the type of file.

   The elements are assembled as follows:

   ```
   [base-name]-[package-version].[file-type]
   ```

   For example, you can break down the `sigsci-module-nodejs-2.1.2.tgz` package version as follows:

`base-name`	`package-version`	`file-type`
`sigsci-module-nodejs`	2.1.2	TGZ

IIS

Download the latest version of the IIS module package or follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the module that you want to use.
3. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:

   - `base-name`: the type of package. The base name for every module package version is `sigsci-module-iis`.
   - `architecture-type`: the architecture type, which is x64 (AMD64) for all ISS module packages.
   - `package-version`: the version of the Next-Gen WAF module.
   - `file-type`: the type of file.

   File names are assembled as follows:

   ```
   [base-name]-[architecture-type]-[package-version].[file-type]
   ```

   For example, you can break down the `sigsci-module-iis-x64-3.3.0.msi` package file name as follows:

`base-name`	`architecture-type`	`package-version`	`file-type`
`sigsci-module-iis`	x64	3.3.0	MSI

4. Optionally, click the file name of the related Secure Hash Algorithm 256-bit (SHA-256) key to download it. You can use the key to validate the module package that you downloaded.

HAProxy

Download the latest version of the HAProxy module package or follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the module that you want to use.
3. Click the name of the operating system you want to use. Options include Alpine, CentOS or RHEL, Debian, and Ubuntu.
4. Click the version of the operating system that you want to use.
5. Click the file name of the module package version that you want to download. The file names are comprised of the following elements:

   - `base-name`: the type of package. The base name for every module package version is `sigsci-module-haproxy`.
   - `package-version`: the version of the Next-Gen WAF module.
   - `os-version`: the version of the operating system (OS).
   - `architecture-type`: the architecture type. Types include AMD64 or both AMD64 and ARM64.
   - `file-type`: the type of file.

   Element delimiters in the file name depend on the OS of the package. File names are assembled as follows:

Operating system	Naming convention
Alpine, Debian, Ubuntu	`[base-name]_[package-version]-[os-version]_[architecture-type].[file-type]`

Operating system	Naming convention
CentOS or RHEL	`[base-name]-[package-version]_[os-version].[architecture-type].[file-type]`

The following table demonstrates how you can break down file names into their elements:

`file-name`	`base-name`	`package-version`	`os-version`	`architecture-type`	`file-type`
`sigsci-module-haproxy_1.3.1-3.6_all.apk`	`sigsci-module-haproxy`	1.3.1	3.6	ARM64, AMD64	APK
`sigsci-module-haproxy-1.3.1_el8-1.noarch.rpm`	`sigsci-module-haproxy`	1.3.1	el8-1	AMD64	RPM

Next-Gen WAF core command line utility

Download the latest version of Next-Gen WAF core command line utility (`ngwafctl`) or follow these steps to download a specific version:

1. Navigate to the package downloads site.
2. Click the version of the utility that you want to use.
3. Click the name of the operating system you want to use. Options include Darwin, Linux, and Windows.
4. Click the file name of the utility package version that you want to download. The file names are comprised of the following elements:
    - `base-name`: the type of package. The base name for every utility package version is `ngwafctl`.
    - `package-version`: the version of the utility.
    - `os`: the type of the operating system (OS).
    - `architecture-type`: the architecture type. Types include ARM64 and AMD64.
    - `file-type`: the type of file.

    The elements are assembled as follows:

    ```
    [base-name]_[package-version]_[os]_[architecture-type].[file-type]
    ```

    For example, you can break down the `ngwafctl_1.0.0_linux_arm64.tar.gz` package version as follows:

`base-name`	`package-version`	`os`	`architecture-type`	`file-type`
`ngwafctl`	1.0.0	Linux	ARM64	TAR.GZ

* * *

Category: Using the Next-Gen WAF

These articles provide information about working with the Next-Gen WAF web interface.

Subcategory: Account info

These articles describe how to manage account access and security.

Automating user management (IdP)

Last updated: 2023-06-09

/en/ngwaf/automating-user-management-idp

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

An identity provider (IdP) is a system that stores and manages users' digital identities. We support automated user management through Okta.

Provisioning users via Okta enables you to automatically synchronize user access to your sites (also known as workspaces) and their specific permission levels (also known as roles) for those sites (workspaces). Specifically, you can:

- **Push new users.** New users created through Okta can be created in the Next-Gen WAF.
- **Push profile updates.** Updates made to the user's profile through Okta can be pushed to the Next-Gen WAF.
- **Push user deactivation and reactivation.** Deactivating the user or disabling the user's access to the application through Okta will delete the user in the third party application. Reactivating the user in Okta will recreate the user.

Limitations and considerations

When using Okta as your IdP, keep the following things in mind:

- A user that is provisioned by Okta can only be modified or deleted inside of Okta.
- The Next-Gen WAF only accepts email addresses with letters that are lowercase. Email addresses with uppercase letters will result in erroneous behavior.
- If an existing user has the same email address as a user being provisioned within Okta, the accounts will be consolidated. Users won’t have to be re-provisioned upon setup, but the new group assignments will override existing role and permissions.

Prerequisites

Before configuring the IdP, complete the following prerequisites:

- In your Next-Gen WAF account, enable single sign-on to use Okta as your SSO provider.
- In Okta, create an integration with Next-Gen WAF if you do not already have one. Follow the instructions listed in the Okta application, which provides specific configuration information.
- Using our API, create an API Access Token in the Next-Gen WAF and store it in a secure location for use later in this guide.

Configuring the IdP

To configure automated user management through Okta, follow these steps.

Enter configuration information

On the **Provisioning** tab of the Signal Sciences Okta application, enable provisioning by entering the following information:

- **SCIM connector base URL:** Enter `https://dashboard.signalsciences.net/api/v0/corps/<corpname>/scim/v2` where `<corpname>` is the “name” of your Corp.
    - Your `<corpname>` is present in the address of your Next-Gen WAF control panel, such as `https://dashboard.signalsciences.net/corps/<corpname>/overview`.
    - Your `<corpname>` can also be retrieved from the List Corps API endpoint.
- **Unique identifier field for users:** Select **Email**.
- **Supported provisioning actions:** Select **Push New Users** and **Push Profile Updates**.
- **Authentication Mode:** Select **HTTP Header**.
- **Authorization:** Generate a Bearer Token from the API Access Token you generated earlier. The Bearer Token is created by base64 encoding a string composed of the email address associated with your user, a colon, and the API Access Token you generated.
    - An example command for creating a **Bearer Token** in bash:

      ```
      $ echo -n "user@example.com:c9e4bbc5-a5c4-19d3-b31f-691d8b2139fe" | base64
      ```

    - An example command for creating a **Bearer Token** in JavaScript:

      ```
      btoa("<signal_sciences_email>:<signal_sciences_access_token>") = "YW5keUBleGFtcGxlY29ycC5jb ZX
      ```

Test configuration

Confirm your connection was configured correctly by clicking **Test Connector Configuration**. If everything is configured correctly, you will see "Signal Sciences was verified successfully!":

Click **Save** to save this configuration and proceed.

Enable provisioning features

After the settings are saved, select **Enable** for the following under **Provisioning to App**:

- Create Users
- Update User Attributes
- Deactivate Users

Click **Save** to save these settings and proceed.

After enabling provisioning, you may see a message that unmapped attributes exist on the application. This will not prevent provisioning; however, if you wish to map Next-Gen WAF attributes to your base Okta user profile, you may do so by mapping the following attributes:

- `userType` should be mapped onto a string attribute that will represent the user's `role`. The value of this must be a valid `role`: `owner`, `admin`, `user`, or `observer`.
- `entitlements` should be mapped onto a string array attribute that will represent the user's `sites`. This should be set to a string array representing the shortnames of sites (workspaces) the user should have access to, such as `www.example.com`.

Assigning a group or user to the application

The following instructions apply to assigning groups, though users will follow a nearly identical process.

1. In the Signal Sciences Okta application, click **Assignments**.
2. From the **Assign** menu, select **Assign to Groups**.

3. Select a group of users to provision. A window appears requesting additional attributes.
4. Select the **Role** for the assigned group. This can be one of **owner**, **admin**, **user**, or **observer**.
5. Click **Add Another** to add a site. This is the "short name" of the site that appears in your Site settings.
6. Click **Save and Go Back**.

Managing users with the IdP

User management includes both updates to attributes and user deletion.

Updating users

Updates to the group and user attributes will be synchronized, including:

- The user's real name
- The user's assigned role
- The user's assigned sites (workspaces)

Next-Gen WAF does not support updating the user's email address, as it is the primary identifier for the user.

Deleting users

Next-Gen WAF users are removed via provisioning in a few ways:

- Remove the user from a group assigned to the Next-Gen WAF application
- Directly remove the user from the Next-Gen WAF application if they are directly assigned
- Deactivating the user in Okta

The user will be re-created if the user is reactivated or re-assigned to the Signal Sciences Okta application.

Troubleshooting

SCIM Provisioning was added to the Okta application in December 2020. If you have a Signal Sciences application in Okta that was created before December 2020, you may need to create a new Signal Sciences application in Okta in order to use SCIM provisioning.

If you have questions or difficulties with the Okta integration, reach out to our Support team for assistance.

📄	**Enabling and disabling two-factor authentication**
📅	Last updated: 2024-06-13
🔗	/en/ngwaf/enabling-and-disabling-two-factor-authentication

IMPORTANT

This guide only applies to customers with Signal Sciences accounts that aren't linked to Fastly accounts. If you have linked a Signal Sciences account to a Fastly account or just have a Fastly account, check out our guide to enabling and disabling two-factor authentication instead.

We support two-factor authentication (2FA) via apps that support both HMAC-based One-time Password (HOTP) (RFC-4226) and Time-based One-time Password (TOTP) (RFC-6238). This includes Duo Security and Google Authenticator for both iPhone and Android.

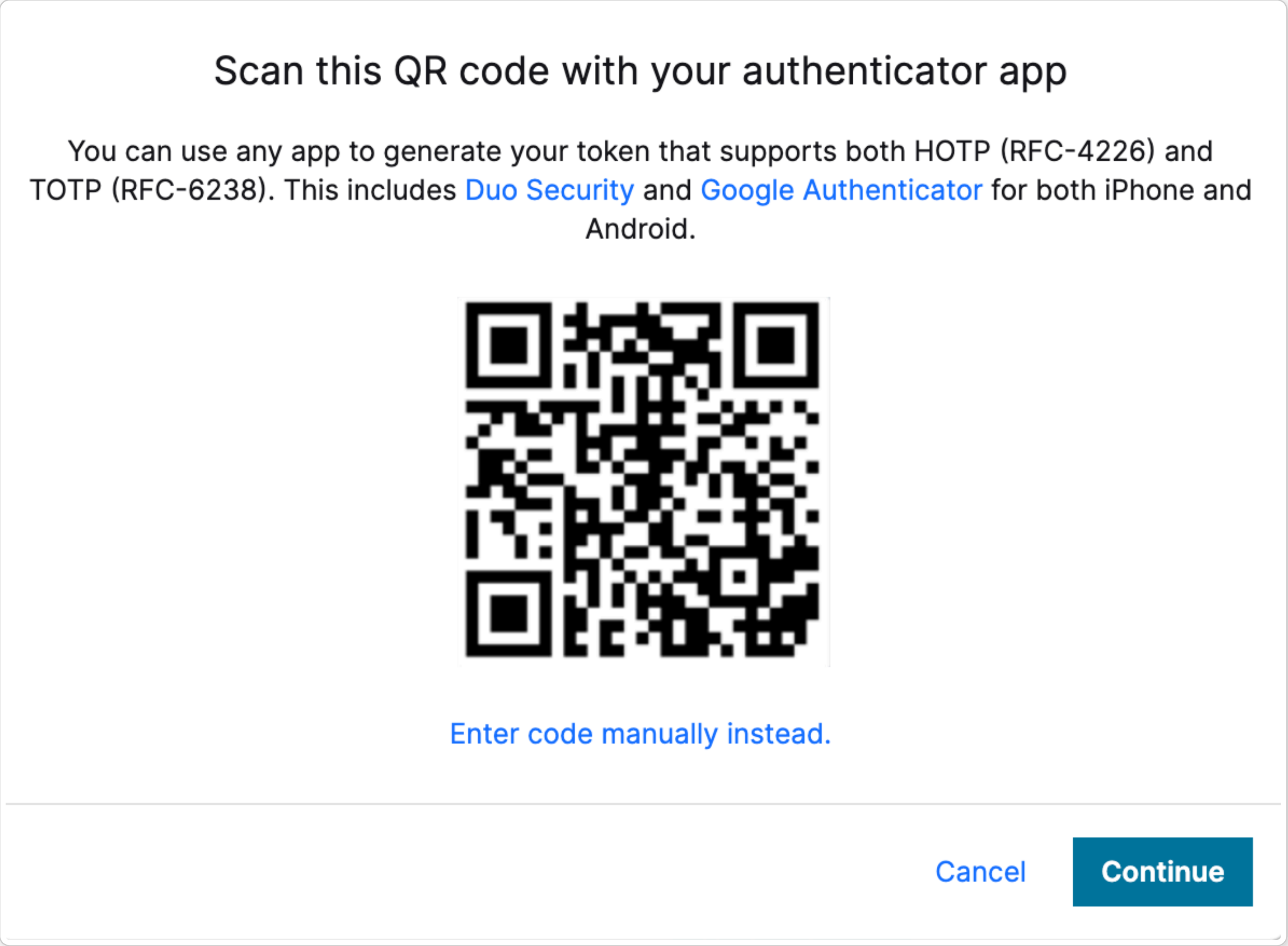
IMPORTANT

We don't support 2FA enforcement.

Enabling two-factor authentication

Two-factor authentication settings are set at the user-level for a particular corp. This means that a user only needs to configure two-factor authentication once to access all the sites to which they belong.

1. From the **My Profile** menu, select **Account Settings**.
2. Select **Enable**.
3. Scan the QR code with your authenticator app or click **Enter code manually instead** and enter the code manually into your authenticator app.



Scan this QR code with your authenticator app

You can use any app to generate your token that supports both HOTP (RFC-4226) and TOTP (RFC-6238). This includes Duo Security and Google Authenticator for both iPhone and Android.

IMPORTANT

The QR code above is an example. Scan the one that appears in the control panel, not in this guide.

4. Enter a name for your device.
5. Click **Continue**.
6. Enter the verification code from your authenticator app.
7. Click **Verify**.

Disabling two-factor authentication

1. From the **My Profile** menu, select **Account Settings**.

2. Click **Disable two-factor authentication** to disable two-factor authentication.

Managing users

Last updated: 2024-08-28

/en/ngwaf/managing-users

> IMPORTANT
>
> This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our user access and control guides for Fastly accounts.

If you have an owner or admin role for the Next-Gen WAF control panel, you can manage the users in your corp (also known as account).

Managing users as an owner

Owners can view and manage all users on the corp (account) by going to the **Corp Manage** menu and selecting **Corp Users**. This page lists all the users in the corp (account), along with their roles, site memberships (also known as workspace memberships), and whether they have 2FA enabled, as well as the list of pending invited users.

Adding users

To add a new user, complete the following steps:

1. Log in to the Next-Gen WAF control panel.

2. From the corp navigation bar, click the **Corp Manage** menu and then select **Corp Users**.

3. Click **Add corp user**.

4. In the **Email** field, enter the user's email address.

5. In the **Role** section, select which role the user should have.

6. In the **Site memberships** section, select which sites the user should be a member of. A user must belong to at least one site.

7. Click **Invite user**.

When the user is invited, they'll receive an email to register an account. They must click the **Accept invite** button at which point they'll be prompted to set their account password. After creating their account, they will then have access to all the sites they're a member of. The invitation is valid for 3 days. If the invitation is expired, resend the invite by clicking the pending user's row and clicking the **Resend Invite** button from the User Edit page.

Editing users

To edit a user, complete the following steps:

1. Log in to the Next-Gen WAF control panel.

2. From the corp navigation bar, click the **Corp Manage** menu and then select **Corp Users**.

3. In the list of users, click on the user.

4. Click **Edit corp user**.

5. Edit the **Role** and **Site memberships** sections as needed.

6. Click **Update user**.

Deleting users

To delete a user, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the corp navigation bar, click the **Corp Manage** menu and then select **Corp Users**.
3. In the list of users, click on the user.
4. Click **Remove corp user**.
5. Click **Delete corp user**.

Other user management tasks as an owner

In addition to managing users and their basic membership settings, you can also manage the following settings at the user level:

- **Enabling single sign-on.** Check out our guide to setting up single sign-on for more information on enabling single sign-on via SAML 2.0 and Google Apps.
- **Bypassing SSO for specific users.** If your corp (account) has single sign-on enabled, an Owner user can set a user to bypass SSO, allowing them to log in to the Next-Gen WAF control panel via username and password without needing to authenticate through your SSO provider.
- **Granting and restricting user permissions for API access tokens.** Check out our guide on using our Next-Gen WAF API for information about personal API access tokens and granting or restricting user permissions for them.
- **Managing two-factor authentication (2FA).** Check out our guide to enabling and disabling 2FA for Next-Gen WAF control panel.

Managing users as an admin

Admins have limited user management abilities for any sites (workspaces) they are a member of.

Inviting new users to a site (workspace)

To invite new users to a site (workspace), complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Settings**.
4. Click **Users**.
5. From the **Manage site users** menu, select **Invite new user**.
6. In the **Email** field, enter the user's email address.
7. In the **Role** section, select which role the user should have.
8. Click **Invite site user**.

When the user is invited, they'll receive an email to register an account. They must click **Accept invite** at which point they'll be prompted to set their account password. After creating their account, they will then have access to all the sites (workspaces) they're a member of. The invitation is valid for 3 days. If the invitation is expired, resend the invite by clicking the pending user's row and clicking **Resend Invite** from the User Edit page.

Assigning existing users to a site (workspace)

To assign existing users to a site (workspace), complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Settings**.
4. Click **Users**.
5. From the **Manage site users** menu, select **Assign existing users**.
6. From the menu, select a user to add to the site.
7. Click **Assign to site**.

Removing users from a site

To remove users from a site, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Settings**.
4. Click **Users**.
5. In the list of users, click on the user.
6. Click **Remove site user**.
7. Click **Remove user**.

All users must belong to at least one site (workspace). If this is the only site (workspace) the user is a member of, you will not be able to remove the user. Instead, an Owner user will need to delete the user entirely.

Configuring account session timeouts

IMPORTANT

Session timeouts can only be configured for the Next-Gen WAF control panel, not the Fastly control panel. Timeouts have a default maximum of 12 hours and a minimum of 30 minutes per session.

To set a custom timeout duration for your corp (account) in the Signal Sciences control panel, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **User Authentication**.
3. Under **Account Timeout**, click on a pre-set duration or click **Custom** to specify a custom duration. If selecting **Custom**, enter the custom duration in the **Days**, **Hours**, **Minutes**, and **Seconds** fields.
4. Click **Update Timeout** to save the new timeout duration.

Setting up single sign-on (SSO)

Last updated: 2024-07-15

/en/ngwaf/setting-up-single-sign-on-sso

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our enablement guide for Fastly accounts.

If your company uses an identity provider (IdP) to manage user authentication, you can enable the single sign-on (SSO) feature to either allow or require your organization's users to sign in to the web interface using the IdP instead of an email address and password. We support both SAML 2.0 and Google Apps SSO (OAuth 2.0) authentication methods.

Enabling single sign-on

Start by switching to SAML in the web interface:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Corp Manage** menu, select **User Authentication**.
4. In the **Authentication** section, click **Switch to SAML** to use SAML authentication for providers like Okta or OneLogin.

Then, configure your IdP to use the following settings:

- **Recipient/Consumer URL:** `https://dashboard.signalsciences.net/saml`
- **Audience URI (SP Entity ID):** `https://dashboard.signalsciences.net/`
- **Consumer URL Validator:** `^https:\/\/dashboard\.signalsciences\.net\/saml$`

A few things to note if you're self-configuring using SAML 2.0:

- We don't publish SAML metadata.
- You must specify the SAML 2.0 Endpoint and x.509 public certificate from the app configured in your IdP.
- We require a signed SAML response. Individually-signed assertions will be ignored, so ensure your overall response is signed.
- You must allow SP-initiated logins to complete the handshake that sets up SAML. Once that's complete, you will be able to use IdP-initiated logins.
- If PingFederate is your IdP, you need to deselect the **Require authn requests to be signed when received via the post or redirect bindings** and **Always sign the SAML assertion** options under the Signature Policy settings.

Start by switching to Google Apps in the web interface:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Corp Manage** menu, select **User Authentication**.
4. In the **Authentication** section, click **Switch to Google Apps** to enable OAuth 2.0 authentication via Google Apps.

You'll be redirected to Google to authenticate, and the domain of the email you authenticate against will be used as the SSO domain for the corp (also known as an account).

After you've authenticated, you'll be redirected back to a login. You'll be shown the domain you selected and be required to enter your password to confirm.

TIP

If you chose the wrong domain, change the domain by clicking **Switch domains**.

After enabling single sign-on

Once you enable SSO, the passwords and 2FA tokens for any existing users will be deleted and all users with active sessions in progress will have those sessions expired.

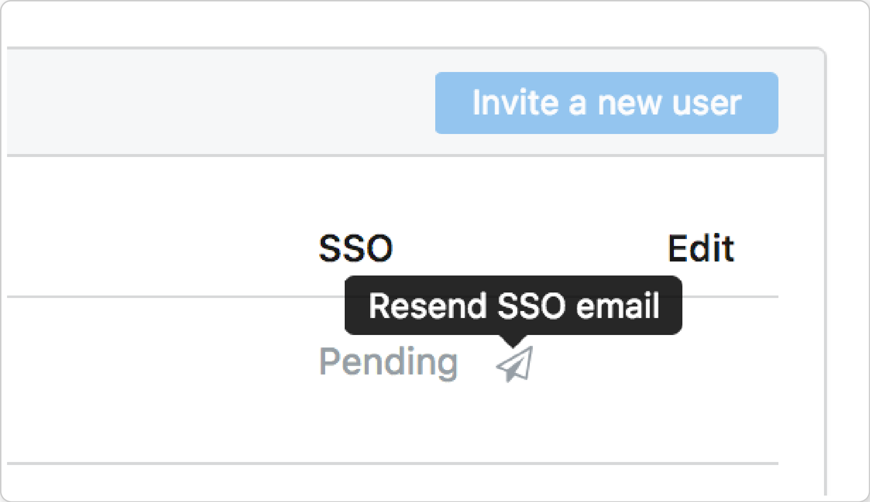
Each user will be sent an email with an SSO binding link and instructions to set up SSO on their accounts. Any users attempting to log in without clicking the SSO binding link will receive an error message telling them that SSO has been enabled for their corp (account) and to follow the link in their email.

Once users have successfully configured SSO, they will receive an email confirming the change.

Considerations

Keep in mind the following things:

- **Use a secure cryptographic algorithm.** The SHA-1 cryptographic algorithm has been retired by the National Institute of Standards and Technology (NIST) and they recommend upgrading to more advanced and secure replacements such as those from the SHA-2 family of hash functions, like SHA-256. Consider using or upgrading to these more advanced algorithms for SAML certificate signing for SSO setup in advance of the NIST recommended phase out deadline.
- **SSO binding links only remain valid for 3 days.** If the SSO binding link expires, you can resend it by clicking **Resend SSO email** next to the **Pending** SSO status in the **Users** panel on the User Management page.



- **The email from your identity provider must match the email in your Signal Sciences account.** If the email from your identity provider doesn't match the email in your Signal Sciences account, you will be alerted that your Signal Sciences email will be changed to your identity provider's email when you enable SSO.

  If the email you choose doesn't match the email in your Signal Sciences account and conflicts with an email already in the system, you will be shown an error message and be required to choose another email.
- **When specified, single sign-off follows your IT department's settings.** If your corp's (account's) IT department determines you need to use a custom logout URL to handle logout redirects and cookie updates, it is possible to supply an optional logout endpoint. There are no parameters necessary; the browser will do a GET request and follow any sign-out settings or redirects supplied by your IT department.

Disabling single sign-on

Owners can disable single sign-on for all users on the corp (account) by following these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Corp Manage** menu, select **User Authentication**.
4. To the right of **Signal Sciences built-in authentication**, click **Switch to built-in auth**.

5. In the **Password** field, enter your new password. You are required to set a new password for your user before disabling single sign-on to prevent you from being locked out of the Next-Gen WAF control panel.

6. Click **Continue**.

After disabling single sign-on, all other users in your corp (account) will have their active sessions expired. They will receive an email with a link to set a new password, informing them SSO has been disabled. All users will need to set new passwords to log back into the Next-Gen WAF control panel.

Bypassing single sign-on for selected users

If your corp (account) has single sign-on enabled, an Owner user can set a user to bypass SSO for their Signal Sciences account. This allows them to log in to the Next-Gen WAF control panel via their username and password without needing to authenticate through your SSO provider.

1. Log in to the Next-Gen WAF control panel.

2. From the **Corp Manage** menu, select **Corp Users**.

3. Click on the user you want to bypass SSO.

4. Click **Edit corp user**.

5. Under **Authentication**, select **Allow this user to bypass Single Sign-On (SSO)**.

6. Click **Update user**.

Using user roles and permissions

Last updated: 2024-08-28

/en/ngwaf/using-user-roles-and-permissions

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our guide to managing users of Fastly accounts.

Every user in your corp (also known as account) is assigned a role. Roles are groups of permissions that afford users the ability to view and control a variety of things in your corp (account).

- **Owners** have access to all corp (account) features, can edit settings on every site (also known as workspace), and can make changes to user accounts.

- **Admins** have limited access to corp (account) features, access to specific sites (workspaces) and site-level (workspace-level) settings, and can invite new users to specific sites (workspaces).

- **Users** have access to specific sites (workspaces) and site-level (workspace-level) settings.

- **Observers** have access to specific sites (workspaces).

Corp (account) management permission

The corp (account) management permissions for each role are as follows:

Permission	Owner	Admin	User	Observer
View corp-wide (account-wide) data and reports	Access	Limited access	Limited access	Limited access

Permission	Owner	Admin	User	Observer
Edit corp-wide (account-wide) security policies	Access	No access	No access	No access
Create or edit Corp (Account) Rules	Access	No access	No access	No access
View Corp (Account) Rules	Access	Access	Access	Access
Create or edit Corp (Account) Lists	Access	No access	No access	No access
Create or edit Corp (Account) Signals	Access	No access	No access	No access
View corp (account) integrations	Access	Access	Access	Access
Edit corp (account) integrations	Access	No access	No access	No access
View corp (account) audit logs	Access	Access	Access	Access

User management permissions

The user management permissions for each role are as follows:

Permission	Owner	Admin	User	Observer
View users	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)
Invite or remove other users	All sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)	No sites (workspaces)
Allow users to create API Access Tokens	Access	No access	No access	No access

Site (workspace) management permissions

The site (workspace) management permissions for each role are as follows:

Permission	Owner	Admin	User	Observer
Create or delete sites (workspaces)	Access	No access	No access	No access
View site-level (workspace-level) data and reports	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)
Edit site (workspace) blocking mode	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
Edit site (workspace) IP anonymization policy	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
Edit site (workspace) default blocking response code	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View associated users	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
Edit site (workspace) Display Name and Short Name	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)

Site (workspace) configuration permissions

The site (workspace) configuration permissions for each role are as follows:

Permission	Owner	Admin	User	Observer
Change Blocking Mode	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
Create or edit rules	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View rules	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)
Create or edit signals	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View signals	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)
Create or edit lists	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View lists	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)
Create or edit redactions	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View redactions	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)
Create or edit integrations	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View integrations	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)
Create agent keys	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View agent keys	All sites (workspaces)	Specific sites (workspaces)	Specific sites (workspaces)	No sites (workspaces)
View site (workspace) audit logs	Access	Access	Access	Access

Personal account management permissions

The personal account management permissions for each role are as follows:

Permission	Owner	Admin	User	Observer
Edit account profile information	Access	Access	Access	Access
Create, edit, view support tickets	Access	Access	Access	Access
Create API Access Token	Limited access	Limited access	Limited access	Limited access

Subcategory: Agent mode (Protection mode)

These articles describe how to set the Agent mode (also known as Protection mode) on the Next-Gen WAF agent.

About the agent mode (protection mode)

Last updated: 2024-08-28

/en/ngwaf/about-the-agent-mode

Agent mode (also known as Protection mode) is a site (also known as workspace) setting that determines how the Next-Gen WAF agent handles request processing. Options include:

- **Blocking:** enables request blocking and logging. This option actively protects your web application and provides visibility into your web traffic. Legitimate traffic is still allowed.
- **Not Blocking (also known as Logging):** enables request logging. This option provides visibility into your web traffic but doesn't actively protect your site (workspace).
- **Off:** disables request processing. The agent doesn't block or log requests. This option doesn't uninstall the agent.

About the Blocking option

When the Agent mode (Protection mode) menu is set to `Blocking`, the Next-Gen WAF:

- logs requests based on our storage policy.
- blocks malicious requests from reaching your web servers and doing harm. Site alerts (also known as workspace alerts) and rules define the criteria used to evaluate and block individual requests.

When requests are blocked, the 406 response code is returned unless you specified a different custom response code. You can view non-sensitive portions of blocked requests and response metadata via the Next-Gen WAF control panel, Fastly control panel, and API.

About the Not Blocking (Logging) option

When the Agent mode (Protection mode) menu is set to `Not Blocking` (`Logging`), the Next-Gen WAF logs requests based on our storage policy and all traffic is allowed.

IMPORTANT

The `Not blocking` (`Logging`) option never blocks requests. Requests that match rules with a block action will be allowed.

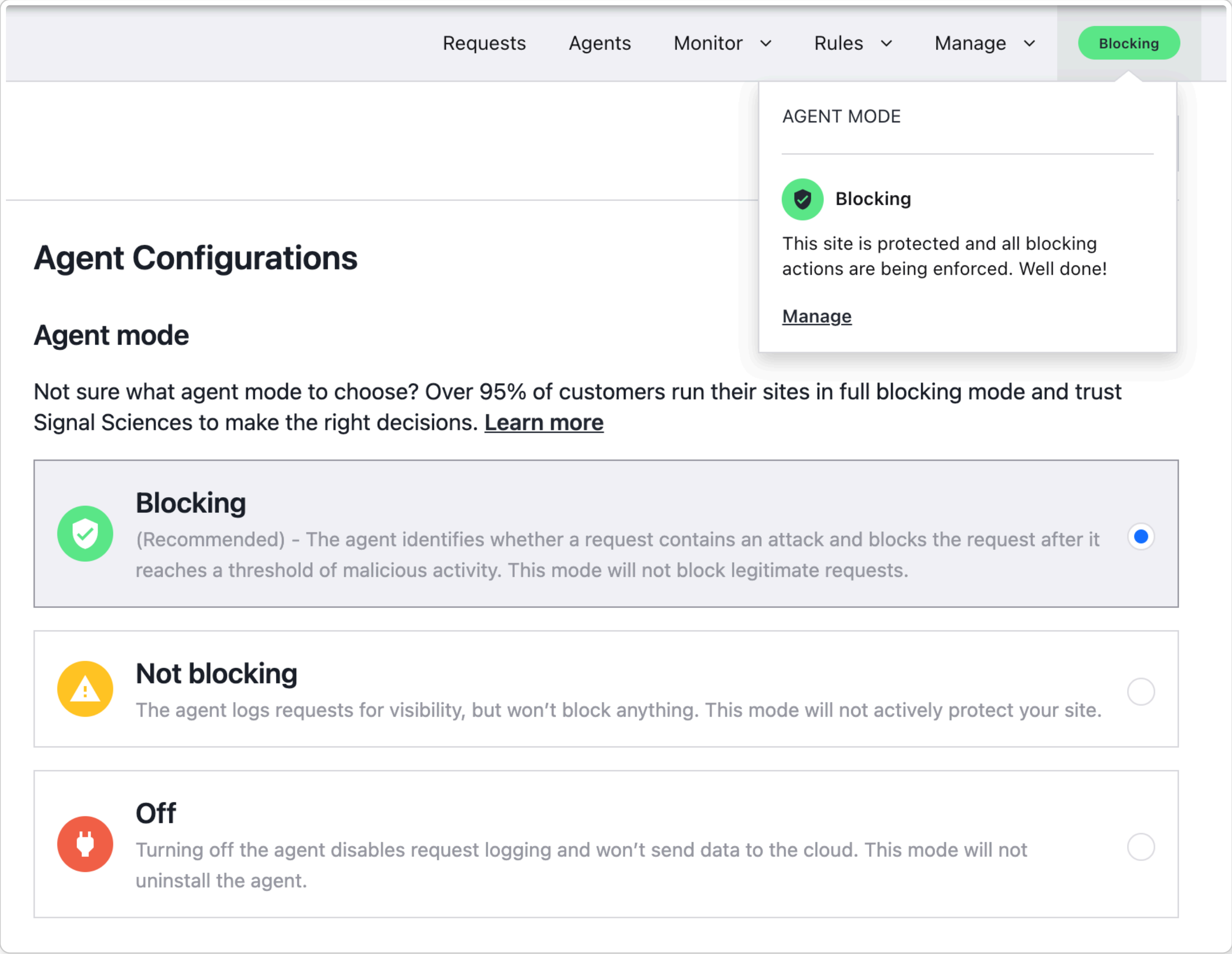
Changing the agent mode (protection mode)

To change the agent mode (protection mode), compete the following steps:

NOTE

If you've been assigned the observer role, you cannot change the agent mode.

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the site navigation bar, click the agent mode indicator.
4. Click **Manage**.



This site is protected and all blocking actions are being enforced. Well done!

Agent Configurations

Agent mode

Not sure what agent mode to choose? Over 95% of customers run their sites in full blocking mode and trust Signal Sciences to make the right decisions. Learn more

● Blocking (Recommended) - The agent identifies whether a request contains an attack and blocks the request after it reaches a threshold of malicious activity. This mode will not block legitimate requests.

○ Not blocking The agent logs requests for visibility, but won't block anything. This mode will not actively protect your site.

○ Off Turning off the agent disables request logging and won't send data to the cloud. This mode will not uninstall the agent.

5. From the **Agent mode** menu, select the agent mode for the site. Options include:
   - **Blocking:** enables request blocking and logging. This option actively protects your web application and provides visibility into your web traffic. Legitimate traffic is still allowed.
   - **Not Blocking:** enables request logging. This option provides visibility into your web traffic but doesn't actively protect your site.
   - **Off:** disables request processing. The agent doesn't block or log requests. This option doesn't uninstall the agent.
6. Click **Update**.

> NOTE
>
> If you've been assigned the user or billing role, you cannot change the protection mode.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear ⚙ next to the workspace that you want to modify.
4. Click **Protection Mode**.
5. Select the protection mode for the site. Options include:
   - **Blocking:** enables request blocking and logging. This option actively protects your web application and provides visibility into your web traffic. Legitimate traffic is still allowed.

   - **Logging:** enables request logging. This option provides visibility into your web traffic but doesn't actively protect your site.
   - **Off:** disables request processing. The agent doesn't block or log requests. This option doesn't uninstall the agent.

6. Click **Update**.

Testing with attack tooling

Last updated: 2024-08-28

/en/ngwaf/testing-with-attack-tooling

After installing the Next-Gen WAF, we recommend testing your setup by running attack tooling against your website to verify that attack data is being captured and blocking is working correctly.

While you can use any attack tooling for testing, we recommend using Nikto which tests a wide variety of vulnerabilities. While Nikto is running, Next-Gen WAF agents will identify any malicious or anomalous requests and send relevant metadata to our backend, after redacting any sensitive information.

This guide explains how to set up Nikto and run three different testing scenarios:

1. Testing attack tooling detection
2. Testing attack detection
3. Testing attack blocking

Before you begin

Nikto requires Perl to be installed. Run `perl -v` to check if you have Perl installed on your system. If Perl is not found, you can download and install it from the Perl website.

Setting up Nikto

Nikto is a common open source tool used for running security tests against web servers. It can run on Linux, OS X, and Windows platforms. To set up Nikto:

1. Download the latest version of Nikto.
2. Using command prompt, navigate to the directory where you downloaded Nikto.
3. Enter `unzip nikto-master.zip` to unzip the file.
4. Enter `cd nikto-master/program/` to change directories to the program directory.
5. Run `./nikto.pl` to verify you are able to run Nikto. A default help message appears.

If you receive a permission denied error message, you can resolve the error by running `chmod +x nikto.pl` which makes the script executable. Then run `./nikto.pl` again.

Testing attack tooling detection

Using Nikto, you can test the attack tooling detection feature.

To run this test:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.

3. Ensure the agent mode indicator in the site navigation bar displays **Not blocking**. In this mode, the agent logs requests but does not block anything. If the agent mode indicator displays **Blocking** or **Off**, update the behavior by clicking the agent mode indicator and then clicking **Manage**.

4. Using command prompt, enter `cd nikto-master/program/` to change directories to the program directory.

5. In a command prompt, run the following command to initiate the first Nikto scan of your website:

```
$ ./nikto.pl -h http://www.example.com
```

6. While the attack is running, navigate to the Site Overview page in the Next-Gen WAF control panel and select the Overview dashboard from the dashboards menu. The Overview dashboard will display the attacks and anomalies within 30 seconds.

1. Log in to the Fastly web interface.

2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.

3. Click the gear ⚙ next to the workspace that you want to modify.

4. Click **Protection Mode**.

5. Ensure **Logging** is selected. In this mode, the agent logs requests but does not block anything.

6. Using command prompt, enter `cd nikto-master/program/` to change directories to the program directory.

7. In a command prompt, run the following command to initiate the first Nikto scan of your website:

```
$ ./nikto.pl -h http://www.example.com
```

8. While the attack is running, return to the Fastly control panel and go to **Security** > **Next-Gen WAF** > **Dashboards**. The Overview dashboard will display the attacks and anomalies within 30 seconds.

Testing attack detection

After verifying that attack tooling has been detected, you can use Nikto to modify an attack to demonstrate an IP address being flagged due to injection attacks. You can do this by modifying the User-Agent string that is sent with each request.

To run this test:

1. Log in to the Next-Gen WAF control panel.

2. From the **Sites** menu, select a site if you have more than one site.

3. From the **Events** card, click **View** next to the IP address associated with the Nikto scanner host.

4. Click **Remove flag now** on the flagged IP address and then **Remove flag**.

5. Using command prompt, enter `cd nikto-master/program/` to change directories to the program directory.

6. Run the following command to initiate the Nikto scan:

```
$ ./nikto.pl -useragent “MyAgent (Demo/1.0)” -h http://www.example.com
```

While the attack is running, return to the Site Overview page in the Next-Gen WAF control panel and select the Overview dashboard from the dashboards menu. The Overview dashboard will display the attacks and anomalies within 30 seconds. Unlike in the previous test, you should see signals from a variety of attacks, not just attack tooling. This means modifying the User-Agent string worked and the IP address will eventually be flagged based on the various attacks.

1. Log in to the Fastly web interface.

2. Go to **Security** > **Next-Gen WAF** > **Events**.

3. Click **View** next to the IP address associated with the Nikto scanner host.

4. Click **Remove flag** on the flagged IP address.

5. Using command prompt, enter `cd nikto-master/program/` to change directories to the program directory.

6. Run the following command to initiate the Nikto scan:

```
$ ./nikto.pl -useragent “MyAgent (Demo/1.0)” -h http://www.example.com
```

7. While the attack is running, return to the Fastly control panel and go to **Security** > **Next-Gen WAF** > **Dashboards**. The Overview dashboard will display the attacks and anomalies within 30 seconds. Unlike in the previous test, you should see signals from a variety of attacks, not just attack tooling. This means modifying the User-Agent string worked and the IP address will eventually be flagged based on the various attacks.

Testing attack blocking

Next-Gen WAF lets you take a different approach to blocking compared to other products. Instead of being limited to blocking individual requests that match a particular signature, you can implement threshold-based blocking. With threshold-based blocking, we look for spikes in malicious traffic from a particular IP (aggregated across all of our agents) and flag that IP if it exceeds specific thresholds in a 1, 10, or 60 minute window. Once an IP is flagged, we block all malicious traffic from that IP. Traffic is blocked for a default 24 hours. You can use site alerts (also known as workspace alerts) to adjust the thresholds and decrease the blocking time period. During the blocking time period, requests that don’t contain an attack will be allowed, preventing the Next-Gen WAF from breaking normal traffic.

For the final test, enable blocking mode and use Nikto to demonstrate how to allow legitimate traffic to continue accessing the website while blocking malicious traffic from the same IP address. To perform this test, you will need to use a web browser that is on the same system you are running the scan from.

> NOTE
>
> Before continuing, make sure to remove the scanning IP address from the flagged list.

To run this test:

1. Log in to the Next-Gen WAF control panel.

2. From the **Sites** menu, select a site if you have more than one site.

3. Click on the agent mode indicator in the site navigation bar and click **Manage**.

4. Update the agent behavior to **Blocking**.

5. Click **Update**.

6. In a browser, access your website.

7. Using command prompt, enter `cd nikto-master/program/` to change directories to the program directory.

8. Run the following command to initiate the Nikto scan:

```
$ ./nikto.pl -useragent “MyAgent (Demo/1.0)” -D V -T 9 -h http://www.example.com
```

9. While the scan is running:

    - use the browser window to navigate your website to confirm that legitimate user traffic is not blocked.

    - observe from the command shell window that requests containing attacks are blocked with a 406 response code. An HTTP 406 is used so as to not trigger operational alarms as a 500 or 404 would. Additionally, by using a unique code like 406, you can customize the error message that the server returns.

Repeat the scan as many times as desired.

You can also manually verify blocking by visiting your website with a malicious payload (e.g., `https://www.example.com/?q=<script>alert('xss')</script>`).

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear ⚙ next to the workspace that you want to modify.
4. Click **Protection Mode** and then select **Blocking**.
5. Click **Update**.
6. Using command prompt, enter `cd nikto-master/program/` to change directories to the program directory.
7. Run the following command to initiate the Nikto scan:

```
$ ./nikto.pl -useragent “MyAgent (Demo/1.0)” -D V -T 9 -h http://www.example.com
```

8. While the scan is running:
   - use the browser window to navigate your website to confirm that legitimate user traffic is not blocked.
   - observe from the command shell window that requests containing attacks are blocked with a 406 response code. An HTTP 406 is used so as to not trigger operational alarms as a 500 or 404 would. Additionally, by using a unique code like 406, you can customize the error message that the server returns.

Repeat the scan as many times as desired.

You can also manually verify blocking by visiting your website with a malicious payload (e.g., `https://www.example.com/?q=<script>alert('xss')</script>`).

Subcategory: Agent response codes

These articles describe how to set custom agent response codes on the Next-Gen WAF agent.

About agent response codes

Last updated: 2024-08-28

/en/ngwaf/about-agent-response-codes

Agent response codes indicate the Next-Gen WAF agent's decision to allow or block requests to your web application. Specifically, the 200 agent response code indicates the request should be allowed and agent response codes greater than or equal to 301 indicate the request should be blocked.

You can view the agent response code for an individual request by navigating to the request details page in the Next-Gen WAF control panel or the Request details page in the Fastly control panel for that request.

How agent response codes and HTTP status codes work

When a request is made to your web application, the Next-Gen WAF agent evaluates the request against your active rules and site alerts (also known as workspace alerts) to determine what should happen to the request (e.g., allow or block). Based on the decision, the agent assigns the request an agent response code. The agent sends this code along with the request details to the appropriate entity for your deployment method.

The entity then continues processing the request and sends the requesting client the appropriate HTTP status code. Due to internal business logic, the entity may return a HTTP status code that differs from the agent response code. For example, a request may have a 200 agent response code but a 302 HTTP status code if the entity contains additional logical.

Types of agent response codes

There are two types of agent response codes:

- **Custom agent response codes (blocking response codes):** codes greater than or equal to 301. These codes indicate a request should be blocked. By default, blocked requests receive a 406 agent response code. However, you can change this default behavior.
- **System agent response codes:** codes that indicate the request should be allowed or that the request wasn't processed correctly.

Notable agent response codes

Notable agent response codes include:

Agent response code	Description
-2	Indicates the request wasn't processed correctly. For information on how to troubleshoot this response code, visit our Troubleshooting agent response codes guide.
-1	Indicates the request wasn't processed correctly. For information on how to troubleshoot this response code, visit Troubleshooting agent response codes.
0	Indicates the request wasn't processed correctly. For information on how to troubleshoot this response code, visit our Troubleshooting agent response codes guide.
200	Indicates the request should be allowed. This is similar to an `HTTP 200 OK` response.
301	Indicates the request should be redirected. Visit Using redirect custom response codes to learn more.
302	Indicates the request should be redirected. Visit Using redirect custom response codes to learn more.
406	Indicates the request should be blocked (similar to an `HTTP 406 NOT ACCEPTABLE` response). By default, all blocked requests return a 406. You can update the default blocking response code from 406 to an alternative custom response code and create rules with a block action to return a specific custom response codes.
499	Indicates the client closed the connection mid-request. For information on how to troubleshoot this timeout error, visit our Troubleshooting agent response codes guide.
504	Indicates the gateway did not receive a response from the user’s upstream origin in the allotted time specified. For information on how to troubleshoot this timeout error, visit our Troubleshooting agent response codes guide.

Using custom agent response codes

Last updated: 2023-06-14

/en/ngwaf/using-custom-agent-response-codes

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Custom agent response codes allow you to specify the HTTP status code that is returned when a request to your web application is blocked. By default, all block actions return the 406 custom agent response code. You can change this default behavior by:

- updating the site (also known as workspace) default blocking response code from 406 to an alternative response code. Blocking actions use the site (workspace) default blocking response code unless a different response code is specified in a rule.
- creating request rules that have a block action and that will return a specified response code.
- creating advanced rate limit rules that have a block action and that will return a specified response code.

Custom agent response codes can facilitate additional actions at the edge depending on the rule triggered. For example, a specific custom agent response code can be used to tell your CDN to redirect the request to a CAPTCHA. The Fastly CDN supports custom agent response codes in VCL to redirect requests to other pages (e.g., custom error pages).

Limitations

When working with custom agent response codes, keep the following things in mind:

- The Essential platform does not support custom agent response codes.
- Supported custom agent response codes are 301, 302, and 400-599.
- Each site (workspace) may have up to 5 unique response codes at any time.
- There is no limit to the total number of rules that use custom agent response codes.
- Custom agent response codes require a minimum agent and module version. When an unsupported module version is told to block a request due to a rule that uses a custom agent response code, that request will **not be blocked**.

Response code precedence

Blocking actions will use the site (workspace) default blocking response code unless a different response code is specified in a rule. Examples of this rule are as follows:

- When a templated rule blocks a request, the site (workspace) default blocking response code is returned.
- When a rule with the site (workspace) default blocking response code and a rule with a custom agent response code both block a request, the custom agent response code is returned.

When rules with different custom agent response codes block the same request, the custom agent response code created first takes precedence over other relevant custom agent response codes. For example, let's say that your site (workspace) has the following rules:

Rule	Condition	Action	Date created
E	IP Address (Client) equals `192.0.2.0`	Block and respond with 500	2022-12-01
D	IP Address (Client) equals `192.0.2.0`	Block and respond with 400	2022-10-01
C	IP Address (Client) equals `192.0.2.0`	Block and respond with 404	2022-08-01
B	Path equals `/example/path`	Block and respond with 400	2022-06-01
A	Path equals `/example/redirect`	Block and respond with 301	2022-04-01

In this example, a client with an IP address of `192.0.2.0` makes a request to the `/custom-limits` page of your web application. As the request meets the conditions of rules C, D, and E, the request is blocked. While rule C was created before rules D and E, the 400 response code from rule D is returned because it is the oldest relevant response code. Specifically, the 400 response code was first added to rule B on June 1st and the 404 and 500 response codes were created on August 1st and December 1st respectively.

Selecting custom agent response codes

Because custom agent response codes can be returned to upstream systems, ensure you understand the behavior of your upstream systems. Specifically, keep the following things in mind when selecting a custom agent response code:

- Some CDNs automatically cache certain response codes. For example, the Fastly CDN automatically caches 301, 302, 404, and 410 responses.
- Using a 401 response code may result in a username and password prompt to the client browser.
- Using response codes such as 400 or 403 may result in an artificial increase of measured “bad request” or “forbidden” requests.
- Response codes in the 5xx range are generally associated with server connections or application errors.

Minimum version support

The following agent and module versions support custom agent response codes:

Name	Minimum version
Agent	Any
Apache	1.8.0+
Cloud Foundry	Any
Envoy	Any
Golang	1.8.0+
HAProxy	1.2.0+
Heroku	Any
IBM Cloud	Any
IIS	2.2.0+
Java	2.1.1+
.Net	1.6.0+
.Net Core	1.3.0+
NGINX	1.4.0+
NGINX C Binary	1.0.44+
Node.js	1.6.1+

Unsupported agents and modules handle requests that should be blocked by rules with custom agent response codes in the following ways:

Agent	Module	Result
Supported	Supported	Blocked with custom agent response code
Supported	Unsupported	Not blocked
Unsupported	Supported	Blocked with default response code of 406
Unsupported	Unsupported	Not blocked
Supported (Reverse Proxy)	N/A	Blocked with custom agent response code

Agent	Module	Result
Unsupported (Reverse Proxy)	N/A	Blocked with default response code of 406

Using redirect custom agent response codes

With redirect custom agent response codes (i.e., 301 and 302), you can specify the absolute or relative URL of the redirect location.

The redirect URL can pass one instance of the `{{REQUESTID}}` variable (e.g., `https://www.example.com/blocked/?reqid={{REQUESTID}}`). When used, this variable is replaced with the ID of the relevant request before the client is sent to the redirect location.

	Troubleshooting agent response codes
	Last updated: 2024-08-28
	/en/ngwaf/troubleshooting-agent-response-codes

IMPORTANT

This guide only applies to Next-Gen WAF customers using the Cloud WAF or Core WAF deployment method.

If something abnormal occurs during request processing, the Next-Gen WAF agent will return an error agent response code (e.g., -2, -1, and 499) that you can use to help resolve the issue.

Troubleshooting -2, -1, and 0 agent response codes

The -2, -1, and 0 agent response codes are error codes applied to requests that weren’t processed correctly. There are a few reasons why this can happen but they tend to fall into two major categories:

- The post or response couldn't be matched to the request
- The module timed out waiting for a response from the agent

Request and response mismatch

Error agent response codes can occur when a post or response couldn't be matched to any actual requests. This is typically the result of NGINX redirecting before the request is passed to the Next-Gen WAF module.

Specific server response codes

The following server response codes cause NGINX to skip the phases that normally run. Due to their nature, they cause NGINX to finish processing the request without it being passed to the Next-Gen WAF module:

- 400 (Bad Request)
- 405 (Not Allowed)
- 408 (Request Timeout)
- 413 (Request Entity Too Large)
- 414 (Request URI Too Large)
- 494 (Request Headers Too Large)
- 499 (Client Closed Request)
- 500 (Internal Server Error)

- 501 (Not Implemented)

Look for NGINX return directives

Look for custom NGINX configurations or Lua code that could be redirecting the request. This is almost always due to `return` directives in an NGINX configuration file. There could be `return` directives used to redirect specific pages to `www`, `https`, or a new URL. The `return` directive stops all processing, causing the request to not be processed by the Next-Gen WAF module. For example:

```
location /oldurl {
     return 302 https://example.com/newurl/
}
```

These would need to be updated to force the request to be processed by our agent first. Calling the `rewrite_by_lua_block` directly allows you to force the Next-Gen WAF module to run first and then perform the return statement for NGINX:

```
location /oldurl {
     rewrite_by_lua_block {
          sigsci.prerequest()
          return ngx.exit(302 "https://example.com/newurl/")
     }
     #return 302 https://example.com/newurl/
}
```

Agent restarted

Request and response mismatches can also be due to restarting the agent. If the agent is restarted after the request is processed, but before the response is processed, the agent will not see the response and fail to attribute it to the request, resulting in an error agent response code.

Module timing out

When the module receives a request, it sends it to the agent for processing. The module then waits for a response from the agent (whether or not to block) for a set amount of time (typically 100ms). If the agent doesn’t process the request within that time, the module will time out and default to failing open, allowing the request through. These requests that failed open will have error agent response codes applied to them.

Module timeouts are most commonly due to insufficient resources allocated to the agent. This can be a result of host or agent misconfiguration, such as the agent being limited to too few CPU cores.

This can also be due to a high volume of traffic to the host. If requests are coming in faster than the agent can process them, subsequent requests will be queued for processing. If a queued request reaches the timeout limit, then the module will fail open and allow the request through.

Similarly, certain rules designed specifically for penetration testing can take longer to run than traditional rules. This can result in requests queueing and timing out due to the increased processing time per request.

Look at response time

Requests that are timing out will have a high response time, exceeding the default timeout of 100ms.

Look at agent metrics

From the Agents page in the Next-Gen WAF control panel, you can access metrics for each agent. These metrics can help you diagnose the issue.

Connections dropped

The Connections dropped metric indicates the number of requests that were allowed through (or "dropped").

CPU usage

The CPU metrics can indicate the host is overloaded, preventing it from processing requests quickly enough.

- The Host CPU metric indicates the CPU percentage for all cores together (100% is maximum).
- The Agent CPU metric indicates the total CPU percentage for the number of cores in use by the agent. For example, if the agent were using 4 cores, then 400% would be the maximum.

CPU allocation and containerization

There are known issues with agents running within containers. It's possible for agents to have insufficient CPU to process requests, due to a low number of CPUs (cores) allocated to the container by the `cgroups` feature.

We recommend the container running the agent should be given at least 1 CPU. If both NGINX and the agent are running in the same container, then we recommend allocating at least 1.5 CPUs.

Troubleshooting the 499 agent response code and the 504 HTTP status code

If a client is making a request and the Cloud WAF Application Load Balancer (ALB) does not receive the first header byte within 60 seconds of the TCP connection being established, the requesting client will receive a 504, while the Next-Gen WAF agent will respond with a 499. This means the requesting client, if making a long-standing request through a browser, will receive a 504 error in the browser, while the Next-Gen WAF control panel will show a 499 for the request.

The long-standing request will need to be optimized to meet the 60 second threshold. If the request cannot be optimized, reach out to our support team for additional details.

Relevant timeouts in the Cloud WAF architecture

- The Cloud WAF agent has 60 seconds to start sending a response to the ALB
- The Cloud WAF agent has 10 seconds to negotiate TLS with the upstream
- The Cloud WAF agent has 30 seconds to establish an HTTP connection to the upstream

Further help

If you're unable to resolve an agent response code issue, generate an agent diagnostic package by running `sigsci-agent-diag`, which will output a `.tar.gz` archive with diagnostic information. Then, reach out to our support team for additional details. When you contact us, be sure to provide the diagnostic `.tar.gz` archive and include control panel links to the requests and agents affected.

Subcategory: Data storage and privacy

These articles describe how we store and make available request and response data via the web interface and API.

📄	About data storage and privacy
📅	Last updated: 2024-04-02
🔗	/en/ngwaf/about-data-storage-and-privacy

We store and make available request and response data via the web interface and API. Due to our redaction process, only non-sensitive or benign portions of the request are ever sent to the platform backend.

Limitations and considerations

Keep these things in mind:

- Data can only be extracted within 24 hours of its creation.
- We store request and response data for 30 days and then delete it.
- We use the collected request data to help identify and block attacks to your web application. We never attribute any data back to your organization or end users.

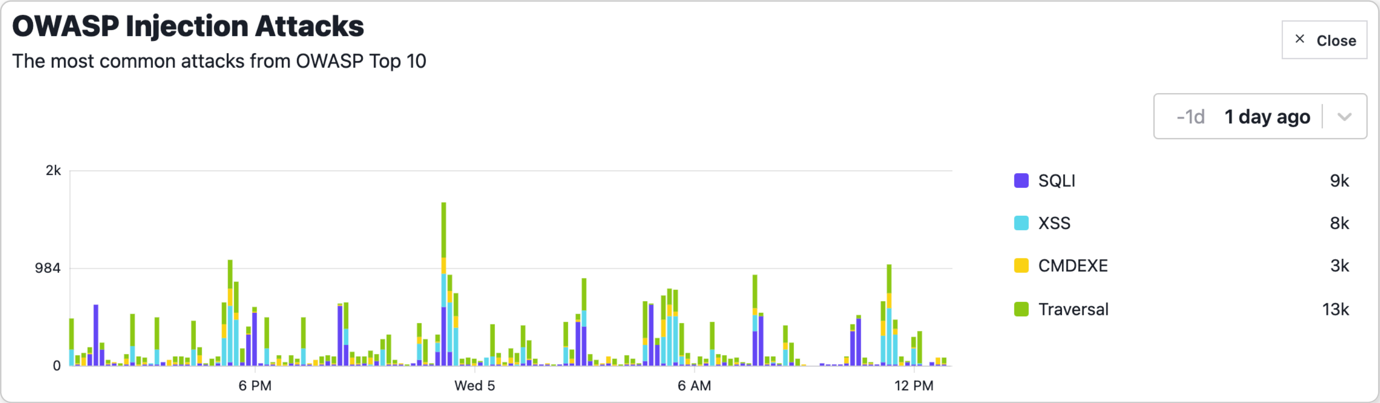
Response data storage

We only collect metadata (e.g., response codes and response headers) from response records.

Request data storage

From request records, we collect and store two types of data:

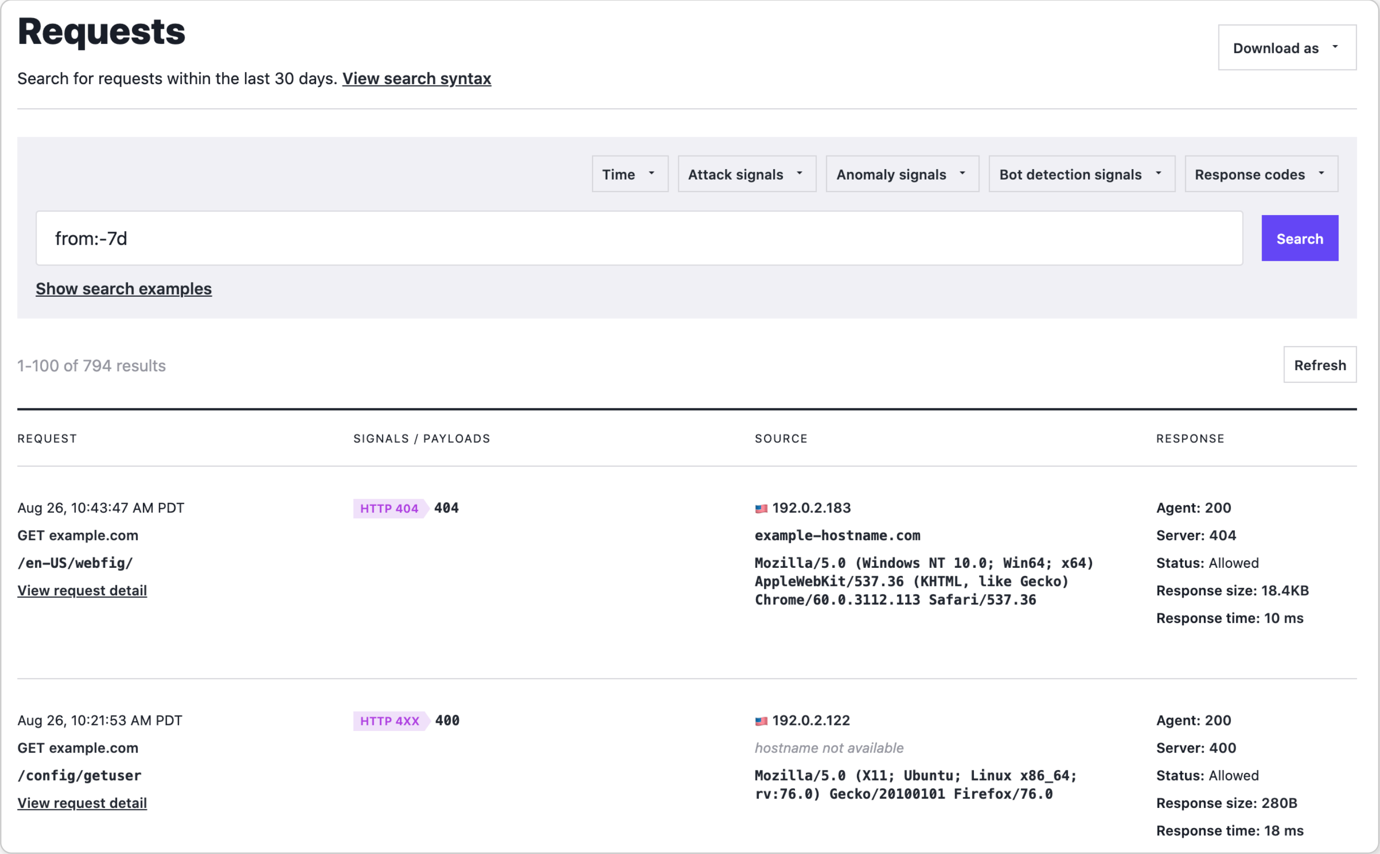
- **Time series data:** the number of signals (e.g., XSS, SQLi, 404s) observed per minute. All time series data is available via graphs in the web interface.



OWASP Injection Attacks

The most common attacks from OWASP Top 10

- **Individual request data:** detailed information about requests (e.g., originating IP address and request parameters). We store individual request data based on storage categories, site alerts (also known as workspace alerts), and the value of the **Request logging** setting for request rules.



Requests

Search for requests within the last 30 days. View search syntax

from:-7d

1-100 of 794 results

REQUEST	SIGNALS / PAYLOADS	SOURCE	RESPONSE
Aug 26, 10:43:47 AM PDT GET example.com /en-US/webfig/ View request detail	HTTP 404 404	192.0.2.183 example-hostname.com Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/60.0.3112.113 Safari/537.36	Agent: 200 Server: 404 Status: Allowed Response size: 18.4KB Response time: 10 ms
Aug 26, 10:21:53 AM PDT GET example.com /config/getuser View request detail	HTTP 4XX 400	192.0.2.122 *hostname not available* Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:76.0) Gecko/20100101 Firefox/76.0	Agent: 200 Server: 400 Status: Allowed Response size: 280B Response time: 18 ms

How request data storage works

When requests are made to your web application, the Next-Gen WAF agent tags the requests with the appropriate signals and sends the signals to our cloud engine. The cloud engine then counts the number of requests that were tagged with a particular signal during one minute periods and makes this data available via time series graphs in the web interface.

The Next-Gen WAF agent also determines which incoming requests we should store individual request data for. Individual request data is detailed information about a request record (e.g., originating IP address and parameters). To identify the requests that need capturing, the agent uses:

- the value of the **Request logging** menu from request rules. Specifically, we log requests that meet the criteria of a request rule with a **Request logging** value of `Sampled`.
- site alerts (workspace alerts) when the agent mode (also known as protection mode) is `Blocking` or `Not blocking` (also known as `Logging`). Specifically, when a system site alert (system workspace alert) flags an IP address, we log a sample of subsequent requests that are tagged with an attack signal and that are from that IP address.
- storage categories, which are based on signal type. For example, we store the individual request data for all requests that are tagged with the `SQLI` attack signal because requests that are tagged with an attack signal fall into the all storage category.

After identifying the requests that need capturing, the agent redacts sensitive data from the selected requests. By default, the agent redacts certain data (e.g., passwords, session tokens, and tracking cookies). The agent also redacts custom fields that you identify. For example, if your password field is named `foobar` instead of `password`, you can create a custom redaction for the `foobar` field.

Next, the agent sends the redacted requests to our cloud engine and the cloud engine makes the individual request data available via the web interface and API.

We store both the time series data and the individual request data for 30 days and then delete it.

Storage categories

Storage categories help determine which request records we store individual request data for. They are based on the type of signals that requests are tagged with.

Storage category	Category applies to	What data is stored
All	Requests that contain at least one attack signal (e.g., SQLi and XSS) or one CVE signal applied by a virtual patching rule	We store individual request data and time series data from all requests that fit into this storage category.
Sampled	Requests that don't fit into the all storage category and that contain at least one custom signal, anomaly signal (e.g., HTTP 404 Errors and Tor traffic), or bot signal.	We store individual request data from a random sample of requests that fit into this storage category. We also store time series data from all requests that fit into this storage category.
Time series only	Requests that only contain informational signals or signals from API or ATO templated rules	We don't store individual request data from requests that fit into this storage category. However, we store time series data from all requests that fit into this storage category.
Not stored	Requests that aren't tagged with a signal	We don't store individual request data from requests that fit into this storage category.

Deleting stored data

If you find information in the raw data that you want to delete, submit a support request with the date range that you want us to scrub.

Anonymizing IP addresses

Last updated: 2024-08-28

/en/ngwaf/anonymizing-ip-addresses

IP Anonymization is a site (also known as workspace) customization that changes the way Next-Gen WAF stores and uses remote client IP addresses. By default IP addresses are not anonymized. When a customer chooses to enable IP Anonymization, agents for a specific site (workspace) will anonymize an IP address before sending it to the cloud. Next-Gen WAF will convert IP addresses into anonymized IPv6 addresses by performing a one-way hash. As a result, Fastly databases will not have knowledge of the actual IP address and it will appear anonymized throughout the control panel.

Actual IP addresses are converted to anonymous IPv6 addresses using rfc7343.

The IP address is anonymized in all headers and data fields with the anonymized IPv6 address. In addition, the actual IP address is truncated by setting the last octet of an IPv4 IP address and the last 80 bits of an IPv6 address to zeros and stored as metadata on the record.

Limitations and considerations

The following features will not work when IP Anonymization is enabled:

- DNS lookups
- CIDR support in the search control panel
- Network Data Insights (partial functionality)

Enabling IP anonymization

To enable IP anonymization, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Settings**.
4. Click **Agent Configurations**.
5. Under **IP Anonymization**, select **Enabled**. A warning appears stating some functionality will not work with IP Anonymization enabled.
6. Click **I understand** and then click **Update**.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear ⚙ next to the workspace that you want to modify.
4. Click **IP Anonymization** and then **Enabled**.
5. Click **Update**.

Redacting data

Last updated: 2024-08-28

/en/ngwaf/redacting-data

To maintain data privacy, Next-Gen WAF redacts sensitive data from requests before they reach the platform backend.

Selective data transfer and redaction

The Next-Gen WAF agent filters requests locally to determine if they contain an attack. Only requests that are marked as attacks or anomalies are then sent to the platform backend after additional filtering and sanitizing are done. Once the agent identifies a potential attack or anomaly in a request, the agent sends only the individual parameter of the request which contains the attack payload, as well as a few other non-sensitive or benign portions of the request (e.g., client IP, user agent, or URI). The entire request is never sent to the platform backend. Additionally, specific portions of the request are automatically redacted and never sent to the backend, including tokens, credentials, and known patterns such as credit card and social security numbers.

JSON API payloads

Next-Gen WAF automatically parses JSON key-value pairs and treats them like request parameters. The following sample requests demonstrate how redactions work within the context of a request.

The initial request:

```
POST /request HTTP/1.1
Content-Length: 72
Content-Type: application/json
Host: api.example.com
{"user":"user@api.example.com","password":"<script>alert(1)</script>mypassword","zip":94089}
```

What's sent to the Next-Gen WAF:

```
POST /request HTTP/1.1
Host: api.example.com
```

```
password=
```

The initial request:

```
POST /request HTTP/1.1
Content-Length: 72
Content-Type: application/json
Host: api.example.com

{"user":"user@api.example.com","password":"mypassword","zip":"<script>alert(1)</script>94089"}
```

What's sent to the Next-Gen WAF:

```
POST /request HTTP/1.1
Host: api.example.com

zip=<script>alert(1)</script>
```

Sensitive headers

Next-Gen WAF redacts the following from requests:

- Explicit names: `authorization`, `x-auth-token`, `cookie`, `set-cookie`
- Any names that contain: `-token`, `-auth`, `-key`, `-sess`, `-pass`, `-secret`
- Query strings from `referer` and `location`

The initial request:

```
POST /example?sort=ascending HTTP/1.1
Host: example.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.10; rv:35.0)
Accept: text/html, application/xhtml+xml
Content-Length: 57
Cookie: foo=bar

sensitive=hunter2&foobar=<script>alert(1)</script>&page=3
```

What’s sent to the Next-Gen WAF:

```
POST /example HTTP/1.1
Host: example.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.10; rv:35.0)

foobar=<script>alert(1)</script>
```

Sensitive parameters

If a request contains an attack or anomaly, and also contains sensitive data in commonly-used parameter names, Next-Gen WAF will redact the entire contents of the sensitive parameter. These parameters include:

- `api_key`
- `password`

- `passwd`
- `pass`
- `pw`
- `user`
- `login`
- `loginid`
- `username`
- `email`
- `key`
- `id`
- `sid`
- `token`
- `request_token`
- `access_token`
- `csrfmiddlewaretoken`
- `oauth_verifier`
- `confirm_password`
- `password_confirmation`

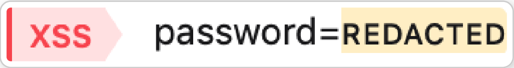
The initial request:

```
POST /example HTTP/1.1

username=<script>alert("jsmith")</script>
```

What's sent to the Next-Gen WAF:

```
POST /example HTTP/1.1

username=[redacted]
```

The control panel clearly displays which parameters have been redacted. Redacted parameters are replaced with the word `REDACTED` highlighted in yellow.



password=REDACTED

Sensitive patterns

Next-Gen WAF automatically redacts known patterns of sensitive information, which includes the following:

- **Credit card numbers:** values like `4111-1111-1111-1111` become `0000-0000-0000-0000`
- **Social security numbers:** values like `078-05-1120` become `000-00-0000`
- **GUIDs:** values like `3F2504E0-4F89-41D3-9A0C-0305E82C3301` become `0000000-0000-0000-0000-000000000000`

- **Bank account (IBAN) numbers:** values like `DE75512108001245126199` become `AA00aaaa0000000`

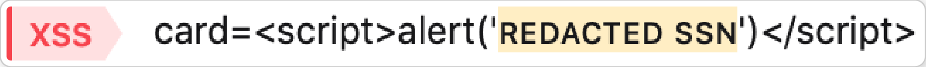
The initial request:

```
POST /example HTTP/1.1

credit_card_example=<script>alert("4111-1111-1111-1111")</script>
```

What's sent to the Next-Gen WAF:

```
POST /example HTTP/1.1

credit_card_example=<script>alert("0000-0000-0000-0000")</script>
```

Within the control panel we clearly display which patterns have been redacted. Redacted patterns are replaced with the word `REDACTED` highlighted in yellow.



xss card=<script>alert('REDACTED SSN')</script>

Custom redactions

In addition to the redactions listed above, you can also specify additional fields to redact from requests. For example, if your password field is named `foobar` instead of `password`, that field can be specified for redaction.

> IMPORTANT
>
> Accounts are limited to 100 redactions per site (also known as workspace).

Creating custom redactions

When you have a sensitive field that is not filtered out by default, you can create a custom field redaction:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Redactions**.
4. Click **Add redaction**.
5. In the **Field name** field, enter the name of the field to be redacted.
6. From the **Field type** menu, select the type of field to be redacted. Options include Request parameter, Request header, or Response header.
7. Click **Create redaction**.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear ⚙ next to the workspace that you want to modify.
4. Click **Redactions** and then **Add Redactions**.
5. In the **Field Name** field, enter the name of the field to be redacted.
6. From the **Field Type** menu, select the type of field to be redacted. Options include Request parameter, Request header, or Response header.

7. Click **Add**.

Editing custom redactions

To edit a custom redaction, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Redactions**.
4. Click **View** to the right of the custom redaction you want to edit.
5. Click **Edit redaction**.
6. Change the **Field name** and **Field type** as needed.
7. Click **Update redaction**.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear next to the workspace that you want to modify.
4. Click **Redactions**.
5. Click the pencil to the right of the redaction that you want to edit.
6. Change the **Field Name** and **Field Type** as needed.
7. Click **Update Redaction**.

Deleting custom redactions

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Site Rules** menu, select **Redactions**.
4. Click **View** to the right of the custom redaction you want to delete.
5. Click **Remove redaction**.
6. Click **Delete** to delete the redaction.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear next to the workspace that you want to modify.
4. Click **Redactions**.
5. Click the trash to the right of the redaction that you want to delete.
6. Click **Delete**.

Transparency

To allow for easy verification of what the agent sends to the backend, we provide a way to view all agent to backend communication.

Verifying in the control panel

To verify our agents are correctly filtering and sanitizing requests, we provide a raw log of data that's sent from our agents:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click on **Agents**.
4. Click on the **Agent ID**.
5. Click the **Requests** tab.
6. Review the requests and verify that data is correctly redacted.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Requests**.
3. Click the document icon to the right of a request.
4. Review the request details to verify the request was sanitized correctly.

Verifying with the agent

> IMPORTANT
>
> Only customers with access to the Next-Gen WAF control panel can use the `debug-log-uploads` setting to verify redactions. If you have access to the Next-Gen WAF product in the Fastly control panel, use the Fastly control panel to verify redactions.

You can also verify directly from the agent itself by setting the `debug-log-uploads` agent configuration option. For example, if you want to log all agent uploads in formatted JSON, add the following line to your agent configuration file (by default at `/etc/sigsci/agent.conf`):

```
debug-log-uploads = 2
```

Subcategory: Integrations

These articles explain how to work with integrations to notify you about activity within your corps (also known as accounts) and sites (also known as workspaces).

Cisco Threat Response (CTR) / SecureX

Last updated: 2023-05-05

/en/ngwaf/ctr

> IMPORTANT
>
> This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Cisco Threat Response (CTR) is a tool used by incident responders that aggregates data from various Cisco security products like AMP for Endpoints, Firewall, Umbrella, Email Security, and Stealthwatch in addition to data from certain third-party products including Next-Gen WAF. Within CTR, an investigator can perform a lookup against some object (file hash, URL, IP address) and CTR will fetch data from all of the products that are integrated including any indicators of compromise and associated metadata.

Installation

The CTR integration is a native integration that is available in the SecureX console:

> NOTE
>
> The user setting up the CTR integration must have permission to create API Access Tokens.

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Create an API Access Token for your user.
4. Generate an **Authorization Bearer Token** from this API Access Token by base64 encoding a string composed of the email address associated with your user, a colon, and the API Access Token you generated. An example of this in JavaScript is:

   ```
   btoa("user@example.com:api-access-token") = "YW5keUBleGFtcGxlY29ycC5jb206ZXhhbXBsZXRva2Vu"
   ```

5. Log in to your SecureX console.
6. Click **Integrations**.
7. From the **Integrations** menu in the navigation bar on the left, select **Available Integrations**.
8. Locate **Signal Sciences Next-Gen WAF** in the list of available modules and click **Add New Module**.
9. In the **Module Name** field, leave the default name or enter a custom name. Custom names are useful if you plan to have multiple integrations for several cloud instances.
10. In the **URL** field, enter `https://dashboard.signalsciences.net/api.v0/corps/<corpname>/ctr`.
    - Your `<corpname>` is present in the address of your Next-Gen WAF control panel, such as `https://dashboard.signalsciences.net/corps/<corpname>/overview`.
    - Your `<corpname>` can also be retrieved from the List Corps API endpoint. Your corp name is the string that appears in the URL after logging into the Next-Gen WAF control panel.
11. In the **Authorization Bearer Token** field, enter the base64-encoded token you generated in Step 3.
12. Click **Save**.

Using the Cisco Threat Response Integration

Once the integration is installed, any lookups within CTR that include an IP address that's been flagged by SigSci will return a record of the event in the Observables widget under Sightings and Indicators.

The Sighting will show when the IP address was flagged, the URL that was targeted, and a link back to the flagged IP address event within the Next-Gen WAF control panel. The Indicator will describe the attack signal that was associated with the flagged IP address (i.e., XSS).

	Datadog
	Last updated: 2023-05-05
	/en/ngwaf/datadog

> IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Events Feed

Our Datadog event integration creates an event when the Next-Gen WAF flags an IP address.

Adding a Datadog integration

1. Log in to Datadog.
2. Click **Integrations** in the navigation bar on the left.
3. Click **APIs**.
4. Click **Create API Key**.
5. Create a new API key by following the steps.
6. Copy the provided **API Key**.
7. Log in to the Next-Gen WAF control panel.
8. From the **Sites** menu, select a site if you have more than one site.
9. From the **Manage** menu, select **Site Integrations**.
10. Click **Add site integration**.
11. Select the **Datadog Alert** integration.
12. In the **API Key** field, enter the **API Key** created in Datadog.
13. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
14. Click **Create site integration**.

Activity types

Activity type	Description
`flag`	An IP address was flagged
`agentAlert`	An agent alert was triggered

Dashboard

Datadog has a default dashboard populated with StatsD metrics from the Next-Gen WAF agent. To use this functionality:

1. Find and install the Signal Sciences integration tile in Datadog integrations tab.
2. Confirm that the Datadog agent is configured to listen for StatsD events: https://docs.datadoghq.com/developers/dogstatsd/
3. Configure the Next-Gen WAF agent to use `dogstatsd`:
   - Add the following line to each agent's agent.config file:

     ```
     statsd-type = "dogstatsd"
     ```

   - When this is done the agent's `statsd` client will have tagging enabled and metrics such as `sigsci.agent.signal.<SIGNAL_TYPE>` will be sent as `sigsci.agent.signal` and tagged with `signal_type:<SIGNAL_TYPE>` (e.g., `sigsci.agent.signal.http404` ⇒ `sigsci.agent.signal tag signal_type:http404`).

- If using Kubernetes to run the Datadog agent, make sure to enable DogStatsD non local traffic as described in the Kubernetes DogStatsD documentation.

4. Configure the Next-Gen WAF agent to send metrics to the Datadog agent by adding the following line to each agent's agent.config file:

```
$ statsd-address="<DATADOG_AGENT_HOSTNAME>:<DATADOG_AGENT_PORT>"
```

5. Verify that the **Signal Sciences - Overview** dashboard is created and starting to capture metrics.

Generic webhooks

Last updated: 2023-03-29

/en/ngwaf/generic-webhooks

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Our generic webhooks integration allows you to subscribe to notifications for certain activity on the Next-Gen WAF.

Adding a webhook

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Integrations**.
4. Click **Add site integration**.
5. Select the **Generic Webhook** integration.
6. In the **Webhook URL** field, enter a URL to receive the notifications at.
7. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
8. Click **Create site integration**.

Notifications format

Notifications are sent with the following format:

```
{
  "created": "2022-12-09T10:43:54-08:00",
  "type": "flag",
  "payload": ...,
  "link":"dashboard link to event"
}
```

X-SigSci-Signature Header

All requests sent from the generic webhook integration contain a header called `X-SigSci-Signature`. The value is an HMAC-SHA256 hex digest hashed using a secret key generated when the generic webhook was created.

The key can be rotated by clicking **Edit** next to the generic webhook and then **Rotate key** in the **Generic webhook integration** form.

Verification is done by creating an HMAC-SHA256 hex digest of the generic webhook payload using the signing key and comparing the result to the value of the `X-SigSci-Signature` header.

X-SigSci-Signature Header Verification Example Code

The examples show header verification code for `X-SigSci-Signature`.

Go

```go
package main

import (
    "crypto/hmac"
    "crypto/sha256"
    "encoding/hex"
    "fmt"
)

// CheckMAC reports whether messageMAC is a valid HMAC tag for message.
func CheckMAC(message, messageMAC, key []byte) bool {
    mac := hmac.New(sha256.New, key)
    mac.Write(message)
    expectedMAC := mac.Sum(nil)

    return hmac.Equal(messageMAC, expectedMAC)
}

func main() {
    key := []byte("[insert signing key here]")

    h := "[insert X-SigSci-Signature value here]"

    json := []byte(`[insert JSON payload here]`)

    hash, err := hex.DecodeString(h)
    if err != nil {
        log.Fatal("ERROR: ", err)
    }

    ok := CheckMAC(json, hash, key)

    fmt.Println(ok)
}
```

Python

```python
import hashlib
import hmac

def checkHMAC(message, messageMAC, key):
    mac = hmac.new(key, message, digestmod=hashlib.sha256).hexdigest()

    return mac == messageMAC

key = '[insert signing key here]'

h = '[insert X-SigSci-Signature value here]'

json = '[insert JSON payload here]'

ok = checkHMAC(json, h, key)

print(ok)
```

Ruby

```ruby
require 'openssl'
require "base64"

key = '[insert signing key here]'
h = '[insert X-SigSci-Signature value here]'
json = '[insert JSON payload here]'

hash  = OpenSSL::HMAC.hexdigest('sha256', key, json)

puts hash == h
```

Bash

```bash
#!/bin/bash

function check_hmac {
  json="$1"
  messageMAC="$2"
  key="$3"

  result=$(echo -n "$json" | openssl dgst -sha256 -hmac "$key")
  if [ "$result" == "$messageMAC" ]
  then
          return 0
  else
          return 1
  fi
}

key='[insert key here]'
h='[insert X-SigSci-Signature value here]'
json='[insert JSON payload here]'

check_hmac "$json" $h $key
```

Activity types

Activity type	Description	Payload
`siteDisplayNameChanged`	The display name of a site (workspace) was changed	
`siteNameChanged`	The short name of a site (workspace) was changed	
`loggingModeChanged`	The agent mode (`Blocking`, `Not Blocking`, `Off`) was changed	Get site by name
`agentAnonModeChanged`	The agent IP anonymization mode was changed	Get site by name
`flag`	An IP address was flagged	Get event by ID
`expireFlag`	An IP address flag was manually expired	List events
`createCustomRedaction`	A custom redaction was created	Create a custom redaction
`removeCustomRedaction`	A custom redaction was removed	Remove a custom redaction
`updateCustomRedaction`	A custom redaction was updated	Update a custom redaction
`customTagCreated`	A custom signal was created	
`customTagUpdated`	A custom signal was updated	
`customTagDeleted`	A custom signal was removed	
`customAlertCreated`	A custom alert was created	Create a custom alert
`customAlertUpdated`	A custom alert was updated	Update a custom alert
`customAlertDeleted`	A custom alert was removed	Remove a custom alert
`detectionCreated`	A templated rule was created	
`detectionUpdated`	A templated rule was updated	
`detectionDeleted`	A templated rule was removed	
`listCreated`	A list was created	Create a list
`listUpdated`	A list was updated	Update a list
`listDeleted`	A list was removed	Remove a list
`ruleCreated`	A request rule was created	
`ruleUpdated`	A request rule was updated	
`ruleDeleted`	A request rule was deleted	
`customDashboardCreated`	A custom dashboard was created	
`customDashboardUpdated`	A custom dashboard was updated	
`customDashboardReset`	A custom dashboard was reset	
`customDashboardDeleted`	A custom dashboard was removed	
`customDashboardWidgetCreated`	A custom dashboard card was created	
`customDashboardWidgetUpdated`	A custom dashboard card was updated	

Activity type	Description	Payload
`customDashboardWidgetDeleted`	A custom dashboard card was removed	
`agentAlert`	An agent alert was triggered	

HashiCorp Vault

Last updated: 2023-11-30

/en/ngwaf/hashicorp-vault

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

With the Signal Sciences plugin for HashiCorp Vault, you can use Vault to manage the keys for your agents. Vault is an identity-based secrets and encryption management system.

Specifically, the plugin allows:

- Vault to store the Agent Access Keys and Agent Secret Keys for your sites (also known as workspaces).
- the Vault agent to pull the keys from Vault when needed and give the keys to the deployed Next-Gen WAF agent.
- Vault to rotate or replace the keys. When Vault replaces keys, the Vault agent updates the configuration file for the relevant Next-Gen WAF agent and restarts the Next-Gen WAF agent.
- authenticated applications, services, and machines to read the keys that are stored in Vault.

Limitations and considerations

Before setting up the plugin to manage the keys in Vault, keep the following in mind:

- To use the Signal Sciences plugin for HashiCorp Vault, Vault must already be installed and configured to load external plugins.
- The key rotation process automatically restarts the Next-Gen WAF agent. Due to the agent's brief downtime during key rotation, we recommend rotating the keys during a maintenance window.
- The Signal Sciences plugin for HashiCorp Vault is only supported on Linux on x86 CPU architectures.

Set up plugin

To set up the plugin for the first time on systems that use `systemd`, follow these steps:

1. Using the curl command line tool, copy the plugin binary to the external plugins directory:

```
$ curl -O https://dl.signalsciences.net/vault-plugin-sigsci/latest/vault-plugin-sigsci.tar.gz
$ tar xzvf vault-plugin-sigsci.tar.gz
$ vault plugin register -sha256=$(sha256sum vault-plugin-sigsci|cut -c-64) secret vault-plugin-sigsc
```

2. Using the command line, enable the plugin:

```
$ vault secrets enable -path=sigsci vault-plugin-sigsci
```

Vault mounts the plugin at path `/sigsci`.

3. Create a user for the plugin. Assign the user the **User** role. An invitation email is sent to the email address you supplied for the plugin user.

4. From the plugin user's email account, open the invitation email and click **Accept invite**. The account creation form appears.

5. Fill out the account creation form:

   - Leave the **Email address** field as is.
   - In the **Name** field, enter `vault-user`.
   - In the **Password** field, enter a password for the account.
   - In the **Confirm password** field, enter the password again.

6. Click **Create account**.

7. Create an API access token for the plugin user. Signal Sciences cloud API credentials are required for reading and managing agent site keys.

8. Using the command line, copy the API access token to `token.txt` file:

   ```
   $ vault write -f /sigsci/role/vault-user corp=<corp-id> email=<email-id> token=@token.txt
   ```

   Replace `<corp-id>` with the ID of your corp and `<email-id>` with the plugin user's email address.

9. Using the command line, copy site keys for a single site or all sites to vault:

   ```
   $ vault write -f /sigsci/creds/vault-user/sites/<site-name>
   ```

   Replace `<site-name>` with the name of the site.

   or

   ```
   $ vault write -f /sigsci/creds/vault-user/sites/
   ```

10. Install and configure the Vault agent using the following template:

    ```
    template {
      source = "/etc/signalsciences/agent.ctmpl"
      destination = "/etc/signalsciences/agent.conf"
    }
    ```

    The Vault agent automates the rendering of the Next-Gen WAF agent configuration template when the site keys are rotated.

    Example content of the configuration template `/etc/signalsciences/agent.ctmpl`:

    ```
    {{ with secret "sigsci/creds/vault-user/sites/<site-name>" }}
    accesskeyid={{ .Data.accessKey }}
    secretkey={{ .Data.secretKey }}
    {{ end }}
    ```

11. Using the command line, create a systemd service to restart the agent:

    ```
    $ sudo tee -a /etc/systemd/system/sigsci-agent-restart.service <<END
    [Unit]
    Description="signalsciences agent restarter"
    ```

```
[Service]
Type=OneShot
ExecStart=/usr/bin/systemctl restart sigsci-agent.service

[Install]
WantedBy=multi-user.target
END
```

12. Using the command line, create a configuration file watcher:

```
$ sudo tee -a /etc/systemd/system/sigsci-agent-restart.path <<END
[Path]
PathChanged=/etc/signalsciences/agent.conf

[Install]
WantedBy=multi-user.target
END
```

13. Using the command line, start and enable the configuration file watcher:

```
$ systemctl enable --now sigsci-agent-restart.service
```

Rotate site keys

To rotate the keys for a site, replace the keys in Vault, restart the Next-Gen WAF agent, and then delete the non-primary keys in Vault:

1. Using the command line, rotate a site key in Vault:

```
$ vault write -f /sigsci/rotate/sites/<site-name>
```

Replace `<site-name>` with the name of the relevant site.

2. Using the command line, delete the non-primary keys in Vault:

```
$ vault delete /sigsci/rotate/sites/<site-name>
```

Replace `<site-name>` with the name of the relevant site.

Manage plugin roles and keys

Once the plugin is set up, you can use the command line to perform these actions:

Action	Command
List roles	`vault read /sigsci/role/`
Read role details	`vault read /sigsci/role/vault-user`
Delete role	`vault delete /sigsci/role/vault-user`
Copy keys for one site to Vault	`vault write -f /sigsci/creds/vault-user/sites/<site-name>`
Copy keys for all sites to Vault	`vault write -f /sigsci/creds/vault-user/sites/`
Rotate keys for a site	`vault write -f /sigsci/rotate/sites/<site-name>`

Action	Command
List keys for all sites	`vault read /sigsci/creds/vault-user/sites/`
Read keys for one site	`vault read /sigsci/creds/vault-user/sites/<site-name>`
Delete the non-primary keys for a site from Vault	`vault delete /sigsci/rotate/sites/<site-name>`
Delete the keys for a site from Vault	`vault delete /sigsci/creds/vault-user/sites/<site-name>`

Integrations introduction

Last updated: 2023-08-18

/en/ngwaf/integrations-intro

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

There are two types of integrations: corp integrations (also known as account integrations) and site integrations (also known as workspace integrations).

Corp integrations (account integrations)

Corp integrations (account integrations) notify you about activity within your corp (account), including changes to users, sites (workspaces), and settings. Only Owners can create and modify these integrations. The following integrations are available as corp integrations (account integrations):

- Mailing List
- Microsoft Teams
- Slack

NOTE

Corp integrations (account integrations) are not supported on the Essential platform.

Site integrations (workspace integrations)

Site integrations (workspace integrations) notify you about activity within specific sites (workspaces), such as IP flagging events, changes to custom rules, and changes to site-level settings (workspace-level settings). All integrations are available as site integrations (workspace integrations):

- Cisco Threat Response / SecureX
- Datadog
- Generic Webhooks
- HashiCorp Vault
- JIRA
- Mailing List
- Microsoft Teams

- OpsGenie
- PagerDuty
- Pivotal Tracker
- Slack
- Splunk On-Call
- Sumo Logic

📄	**Jira**
📅	Last updated: 2023-05-04
🔗	/en/ngwaf/jira

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Our JIRA issue integration creates an issue when IP addresses are flagged on the Next-Gen WAF.

Adding a JIRA issue integration

JIRA issue integrations are configured per project.

1. Create a new user in JIRA for the integration to use.
2. Create an API token for that user.
3. Log in to the Next-Gen WAF control panel.
4. From the **Sites** menu, select a site if you have more than one site.
5. From the **Manage** menu, select **Site Integrations**.
6. Click **Add site integration**.
7. Select the **Jira Issue** integration.
8. In the **Host** field, enter the URL of your JIRA instance.
9. In the **Username** field, enter the username you created in JIRA.
10. In the **API Token** field, enter the API token you created in JIRA.
11. In the **Project Key** field, enter the key of the JIRA project to create new issues in.
12. In the **Issue Type** field, enter the type of issue that should be created.
13. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
14. Click **Create site integration**.

Activity types

Activity type	Description
`flag`	An IP address was flagged
`agentAlert`	An agent alert was triggered

Mailing list

Last updated: 2023-05-05

/en/ngwaf/mailing-list

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Our mailing list integration allows you to receive email notifications for certain activity on the Next-Gen WAF.

Adding a mailing list integration

Corp integration (account integration)

NOTE

Only Owners can create, edit, and delete corp integrations (also known as account integrations).

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Corp Integrations**.
3. Click **Add corp integration**.
4. Select the **Mailing List** integration.
5. In the **Email address** field, enter the email address or alias to send alerts to.
6. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
7. Click **Create corp integration**.

Site integration (workspace integration)

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Integrations**.
4. Click **Add site integration**.
5. Select the **Mailing List** integration.
6. In the **Email address** field, enter the email address or alias to send alerts to.
7. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
8. Click **Create site integration**.

Activity types

Corp (Account)

Activity type	Description
`releaseCreated`	New release notifications
`featureAnnouncement`	New feature announcements
`corpUpdated`	Account timeout setting updated
`newSite`	A new site (workspace) was created
`deleteSite`	A site (workspace) was deleted
`enableSSO`	SSO was enabled for the corp (account)
`disableSSO`	SSO was disabled for the corp (account)
`corpUserInvited`	A user was invited
`corpUserReinvited`	A user was reinvited
`listCreated`	A list was created
`listUpdated`	A list was updated
`listDeleted`	A list was removed
`customTagCreated`	A custom signal created
`customTagDeleted`	A custom signal updated
`customTagUpdated`	A custom signal removed
`userAddedToCorp`	A user was added to the corp (account)
`userMultiFactorAuthEnabled`	A user enabled 2FA
`userMultiFactorAuthDisabled`	A user disabled 2FA
`userMultiFactorAuthUpdated`	A user updated 2FA secret
`userRegistered`	A user was registered
`userRemovedCorp`	A user was removed from the corp (account)
`userUpdated`	A user was updated
`userUndeliverable`	A user's email address bounced
`userUpdatePassword`	A user updated their password
`accessTokenCreated`	An API Access Token was created
`accessTokenDeleted`	An API Access Token was deleted

Site (workspace)

Activity type	Description
`siteDisplayNameChanged`	The display name of a site (workspace) was changed

Activity type	Description
`siteNameChanged`	The short name of a site (workspace) was changed
`loggingModeChanged`	The agent mode ("Blocking", "Not Blocking", "Off") was changed
`agentAnonModeChanged`	The agent IP anonymization mode was changed
`flag`	An IP address was flagged
`expireFlag`	An IP address flag was manually expired
`createCustomRedaction`	A custom redaction was created
`removeCustomRedaction`	A custom redaction was removed
`updateCustomRedaction`	A custom redaction was updated
`customTagCreated`	A custom signal was created
`customTagUpdated`	A custom signal was updated
`customTagDeleted`	A custom signal was removed
`customAlertCreated`	A custom alert was created
`customAlertUpdated`	A custom alert was updated
`customAlertDeleted`	A custom alert was removed
`detectionCreated`	A templated rule was created
`detectionUpdated`	A templated rule was updated
`detectionDeleted`	A templated rule was removed
`listCreated`	A list was created
`listUpdated`	A list was updated
`listDeleted`	A list was removed
`ruleCreated`	A request rule was created
`ruleUpdated`	A request rule was updated
`ruleDeleted`	A request rule was deleted
`customDashboardCreated`	A custom dashboard was created
`customDashboardUpdated`	A custom dashboard was updated
`customDashboardReset`	A custom dashboard was reset
`customDashboardDeleted`	A custom dashboard was removed
`customDashboardWidgetCreated`	A custom dashboard card was created
`customDashboardWidgetUpdated`	A custom dashboard card was updated
`customDashboardWidgetDeleted`	A custom dashboard card was removed
`agentAlert`	An agent alert was triggered
`weeklyDigest`	Weekly digest sent

OpsGenie

Last updated: 2023-05-04

/en/ngwaf/opsgenie

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Our OpsGenie issue integration creates an alert when the Next-Gen WAF flags an IP address.

Adding a OpsGenie integration

1. Create an API integration in OpsGenie.
2. Copy the provided **API Key**.
3. Log in to the Next-Gen WAF control panel.
4. From the **Sites** menu, select a site if you have more than one site.
5. From the **Manage** menu, select **Site Integrations**.
6. Click **Add site integration**.
7. Select the **OpsGenie Alert** integration.
8. In the **API Key** field, enter the **API Key** created in OpsGenie.
9. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
10. Click **Create site integration**.

Activity types

Activity type	Description
`flag`	An IP address was flagged
`agentAlert`	An agent alert was triggered

PagerDuty

Last updated: 2023-05-04

/en/ngwaf/pagerduty

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Our PagerDuty issue integration creates an incident when the Next-Gen WAF flags an IP address.

Adding a PagerDuty integration

PagerDuty issue integrations are configured per project.

1. Create a new service in PagerDuty selecting **Use Our API Directly** from the **Integration Type** menu.
2. Copy the newly created **Service API Key**.
3. Log in to the Next-Gen WAF control panel.
4. From the **Sites** menu, select a site if you have more than one site.
5. From the **Manage** menu, select **Site Integrations**.
6. Click **Add site integration**.
7. Select the **PagerDuty Trigger** integration.
8. In the **Service API Key** field, enter the **Service API Key** created in PagerDuty.
9. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
10. Click **Create site integration**.

Activity types

Activity type	Description
`flag`	An IP was address flagged
`agentAlert`	An agent alert was triggered

Pivotal Tracker

Last updated: 2023-05-04

/en/ngwaf/pivotal-tracker

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

The PivotalTracker integration allows you to create a story anytime an event triggers.

Adding a PivotalTracker integration

PivotalTracker alerts integrations are configured per project.

1. In PivotalTracker, locate your **API token**.
2. Access your Pivotal Tracker project settings and, under **Access**, locate your **Project ID**.
3. Log in to the Next-Gen WAF control panel.
4. From the **Sites** menu, select a site if you have more than one site.
5. From the **Manage** menu, select **Site Integrations**.
6. Click **Add site integration**.

7. Select the **PivotalTracker Story** integration. The PivotalTracker story integration setup page appears.

8. In the **API Token** field, enter the **API token** found in PivotalTracker.

9. In the **Project ID** field, enter the **Project ID** found in PivotalTracker.

10. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.

11. Click **Create site integration**.

Activity types

Activity type	Description
`flag`	An IP address was flagged
`agentAlert`	An agent alert was triggered

	Slack
	Last updated: 2023-05-05
	/en/ngwaf/slack

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Our Slack message integration allows you to be notified when certain activity occurs on the Next-Gen WAF.

Adding a Slack message integration

You can add Slack message integration for both Corps (also known as Accounts) and Sites (also known as Workspaces).

Corp integration

NOTE

Only Owners can create, edit, and delete corp integrations.

1. In Slack, enable incoming webhooks if you have not already.

2. Create a new webhook.

3. Copy the **Webhook URL** of the new webhook.

4. Log in to the Next-Gen WAF control panel.

5. From the **Corp Manage** menu, select **Corp Integrations**.

6. Click **Add corp integration**.

7. Select the **Slack Message** integration.

8. In the **Webhook URL** field, enter the **Webhook URL** created in Slack.

9. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.

10. Click **Create corp integration**.

Site integration (workspace integration)

1. In Slack, enable incoming webhooks if you have not already.
2. Create a new webhook.
3. Copy the **Webhook URL** of the new webhook.
4. Log in to the Next-Gen WAF control panel.
5. From the **Sites** menu, select a site if you have more than one site.
6. From the **Manage** menu, select **Site Integrations**.
7. Click **Add site integration**.
8. Select the **Slack Message** integration.
9. In the **Webhook URL** field, enter the **Webhook URL** created in Slack.
10. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
11. Click **Create site integration**.

Activity types

Corp integrations (account integrations) and site integrations (workspace integrations) have the following separate activity types.

Corp

Activity type	Description
`releaseCreated`	New release notifications
`featureAnnouncement`	New feature announcements
`corpUpdated`	Account timeout setting updated
`newSite`	A new site (workspace) was created
`deleteSite`	A site (workspace) was deleted
`enableSSO`	SSO was enabled for the corp
`disableSSO`	SSO was disabled for the corp
`corpUserInvited`	A user was invited
`corpUserReinvited`	A user was reinvited
`listCreated`	A list was created
`listUpdated`	A list was updated
`listDeleted`	A list was removed
`customTagCreated`	A custom signal created
`customTagDeleted`	A custom signal removed
`customTagUpdated`	A custom signal updated

Activity type	Description
`userMultiFactorAuthEnabled`	A user enabled 2FA
`userMultiFactorAuthDisabled`	A user disabled 2FA
`userMultiFactorAuthUpdated`	A user updated 2FA secret
`userRegistered`	A user was registered
`userRemovedCorp`	A user was removed from the corp
`userUpdated`	A user was updated
`userUndeliverable`	A user's email address bounced
`userUpdatePassword`	A user updated their password
`accessTokenCreated`	An API Access Token was created
`accessTokenDeleted`	An API Access Token was deleted

Site (Workspace)

Activity type	Description
`siteDisplayNameChanged`	The display name of a site (workspace) was changed
`siteNameChanged`	The short name of a site (workspace) was changed
`loggingModeChanged`	The agent mode ("Blocking", "Not Blocking", "Off") was changed
`agentAnonModeChanged`	The agent IP anonymization mode was changed
`flag`	An IP address was flagged
`expireFlag`	An IP address flag was manually expired
`createCustomRedaction`	A custom redaction was created
`removeCustomRedaction`	A custom redaction was removed
`updateCustomRedaction`	A custom redaction was updated
`customTagCreated`	A custom signal was created
`customTagUpdated`	A custom signal was updated
`customTagDeleted`	A custom signal was removed
`customAlertCreated`	A custom alert was created
`customAlertUpdated`	A custom alert was updated
`customAlertDeleted`	A custom alert was removed
`detectionCreated`	A templated rule was created
`detectionUpdated`	A templated rule was updated
`detectionDeleted`	A templated rule was removed
`listCreated`	A list was created
`listUpdated`	A list was updated

Activity type	Description
`listDeleted`	A list was removed
`ruleCreated`	A request rule was created
`ruleUpdated`	A request rule was updated
`ruleDeleted`	A request rule was deleted
`customDashboardCreated`	A custom dashboard was created
`customDashboardUpdated`	A custom dashboard was updated
`customDashboardReset`	A custom dashboard was reset
`customDashboardDeleted`	A custom dashboard was removed
`customDashboardWidgetCreated`	A custom dashboard card was created
`customDashboardWidgetUpdated`	A custom dashboard card was updated
`customDashboardWidgetDeleted`	A custom dashboard card was removed
`agentAlert`	An agent alert was triggered

📄	**Splunk On-Call**
📅	Last updated: 2024-01-31
🔗	/en/ngwaf/splunk-on-call

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

With the VictorOps Alert integration, notifications are sent to Splunk On-Call, formerly known as VictorOps, anytime activity occurs (e.g., agent mode changes).

Adding a VictorOps Alert integration

VictorOps Alert integrations are configured per project.

1. From the VictorOps web portal, enable integrations and copy the integration **Post URL**, being sure to change `$routing_key` to the appropriate notification group. The **Post URL** will be in the format of:

   ```
   https://alert.victorops.com/integrations/generic/XXXXXXXXX/alert/XXXXXXXXXXXXX/$routing_key
   ```

   For more information, check out Splunk's integration documentation.

2. Log in to the Next-Gen WAF control panel.

3. From the **Sites** menu, select a site if you have more than one site.

4. From the **Manage** menu, select **Site Integrations**.

5. Click **Add site integration**.

6. Select the **VictorOps Alert** integration.

7. In the **Webhook URL** field, enter the copied **Post URL**.

8. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.

9. Click **Create site integration**.

Activity types

Activity type	Description
`siteDisplayNameChanged`	The display name of a site (workspace) was changed
`siteNameChanged`	The short name of a site (workspace) was changed
`loggingModeChanged`	The agent mode ("Blocking", "Not Blocking", "Off") was changed
`agentAnonModeChanged`	The agent IP anonymization mode was changed
`flag`	An IP address was flagged
`expireFlag`	An IP address flag was manually expired
`createCustomRedaction`	A custom redaction was created
`removeCustomRedaction`	A custom redaction was removed
`updateCustomRedaction`	A custom redaction was updated
`customTagCreated`	A custom signal was created
`customTagUpdated`	A custom signal was updated
`customTagDeleted`	A custom signal was removed
`customAlertCreated`	A custom alert was created
`customAlertUpdated`	A custom alert was updated
`customAlertDeleted`	A custom alert was removed
`detectionCreated`	A templated rule was created
`detectionUpdated`	A templated rule was updated
`detectionDeleted`	A templated rule was removed
`listCreated`	A list was created
`listUpdated`	A list was updated
`listDeleted`	A list was removed
`ruleCreated`	A request rule was created
`ruleUpdated`	A request rule was updated
`ruleDeleted`	A request rule was deleted
`customDashboardCreated`	A custom dashboard was created
`customDashboardUpdated`	A custom dashboard was updated
`customDashboardReset`	A custom dashboard was reset

Activity type	Description
`customDashboardDeleted`	A custom dashboard was removed
`customDashboardWidgetCreated`	A custom dashboard card was created
`customDashboardWidgetUpdated`	A custom dashboard card was updated
`customDashboardWidgetDeleted`	A custom dashboard card was removed
`agentAlert`	An agent alert was triggered

Sumo Logic

Last updated: 2023-05-04

/en/ngwaf/sumo-logic

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

The generic webhook integration enables you to export notifications for certain activity on Signal Sciences directly to Sumo Logic.

Integrating with Sumo Logic

1. Create a new hosted collector in Sumo Logic.
2. Add an HTTP Logs and Metrics Source to the new hosted collector.
   - Copy the **HTTP Source Address** for later use when setting up the generic webhook integration.
3. Log in to the Next-Gen WAF control panel.
4. From the **Sites** menu, select a site if you have more than one site.
5. From the **Manage** menu, select **Site Integrations**.
6. Click **Add site integration**.
7. Select the **Generic Webhook** integration.
8. In the **Webhook URL** field, enter a URL to receive the notifications at.
9. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
10. Click **Create site integration**.

Activity types

Activity type	Description	Payload
`siteDisplayNameChanged`	The display name of a site (also known as workspace) was changed	
`siteNameChanged`	The short name of a site (workspace) was changed	

Activity type	Description	Payload
`loggingModeChanged`	The agent mode (`Blocking`, `Not Blocking`, `Off`) was changed	Get site by name
`agentAnonModeChanged`	The agent IP anonymization mode was changed	Get site by name
`flag`	An IP address was flagged	Get event by ID
`expireFlag`	An IP address flag was manually expired	List events
`createCustomRedaction`	A custom redaction was created	Create a custom redaction
`removeCustomRedaction`	A custom redaction was removed	Remove a custom redaction
`updateCustomRedaction`	A custom redaction was updated	Update a custom redaction
`customTagCreated`	A custom signal was created	
`customTagUpdated`	A custom signal was updated	
`customTagDeleted`	A custom signal was removed	
`customAlertCreated`	A custom alert was created	Create a custom alert
`customAlertUpdated`	A custom alert was updated	Update a custom alert
`customAlertDeleted`	A custom alert was removed	Remove a custom alert
`detectionCreated`	A templated rule was created	
`detectionUpdated`	A templated rule was updated	
`detectionDeleted`	A templated rule was removed	
`listCreated`	A list was created	Create a list
`listUpdated`	A list was updated	Update a list
`listDeleted`	A list was removed	Remove a list
`ruleCreated`	A request rule was created	
`ruleUpdated`	A request rule was updated	
`ruleDeleted`	A request rule was deleted	
`customDashboardCreated`	A custom dashboard was created	
`customDashboardUpdated`	A custom dashboard was updated	
`customDashboardReset`	A custom dashboard was reset	
`customDashboardDeleted`	A custom dashboard was removed	
`customDashboardWidgetCreated`	A custom dashboard card was created	
`customDashboardWidgetUpdated`	A custom dashboard card was updated	
`customDashboardWidgetDeleted`	A custom dashboard card was removed	
`agentAlert`	An agent alert was triggered	

	Microsoft Teams
	Last updated: 2023-05-05
	/en/ngwaf/teams

IMPORTANT

This feature only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. Corp integrations (account integrations) are not supported on the Essential platform.

Our Teams integration allows you to be notified when certain activity occurs on the Next-Gen WAF.

Adding Teams integration

You can add Teams integration for both corps (also known as accounts) and sites (also known as workspaces).

Corp (account) integration

NOTE

Only Owners can create, edit, and delete corp integrations.

1. Add a custom incoming webhook in Microsoft Teams
2. Copy the **Webhook URL** of the new webhook.
3. Log in to the Next-Gen WAF control panel.
4. From the **Corp Manage** menu, select **Corp Integrations**.
5. Click **Add corp integration**.
6. Select the **Microsoft Teams** integration.
7. In the **Webhook URL** field, enter the **Webhook URL** created in Slack.
8. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.
9. Click **Create corp integration**.

Site (workspace) integration

1. Add a custom incoming webhook in Microsoft Teams
2. Copy the **Webhook URL** of the new webhook.
3. Log in to the Next-Gen WAF control panel.
4. From the **Sites** menu, select a site if you have more than one site.
5. From the **Manage** menu, select **Site Integrations**.
6. Click **Add site integration**.
7. Select the **Microsoft Teams** integration.
8. In the **Webhook URL** field, enter the **Webhook URL** created in Slack.

9. Select if you want to be alerted regarding **All activity** or **Specific activity**. If you selected **Specific activity**, then in the **Activity** menu choose the activity types that you want the integration to create alerts for.

10. Click **Create site integration**.

Activity types

Corp (account) and site (workspace) integrations have the following separate activity types.

Corp (account)

Activity type	Description
`releaseCreated`	New release notifications
`featureAnnouncement`	New feature announcements
`corpUpdated`	Account timeout setting updated
`newSite`	A new site (workspace) was created
`deleteSite`	A site (workspace) was deleted
`enableSSO`	SSO was enabled for the corp (account)
`disableSSO`	SSO was disabled for the corp (account)
`corpUserInvited`	A user was invited
`corpUserReinvited`	A user was reinvited
`listCreated`	A list was created
`listUpdated`	A list was updated
`listDeleted`	A list was removed
`customTagCreated`	A custom signal created
`customTagDeleted`	A custom signal updated
`customTagUpdated`	A custom signal removed
`userAddedToCorp`	A user was added to the corp (account)
`userMultiFactorAuthEnabled`	A user enabled 2FA
`userMultiFactorAuthDisabled`	A user disabled 2FA
`userMultiFactorAuthUpdated`	A user updated 2FA secret
`userRegistered`	A user was registered
`userRemovedCorp`	A user was removed from the corp (account)
`userUpdated`	A user was updated
`userUndeliverable`	A user's email address bounced
`userUpdatePassword`	A user updated their password
`accessTokenCreated`	An API Access Token was created
`accessTokenDeleted`	An API Access Token was deleted

Site (workspace)

Activity type	Description
`siteDisplayNameChanged`	The display name of a site (workspace) was changed
`siteNameChanged`	The short name of a site (workspace) was changed
`loggingModeChanged`	The agent mode ("Blocking", "Not Blocking", "Off") was changed
`agentAnonModeChanged`	The agent IP anonymization mode was changed
`flag`	An IP address was flagged
`expireFlag`	An IP address flag was manually expired
`createCustomRedaction`	A custom redaction was created
`removeCustomRedaction`	A custom redaction was removed
`updateCustomRedaction`	A custom redaction was updated
`customTagCreated`	A custom signal was created
`customTagUpdated`	A custom signal was updated
`customTagDeleted`	A custom signal was removed
`customAlertCreated`	A custom alert was created
`customAlertUpdated`	A custom alert was updated
`customAlertDeleted`	A custom alert was removed
`detectionCreated`	A templated rule was created
`detectionUpdated`	A templated rule was updated
`detectionDeleted`	A templated rule was removed
`listCreated`	A list was created
`listUpdated`	A list was updated
`listDeleted`	A list was removed
`ruleCreated`	A request rule was created
`ruleUpdated`	A request rule was updated
`ruleDeleted`	A request rule was deleted
`customDashboardCreated`	A custom dashboard was created
`customDashboardUpdated`	A custom dashboard was updated
`customDashboardReset`	A custom dashboard was reset
`customDashboardDeleted`	A custom dashboard was removed
`customDashboardWidgetCreated`	A custom dashboard card was created
`customDashboardWidgetUpdated`	A custom dashboard card was updated
`customDashboardWidgetDeleted`	A custom dashboard card was removed

Activity type	Description
`agentAlert`	An agent alert was triggered

Subcategory: Rules

These articles describe how to work with rules.

About rules

Last updated: 2024-08-28

/en/ngwaf/about-rules

Rules are configurations that define when the Next-Gen WAF should:

- allow, block, rate limit, or tag requests.
- prevent requests from being tagged with certain built-in signals.

You can create rules at the corp (also known as account) or site (also known as workspace) level:

- **Corp (account) rules:** apply to all or multiple, specific sites (workspaces). You can create and manage these rules via the Corp Rules page in the Next-Gen WAF control panel. Corp (account) rules are not supported on the Essential platform.
- **Site (workspace) rules:** apply to one specific site (workspace). You can create and manage these rules via the Site Rules and Templated Rules pages in the Next-Gen WAF control panel and the Rules page in the Fastly control panel.

How rules work

Rules define how the Next-Gen WAF should handle requests to the web applications you're protecting. The Next-Gen WAF agent uses your active rules to determine what should happen to individual requests (e.g., allow, block, rate limit, or tag). The agent then performs any tagging decisions and sends the decisions to allow, block, or rate limit requests to the appropriate entity for you particular deployment method. The entity enacts the agent's decisions.

✓ TIP

Consider using the Next-Gen WAF Simulator to construct sample requests and responses to help with debugging and testing rule creation logic. This feature is only available to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Rules precedence

When rules conflict, the Next-Gen WAF agent uses the following logic to determine which rule should take precedence:

- a rule with an allow action always takes precedence over a rule with a block action. For example, if you create a rule to block a range of IP addresses and a rule to allow one specific IP address within that range, requests from that IP address will be allowed because the allow rule takes precedence.
- a corp (account) rule usually takes precedence over a site (workspace) rule. The only time a corp (account) rule doesn't take precedence is when the site (workspace) rule has an allow action.

Types of rules

There are four types of rules:

- **Request rules:** allow, block, or tag certain requests on an individual basis. For example, you could make a rule to block all requests with specific headers, requests to certain paths, or requests originating from specific IP addresses.

- **Advanced rate limiting rules**: block or tag requests from individual clients when a threshold (e.g., 100 requests in 1 minute) is passed. For example, you could make a rule to rate limit requests made to your web application's login page to prevent account takeover attacks. If too many failed login attempts are made from a specific IP address, it's reasonable to suspect that person is trying to guess a password and break into another person's account. The rate limit rule will block that IP address from the login path for a set amount of time and prevent them from continuing to guess passwords.

  > IMPORTANT
  >
  > Advanced rate limiting rules are not supported on the Essential platform.

- **Signal exclusion rules**: prevent requests from being tagged with certain signals. Signal exclusion rules help prevent false positives. For example, let's say you have an internal CMS where employees can post raw HTML. If employees try to post raw HTML that look like a Cross-Site Scripting (XSS) attack, their requests might get tagged with the `XSS` system signal and then blocked. To prevent false positives and your well-meaning employees from being accidentally blocked, you could create a signal exclusion rule to prevent requests that are coming from your VPN IP and post HTML from being tagged with the `XSS` signal.

- **Templated rules**: partially pre-constructed rules that can help you protect against Common Vulnerabilities and Exposures (CVE) and gain visibility into registrations, logins, and API requests. For example, you can enable the `GraphQL API Query` templated rule to track GraphQL API requests.

Converting requests to rules

Last updated: 2023-06-28

/en/ngwaf/converting-requests-to-rules

From the Requests page, you can convert individual requests into pre-populated rules, enabling you to take action on similar requests. To convert a request into a rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Requests**.
4. Locate or search for the request you want to convert into a rule.
5. Click **View request detail**.
6. Click **Convert to rule** in the upper-right corner.
7. Under **Type**, select the type of rule you want to make (**Request**, **Rate limit**, or **Signal exclusion**).
8. Under **Conditions**, select which characteristics of the request you want to convert into rule conditions. For example, selecting **IP Address** and **Path** will create conditions in the rule that look for the specific IP address and path featured in the request.
9. Click **Continue**.
10. Under **Conditions**, modify the rule as needed by adding and editing rule conditions.
11. Under **Actions**, select which actions the rule should take (e.g., **Block**, **Allow**, or **Add signal**). Additional actions can be added by clicking **Add action**.
12. Under **Status**, optionally disable the rule by deselecting **Always enabled**. By default, rules are automatically enabled when created unless specifically disabled.

    You can optionally set the rule to automatically disable after a set period of time. Click **Change expiration** and select a duration from the menu.

13. In the **Description** field, enter a description for the rule.

14. Click **Create site rule**.

1. Log in to the Fastly web interface.

2. Go to **Security** > **Next-Gen WAF** > **Requests**.

3. From the workspaces bar, click the menu ⌄ to the right of the workspace name and select a workspace.

4. Locate or search for the request you want to convert into a rule.

5. Click the document icon 🗎 next to the request.

6. Click **Convert to rule**.

7. Select the request characteristics that the rule will be based on. For example, selecting **IP address** and **Path** will add two conditions to the rule. The conditions will look for the specific IP address and path featured in the request.

8. Click **Submit**. For each selected request characteristic, a pre-populated condition is added to the **Conditions** section.

9. Under **Type**, leave **Request** selected.

10. *(Optional)* Under **Conditions**, edit the rule conditions that were created based on the selected request characteristics and add additional conditions as needed.

11. Under **Actions**, select the action the rule should take when a request meets the rule conditions (e.g., **Block** or **Allow**).

12. Fill out the fields in the **Details** section as follows:
    - In the **Description** field, enter a description for the rule.
    - *(Optional)* Click the **Status** switch to disable the rule.

13. Click **Create workspace rule**.

Defining rule conditions

Last updated: 2024-08-28

/en/ngwaf/defining-rule-conditions

When creating rules, you define a set of conditions that outline the circumstances under which requests should be allowed, blocked, rate limited, or tagged.

About rule conditions

A rule condition is made up of a field, an operator, and a value.

Fields

A rule conditions is based on a specific field.

When creating a request rule or an advanced rate limiting rule, you can base a rule's conditions on the following request fields:

Field	Type	Properties
Agent name	String	Text or wildcard
Country	Enum	ISO countries
Domain	String	Text or wildcard

Field	Type	Properties
IP address	IP	Text or wildcard, supports CIDR notation
JA3 Fingerprint	String	Text
Method	Enum	`GET, POST, PUT, PATCH, DELETE, HEAD, TRACE`
Path	String	Text or wildcard
POST parameter	Multiple	`Name (string), Value (string), Value (integer)`
Query parameter	Multiple	`Name (string), Value (string), Value (integer)`
Request cookie	Multiple	`Name (string), Value (string), Value (integer)`
Request header	Multiple	`Name (string), Value (string), Value (IP), Value (integer)`
Response code	String	Text or wildcard
Response header	Multiple	`Name (string), Value (string)`
Scheme	Enum	`http, https`
Signal	Multiple	`Type (signal), Parameter name (string), Parameter value (string)`
User agent	String	Text or wildcard

When creating a signal exclusion rule, you can base the rule conditions on the same request fields and fields specific to the particular signal that is being excluded:

Field	Type	Properties
Parameter name	String	Text or wildcard
Parameter value	String	Text or wildcard

Operators

When creating rules, operators are used to specify the logic of your rule when matching conditions. For example, the equals operator is used to check if a value in the request matches the value in the rule condition exactly, such as when attempting to match a specific IP address or path.

Operator	Description	Example Match
Equals	Checks if the request value matches the rule condition value exactly.	`203.0.113.169` Equals `203.0.113.169`
Does not equal	Checks if the request value does not match the rule condition value exactly.	`203.0.113.169` Does not equal `192.0.2.191`
Contains	Checks if the rule condition value being checked is contained within the request value; for example, to check if a substring is found within a larger string.	`thisisanexamplestring` Contains `example`
Does not contain	Checks if the rule condition value being checked is not contained within the request value; for example, to check if a substring is not found within a larger string.	`thisisanexamplestring` Does not contain `elephant`
Greater than or equal to	Checks if the request value is greater than or equal to the rule condition value	`12` Greater than or equal to `10`

Operator	Description	Example Match
Less than or equal to	Checks if the request value is less than or equal to the rule condition value	`10` Less than or equal to `12`
Like (wildcard)	Allows the use of wildcard characters in matching; checks if the request value matches the rule condition value.	`bats` Like (wildcard) `[bcr]ats`
Not like (wildcard)	Allows the use of wildcard characters in matching; checks if the request value does not match the rule condition value.	`bats` Not like (wildcard) `[hps]ats`
Matches (regexp)	Allows the use of regular expressions in matching; checks if the request value matches the rule condition value. Platform availability: Professional and Premier.	`bats` Matches (regexp) `(b|c|r)ats`
Does not match (regexp)	Allows the use of regular expressions in matching; checks if the request value does not match the rule condition value. Platform availability: Professional and Premier.	`bats` Does not match (regexp) `(h|p|s)ats`
Is in list	Checks if the request value matches any of the values in a specific list. Platform availability: Professional and Premier.	`203.0.113.169` Is in list `Known IP Addresses`
Is not in list	Checks if the request value does not match any of the values in a specific list. Platform availability: Professional and Premier.	`192.0.2.191` Is not in list `Known IP Addresses`

Exists where	Allows for name-value pair subconditions in matching; checks if the subconditions exist in the request value.	Request value:
		`Content-Type: application/xml`
		Condition:
		`Request Header` Exists where
		Subconditions:
		`Name` Equals `Content-Type`
		And
		`Value (string)` Equals `application/xml`

Does not exist where	Allows for name-value pair subconditions in matching; checks if the subconditions do not exist in the request value.	Request value:
		`Content-Type: application/xml`
		Condition:
		`Request Header` Does not exist where
		Subconditions:
		`Name` Equals `Content-Type`
		And
		`Value (string)` Equals `application/json`

Wildcards

The `Like` (wildcard) operator uses glob syntax and supports 0-or-many wildcards (`*`), single-character wildcards (`?`), character-lists (`[abc]`), character-ranges (`[a-c]`, `[0-9]`), alternatives (`{cat,bat,[fr]at}`), and exclusions (`[!abc]`, `[!0-9]`).

If you need to match a literal `*`, `?`, `[`, or `]` character, escape them with the `\` character. For example: `\*`.

The `Like` (wildcard) operator requires a full string match. If you're trying to match part of a string, you may need to include the `*` wildcard at the beginning or end to include the rest of the string for correct matching.

Regular expressions are not supported with the `Like` (wildcard) operator. If you want to use regular expressions, you must use the `Matches` (regexp) operator.

Field value case sensitivity

All fields in rules are case sensitive with the exception of header names.

For example, if you create a rule that looks for a header named `X-Custom-Header`, it will match on requests with headers named `X-Custom-Header` and `x-custom-header` because header names aren't case sensitive. However, if the rule looks for the value `Example-Value`, it will only match on `Example-Value` and not `example-value` because all other rule fields—such as header values in this example—are case sensitive.

> NOTE
>
> When constructing a regular expression pattern (regexp) that matches on a header name, POST parameter name, or query parameter name, write the pattern in all lowercase or prefix the pattern with a case insensitive regex matching mode of `(?i)`.

Path syntax best practices

When basing a rule condition on the Path field, keep these best practices in mind:

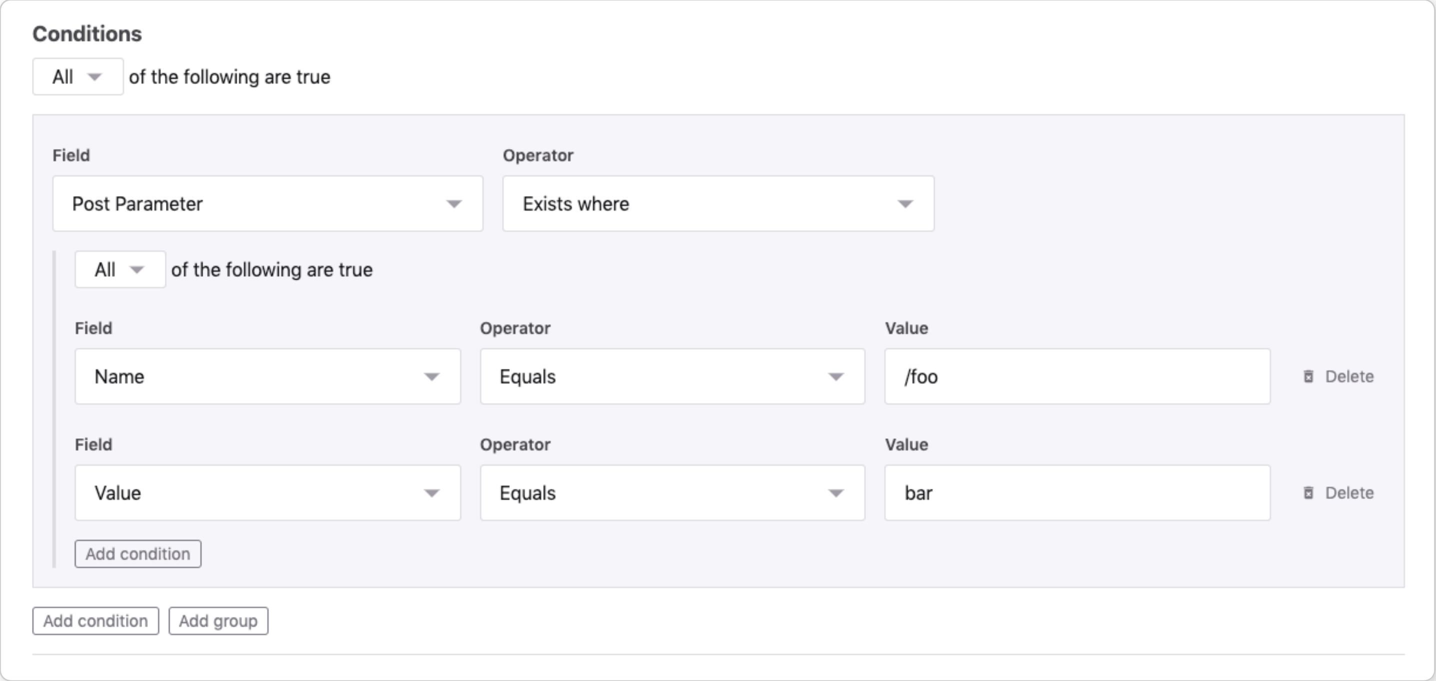
- **Always use leading slashes.** For a URL like `https://example.com/some-path`, the correct path syntax to use would be `/some-path`.
- **Use relative paths instead of absolute URLs.** For example, if the absolute URL to the login page on your site is `https://example.com/login`, then `/login` is the correct path syntax to enter when configuring your login signals.
- **Take care when using trailing characters in your paths.** Since our path syntax uses exact matching, trailing characters can sometimes return zero matches. Consider an example where the path to your login page is `https://example.com/login/`:
    - `/login/` will return a match.
    - `/login` with not return a match.

Post Parameter field

When creating rules that inspect the JSON body of POST requests, Post Parameter names require a leading `/`. For example, if the JSON payload is:

```
{
  "foo": "bar"
}
```

Then the name of the Post Parameter will need to be `/foo` in the rule.



Conditions

All of the following are true

Field: Post Parameter
Operator: Exists where

All of the following are true

Field	Operator	Value
Name	Equals	/foo
Value	Equals	bar

The leading `/` on of Post Parameter name facilitates nested values. For example, `/foo/bar` for a payload such as:

```
{
  "foo": {
    "bar": ["value1", "value2"]
  }
}
```

Country field

The Country field allows you to specify conditions that match against a particular country to block or allow traffic. Geolocation can be combined with other conditions like path or domain.

Where does the geodata come from?

We license MaxMind's Geolite2 data and distribute it within our agent. This data is updated periodically and included with newer agent releases as well as dynamically updated similar to rule updates.

How often is geodata updated?

We update our geodata and release an agent monthly (typically the second week of the month). At the same time as the agent release, the new geodata is deployed to our cloud tagging so that the latest country information is present. This will be a minor agent increment. This data is also dynamically updated similar to rule updates and these agents will download and cache the updated geolocation data.

What happens if my agent is out-of-date?

If your agent is out-of-date, then an IP may be blocked or allowed based on outdated geo information. Or requests may display in the control panel that would have been blocked with newer geodata. The country displayed in the control panel will reflect the latest available geodata.

How do dynamic geolocation data updates work?

The geolocation data is packaged up for the agent to download whenever there is an update. This data is cached locally on the agent machine. The cache location is under the shared-cache-dir directory which defaults to `{$TMPDIR|%TMP%|%TEMP%}/sigsci-agent.cache/`. The geolocation data is only downloaded if it does not exist locally or the data is not up-to-date.

Requirements for this functionality:

- The filesystem where this cache directory resides must be:
  - Writeable by the person running the agent
  - Have at least 5MB of free space
  - While auto-detection of the cache directory normally works fine, you may need to configure shared-cache-dir on some systems where a TEMP space is not defined (e.g., where `$TMPDIR` or `%TMP%` or `%TEMP%` environment vars are not set properly)
- The network must be capable of:
  - Downloading from the base download-url (this is the same base URL as normal rule updates)
  - Downloading the data (currently about 2MB) within the timeout limit (currently 60 seconds)

If the dynamic geolocation data cannot be downloaded, then the agent will default to the geolocation data packaged with the agent.

Using client challenges

Last updated: 2024-08-28

/en/ngwaf/using-client-challenges

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Sites (also known as workspaces) can be set up to send either interactive or non-interactive challenges to clients and those challenges can be conditionally exempted with the appropriate rules configuration.

Before you begin

Using client challenges requires the purchase of the Bot Management product at either the Professional or Premier platform level (it is not available for the Essential platform). Once purchased, client challenges must be enabled for each individual service using your service ID before you can configure them as request rules.

Limitations and considerations

When working with client challenges, keep the following things in mind:

- You must choose between either an interactive or non-interactive challenge for each service. Both cannot be active on a single service at the same time.
- Using client challenges for multiple hostnames within the same service requires rule conditions to restrict the challenge to a specific hostname. If, for example, a service includes both www.example.com and api.example.com as hosts, client challenges will not behave as expected. We suggest restricting client challenges to a specific hostname.
- To exclude a bot from client challenges when you want it to access your website, you must include that bot in a rule condition (e.g., set up a rule condition excluding clients with the `VERIFIED-BOT` signal from client challenges).

Available challenges and how they work

Two types of challenges are available to send to clients:

- **Non-interactive challenges** leverage what is called a JavaScript proof-of-work and ask a client to prove that it is running a JavaScript-compatible browser by solving what is essentially a JavaScript math problem.

- **Interactive challenges** (sometimes called CAPTCHA challenges) prompt a client with a random alphanumeric string and ask the client to enter that string into the presented box to prove that the person requesting the information is human.

Enabling client challenges

Once you've obtained access to Bot Management features, send the following Fastly enablement API call for each service you plan to use client challenges on, replacing `<SID>` with your service ID:

```
PUT /enabled-products/bot_management/services/<SID>
```

Example client challenges

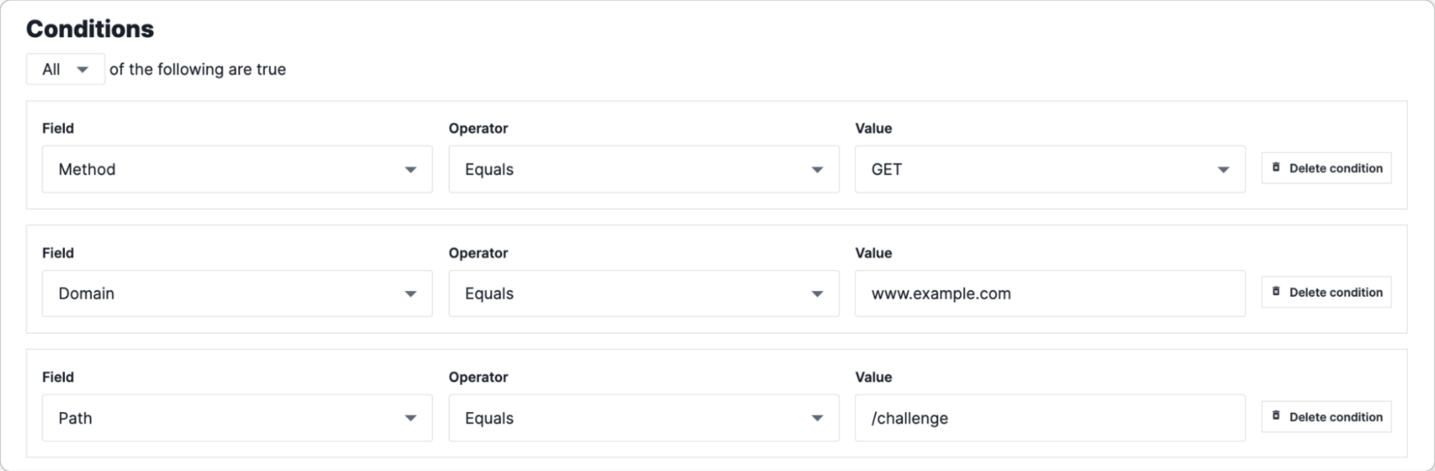
The following examples demonstrate how to configure client challenges for a few common use cases. Be sure to change the generic values (e.g., hostnames and paths) in these examples to ones specific to your particular application.

Requiring a challenge for all traffic except from verified bots

Let's say you want to create a rule that sends a challenge to all request traffic destined for `www.example.com/challenge` except for requests with the `VERIFIED-BOT` signal. When configuring the request rule, create three conditions as follows, making sure to select **All** so that they are all true:

Condition	Field	Operator	Value
1	Method	Equals	GET
2	Domain	Equals	`www.example.com`
3	Path	Equals	`/challenge`

In the control panel, the settings would appear like this:



Conditions

All of the following are true

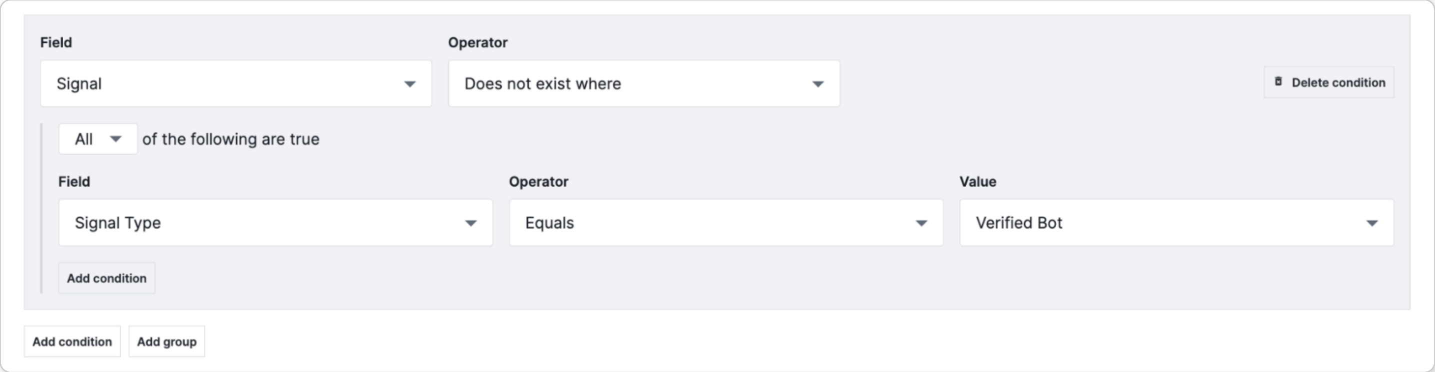
Field	Operator	Value	
Method	Equals	GET	Delete condition
Domain	Equals	www.example.com	Delete condition
Path	Equals	/challenge	Delete condition

Then create a condition group for the challenge itself by clicking **Add condition** from below the first three conditions, and then specifying the settings of that condition as follows:

- From the first **Field** menu, select **Signal**.
- From the first **Operator** menu, select **Does not exist where**.
- Select **All** to specify that a request must meet every condition.
- From the second **Field** menu, select **Signal Type**.
- From the second **Operator** menu, select **Equals**.

- From the **Value** menu, select **Verified Bot**.

In the control panel, the settings would appear like this:



Field: Signal
Operator: Does not exist where

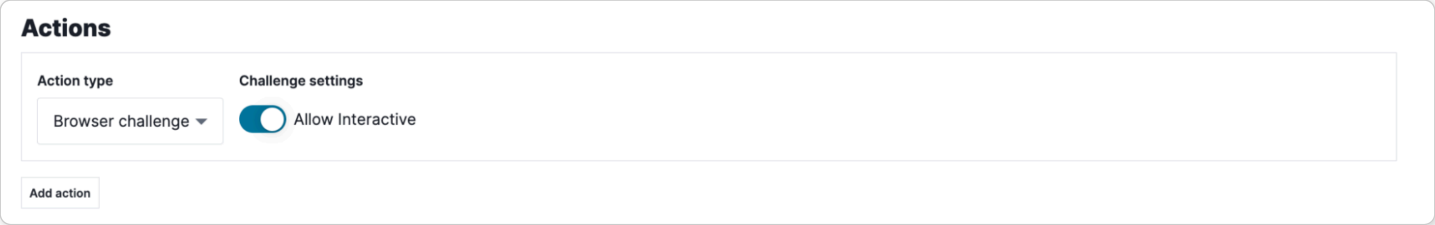
All of the following are true

Field: Signal Type
Operator: Equals
Value: Verified Bot

Then decide whether you want the challenge to be interactive or non-interactive by:

- From the **Action type** menu, select **Browser challenge**.
- Click the **Allow Interactive** switch to require an interactive (CAPTCHA) challenge setting or leave it disabled to keep the challenge non-interactive.

In the control panel, the settings for an interactive challenge would look like this:



Actions

Action type: Browser challenge
Challenge settings: Allow Interactive (on)

Protecting a POST endpoint

Let's say you want to create rules that protect a POST endpoint, in this case `www.example.com/login`. To do this, configure three request rules that would:

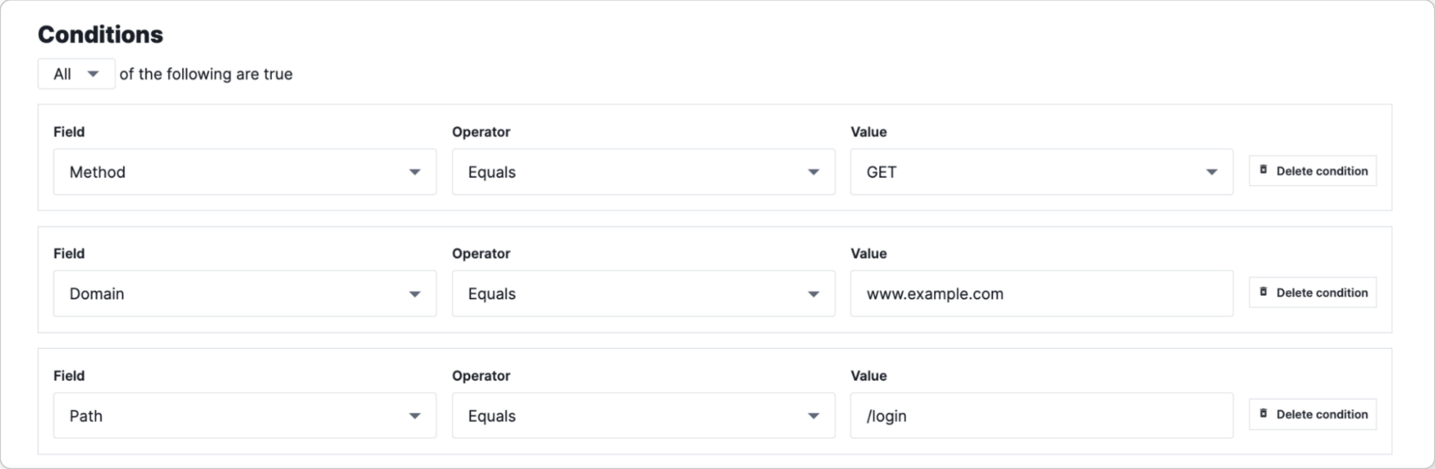
- send a browser challenge for any GET requests,
- use token verification on a POST request, and
- configure signal blocking for requests that are invalid.

Creating a browser challenge

When configuring the browser challenge rule, create three conditions as follows, making sure to select **All** to require them to all be true:

Condition	Field	Operator	Value
1	Method	Equals	GET
2	Domain	Equals	`www.example.com`
3	Path	Equals	`/login`

In the control panel, the settings would appear like this:



Conditions

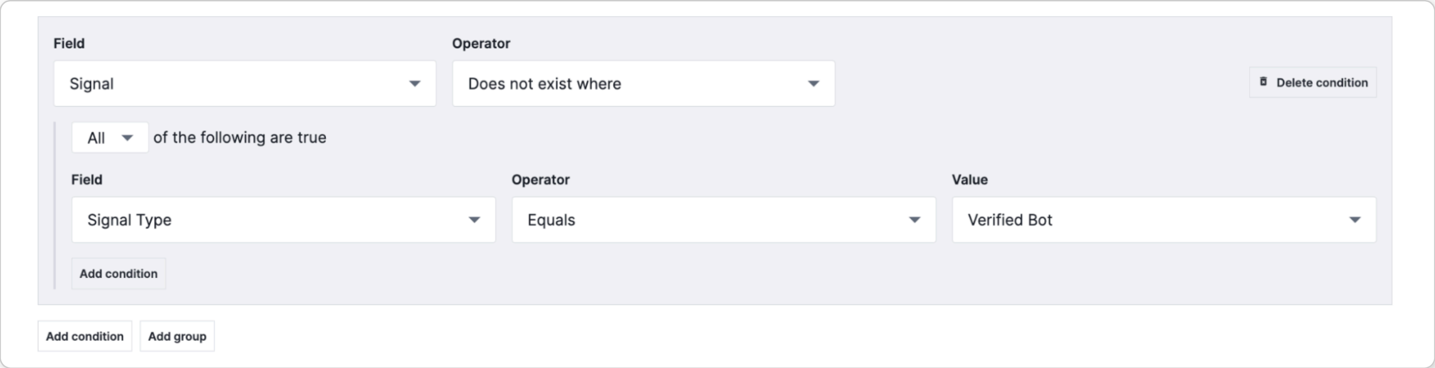
All of the following are true

Field	Operator	Value
Method	Equals	GET
Domain	Equals	www.example.com
Path	Equals	/login

Then create a condition group for the challenge itself by clicking **Add condition** from below the first three conditions, and then specifying the settings of that condition as follows:

- From the first **Field** menu, select **Signal**.
- From the first **Operator** menu, select **Does not exist where**.
- Select **All** to specify that a request must meet every condition.
- From the second **Field** menu, select **Signal Type**.
- From the second **Operator** menu, select **Equals**.
- From the **Value** menu, select **Verified Bot**.

In the control panel, the settings would appear like this:



Field	Operator
Signal	Does not exist where

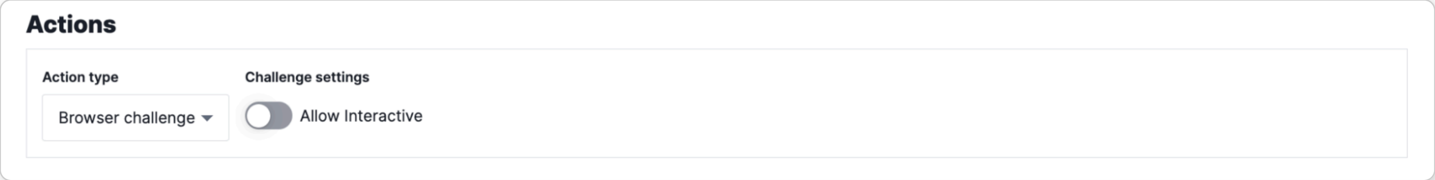
All of the following are true

Field	Operator	Value
Signal Type	Equals	Verified Bot

Then select the browser challenge by doing this:

- From the **Action type** menu, select **Browser challenge**.
- Leave the **Allow Interactive** switch disabled to keep the challenge non-interactive.

In the control panel, the non-interactive challenge setting would look like this:



Actions

Action type: Browser challenge

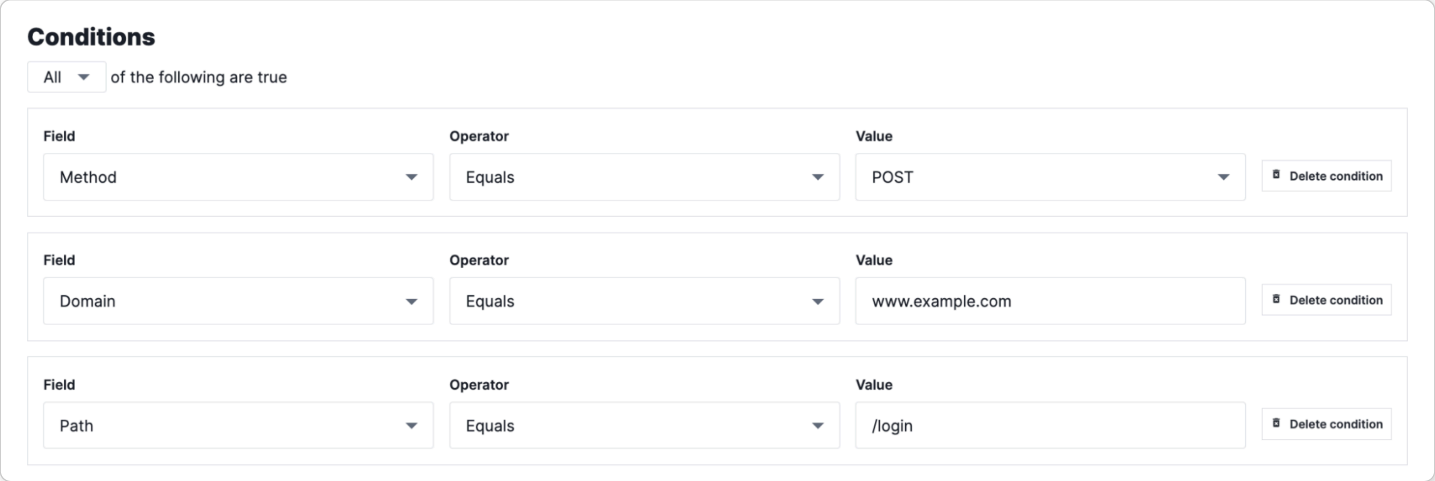
Challenge settings: ○ Allow Interactive

Configuring token verification

When configuring the token verification rule, create three conditions as follows, making sure to select **All** to require them to all be true:

Condition	Field	Operator	Value
1	Method	Equals	POST
2	Domain	Equals	`www.example.com`
3	Path	Equals	`/login`

In the control panel, the settings would appear like this:



Conditions

All of the following are true

Field: Method; Operator: Equals; Value: POST

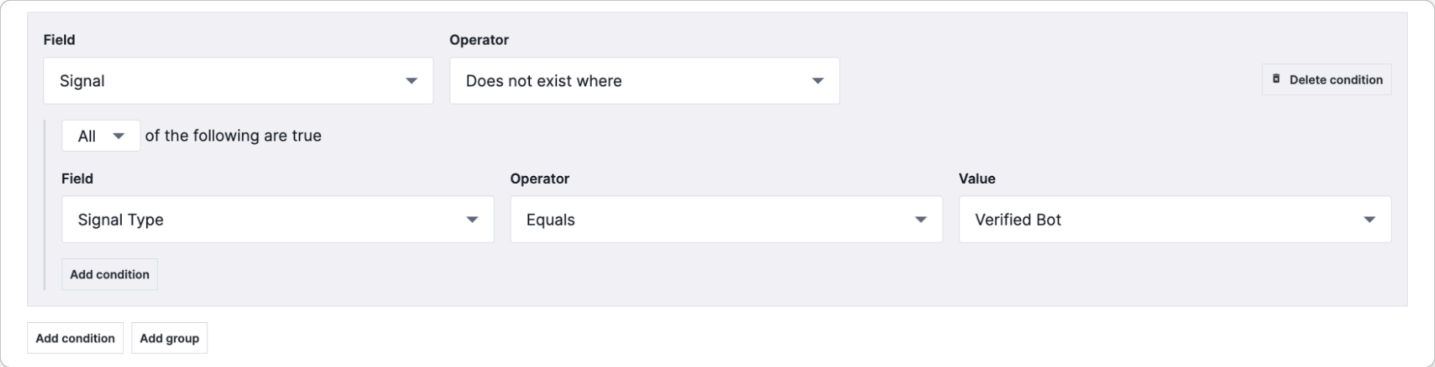
Field: Domain; Operator: Equals; Value: www.example.com

Field: Path; Operator: Equals; Value: /login

Then create a condition group for the challenge itself by clicking **Add condition** from below the first three conditions, and then specifying the settings of that condition as follows:

- From the first **Field** menu, select **Signal**.
- From the first **Operator** menu, select **Does not exist where**.
- Select **All** to specify that a request must meet every condition.
- From the second **Field** menu, select **Signal Type**.
- From the second **Operator** menu, select **Equals**.
- From the **Value** menu, select **Verified Bot**.

In the control panel, the settings would appear like this:



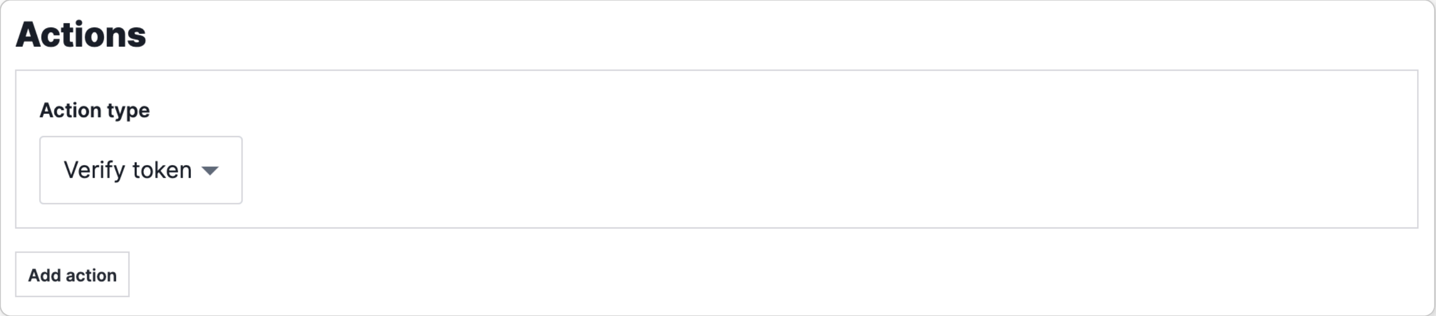
Field: Signal; Operator: Does not exist where

All of the following are true

Field: Signal Type; Operator: Equals; Value: Verified Bot

Then from the **Action type** menu, select **Verify token** to set the browser challenge.

In the control panel, the non-interactive challenge setting would look like this:



Actions

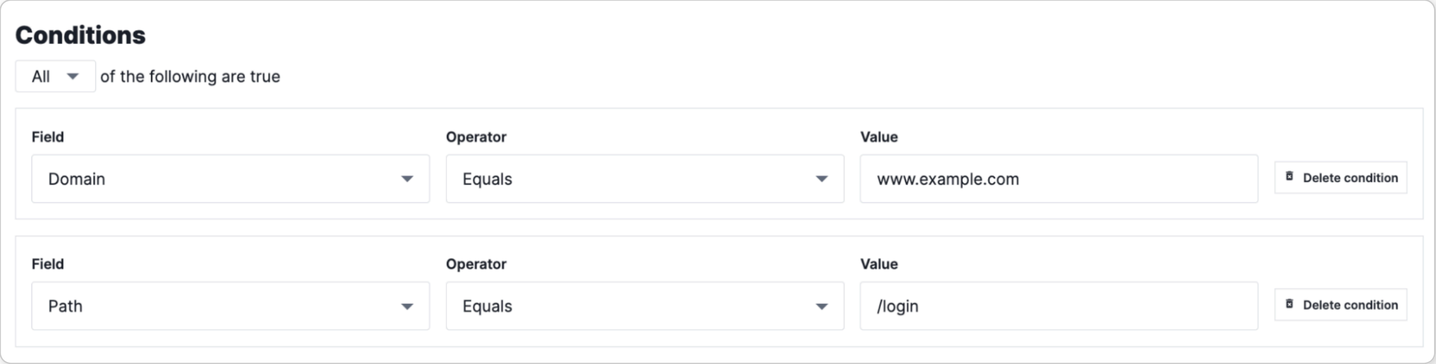
Action type: Verify token

Configuring signal blocking

When configuring the signal blocking rule, create two conditions as follows, making sure to select **All** to require them to all be true:

Condition	Field	Operator	Value
1	Domain	Equals	`www.example.com`
2	Path	Equals	`/login`

In the control panel, the settings would appear like this:



Conditions

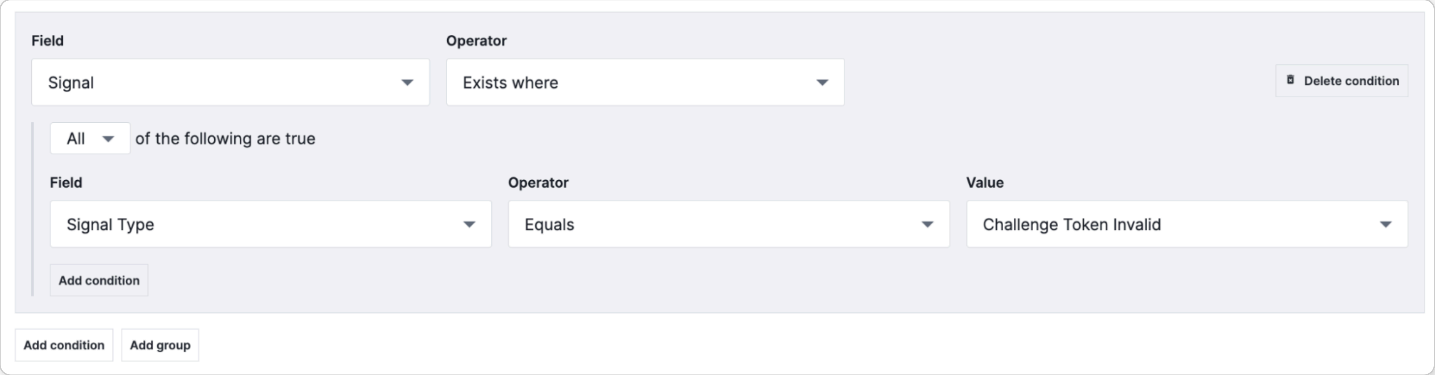
All of the following are true

Field	Operator	Value
Domain	Equals	www.example.com
Path	Equals	/login

Then create a condition group for the challenge itself by clicking **Add condition** from below the first two conditions, and then specifying the settings of that condition as follows:

- From the first **Field** menu, select **Signal**.
- From the first **Operator** menu, select **Exists where**.
- Select **All** to specify that a request must meet every condition.
- From the second **Field** menu, select **Signal Type**.
- From the second **Operator** menu, select **Equals**.
- From the **Value** menu, select **Challenge Token Invalid**.

In the control panel, the settings would appear like this:



Field: Signal
Operator: Exists where

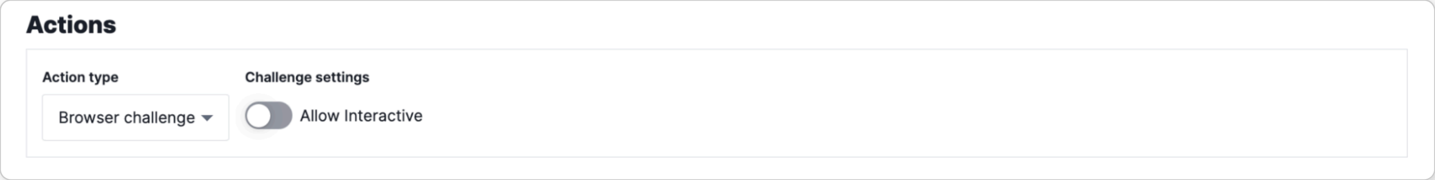
All of the following are true

Field	Operator	Value
Signal Type	Equals	Challenge Token Invalid

Then select the browser challenge by doing this:

- From the **Action type** menu, select **Browser challenge**.
- Leave the **Allow Interactive** switch disabled to keep the challenge non-interactive.

In the control panel, the non-interactive challenge setting would look like this:



Actions

Action type: Browser challenge
Challenge settings: Allow Interactive (off)

Using lists in rules

Last updated: 2024-08-28

/en/ngwaf/using-lists-in-rules

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

About Lists

Lists can be used to create and maintain sets of data for use when creating rules. Lists allow you to easily reuse the same sets of data across multiple rules. Lists can be created on individual sites (Site Lists) (also known as Workspace Lists) as well as the corp as a whole (Corp Lists) (also known as Account Lists) to be easily used in multiple sites (workspaces).

For example, you could create a list of prohibited countries that you don't do business with. You could then use this list in any rules that involve those countries, such as rules to track registration or login attempts originating from those countries. If a prohibited country changes, simply update the list instead of updating every rule that uses it.

Lists can consist of the following types of data:

- Countries
- IP addresses
- Strings
- Wildcards

Limitations and caveats

- The Essentials platform does not support lists.
- Lists support CIDR notation for IP address ranges.
- Lists are limited to 25 per corp (account) plus 25 per site (workspace).
- Lists can contain a maximum of 5000 items.

Creating a List

Create both Corp (Account) and Site (Workspace) lists using these steps.

Corp Lists (Account Lists)

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Rules** menu, select **Corp Lists**.
3. Click **Add corp list**.
4. From the **Type** menu, select the type of data the list will contain.
5. In the **Name** field, enter the name of the list.
6. *(Optional)* In the **Description (optional)** field, enter a description for the list.
7. In the **Entries** field, enter the items that will comprise the list. Each entry must be on its own line.
8. Click **Create corp list**.

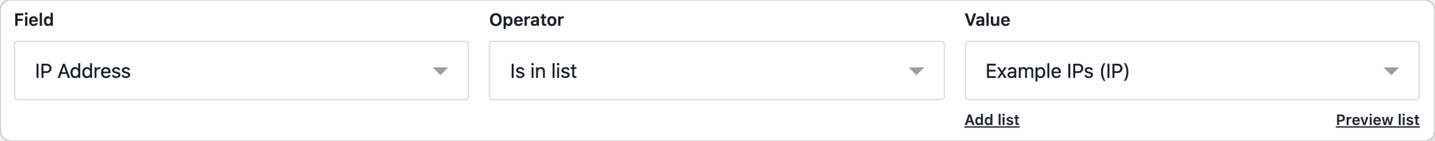
> IMPORTANT
>
> Only owners (superusers) can create, edit, and delete Corp Lists (Account Lists). This is because Corp Lists (Account Lists) have the ability to manipulate traffic across every site (workspace) and other roles can only manage Rules and Lists for sites (workspaces) they have access to.

Site Lists (Workspace Lists)

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Site Rules** menu, select **Site Lists**.
4. Click **New list**.
5. From the **Type** menu, select the type of data the list will contain.
6. In the **Name** field, enter the name of the list.
7. *(Optional)* In the **Description (optional)** field, enter a description for the list.
8. In the **Entries** field, enter the items that will comprise the list. Each entry must be on its own line.
9. Click **Create site list**.

Using a List

When creating a rule, select **Is in list** or **Is not in list** for the operator, then select the list from the value menu.



Field	Operator	Value
IP Address	Is in list	Example IPs (IP)

For more information about creating rules, see Rules.

Working with advanced rate limiting rules

Last updated: 2024-08-16

/en/ngwaf/working-with-advanced-rate-limiting-rules

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Advanced rate limiting rules put a cap on how often an individual client can send requests that meet set conditions before all or some requests from that same client are blocked or logged.

Limitations and considerations

When working with advanced rate limiting rules, keep the following things in mind:

- Advanced rate limiting is only included with the Premier platform and certain packaged offerings. It is not included as part of the Professional or Essential platforms.
- Each site (also known as workspace) is limited to a maximum of 15 rate limit rules.
- A given signal can only be used as the threshold signal for a single rate limit rule. A signal can't be used as the threshold signal in more than one rate limit rule.

If you have an Edge WAF deployment, keep these additional considerations in mind:

- The faster requests are received the quicker they can be blocked.
- Rules with a lower threshold block or log requests sooner than rules with a higher threshold, subject to the rate the requests are received.
- You may need up to two times the number of requests over any 60 second window to declare a match.
- When testing rules in multiple physical locations, your results may vary due to the distributed nature of Fastly's network and the different number of cache nodes per POP.
- For the most consistent results, test with rates of 100 RPS or more.

How advanced rate limiting rules work

When the web application you're protecting starts receiving requests that meet the conditions of a rate limit rule, the requests are tagged with the *threshold signal*. Threshold signals are tallied and counted towards the threshold for that rule. When the threshold signal count for a single client exceeds the rule's threshold, that client is rate limited.

How the client is rate limited depends on the Match type and Action type fields for that rate limit rule. The **Match type** field defines which requests from the client should be blocked or logged after the threshold has been passed. Field options include:

- **Rule conditions:** rate limit requests from the client that match the rate limit rule's conditions. See an example use case of this option.

- **Other signal:** rate limit requests from the client that are tagged with the *action signal*. When the action signal is not an attack or anomaly signal, you need a request rule that tags requests with the selected signal. See an example use case of this option.
- **All requests:** rate limit all requests from the client.

The **Action type** field defines whether requests that meet the Match type condition should be blocked or logged. When the **Action type** field is set to **Block**, subsequent requests that meet the Match type are blocked and tagged with these signals:

- the threshold signal defined in the rule
- `Rate Limit` system signal
- `Blocked Request` system signal

When the **Action type** field is set to **Log**, subsequent requests that meet the Match type are logged and tagged with these signals:

- the threshold signal defined in the rule
- `Rate Limit` system signal

Threshold counting for Edge WAF deployments

Edge WAF deployments operate on Fastly's Edge Cloud platform, which is a distributed global network. This mode of deployment uses both local and global counting mechanisms to track the number of threshold signals per client and to determine when a client exceeds the threshold of an advanced rate limit rule.

Located at the Fastly POP-level, the local counting mechanism tracks threshold signals over a 60 second window during the interval set by the advanced rate limit rule, either 1 minute or 10 minutes. The total threshold signal count from each window is added to the next window for the duration of the interval. If the count from the last completed window causes the total threshold signal count to exceed the threshold of the advanced rate limit rule, the client is rate limited. As the local counting mechanism is distributed across a number of cache nodes in a single POP, there may be a slight synchronization time delay.

Located in our cloud engine, the global counting mechanism aggregates the threshold signal count from our POP network. The cloud engine then forwards the aggregated count to the Edge WAF deployment, which takes approximately one to two minutes.

Data storage

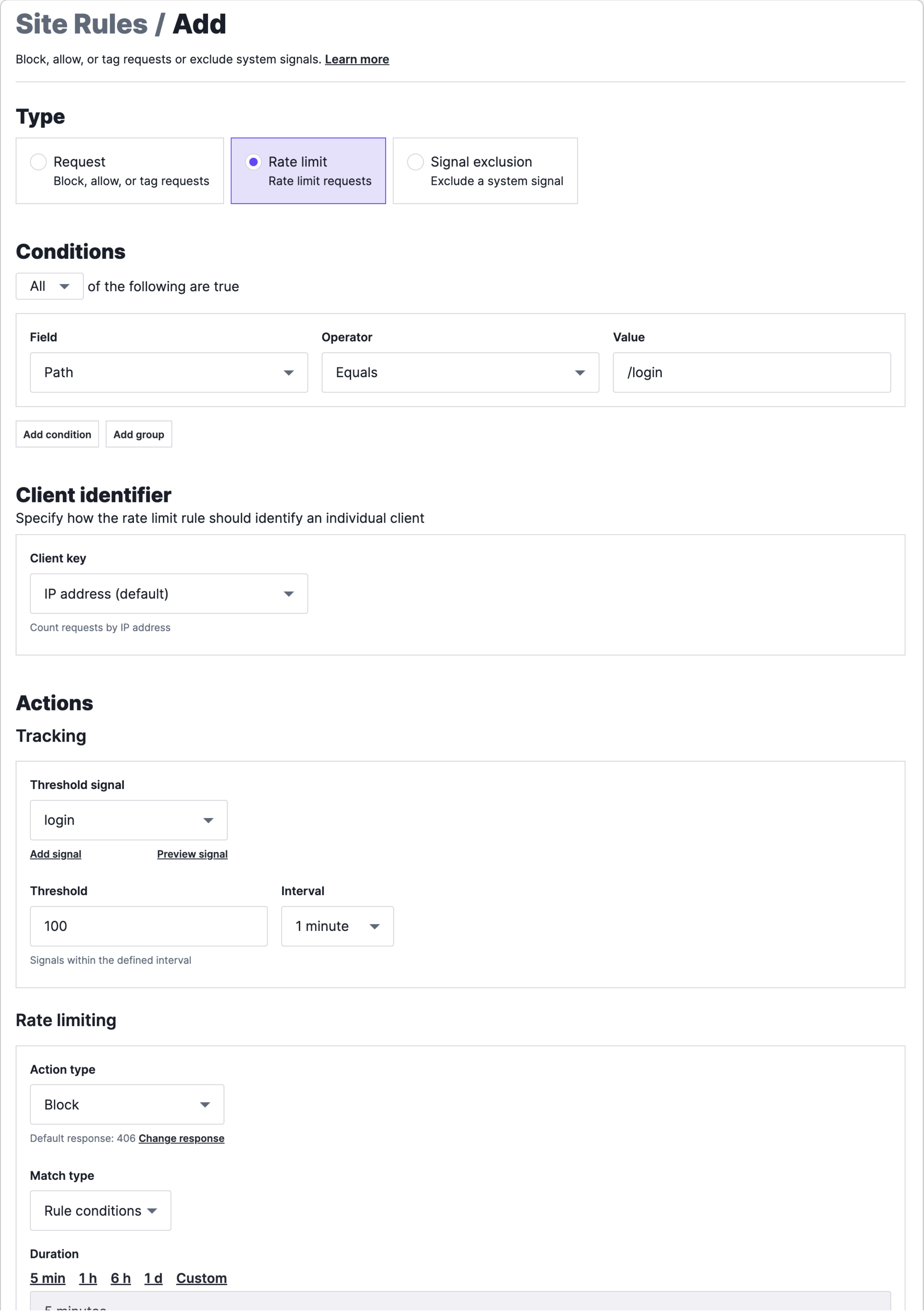
We store signal data based on the storage category of the signal.

Signal	Signal type	Storage category
Threshold signal	Informational	Time series only
`Rate Limit`	Anomaly	Sampled
`Blocked Request`	Anomaly	Sampled

Creating advanced rate limiting rules

To create an advanced rate limiting rule, start by navigating to the Add form for rules and selecting a type of rule:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Site Rules**.
4. Click **Add site rule**.



Site Rules / Add

Block, allow, or tag requests or exclude system signals. Learn more

Type

○ Request
Block, allow, or tag requests

● Rate limit
Rate limit requests

○ Signal exclusion
Exclude a system signal

Conditions

All of the following are true

Field	Operator	Value
Path	Equals	/login

Client identifier

Specify how the rate limit rule should identify an individual client

Client key: IP address (default)

Count requests by IP address

Actions

Tracking

Threshold signal: login

Threshold: 100

Interval: 1 minute

Signals within the defined interval

Rate limiting

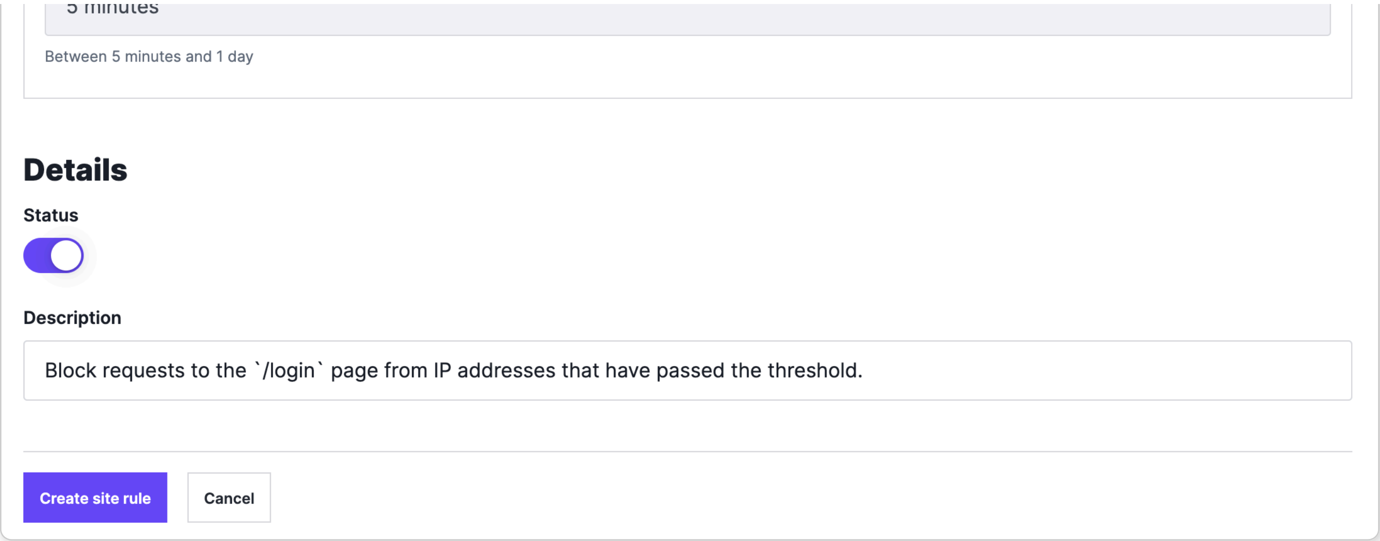
Action type: Block

Default response: 406 Change response

Match type: Rule conditions

Duration

5 minutes



5 minutes

Between 5 minutes and 1 day

Details

Status

Description

Block requests to the `/login` page from IP addresses that have passed the threshold.

5. In the **Type** section, select **Rate limit**.

Next, define the logic that the rule should use to identify requests that count towards the threshold. In the **Conditions** section:

1. Fill out these fields to create a condition:
   - From the **Field** menu, select the request field that the condition is based on.
   - From the **Operator** menu, select an operator to specify how the selected field and value relate.
   - In the **Value** field, enter a value for the specified field.
2. *(Optional)* Click **Add condition** to add another condition or **Add group** to create a group of conditions.
3. Decide whether a request must meet one or all conditions in order to count towards the threshold:
   - Select **Any** from the conditions menu to specify that a request must meet only one of the conditions you've created.
   - Leave **All** selected in the conditions menu to specify that a request must meet every condition you've created.

Once you've done that, specify how the rate limit rule should identify an individual client. In the **Client identifier** section:

1. From the **Client key** menu, select how the rate limit rule should identify a client. Depending on the Client key option you selected, additional client identifier fields may appear.
2. *(Optional)* Fill out any additional fields that appeared in the Client identifier section.

Next, specify a signal that should be applied to requests that meet the rule's condition set and define the threshold. In the **Actions** section, fill out the **Tracking** subsection as follows:

1. From the **Threshold signal** menu, select the signal that you want applied to requests that match the rule conditions. Requests tagged with the threshold signal are tallied and counted towards the threshold of the rule.
2. In the **Threshold** field, enter the number of requests that must be detected before a client is rate limited.
3. From the **Interval** menu, select the period of time requests must be detected during to pass the threshold.

Next, define how a client that exceeds the threshold should be rate limited. In the **Actions** section, fill out the **Rate limiting** subsection as follows:

1. From the **Action type** menu, select the action that should be taken when the threshold has been exceed and requests meet the conditions of the match type. Action types include **Block** and **Allow**. When you select **Block**, the Change response link appears.
2. *(Optional)* Click **Change response** to specify a custom response code to return when the rule blocks a request and fill out the related fields as follows:
   - In the **Response code (optional)** field, enter a custom response code. Supported custom response codes are 301, 302, and 400-599.

    - If you entered `301` or `302` in the **Response code (optional)** field then, in the **Redirect URL (optional)** field, enter the absolute or relative URL of the redirect location. See Using redirect custom response codes.

3. From the **Match type** menu, select the conditions that determine what should be rate limited once the threshold is exceeded. Options include:
    - **Rule conditions:** rate limit requests from the client that match the rule's conditions. See an example use case of this option.
    - **Other signal:** rate limit requests from the client that are tagged with the selected **Action signal**. When the action signal is not an attack or anomaly signal, you need a request rule that tags requests with the selected signal. See an example use case of this option.
    - **All requests:** rate limit all requests from the client.
4. From the **Duration** menu, select the amount of time the client should be rate limited.

Finally, add a description of the rule and save the rule:

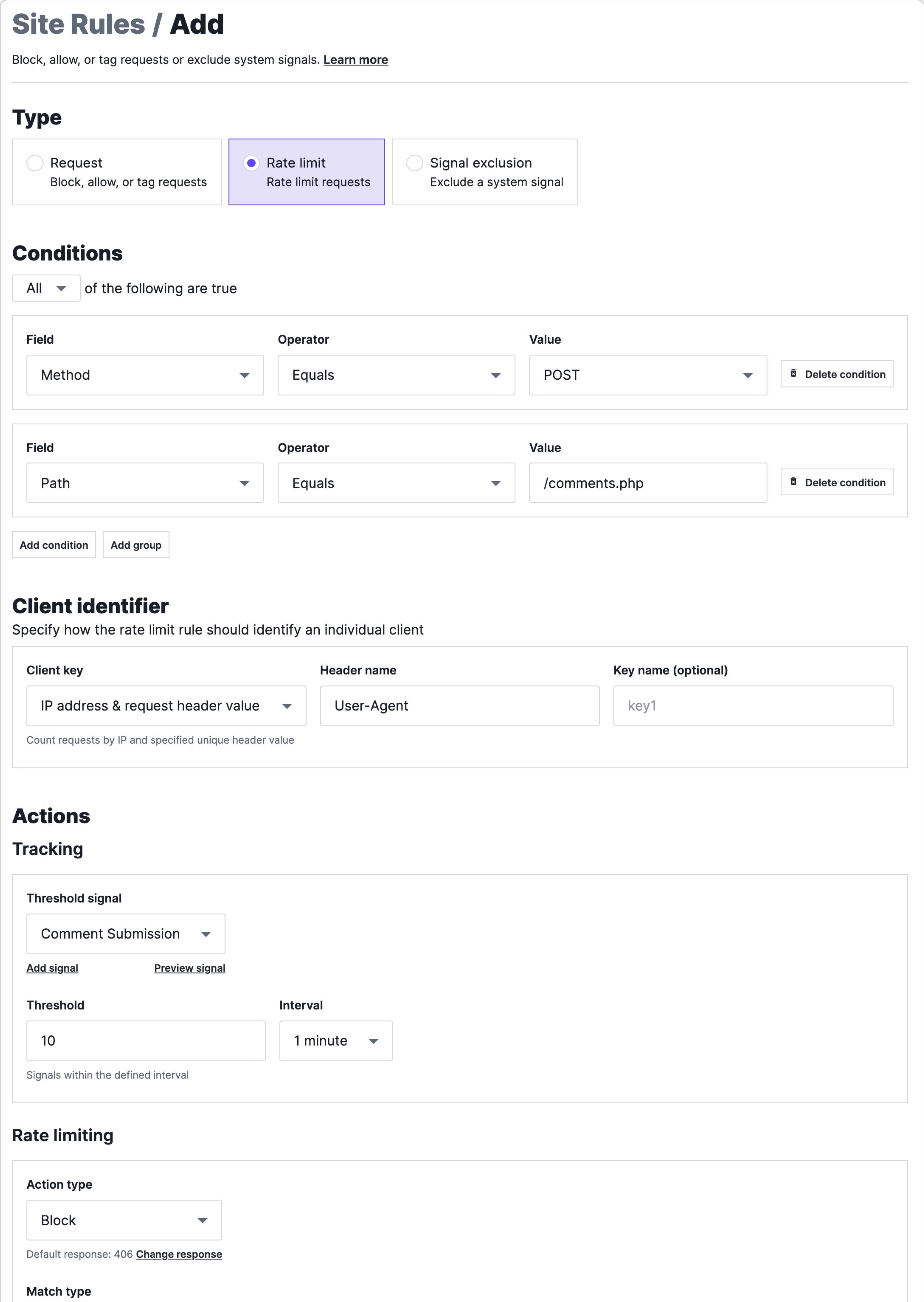
1. Fill out the **Details** section as follows:
    - Leave the **Status** switch enabled.
    - In the **Description** field, enter a description of the rule.
2. Click **Create site rule**. The advanced rate limit rule is created, and the Site Rules page appears.

Example rate limit rules

The following examples demonstrate how to configure rate limit rules for common use-cases. Be aware that values (e.g., paths and response codes) used in these examples may not be the same as those used by your particular web application.

Rate limit comment submissions

This example rule demonstrates how to rate limit the ability to submit comments:



Site Rules / Add

Block, allow, or tag requests or exclude system signals. **Learn more**

Type

○ Request
Block, allow, or tag requests

● Rate limit
Rate limit requests

○ Signal exclusion
Exclude a system signal

Conditions

All of the following are true

Field	Operator	Value
Method	Equals	POST
Path	Equals	/comments.php

Client identifier

Specify how the rate limit rule should identify an individual client

Client key	Header name	Key name (optional)
IP address & request header value	User-Agent	key1

Count requests by IP and specified unique header value

Actions

Tracking

Threshold signal: Comment Submission

Threshold: 10

Interval: 1 minute

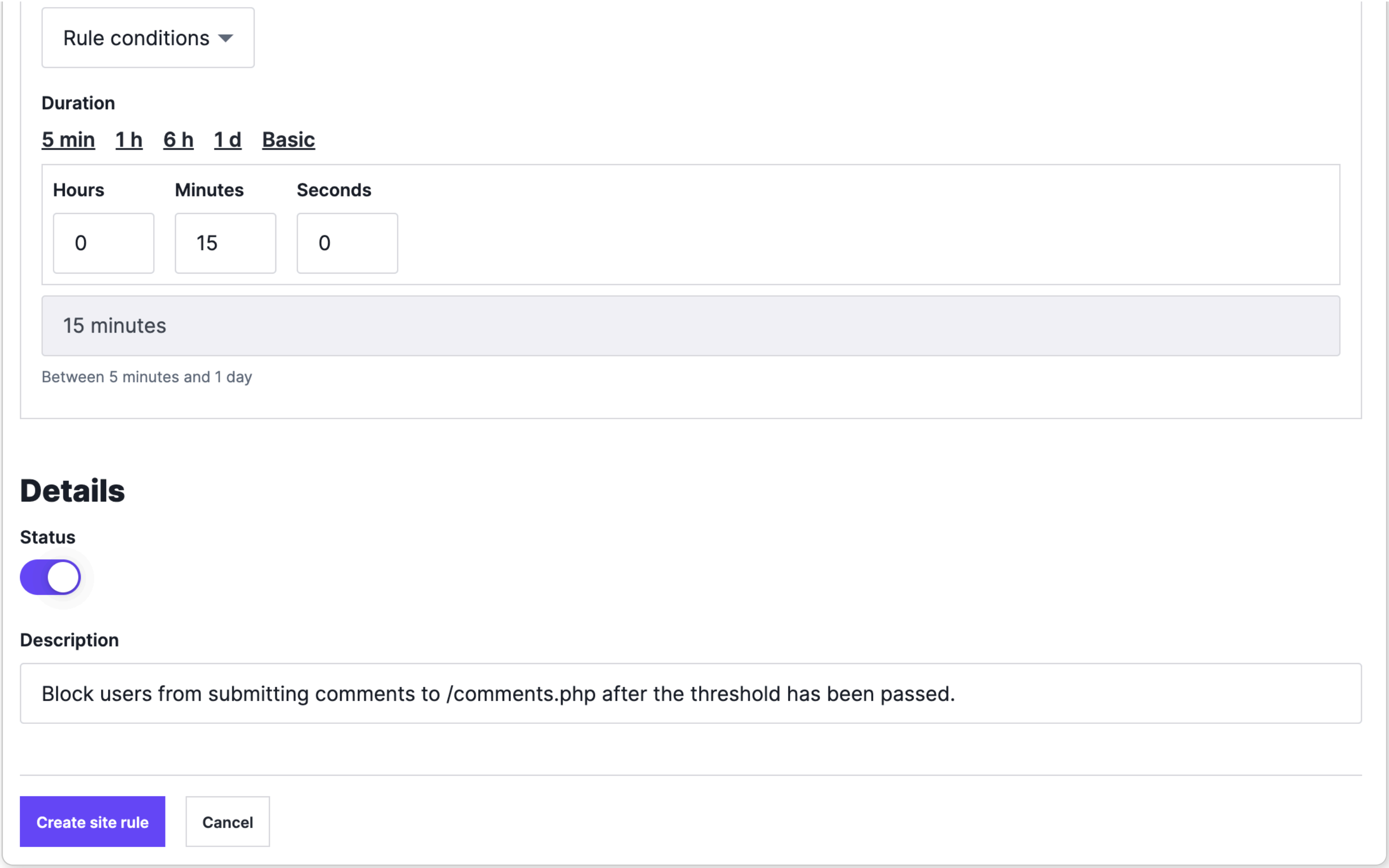
Signals within the defined interval

Rate limiting

Action type: Block

Default response: 406 **Change response**

Match type



Duration

Hours: 0

Minutes: 15

Seconds: 0

15 minutes

Between 5 minutes and 1 day

Details

Status

Description

Block users from submitting comments to /comments.php after the threshold has been passed.

Specifically, the rule looks for POST requests to the `/comments.php` file and tags them with the `Comment Submission` custom signal (the **Threshold signal**). Because someone may attempt to change their IP address to circumvent the rate limit, the rule uses both the IP address and the value of the `User-Agent` request header (the **Client identifier**) to track requests from them.

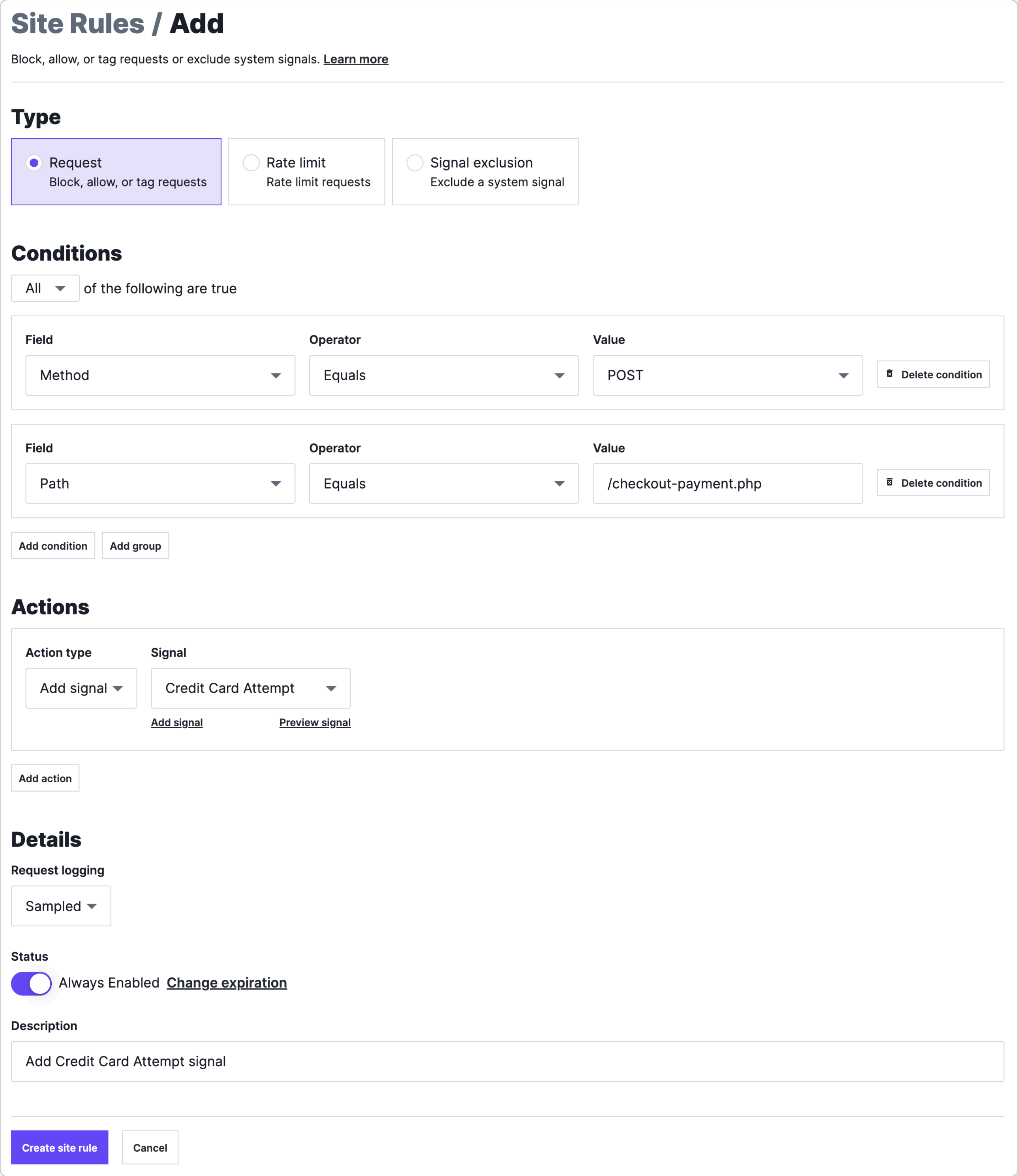
When 10 requests (the **Threshold**) tagged with the `Comment Submission` signal are detected from a unique IP address and `User-Agent` within 1 minute (the **Interval**), any subsequent requests with the `Comment Submission` signal from that IP address and `User-Agent` will be blocked (the **Action type**) for the next 15 minutes (the **Duration**).

Credit card validation attempts

This example demonstrates how to rate limit credit card validation attempts after too many failed attempts. This use-case requires two separate rules:

- a request rule to track credit card validation attempts.
- a rate limit rule to track credit card validation failures and rate limit the originating IP address.

The request rule looks for POST requests to the `/checkout-payment.php` file and tags them with the `Credit Card Attempt` custom signal.



Site Rules / Add

Block, allow, or tag requests or exclude system signals. Learn more

Type

● Request — Block, allow, or tag requests
○ Rate limit — Rate limit requests
○ Signal exclusion — Exclude a system signal

Conditions

All of the following are true

Field	Operator	Value	
Method	Equals	POST	Delete condition
Path	Equals	/checkout-payment.php	Delete condition

Add condition Add group

Actions

Action type	Signal
Add signal	Credit Card Attempt

Add signal Preview signal

Add action

Details

Request logging: Sampled

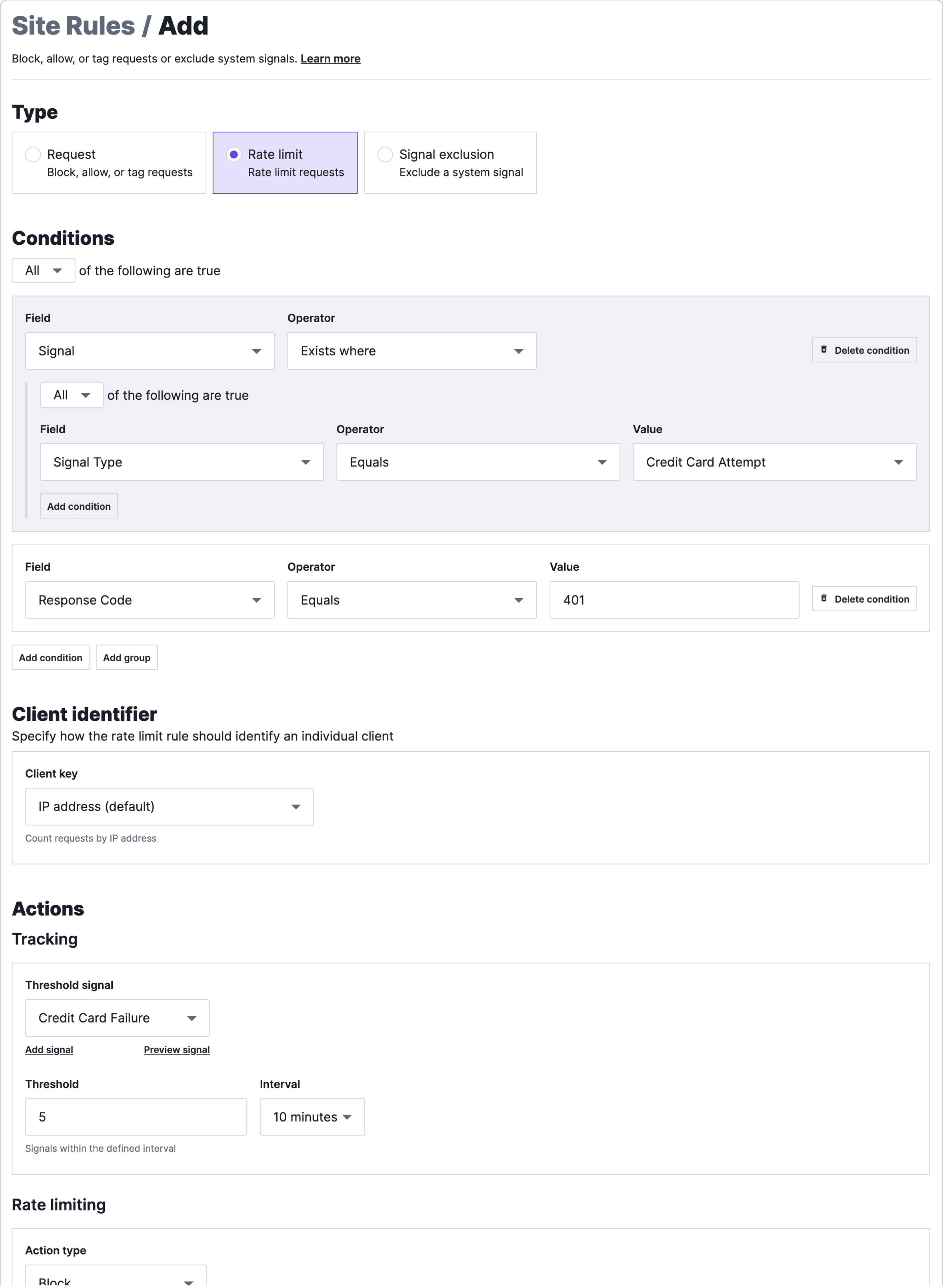
Status: Always Enabled Change expiration

Description: Add Credit Card Attempt signal

Create site rule Cancel

The rate limit rule looks for requests tagged with the `Credit Card Attempt` custom signal, as well as if the request received a `401` response code indicating the credit card validation attempt was a failure. The rule applies a `Credit Card Failure` custom signal (the **Threshold signal**) to these requests.

When 5 requests (the **Threshold**) tagged with the `Credit Card Failure` signal are detected from a signal IP within 10 minutes (the **Interval**), any subsequent requests tagged with the `Credit Card Attempt` signal (the **Action signal**) from that IP will be blocked (the **Action type**) for the next 5 minutes (the **Duration**).



Site Rules / Add

Block, allow, or tag requests or exclude system signals. Learn more

Type

○ Request
Block, allow, or tag requests

● Rate limit
Rate limit requests

○ Signal exclusion
Exclude a system signal

Conditions

All of the following are true

Field: Signal
Operator: Exists where

All of the following are true

Field: Signal Type
Operator: Equals
Value: Credit Card Attempt

Field: Response Code
Operator: Equals
Value: 401

Client identifier

Specify how the rate limit rule should identify an individual client

Client key: IP address (default)
Count requests by IP address

Actions

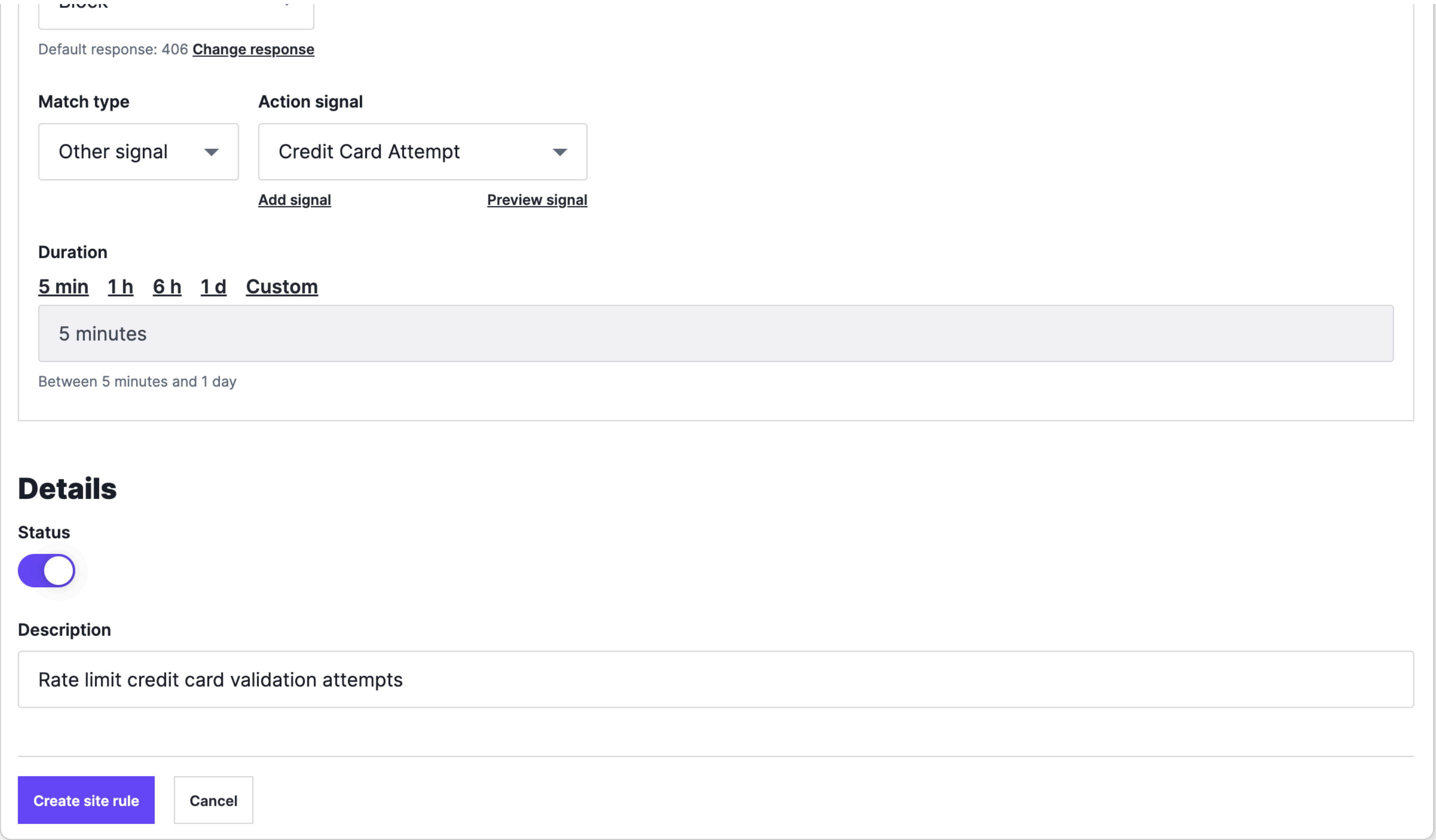
Tracking

Threshold signal: Credit Card Failure

Threshold: 5
Interval: 10 minutes
Signals within the defined interval

Rate limiting

Action type: Block



Block

Default response: 406 Change response

Match type: Other signal

Action signal: Credit Card Attempt

Duration: 5 minutes

Between 5 minutes and 1 day

Details

Status: on

Description: Rate limit credit card validation attempts

Glossary

Term	Definition
Action type	Whether requests are logged or blocked.
Client	The source from where requests originate.
Client identifier	The parts of requests used to identify an individual client.
Duration	How long a client remains rate limited.
Interval	The period of time requests must be detected during to pass the threshold.
Match type	Which requests from the client should be blocked or logged after the threshold has been passed.
Threshold	How many requests must be detected before a client is rate limited.
Threshold signal	The signal that requests are tagged with when they meet the rate lime rule's condition set. Threshold signals are tallied and counted towards the threshold for that rule. When the threshold signal count for a single client exceeds the rule’s threshold, that client is rate limited.

Working with request rules

Last updated: 2024-08-28

/en/ngwaf/working-with-request-rules

Request rules allow you to define arbitrary conditions and block, allow, or tag requests indefinitely or for a specific period of time. For example, you could make a rule to block all requests with specific headers, requests to certain paths, or requests originating from specific IP addresses.

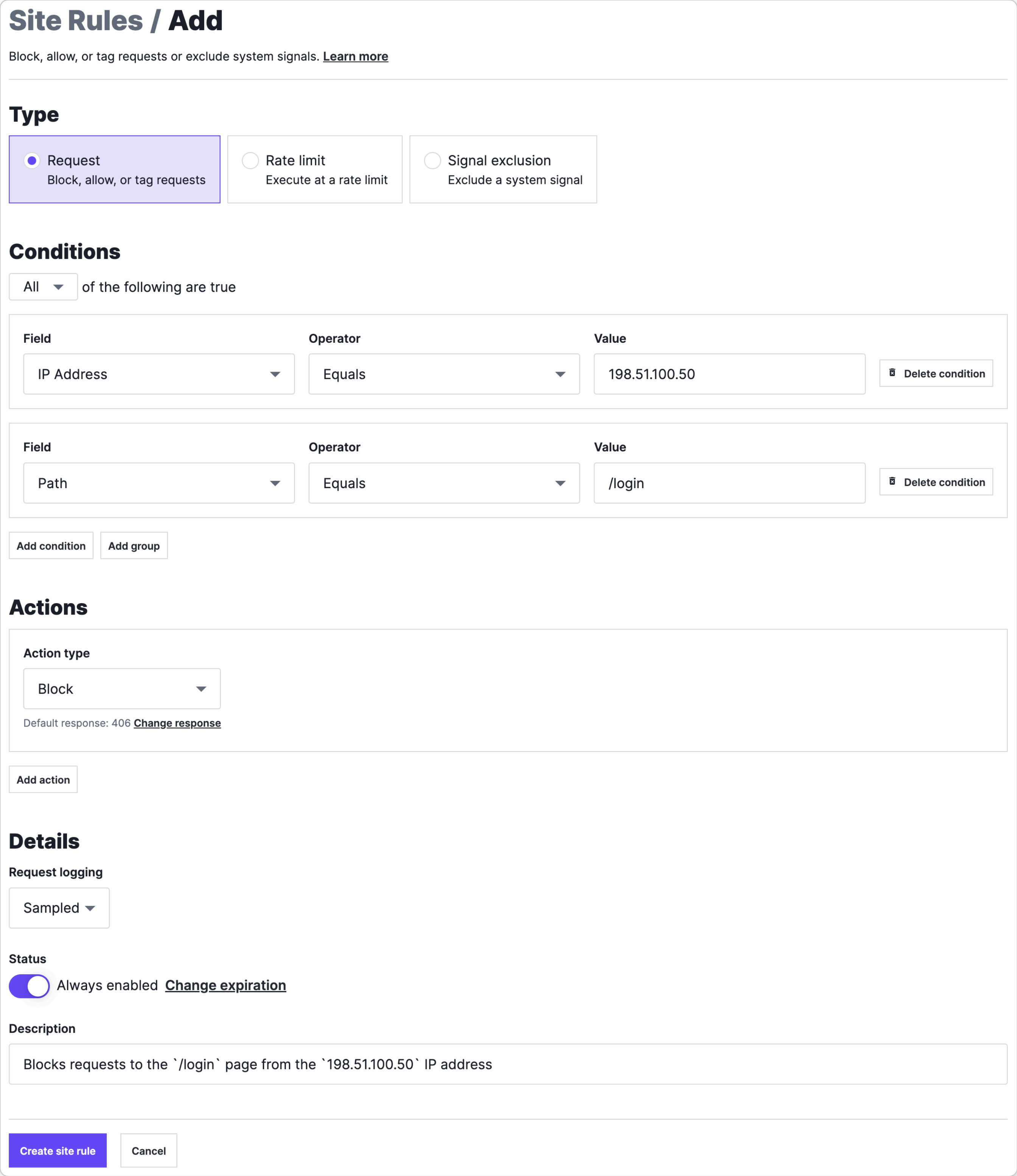
Limitations and considerations

Request rules are limited to 1000 per corp (also known as account) plus 1000 per site (also known as workspace).

Creating request rules

To create a request rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click **Add site rule**.



Site Rules / Add

Block, allow, or tag requests or exclude system signals. Learn more

Type

● Request — Block, allow, or tag requests
○ Rate limit — Execute at a rate limit
○ Signal exclusion — Exclude a system signal

Conditions

All of the following are true

Field	Operator	Value
IP Address	Equals	198.51.100.50
Path	Equals	/login

Actions

Action type: Block

Default response: 406 Change response

Details

Request logging: Sampled

Status: Always enabled Change expiration

Description: Blocks requests to the `/login` page from the `198.51.100.50` IP address

4. In the **Type** section, select **Request**.

5. Fill out the fields in the **Conditions** section as follows:

   - From the **Field** menu, select the request field that the condition is based on.
   - In the **Value** field, enter a value for the specified field.
   - From the **Operator** menu, select an operator to specify how the selected field and value relate.
   - *(Optional)* Click **Add condition** to add another condition or **Add group** to create a group of conditions.

- Select **All** to specify that a request must meet every condition or **Any** to specify that a request must meet only one condition.

6. Fill out the fields in the **Actions** section as follows:

    - From the **Action type** menu, select the action that should be taken when a request meets the rule's conditions. Action types include `Block`, `Allow`, `Add signal`, `Browser challenge`, and `Verify token`. Check out our guide to using client challenges for additional details on browser challenges and token verification.
    - *(Optional)* If you selected `Browser challenge` from the **Action type** menu, leave the **Allow Interactive** switch disabled to keep the challenge non-interactive or click the switch to require an interactive (CAPTCHA) challenge.
    - *(Optional)* Click **Change response** to specify the custom response code to return when the rule blocks a request. Supported custom response codes are `301`, `302`, and `400-599`.
    - *(Optional)* If you entered `301` or `302` in the **Response code (optional)** field then, in the **Redirect URL (optional)** field, enter the absolute or relative URL of the redirect location. For more information, check out our guide on using redirect custom response codes.
    - *(Optional)* Click **Add action** to add another action.

7. Fill out the fields in the **Details** section as follows:

    - From the **Request logging** menu, select **Sampled** to store the logs for requests that match the rule's criteria and **None** to not store the logs. When you select **None**, the time series graphs will still include data from requests that match the rule's criteria. Read our guide on request data storage for more information.
    - Leave the **Status** switch enabled.
    - Click **Change expiration** and select from the menu when the rule should be disabled.
    - In the **Description** field, enter a description of the rule.

8. Click **Create site rule**. The request rule is created and the Site Rules page appears.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Rules**.
3. From the workspaces bar, click the menu ⌄ to the right of the workspace name and select a workspace.
4. Click **Add workspace rule**.
5. Under **Type**, leave **Request** selected.
6. Fill out the fields in the **Conditions** section as follows:
    - From the **Field** menu, select the request field that the condition is based on.
    - In the **Value** field, enter a value for the specified field.
    - From the **Operator** menu, select an operator to specify how the selected field and value relate.
    - *(Optional)* Click **Add condition** to add another condition or **Add group** to create a group of conditions.
    - Leave **All** selected to specify that a request must meet every condition or select **Any** to specify that a request must meet only one condition.
7. Under **Actions**, select the action the rule should take when a request meets the rule conditions (e.g., **Block** or **Allow**).
8. Fill out the fields in the **Details** section as follows:
    - In the **Description** field, enter a description for the rule.
    - *(Optional)* Click the **Status** switch to disable the rule.
9. Click **Add Workspace Rule**.

	Working with signal exclusion rules
	Last updated: 2024-08-28
	/en/ngwaf/working-with-signal-exclusion-rules

A signal exclusion rule prevents requests with a particular pattern from being tagged with a specific system signal. You can use signal exclusion rules to help avoid false positives. For example, you may want to prevent requests that are from internal IP addresses and that failed to access an admin page from being tagged with the `FORCEFULBROWSING` signal.

Limitations and considerations

When working with signal exclusion rules, keep the following in mind:

- Signal exclusion rules are limited to 1000 at the corp-level (also known as account-level) plus 1000 at the site-level (also known as workspace-level) and count against the total number of request rule limits for corps (accounts) and sites (workspaces).
- The Essentials platform does not include corp-level (account-level) signal exclusion rules.

Working with corp-level (account-level) signal exclusion rules

Corp-level (account-level) signal exclusion rules apply to one or more sites (workspaces) within your corp (account). You can manage your corp-level (account-level) rules from the Corp Rules page.

Viewing corp-level (account-level) signal exclusion rules

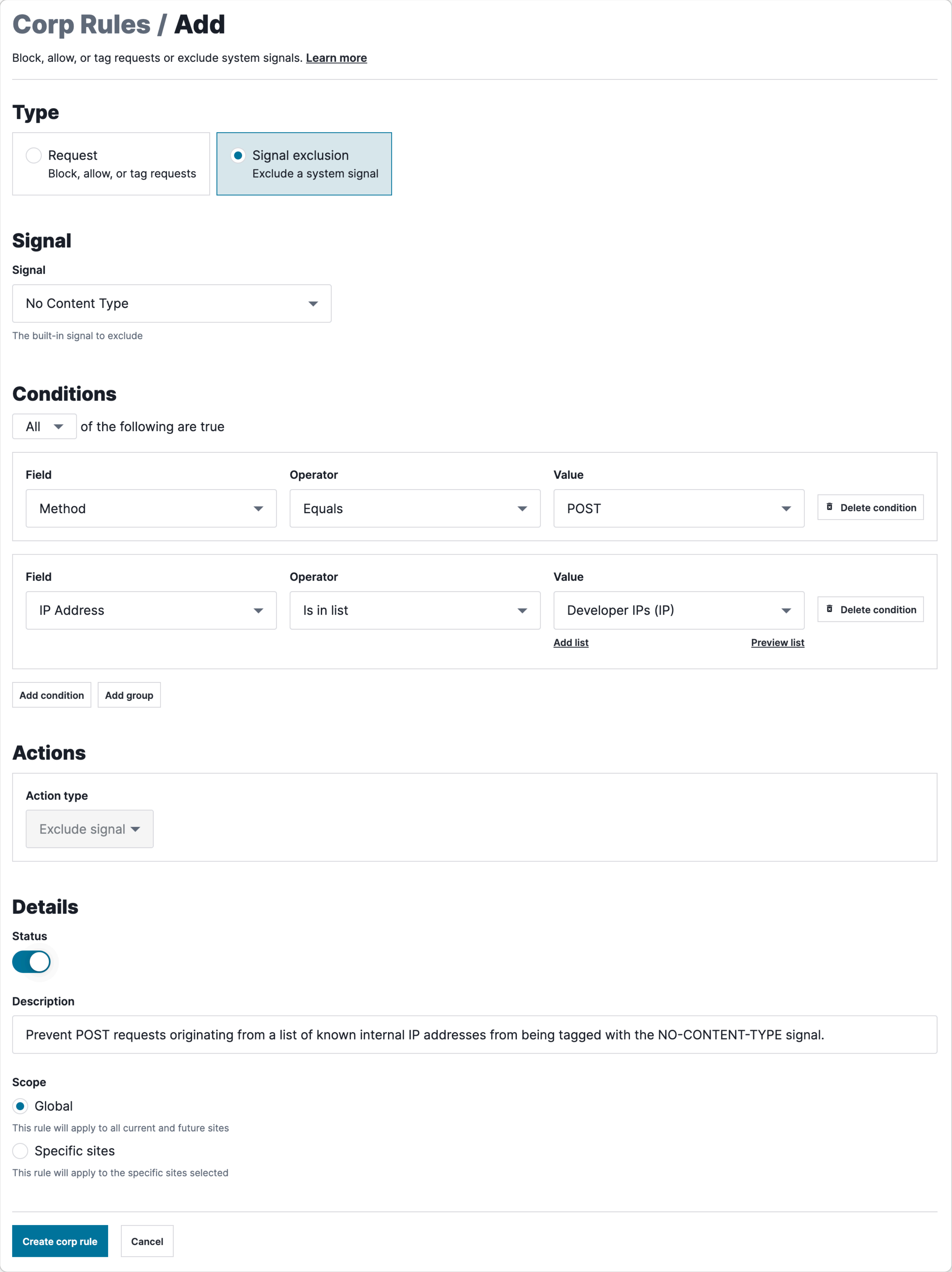
To view a corp-level (account-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Rules** menu, select **Corp Rules**.
3. Click **Edit** to the right of the rule that you want to view. The View page appears.

Creating corp-level (account-level) signal exclusion rules

To create a corp-level (account-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Rules** menu, select **Corp Rules**.
3. Click **Add corp rule**.



Corp Rules / Add

Block, allow, or tag requests or exclude system signals. Learn more

Type

○ Request
Block, allow, or tag requests

● Signal exclusion
Exclude a system signal

Signal

Signal: No Content Type

The built-in signal to exclude

Conditions

All of the following are true

Field	Operator	Value
Method	Equals	POST
IP Address	Is in list	Developer IPs (IP)

Actions

Action type: Exclude signal

Details

Status: on

Description: Prevent POST requests originating from a list of known internal IP addresses from being tagged with the NO-CONTENT-TYPE signal.

Scope

● Global
This rule will apply to all current and future sites

○ Specific sites
This rule will apply to the specific sites selected

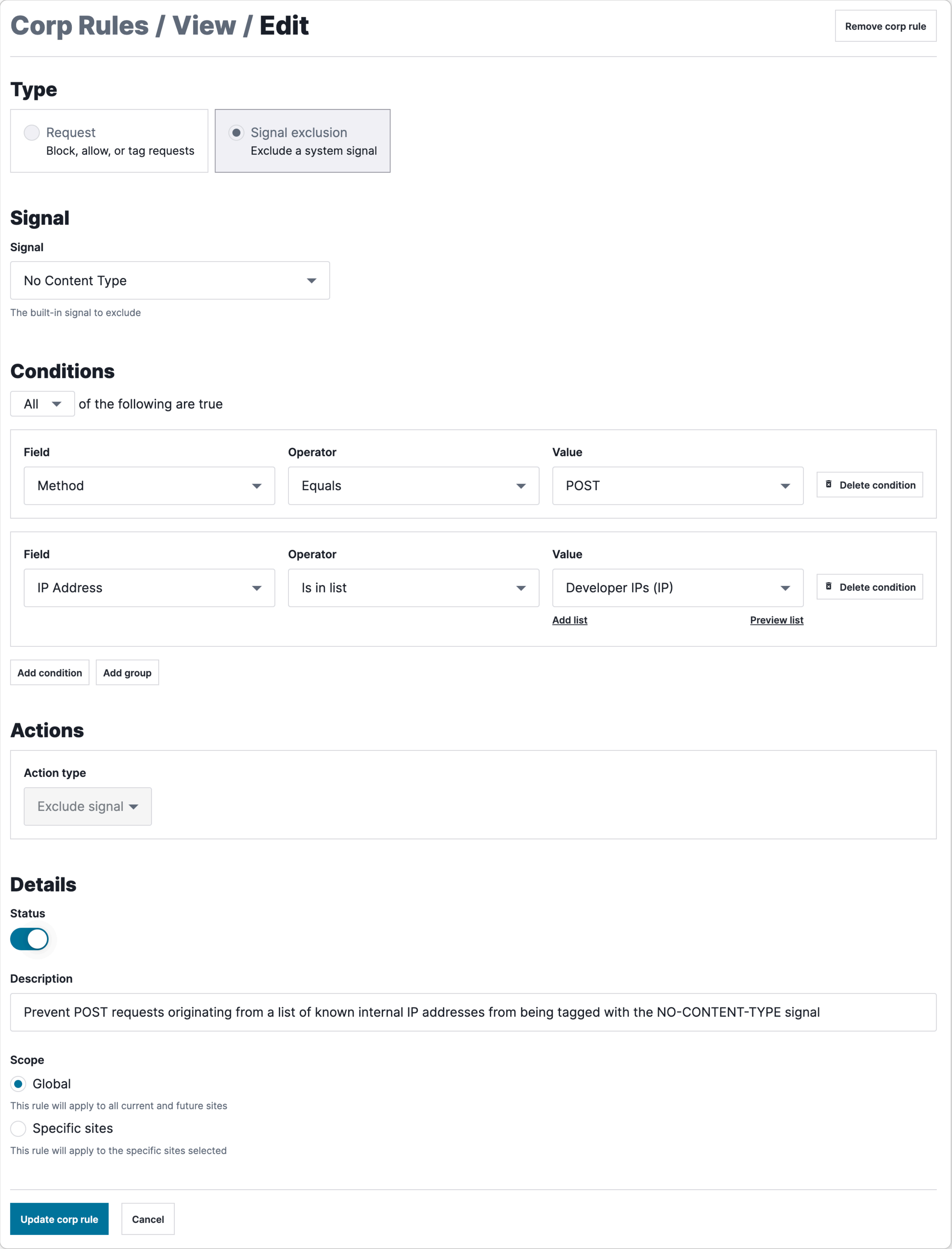
4. In the Type section, select **Signal exclusion**.

5. From the Signal menu, select the signal that you want to prevent from being assigned to requests that meet specific conditions.
6. Fill out the fields in the Conditions section as follows:
    - From the **Field** menu, select the request field that the condition is based on.
    - In the **Value** field, enter a value for the specified field.
    - From the **Operator** menu, select an operator to specify how the selected field and value relate.
    - *(Optional)* Click **Add condition** to add another condition, or click **Add group** to create a group of conditions.
    - Select **All** to specify that a request must meet every condition to be excluded or **Any** to specify that a request must meet only one condition to be excluded.
7. Fill out the fields in the **Details** section as follows:
    - Leave the **Status** switch enabled.
    - In the **Description** field, enter a description of the rule.
    - From the **Scope** menu, leave **Global** selected for the rule to apply to all your sites. If you want the rule to apply to specific sites, select **Specific sites** and then select the sites the rule should apply to.
8. Click **Create corp rule**. The rule is created, and the Corp Rules page appears.

Editing corp-level (account-level) signal exclusion rules

To edit a corp-level (account-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Rules** menu, select **Corp Rules**.
3. Click **Edit** to the right of the rule that you want to delete.



Corp Rules / View / Edit

Type

○ Request
Block, allow, or tag requests

● Signal exclusion
Exclude a system signal

Signal

Signal: No Content Type

The built-in signal to exclude

Conditions

All of the following are true

Field	Operator	Value
Method	Equals	POST
IP Address	Is in list	Developer IPs (IP)

Actions

Action type: Exclude signal

Details

Status: on

Description: Prevent POST requests originating from a list of known internal IP addresses from being tagged with the NO-CONTENT-TYPE signal

Scope

● Global
This rule will apply to all current and future sites

○ Specific sites
This rule will apply to the specific sites selected

4. From the Signal menu, select the signal that you want to prevent from being assigned to requests that meet specific conditions.

5. Fill out the fields in the Conditions section as follows:

  - From the **Field** menu, select the request field that the condition is based on.
  - In the **Value** field, enter a value for the specified field.
  - From the **Operator** menu, select an operator to specify how the selected field and value relate.
  - *(Optional)* Click **Add condition** to add another condition, or click **Add group** to create a group of conditions.
  - Select **All** to specify that a request must meet every condition to be excluded or **Any** to specify that a request must meet only one condition to be excluded.
6. Fill out the fields in the **Details** section as follows:
  - Leave the **Status** switch enabled.
  - In the **Description** field, enter a description of the rule.
  - From the **Scope** menu, leave **Global** selected for the rule to apply to all your sites. If you want the rule to apply to specific sites, select **Specific sites** and then select the sites the rule should apply to.
7. Click **Update corp rule**. The rule is updated, and the Corp Rules page appears.

Deleting corp-level (account-level) signal exclusion rules

To delete a corp-level (account-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Rules** menu, select **Corp Rules**.
3. Click **Edit** to the right of the rule that you want to delete.
4. Click **Remove corp rule** and then **Delete corp rule**. The rule is deleted, and the Corp Rules page appears.

Working with site-level (workspace-level) signal exclusion rules

Site-level (workspace-level) signal exclusion rules apply to only one site (workspace). You can manage your site-level (workspace-level) rules from the Site Rules page.

Viewing site-level (workspace-level) signal exclusion rules

To view a site-level (workspace-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Site Rules**.
4. Click **Edit** to the right of the rule that you want to view. The View page appears.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Rules**.
3. From the workspaces bar, click the menu ⌄ to the right of the workspace name and select a workspace.
4. Click the **Description** of the rule that you want to view. The Rule detail page appears.

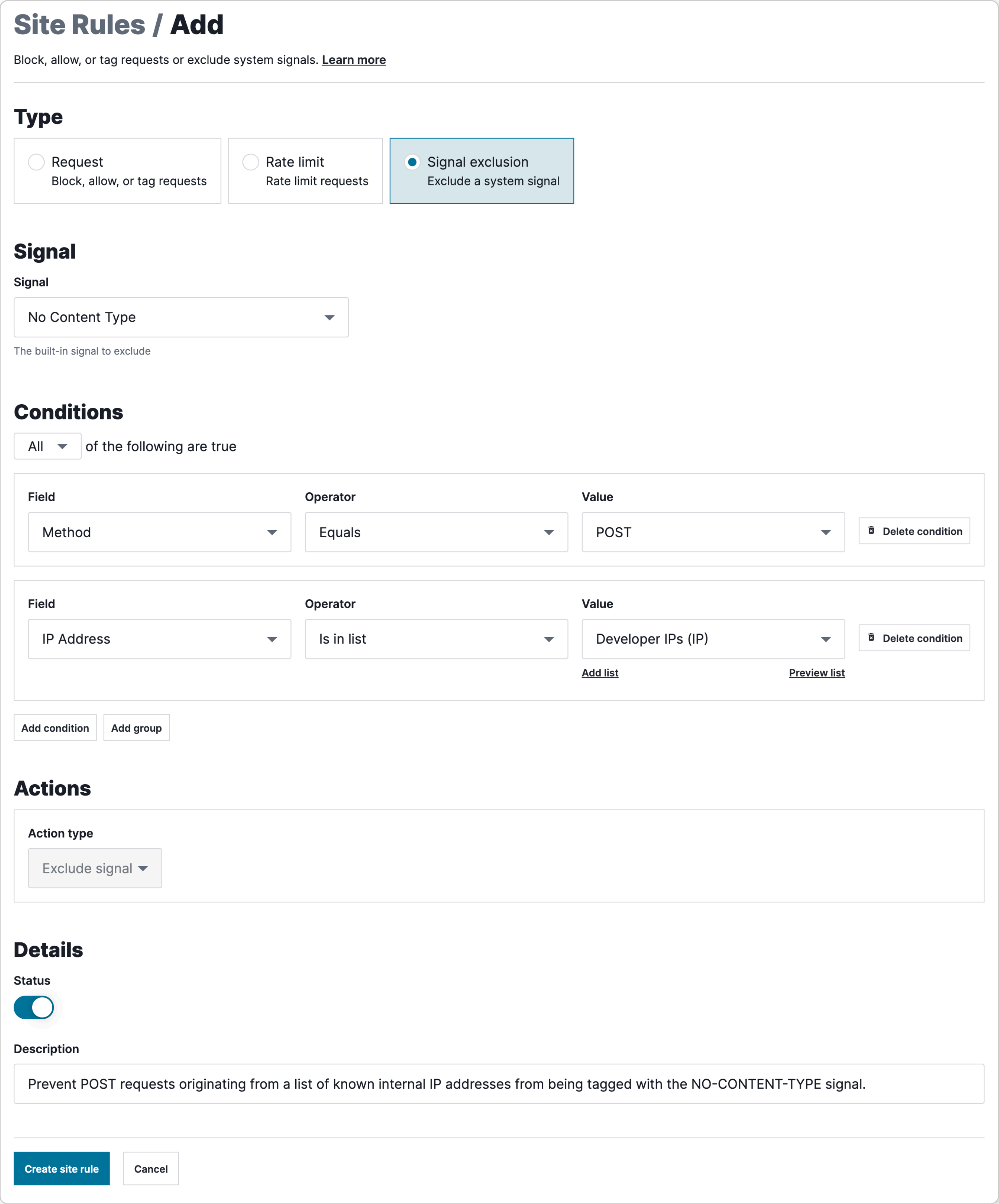
Creating site-level (workspace-level) signal exclusion rules

To create a site-level (workspace-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.

3. From the **Rules** menu, select **Site Rules**.

4. Click **Add site rule**.



Site Rules / Add

Block, allow, or tag requests or exclude system signals. Learn more

Type

○ Request — Block, allow, or tag requests
○ Rate limit — Rate limit requests
● Signal exclusion — Exclude a system signal

Signal

Signal: No Content Type
The built-in signal to exclude

Conditions

All of the following are true

Field	Operator	Value	
Method	Equals	POST	Delete condition
IP Address	Is in list	Developer IPs (IP) Add list Preview list	Delete condition

Actions

Action type: Exclude signal

Details

Status: on

Description: Prevent POST requests originating from a list of known internal IP addresses from being tagged with the NO-CONTENT-TYPE signal.

5. In the **Type** section, select **Signal exclusion**.

6. From the **Signal menu**, select the signal that you want to prevent from being assigned to requests that meet specific conditions.

7. Fill out the fields in the **Conditions** section as follows:

   - From the **Field** menu, select the request field that the condition is based on.
   - In the **Value** field, enter a value for the specified field.
   - From the **Operator** menu, select an operator to specify how the selected field and value relate.
   - *(Optional)* Click **Add condition** to add another condition, or click **Add group** to create a group of conditions.
   - Leave **All** selected to specify that a request must meet every condition to be excluded or select **Any** to specify that a request must meet only one condition to be excluded.

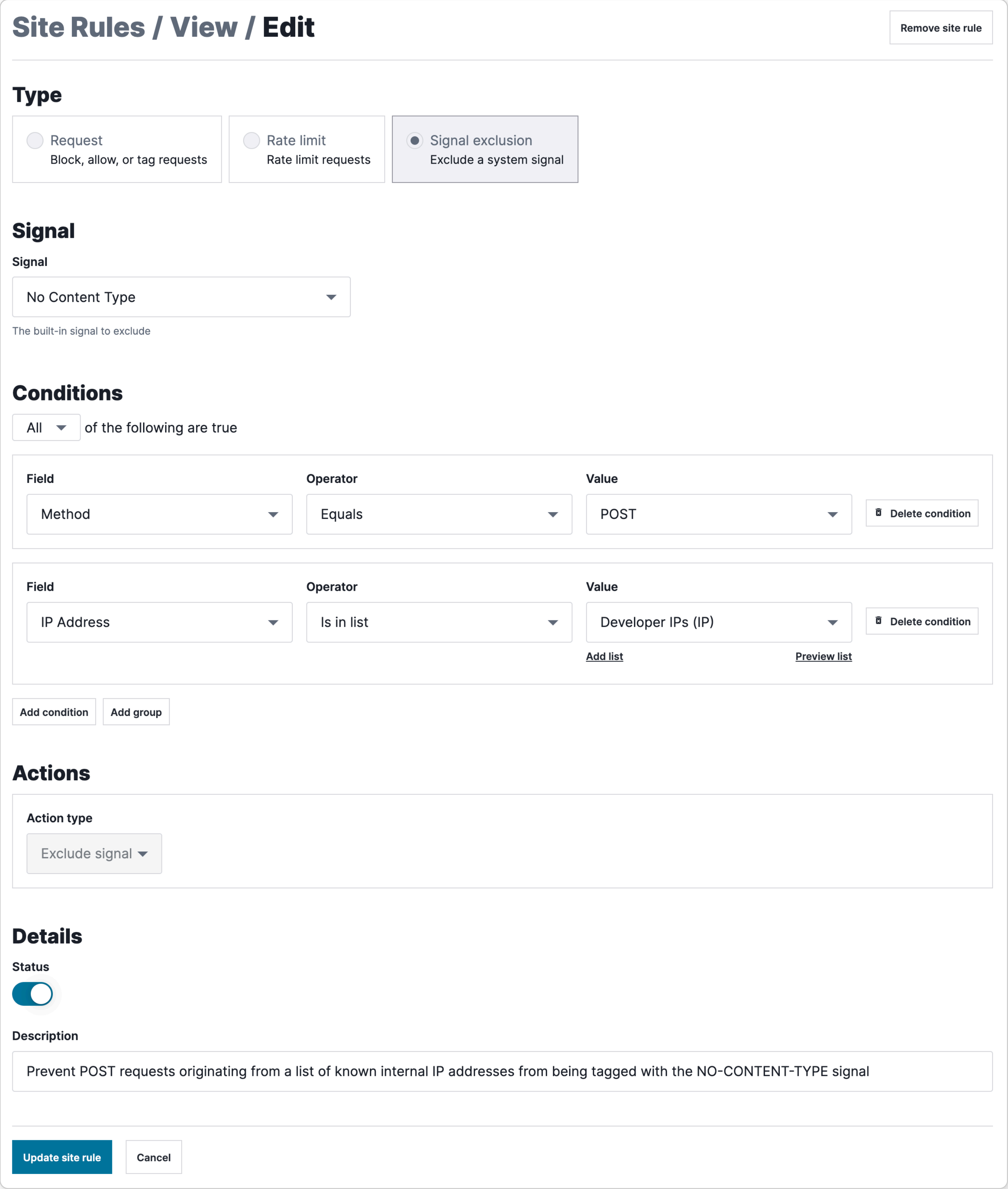
8. Fill out the fields in the **Details** section as follows:
   - Leave the **Status** switch enabled.
   - In the **Description** field, enter a description of the rule.
9. Click **Create site rule**. The rule is created, and the Site Rules page appears.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Rules**.
3. From the workspaces bar, click the menu ⌄ to the right of the workspace name and select a workspace.
4. Click **Add workspace rule**.
5. In the **Type** section, select **Signal exclusion**.
6. From the **Signal** menu, select the signal that you want to prevent from being assigned to requests that meet specific conditions.
7. Fill out the fields in the **Conditions** section as follows:
   - From the **Field** menu, select the request field that the condition is based on.
   - In the **Value** field, enter a value for the specified field.
   - From the **Operator** menu, select an operator to specify how the selected field and value relate.
   - *(Optional)* Click **Add condition** to add another condition, or click **Add group** to create a group of conditions.
   - Leave **All** selected to specify that a request must meet every condition to be excluded or select **Any** to specify that a request must meet only one condition to be excluded.
8. In the **Action** section, leave **Exclude signal** selected for the **Type** menu.
9. Fill out the fields in the **Details** section as follows:
   - In the **Description** field, enter a description of the rule.
   - Leave the **Status** switch enabled.
10. Click **Add workspace rule**. The rule is created, and the Rules page appears.

Editing site-level (workspace-level) signal exclusion rules

To edit a site-level (workspace-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Site Rules**.
4. Click **Edit** to the right of the rule that you want to modify.



Site Rules / View / Edit

Remove site rule

Type

○ Request
Block, allow, or tag requests

○ Rate limit
Rate limit requests

● Signal exclusion
Exclude a system signal

Signal

Signal: No Content Type

The built-in signal to exclude

Conditions

All of the following are true

Field	Operator	Value	
Method	Equals	POST	Delete condition
IP Address	Is in list	Developer IPs (IP) Add list Preview list	Delete condition

Add condition Add group

Actions

Action type: Exclude signal

Details

Status: on

Description: Prevent POST requests originating from a list of known internal IP addresses from being tagged with the NO-CONTENT-TYPE signal

Update site rule Cancel

5. From the **Signal** menu, select the signal that you want to prevent from being assigned to requests that meet specific conditions.

6. Fill out the fields in the **Conditions** section as follows:

   - From the **Field** menu, select the request field that the condition is based on.
   - In the **Value** field, enter a value for the specified field.
   - From the **Operator** menu, select an operator to specify how the selected field and value relate.

   - *(Optional)* Click **Add condition** to add another condition, or click **Add group** to create a group of conditions.
   - Select **All** to specify that a request must meet every condition to be excluded or **Any** to specify that a request must meet only one condition to be excluded.

7. Fill out the fields in the **Details** section as follows:
   - Leave the **Status** switch enabled.
   - In the **Description** field, enter a description of the rule.
8. Click **Update site rule**. The rule is updated, and the Site Rules page appears.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Rules**.
3. From the workspaces bar, click the menu ⌄ to the right of the workspace name and select a workspace.
4. Click the pencil ✎ to the right of the rule that you want to modify.
5. From the **Signal** menu, select the signal that you want to prevent from being assigned to requests that meet specific conditions.
6. Fill out the fields in the **Conditions** section as follows:
   - From the **Field** menu, select the request field that the condition is based on.
   - In the **Value** field, enter a value for the specified field.
   - From the **Operator** menu, select an operator to specify how the selected field and value relate.
   - *(Optional)* Click **Add condition** to add another condition, or click **Add group** to create a group of conditions.
   - Select **All** to specify that a request must meet every condition to be excluded or **Any** to specify that a request must meet only one condition to be excluded.
7. Fill out the fields in the **Details** section as follows:
   - In the **Description** field, enter a description of the rule.
   - Leave the **Status** switch enabled.
8. Click **Update workspace rule**. The rule is updated, and the Rules page appears.

Deleting site-level (workspace-level) signal exclusion rules

To delete a site-level (workspace-level) signal exclusion rule, follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Site Rules**.
4. Click **Edit** to the right of the rule that you want to delete.
5. Click **Remove site rule** and then **Delete site rule**. The rule is deleted, and the Site Rules page appears.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Rules**.
3. From the workspaces bar, click the menu ⌄ to the right of the workspace name and select a workspace.
4. Click the trash 🗑 to the right of the rule that you want to delete.
5. Click **Remove workspace rule** and then **Delete workspace rule**. The rule is deleted, and the Rules page appears.

Working with templated rules

Last updated: 2024-04-02

/en/ngwaf/working-with-templated-rules

IMPORTANT

This guide only applies to the Premier and Professional platforms. If you are on the Essentials platform, check out our Working with signals on the Essentials platform guide.

Templated rules are partially pre-constructed rules that can help you protect against Common Vulnerabilities and Exposures (CVE) and gain visibility into registrations, logins, and API requests. For example, you can enable the GraphQL API Query templated rule to track GraphQL API requests.

Types of templated rules

There are three types of templated rules.

Virtual patching rules

Virtual patching rules block or log requests matching specific vulnerabilities. These can be configured to send an alert after a threshold of matching requests. New virtual patching rules are announced through an optional email subscription. You can subscribe to virtual patching announcements in your account settings.

API protection rules

API protection rules tag requests made to your API, allowing you to detect patterns such as repeated API requests from an unexpected user agent. API Protection signals are informational, so only certain requests tagged with these signals will appear in the requests page of the control panel. See Storage categories for additional details.

NOTE

To use the GraphQL API Query templated rule, your agents must be on version 4.33.0 or above.

ATO protection rules

ATO protection rules enable you to quickly create rules to identify account takeover (ATO) attacks, such as failed password reset attempts. With the exception of the Login and Registration groups of signals, ATO Protection signals are informational, so only certain requests tagged with these signals will appear in the requests page of the control panel. See Storage categories for additional details.

Enabling and editing templated rules

To enable and edit templated rules, complete the following steps:

IMPORTANT

The Templated Rules page is only included with the Premier and Professional platforms. It is not included as part of the Essential platform.

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Site Rules** menu, select **Templated Rules**.

4. Click **View** to the right of the rule you want to enable or edit.
5. Click **Configure** in the upper-right corner to enable or edit the rule.
6. In the condition-related fields, enter values specific to your application, such as paths, response codes, and headers. It is possible to add, edit, and remove conditions in the rule as necessary for your application.
7. *(Optional)* If the **Configure thresholds and actions** section is available, select the action that should be taken (e.g., block or log).

   When configuring failure-based rules (e.g., `Login Failure`), you can also optionally define the:

   - threshold, the parameters that define how often an individual client can send requests that meet the rule's conditions before action is taken.
   - duration, the amount of time the action will occur.
   - notifications, whether notification should be sent via your site (also known as workspace) integrations.
8. Click **Update Rule** or **Update Site Rule**.

Subcategory: Signals

These articles describe how to work with signals.

About signals

Last updated: 2023-08-25

/en/ngwaf/about-signals

Signals are labels that describe requests. Requests are tagged with signals based on the logic of your active rules. Per our data storage policy, the type of signals that requests are tagged with help determine which individual request data is stored and available in the web interface. Using our control panels, you can find and search for requests that have been tagged with a specific signal.

Limitations and considerations

When working with signals, keep the following things in mind:

- The Essentials platform does not support custom signals.
- Depending on the platform you have purchased, you can monitor signals for a site (also known as workspace) via our control panels.

Platform	Next-Gen WAF control panel	Fastly control panel
Essentials	Signals page	Signals page
Professional	Signals Dashboard page	Not included
Premier	Signals Dashboard page	Not included

How signals work

When requests are made to your web application, the Next-Gen WAF agent uses your active rules to identify which requests need to be tagged with a signal and then tags them with the appropriate signal. The system then counts the number of requests that get tagged with a particular signal during one minute periods and makes this data available via time series graphs.

Signal type (e.g., attack, anomaly, informational, custom) determines what individual request data is stored and available in the control panel. For example, we store data from all requests that are tagged with the `SQLI` system signal because `SQLI` is an attack signal. We don't store individual request data for requests that haven't been tagged with a signal.

Types of signals

There are two main types of signals:

- **Custom:** signals that you create to track request behavior that is particular to your web applications. You can create custom signals at the corp (also known as account) or site (workspace) level.
- **System:** signals that we create to track common attacks, anomalies, and behaviors (e.g., requests to your API and account login and registration activity).

Filtering requests by signal

On the Requests page in the Next-Gen WAF control panel and the Requests page in the Fastly control panel, you can use the `tag` field to filter requests by a specific signal.

Signal type	Description
System signal	The search syntax is `tag: <system-signal>`. Be sure to replace `<system-signal>` with the name of the system signal that you want to search for.
Corp (account) custom signal	The search syntax is `tag: corp.<corp-custom-signal>`. Be sure to replace `<corp-custom-signal>` with the name of the corp (account) custom signal that you want to search for. The Corp Signals page lists the custom signals that were created at the corp (account) level.
Site (workspace) custom signal	The search syntax is `tag: site.<site-custom-signal>`. Be sure to replace `<site-custom-signal>` with the name of the site (workspace) custom signal that you want to search for. The Site Signals page lists the custom signals that were created at the site (workspace) level.

📄	**Working with custom signals**
📅	Last updated: 2024-08-28
🔗	/en/ngwaf/working-with-custom-signals

Working with custom signals

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Custom signals can be created to increase visibility into rules. Normally, requests that are immediately blocked or allowed by rules will not be visible in the control panel. To add visibility to immediately blocked or allowed requests, configure the rule to add a custom signal to the requests. A representative sample of requests that have been tagged with a custom signal will be listed in the Requests page of the control panel and can be found by searching for the custom signal.

Limitations and considerations

When working with signals, keep the following things in mind:

- The Essentials platform does not support custom signals.
- Only owners (superusers) can create, edit, and delete corp-level (account-level) signals.
- Signals are limited to 200 per corp (account) plus 200 per site (workspace).

Viewing and Editing Signals

Corp Signals can be managed by going to **Corp Rules** > **Corp Signals**, while Site Signals can be managed by navigating to a specific site (workspace) and going to **Rules** > **Site Signals**. Any signals you have created will be listed on these pages. Edit or remove any of the signals by clicking **Details** to the right of the signal.

Creating Signals

You can create custom signals at the corp-level (account-level) and site-level (workspace-level).

Corp Signals

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Rules** menu, select **Corp Signals**.
3. Click **Add corp signal**.
4. In the **Signal name** field, enter the name of the custom signal.
5. *(Optional)* In the **Description (optional)** field, enter a description for the custom signal.
6. Click **Create corp signal**.

> NOTE
> Only owners (superusers) can create, edit, and delete Corp Signals.

Site Signals

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Site Rules** menu, select **Site Signals**.
4. Click **Add site signal**.
5. In the **Signal name** field, enter the name of the custom signal.
6. *(Optional)* In the **Description (optional)** field, enter a description for the custom signal.
7. Click **Create site signal**.

Using Signals

When creating a rule, the **Add signal** action can be used to tag requests processed by the rule with a custom signal. Select the appropriate signal or create a new signal by selecting **Create new signal** from the menu.

Working with signals on the Essentials platform

Last updated: 2024-08-28

/en/ngwaf/working-with-signals-on-the-essentials-platform

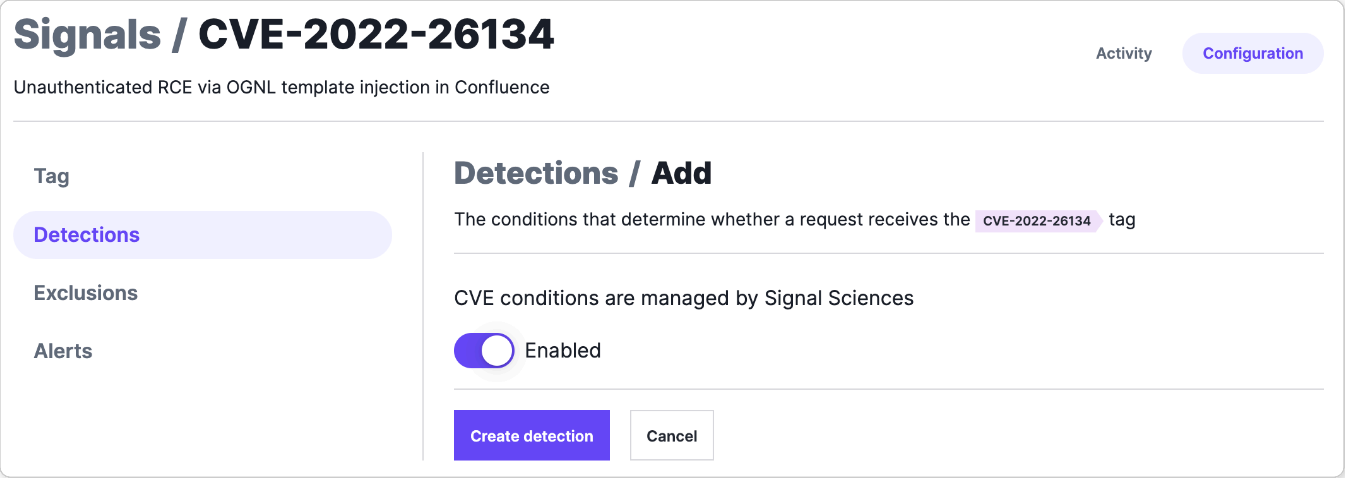
> IMPORTANT
> This guide only applies to Next-Gen WAF customers on the Essential platform. If you are on the Premier or Professional platform, check out our Working with templated rules and Configuring custom site alerts guides.

To help protect your web application against Common Vulnerabilities and Exposures (CVE) and other attacks and anomalies, you can enable and adjust the partially pre-constructed configurations that are associated with system signals.

Enabling CVE virtual patch signals

To enable a CVE virtual patch signal, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click the **Signals** tab.
4. On the **Signals** page, click **View** in the row of the CVE signal that you want to enable.
5. Click the **Configuration** tab.
6. Click the **Detections** tab and then **Add detection**.



Signals / CVE-2022-26134

Unauthenticated RCE via OGNL template injection in Confluence

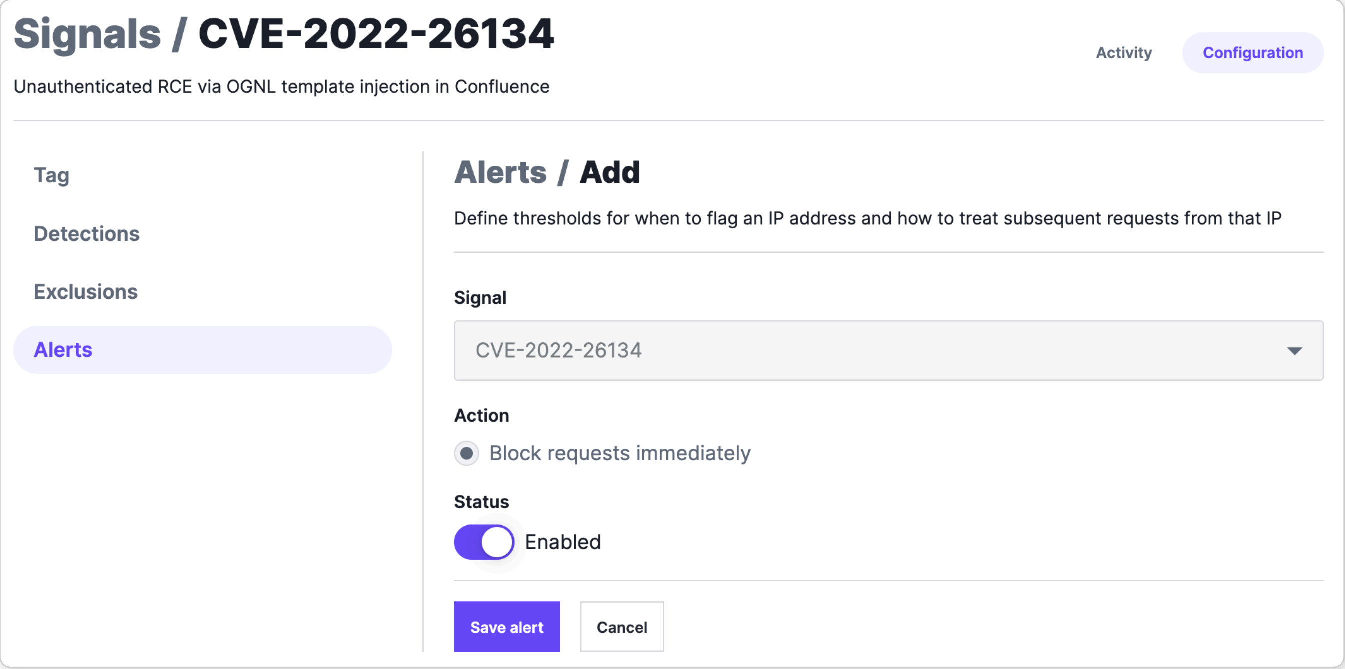
Detections / Add

The conditions that determine whether a request receives the CVE-2022-26134 tag

CVE conditions are managed by Signal Sciences

Enabled

7. Verify the switch is set to **Enabled**.
8. Click **Create detection**.
9. Click the **Alerts** tab and then **Add alert**.



Signals / CVE-2022-26134

Unauthenticated RCE via OGNL template injection in Confluence

Alerts / Add

Define thresholds for when to flag an IP address and how to treat subsequent requests from that IP

Signal: CVE-2022-26134

Action: ● Block requests immediately

Status: Enabled

10. In the **Status** area, set the switch to **Enabled**.
11. Click **Save alert**. The signal is enabled and requests that match the signal are assigned the tag associated with the rule.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear ⚙ next to the workspace that you want to modify.
4. Click **Virtual Patches**.
5. Use the search bar to search for the virtual patch you want to apply, and then click the pencil to the right of the patch.
6. From the **Status** menu, select **Enabled**.
7. *(Optional)* If your workspace is in blocking mode, choose whether to **Block requests** or **Log requests** if the signal is observed.
8. Click **Update virtual patch**.

Configuring attack and anomaly signals

IMPORTANT

This section only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

With attack and anomaly signals, you can:

- add exclusions to prevent requests with a particular pattern from being tagged with the signal.
- add alerts that define how to monitor and handle requests from IP addresses that contain the signal.

Adding exclusions

Exclusions prevent requests with a particular pattern from being tagged with the signal. You can use exclusions to help avoid false positives. For example, you may want to prevent requests that are from internal IP addresses and that failed to access an admin page from being tagged with the `FORCEFULBROWSING` signal.

To add an exclusion to an attack or anomaly signal, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click the **Signals** tab.
4. On the **Signals** page, click **View** in the row of the CVE signal that you want to enable.
5. Click the **Configuration** tab.
6. Click the **Exclusions** tab and then **Add exclusion**.
7. Fill out the fields in the **Conditions** section as follows:
   - From the **Field** menu, select the request field that the condition is based on.
   - In the **Value** field, enter a value for the specified field.
   - From the **Operator** menu, select an operator to specify how the selected field and value relate.
   - *(Optional)* Click **Add condition** to add another condition, or click **Add group** to create a group of conditions.
   - Select **All** to specify that a request must meet every condition to be excluded or **Any** to specify that a request must meet only one condition to be excluded.
8. Fill out the fields in the **Details** section as follows:

   - Leave the **Status** switch enabled.
   - In the **Description** field, enter a description of the exclusion.

9. Click **Create exclusion**.

Adding alerts

Alerts define how to monitor and handle requests from IP addresses that contain the associated signal. Specifically, they outline:

- the criteria that must be met for an IP address to be flagged. For example, flag an IP address when there are 25 SQL Injection attack signals in 1 minute.
- how to handle requests from IP addresses that are flagged. You can either log subsequent requests or block subsequent requests containing attack signals from the IP address.
- how long to block or log subsequent requests from flagged IP addresses.

> ✓ TIP
>
> You can use alerts to override the system site alerts (also known as system workspace alerts) for an individual signal.

To add an alert to an attack or anomaly signal, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. Click the **Signals** tab.
4. On the **Signals** page, click **View** in the row of the CVE signal that you want to enable.
5. Click the **Configuration** tab.
6. Click the **Alerts** tab and then **Add alert**.
7. Fill out the alert fields as follows:
   - In the **Long name** field, enter a descriptive name for the alert (e.g., `Increase in failed logins`).
   - In the **Threshold** field, enter how many requests containing the signal should be detected before the IP address is flagged.
   - From the **Interval** menu, select the number of minutes during which signals from the IP address are counted to determine if the threshold has been met.
   - Under **When an IP hits the threshold**, select whether the alert should log subsequent requests or block subsequent requests containing attack signals from the IP address.
   - Under **Take action for**, select how long the IP address should be flagged. By default, IP addresses are flagged for 24 hours. You can set a custom duration by selecting **Custom duration** and choosing a duration.
   - Leave the **Notifications** checkbox selected to send an external notification (e.g., email and Slack) when the site alert is triggered. Deselect the checkbox to not send any external notifications.
   - Click the **Status** switch to enable the site alert.
8. Click **Save alert**.

Using system signals

Last updated: 2024-08-28

/en/ngwaf/using-system-signals

The following information provides you with details about the various system signals:

- **Long name:** the name of the signal that you can use to verbally reference or describe it.
- **Short name:** the name of the signal that is applied to matched requests and that can be used to search within the Next-Gen WAF web interface.
- **Usable in:** outlines where a signal can be used. The options are Lists, Rate Limit Rules, Request Rules, or Signal Exclusions. None indicates that the signal may be provided but cannot be used outside of its informational context.
- **Description:** an outline of what the signal means or what it indicates.

Attacks

Attack signals are labels that describe malicious requests that contain attack payloads designed to hack, destroy, disable, steal, gain unauthorized access, and otherwise take harmful actions.

Long name	Short name	Usable in	Description
Attack Tooling	`USERAGENT`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Attack Tooling is the use of automated software to identify security vulnerabilities or to attempt to exploit a discovered vulnerability.
AWS SSRF	`AWS-SSRF`	• Templated Rule	Server Side Request Forgery (SSRF) is a request which attempts to send requests made by the web application to target internal systems. AWS SSRF attacks use SSRF to obtain Amazon Web Services (AWS) keys and gain access to S3 buckets and their data.
Backdoor	`BACKDOOR`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	A backdoor signal is a request that attempts to determine if a common backdoor file exists on a system. The signal generally matches known backdoor filenames. Traditionally these filenames appear with PHP file extensions like `admin.php` and `r57.php`. However, when these paths return a 200 or a larger response than expected, it may indicate that a system has been compromised or is unknowingly hosting a backdoor file.
Command Execution	`CMDEXE`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Command Execution is the attempt to gain control or damage a target system through arbitrary operating system commands.
Cross Site Scripting	`XSS`	• Lists • Rate Limit Rules	Cross-Site Scripting is the attempt to hijack a person's account or web-browsing session through malicious JavaScript code.

Long name	Short name	Usable in	Description
		- Request Rules - Signal Exclusion	
Directory Traversal	`TRAVERSAL`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Directory Traversal is the attempt to navigate privileged folders throughout a system in hopes of obtaining sensitive information.
Log4J JNDI	`LOG4J-JNDI`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Log4J JNDI attacks attempt to exploit the Log4Shell vulnerability present in Log4J versions earlier than 2.16.0.
SQL Injection	`SQLI`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	SQL Injection is the attempt to gain access to an application or obtain privileged information by executing arbitrary database queries.

Anomalies

Anomaly signals are labels that describe abnormal requests. While not inherently malicious, abnormal requests may be indicative of unwanted or abusive traffic. Examples include malformed request data and requests originating from known scanners.

Long name	Short name	Usable in	Description
Abnormal Path	`ABNORMALPATH`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Abnormal Path indicates the original path differs from the normalized path (e.g., `/foo/./bar` is normalized to `/foo/bar`).

Long name	Short name	Usable in	Description
Bad Hop Headers	`BHH`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Bad Hop Headers indicate an HTTP smuggling attempt through either a malformed Transfer-Encoding (TE) or Content-Length (CL) header, or a well-formed TE and CL header.
Blocked Requests	`BLOCKED`	None	Requests blocked by the Next-Gen WAF
Code Injection PHP	`CODEINJECTION`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Code Injection is the attempt to gain control or damage a target system through arbitrary application code commands.
Compression Detected	`COMPRESSED`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	The POST request body is compressed and cannot be inspected. For example, if a `Content-Encoding: gzip` request header is specified and the POST body is not plain text.
Fastly Unknown Backend	`FASTLY-UNKNOWN-BACKEND`		Indicates a request to a backend that does not exist in your edge security service.
Forceful Browsing	`FORCEFULBROWSING`	- Signal Exclusion	Forceful Browsing is the failed attempt to access admin pages.
GraphQL API Query	`GRAPHQL-API`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a GraphQL API request.
GraphQL Duplicate Variables	`GRAPHQL-DUPLICATE-VARIABLES`	- Lists - Rate Limit Rules - Request Rules	Indicates a GraphQL request that contains duplicated variables.

Long name	Short name	Usable in	Description
		- Signal Exclusion	
GraphQL Max Depth	`GRAPHQL-DEPTH`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a request has reached or exceeded the maximum depth allowed on the server for GraphQL API queries.
GraphQL Missing Required Operation Name	`GRAPHQL-MISSING-REQUIRED-OPERATION-NAME`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a request has multiple GraphQL operations but does not define which operation to execute.
GraphQL Syntax	`GRAPHQL-SYNTAX`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a request that contains invalid GraphQL syntax. This may be related to a programming error or a malicious request.
GraphQL Undefined Variable	`GRAPHQL-UNDEFINED-VARIABLES`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a request made to a GraphQL API containing more variables than expected by a function. This can be used to obfuscate malicious requests.
HTTP 403 Errors	`HTTP403`	- Signal Exclusion	Forbidden. This is commonly seen when the request for a url has been protected by the server's configuration.
HTTP 404 Errors	`HTTP404`	- Signal Exclusion	Not Found. This is commonly seen when the request for a page or asset does not exist or cannot be found by the server.
HTTP 429 Errors	`HTTP429`	- Signal Exclusion	Too Many Requests. This is commonly seen when rate-limiting is used to slow down the number of active connections to a server.

Long name	Short name	Usable in	Description
HTTP 4XX Errors	`HTTP4XX`	- Signal Exclusion	4xx Status Codes commonly refer to client request errors.
HTTP 500 Errors	`HTTP500`	- Signal Exclusion	Internal Server Error. This is commonly seen when a request generates an unhandled application error.
HTTP 503 Errors	`HTTP503`	- Signal Exclusion	Service Unavailable. This is commonly seen when a web service is overloaded or sometimes taken down for maintenance.
HTTP 5XX Errors	`HTTP5XX`	- Signal Exclusion	5xx Status Codes commonly refer to server related issues.
HTTP Response Splitting	`RESPONSESPLIT`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Identifies when CRLF characters are submitted as input to the application to inject headers into the HTTP response.
Insecure Authentication/Authorization	`INSECURE-AUTH`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Insecure Authentication/Authorization, such as using JSON Web Tokens with the None Algorithm.
Invalid Encoding	`NOTUTF8`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Invalid Encoding can cause the server to translate malicious characters from a request into a response, causing either a denial of service or XSS.
Malformed Data in the request body	`MALFORMED-DATA`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	A POST, PUT or PATCH request body that is malformed according to the `Content-Type` request header. For example, if a `Content-Type: application/x-www-form-urlencoded` request header is specified and contains a POST body that is json. This is often a programming error, automated or malicious request.

Long name	Short name	Usable in	Description
Malicious IP Traffic	`SANS`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	The regularly imported SANS Internet Storm Center list of IP addresses that have been reported to have engaged in malicious activity.
SigSci Malicious IPs	`SIGSCI-IP`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Whenever an IP is flagged due to a malicious signal by our decision engine, that IP will be propagated to all customers. We then log subsequent requests from those IP addresses that contain any additional signal for the duration of the flag.
Missing `Content-Type` request header	`NO-CONTENT-TYPE`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	A POST, PUT or PATCH request that does not have a `Content-Type` request header. By default application servers should assume `Content-Type: text/plain; charset=us-ascii` in this case. Many automated and malicious requests may be missing `Content Type`.
No User Agent	`NOUA`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Indicates a request contained no `User-Agent` header or the header value was not set.
Null Byte	`NULLBYTE`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Null bytes do not normally appear in a request and indicate the request is malformed and potentially malicious.
Out-of-Band Domain	`OOB-DOMAIN`	• Lists • Rate Limit Rules	Out-of-Band domains are generally used during penetration testing to identify vulnerabilities in which network access is allowed.

Long name	Short name	Usable in	Description
		- Request Rules - Signal Exclusion	
Private Files	`PRIVATEFILE`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Private files are usually confidential in nature, such as an Apache .htaccess file, or a configuration file which could leak sensitive information.
Scanner	`SCANNER`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Identifies popular scanning services and tools
SearchBot Impostor	`IMPOSTOR`	- Templated Rule	Search bot impostor is someone pretending to be a Google or Bing search bot, but who is not legitimate.
Site Flagged IP	`SITE-FLAGGED-IP`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a request was received from an IP that was flagged for exceeding attack thresholds for a specific site (also known as workspace). This signal is only included with the Premier platform.

Bots

Bot signals are labels that describe suspected and verified bot requests.

Long name	Short name	Usable in	Description
Accessibility	`VERIFIED-BOT.ACCESSIBILITY`	- Lists - Rate Limit Rules - Request Rules	Tools that make content accessible (e.g., screen readers).

Long name	Short name	Usable in	Description
		- Signal Exclusion	
Challenge Token Invalid	`CHALLENGE-TOKEN-INVALID`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a request that did not include a valid bot challenge token.
Challenge Token Valid	`CHALLENGE-TOKEN-VALID`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Indicates a request that included a valid bot challenge token.
Challenged Request	`CHALLENGED`	None	Indicates a request that was issued a client challenge by the Next-Gen WAF.
Content Fetcher	`VERIFIED-BOT.CONTENT-FETCHER`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Tools that extract content from websites to be used elsewhere.
Monitoring & Site Tools	`VERIFIED-BOT.MONITORING-SITE-TOOLS`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Tools that access your website to monitor things like performance, uptime, and proving domain control.
Online Marketing	`VERIFIED-BOT.ONLINE-MARKETING`	- Lists - Rate Limit Rules - Request Rules - Signal Exclusion	Crawlers from online marketing platforms (e.g., Facebook, Pinterest).

Long name	Short name	Usable in	Description
Page Preview	`VERIFIED-BOT.PAGE-PREVIEW`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Tools that access your website to show a preview of the page, in other online services, and social media platforms.
Platform Integrations	`VERIFIED-BOT.PLATFORM-INTEGRATIONS`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Integration with other platforms by accessing the website's API, notably Webhooks.
Research	`VERIFIED-BOT.RESEARCH`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Commercial and academic tools that collect and analyze data for research purposes.
Search Engine Crawler	`VERIFIED-BOT.SEARCH-ENGINE-CRAWLER`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Crawlers that index your website for search engines.
Search Engine Optimization	`VERIFIED-BOT.SEARCH-ENGINE-OPTIMIZATION`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Tools that support search engine optimization tasks (e.g., link analysis, ranking).

Long name	Short name	Usable in	Description
Security Tools	`VERIFIED-BOT.SECURITY-TOOLS`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Security analysis tools that inspect your website for vulnerabilities, misconfigurations and other security features.
Suspected Bad Bot	`SUSPECTED-BAD-BOT`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Indicates a request that is suspected of being a bad bot.
Suspected Bot	`SUSPECTED-BOT`	• Rate Limit Rules • Request Rules • Signal Exclusion	Indicates a request that is suspected of being a bot.

Informational

Informational signals are labels that describe common request properties that aren't malicious or abnormal.

Long name	Short name	Usable in	Description
Allowed Requests	`ALLOWED`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Indicates a request that is allowed due to a rule with an allow action. Requests with this signal are never blocked.
Datacenter Traffic	`DATACENTER`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Datacenter Traffic is non-organic traffic originating from identified hosting providers. This type of traffic is not commonly associated with a real end user.

Long name	Short name	Usable in	Description
Double Encoding	`DOUBLEENCODING`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Double Encoding checks for the evasion technique of double encoding HTML characters.
Fail Open	`FAIL-OPEN`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Indicates a request was allowed because the WAF failed open.
GraphQL IDE	`GRAPHQL-IDE`	• Rate Limit Rules • Request Rules	Indicates a request originating from a GraphQL Interactive Development Environment (IDE).
GraphQL Introspection	`GRAPHQL-INTROSPECTION`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Indicates an attempt to obtain the schema of a GraphQL API. The schema can be used to identify which resources are available, informing subsequent attacks.
JSON Encoding Error	`JSON-ERROR`	• Signal Exclusion	A POST, PUT, or PATCH request body that is specified as containing JSON within the `Content-Type` request header but contains JSON parsing errors. This is often related to a programming error or an automated or malicious request.
Tor Traffic	`TORNODE`	• Lists • Rate Limit Rules • Request Rules • Signal Exclusion	Tor is software that anonymizes and conceals location, activity, and IP address information when browsing the internet. A spike in Tor traffic can indicate an attacker trying to mask their location.
Weak TLS	`WEAKTLS`	• Signal Exclusion	Weak TLS. A web server's configuration allows SSL/TLS connections to be established with an obsolete cipher suite or protocol version. This signal is based on inspecting a small percent of requests. Also,

Long name	Short name	Usable in	Description
			some architectures and Signal Sciences' language SDK modules do not support this signal.
XML Encoding Error	`XML-ERROR`	- Signal Exclusion	A POST, PUT, or PATCH request body that is specified as containing XML within the `Content-Type` request header but contains XML parsing errors. This is often related to a programming error or an automated or malicious request.

Subcategory: Sites (workspaces)

These articles describe how to work with sites (also known as workspaces).

About sites (workspaces)

Last updated: 2024-08-28

/en/ngwaf/about-sites

A site (also known as a workspace) is a single web application, bundle of web applications, API, or microservice that the Next-Gen WAF can protect from attacks. Sites (workspaces) contain various configurations that determine how Next-Gen WAF agents process incoming requests. These configurations enable request logging and blocking and define what type of requests should be allowed, logged, or blocked.

Every site (workspace) belongs to a corp (also known as a corporation or account). A corp (account) is a company hub for managing all sites (workspaces), account access permissions, and corp-level (account-level) configurations. Account access is authenticated against a corp (account) and members can be included from different sites (workspaces).

When defining the scope of your site (workspace), consider how you want to compartmentalize data, rules, and account access. For example, you may want to create sites (workspaces) based on an environment type (e.g., development, staging, and production) or region (e.g., APAC, EU, and US). Read our Managing sites guide for more information.

Monitoring your site (workspace)

You can monitor the traffic and performance of your site (workspace) via the web interface. For example, you may want to:

- view high-level site (workspace) metrics organized into multiple dashboards. You can access these dashboards from the Next-Gen WAF control panel or Fastly control panel.
- reference a list of individual requests that have been tagged with signals. You can access this list from the Next-Gen WAF control panel or Fastly control panel.
- track IP addresses that have been or will be flagged soon or review a historical record of all flagged IP addresses within the last 30 days. You can track IP addresses by accessing the Monitor menu in the Next-Gen WAF control panel or the Events page in the Fastly control panel.
- view a summary of the status and performance of the agent. Note that this feature is only available to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Managing sites (workspaces)

Last updated: 2024-08-28

/en/ngwaf/managing-sites

You can add, edit, and delete sites (also known as workspaces).

Adding sites (workspaces)

To add a site (workspace), follow these steps:

> NOTE
>
> By default, your corp (also known as account) has a limited number of sites (workspaces). If you need more, contact support for assistance.

1. Log in to the Next-Gen WAF control panel.
2. From the corp navigation bar, click the **Corp Manage** menu and then select **Sites**.
3. Click **Add site**.
4. In the **Display name** field, enter a friendly name for the new site. The display name determines how the site is listed on the Site Overview page and the site select selector menu.
5. In the **Short name** field, enter a short name for the new site. The short name is used in URLs and the API (e.g., `https://dashboard.signalsciences.net/corps/SHORT-NAME/`).

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click **Add Workspace**.
4. In the **Workspace name** field, enter a friendly name for the new workspace.
5. In the **Workspace description** field, enter a description of the workspace.
6. Click **Add Workspace**.

Editing sites (workspaces)

To edit a site (workspace), follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the corp navigation bar, click the **Corp Manage** menu and then select **Sites**.
3. Click the name of the site that you want edit.
4. Fill out the fields on the **Name** form as follows:
   - In the **Display name** field, enter a friendly name for the site. The display name determines how the site is listed on the Site Overview page and the site select selector menu.
   - In the **Short name** field, enter a short name for the site. The short name is used in URLs and the API.
5. Click **Update**.
6. Click the **Agent Configurations** tab.
7. Fill out the Agent Configurations form as follows:
   - From the **Agent mode** menu, select the agent mode for the site.
   - From the **IP anonymization** menu, select **Disabled** to not anonymize IP addresses or select **Enabled** to convert IP addresses into anonymized IPv6 addresses.
   - In the **Client IP headers** area, add a header by clicking **Add header** and then entering the name of the header in the **Header** field. Remove a header by clicking **Delete header** to the right of a header name.

   - In the **Blocking response code** field, enter a site default blocking response code. All blocking actions will return the site default blocking response code unless a different response code is specified in a rule. Supported response codes are 301, 302, and 400-599.
   - *(Optional)* If you entered `301` or `302` in the **Blocking response code** field then, in the **Redirect URL** field, enter the absolute or relative URL of the redirect location. See Using redirect custom response codes.

8. Click **Update**.
9. Click the **Users** tab.
10. Manage the users assigned to the site.

1. Log in to the Fastly web interface.
2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.
3. Click the gear ⚙ next to the workspace that you want to modify.
4. Update the settings located on the following tabs as needed:
   - On the **General** tab, update the **Workspace Name** and **Workspace Description** fields, then click **Update**.
   - On the **Protection Mode** tab, update the protection mode, then click **Update**.
   - On the **Attack Thresholds** tab, adjust the attack thresholds, then click **Update**.
   - On the **Virtual Patches** tab, enable and disable CVE virtual patch signals.
   - On the **IP Anonymization** tab, select **Disabled** to avoid anonymizing IP addresses or select **Enabled** to convert IP addresses into anonymized IPv6 addresses. Then click **Update**.
   - On the **Redactions** tab, click **Add redactions** to add custom redactions, then click **Update**.

Deleting sites (workspaces)

If you've been assigned the role of owner (superuser), you can delete sites (workspaces) in your corp (account).

Limitations and considerations

A site (workspace) cannot be deleted if it:

- is the site (workspace) you are currently accessing in the control panel
- is the last site (workspace) remaining for the corp (account)
- has users that aren't members of any other sites (workspaces)

If you would like to delete a site (workspace) meeting any of the conditions listed above, reach out to our support team.

Deleting a site (workspace)

To delete a site (workspace), follow these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the corp navigation bar, click the **Corp Manage** menu and then select **Sites**.
3. Click the name of the site that you want to delete.
4. Click **Delete site**.
5. Review the warnings associated with deleting a site and select **I understand the consequences of deleting a site**.
6. Click **Delete**.

1. Log in to the Fastly web interface.

2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.

3. Click **Settings** next to the workspace that you want to delete.

4. Click **Delete workspace**.

5. Enter the name of the workspace as a means of verifying that you want to permanently delete the workspace, then click **Delete**.

📄	**Using site (workspace) dashboards**
📅	Last updated: 2023-06-09
🔗	/en/ngwaf/using-site-dashboards

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, check out our web interface guides for the Fastly control panel.

Dashboards provide collections of metrics about sites (also known as workspaces) represented as cards on the Site Overview page. There are two types of dashboards:

- **System-generated:** These dashboards display cards that provide an overview of the most commonly useful system signals related to request anomalies and attacks directed at your site (workspace). You cannot modify system-generated dashboards.
- **Custom:** These dashboards display cards with metrics you've personally selected as useful system signals related to request anomalies and attacks directed at your site (workspace). Custom dashboards allow you to rearrange and edit the display of those signals to best suit your needs.

Limitations and considerations

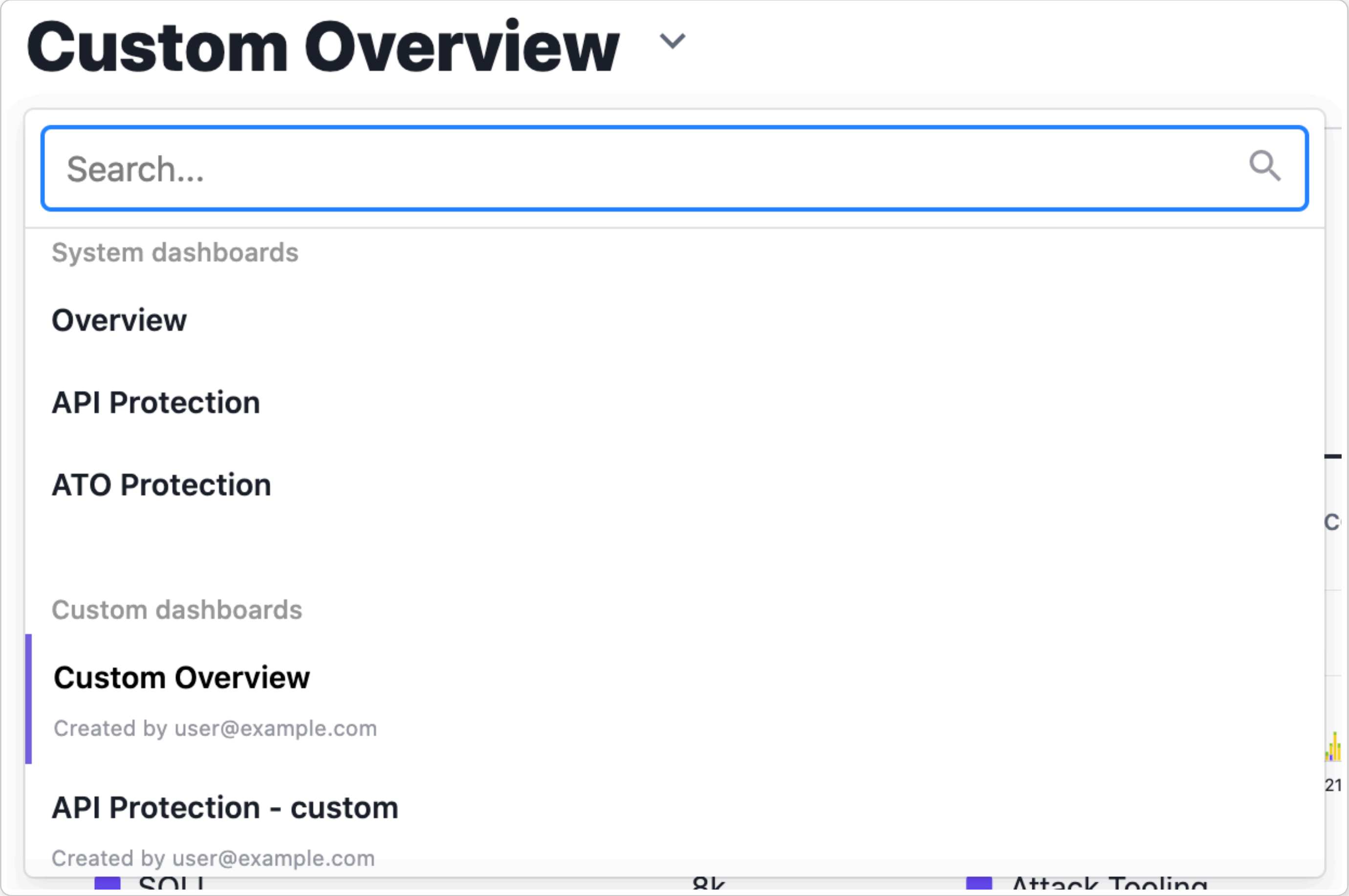
Keep in mind that only Premier and Professional platforms support both system-generated and custom dashboards as part of your Site Overview. The Essentials platform only supports system-generated dashboards. For a complete list of available features at each platform level, check out our product description.

Viewing a dashboard

To view a system-generated or custom dashboard, follow these steps:

1. Click the name of your site (workspace) in the upper left corner of the web interface.

2. Click the arrow next to the name of the current dashboard.



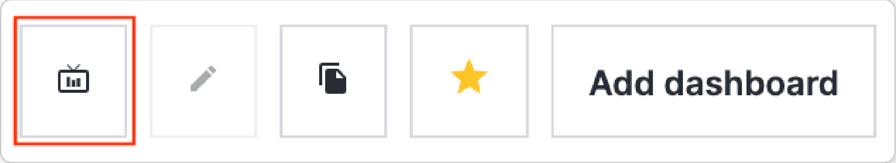
3. From the dashboards menu, select the dashboard you want to switch to. You can narrow down the list by using the search field. The selected dashboard appears.

Viewing a dashboard in monitor view

Clicking Monitor view, which appears as a small monitor icon at the top of the dashboard, displays your dashboard in focus mode. Focus mode displays the Site Overview page as you've customized it and temporarily hides the rest of the web interface. While in focus mode, you can create a read-only URL so that you can view your dashboard on a TV.

To set up monitor view on a TV:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click Monitor view. The Site Overview page appears in focus mode in the default grid view.



3. Click **Share**.
4. Click the **Read-only URL** switch.
5. Copy the link and open it on the TV you'd like to display the dashboard on.

You can change the focus mode view from the default grid view to carousel view by clicking **Carousel**. In the carousel view, the monitor will cycle through all cards on the Site Overview page. If necessary, you can generate a new URL, which invalidates the old URL. You can also disable the read-only URL altogether.

Setting a default dashboard

You can select a default dashboard that will automatically be selected when you log in to the web interface.

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click the star in the upper-right corner of the Site Overview page. The displayed dashboard becomes your default dashboard.

Working with custom dashboards

On the Site Overview page, you can create, duplicate, rename, and delete custom dashboards.

Creating a custom dashboard

To create a custom dashboard, follow these steps:

1. On the Site Overview page, click **Add dashboard**.
2. Fill out the **Add custom dashboard** controls as follows:
    - In the **Name** field, enter the name of the new dashboard.
    - *(Optional)* Click **Choose default cards** to display the default cards you can select to add to the custom dashboard.
3. Click **Create dashboard**. Your newly created dashboard appears on the Site Overview page.

Duplicating a dashboard

To duplicate a dashboard, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click the two stacked documents in the upper-right corner of the overview page. A duplicate of the selected dashboard appears on the Site Overview page.

Renaming a custom dashboard

To rename a custom dashboard, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click the pencil in the upper-right corner of the Site Overview page.
3. In the **Name** field, enter a new name for the dashboard.
4. Click **Update dashboard**. The renamed dashboard appears on the Site Overview page.

Deleting a custom dashboard

To delete a custom dashboard, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click the pencil in the upper-right corner of the Site Overview page.
3. Click the **Delete dashboard** and then **Delete dashboard**. The dashboard is deleted.

Working with cards

You can surface relevant metrics on custom dashboards by adding cards that highlight meaningful data, editing cards to display specific signals, arranging the cards into a preferred layout, and deleting cards that aren't needed anymore.

Adding preset cards

To add a preset card to a custom dashboard, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click **Add card** in the empty card slot at the end of the dashboard.
3. Select a preset card type.
4. Fill out the Add card window as follows:
    - In the **Title** field, enter a title for the card.
    - In the **Description** field, enter a description for the card.
    - From the **Signals** menu, select the signals the card will track. You can search for specific signals within the list by entering the name of the signal you want to search for.
5. Click **Create card**. The card is added to the dashboard.

Adding custom cards

To add a custom card to a custom dashboard, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click **Add card** in the empty card slot at the end of the dashboard.
3. Select **Signals request chart:** to create a card with a bar graph or **Signals trend list:** to create a card that lists each signal and the percentage each signal increased or decreased over the selected time period.
4. Fill out the Add card window as follows:
    - In the **Title** field, enter a title for the card.
    - In the **Description** field, enter a description for the card.
    - From the **Signals** menu, select the signals the card will track. You can search for specific signals within the list by entering the name of the signal you want to search for.
5. Click **Create card**. The card is added to the dashboard.

Editing cards

To edit a card on a custom dashboard, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click the pencil that appears when you hover over the upper-right corner of the card you want to edit.
3. Fill out the **Edit card** window as follows:
    - In the **Title** field, enter a new title for the card.
    - In the **Description** field, enter a new description for the card.
    - From the **Signals** menu, remove signals by clicking the `x` icon in the name or add signals by selecting them from the menu.
4. Click **Update card**. The card is updated.

Rearranging cards

To arrange custom dashboard cards into a preferred layout, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click the four-way arrow that appears when you hover over the upper-right corner of a card, and then drag the card to the preferred location on the dashboard.

Removing cards

To remove a card from a custom dashboard, follow these steps:

1. On the Site Overview page, select the relevant dashboard from the Dashboard menu.
2. Click the pencil that appears when you hover over the upper-right corner of the card.
3. Click **Delete card** and then **Delete**. The card is removed from the dashboard.

Subcategory: Thresholds (site alerts)

These articles describe how to configure thresholds.

About thresholds

Last updated: 2024-04-02

/en/ngwaf/about-thresholds

Thresholds (also known as site alerts and workspace alerts) monitor and handle requests from IP addresses that have been tagged with specific signals. Specifically, when the number of requests from an IP address meets the signal count threshold for a site alert (workspace alert), the IP address is flagged and select, subsequent requests from the IP address are blocked or logged for a set period of time.

You can monitor site alert activity via our control panels.

Control panel	Web interface location
Next-Gen WAF	**Events** page **Observed Sources** page
Fastly	**Events** page

Types of thresholds

There are two types of thresholds:

- **system (also known as attack thresholds):** configurations that we've defined to monitor and handle requests from IP addresses that contain attack signals. They apply to all attack signals for a site (workspace). You can lower and raise the attack thresholds and override them for individual attack signals.
- **custom:** configurations that you define to monitor and handle requests from IP addresses that contain specific signals. They are only included with the Professional and Premier platforms.

Precedence for thresholds

When multiple site alerts (workspace alerts) exist, the Next-Gen WAF agent uses the following logic to determine which threshold configuration should take precedence:

- The alert with the lowest threshold and smallest interval for a given action (i.e., block or log) will be checked first.
- Alerts with a block action do not compete for precedence against those with a log action.
- After an alert with a block action flags an IP address, other alerts with a block action can't flag that IP address until the existing flag is lifted.

- After an alert with a log action flags an IP address, other alerts with a log action can't flag that IP address until the existing flag is lifted.
- An alert with a block action and an alert with a log action can both flag the same IP address.

Preventing specific IP addresses from being flagged

To prevent an IP address from being flagged by site alerts (workspace alerts), create a request rule with an allow action. For example, let's say you plan to scan your web application for vulnerabilities. To ensure the scanning IP address isn't flagged, you can create a request rule with an allow action.

Configuring attack thresholds

Last updated: 2024-08-28

/en/ngwaf/configuring-attack-thresholds

Attack threshold configurations (also known as system site alerts and system workspace alerts) apply to an entire site and target attackers’ ability to use scripting and tooling.

How attack thresholds works

System site alerts (system workspace alerts) monitor and flag IP addresses that exhibit repeat malicious behavior and then handle requests from the flagged IP addresses.

Flagging occurs when enough attacks are seen from a single IP address. More explicitly, we count the number of attack signals per IP address, and when this number reaches one of the attack thresholds, we flag and blocklist the IP address.

After an IP address has been flagged, subsequent requests that are from the flagged IP address and that are tagged with an attack signal are either blocked or logged depending on the Agent mode (also known as Protection mode) setting. Specifically, requests with an attack signal are blocked when the setting is set to `Blocked` and logged when set to `Not Blocking` (also known as `Logging`).

By default, malicious traffic from the IP address is blocked or logged for 24 hours. If you have access to the Next-Gen WAF control panel, you can change the default time that blocklisted IP addresses are blocked by updating the `blockDurationSeconds` field via our API.

Limitations and considerations

When working with attack thresholds, keep the following things in mind:

- Requests that have only been tagged with anomaly and custom signals are not counted towards flagging thresholds.
- When an IP address is flagged by any Next-Gen WAF customer, we record that IP address as a known potential bad actor and make its status known across our whole network by tagging it with the SigSci Malicious IPs (`SigSci IP`) anomaly signal.

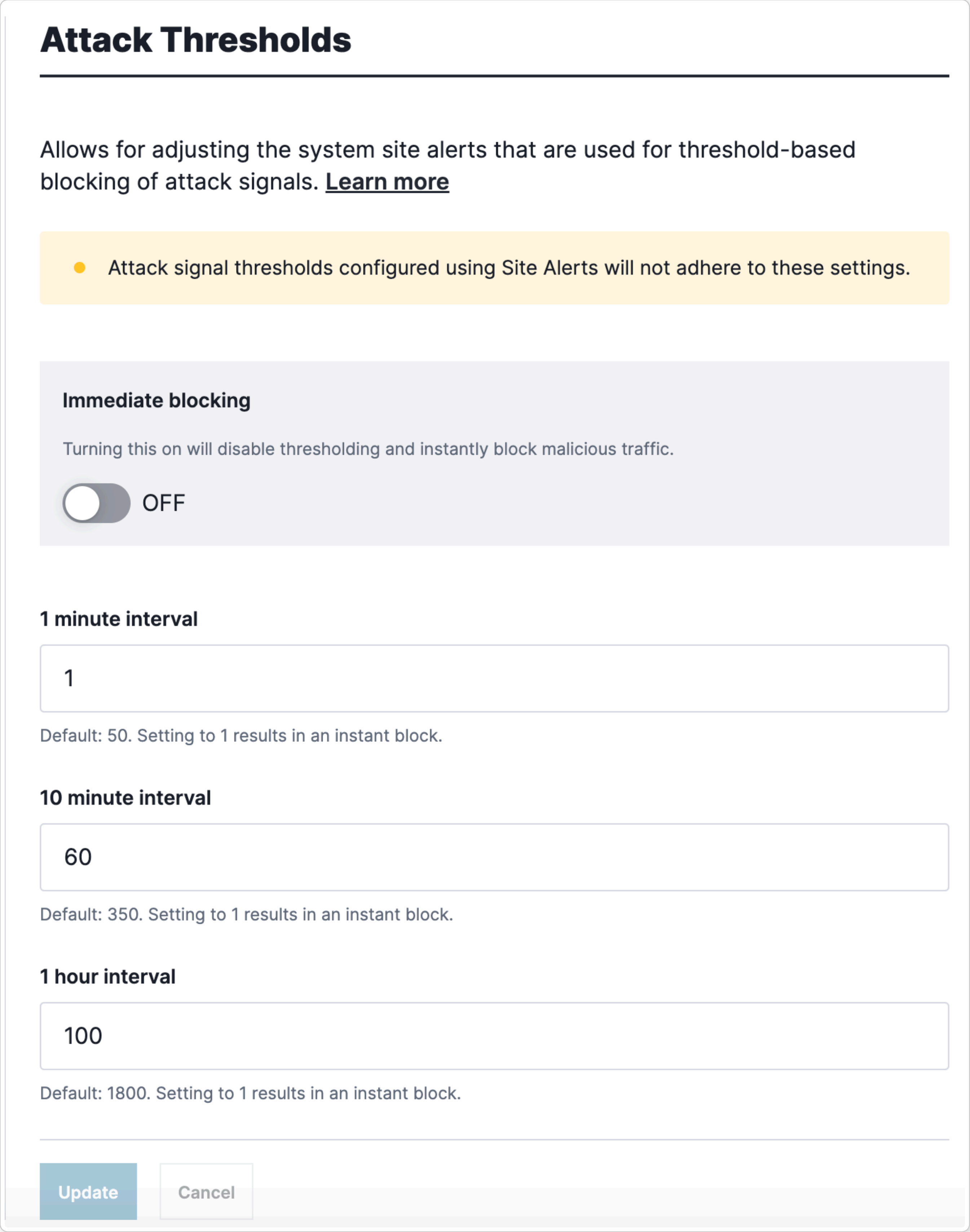
Adjusting attack thresholds

The default attack thresholds are based on historical patterns that we've seen across all customers.

Interval	Threshold	Frequency of check
1 minute	50	Every 20 seconds
10 minutes	350	Every 3 minutes
1 hour	1,800	Every 20 minutes

To raise or lower the attack thresholds, complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Settings**.
4. Click **Attack Thresholds**.



Attack Thresholds

Allows for adjusting the system site alerts that are used for threshold-based blocking of attack signals. Learn more

● Attack signal thresholds configured using Site Alerts will not adhere to these settings.

Immediate blocking

Turning this on will disable thresholding and instantly block malicious traffic.

OFF

1 minute interval

1

Default: 50. Setting to 1 results in an instant block.

10 minute interval

60

Default: 350. Setting to 1 results in an instant block.

1 hour interval

100

Default: 1800. Setting to 1 results in an instant block.

5. In the **1 minute interval**, **10 minute interval**, and **1 hour interval** fields, enter the thresholds that are appropriate for your site. To immediately block requests that are tagged with at least one attack signal, use the **Immediate blocking** setting.
6. Click **Update**.

1. Log in to the Fastly web interface.

2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.

3. Click the gear ⚙ next to the workspace that you want to modify.

4. Click **Attack Thresholds**.

5. In the **1 minute interval**, **10 minute interval**, and **1 hour interval** fields, enter the thresholds that are appropriate for your website. To immediately block requests that are tagged with at least one attack signal, use the **Immediate blocking** setting.

6. Click **Update**.

Overriding attack thresholds

IMPORTANT

Only Next-Gen WAF customers with access to the Next-Gen WAF control panel can override attack thresholds. If you have access to the Next-Gen WAF product in the Fastly control panel, you can't override them.

You can override the attack thresholds for individual attack signals. When multiple thresholds exist, precedence rules determine the order in which configurations are checked.

Platform	How to override
Professional and Premier platforms	Create custom site alerts (custom workspace alerts).
Essentials platform	Use the alert configuration options on the Signals page.

Applying immediate blocking

You can use the **Immediate blocking** setting to immediately block all requests tagged with at least one attack signal. While **Immediate blocking** is enabled, your existing attack threshold settings are maintained so that you can easily revert to threshold-based blocking.

To enable immediate blocking:

1. Log in to the Next-Gen WAF control panel.

2. From the **Sites** menu, select a site if you have more than one site.

3. From the **Manage** menu, select **Site Settings**.

4. Click **Attack Thresholds**.

5. Click the **Immediate blocking** switch to the on position.

1. Log in to the Fastly web interface.

2. Go to **Security** > **Next-Gen WAF** > **Workspaces**.

3. Click the gear ⚙ next to the workspace that you want to modify.

4. Click **Attack Thresholds**.

5. Click the **Immediate blocking** switch to the **On** position.

6. Click **Update**.

Configuring custom site alerts

Last updated: 2024-08-28

/en/ngwaf/configuring-custom-site-alerts

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

You can create custom site alerts (also known as custom workspace alerts) to monitor and handle requests from IP addresses that contain specific signals. A custom site alert (custom workspace alert) outlines:

- the criteria that must be met for an IP address to be flagged. For example, flag an IP address when there are 25 SQL Injection attack signals in 1 minute.
- how to handle requests from IP addresses that are flagged. You can either log subsequent requests or block subsequent requests containing attack signals from the IP address.
- how long to block or log subsequent requests from flagged IP addresses.

Limitations and considerations

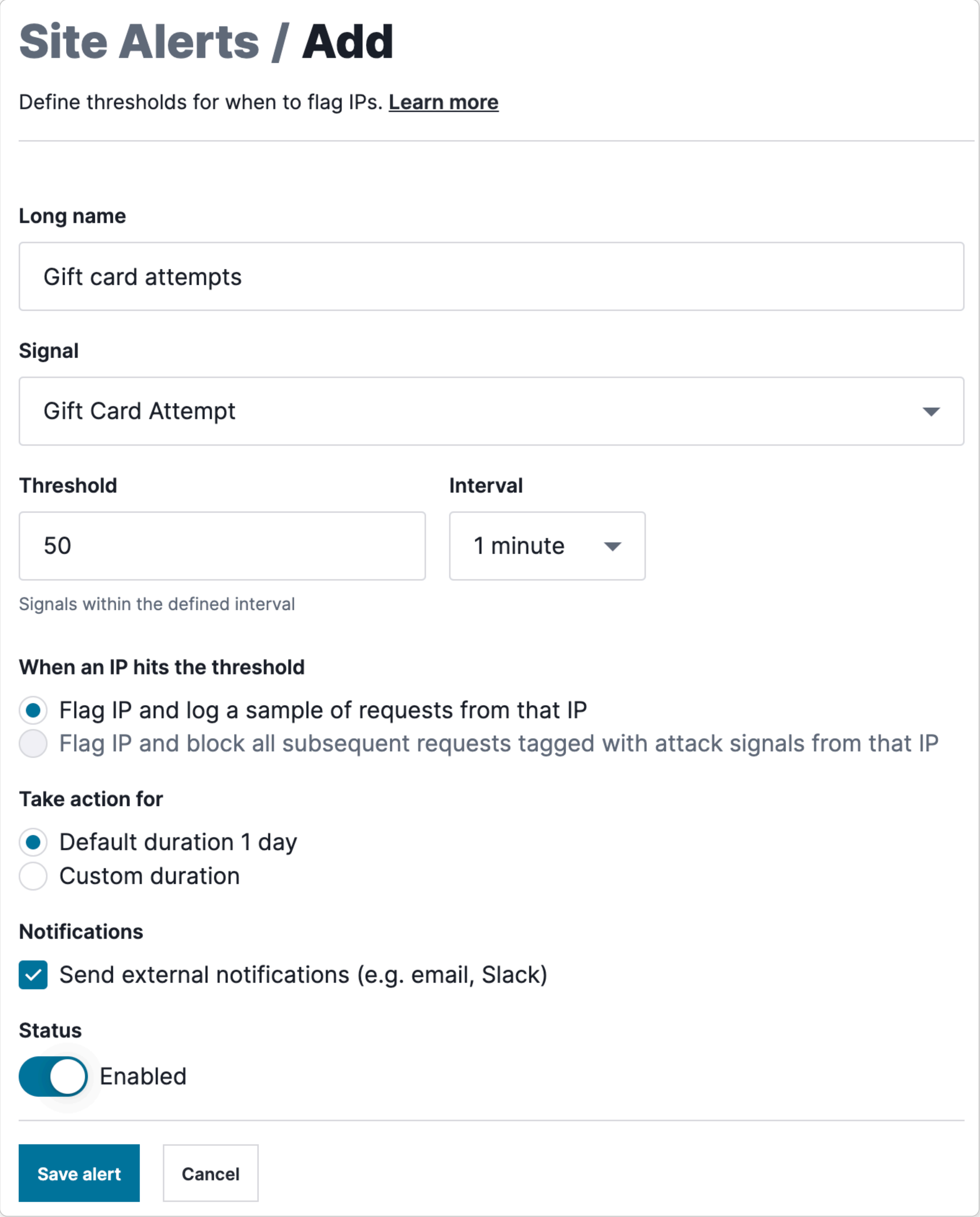
When working with custom site alerts (custom workspace alerts), keep the following things in mind:

- Custom site alerts (custom workspace alerts) are only included with the Professional and Premier platforms. They are not included as part of the Essentials platform.
- Accounts are limited to 50 custom site alerts (custom workspace alerts) per site.
- If you've been assigned an observer role (or the user or billing role), you cannot configure custom site alerts (custom workspace alerts).
- With the Premier platform, you can block all requests from IP addresses that have been flagged for events using request rules with the Site Flagged IP (`SITE-FLAGGED-IP`) anomaly signal.

Adding custom site alerts (custom workspace alerts)

To create a custom site alert (custom workspace alert), complete the following steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Rules** menu, select **Site Alerts**.
4. Click **Add site alert**.



Site Alerts / Add

Define thresholds for when to flag IPs. Learn more

Long name

Gift card attempts

Signal

Gift Card Attempt

Threshold

50

Interval

1 minute

Signals within the defined interval

When an IP hits the threshold

● Flag IP and log a sample of requests from that IP
○ Flag IP and block all subsequent requests tagged with attack signals from that IP

Take action for

● Default duration 1 day
○ Custom duration

Notifications

☑ Send external notifications (e.g. email, Slack)

Status

Enabled

5. Fill out the Add form as follows:

   - In the **Long name** field, enter a descriptive name for the alert (e.g., `Increase in failed logins`).
   - From the **Signal** menu, select the signal that the site alert should track.
   - In the **Threshold** field, enter how many requests containing the signal should be detected before the IP address is flagged.

   - From the **Interval** menu, select the number of minutes during which signals from the IP address are counted to determine if the threshold has been met.
   - Under **When an IP hits the threshold**, select whether the alert should log subsequent requests or block subsequent requests containing attack signals from the IP address. If you selected a custom or anomaly signal as the **Signal**, then you will only be able to log subsequent requests from the IP.
   - Under **Take action for**, select how long the IP address should be flagged. By default, IP addresses are flagged for 24 hours. You can set a custom duration by selecting **Custom duration** and choosing a duration.
   - Leave the **Notifications** checkbox selected to send an external notification (e.g., email and Slack) when the site alert is triggered. Deselect the checkbox to not send any external notifications.
   - Click the **Status** switch to enable the site alert.

6. Click **Save alert**.

Client IP addresses

/en/ngwaf/client-ip-addresses

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

Often the server being protected is behind a load balancer or other proxy. In this case, the server will see this load balancer or proxy IP address as the remote (client) IP address. To get around this common issue, most load balancers or proxies offer the ability to record the real remote IP address in an HTTP header that will be added to the request for other devices to use. The most common HTTP headers used for this are the `X-Forwarded-For` and `X-Real-Ip` headers. By default, the agent will take the real remote address from the `X-Forwarded-For` HTTP header when it is present, but the agent may need to be configured to use a different header (or none at all) in your environment. This (or another) HTTP header must be added by configuring the load balancer or proxy with access to the real remote address. In most cases this has already been done as it is generally required by other services as well.

To be the most compatible out of the box, the default for the agent is to take the real remote address from the `X-Forwarded-For` HTTP header. Without any additional configuration, the agent will use the remote address specified by this HTTP header. While this normally gives correct results, this method may not work in some environments that use a different header or another means of obtaining the real remote address.

Setting alternative headers in the control panel

You can set alternative client IP headers for the agent to source the real remote IP address directly from the control panel:

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Settings**.
4. Click **Agent Configurations**.
5. Under **Client IP Headers**, click **Add header**.
6. In the **Header** text box that appears, enter the header name. Headers are not case sensitive.
7. *(Optional)* Click **Add header** again and enter another header name in the new **Header** text box.
8. Click **Update**.

You can specify up to 10 different headers. Headers will be used in order from top to bottom, meaning if the first header is not present in the request, the agent will proceed to check for the second header, and so on, until one of the listed headers is found. If none of the defined headers exist, or the value is not an IP address, then the agent will use the socket address.

> NOTE
>
> Alternative client IP headers set in the control panel take priority and will override any alternative client IP headers set directly in the agent. Client IP headers set in the control panel do not currently apply to WebSocket inspection or agents deployed at the edge. The client IP header must be set directly in the agent.

Removing alternate headers in the control panel

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Site Settings**.
4. Click **Agent Configurations**.
5. Under **Client IP Headers**, click **Delete header** to the right of the header you want to delete.

Setting alternative headers directly in the agent

You can set alternative headers directly in the agent following the details below.

Alternative HTTP header

If your environment uses a different HTTP header to pass the real remote address, you will need to configure the agent to use that header. You can set an alternative header using the `client-ip-header` agent configuration option. For example, you can specify the agent use the `X-Real-IP` header by adding the following line to the `/etc/sigsci/agent.conf` file:

```
client-ip-header = "X-Real-Ip"
```

As this is such a common issue, most web servers offer an alternative module for interpreting the real remote address. If one of these is used, the remote address will be correctly passed to the agent and you will want to disable the agent from interpreting the default `X-Forwarded-For` header. If this is not done, then the agent may misinterpret the remote address. To do this, you will need to set the `client-ip-header` option to an empty value:

```
client-ip-header = " "
```

If the agent configuration is updated, the agent will then need to be restarted.

X-Forwarded-For header configuration

When a request is received, the agent will read the left-most IP address from the X-Forwarded-For (XFF) header.

For example, if a received request contains:

```
X_FORWARDED_FOR="127.0.0.1, 203.0.113.63"
```

The agent will report:

```
127.0.0.1
```

To ensure that the true IP address is being identified in the above case, the agent can be configured to read XFF IP addresses from right to left instead. You can set the agent to read XFF IP addresses from right to left by setting the `local-networks` agent configuration option to `private`. Add the following line to your agent configuration file (by default at `/etc/sigsci/agent.conf`):

```
local-networks = "private"
```

By setting the `local-networks` option to `private`, the agent will instead read the IP addresses in the XFF header from right to left and choose the first non-local IP address. In the example above, the agent would then report:

```
203.0.113.63
```

Alternatives with various web servers

There are a number of alternative modules for interpreting the real remote address. If one of these is used, be sure to disable the agent from interpreting the headers as outlined above.

NGINX - http_realip_module

The `http_realip_module` that is included with NGINX will allow you to extract the real IP from an HTTP header and use it internally. This performs some configurable validation and is far less prone to spoofing. In addition, the module seamlessly replaces the remote address so that NGINX will just do the right thing.

To use the `http_realip_module` in NGINX, you will need that module built into the binary. For binaries supplied by Fastly, the module is already included (as is true for most vendor supplied NGINX binaries). However, if you are building NGINX from source, then you will need to configure NGINX to enable this module.

The NGINX documentation on this module provides more details.

The recommended configuration for this module is to set the `set_real_ip_from` directive to all trusted (internal) addresses or networks and enable recursion via the `real_ip_recursive` directive. For example, if your load balancer IP is `192.0.2.54` and is adding the `X-Forwarded-For` header, then you might use the following configuration in NGINX in either the `http` or `server` blocks:

```
set_real_ip_from  192.0.2.54;
real_ip_header    X-Forwarded-For;
real_ip_recursive on;
```

NGINX http_realip_module - Proxy Protocol

If your NGINX deployment is configured behind a load balancer or similar that communicates to NGINX over the proxy protocol, then the `real_ip_header` needs to be sourced from the `proxy_protocol` parameter. This can be configured in either the `http` or `server` blocks.

```
set_real_ip_from  192.0.2.54;
real_ip_header    proxy_protocol;
```

For more configuration guidance around this type of deployment, check out the NGINX documentation.

Apache Web Server 2.4+ - mod_remoteip

The `mod_remoteip` module that is included with Apache Web Server 2.4+ will allow you to extract the real IP from an HTTP header and use it internally. This performs some configurable validation and is far less prone to spoofing. In addition, the module seamlessly replaces the remote address so that the web server will just do the right thing.

To use the `mod_remoteip`, you will need to load the module and configure it.

The Apache documentation on this module provides more details.

The recommended configuration for this module is to set the `RemoteIPHeader` directive with the appropriate header (e.g., `X-Forwarded-For`) containing the real client IP address. This can be used in conjunction with `RemoteIPInternalProxy` which adds one or more addresses (or address blocks) to trust for presenting a valid `RemoteIPHeader` value (e.g., a load balancer or reverse proxy).

For example, if your load balancer IP address is `192.0.2.54` and is adding the `X-Forwarded-For` header, then you might use the following in Apache HTTP Server configuration (typically `apache2.conf` or `httpd.conf`):

```
# Load the module (see also a2enmod command)
LoadModule remoteip_module mod_remoteip.so

# Configure
RemoteIPInternalProxy 192.0.2.54
RemoteIPHeader X-Forwarded-For
```

On Debian/Ubuntu, you will typically use the `a2enmod` command to dynamically enable a module instead of adding the LoadModule directive directly to your configuration. For example:

```
$ sudo a2enmod remoteip
```

Apache Web Server 2.2 or less - various solutions

The Apache Web Server prior to 2.4 does not supply a module to interpret an HTTP header to get the real remote address. However, there are a number of third party modules that can be used similar to Apache Web Server 2.4+ above.

Take a look at one of these popular third party modules:

- `mod_realip2`
- `mod_rpaf`

Known issues

When managing real client IP addresses, keep the following in mind.

Google Container Engine

If you have downgraded or not upgraded Kubernetes in Google Container Engine (GKE) to at least Kubernetes v1.1, then you may not be able to get the real client IP address. The solution is to upgrade Kubernetes.

Kubernetes prior to v1.1

If you are using Kubernetes prior to v1.1, then currently the only non-beta load balancer option is their network load balancer. The network load balancer does not add the extra `X-Forwarded-For` header as the HTTPS load balancer. Because of this, the real remote address cannot be obtained. The HTTPS load balancer that does add in this support is currently in beta and should be available with Kubernetes v1.1.

- **Google Container Network Load Balancer:** https://cloud.google.com/container-engine/docs/load-balancer
- **Google Container HTTP Load Balancer (beta):** https://cloud.google.com/container-engine/docs/tutorials/http-balancer
- **Kubernetes Ingress Load Balancing:** https://kubernetes.io/docs/concepts/services-networking/ingress/#load-balancing

* * *

Header links

🔗 /en/ngwaf/header-links

IMPORTANT

The header links feature is only available to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Header links facilitate cross-referencing Next-Gen WAF data with your own internal systems via a hyperlink. We currently support linking either request or response headers to any system (e.g., Kibana).

For example, an `X-Request-ID` request header or `X-User-ID` response header can be linked directly to one of your internal systems.

Creating header links

1. Log in to the Next-Gen WAF control panel.
2. From the **Sites** menu, select a site if you have more than one site.
3. From the **Manage** menu, select **Header Links**.
4. Click **Add header link**.
5. In the **Header name** field, enter the name of the header (e.g., `X-Request-ID`).
6. From the **Header type** menu, select whether the header is a **Request Header** or a **Response Header**.
7. In the **Link template** field, enter the link to your internal system with the value replaced with the string `{{value}}`.

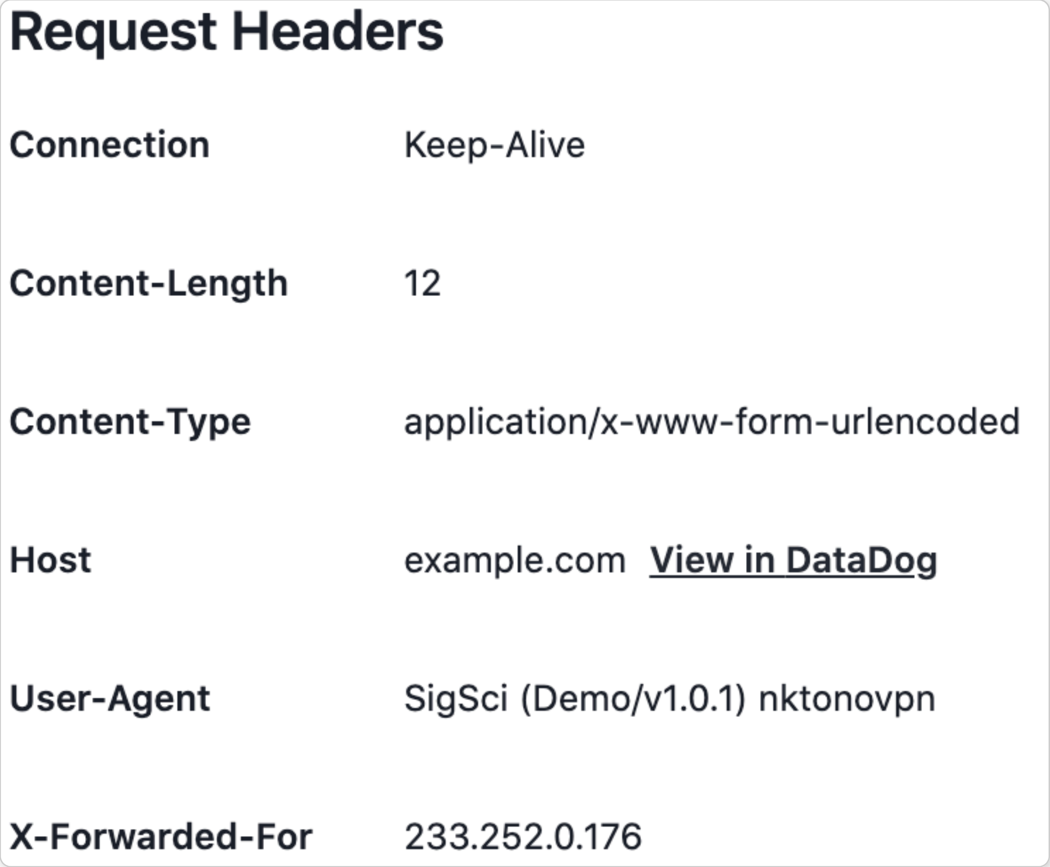
   For example, assume `https://internal-system.example.com/search?X-Forwarded-For&203.0.113.1/results` is the search URL for an internal system which displays all results that contained both the `X-Forwarded-For` header and the IP address `203.0.113.1`.

   To use this URL as the header link template URL for the `X-Forwarded-For` header, you would replace `203.0.113.1` with `{{value}}` in the URL. This makes the link generic and not specific to that single IP address. The header link template URL would then be `https://internal-system.example.com/search?X-Forwarded-For&{{value}}/results`.
8. In the **Display name** field, enter the name of the internal system. This name is used in the header links in the Next-Gen WAF control panel. For example, entering `Kibana` will title the link `View in Kibana`.

Using header links

To view the link in action, click **View request detail** on any request on the Requests page.

Underneath either **Request headers** or **Response headers**, next to the header you specified, you will see a header link (e.g., **View in Kibana**). Clicking this link will take you to that internal system with results for that specific header and value.



Request Headers

Connection	Keep-Alive
Content-Length	12
Content-Type	application/x-www-form-urlencoded
Host	example.com View in DataDog
User-Agent	SigSci (Demo/v1.0.1) nktonovpn
X-Forwarded-For	233.252.0.176

* * *

Category: Developer

These articles explain how to work with the Next-Gen WAF API.

Extracting your data

/en/ngwaf/extract-your-data

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Next-Gen WAF stores requests that contain attacks and anomalies, with some qualifications. If you would like to extract this data in bulk for ingestion into your own systems, we offer a request feed API endpoint which makes available a feed of recent data, suitable to be called by (for example) an hourly cron.

This functionality is typically used by security operation center (SOC) teams to automatically import data into security information and event management (SIEM) solutions such as Datadog, ELK, and other commercial systems.

Data extraction vs searching

We have a separate API endpoint for searching request data. Its use case is for finding requests that meet certain criteria, as opposed to bulk data extraction:

Searching	Data Extraction
Search using full query syntax	Returns all requests, optionally filtered by signals
Limited to 1,000 requests	Returns all requests
Window: up to 7 days at a time	Window: past 24 hours
Retention: 30 days	24 hours

Time span restrictions

The following restrictions are in effect when using this endpoint:

- The `until` parameter has a maximum of **five minutes** in the past. This is to allow our data pipeline sufficient time to process incoming requests - see below.
- The `from` parameter has a minimum value of **24 hours and five minutes** in the past.
- Both the `from` and `until` parameters must fall on full minute boundaries.
- Both the `from` and `until` parameters require Unix timestamps with second level detail (e.g., `1445437680`).

Delayed data

A five-minute delay is enforced to build in time to collect and aggregate data across all of your running agents, and then ingest, analyze, and augment the data in our systems. Our five-minute delay is a tradeoff between data that is both timely and complete.

Pagination

This endpoint returns data either 1,000 requests at a time or by the size specified in the `limit` query parameter. If the time span specified contains more than 1,000 requests (default) or more than defined by the `limit` parameter, a `next` URL will be provided to retrieve the next batch. Each `next` URL is valid for one minute from the time it's generated.

Retrieved data can vary in size, sometimes greatly. To avoid exceeding URL size limitations, send the `next` parameter and its value as POST parameters in a POST request using a Content-Type of `application/x-www-form-urlencoded`.

Sort order

As a result of our data warehousing implementation, the data you get back from this endpoint will be complete for the time span specified, but is not guaranteed to be sorted. Once all data for the given time span has been accumulated, it can be sorted using the `timestamp` field, if necessary.

Rate limiting

Limits for concurrent connections to this endpoint:

- **Two** per site (also known as a workspace)
- **Five** per corp (also known as an account)

Example usage

A common way to use this endpoint is to set up a cron that runs at 5 minutes past each hour and fetches the previous full hour's worth of data. In the example below, we calculate the previous full hour's start and end timestamps and use them to call the API.

Python

```
import requests
import os
import json
import calendar
from datetime import datetime, timedelta, timezone

# Set up environment variables
NGWAF_EMAIL = os.getenv('NGWAF_USER_EMAIL')
NGWAF_TOKEN = os.getenv('NGWAF_TOKEN')
NGWAF_CORP = os.getenv('CORP_NAME')
NGWAF_SITE = os.getenv('SITE_NAME')

if not NGWAF_EMAIL or not NGWAF_TOKEN or not NGWAF_CORP or not NGWAF_SITE:
    raise EnvironmentError("Please set NGWAF_EMAIL, NGWAF_TOKEN, NGWAF_CORP, and NGWAF_SITE environ

# Base URL for the API
base_url = 'https://dashboard.signalsciences.net/api/v0'

# Set up headers with authentication
headers = {
    'x-api-user': NGWAF_EMAIL,
    'x-api-token': NGWAF_TOKEN
}

# Calculate UTC timestamps for the previous full hour
until_time = datetime.now(timezone.utc).replace(minute=0, second=0, microsecond=0)
from_time = until_time - timedelta(hours=1)
until_time = calendar.timegm(until_time.utctimetuple())
from_time = calendar.timegm(from_time.utctimetuple())

# Set up the initial URL for the GET request
get_url = f'{base_url}/corps/{NGWAF_CORP}/sites/{NGWAF_SITE}/feed/requests?from={from_time}&until={

# Debugging: print the URL and timestamps
print(f"Fetching data from: {get_url}")
print(f"from_time: {from_time}, until_time: {until_time}")

def fetch_paginated_data(url):
    data_list = []
    while url:
        # Make the initial GET request
        response_raw = requests.get(url, headers=headers)
        if response_raw.status_code != 200:
            raise RuntimeError(f"Failed to fetch data from {url}. Status Code: {response_raw.status

        response = response_raw.json()
        data_list.extend(response.get('data', []))

        next_uri = response.get('next', {}).get('uri', '')
        if not next_uri:
            break

        # Extract the next parameter from the URI
        next_value = next_uri.split('next=')[-1]

        # Prepare the POST request for pagination
        post_url = f'{base_url}/corps/{NGWAF_CORP}/sites/{NGWAF_SITE}/feed/requests'
        post_data = {'next': next_value}
        headers['Content-Type'] = 'application/x-www-form-urlencoded'  # Add the necessary header
        post_response_raw = requests.post(post_url, headers=headers, data=post_data)
        if post_response_raw.status_code != 200:
            raise RuntimeError(f"Failed to fetch paginated data from {post_url}. Status Code: {post

        post_response = post_response_raw.json()
        data_list.extend(post_response.get('data', []))

        next_uri = post_response.get('next', {}).get('uri', '')
        if not next_uri:
            break

    return data_list

# Fetch data
data = fetch_paginated_data(get_url)

# Output the data or save to a file, etc.
print(json.dumps(data, indent=4))
```

* * *

Data flows

/en/ngwaf/module-flows

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

This document demonstrates various data flows between the Module and Agent. While MessagePack is the serialization protocol, the data is displayed here in JSON format for ease of reading.

Benign Post Request

Notice how in `HeadersIn` the `Cookie` value was redacted, and also that `TLSProtocol` and `TLSCipher` are filled in.

```
{
   "ModuleVersion": "sigsci-module-apache 0.214",
   "ServerVersion": "Apache/2.4.7 (Ubuntu) PHP/5.5.9-1ubuntu4.11 OpenSSL/1.0.1f",
   "ServerFlavor": "prefork",
   "ServerName": "soysauce.in",
   "Timestamp": 1438838135,
   "RemoteAddr": "198.51.100.209",
   "Method": "POST",
   "Scheme": "https",
   "URI": "/add-data"
   "Protocol": "HTTP/1.1",
   "TLSProtocol": "TLSv1.2",
   "TLSCipher": "ECDHE-RSA-AES128-SHA256",
   "HeadersIn": [
       [ "Host", "soysauce.in" ],
       [ "Accept", "*/*" ],
       [ "Connection", "keep-alive" ],
       [ "Cookie", "" ],
       [ "User-Agent", "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_10_4) AppleWebKit/600.7.12 (KHTML
       [ "Accept-Language", "en-us" ],
       [ "Referer", "https://soysauce.in/" ],
       [ "Accept-Encoding", "gzip, deflate" ],
   ],
   "PostData": "foo=bar&company=something"
}
```

This request was completely benign, so all that is returned is a `200` response (allow the request to proceed).

```
{
    "WAFResponse": 200
}
```

And that is end of the request.

Benign request (with 404 error)

```
$ curl -v '127.0.0.1:8085/junk'
*   Trying 127.0.0.1...
* Connected to 127.0.0.1 (127.0.0.1) port 8085 (#0)
> GET /junk HTTP/1.1
> User-Agent: curl/7.37.1
> Host: 127.0.0.1:8085
> Accept: */*
>
< HTTP/1.1 404 Not Found
< Content-Type: text/plain; charset=utf-8
< Date: Wed, 05 Aug 2015 18:38:24 GMT
< Content-Length: 19
<
```

would be converted into the following:

```
{
  "ModuleVersion": "sigsci-sdk-golang 1.0",
  "ServerVersion": "go1.4.2",
  "ServerFlavor": "",
  "ServerName": "127.0.0.1:8085",
  "Timestamp": 1438799904,
  "RemoteAddr": "127.0.0.1",
  "Method": "GET",
  "Scheme": "http",
  "URI": "/junk",
  "Protocol": "HTTP/1.1",
  "HeadersIn": [
      [ "User-Agent",  "curl/7.37.1" ],
      [ "Accept", "*/*" ],
  ],
}
```

Response is just `200` or allow the response to pass through.

```
{
    "WAFResponse": 200
}
```

The server proceeds normally. If at the end of the request, we find that a error condition occurred or that it had an exceptionally large output or took an exceptionally long time to process, we would followup with a `PostRequest`. Notice how `ResponseCode`, `ResponseMillis`, `ResponseSize` and filled out as well as `HeadersOut`.

```
{
  "ModuleVersion": "sigsci-sdk-golang 1.0",
  "ServerVersion": "go1.4.2",
  "ServerFlavor": "",
  "ServerName": "127.0.0.1:8085",
  "Timestamp": 1438799904,
  "RemoteAddr": "127.0.0.1",
  "Method": "GET",
  "Scheme": "http",
  "URI": "/junk",
  "Protocol": "HTTP/1.1",
  "WAFResponse": 200,
  "ResponseCode": 404,
  "ResponseMillis": 1,
  "ResponseSize": 19,
  "HeadersIn": [
      [ "User-Agent", "curl/7.37.1" ],
      [ "Accept",  "*/*" ],
  ],
  "HeadersOut": [
      [ "Content-Type",  "text/plain; charset=utf-8" ]
  ]
}
```

Blocked Request with SQLI and 406

Here are the raw HTTP headers:

```
$ curl -v '127.0.0.1:8085/junk?id=1+UNION+ALL+SELECT+1'
* Connected to 127.0.0.1 (127.0.0.1) port 8085 (#0)
> GET /junk?id=1+UNION+ALL+SELECT+1 HTTP/1.1
> User-Agent: curl/7.37.1
> Host: 127.0.0.1:8085
> Accept: */*
>
< HTTP/1.1 406 Not Acceptable
< Content-Type: text/plain; charset=utf-8
< Date: Wed, 05 Aug 2015 17:59:46 GMT
< Content-Length: 19
<
406 not acceptable
```

This translates to the following flow.

Server/Module sends the following to the agent:

```
{
  "ModuleVersion": "sigsci-sdk-golang 1.0",
  "ServerVersion": "go1.4.2",
  "ServerFlavor": "",
  "ServerName": "127.0.0.1:8085",
  "Timestamp": 1438796694,
  "RemoteAddr": "127.0.0.1",
  "Method": "GET",
  "Scheme": "http",
  "URI": "/junk?id=1+UNION+ALL+SELECT+1",
  "Protocol": "HTTP/1.1",
  "HeadersIn": [
      [ "Accept",  "*/*" ],
      [ "User-Agent",  "curl/7.37.1" ],
  ],
}
```

The Agent replies with the following. Notice the `RequestID` is filled in, along with an `X-SigSci-Tags` header describing was found (SQLi in this case).

```
{
  "WAFResponse": 406,
  "RequestID": "55c24b96ca84c02201000001",
  "RequestHeaders": [
      [ "X-SigSci-Tags", "SQLI" ]
  ]
}
```

The request should be blocked, and at the end of the request, and `UpdateRequest` message.

```
{
  "RequestID": "55c24b96ca84c02201000001",
  "ResponseCode": 406,
  "ResponseMillis": 1,
  "ResponseSize": 19,
  "HeadersOut": [
      [ "Content-Type", "text/plain; charset=utf-8" ],
  ]
}
```

* * *

Using our API

/en/ngwaf/using-our-api

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Our entire control panel is built API-first — this means that anything we can do, you can do as well via our RESTful/JSON API.

We've seen customers use our API a number of ways, but a common use case is importing our request data into a security information and event management (SIEM) solution (e.g., Datadog, Kibana, and Sumo Logic). With a SIEM, you can correlate your internal data with data from the Next-Gen WAF.

> ✓ TIP
>
> We offer a Terraform provider.

About API access tokens

Anyone with the appropriate permissions can connect to the API by creating and using personal API access tokens. Authenticate against our API using your email and access token.

By default, everyone has the ability to create and use API access tokens. However, owners can choose to restrict API Access Token creation and usage to specific people. All plans allow you to create up to 5 access tokens per person.

Managing API access tokens

Follow these steps when managing API access tokens.

Creating API access tokens

1. Log in to the Next-Gen WAF control panel.
2. From the **My Profile** menu, select **API access tokens**.
3. Click **Add API access token**.
4. In the **Token name** field, enter a name to identify the access token.

   > IMPORTANT
   >
   > Don't use special characters (e.g., `-`, `@`, `!`, or `%`) in token names. These often result in a `400 Bad Request` HTTP status code error being sent.

5. Click **Create API access token**.
6. Record the token in a secure location for your use.

   > IMPORTANT
   >
   > This is the only time the token will be visible. Record the token and keep it secure. For your security, it will not appear in the control panel.

7. Click **Continue** to finish creating the token.

Restricting permission to create and use API access tokens

Owners can restrict the creation and use of API access tokens. After doing so, Owners can then manually grant a specific person permission to create and use API access tokens.

API access tokens that were created before restrictions were activated will not be deleted. However, the users with existing tokens will need to be given permission to use API access tokens. Until a user is again granted permission to use API access tokens, the token will remain in a disabled state. After a user has been granted permission, the control panel will remember that permission moving forward.

Owners can enable API Access Token restrictions by following these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **User Authentication**.

3. Navigate to the **API access tokens** section.
4. In the **Access token permissions** field, select the **Restrict access by user** option. A message will be displayed warning you about this setting and its restrictions.
5. Click **Continue** to proceed.
6. Click **Update API access tokens** to save this change.

Granting permission to create and use API access tokens

When API access token creation and usage is restricted, only owners can enable other users to create API access tokens.

> NOTE
>
> After restricting API Access Token usage, Owners will also need to grant themselves permission to create and use API access tokens.

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **Corp Users**.
3. Click on the user you want to grant permission to.
4. Click **Edit corp user**.
5. Under the **Authentication** section, select the **Allow this user to create API access tokens** checkbox.
6. Click **Update user**.

Deleting API access tokens

1. Log in to the Next-Gen WAF control panel.
2. From the **My Profile** menu, select **API access tokens**.
3. Click **Delete** to the right of the token you want to delete.
4. Click **Delete** to confirm you want to delete the token.

Viewing Personal API Tokens

Owners can view a table of all access tokens across your corp by going to the **Corp Manage** menu and selecting **API access tokens**. This table shows the various statuses of each token (active, expired, disabled by owner), their creators, IPs they were used by, and expiration dates.

Managing Corporation-Wide API Access Token Settings

Follow these steps when managing corporation-wide API access token settings.

Setting Automatic Token Expirations

Owners can set API access tokens to automatically expire after a set period of time.

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **User Authentication**.
3. Navigate to the **API access tokens** section.
4. In the **Access token expiration**, select the **Custom expiration** option.
5. Select one of the default periods of time, or select **Custom** to set a specific custom period of time.

The expiration is based on the creation date of the token itself, not from the start of the expiration policy. For example if there's a 60-day-old token and you set a 30-day expiration policy, the token will instantly be expired. But if you later switch the expiration to 90 days, the token will be un-expired.

6. Click **Update API access tokens**.

Restricting API Access Token Usage by IP

Owners can restrict the use of API access tokens to specific IP addresses.

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **User Authentication**.
3. Navigate to the **API access tokens** section.
4. In the **Restrict usage by IP (optional)** field, enter the IP addresses and IP ranges you want to limit token usage to. Enter each IP address on a new line.
5. Click **Update API access tokens**.

Using Personal API access tokens

Golang

```
package main

import (
    "encoding/json"
    "fmt"
    "io/ioutil"
    "log"
    "net/http"
    "os"
    "time"
)

var (
    // Defines the API endpoint
    endpoint = "https://dashboard.signalsciences.net/api/v0"
    email    = os.Getenv("SIGSCI_EMAIL")
    token    = os.Getenv("SIGSCI_TOKEN")
)

// Corp is a Signal Sciences corp (also known as account)
type Corp struct {
    Name         string
    DisplayName  string
    SmallIconURI string
    Created      time.Time
    SiteLimit    int
    Sites        struct {
        URI string
    }
    AuthType    string
    MFAEncorced bool
}

// CorpResponse is the response from the Signal Sciences API
// containing the corp (account) data.
type CorpResponse struct {
    Data []Corp
}

func main() {
    // No need for timestamps or anything
    log.SetFlags(0)

    // Get corps
    req, err := http.NewRequest("GET", endpoint+"/corps", nil)
    if err != nil {
        log.Fatal(err)
    }

    // Set headers
    req.Header.Set("x-api-user", email)
    req.Header.Set("x-api-token", token)
    req.Header.Set("Content-Type", "application/json")
    req.Header.Add("User-Agent", "SigSci Go-Example")

    // Make request
    var transport http.RoundTripper = &http.Transport{}
    response, err := transport.RoundTrip(req)
    if err != nil {
        log.Fatal(fmt.Sprintf("Error connecting to API: %v", err))
    }
    defer response.Body.Close()

    payload, err := ioutil.ReadAll(response.Body)
    if err != nil {
        log.Fatal(fmt.Sprintf("Unable to read API response: %v", err))
    }

    if response.StatusCode != http.StatusOK {
        log.Fatal(fmt.Sprintf("API request failed, status: %d, resp: %s", response.StatusCode, payl
    }

    var corpResp CorpResponse
    err = json.Unmarshal(payload, &corpResp)
    if err != nil {
        log.Fatal(err)
    }

    // Print out corp (account) data
    fmt.Printf("%+v\n", corpResp.Data)
}
```

Python

```
import requests, os

# Initial setup

endpoint = 'https://dashboard.signalsciences.net/api/v0'
email = os.environ.get('SIGSCI_EMAIL')
```

```
token = os.environ.get('SIGSCI_TOKEN')

# Fetch list of corps (accounts)

headers = {
    'Content-type': 'application/json',
    'x-api-user': email,
    'x-api-token': token
}
corps = requests.get(endpoint + '/corps', headers=headers)
print corps.text
```

Ruby

```
require 'net/http'
require 'json'

# Initial setup

endpoint = "https://dashboard.signalsciences.net/api/v0"
email = ENV['SIGSCI_EMAIL']
token = ENV['SIGSCI_TOKEN']

# Fetch list of corps (accounts)

corps_uri = URI(endpoint + "/corps")

http = Net::HTTP.new(corps_uri.host, corps_uri.port)
http.use_ssl = true

request = Net::HTTP::Get.new(corps_uri.request_uri)
request["x-api-user"] = email
request["x-api-token"] = token
request["Content-Type"] = "application/json"

response = http.request(request)
puts response.body
```

Shell

```
$ curl -H "x-api-user:$SIGSCI_EMAIL" -H "x-api-token:$ACCESS_TOKEN" -H "Content-Type: application/js"
```

* * *

X-SigSci-* request headers

/en/ngwaf/x-sigsci-headers

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

`X-SigSci-` headers are added to incoming requests. The end user (your customers) can't see them. However, your internal application can use these headers for various integrations.

> NOTE
>
> If you are using the module-agent deployment method, your deployment module may alter the case of header names (e.g., `X-SigSci-AgentResponse` may appear as `X-Sigsci-Agentresponse`).

The following are `X-SigSci-` headers:

- **X-SigSci-AgentResponse:** a code that indicates the Next-Gen WAF agent's decision to allow or block a request to your web application. The 200 agent response code indicates the request should be allowed, and agent response codes greater than or equal to 301 indicate the request should be blocked. For more information, check out our About agent response codes guide.

- **X-SigSci-RequestID:** a request ID used to uniquely identify a request. Not all requests will be assigned an ID.

- **X-SigSci-Tags:** a CSV string of comma-separated signals that are associated with a request. The header includes both system and custom signals (e.g., `SQLI, XSS, NOUA, TOR, SITE.CUSTOM-SIGNAL`).

  > NOTE
  >
  > Do not use the `IMPOSTOR` signal as an indicator of malicious intent. Anything that appears to be a mainstream search engine is tagged with this signal and the exact identification is done upstream.

* * *

Category: FAQ

These articles provide answers to frequently asked questions.

Agent StatsD Metrics

/en/ngwaf/agent-statsd-metrics

> IMPORTANT
>
> This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel. If you have access to the Next-Gen WAF product in the Fastly control panel, you can only deploy the Next-Gen WAF with the Edge WAF deployment method.

StatsD Metrics

Metrics can be reported through StatsD to the service of your choice using the `statsd-address` agent configuration flag.

Metrics can be filtered using the `statsd-metrics` agent configuration flag.

The following metrics are reported through StatsD:

- Counters are counts since last update

- Gauges are point in time or lifetime metrics

Metric	Type	Description
`sigsci.agent.waf.total`	counter	The number of requests inspected

Metric	Type	Description
`sigsci.agent.waf.error`	counter	The number of errors while attempting to process a request
`sigsci.agent.waf.allow`	counter	The number of allow decisions
`sigsci.agent.waf.block`	counter	The number of block decisions
`sigsci.agent.waf.perf.decision_time.50pct`	gauge	The 50th percentile of the decision time (in milliseconds)
`sigsci.agent.waf.perf.decision_time.95pct`	gauge	The 95th percentile of the decision time (in milliseconds)
`sigsci.agent.waf.perf.decision_time.99pct`	gauge	The 99th percentile of the decision time (in milliseconds)
`sigsci.agent.waf.perf.queue_time.50pct`	gauge	The 50th percentile of the queue time (in milliseconds)
`sigsci.agent.waf.perf.queue_time.95pct`	gauge	The 95th percentile of the queue time (in milliseconds)
`sigsci.agent.waf.perf.queue_time.99pct`	gauge	The 99th percentile of the queue time (in milliseconds)
`sigsci.agent.rpc.connections.open`	gauge	The number of open RPC connections
`sigsci.agent.runtime.cpu_pct`	gauge	CPU percent used by the agent
`sigsci.agent.runtime.mem.sys_bytes`	gauge	Memory used by the agent
`sigsci.agent.runtime.uptime`	gauge	Agent uptime
`sigsci.agent.signal.NAME`	counter	Number of NAME signals

* * *

Fastly Security Labs

/en/ngwaf/fastly-security-labs

IMPORTANT

This guide only applies to Next-Gen WAF customers with access to the Next-Gen WAF control panel.

Fastly Security Labs is a program that grants your corp (also known as an account) access to in-development beta features. In addition to early access to these upcoming features, you will also have the opportunity to provide regular feedback to help shape them as they develop.

NOTE

Features included in the Fastly Security Labs program may be part of a Beta release. The status of each feature will be specified in the documentation for that feature. For more information, read our product and feature lifecycle descriptions.

Enrolling

Customers on the Professional or Premier platforms are eligible for participation in Fastly Security Labs. To participate, contact our support team.

Opting out of features

Your corp (account) will be subscribed to all features by default. You can choose to opt out of specific features by following these steps:

1. Log in to the Next-Gen WAF control panel.
2. From the **Corp Manage** menu, select **User Authentication**.
3. In the **Fastly Security Labs** section, deselect the features to opt out of.
4. Click **Update labs**.

Limitations

Because Fastly Security Labs features are still in development, issues related to these features may need to be escalated to our development team for troubleshooting. As a result, these features are not covered by our support SLA because issue response and resolution times may take longer than typically expected.

* * *

IPv6 support

🔗 /en/ngwaf/ipv6-support

Fastly provides full support for IPv6 in the product, including:

- Detection and decisioning: Requests are appropriately tagged and IPv6 addresses can be automatically flagged within the product.
- Blocklist and allowlist support: IPv6 addresses can be blocklisted and allowlisted within the UI.
- Search: IPv6 addresses can be filtered within search.
- Country/DNS lookups: IPv6 addressed are resolved and mapped to countries, where possible.

* * *

Category: Reference

These articles provide reference information for Next-Gen WAF.

Subcategory: Release notes

These articles provide information about agent and module releases.

Agent release notes

🔗 /en/ngwaf/agent-release-notes

4.57.0 2024-08-08

- Updated base GeoIP data: August 2024
- Improved CMDEXE detection

- Improved SQLI detection

4.56.0 2024-07-11

- Improved XSS detection
- Updated base GeoIP data: July 2024

4.55.1 2024-07-03

- Upgraded to Golang 1.21.12 to address CVE-2024-24791 for reverse proxy deployments

4.55.0 2024-06-21

- Improved XSS detection
- Added support for Alpine Linux 3.20 (amd64 and arm64)
- Updated base GeoIP data: June 2024
- Upgraded to Golang 1.21.11

4.54.0 2024-05-09

- Reduced memory usage when reading OpenAPI specifications by removing unnecessary fields
- Added support for running the agent on Ubuntu 24.04
- Improved CMDEXE detection
- Improved XSS detection
- Upgraded to Golang 1.21.10
- Updated base GeoIP data: May 2024

4.53.0 2024-04-04

- Improved GraphQL support
- Improved OpenAPI enforcement
- Improved XSS detection
- Improved text/csv support
- Upgraded to Golang 1.21.9
- Updated base GeoIP data: April 2024

4.52.0 2024-03-14

- Added general availability of gRPC inspection when running as a reverse proxy
- Added general availability of startup probe configuration options `startup-probe-listener` and `startup-probe-filepath`
- Upgraded to Golang 1.21.8
- Improved CMDEXE detection
- Improved SQLI detection
- Updated base GeoIP data: March 2024

4.51.0 2024-02-15

- Upgraded to Golang 1.21.6
- Improved CMDEXE detection
- Improved gRPC inspection
- Updated base GeoIP data: February 2024

4.50.0 2024-01-11

- Added support for Alpine Linux 3.19 (amd64 and arm64)
- Improved CMDEXE detection
- Improved SQLI detection
- Upgraded to Golang 1.20.13
- Updated base GeoIP data: January 2024

4.49.0 2023-12-07

- Improved API Schema Enforcement beta functionality
- Improved CMDEXE detection
- Improved SQLI detection
- Improved XSS detection
- Fixed RPC UNIX socket permission issue in docker image
- Upgraded to Golang 1.20.12
- Updated base GeoIP data: December 2023

4.48.0 2023-11-09

- Improved GeoIP database loading on agent startup
- Improved CMDEXE detection
- Improved SQLI detection
- Updated base GeoIP data: November 2023

4.47.0 2023-10-12

- Improved redaction of credit card numbers
- Improved CMDEXE detection
- Improved XSS detection
- Updated base GeoIP data: October 2023
- Upgraded to Golang 1.20.10
- Upgraded third party libraries to mitigate rapid stream reset issues disclosed in CVE-2023-39325

4.46.0 2023-09-14

- Added x86_64 and arm64 support for Debian 12 (bookworm)
- Added `waf-data-log-all` configuration option
- Added `extend-content-types` configuration option
- Improved CMDEXE detection
- Improved SQLI detection
- Improved XSS detection
- Updated base GeoIP data: September 2023
- Upgraded to Golang 1.20.8

4.45.0 2023-08-09

- Upgraded to Golang 1.20.7
- Improved CMDEXE detection
- Improved SQLI detection
- Improved XSS detection
- Updated base GeoIP data: August 2023

4.44.0 2023-07-12

- Added alpha support for API Schema Enforcement
- Improved stability of GraphQL inspection
- Improved detection when using examine-unknown-content-type feature
- Improved SQLI detection
- Improved release automation
- Upgraded to Golang 1.20.6
- Updated base GeoIP data: July 2023

4.43.0 2023-06-16

- Improved SQLI detection
- Added support for handling gRPC with gzip encoding
- Fixed v4.42.0 release issue where agent would incorrectly report its version number in some locations
- Updated base GeoIP data: June 2023

4.41.0 2023-05-11

- Improved SQLI detection
- Added x86_64 and arm64 support for Amazon Linux 2023
- Added x86_64 and arm64 support for Alpine Linux 3.18
- Upgraded to Golang 1.19.9
- Updated base GeoIP data: May 2023

4.40.0 2023-04-13

- Improved SQLI detection
- Improved RPM, DEB package upgrade scripts

4.39.1 2023-04-03

- Fixed resource leak when loading a new ruleset
- Fixed inspection regression causing internal errors for certain requests
- Improved SQLI detection
- Changed RPM package filenames to not specify `el` version in name

4.39.0 2023-03-15

- Improved detection of XSS
- Improved detection of SQLI
- Upgraded to Golang 1.19.7
- Updated base GeoIP data: March 2023

4.38.0 2023-02-15

- Improved detection of SQLI
- Improved detection of CMDEXE
- Updated base GeoIP data: February 2023

4.37.0 2023-01-12

- Upgraded to Golang 1.19.4
- Improved detection of SQLI
- Updated base GeoIP data: January 2023

4.36.1 2022-12-13

- Improved SQLI detection

4.36.0 2022-12-07

- Add support for Alpine 3.17
- Improved SQLI detection
- Updated base GeoIP data: December 2022

4.35.0 2022-11-09

- Added optional systemd based agent auto update for Debian, Ubuntu, and RHEL/CentOS
- Upgraded to Golang 1.19.3
- Improved GraphQL Parsing

- Improved CMDEXE detection
- Updated base GeoIP data: November 2022

4.34.0 2022-10-12

- Upgraded to Golang 1.19.2
- Improved SQLI detection
- Updated base geo IP data: October 2022

4.33.0 2022-09-14

- Added GA support for AWS Lambda
- Fixed HAProxy SPOA health check response
- Improved SQLI detection
- Improved CMDEXE detection
- Upgraded to Golang 1.18.6
- Updated base geo IP data: September 2022

4.32.1 2022-08-24

- Closed GraphQL related vulnerability
- Improved CMDEXE detection

4.32.0 2022-08-17

- Added x86_64 and arm64 support for Red Hat Enterprise Linux(RHEL9)/CentOS Stream 9
- Improved CODEINJECTION detection
- Improved CMDEXE detection
- Improved inspection of HTTP request bodies
- Updated base geo IP data: August 2022

Apache release notes

/en/ngwaf/apache-release-notes

1.9.2 2023-06-27

- Added additional module configuration for inspection
- Added support for Amazon Linux 2 and 2023 (x86_64 only) (2023-07-25)
- Added support for Alpine Linux 3.19 (x86_64 and arm64) (2023-12-14)
- Added support for Ubuntu 24.04 (x86_64 and arm64) (2024-05-16)

1.9.1 2023-04-25

- Allow `SigSciAgentHost` and `SigSciAgentPort` to be overridden so they can be used within VirtualHost directives

1.9.0 2022-01-18

- Improved `Content-Type` header inspection
- Added Debian 11 (bullseye) support
- Added Ubuntu 22.04 (jammy) support (2023-01-25)

1.8.5 2021-09-20

- Standardized release notes

1.8.4 2021-07-29

- Added support for `Content-type application/graphql`

1.8.3 2021-02-20

- Added cryptographic signatures to released RPM packages

1.8.2 2021-01-08

- Added Ubuntu 20.04 (Focal Fossa) support
- Removed support for Apache 2.2 32-bit LSB for CentOS 6 (EL6)

1.8.1 2020-07-13

- Added support for setting Location header if agent responds with `X-Sigsci-Redirect`

1.8.0 2020-06-10

- Added support for OPTIONS and CONNECT requests
- Deprecated alternative blocking response codes (`SigSciAltResponseCodes`). Allow any code received from agent, 300 and above as blocking.
- Improved socket error handling and logging

1.7.16 2020-03-06

- Improved handling of headers of larger size returned by agent
- Improved handling of reading from socket when data not ready

1.7.15 2020-03-02

- Added support for configurable agent response codes
- Fixed handling of inspection in Locations

1.7.14 2020-02-24

- Added support for agent response code 429
- Added support for Apache 2.2 32-bit LSB for CentOS 6 (EL6)

1.7.13 2020-02-10

- Fixed agent response parsing errors to get the response code

1.7.12 2020-02-04

- Added Debian 10 (buster) support
- Added CentOS 8 (EL8) support

1.7.11 2019-07-02

- Fixed double send of pre-request to agent

1.7.10 2019-05-07

- Added support for Apache 2.4 for Windows

1.7.9 2019-04-23

- Updated internal tooling

1.7.8 2019-03-25

- Added `ServerName` field to agent messages

1.7.7 2019-02-15

- Fixed compiler error for CentOS 6 + Apache 2.4

1.7.6 2018-10-03

- Added ability to set `SigSciAgentPostLen` to `0` to turn off post body processing

1.7.5 2018-06-07

- Added ability to send request to agent despite missing TLS parameters

1.7.4 2018-05-23

- Improved error logging when building messages bound for the agent

1.7.3 2018-05-17

- Improved logging across all modules
- Enhanced logging of communication with the agent

1.7.2 2018-05-16

- Added config check for run-list creation
- Updated directive SigSciAgentInspection to be configured per directory and/or globally

1.7.1 2018-05-08

- Hardened apache module to ensure complete logging for errors

1.7.0 2018-05-01

- Added new global directives: `SigSciRunBeforeModulesList` and `SigSciRunAfterModulesList`

1.6.1 2018-04-06

- Standardized release notes
- Porting fixes for Ubuntu 18.04 (Bionic Beaver)
- Ubuntu 18.04 (Bionic Beaver) packaging

1.6.0 2018-1-30

- ISSUE-10307: Allow other modules to run before this one. i.e., `mod_auth_oidc`

-
  ```
  Improved performance and noise reduction per customer request
  ```

-
  ```
  Added new directive: `SigSciEnableFixups`
  ```

-
  ```
  Changed Directive names for all existing Directives to contain prefix `SigSci`
  ```

1.5.7 2018-01-24

- Added support for multipart/form-data post

1.5.6 2017-10-23

- Fixed module version gen script

1.5.5 2017-10-16

- No code changes
- Added `.tar.gz` packages for CentOS `

1.5.4 2017-10-12

- Improved error logs
- Added debugging for specific customer issue

1.5.3 2017-09-11

- Standardized defaults across modules and document

1.5.2 2017-09-01

- Fixed module type

1.5.1 2017-07-24

- Added XML support and inspection
- Upgraded to latest `messagepack` library
- Added Alpine Linux support

1.5.0 2017-03-21

- Redacted

1.4.6 2016-12-02

- Added `.tar.gz` output packages
- Updated external package https://github.com/camgunz/cmp to reduce static analysis noise, no functional changes

1.4.5 2016-10-31

- Fixed error converting timeout from milliseconds to microseconds
- Fixed issue setting socket timeout when >= 1000ms

1.4.4 2016-10-27

- Added ability to allow post-bodies greater than 128k
- Increased default timeout time from 5ms to 100ms similar to NGINX

1.4.3 2016-09-15

- Added support for mod_remoteip over-rides of the client IP address

1.4.2 2016-08-31

- No change, rebuilt to correct version numbers

1.4.1 2016-08-11

- No change, rebuilt to support CentOS 6 + Apache 2.4

1.4.0 2016-07-13

- Switched to SemVer versions
- Added support for Ubuntu 16.04 (Xenial Xerus)

0.344 2016-07-12

- Removed module-level filtering to allow agent features
- Fixed minor packaging issues

0.340 2016-04-15

- Added support for Apache 2.4 on RHEL/CentOS 6

0.338 2016-04-10

- Added support for RHEL/CentOS 5

0.318 2016-03-21

- Brought all version numbering in sync with the new packages

0.317 2016-02-26

- Originally HTTP methods that were inspected where explicitly listed (allowlisted, e.g. "GET", "POST"). The logic is now inverted to allow all methods not on an ignored list (blocklisted, e.g. "OPTIONS", "CONNECT"). This allows for the detection of invalid or malicious HTTP requests.
- Added backward compatibility support for using the agent RPCv1 protocol (e.g., with `-rpc-version=1`)
- Added the module base address to the startup message to aid debugging EX: SigSci Apache Module version 0.123 starting (base `7f08e4e86000`)
- Improved log messages when reading the request body
- Fixed a potential crash if a request times out

0.311 2016-02-03

- Fixed server crashes as seen in some configurations (so far only in the lab)
- Updated packaging
- Improved performance and memory
- Added support for inspecting HEAD requests

0.241 2015-08-24

- Fixed sending correct values of response code and bytes sent when Apache does certain forms of internal redirects
- Added a Hello World message on Apache start, indicating module is loaded and it's version number
- Improved work around Apache's state machine to capture more response headers

(Originally released as 239, but with minor improvements)

0.224 2015-08-11

HIGHLY RECOMMENDED

- Fixed incorrect handling of (rare) negative length values and time values (due to clock drift, lack of kernel having a monotonic clock, etc)
- Made general optimizations and improvements
- Redacted `Authorization` and `X-Auth-Token` HTTP request headers

0.214 2015-07-31

HIGHLY RECOMMENDED

- Removed incorrect WARNING log message of the form "Allocated buffer using Content-Length of 22 bytes for input stream", which was benign and was turned into a DEBUG message
- Added ability to send Scheme information to agent (i.e. `http` or `https`)
- Added ability to send back TLS (SSL) information to the agent, upgrade agent to at least 1.8.3385 for best results

- Made minor optimizations

0.207 2015-07-20

HIGHLY RECOMMENDED

- Fixed bug in requests with POST bodies > 4000 bytes, where input would get truncated. This bug appeared to manifest itself on some Apache configurations and not others. Regardless, this release is highly recommended for all.
- Added `X-SigSci-AgentResponse`, `X-SigSci-RequestID` request headers, bringing Apache to parity with other platforms
- With Agent 1.8.3186, `X-SigSci-Tags` is added indicating what was detected in the request

0.159 2015-07-13

- Enabled forward compatibility for upcoming feature

0.144 2015-07-06

- Enabled sending of response headers to Agent for upcoming features, which brings the Apache module to parity with other platforms
- Added support and inspect `PATCH` http methods
- Fixed possible issue with reading post bodies > 64k
- Removed rare debug messages that were incorrectly going to stderr

0.139 2015-06-14

- Fixed issues where the Signal Sciences dashboard would show a incorrect "Agent Response" of 0. For best results, upgrade Agent to at least 1.8.2718

0.133 2015-06-11

- Major cleanup and bug fix release. Highly recommended for all customers.
- Removed ability to send `Cookie` or `Set-Cookie` headers to the agent
- Removed deprecated communication protocol

CloudFoundry release notes

/en/ngwaf/cloudfoundry-release-notes

0.1.4 2017-03-21

- Added SIGSCI_REQUIRED variable setting, if true this will prevent the app from starting if the agent fails to start.

0.1.3 2017-03-16

- Added configurable health check feature for both the agent listener and upstream app process.

0.1.2 2017-03-12

- Reset port assignment to ensure app can start if agent fails to start.

0.1.1 2017-03-03

- Agent version can now be specified with the `SIGSCI_AGENT_VERSION` variable.
- Access logging disabled by default.
- Enable access logging by specifying a log file path with the `SIGSCI_REVERSE_PROXY_ACCESSLOG` variable.
- If agent keys are not provided the agent installation process will be skipped.

0.1.0 2017-02-07

- Initial release.
- Package can be extracted directly into existing buildpacks.

Dotnet Core release notes

/en/ngwaf/dotnet-core-release-notes

1.3.1 2023-04-25

- Added configuration option for custom content-types.

1.3.0 2020-08-24

- Added support for setting redirect location
- Added support for blocking on response code range 300 - 599
- Allowed OPTIONS and CONNECT methods

1.2.6 2020-06-18

- Fixed deployment pipeline

1.2.5 2020-06-17

- Added NuGet.org support

1.2.4 2020-02-28

- Added support for HTTP response AsyncFlush

1.2.3 2020-02-07

- Fixed runtime errors when upgraded to .NET Core v3.1

1.2.2 2019-09-09

- Fixed TCP connection leak

1.2.1 2019-06-07

- Fixed handling of xml content type

1.2.0 2019-04-19

- Added netstandard2.0 to TargetFrameworks
- Replaced the package reference for Microsoft.AspNetCore.All with Microsoft.AspNetCore

1.0.1 2018-11-05

- Set default agent connection pool size to zero

1.0.0 2017-10-26

- Initial release

Dotnet release notes

/en/ngwaf/dotnet-release-notes

1.6.1 2021-07-29

- Added support for Content-type application/graphql

1.6.0 2020-09-21

- Removed HTTP method filtering (now inspecting OPTIONS and CONNECT)
- Added support for blocking 300-599 status codes
- Added support for blocking with an HTTP redirect

1.5.5 2020-06-22

- Added support for Nuget packaging

1.5.4 2020-01-07

- Fixed TCP connection leak
- Updated default agent connection pool size changed and set to zero

1.5.3 2019-06-07

- Standardized release notes
- Fixed outdated module detection
- Fixed handling of xml content type

1.5.2 2017-12-12

- Removed filterHeaders option
- Added support for multipart form post

1.5.1 2017-09-01

- Fixed module type

1.5.0 2017-04-18

- Fixed issue, now the response size will always be 0 or greater. No more sending -1 in RPC.Post/UpdateRequest
- Fixed issue preventing module from correctly calling RPC.PostRequest when the Agent returns a 406

Golang release notes

/en/ngwaf/golang-release-notes

1.13.0 2023-07-06

- Added new module configuration option for more granular inspection

1.12.1 2023-02-24

- Sync versions

1.12.0 2023-01-10

- Replaced internal custom header extractor function with raw header extractor function

1.11.0 2022-01-18

- Improved `Content-Type` header inspection
- Standardized release notes

1.10.0 2021-05-26

- Added support for `application/graphql` content-type

1.9.0 2020-10-22

- Added `server_flavor` config option

1.8.2 2020-06-15

- Updated revision for GitHub Actions release

1.8.1 2020-06-15

- Added internal release metadata support

1.8.0 2020-06-15

- Deprecated the `AltResponseCodes` concept in favor of using all codes 300-599 as "blocking"
- Added HTTP redirect support

1.7.1 2020-04-06

- Updated the response recorder to implement the `io.ReaderFrom` interface
- Fixed some linter issues with missing comments on exported functions

1.7.0 2020-03-11

- Cleaned up configuration and added an `AltResponseCodes` option to configure alternative (other than 406) response codes that can be used for blocking

1.6.5 2020-01-06

- Updated the `http.ResponseWriter` wrapper to allow `CloseNotify()` calls to pass through

1.6.4 2019-11-06

- Updated the example to be more configurable allowing it to be used in other example documentation
- Added the ability to support inspecting gRPC (`protobuf`) content

1.6.3 2019-09-12

- Added custom header extractor to the post request

1.6.2 2019-08-25

- Added support for a custom header extractor function

1.6.1 2019-06-13

- Cleaned up internal code

1.6.0 2019-05-30

- Updated list of inspectable XML content types
- Added `http.Flusher` interface when the underlying handler supports this interface
- Updated timeout to include time to connect to the agent
- Cleaned up docs, code, and examples

1.5.0 2019-01-31

- Switched Update / Post RPC call to async
- Internal release for agent reverse proxy

1.4.3 2018-08-07

- Improved error and debug messages
- Exposed more functionality to allow easier extending

1.4.2 2018-06-15

- Improved handling of the `Host` request header
- Improved debugging output

1.4.1 2018-06-04

- Improved error and debug messages

1.4.0 2018-05-24

- Standardized release notes
- Added support for multipart/form-data post
- Extended architecture to allow more flexibility
- Updated response writer interface to allow for WebSocket use
- Removed default filters on CONNECT/OPTIONS methods - now inspected by default
- Standardized error page
- Updated to contact agent on init for faster module registration

1.3.1 2017-09-25

- Removed unused dependency
- Removed internal testing example

1.3.0 2017-09-19

- Improved internal testing
- Updated `msgpack` serialization

1.2.3 2017-09-11

- Standardized defaults across modules and document
- Bad release

1.2.2 2017-07-02

- Updated to use signalsciences/tlstext

1.2.1 2017-03-21

- Added ability to send XML post bodies to agent
- Improved content-type processing

1.2.0 2017-03-06

- Improved performance
- Exposed internal data structures and methods to allow alternative module implementations and performance tests

1.1.0 2017-02-28

- Fixed TCP vs. UDS configuration

0.1.0 2016-09-02

- Initial release

HAProxy release notes

/en/ngwaf/haproxy-release-notes

1.4.2 2024-08-19

- Added RHEL9 support (2024-08-19)

1.4.1 2023-08-17

- Updated example SPOE configuration files with custom response status

1.4.0 2023-06-28

- Added new module configuration option for more granular inspection

1.3.1 2022-10-04

- Updated example SPOE configuration files

1.3.0 2022-01-19

- Improved `Content-Type` header inspection
- Improved the URL path and query information sent to agent
- Fixed the scheme information sent to agent (i.e. `http` or `https`)
- Added Ubuntu 20.04 (focal) support

1.2.3 2021-09-13

- Added example SPOE configuration files to communicate with signal sciences agent

1.2.2 2021-07-29

- Added Debian 11 (bullseye) support (2021-08-31)
- Added support for Content-type application/graphql
- Standardized release notes

1.2.1 2021-02-17

- Added cryptographic signatures to released RPM packages

1.2.0 2020-08-11

- Added support for setting redirect location
- Added support for blocking on response code range 300 - 599
- Added support for OPTIONS and CONNECT methods

1.1.12 2020-04-17

- Updated to support HAProxy 1.9 and above
- Added Debian buster support

1.1.11 2020-04-09

- Improved error handling when sending a blocking response

1.1.10 2020-04-06

- Corrected distribution tar file compression
- Added configurable support for custom response header `extra_blocking_resp_hdr` upon 406 responses

1.1.9 2020-02-05

- Added CentOS 8 (el8) support

1.1.8 2020-01-24

- Added explicit socket close

1.1.7 2019-10-03

- Fixed runtime error from method `res_add_header`

1.1.6 2019-06-06

- Fixed handling of xml content-types

1.1.5 2019-02-07

- Added a default timeout for network operations (set `sigsci.timeout` to override)
- Reduced logging so that expected errors are not logged (set `sigsci.log_network_errors = true` to override)

1.1.4 2018-07-03

- Fixed issue with module not blocking on agent 406

1.1.3 2018-03-09

- Fixed packaging to remove extra directory layer
- Standardized release notes
- Added Ubuntu 18.04 packaging

1.1.2 2018-02-05

- ISSUE-10459 : Enabled timeout tests for module read and agent response

1.1.1 2018-01-12

- ISSUE-10459 : Updated to HAProxy 1.8

- Added support for multipart/form-data post

1.1.0 2017-11-15

- Breaking configuration change. To reduce pollution of the global namespace all `sigsci_XXX` configuration parameters should now be `sigsci.XXX`. No other functional changes.
- Made various minor corrections based on static analysis

1.0.5 2017-11-14

- Fixed bugs

1.0.4 2017-11-07

- Production release

0.0.3 2017-09-11

- Standardized defaults across modules and document

0.0.2 2017-09-07

- Fixed module type

0.0.1 2017-07-02

- Initial - alpha release

Heroku release notes

/en/ngwaf/heroku-release-notes

0.2.2 2022-09-06

- Improved compatibility of ruby dependency.

0.2.1 2020-11-09

- Added server-flavor option to distinguish buildpack.

0.2.0 2020-06-15

- Added `SIGSCI_HEROKU_BIND_RACE_WORKAROUND=1` configuration to work around a race condition where the app might consume the listener port before the sigsci-agent can start listening
- Fixed the healthcheck not starting and not logging to stderr (enabled with `SIGSCI_HC=true`)
- Cleaned up the startup script and added more debugging output when setting `SIGSCI_HEROKU_BUILDPACK_DEBUG=2`

0.1.11 2020-05-19

- Fixed upstream URL

0.1.10 2020-05-19

- Added support to retry starting the agent on failure
- Added additional debugging on startup when `SIGSCI_HEROKU_BUILDPACK_DEBUG=1`

0.1.9 2018-10-01

- Added healthcheck logic to pass on status of reverse-proxied application
- Standardized release notes

0.1.8 2017-11-14

- Allowed directly specifying the agent download URL via `SIGSCI_AGENT_URL`

0.1.7 2017-10-17

- Added ability to leverage wait-for command during dyno startup to ensure web process starts before the agent starts
- Added handling of port assignment for unicorn app startup command

0.1.6 2017-10-16

- Changed process start order to avoid 502s at dyno start up

0.1.5 2017-03-13

- Updated envronment variable names used to set values in conf file

0.1.4 2017-03-13

- Reset port assignment to ensure app can start if agent fails to start

0.1.3 2017-03-03

- Added ability to specify agent version with the `SIGSCI_AGENT_VERSION` variable
- Disabled access logging by default
- Added ability to enable access logging by specifying a log file path with the `SIGSCI_REVERSE_PROXY_ACCESSLOG` variable

0.1.2 2017-03-02

- Added support for Scala buildpack (proper port assignment)

0.1.1 2017-02-13

- Fixed README url

0.1.0 2017-02-07

- Refactored installation and setup process
- Removed usage of the sigsci reverse proxy binary

IBM Cloud release notes

/en/ngwaf/ibm-cloud-release-notes

1.0.2 2016-08-15

- Add start script for php buildpack
- Fix permissions on php start script
- A little script clean up
- Readme updates

1.0.1 2016-08-01

- Fix permissions

1.0.0 2016-08-01

- Initial release

IIS release notes

/en/ngwaf/iis-release-notes

3.4.0 2023-06-27

- Added additional module configuration for inspection

3.3.0 2022-09-26

- Updated RPC library.

3.2.0 2022-01-21

- Improved `Content-Type` header inspection
- Standardized release notes

3.1.1 2021-07-29

- Added support for `Content-type application/graphql`

3.1.0 2021-07-16

- Updated installer to not install 32-bit module on Win 2008 Server R2 and Win 7

3.0.0 2021-02-04

- Added improved Azure support for 32-bit, re-releasing as 3.0.0 for 32-bit app pool support in general

2.4.0 2021-01-28

- Added 32-bit app pool support; one installer for 32-bit, 64-bit or mixed app pools. 64-bit OS only.

2.3.0 2020-09-29

- Enhanced debug logging and moved some error level logging to debug level to reduce verbosity
- Added support for reporting of Azure site extension

2.2.0 2020-08-11

- Added support for using all codes 300-599 as "blocking"
- Added HTTP redirect support
- Removed restrictions on HTTP methods
- Fixed an issue where Windows event log entry descriptions were not resolved

2.1.2 2020-06-24

- Fixed an issue when connecting to agent on servers where the localhost resolves to IPv6 address

2.1.1 2020-06-23

- Added support for reading status page path from environment variable

2.1.0 2020-06-22

- Added support for Azure app services
- Added support for reading configuration from environment variables
- Changed log messages destination to standard Windows events

2.0.1 2020-03-05

- Fixed installer when installing on a machine without .NET 3.5 installed by default (e.g., Windows Server 2019)

2.0.0 2020-03-03

- Improved the installer, working on older versions of Windows back to Server 2008r2
- Changed the default behavior to install as per-machine (instead of per-user). Because of this, previous installs may need to be uninstalled first. A warning will appear during installation if this is the case.
- Changed default agent rpc-address from port 9999 to port 737 to match the agent default
- Updated the installer to detect non-default agent port configurations (i.e., detect old port 9999 configurations) and configure the IIS module to match
- Replaced the PowerShell utilities with a new `SigsciCtl.exe` utility to aid in manual configuration and diagnostics

1.10.2 2019-12-19

- Fixed handling of IIS application initialization preload requests
- Fixed an issue handling UAC in the installer
- Added a PowerShell script to the install to aid in diagnostics

1.10.1 2019-10-18

- Updated the installer

1.10.0 2019-10-08

- Added a `TimeoutMillis` configuration parameter to configure the inspection timeout
- Updated the installer

1.9.3 2019-06-07

- Fixed handling of xml content type

1.9.2 2019-05-22

- Added signatures to packages and DLL

1.9.0 2019-01-29

- Fixed race condition causing potential crash in RPC processing

1.8.0 2019-01-10

- Updated RPC library

1.7.3 2018-11-08

- Fixed race condition
- Improved logging
- Added config options `agentHost`, `MaxPostSize`, `AnomalySize` and `AnomalyDurationMillis`
- Default RPC version changed and set to RPCv0

1.7.2 2018-05-08

- Updated MSI installer to avoid installing for unsupported 32-bit application pools

1.7.1 2018-03-22

- Added MSI installer
- Standardized release notes

1.7.0 2018-02-02

- Fixed race condition

1.6.7 2018-02-01

- Added config options

1.6.6 2018-01-23

- Added support for multipart/form-data post

- Added debug logging option
- Fixed module registration priority
- Fixed outdated module detection

1.6.5 2017-11-08

- Changed it to always send sensitive headers to agent, agent redacts sensitive headers

1.6.4 2017-09-11

- Standardized defaults across modules and document

1.6.3 2017-09-01

- Fixed module type

1.6.2 2017-04-17

- Fixed a bug where the response time for blocked requests was -1ms

1.6.1 2017-04-17

- Fixed a bug where a request that received a 406 from the agent would not call RPC.PostRequest

1.6.0 2017-04-16

- Added a stats page so you can easily see the module's various internal performance counters (request counts, error counts, RPC call counts, RCP call timing information). The page is disabled by default. To enable it, you'll need to follow the configuration instructions in README.md.

Java release notes

🔗 /en/ngwaf/java-release-notes

2.5.7 2024-05-02

- Fixed packaging and dependency resolution bug

2.5.6 2024-04-12

- Fixed jnr-jffi upstream naming bug

2.5.5 2024-04-11

- Added build of shaded jar based on jnr-ffi 1.3.13 for RHEL7 based machines with older glibc versions

2.5.4 2023-03-08

- Added the maxSize configuration option

2.5.3 2023-01-24

- Added compatibility for Jetty Jakarta

2.5.2 2023-06-28

- Added additional module configuration for inspection

2.5.1 2022-06-02

- Fixed multipart form parsing bug with spring boot

2.5.0 2022-04-07

- Added compatibility for Jakarta

2.4.5 2022-02-14

- Improved utilization of CPU and memory resources

2.4.0 2022-01-18

- Improved `Content-Type` header inspection
- Added support for Servlet 3.0 `getParts()`, `getPart()` APIs.

2.3.0 2021-08-31

- Removed dependencies from Apache `http-core` and `http-client` to address potential security vulnerabilities

2.2.4 2021-06-15

- Improved rethrowing application exceptions in container
- Added support for `Content-type application/graphql`

2.2.3 2021-03-22

- Added bypass options by CIDR block, IP range, path or hostname

2.2.2 2020-11-10

- Fixed a bug with reading integer headers

2.2.1 2020-09-9

- Improved logging when module fails to communicate to the agent

2.2.0 2020-08-17

- Fixed an issue where query parameters added during the forward to JSP page or another servlet are missing

2.1.4 2020-07-27

- Added support for redirect, blocking and allowing options and connect

2.1.3 2020-04-02

- set thread pool and queue size

2.1.2 2020-03-03

- Improved support for Servlets 3.1 async features
- Added support for configurable agent response codes

2.1.1 2020-02-25

- Added support for agent response code 429

2.1.0 2020-02-13

- Added support for Servlets 3.1 async features
- Fixed an issue where module caused agent traffic spike at the start of stress tests

2.0.4 2020-02-04

- Fixed an issue where HTTP response header with multiple values caused an exception in RPC post request

2.0.3 2020-01-27

- Fixed an issue where Unix socket close caused RPC errors

2.0.2 2019-12-04

- Fixed a rare null pointer exception error in RPC post request
- Fixed an issue where `null` HTTP header value is returned instead of an empty string
- Improved debug log

2.0.0 2019-11-21

Introducing version 2.0 of the Signal Sciences Java module. This release includes a 2x performance improvement and better utilization of memory resources. JAR dependencies have been updated and isolated to work in more environments. No configuration changes are required. As is best practice, it's advised to deploy in a staging environment before production. The specifics of the optimizations are as follows:

- Created shaded jar file with no dependencies and moved all packages to `signalsciences` namespace
- Fixed RPC connections tracking code that was running in O(n) time
- Minimized temporary buffers usage during (de)serialization, reading and writing of `msgpack` data to sockets
- Minimized number of buffers used to cache the post body and avoided unnecessary copying
- Minimized reflection usage to (de)serialize Java objects to/from `msgpack` stream

1.2.0 2019-05-03

- Added support for Netty
- Fixed a rare unix connection leak
- Reduced logging around RPC connection errors

1.1.3 2019-03-07

- Added config option `expectedContentTypes` that can accept space separated media types and these additional media types are added to the list of valid content types checked by the module before sending the post body to agent for inspection

1.1.2 2019-02-19

- Added ability for Java module to work without any dependencies
- Changed to parse post body only if content-type is `application/x-www-form-urlencoded`
- Fixed an issue where module reported invalid version 1.X

1.1.1 2019-01-25

- Added config option to work around missing post body when asynchronously handling request

1.1.0 2018-10-31

- Updated jars to match maven conventions
  - `sigsci-module-java-{version}.jar` contains the module classes without dependencies (see `pom.xml`)
  - `sigsci-module-java-{version}-shaded.jar` bundles dependencies following maven shaded classifier `<classifier>shaded</classifier>`
- Updated dependencies to latest
- Fixed a rare issue where an exception would cause the filter chain to be called twice

1.0.5 2018-10-04

- Fixed an issue where a null header name or value would cause an exception

1.0.4 2018-09-28

- Fixed a rare error handling case that could have resulted in leaked open connections

1.0.3 2018-06-27

- Added debug for filter conflict errors

1.0.2 2018-01-26

- Added support for multipart/form-data post
- Fixed class loader issue with multiple versions of `asm.jar`
- Updated default `sigsci-agent` unix socket

1.0.1 2017-09-08

- Fixed module type
- Fixed default RPC timeout and max post size

1.0.0 2017-08-07

- Bumped version

0.4.0 2017-08-03

- Added support for java servlet filter

0.3.0 2017-04-05

- Added ability to forward XML-like post bodies to agent
- Revamped TCP RPC
- Initial Unix RPC

0.2.0 2017-03-06

- Fixed issue; reading post content via `getInputStream`, `getReader` and `getHeader*` should behave the same as Jetty
- Changed module defaults to be consistent with other Signal Sciences modules

0.1.6 2017-02-10

- Added support for jetty 9.3.x and 9.4.x

0.1.5 2016-09-30

- Added source for jetty handler to serve as an example

0.1.4 2016-09-20

- Changed it to send all headers to agent for inspection

0.1.3 2016-09-19

- Reduced logging around failures to reconnect to agent

0.1.2 2016-09-16

- Added simple example server with source to packages

0.1.1 2016-09-15

- Added javadoc packages

0.1.0 2016-09-08

- Initial beta release

NGINX C Binary release notes

/en/ngwaf/nginx-c-binary-release-notes

1.1.9 2024-08-06

- Improved inspection of requests that don't follow RFC 2616 or RFC 7231 conventions for request bodies

1.1.8 2022-11-08

- Ensure shared object exists during postinstall (released on 2024-07-09)
- Added support for NGNIX 1.27.0 on Alpine Linux 3.15 - 3.20, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 11 & 12, Ubuntu 18.04 LTS - 24.04 LTS (released on 2024-06-21)
- Added support for all supported NGINX versions on Alpine 3.20 (releases 2024-06-20)
- Added support for NGNIX 1.26.1 on Alpine Linux 3.15 - 3.20, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 11 & 12, Ubuntu 18.04 LTS - 24.04 LTS (released on 2024-06-18)
- Added support for NGINX Plus Release 32 (R32) on Alpine Linux 3.15 - 3.19, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 11 & 12, Ubuntu 18.04 LTS - 24.04 LTS (released on 2024-05-31)
- Added support for Ubuntu 24.04 LTS (noble numbat) NGINX versions 1.18.0 - 1.26.0 (released 2024-05-16)
- Added support for NGINX 1.26.0 on Alpine Linux 3.15 - 3.19, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 11 & 12, Ubuntu 18.04 LTS - 22.04 LTS (released on 2024-05-02)
- Added support for NGINX 1.25.5 on Alpine Linux 3.15 - 3.19, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 11 & 12, Ubuntu 18.04 LTS - 22.04 LTS (released on 2024-05-01)
- Fixed worker process crash
- Set permissions on installed binaries to be more restrictive (released on 2024-04-02)
- Added support for NGINX 1.25.4 on Alpine Linux 3.15 - 3.19, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 11 & 12, Ubuntu 18.04 LTS - 22.04 LTS (released on 2024-02-21)
- Added support for NGINX Plus Release 31 (R31) on Alpine Linux 3.15 - 3.19, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 11 & 12, Ubuntu 18.04 LTS - 22.04 LTS (released 2024-01-08)
- Added support for NGINX 1.16.0 - 1.25.3 on Alpine Linux 3.19 (released 2023-12-14)
- Added support for NGINX Plus versions (R20 - R30) on Alpine Linux 3.19 (released 2023-12-14)
- Added support for NGINX Plus versions (R30, R29, R28, R27, R26, R25, and R24) on Alpine Linux 3.13 - 3.18, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 10 - 12, Ubuntu 18.04 LTS - 22.04 LTS
- Added support for NGINX on Alpine Linux 3.13 - 3.18, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 10 - 12, Ubuntu 18.04 LTS - 22.04 LTS

1.1.7 2022-09-13

- Fixed memory leak in the event of a pre-request failure (released 2022-09-13)
- Added support for NGINX 1.25.3 on Alpine Linux 3.13 - 3.18, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 10 - 12, Ubuntu 18.04 LTS - 22.04 LTS (released on 2023-10-30)
- Added support for NGINX 1.25.2 on Alpine Linux 3.13 - 3.18, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 10 - 12, Ubuntu 18.04 LTS - 22.04 LTS (released on 2023-08-22)
- Added support for NGINX Plus Release 30 (R30) on Alpine Linux 3.13 - 3.18, AmazonLinux 2 LTS, AmazonLinux 2023, Centos 7 - 9, Debian 10 - 12, Ubuntu 18.04 LTS - 22.04 LTS (released 2023-08-22)
- Added support for Debian 12 (bookworm) (amd64 and aarch64) NGINX versions 1.18.0 - 1.25.0 and NGINX Plus R28 & R29 (released 2023-08-17)
- Added support for NGINX 1.25.1 on Alpine Linux 3.13 - 3.17, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 10, Debian 11, Ubuntu 18.04 LTS - 22.04 LTS (released on 2023-07-24)
- Added support for NGINX 1.25.0 on Alpine Linux 3.13 - 3.17, Amazon Linux 2 LTS, Amazon Linux 2023, Centos 7 - 9, Debian 10, Debian 11, Ubuntu 18.04 LTS - 22.04 LTS (released on 2023-05-30)

- Added support for NGINX Plus Release 28 (R28) and Release 29 (R29) on AmazonLinux 2023 (released 2023-05-17)
- Added support for Alpine Linux 3.18 (amd64 and aarch64) NGINX versions 1.20.2 - 1.24.0 and NGINX Plus R28 & R29 (released 2023-05-16)
- Added support for NGINX Plus Release 29 (R29) on Alpine Linux 3.13, 3.14, 3.15, 3.16, 3.17, Amazon Linux 2 LTS, CentOS 7.4+, Debian 11, Ubuntu 18.04 LTS, 20.04 LTS, 22.04 LTS (released on 2023-05-11)
- Added support for NGINX 1.23.4 and 1.24.0 on Alpine Linux 3.14 - 3.17, Amazon Linux 2 LTS, Centos 7 - 9, Debian 11, Ubuntu 18.04 LTS - 22.04 LTS (release on 2023-04-11)
- Added support for NGINX 1.23.3 on Debian 11 (released 2023-01-11)
- Added support for NGINX 1.23.3 (released 2023-01-06)
- Added support for NGINX Plus Release 28 (R28) on Alpine Linux 3.13, 3.14, 3.15, 3.16, 3.17, Amazon Linux 2 LTS, CentOS 7.4+, Debian 11, Ubuntu 18.04 LTS, 20.04 LTS, 22.04 LTS (released on 2022-11-30)
- Added support for NGINX 1.14.2, 1.16.1, 1.18.0, 1.20.2, 1.22.1, 1.23.2, and NGINX Plus Release 27 (R27) on Alpine 3.17 (released 2022-11-30)
- Added support for NGINX 1.14.2, 1.16.1, 1.18.0, 1.20.2, 1.22.1, 1.23.2, and NGINX Plus Release 27 (R27) on CentOS stream9 / RHEL 9 (released 2022-11-21)
- Added support for NGINX 1.22.1 and 1.23.2 on Alpine (3.13 - 3.16), Amazon Linux 2, CentOS (7 & 8), Debian 11, Ubuntu (18.04, 20.04, 22.04) (released 2022-11-01)
- Added support for NGINX 1.19.0,1.19.1,1.19.2,1.19.3,1.19.4,1.19.5,1.19.6,1.19.7,1.19.8,1.19.9,1.20.0,1.21.0,1.21.1,1.21.3,1.21.4,1.21.5,1.23.0 on CentOS 8 (released 2022-10-25)
- Added support for NGINX 1.19.0,1.19.1,1.19.2,1.19.3,1.19.4,1.19.5,1.19.6,1.19.7,1.19.8,1.19.9,1.19.10,1.20.0,1.20.1,1.20.2,1.21.0,1.21.1,1.21.3,1.21.4,1.21.5,1.21.6,1.22.0,1.23.0 on CentOS 7 (released 2022-10-25)
- Added support for NGINX Plus Release 25 (R25) on CentOS 7, CentOS 8, and Amazon Linux 2 (released 2022-10-24)
- Added support for NGINX Plus Release 26 and 27 (R26 and R27) on CentOS 7 and CentOS 8 (released 2022-10-05)
- Added support for AArch64 Alpine Linux 3.14, 3.15, 3.16 with NGINX (1.16.0-1.23.0) (released 2022-09-20)

1.1.6 2022-04-14

- Improved WebSocket messages inspection
- Added support for NGINX Plus Release 26 (R26) (released 2022-04-19)
- Added support for Alpine 3.15 (released 2022-04-22)
- Added support for Alpine 3.14 (released 2022-05-12)
- Added support for Alpine 3.16 (NGINX 1.22.0 only) (released 2022-05-31)
- Added support for Ubuntu 22.04 (NGINX 1.22.0 only) (released 2022-05-31)
- Added support for NGINX 1.22.0 (released 2022-05-31)
- Added support for NGINX 1.23.0 (released 2022-07-07)
- Added support for NGINX Plus Release 27 (R27) (released 2022-07-11)
- Added Arm64 support for NGINX 1.21.6,1.22.0,1.23.0 for CentOS 7,8 (released 2022-07-18)
- Added Arm64 support for NGINX Plus Release 25 (R25) and Release 27 (R27) support for Amazon Linux 2, CentOS 7,8, Ubuntu 18.04, 20.04, 22.04, Debian 10,11 (released 2022-07-18)
- Added support for Amazon Linux 2(NGINX 1.23.0 only) (x86-64 and arm64) (released 2022-07-18)

- Added support for Ubuntu 20.04 (focal) (NGINX 1.20.1) (x86-64 and arm64) (released 2022-07-21)
- Added support for NGINX 1.18.0,1.19.0,1.19.1,1.19.2,1.19.3,1.19.4,1.19.5,1.19.6,1.19.7,1.19.8,1.19.9,1.19.10,1.20.0,1.20.1,1.20.2,1.21.0,1.21.1,1.21.3,1.21.4,1.21.5,1.21.6,1.22.0 on Ubuntu 22.04 (x86-64 and arm64) (released 2022-07-21)
- Added support for NGINX 1.18.0,1.19.0,1.19.1,1.19.2,1.19.3,1.19.4,1.19.5,1.19.6,1.19.7,1.19.8,1.19.9,1.19.10,1.20.0,1.20.1,1.20.2,1.21.0,1.21.1,1.21.3,1.21.4,1.21.5,1.21.6 on Alpine 3.16 (x86-64) (released 2022-07-22)
- Added support for NGINX Plus Release 26 (R26) (released 2022-08-25)

1.1.5 2021-05-17

- Added support for NGINX 1.19.10 on Alpine 3.14 (released 2022-03-07)
- Added Arm64 support for NGINX 1.18.0,1.19.4,1.19.5,1.19.6,1.19.7,1.19.8,1.19.9,1.19.10 on Ubuntu 18.04, 20.04 and Debian 10,11 (released 2022-03-25)
- Added Arm64 support for NGINX 1.20.0,1.20.1,1.20.2,1.21.0,1.21.1,1.21.3 on Ubuntu 18.04, 20.04 and Debian 10,11 (released 2022-03-15)
- Added support for Debian 10 (buster) NGINX 1.14.2 (released 2021-09-28)
- Standardized release notes (2021-09-01)
- Added support for Debian 11 (bullseye) NGINX 1.18.0 (released 2021-09-01)
- Added support for Debian 9 and backports NGINX 1.14.1
- Added support for CentOS 7 & 8 EPEL versions of NGINX
- Added support for NGINX Plus Release 24 (R24)
- Added support for NGINX 1.19.7, 1.19.8, 1.19.9, 1.19.10, 1.20.0, 1.20.1, 1.21.0, 1.21.1, 1.21.2, 1.21.3 and 1.21.4
- Added cryptographic signatures to released RPM packages
- Added support for Alpine 3.13 and Alpine 3.14
- Added support for NGINX Plus Release 25 (R25)
- Added support for NGINX 1.20.2 (released 2021-11-16)
- Added support for NGINX 1.21.6 (released 2022-02-15)
- Added support for NGINX 1.21.5 Alpine Linux (3.11, 3.12, 3.13, 3.14), Debian (10, 11), Ubuntu (18.04, 20.04) (2022-04-12)

1.1.4 2021-01-13

- Fixed a rare issue where module failed to add request headers received from the agent
- Added support for NGINX Plus Release 23 (R23)
- Added support for Ubuntu 20.04 (Focal Fossa)
- Added support for NGINX 1.19.6

1.1.3 2020-11-24

- Improved support for setting headers to HTTP/0.9 request if agent responds with headers

1.1.2 2020-10-05

- Fixed a rare HTTP POST request timeout issue when the external authentication used

1.1.1 2020-09-10

- Fixed a rare HTTP/2 request timeout issue when the external authentication used
- Released packages for NGINX 1.19.3 (2020-10-01)

1.1.0 2020-08-27

- Fixed processing of HTTP/2 requests that may result in `-2` agent responses
- Fixed handling of internal HTTP/2 request
- Fixed a rare HTTP request timeout issue when the external authentication used

1.0.46 2020-07-10

- Fixed crash for HTTPS request with malformed or HTTP/0.9 type header line
- Released packages for NGINX 1.19.1 and 1.19.2

1.0.45 2020-07-08

- Added support for setting `Location` header if agent responds with `X-Sigsci-Redirect`

1.0.44 2020-06-15

- Added ability to pass non-406 WAF blocking response codes from the agent
- Added support for Amazon Linux 2
- Added support for NGINX 1.10.3-fips for Ubuntu 16.04 (Xenial Xerus)
- Added support for NGINX 1.19.0 and NGINX Plus Release 22 (R22)

1.0.43 2020-05-11

- Added support to inspect WebSockets

1.0.42 2020-04-21

- Released packages for NGINX 1.18.0 stable
- Released packages for NGINX 1.17.10
- Removed support for Ubuntu 19.04 in favor of 19.10 as per https://wiki.ubuntu.com/DiscoDingo/ReleaseNotes

1.0.41 2020-04-07

- Released packages for NGINX Plus Release 21 (R21)

1.0.40 2020-03-30

- Added support for sigsci-nginx-ingress-controller

1.0.39 2020-03-23

- Released packages for NGINX 1.17.9

1.0.38 2020-03-11

- Added Alpine Linux support

1.0.37 2020-02-19

- Fixed UDS path length check

1.0.36 2020-02-11

- Added CentOS (EL8) support

1.0.35 2020-01-21

- Released packages for NGINX 1.17.8

1.0.34 2020-01-17

- Fixed dependency ordering issue with the NGINX NDK

1.0.33 2020-01-02

- Released packages for NGINX 1.17.7

1.0.32 2019-12-04

- Released packages for NGINX Plus Release 20 (R20)
- Fixed installers to avoid interfering with existing NDK module installs

1.0.31 2019-11-21

- Updated to log RPC errors in detail
- Updated to use latest NGINX Development Kit (NDK) - version 0.3.1

1.0.30 2019-11-19

- Released packages for NGINX 1.17.6
- Updated source to build with NGINX < 1.13.4

1.0.30 2019-10-10

- Released packages for NGINX 1.17.4

1.0.29 2019-09-12

- Built NGINX and NGINX Plus as EL6 for Amazon Linux image 2018.03

1.0.28 2019-09-12

- Fixed nginx-org build for Amazon Linux image 2018.03

1.0.27 2019-09-06

- Released packages for NGINX Plus Release 19 (R19)

1.0.26 2019-09-05

- Fixed sending post-msg request to agent even when missing context
- Added support for Debian 10 buster

1.0.25 2019-08-30

- Added support for Amazon Linux image 2018.03

1.0.24 2019-08-22

- Fixed post to handle invalid content-length and chunked requests

1.0.23 2019-08-14

- Released packages for NGINX 1.16.1 and 1.17.3

1.0.22 2019-08-07

- Released packages for NGINX 1.14.1 and 1.17.2

1.0.21 2019-08-06

- Fixed handling of internal requests

1.0.20 2019-07-09

- Released packages for NGINX 1.17.1

1.0.19 2019-06-21

- Released packages for NGINX 1.12.2

1.0.18 2019-06-13

- Eliminated sending of duplicate messages to agent

1.0.17 2019-06-05

- Released packages for NGINX 1.17.0

1.0.16 2019-06-03

- Released packages for NGINX 1.16.0
- Added support for Ubuntu 19.04 (Disco Dingo)

1.0.15 2019-05-22

- Released packages for NGINX 1.15.3

1.0.14 2019-04-22

- Released packages for NGINX Plus Release 18 (R18) (1.15.10)

1.0.13 2019-04-18

- Released packages for NGINX 1.15.12

1.0.12 2019-04-10

- Updated dependencies for CentOS packages

1.0.11 2019-04-03

- Released packages for NGINX 1.15.10

1.0.10 2019-03-30

- Fixed TLS parameter interrogation

1.0.9 2019-03-27

- Fixed handling of missing host header value

1.0.8 2019-03-15

- Released packages for NGINX 1.15.7, 1.15.8, and 1.15.9
- Released package for NGINX Plus Release 17 (R17) (1.15.7)

1.0.7 2019-02-26

- Set rewrite phase as default

1.0.6 2019-02-20

- Added support for rewrite phase processing

1.0.5 2019-01-29

- Updated package for NGINX Plus with dependency `nginx-plus-module-ndk` - NGINX Plus Release 17 (R17)
- Cleaned up package uninstall script

1.0.4 2019-01-28

- Removed (nginx.org)ndk lib from NGINX Plus - NGINX Plus Release 17 (R17)

1.0.3 2018-12-19

- Re-certified with latest release - NGINX Plus Release 17 (R17)

1.0.2 2018-12-05

- Re-certified with latest release - NGINX Plus Release 16 (R16)

1.0.1 2018-11-28

- Updated config checks for port and time values
- Updated READMEs for install

1.0.0 2018-11-01

- Built packages for NGINX 1.15.2 and NGINX Plus

NGINX release notes

/en/ngwaf/nginx-release-notes

1.6.0 2023-04-17

- Added new module configuration option for more granular inspection
- Added support Debian 12 (Bookworm) (2023-11-09)
- Added support for Ubuntu 24.04 (Noble) (2024-06-26)

1.5.1 2022-10-17

- Added support for Kong 3.0
- Added support for Ubuntu 22.04 (Jammy) (2023-01-17)

1.5.0 2022-01-19

- Improved `Content-Type` header inspection

1.4.3 2021-07-29

- Added support for `Content-type application/graphql`
- Standardized release notes (2021-08-31)
- Added Debian 11 support (2021-08-31)

1.4.2 2021-03-10

- Added checksum to `sigsci-module-nginx.tar.gz`

1.4.1 2021-02-18

- Added cryptographic signatures to released RPM packages

1.4.0 2020-06-25

- Added ability to pass OPTIONS, CONNECT, and all http methods to the agent
- Added ability to allow any waf response code received from agent, 300 to 599 as blocking
- Added support for setting `Location` header if agent responds with `X-Sigsci-Redirect`
- Added Ubuntu 20.04 (Focal Fossa) support (2020-09-07)

1.3.1 2020-01-30

- Added Debian 10 (buster) support
- Added CentOS8 (EL8) support

1.3.0 2019-07-12

- Updated module to identify rewritten PreRequests

1.2.9 2019-06-18

- Fixed backward compatibility issue

1.2.8 2019-06-10

- Updated module to identify PreRequests

1.2.7 2019-05-23

- Fixed handling of XML content-type to ensure POST body will be read

1.2.6 2018-10-01

- Added NGINX environment override `SIGSCI_NGINX_DISABLE_JIT` to disable the JIT
- Added explicit socket close

1.2.5 2018-06-28

- Fixed handling of bad json elegantly rather than error exception

1.2.4 2018-04-26

- Added option to reuse TCP or Unix socket connection when agent `-rpc-version=1` is used

1.2.3 2018-04-06

- Added Ubuntu 18.04 (Bionic Beaver) package

1.2.2 2018-03-27

- Added Kong plugin
- Added Debian 9 (stretch) package

1.2.1 2018-01-30

- Added support for multipart/form-data post

1.2.0 2017-10-07

- Improved logging
    - Debug logging performance penalty minimized
    - Ad-hoc data is now JSON encoded for clarity and safety

- Each message is tagged with `NETWORK`, `DEBUG` or `INTERNAL`

- Updated third-party dependencies to latest
    - `rxi/json.lua`
    - `fperrad/lua-MessagePack`
- Standardized defaults across modules and document

1.1.8 2017-09-01

- Fixed module type

1.1.7 2016-12-12

- Disabled debug log by default

1.1.6 2016-12-09

- Cleaned up `log_debug` output

1.1.5 2016-11-30

- Cleaned up network error logging
- Added `log_debug` option to aid in debugging
- Added ability to detect and warn for non-LuaJIT installs due to recent compatibility issues

1.1.4 2016-09-01

- Disabled exit if NGINX returns the HTTP method as nil

1.1.3 2016-07-26

- Corrected version number reported by module

1.1.2 2016-07-20

- Added new download option at https://dl.signalsciences.net/sigsci-module-nginx/sigsci-module-nginx_latest.tar.gz

1.1.1 2016-07-14

- Added support for Ubuntu 16.04 (Xenial Xerus)

1.1.0 2016-07-13

- Changed default socket to `/var/run/sigsci.sock` to allow systemd to work without reconfiguration
- Allowed XML mime types to be passed through to Agent, which allows the Agent to inspect XML documents
- Removed header filtering, as that is now down in the agent, which allows custom rules and other actions on cookie data
- Updated `lua-MessagePack` to latest
- Fixed NGINX validator script

1.0.0+428 2016-03-16

- Added license information to packages
- Fixed version reporting bug

1.0.0+424 2016-03-15

- Cleaned up some error messages surrounding timeouts
- Fixed bug reading agent responses when `-rpc-version=1` is used
- Built additional package formats

1.0.0+417 2016-03-07

- Fixed bug with version reporting in dashboard

1.0.0+416 2016-02-26

- Added backward compatibility support for using the agent RPCv1 protocol (e.g., with `-rpc-version=1`)

1.0.0+411 2016-02-17

- Originally HTTP methods that were inspected where explicitly listed (allowlisted, e.g. "GET", "POST"). The logic is now inverted to allow all methods not on an ignored list (blocklisted, e.g. "OPTIONS", "CONNECT"). This allows for the detection of invalid or malicious HTTP requests.

1.0.0+408 2016-02-03

- Implemented packaging fixes

1.0.0+407 2016-01-27

- Added support for inspecting HEAD requests
- Improved return speed if post request has an invalid method

1.0.0+388 2015-11-10

- Made network and internal error logging configurable, with network error logging off by default, which will help prevent flooding web server logs with messages if the agent is off or not running
- Allowed "subrequest processed" used in certain configurations of NGINX

1.0.0+378 2015-10-07

- Improved error handling and standardized error message format

1.0.0+369 2015-09-15

- Added ability to optionally allow a site access key to be specified in `prerequest` and `postrequest` functions

1.0.0+363 2015-08-24

- Fixed issue of missing server response codes introduced by 361

1.0.0+361 2015-08-17

This was a maintenance release with general improvements

- Added new feature on startup to send a `notice` message in the error log describing the components used in the module
- Upgraded pure-Lua MessagePack to 0.3.3, which contains minor performance improvements and allows use of various Lua tool chains
- Allowed module to run using plain Lua (not LuaJIT). We strongly recommend LuaJIT as using plain Lua may have severe performance issues. However this does allow options for very low volume servers and aids in debugging.
- Added ability to ensure response time value is non-negative (on machines lacking a monotonic clock and/or clock drift, the value can occasionally go negative)
- Made minor performance improvements and API standardization

1.0.0+346 2015-07-31

- Added ability to send Scheme information to agent (i.e. `http` or `https`)
- Added ability to send TLS (SSL) protocol and cipher suite information to agent, upgrade agent to at least 1.8.3385 for best results

1.0.0+344 2015-07-21

- Improved clarity when NGINX is misconfigured

1.0.0+343 2015-07-13

- Enabled setting of request headers from Agent response, requires Agent 1.8.3186 and greater
- Added `X-SigSci-RequestID` and `X-SigSci-AgentResponse` request headers, allowing integration with other logging systems
- Fixed "double signal" issue first noticed in 1.0.0+320

1.0.0+327 2015-07-07

- Fixed compatibility to support NGINX version 1.0.15

1.0.0+322 2015-07-06

- Added support for inspection of HTTP `PATCH` method

1.0.0+320 2015-06-14

- Fixed issues where the Signal Sciences dashboard would show an incorrect "Agent Response" of 0 (for best results, upgrade Agent to at least 1.8.2718)

Known Issues (fixed in 1.0.0+343)

- Requesting a static file, or a missing file, that results with a custom error page may result in "double signal" on the dashboard (i.e., one request generates two entries). This is due to a bug in the NGINX state machine with custom error pages. We are actively working to find a solution.

1.0.0+315 2015-06-11

- Updated to bring module up to latest API specification to enable future features

NGINX 1.10 Lua Module release notes

🔗 /en/ngwaf/nginx110-lua-module-release-notes

2.3.2 2017-04-17

- Add amazonlinux 2016.09 package

2.3.1 2017-03-07

- Add epel 6,7 packages

2.3.0 2017-02-16

- Upgrade to 1.10.3

2.2.1 2016-12-23

- Add debian8 packages
- Upgrade lua-nginx-module to 0.10.7

2.2.0 2016-11-02

- Upgrade to 1.10.2

2.1.0 2016-09-13

- Major upgrade, 2.1.0 to indicate working with nginx 1.10.0 to 1.10.1

1.10.1.2 2016-09-09

- CentOS 6 support

1.10.1.1 2016-08-23

- Initial

NGINX 1.11 Lua Module release notes

🔗 /en/ngwaf/nginx111-lua-module-release-notes

2.7.0 2017-03-21

- Add 1.11.8,9,10
- update configure flags for >= 1.11.5 to use --with-compat

2.6.1 2016-12-23

- Add debian8 packages

2.6.0 2016-11-21

- Upgrade to nginx 1.11.6
- Upgrade ngx-lua to 0.10.7

2.5.0 2016-11-02

- Upgrade to 1.11.5

2.4.0 2016-09-13

- Major upgrade, 2.4.0 supports 1.11.0 to 1.11.4

1.11.3.2 2016-09-09

- CentOS 6 support

1.11.3.1 2016-09-07

- Initial

NGINX 1.12 Lua Module release notes

/en/ngwaf/nginx112-lua-module-release-notes

1.1.3 2019-09-24

- add el/7 builds for amazonlinux

1.1.2 2018-06-22

- add epel builds for centos7

1.1.1 2018-05-21

- added debian 7 (wheezy) package

1.1.0 2018-05-03

- Updated lua-nginx-module to 0.10.13
- Added debian 9 (stretch) package
- Added ubuntu 18.04 (bionic) package
- Standardized release notes

1.0.3 2017-10-23

- Added 1.12.2 to build matrix

1.0.2 2017-10-05

- Added amazonlinux2017.09 to matrix

1.0.1 2017-07-22

- Added per-point version packages
- Added jenkins build_number as iteration (release in rpm terms)

1.0.0 2017-07-12

- First build for nginx 1.12.1
- lua-nginx-module 0.10.8
- LuaJIT 2.0.5

ngwafctl release notes

🔗 /en/ngwaf/ngwafctl-release-notes

0.2.1 2024-03-22

- Fix NGWAF container detection consistency issue
- Update default waf image tag

0.2.0 2024-03-21

- Added check for Istio Telemetry Accesslog
- Added check to ensure the Agent can fetch updated configurations from Fastly
- Added a new flag for specifying the WAF container image name --ngwaf-image
- Improved Gloo resource detection
- Implemented additional redactions
- Reduced diagnose log verbosity
- Fixed bugs

0.1.0 2024-03-05

- Initial Release

NodeJS release notes

🔗 /en/ngwaf/nodejs-release-notes

2.2.4 2024-07-23

- Added debug to help diagnose issues with Koa

2.2.3 2023-11-13

- Removed framework dependencies as they are unnecessary.

2.2.2 2023-11-08

- Updated to use node-restify v11

2.2.1 2023-07-28

- Fixed HTTP protocol version sent to agent

2.2.0 2023-07-07

- Added new module configuration option for more granular inspection

2.1.3 2022-12-09

- Pruned dependencies to remove stale references

2.1.2 2022-06-13

- Pruned dependencies to remove stale references

2.1.1 2022-02-23

- Fixed logging bug for post and update inspection steps

2.1.0 2022-01-18

- Improved `Content-Type` header inspection

2.0.2 2021-10-05

- Fixed issue with post body processing for Node.js v16

2.0.1 2021-09-27

- Fixed debug logging bug

2.0.0 2021-09-13

- Refactored `sigsci.js` to allow the addition of new web frameworks without code duplication
- Standardized release notes

1.6.4 2021-03-25

- Added requirement of at least `msgpack5` 3.6.1 explicitly to address CVE-2021-21368

1.6.3 2020-09-17

- Fixed timeout error logging

1.6.2 2020-09-15

- Updated dependencies

1.6.1 2020-08-03

- Fixed logging bug

1.6.0 2020-07-30

- Added support for Hapi v17

1.5.3 2020-05-28

- Fixed an issue where form post data wasn't read fully

1.5.2 2020-03-23

- Added null check for response headers

1.5.1 2019-10-17

- Added support for Hapi v18 testing framework

1.5.0 2019-09-26

- Added Hapi v18 support

1.4.8 2019-02-08

- Fixed possible `multipart/form-data` post body corruption

1.4.7 2018-01-29

- Added support for `multipart/form-data` post

1.4.6 2017-09-19

- Added option to enable debug log

1.4.5 2017-08-23

- Fixed module type

1.4.4 2017-04-26

- Fixed possible race condition

1.4.3 2017-03-22

- Added ability to forward XML-like post bodies to agent

1.4.2 2017-03-07

- Added ability to close connection on `UpdateResponse` and `PostResponse` callback

1.4.1 2017-03-06

- Prevented crashing in some error handling cases

- Fixed bug that caused invalid RPC requests to be sent to the Signal Sciences agent
- Trimmed whitespace around header values
- Updated third-party dependencies in shrinkwrap

1.4.0 2017-02-10

- Improved logging
- Improved JSHint static analysis
- Updated third-party dependencies in shrinkwrap

1.3.2 2017-02-09

- Fixed configuration of TCP/IP vs UDS

1.3.1 2016-09-15

- Improved handling of TLS and null pointer issue for Hapi

1.3.0 2016-08-15

- Added initial Hapi support
- Corrected code to conform to standard
- Made no other functional changes

1.2.1 2016-07-20

- Made no changes, released to improve download experience

1.2.0 2016-07-13

- Removed header filtering from module, as this is now done in the agent
- Improved packaging

1.1.1 2016-05-27

- Fixed issue where the remote socket address was not set correctly

1.1.0 2016-05-12

- Standardized support for Node.js Express to behave like other express middleware
- Added support for Restify
- Fixed minor cosmetic issues to log messages, and code simplification

1.0.1 2016-05-05

- Fixed support for Node.js Express
- Improved timeout error messages

1.0.0 2016-05-02

- Initial release

Glossary

/en/ngwaf/glossary

Term	Definition
Admin	A user role that can access the Next-Gen WAF control panel. Users with this role have limited access to corp configurations, can edit specific sites, and can invite users to sites.
Agent	One of the main components of the Next-Gen WAF architecture. The agent receives requests from modules and quickly decides whether those requests contain attacks or not. The agent then passes their decision back to the module.
Agent alerts	Custom alerts that trigger notifications whenever: • The average number of requests per second (RPS) for all agents across all sites reaches a user-specified threshold • The number of online agents reaches a user-specified threshold
Agent mode (also known as Protection mode)	Determines whether to block requests, not block requests, or entirely disable request processing.
Allow	An agent decision to allow a request through.
Anomalies	Abnormal requests that, although not attacks, may still be notable. Examples include malformed request data and requests originating from known scanners.
API access tokens	Permanent tokens used to access the Signal Sciences API. Users can connect to the API using their email and access token.
Attacks	Malicious requests containing attack payloads designed to hack, destroy, disable, steal, gain unauthorized access, and otherwise take harmful actions against a corp's sites.
Audit log	An audit of activity, changes, and updates made to a site or corp.
Blocking	An agent mode (protection mode) that blocks subsequent attacks from a flagged IP address after it has been identified as malicious. Blocking mode still allows legitimate traffic through if the requests do not contain attacks.
Cards	Visual charts of data that can be monitored and customized on site dashboards.
Cloud engine	One of the main components of the Next-Gen WAF architecture. The cloud engine collects metadata to help improve agent detections and decisions.
Configurations	A set of features that users can customize to meet their business needs. Configurations include: rules, lists, signals, alerts, integrations, site settings, and user management.
Corp (Corporation)	A company hub for monitoring all site activity and managing all sites, users, and corp configurations. Users are authenticated against a corp and can be members of different sites in that corp.
Dashboards	The corp and site homepages. The site dashboard gives visibility into specific types of attacks and anomalies. The corp dashboard gives a snapshot of all top site activity including which sites have the most attack requests, blocked requests, and flagged IP addresses.

Term	Definition
Events	Actions that Next-Gen WAF takes as the result of regular threshold-based blocking, templated rules, site alerts (workspace alerts), and rate limit rules. This includes any occurrence that happens on the Events page, such as a flagged IP address. Events are automatically system generated.
Flagged IP addresses	An IP address that has been flagged for exceeding thresholds.
Header links	External data like Kibana or Datadog that connects with request data from the Next-Gen WAF.
Integrations	DevOps toolchain apps that send activity notifications to users. Examples include Slack, Datadog, PagerDuty, mailing lists, and generic webhooks.
IP Anonymization	IP addresses are converted to anonymous IPv6 addresses so that the Next-Gen WAF will not know the actual IP address, which causes the IP address to appear anonymous in the dashboard.
Lists	Sets of custom data used in corp and site rules, such as a list of countries a corp doesn't do business with. Lists include sets of countries, IP addresses, strings, and wildcards.
Log	In not blocking mode (logging mode), requests that would have been blocked are logged and allowed to pass through instead.
Module	One of the main components of the Next-Gen WAF architecture. The module receives and passes requests to the agent. It then enforces the agent's decisions to either allow, log, or block those requests.
Monitor	To observe and keep watch over corp and site events.
Monitor view	The site dashboard in a TV-friendly format.
Next-Gen WAF	The overall platform that protects a corp's sites.
Not blocking (also known as Logging)	The default agent mode (protection mode). In this mode, attacks are logged but not blocked and the site is not actively protected.
Notification	Any product message sent internally or externally. External notifications are sent through integrations when activity happens (e.g., a Slack notification is sent when a new site is created).
Observer	A user role that can access the Next-Gen WAF control panel. Users with this role can view sites they are assigned to but cannot edit any configurations. This role is equivalent to the user or billing roles in the Fastly control panel.
Off	An agent mode (protection mode) that stops sending traffic to the Next-Gen WAF and disables all request processing.
Owner	A user role that can access the Next-Gen WAF control panel. Users with this role have access to all corp configurations, can edit every site, and can manage users. This role is equivalent to the superuser role in the Fastly control panel.
Rate limit rule	A type of rule that allows you to use the Advanced Rate Limiting feature to define arbitrary conditions and automatically begin to block or tag requests that pass a user-defined threshold.
Redactions	Sensitive data that is not sent to the Next-Gen WAF backend for privacy reasons. Next-Gen WAF redacts some sensitive data by default, such as credit card numbers and social security numbers. In addition to the default redactions, users can specify their own custom redactions.
Request rule	A type of rule that allows you to define arbitrary conditions to block, allow, or tag requests.
Requests	Information that is sent from the client to the server over the hypertext transfer protocol (HTTP). Next-Gen WAF protects over a trillion production requests per month.
Response time	The amount of time between when a request was received by the server and when the server generated a response.

Term	Definition
Role	Every user account for the Next-Gen WAF control panel is assigned one role that defines what the account has authorization to access and the permissions associated with that access level.
Rules	A configuration that defines conditions to block, allow, or tag requests or exclude built-in signals.
Sampling	The act of taking a random sample of certain types of requests to be stored and available in the control panel.
Signal	A descriptive tag about a request.
Signal exclusion rule	A type of rule that allows you to define arbitrary conditions to exclude a specific system signal (such as `XSS`).
Site (Workspace)	A single web application, bundle of web applications, API, or microservice that Next-Gen WAF can protect from attacks. Users can monitor events, set up blocking mode to block attacks, and create custom configurations on sites.
Site alerts (workspace alerts)	A custom alert that allows users to define thresholds for when to flag, block, or log an IP address.
Suspicious IP addresses	IP addresses that are approaching thresholds, but have not yet met or exceeded them.
Templated rule	A type of partially pre-constructed rule that, when filled out, allows you to block, allow, or tag certain types of requests.
Thresholds	A limit either that must be exceeded for a certain event to happen. For example, suspicious IP addresses must exceed a certain threshold to become flagged.
User (role)	A user role that can access the Next-Gen WAF control panel. Users with this role can edit site configurations on sites they are assigned to. This role is equivalent to the engineer role in the Fastly control panel.
Users	All of the people who manage, edit, or just observe activity. A user belongs to a particular corp and is identified by an email address and password. A user can be a member of one or more sites.
Virtual Patch	A virtual patch prevents attacks of a known vulnerability in a module or framework by not allowing the attacks to reach the web app. This buys time to fix the underlying vulnerability while the virtual patch is protecting the app.

* * *

Searching for requests

/en/ngwaf/searching-for-requests

You can use the web interface to view a list of individual requests that have been tagged with signals and that fit into the all or sampled data storage category. This guide describes the different search functionality and search syntax you can use to narrow this list.

Filtering

You can use filters to find requests that meet specific criteria. Selected values auto-populate in the search bar where you can further modify the query.

Filter options on the Requests page include:

- **Time:** filters the requests list based on when the requests were sent. For example, when `2 hours` is selected, only requests that were made in the last two hours appear on the page.
- **Attack signals:** filters the requests list based on the attack signals that requests are tagged with. For example, when `Attack Tooling` is selected, only requests tagged with the `Attack Tooling` signal appear on the page.
- **Anomaly signals:** filters the requests list based on the anomaly signals that requests are tagged with. For example, when `Address Changed` is selected, only requests tagged with the `Address Changed` signal appear on the page.
- **Response codes:** filters the requests list based on the response codes associated with requests. For example, when `404` is selected, only requests with a `404` response code appear on the page.

Filter options on the Requests page include:

- **Time menu:** filters the requests list based on when the requests were sent. For example, when `2 hours` is selected, only requests that were made in the last two hours appear on the page.
- **Query builder:** used in conjunction with the Time menu, filters the request list by tag (a particular signal on a request) or HTTP status code.

Search bar

You can enter free-text and explicit queries into the search bar to find requests that meet specific criteria. Explicit queries follow the `<key><operator><value>` syntax, where:

- the **key** is the field to search upon.
- the **operator** defines the relationship of the key to the value.
- the **value** is the specific value used to filter the requests list.

Example free-text and explicit queries are as follows:

Free-text query	Explicit query	Description
`/a/path/here sqli -7h`	`path:/a/path/here sqli from:-7h`	Show all SQLI in last 7 hours with this particular path
`RU`	`country:ru`	All recent requests from Russia
`cn 500`	`country:cn httpcode:500`	All recent requests from China that had a 500 error
`404 233.252.0.23`	`httpcode:404 ip:233.252.0.23`	Recent requests from an IP that had a 404 error

Keys

The keys that you can search on are as follows:

Name	Type	Description
`agent`	string	The server hostname (or alias) for the agent (`agent:~hostname`, `agent:~appname`, `agent:hostname.appname`, or `agent:hostname-appname`)
`agentcode`	integer	The agents internal response code
`bytesout`	integer	HTTP response size in bytes
`country`	string	Request estimated country of origin (e.g., US, RU)
`from`	time	Filter output with requests since a particular date
`httpcode`	integer	The response's http response code
`ip`	string	Single IPv4 (`ip:198.51.100.128`) Single IPv6 (`ip:2001:0db8:1681:f16f:d4dc:a399:c00d:0225`)

Name	Type	Description
		IPv4 CIDR (`ip:198.51.100.0/24`) IPv6 CIDR (`ip:2001:0db8:1681:f16f::/64`) IPv4 range (`ip:198.51.100.0..198.51.100.255`) IPv6 range (`ip:2001:0db8:1681:f16f::` through `2001:0db8:1681:f16f:ffff:ffff:ffff:ffff`)
`ja3`	string	JA3 fingerprint
`method`	string	HTTP Method (e.g., GET, POST)
`path`	string	Request URL path, does not include query parameters
`payload`	string	The data that triggered a signal (i.e., the attack value)
`protocol`	string	HTTP Request Protocol, typically HTTP/1.1 or HTTP/1.0
`ratelimited`	string	Requests that have been tagged with a specific threshold signal and have been rate limited. The search syntax is `ratelimited: site.<threshold-signal>`. You will need to replace `<threshold-signal>` with the name of the threshold signal that you want to search for.
`responsemillis`	integer	HTTP response time in milliseconds
`remotehost`	string	Remote hostname (`remotehost:www.example.com`) or subdomain match (`remotehost:~example.com`)
`server`	string	Requested server name in the http request (e.g., `example.com` if `http://example.com/name`)
`tag`	string	A particular signal on a request (e.g., SQLI, XSS)
`target`	string	Server + Path
`sort`	string	Sort with `time-asc` (oldest first) or `time-desc` (most recent first)
`until`	time	Filter output with request before a particular date
`useragent`	string	The request's user agent (browser)

Operators

When using operators, keep in mind the following:

- All values below can be quoted to allow for spaces.
- Adding `-` (minus) before any key negates the operation.
- Different key names function as an AND operator (`from:-1h path:/foo`).
- Multiple keys with the same name function as an OR operator (`path:/foo path:/bar` should return paths matching either `/foo` or `/bar`).

Supported operators include:

Operator	Meaning
`key:value`	equals
`key:=value`	equals, alternate syntax
`-key:value`	not equals, general negation of all operators
`key:!=value`	not equals, alternate syntax

Operator	Meaning
`key:>value`	greater-than, integers only
`key:>=value`	equals or greater-than, integers only
`key:<value`	less-than, integers only
`key:<=value`	equals or less-than, integers only
`key:value1..value2`	in range between `value1` and `value2`, integers only. For time see `from` and `until`
`key:~value`	search on the field with the terms provided

Time

Time ranges can be specified in a number of ways using the `from` and `until` keys.

Queries on the Requests page are limited to a maximum time range of 7 days. Queries greater than a 7 day period will not yield any results. For example, if you wanted to find results from 2 weeks ago, your query would need to use `from:-21d until:-14d`, which would be a 7 day window. A query of just `from:-21d` would not yield any results as that would be a 21 day window.

Relative time

Suffix	Meaning
`-5s`	5 seconds ago (from now)
`-5min`	5 minutes ago
`-5h`	5 hours ago
`-5d`	5 days ago
`-5w`	5 weeks ago
`-5mon`	5 months ago
`-5y`	5 year ago

Example:

- `from:-5h` (until now)
- `from:-5h until:-4h` (one hour range)

Absolute time

Absolute time is also allowed using

- Unix UTC Seconds Since Epoch
- Java/JavaScript UTC Milliseconds since Epoch
- ISO Date format `YYYYMMDD`

Example Absolute Time: Unix UTC Seconds

- `from:141384000` (until now)
- `from:141384000 until:1413844691`

Example Absolute Time: Java/JavaScript Milliseconds UTC

- `from:141384000000` (until now)
- `from:141384000000 until:1413844691000`

Example Absolute Date: `YYYYMMDD`

- `from:20141031` (until now)
- `from:20141031 until:20141225`

You can also mix and match time formats:

- `from:20141031 until:-1h`

Query builder

> IMPORTANT
>
> The Query builder is only available in the Fastly control panel, not the Next-Gen WAF control panel.

The Query builder lets you filter for requests with a specific combination of tags (e.g. NOUA) and HTTP status codes (e.g. 404, 500).

To filter results using the Query builder:

1. Use the **Time menu** to specify a time range for when requests were sent.
2. Click **Query builder**.
3. From the **Tag** and **HTTP Code** tabs, select the combinations of tags and codes you want to filter on. Your selections are populated in the search bar.

   Click **Select All** on either tab to select all tags or all HTTP codes. Click **Clear selection** on a given tab to clear selections on that tab or **Clear all** to clear all Query builder filters.
4. Exit the Query builder.
5. Click **Search**.

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