



Analyzing, Detecting, and Fixing Policy Anomalies Using Policy Analyzer and Optimizer

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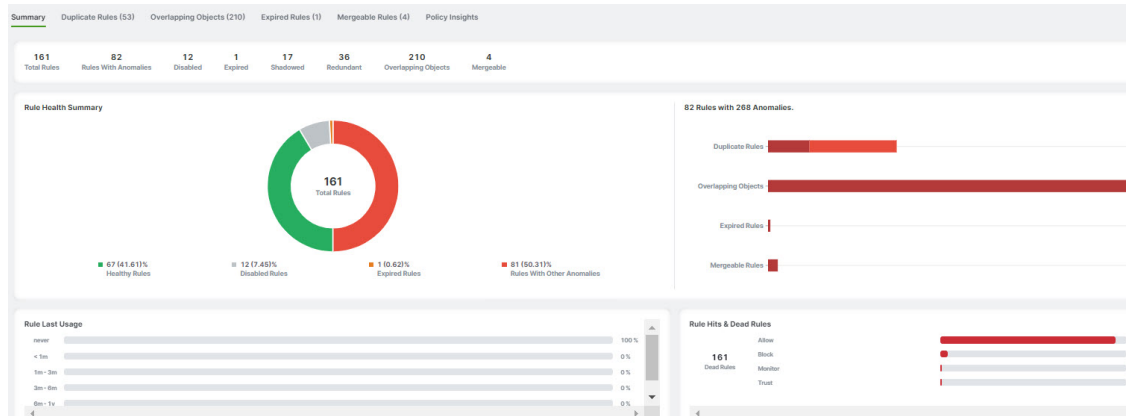
About Policy Analyzer and Optimizer

Cisco Secure Firewall Threat Defense devices with extensive access control policies, especially those generated through the firewall migration process, may have numerous duplicate or shadowed rules. Such bloated policies with unoptimized rulesets can lead to excessive consumption of device memory, delayed loading of rules, long search times, resulting in inefficient security policy enforcement, reduced network speeds, and extended deployment durations.

To deal with such situations, Cisco Defense Orchestrator(CDO) provides Policy Analyzer and Optimizer. It is an intelligent cloud service that can analyze security policies, detect anomalies, and provide recommendations on remediations that can be performed to optimize the policies, thereby improving the firewall performance. The Policy Analyzer and Optimizer can analyze policies both in the cloud-delivered Firewall Management Center and On-Prem Firewall Management Centers that are onboarded to CDO. In addition, this feature can:

- provide comprehensive visualization of policy health information, including an analysis overview and policy insights based on aggregate hit counts.
- analyze policies regularly on scheduled intervals or whenever preferred.
- detect rule anomalies, such as duplicate rules, object overlap in rules, and expired rules.

Figure 1: Analysis Summary



Note that the Policy Analyzer and Optimizer can get launched from CDO's **Services** page, **Insights > Policy Analyzer and Optimizer** on the left pane, and on-prem management center's **Access Control** policies page for the administrator's convenience.

Analysis, Remediation, and Reporting

The Policy Analyzer and Optimizer performs these services: analysis, remediation, and reporting.

Analysis

The Policy Analyzer and Optimizer polls cloud-delivered Firewall Management Center and on-prem management center for policies and displays them on the Policy Analyzer and Optimizer page. To open the **Policy Analyzer and Optimizer** page, navigate **Tools & Services > Firewall Management Center**, select **Cloud-delivered FMC** or any on-prem management center, and choose **Policy Analyzer and Optimizer** from the right pane. Alternatively, on the CDO left pane, choose **Insights > Policy Analyzer and Optimizer**. Choose **Cloud-delivered FMC** or any on-prem management center from the **Showing policy for** tab on the top-left corner.

When you have created a new access control policy or imported a policy, it will take a while for the Policy Analyzer and Optimizer to identify it, after which you can manually trigger the policy analysis. You can also wait for the auto-analysis that occurs every 24 hours. When the analysis is done, Policy Analyzer and Optimizer provides insights on the number of rules in the policy, the percentage of the policy that can be optimized, and a detailed summary that contains information such as Rule Health Summary, Rule Last Usage, Rule Hits & Dead Rules, and so on.

<input type="checkbox"/>	Access Control Policy Name	Devices	Total Rules	Observations	Analysis Status	Last Modified	Last Analyzed	Remediation Status	Remediation Time
<input type="checkbox"/>	Japan_Tokyo_Corp	1	161	59 18% Optimizable	Completed	06/26/2024, 13:30:25	06/26/2024, 14:45:24 <i>Analysis up-to-date</i>		
<input type="checkbox"/>	Geo_Location_Base_Pc		3	0 0% Optimizable	Completed	05/16/2024, 15:28:38	05/16/2024, 20:05:09 <i>Analysis up-to-date</i>		



Note The **Optimizable** percentage under **Observations** column is an approximation of how many rules in the policies can be optimized if the suggested remediations are applied.

Remediation

The policy analysis summary describes the health of your security policy and lets you choose which remediations suggested by the Policy Analyzer and Optimizer you want to apply to your policies. Using the suggested remediations, you could either disable or delete Duplicate Rules, Overlapping Objects, Expired Rules and merge rules that have similar allow and block settings, which can be merged into a single rule. The hit count data is listed under the **Policy Insights** tab. You can **Apply Remediation** to make the chosen remediations get applied to your policies.

Reporting

A detailed report is available for an analyzed policy. After remediation is applied on a policy, a remediation report becomes available. This report contains a consolidated list of the policy anomalies that existed and the remediations that were applied and can be downloaded as a PDF.

Prerequisites to Use Policy Analyzer and Optimizer

- The On-Prem Firewall Management Center must be Version 7.2 or later and must be onboarded to CDO. Ensure that the policy that you want to analyze is associated with at least one device.
- An On-Prem Firewall Management Center Version 7.6 or later must be integrated with the Cisco Security Cloud; the On-Prem Firewall Management Center gets onboarded to the selected CDO tenant as part of the Security Cloud integration.

Policy Analyzer and Optimizer Licensing Requirements

The Policy Analyzer and Optimizer does not require any additional licensing. It comes as part of the CDO base subscription.

Enable Policy Analyzer and Optimizer for Cloud-delivered Firewall Management Center

The Policy Analyzer and Optimizer is enabled for the cloud-delivered Firewall Management Center by default. To use it to analyze access policies on your cloud-delivered Firewall Management Center, follow the steps below:

Step 1 On the navigation bar of your CDO tenant, navigate **Tools & Services > Firewall Management Center**.

Step 2 The **Services** page opens with the cloud-delivered Firewall Management Center selected by default.

Step 3 Click **Policy Analyzer and Optimizer** under **System** on the right pane.

You should now see the access control policies on your cloud-delivered Firewall Management Center listed. You can choose one to analyze or view details for an already analyzed policy.

Enable Policy Analyzer and Optimizer for CDO-managed On-Prem Firewall Management Center

If you have an On-Prem Firewall Management Center Version 7.2 or later, integrate it with SecureX, onboard your on-prem management center to CDO, navigate to **Tools & Services > Firewall Management Center**, select the on-prem management center, and choose **Policy Analyzer and Optimizer** under **System** in the right pane. See [Onboard an On-Prem Firewall Management Center](#) for more information.

If you have an on-prem management center Version 7.6 and want to use Policy Analyzer and Optimizer, follow the steps below:

-
- Step 1** In your on-prem management center, navigate **Integration > Cisco Security Cloud**.
 - Step 2** If you have not integrated your on-prem management center with Cisco Security Cloud, click **Enable Cisco Security Cloud** and follow the steps. To authorize the cloud integration, you must choose an existing CDO tenant or provision a new one, to which your on-prem management center will get onboarded, after the cloud integration is successful.
 - Step 3** After integrating your on-prem management center with Cisco Security Cloud, check the **Enable Policy Analyzer and Optimizer** checkbox and click **Save**.
 - Step 4** Go to **Policies > Access Control**.
 - Step 5** Select a policy and click **Analyze Policy**. Note that the **Anomaly** column displays **In Progress** and once the analysis is complete, it displays the number of anomalies and the percentage of the policy optimizable.
 - Step 6** Click on the percentage to be cross-launched to the **Policy Analyzer and Optimizer** page in the CDO tenant to which your on-prem management center is registered.
 - Step 7** Alternatively, go to **Tools & Services > Firewall Management Center**, select the on-prem management center, and choose **Policy Analyzer and Optimizer** from the right pane.
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Policy Analysis


After provisioning a cloud-delivered Firewall Management Center or onboarding an On-Prem Firewall Management Center to your CDO tenant, and creating policies, you can start to analyze them using the Policy Analyzer and Optimizer. See [Onboard an On-Prem Firewall Management Center](#) and [Enable Cloud-delivered Firewall Management Center on Your CDO](#) tenant, for more information.

This section covers the various ways in which you can get your policies analyzed.

Analyze Cloud-delivered Firewall Management Center Policies

If you have the cloud-delivered Firewall Management Center already provisioned on your CDO tenant, you can readily start analyzing the policies. To provision the cloud-delivered Firewall Management Center on CDO, see [Enable Cloud-delivered Firewall Management Center on Your CDO](#).



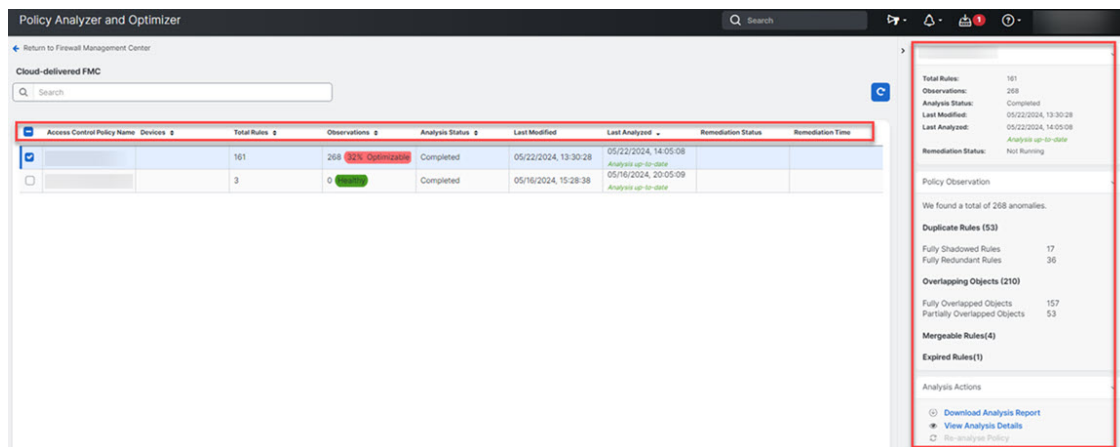
Note When you create a new policy, it might take a while for the Policy Analyzer and Optimizer to fetch the policy details and show up on the **Policy Analyzer and Optimizer**. Click the refresh () button on the top-right corner to manually refresh the page to see new policies.

Step 1 From the CDO left navigation pane, navigate to **Tools & Services > Firewall Management Center**—the **Services** page comes up, with **Cloud-Delivered FMC** selected by default.

Step 2 Click **Policy Analyzer and Optimizer** under **System** on the right pane.

Alternatively, on the left pane, choose **Insights > Policy Analyzer and Optimizer**. The **Showing policy for** option at the top-left corner shows which device's policies are displayed; click to switch among cloud-delivered Firewall Management Center and other On-Prem Firewall Management Centers.

Step 3 For analyzed policies, the Policy Analyzer and Optimizer provides an overview of the analysis that includes **Total Rules**, **Observations**, **Analysis Status**, and **Last Modified** and **Last Analyzed** timestamps. You can also see more details on the right pane when you select a policy.



The screenshot shows the 'Policy Analyzer and Optimizer' interface. On the left, there is a search bar and a table of policies. The table has columns for 'Access Control Policy Name', 'Devices', 'Total Rules', 'Observations', 'Analysis Status', 'Last Modified', 'Last Analyzed', 'Remediation Status', and 'Remediation Time'. Two policies are listed: one with 161 total rules and 268 observations (92% Optimized), and another with 3 total rules and 0 observations. On the right, a detailed analysis pane is shown for a selected policy, displaying summary statistics and a breakdown of anomalies.

Access Control Policy Name	Devices	Total Rules	Observations	Analysis Status	Last Modified	Last Analyzed	Remediation Status	Remediation Time
[Policy Name]		161	268 (92% Optimized)	Completed	05/22/2024, 13:30:28	05/22/2024, 14:05:08	Not Running	
[Policy Name]		3	0	Completed	05/16/2024, 15:28:38	05/16/2024, 20:05:09	Not Running	

Policy Observation Summary:

- Total Rules: 161
- Observations: 268
- Analysis Status: Completed
- Last Modified: 05/22/2024, 13:30:28
- Last Analyzed: 05/22/2024, 14:05:08
- Remediation Status: Not Running

Policy Observation Details:

We found a total of 268 anomalies.

- Duplicate Rules (53)**
 - Fully Shadowed Rules: 17
 - Fully Redundant Rules: 36
- Overlapping Objects (210)**
 - Fully Overlapped Objects: 157
 - Partially Overlapped Objects: 53
- Mergeable Rules(4)**
- Expired Rules(1)**

Analysis Actions:

- Download Analysis Report
- View Analysis Details
- Re-analyze Policy

Step 4 Select the policy for which you want to view the analysis details or re-analyze.

The Policy Analyzer and Optimizer automatically analyzes all the policies every 24 hours, and there are high chances that all your policies already got analyzed and details are ready for you to review.

Step 5 Click **Re-analyze Policy** to manually trigger another analysis.

Analyze On-Prem Firewall Management Center Policies

To use Policy Analyzer and Optimizer to analyze policies on an On-Prem Firewall Management Center Version 7.2 or later, you need to have onboarded it to CDO, either using **Auto discover from Cisco Security Cloud** or **Use Credentials** way of onboarding. For an On-Prem Firewall Management Center Version 7.6, you need to have integrated it to the Cisco Security Cloud, which in turn onboards your On-Prem Firewall Management Center to your CDO tenant. Make sure that you do the following before you begin:

- After onboarding your On-Prem Firewall Management Center, ensure that its in **Active** status in **Tools & Services > Firewall Management Center**.
- Check the **Enable Policy Analysis & Optimization** checkbox after you integrate with the Cisco Security cloud, by navigating to **Integration > Cisco Security Cloud**.
- If you have just onboarded an On-Prem Firewall Management Center or created or imported a new policy in an already onboarded On-Prem Firewall Management Center, wait until the Policy Analyzer and Optimizer fetches the policies.
- You can trigger analysis of the policies manually or they get automatically analyzed as part of the scheduled automated analysis.

Step 1 From the CDO left navigation pane, navigate to **Tools & Services > Firewall Management Center**—the **Services** page comes up, with **Cloud-Delivered FMC** selected by default.

Step 2 Select the On-Prem Firewall Management Center whose policies you want to analyze.

Step 3 Click **Policy Analyzer and Optimizer** under **System** on the right pane.

Alternatively, on the left pane, choose **Insights > Policy Analyzer and Optimizer**. The **Showing policy for** option at the top-left corner shows which device's policies are displayed; click to switch among cloud-delivered Firewall Management Center and other On-Prem Firewall Management Centers.

Step 4 For analyzed policies, the Policy Analyzer and Optimizer provides an overview of the analysis that includes **Total Rules**, **Observations**, **Analysis Status**, and **Last Modified** and **Last Analyzed** timestamps. You can also see more details on the right pane when you select a policy.

Policy Reporting

When your policies are analyzed and ready, on the **Policy Analyzer and Optimizer** page, the **Analysis Status** is **Completed** and the **Observations** column displays if your policy is healthy or can be optimized.

The screenshot displays the 'Policy Analyzer and Optimizer' interface. The main table shows two policies with the following data:

Access Control Policy Name	Devices	Total Rules	Observations	Analysis Status	Last Modified	Last Analyzed	Remediation Status	Remediation Time
[Policy Name]		161	268 Can be Optimized	Completed	06/05/2024, 13:30:43	06/05/2024, 14:05:09		
[Policy Name]		3	0 Healthy	Completed	05/16/2024, 15:28:38	05/16/2024, 20:05:09		

The right-hand pane provides a detailed analysis for the selected policy:

- Total Rules:** 161
- Observations:** 268
- Analysis Status:** Completed
- Last Modified:** 06/05/2024, 13:30:43
- Last Analyzed:** 06/05/2024, 14:05:09
- Remediation Status:** Not Running

Analysis Actions:

- View Analysis Details
- Download Analysis Report
- Re-analyze Policy

Remediation Actions:

- Remediation History

Policy Observation:

We found a total of 268 anomalies.

- Duplicate Rules (53)**
- Fully Shadowed Rules: 17
- Fully Redundant Rules: 36
- Overlapping Objects (210)**
- Fully Overlapped Objects: 157
- Partially Overlapped Objects: 53
- Mergable Rules(4)**
- Expired Rules(1)**

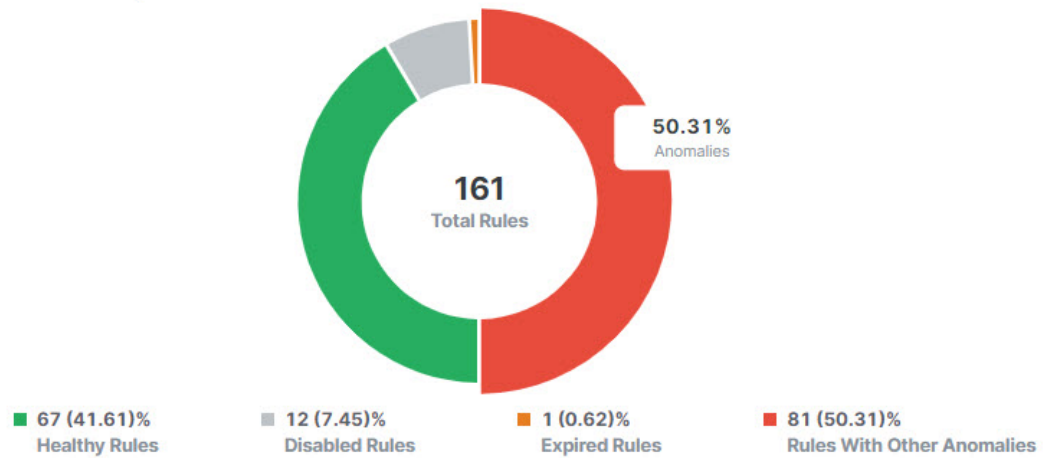
Select the policy to see details about the analysis on the right pane. You can **View Analysis Details**, **Download Analysis Report**, and view the **Remediation History**.

Policy Analysis Summary

The **Summary** tab includes the following rule information, presented in pie charts and bar graphs:

Rule Health Summary—provides insights on how many rules are healthy, disabled, expired, and contain anomalies, using a pie chart. You can also hover over the part of the pie to view the percentage of rules.

Rule Health Summary

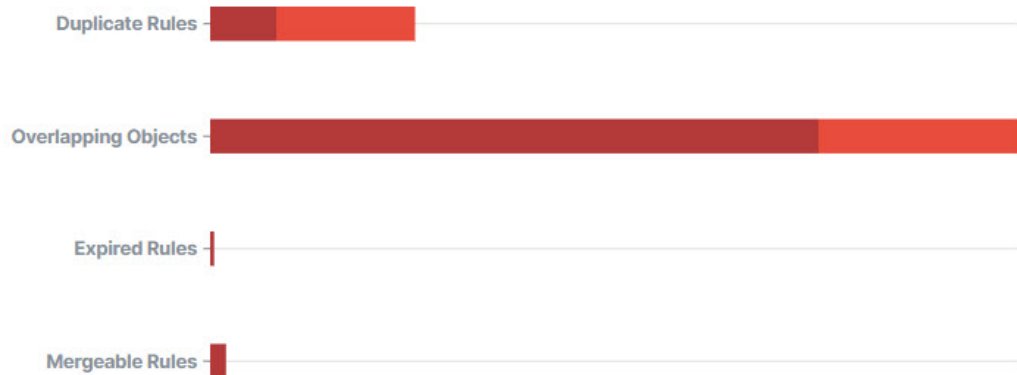


Rule Last Usage—provides insights on the recentness on the rule usage, with time periods.



Rules with Anomalies—provides insights on how many rules have anomalies, using a bar graph. Hover over the bars to see the number of rules having anomalies.

82 Rules with 268 Anomalies.



Rule Hits & Dead Rules—provides insights on hitcount of expired rules, for rule types including allow, block, monitor, and trust.



Duplicate Rules

The **Duplicate Rules** tab lists shadowed and redundant rules with anomalies:

- A **Fully Shadowed Rule** is one that will never evaluate network traffic because another rule that precedes it over shadows this rule.
- A **Fully Redundant Rule** is one that is just a part of another larger rule, such that removing this redundant rule does not have an impact on the network traffic, because the traffic evaluation that this rule must perform is already performed by another rule.

You can choose to either disable or delete all the fully shadowed or fully redundant rules.



Note Expand each observation to see the list of rules that are redundant because of the larger rule. Each rule in the list is displayed with a set of attributes; click the settings button on the top right to select which rule attributes you would like to see along with the rule.

Fully Shadowed Rules (17)

A shadowed rule is a rule that will never evaluate network traffic because the traffic matches the criteria of a preceding rule in the policy, and the preceding rule takes action before the shadowed rule can be matched. [Learn More](#)

[Disable All Fully Shadowed Rules](#)
[Delete All Fully Shadowed Rules](#)

Observation - 1	1 rule is fully shadowed by rule [redacted]
Observation - 2	2 rules are fully shadowed by rule [redacted]
Observation - 3	1 rule is fully shadowed by rule [redacted]
Observation - 4	1 rule is fully shadowed by rule [redacted]
Observation - 5	1 rule is fully shadowed by rule [redacted]

After you disable the shadowed rules, you still get to **Undo** it before applying the changes. It is recommended that you disable the rules first to measure the impact and delete them, because when you delete them later, they get permanently deleted.

You can enable the disabled rules any time by navigating to the cloud-delivered Firewall Management Center or the On-Prem Firewall Management Center on which the rules are present.

Overlapping Objects

The **Overlapping Objects** tab lists objects that are either fully overlapping (the IP addresses are either the same or a complete subset) or partially overlapping (some subset of IP addresses are repeated, but not all).

For example, if a rule contains an object for 192.168.1.1 and another for 192.168.1.0/24, the 192.168.1.1 object is fully overlapped by the other object and is not needed in the rule. You can click the **Remove All Fully Overlapped Objects from Rules** button.

Fully Overlapped Objects (157)

Fully overlapped objects refers to objects which are subset of other objects in same rule, and can be removed to optimise the rule. [Learn More](#)

[Remove All Fully Overlapped Objects from Rules](#)

i The 40 rules below have fully overlapped objects. We recommend that you remove all fully overlapped objects to increase efficiency.

Rule Name	Overlapped Objects
3. [redacted]	Destination Network Fully Overlapped by [redacted]
4. [redacted]	Source Network Fully Overlapped by [redacted]

For partial overlaps, you need to evaluate each occurrence, determine if any changes can be made, and implement those changes directly by editing the objects.

Partially Overlapped Objects (53)

i The 28 rules below have partially overlapped objects. We recommend that you remove all partially overlapped objects to increase efficiency.

Rule Name	Overlapped Objects
[redacted]	Destination Network Partially Overlapped by [redacted]
[redacted]	Public-DNS_1 PUBLIC-DNS +1 more...
[redacted]	Source Network Partially Overlapped by [redacted]
[redacted]	Japan_Tokyo_Data JAPAN_TOKYO
[redacted]	JAPAN_TOKYO JAPAN_SERVER_SEGMENT

Expired Rules

The **Expired Rules** tab lists rules that were configured with a time range and the time range has expired. You can also see rule information such as the date on which the rule expired, hit count, last hit time, and the time range.

You can choose to either **Disable All Expired Rules** or **Delete All Expired Rules**.

Expired Rules

An expired rule is one that was configured with a time range and that time range has expired. [Learn More](#)

[Disable All Expired Rules](#)
[Delete All Expired Rules](#)

Rule Name	Expired on	Hit Count	Last Hit Time	Time Range
	09/24/2022, 05:29:00	0	never hit	1513938_1513942

Mergeable Rules

The **Mergeable Rules** tab lists the rules that have similar allow and block settings and can be merged into a single rule. You can read the observations and click **Merge All Rules** at once to merge the objects in those rules, to reduce the number of rules you manage.

Mergeable Rules

Mergeable rules are two or more rules that have similar criteria for allowing or blocking traffic, and can be combined into a single rule. [Learn More](#)

[Merge All Rules](#)

Observation - 1 These 2 rules can be merged by combining the values into one rule. We recommend you merge these 2 rules to increase efficiency.

Rule Name	Action	Hit Count	Last Hit Time	Time Range	Source Zone	Destination Zone	Source Network	Destination Network	Source Port	Destination Port	VLAN
	Allow	0	never hit		test-zone-1	test-zone-2		Any	Any	Any	Any

The 2 rules listed below can be merged with 'AMP-Access' by combining the 'APPLICATION' values into one rule.

Rule Name	Action	Hit Count	Last Hit Time	Time Range	Source Zone	Destination Zone	Source Network	Destination Network	Source Port	Destination Port	VLAN
	Allow	0	never hit		test-zone-1	test-zone-2		Any	Any	Any	Any
	Allow	0	never hit		test-zone-1	test-zone-2		Any	Any	Any	Any



Note When you merge two rules, the logging settings from the first rule are applied to the rule that the first rule is getting merged with. Therefore, the logging behavior for the merged rule will follow the settings configured on the first rule, and any unique logging configurations from other rules will be overwritten.

Policy Insights

The **Policy Insights** tab has a **Hit Count** section that initially lists any rules that have never been triggered (**Never Hit Rules**). The hit count information is from all devices that are assigned to the policy. You can change criteria and see other hit count information, for example, **Not Hit Rules** for the past 6 months, or **Hit Rules** over a selected time period. You can filter the rules using the actions set in the rules, hit information, and time period:

- **Never Hit Rules**—Rules that have never been hit from the time they were created.
- **Hit Rules**—Rules that have been hit in the selected time period.
- **Not Hit Rules**—Rules that have not been hit in the selected time period.

Select the rules you want to disable or delete and click **Disable Rules** or **Delete Rules**. It is recommended that you disable the rules first to measure the impact of disabling them and then delete them.

Hit Count Insights
Hit count data shows you how often a rule's criteria matches network traffic. Use the filters to identify ineffective rules so that you can reconfigure them or delete them.

Displaying 50 of 161 results

Select Action Select Rules Type Select Time Period

4 rules selected out of 161

Rule Name	Action	Hit Count	First Hit Time	Last Hit Time
119. SERVER_DECOM_ACTIVITY (1)	Block	0	never hit	never hit
121. CSPSC	Allow	0	never hit	never hit
122. CSPSC (1)	Allow	0	never hit	never hit
123. CSPSC (2)	Allow	0	never hit	never hit

Disable Rules Delete Rules

Policy Remediation

When you choose to delete or disable rules with anomalies from the analysis summary, the Policy Analyzer and Optimizer does not immediately apply those changes. The changes that you wanted to do are staged and are applied only when you click **Apply Remediation**.

Note that after clicking **Apply Remediation** once, you cannot apply remediations again based on the same report. You must run a policy analysis again on the new policy settings and remediate the anomalies using the new report.

Apply Policy Remediation

Before you begin

- Ensure you take a backup of all the policies before applying remediations.
- Ensure you have a few policy remediations that are staged to be applied. If there are no staged changes, the **Apply Remediation** button is disabled.
- Ensure you have verified the **Policy Last Modified**, **Policy Last Analysed** dates and timestamps, and the number of rules that you have marked for remediation, at the top-right corner, so that you are sure which version of the policies you are applying the remediations to.

Step 1 In the **Policy Analyzer and Optimizer** page, click **Apply Remediation**.

Step 2 Read through the confirmation pop-up, which contains a gist of all the remediations that will be applied, and ensure you are not applying remediations to policies that you do not want remediated.

Step 3 Click **Apply**.

Note When you click **Apply**, you will see pop-up messages such as **Remediations are being applied** and **The policy is locked for remediation**.

Step 4 After the remediations are completed successfully, click **Download Optimization Report**.

Because the policy just got modified when the remediations were applied, you must reanalyze the newly modified set of policies to get a different analysis summary, using which you can further remediate any left-over policy anomalies.

The remediation report contains consolidated data of all the remediations applied and the rules they were applied to. When you select a policy from the **Policy Analyzer and Optimizer** page, you can view the **Remediation History** from the right pane, which includes data about the date and time of the remediation, the user who initiated the remediation, and the remediation status. You can also download the remediation report from the same pop-up.

All the remediations are recorded and are available under **Remediation History**, with information such as date and time of the remediation, the user who performed the remediation, and so on.

Note For an On-Prem Firewall Management Center in which the Change Management Workflow is enabled, when policy remediations are applied, an internal workflow ticket is created and the changes are staged. The changes take effect only when the ticket is submitted or approved. See [Change Management](#) in *Cisco Secure Firewall Management Center Administration Guide* for more information.

What Does the Policy Remediation Report Contain?

The policy remediation report consolidates all the pieces of a completed remediation and can be downloaded as a PDF. This report contains the following sections, based on what remediations you have performed on your policies. Each section carries information about the rule name, the remediation action taken, and any related comments. For example, if you have not remediated any duplicate rules, the report does not contain the section pertaining to the duplicate rules remediation:

- Remediation Summary
- Hit Count Remediation
- Expired Rules Remediation
- Duplicate Rules Remediation
- Mergeable Rules Remediation



Note To know if a policy is remediated by the Policy Analyzer and Optimizer, navigate to **Policies > Access Policies** and edit a policy to view the rules in the **Policy Editor**. When a policy is remediated by Policy Analyzer and Optimizer, a comment gets added to the rules that are optimized. You can also filter all the rules optimized by the Policy Analyzer and Optimizer using "updated by Policy Analyzer and Optimizer" to view all the rules remediated by the Policy Analyzer and Optimizer.

Troubleshooting Policy Analyzer and Optimizer

Read the following sections to troubleshoot any issues with the Policy Analyzer and Optimizer:

Policy Analyzer and Optimizer Does Not Analyze Policies

If you notice that Policy Analyzer and Optimizer is not analyzing policies despite clicking **Analyze Policy**, try the following:

- Step 1** Navigate **Tools & Services > Firewall Management Center**.
- Step 2** Select the On-Prem Management Center or **Cloud-Delivered FMC** for which the policy analysis is not happening and choose **Workflows** under **Actions** on the right pane.

- Step 3** If you see that the latest workflow's **Current State** shows up as **Error**, expand the workflow and scroll to the last action whose **END STATE** is **ERROR**.
- Step 4** Click **Error Message** under the **RESULT** column to see a detailed error message or click **Stack Trace** to see the series of exceptions that occurred, which caused the error.
- Step 5** Resolve the error or contact Cisco TAC for assistance.
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Policy Analyzer and Optimizer Does Not Fetch Policies

If policies on your On-Prem Management Center are not displayed on the Policy Analyzer and Optimizer page on CDO, do the following:

- Step 1** On the On-Prem Management Center, navigate **Integration > Cisco Security Cloud**.
- Step 2** Ensure that the **Enable Policy Analyzer and Optimizer** checkbox is checked.
- Step 3** (Optional) In the left navigation pane of your CDO tenant, navigate **Tools Services > Firewall Management Center**, and ensure that the On-Prem Management Center is active and reachable.
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Frequently Asked Questions About Policy Analyzer and Optimizer

Can Cisco AI Assistant analyze and remediate policies instead of manually doing it using Policy Analyzer and Optimizer?

The Cisco AI Assistant collaborates with Policy Analyzer and Optimizer to scrutinize policies with anomalies and notify users. However, the AI Assistant cannot automatically analyze and remediate policies.

Can Policy Analyzer and Optimizer detect new changes to an already-analyzed policy and run analysis again on the same policy?

No, the Policy Analyzer and Optimizer can analyze policies only when manually triggered or at a 24-hour scheduled policy analysis run.

For a shared policy, does the Policy Analyzer and Optimizer provide individual device-based reports?

No. The Policy Analyzer and Optimizer provides reports only based on the access policy analysis data.

I am an On-Prem Firewall Management Center user. Should I purchase the CDO base license to use the Policy Analyzer and Optimizer?

No. The Policy Analyzer and Optimizer comes as part of an existing or a newly created CDO tenant during the Cisco Security Cloud integration.

I provisioned a CDO tenant when I integrated my On-Prem Firewall Management Center with the Cisco Security Cloud. What other features, except Policy Analyzer and Optimizer, can I leverage in CDO?

You can only leverage Policy Analyzer and Optimizer capabilities of this CDO tenant. To use other features of CDO, you need to purchase the CDO base license and other device-specific licenses.

For an On-Prem Firewall Management Center on which the change management workflow is enabled and there are policies with pending changes to be approved, can the Policy Analyzer and Optimizer still apply remediations those policies?

No. The remediation will be hindered with an error saying the policies are locked for use.

Is there a maximum number of rules that Policy Analyzer and Optimizer can analyze in a policy?

There are no such limits. The Policy Analyzer and Optimizer can analyze any number of policies and rules. However, when the policies have more number of rules, the analysis takes a long time too.

What is the difference between disable rules and delete rules? Which is the better option?

Deleting a rule removes the rule completely from the device memory. However, disabling a rule keeps it in the device memory as a backup and does not get deployed to the device.

If a policy remediation fails when it is partially done, are the changes automatically revoked by Policy Analyzer and Optimizer?

No. In such a case, you get a failure notification and a remediation report. You can read the report to know which rules were impacted by the half-done remediation, manually revoke the changes, and start the remediation all over again.