

Data Center Next-Generation Firewall Use Case—Juniper Validated Design (JVD)

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Table of Contents

About this Document | 1

Solution Benefits | 1

Use Case and Reference Architecture | 4

Data Center Next-Generation Firewall Use Cases | 5

Data Center Next-Generation Firewall Topology | 5

Validation Framework | 6

Test Objectives | 8

Recommendations | 9

Appendix: Next-Generation Firewall JVD Configuration | 9

Data Center Next-Generation Firewall Use Case—Juniper Validated Design (JVD)

Juniper Networks Validated Designs provide customers with a comprehensive, end-to-end blueprint for deploying Juniper solutions in their network. These designs are created by Juniper's expert engineers and tested to ensure they meet the customer's requirements. Using a validated design, customers can reduce the risk of costly mistakes, save time and money, and ensure that their network is optimized for maximum performance.

About this Document

This document covers the data center next-generation firewall use case with focus on optimal configuration of typical features in the data center. We also focus on the validation of each feature using a feature-based test plan and report the combined performance results delivered by these features. SRX4600 is the platform that is utilized in this validated design.

Solution Benefits

Juniper's approach to a data center security solution starts with operational efficiency, which is the most critical part of any architectural transformation. Following are the various components of this architecture:

In the data center:

- **Data center WAN gateway**—This is the main entryway to your data center where you control who and what can access your corporate resources. Using the analogy of fine art in a museum, this is where the balance between availability and security must be struck. Additionally, this is where you control who can access the data in the data center. It is your first line of defence, and access policies at the data center WAN gateway must align with user policies at your edge.
- **Cloud/Data Center Interconnect (DCI)**—This is the connection between your data center locations where information is exchanged between applications. The most important point to remember here is that the data in transit between data center locations must be secured.

- **Intra-data center**—Inside your data center, there are physical servers that house your applications and their components. There is a micro perimeter that needs to protect these resources. In a zero trust data center, segmentation between servers limiting the impact of a successful attack is a must.
- **Public Cloud**—Public Cloud offers tons of scale, redundancy, and global reach. Many public cloud environments offer their own native security controls, but within the context of zero trust, access to public cloud resources must align with application access policies in your other data center environments.
- **Juniper Security Director Cloud (Management)**—Whether edge security is delivered on-premises or from the cloud, one management experience and one policy framework make it very easy to create a policy once and apply it anywhere, providing unbroken visibility regardless of architecture.

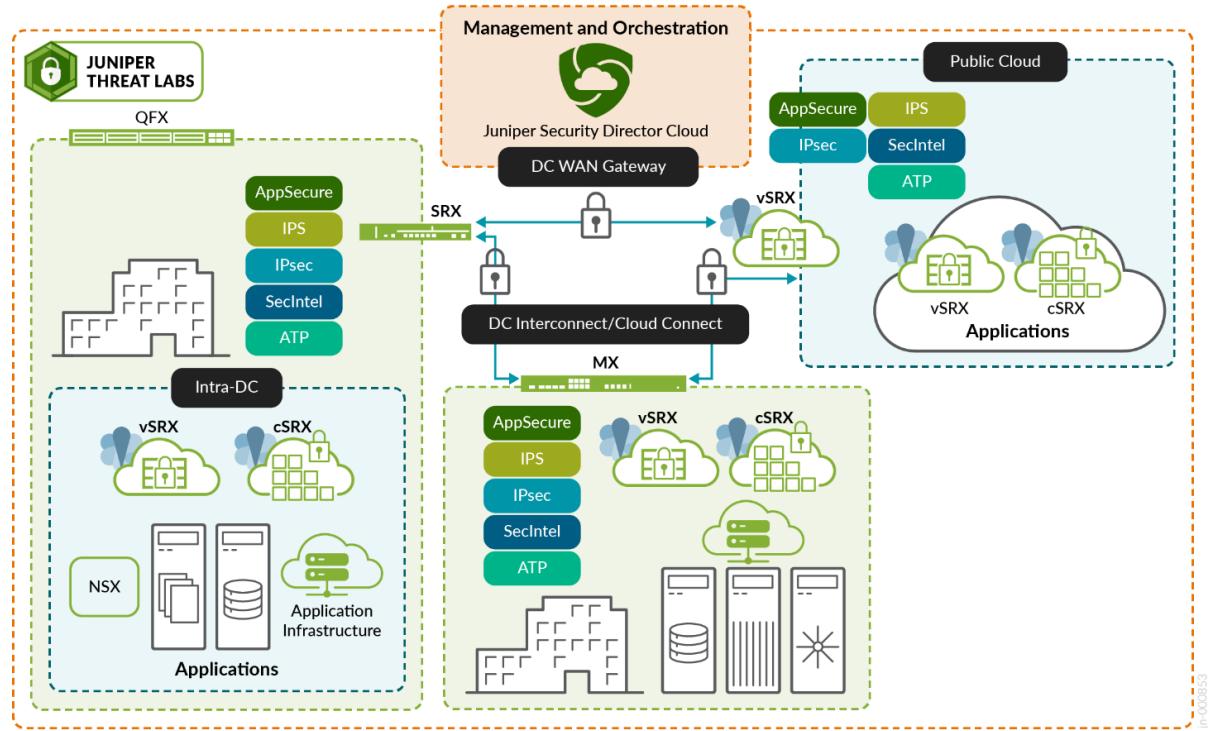
Examples of data center traffic profiles with security implemented:

- At the data center edge gateway—ensuring consistent zero trust access to private and public cloud environments.
- Traffic flow between servers (East-West traffic).
- Traffic flow between clouds (DCI).
- Traffic flow at the application level to protect data (microsegmentation).

Features provided by Juniper Security Director Cloud with the same policy framework:

- Consistent threat protection.
- Easy extension of security policies to new environments and applications, reducing misconfigurations and lowering risk.
- Scaling data center security operations. Because visibility is unbroken in a unified console, security integration between multiple environments is not necessary, and automation is built in to identify and resolve threats quickly.

Figure 1: Data Center Reference Architecture



This JVD focuses on the next-generation firewall services that are typically used in the data center. This solution benefits you by providing an example of an optimized configuration for commonly utilized security services in the data center, and a validation that the deployed solutions are working as intended.

The following features are deployed and validated in this JVD:

- Application Security
- Intrusion detection and prevention (IDP)
- Advanced Threat Prevention (ATP)
- Security Intelligence (Seclintel)
- Advanced anti-malware (AAMW)
- DNS security
- Screens
- SSL Proxy (depends on use case implementation)

Use Case and Reference Architecture

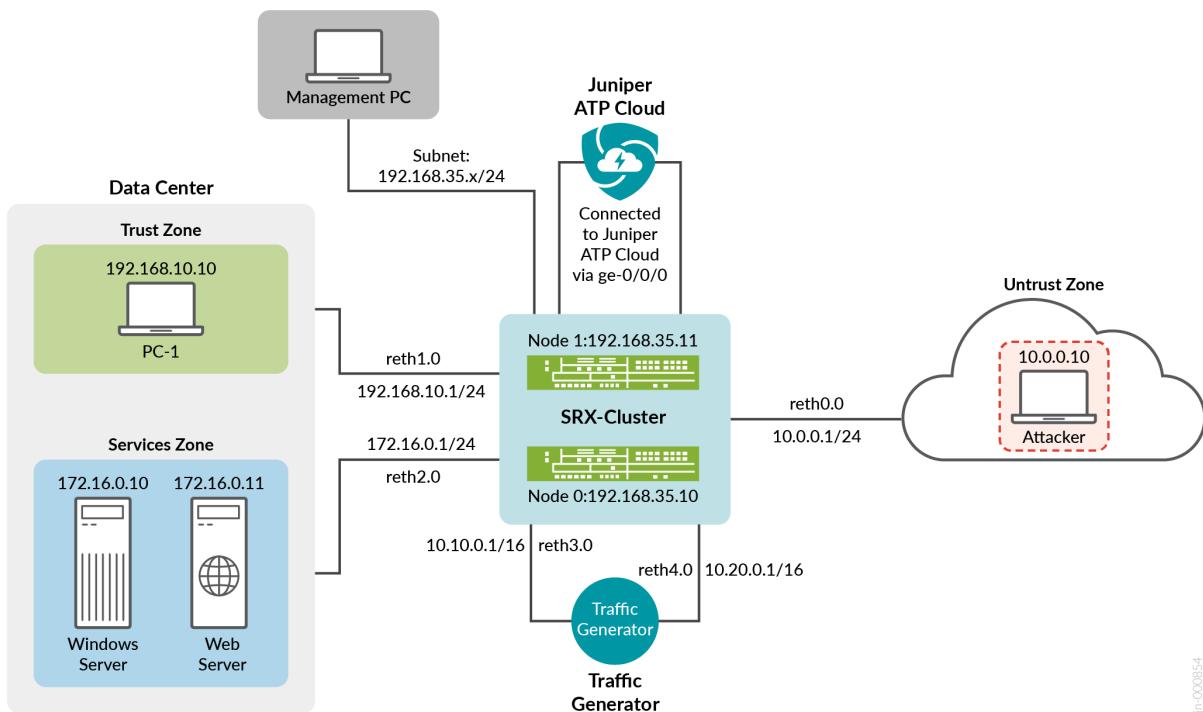
IN THIS SECTION

- Data Center Next-Generation Firewall Use Cases | 5
- Data Center Next-Generation Firewall Topology | 5

In this section, we demonstrate how to implement next-generation firewall features in the data center environment. We test several use cases that present an example data center security implementation with a combination of next-generation firewall features. Each features contributes to a robust comprehensive implementation covering a holistic data center security deployment.

To test the JVD, a lab was built similar to the architecture shown in [Figure 2 on page 4](#). The results of these tests are available in the associated Test Report document.

Figure 2: Reference Architecture



Data Center Next-Generation Firewall Use Cases

Table 1: Data Center Next-Generation Firewall Use Cases

Use Case	Purpose
Next-generation firewall and ATP.	Evaluates the usability and manageability of the firewall's ATP features and ensures the firewall can efficiently handle different types of traffic while maintaining performance. Also, detects and prevents zero-day threats through machine learning (ML) and behavioral analysis.
Validate data center traffic against threat on DNS traffic and validate DNS security features.	Protects data center traffic against common DNS exploits by employing heuristic analysis and behavior-based detection. Validates if DGA/DNS tunneling and SeCIntel static blocks are effectively utilized by the SRX Series Firewall.
Effectiveness of IDP system (IDS/IPS) functionalities	Tests the effectiveness of IDP/IPS features by generating flood attacks, other attacks, and validates the effectiveness of the configured firewall settings.
Test security features with high availability use cases.	Tests security features with high availability use cases. Validates all the configured features are effective against a high availability scenario. Each security feature is tested against different failure scenarios.
Evaluate firewall performance with various traffic types and various ATP features enabled.	Evaluates the usability and manageability of the firewall's ATP features and ensures the firewall can efficiently handle different types of traffic while maintaining performance. Also detects and prevents zero-day threats through ML and behavioral analysis over constant base traffic across 20,000 users (HTTP traffic for 20,000 users).

Data Center Next-Generation Firewall Topology

The lab was configured with a basic data center architecture to emulate the following components:

- SRX Series Firewall (SRX4600) device in a Layer 2 high availability architecture.
- Baseline configuration covering:
 - Interface configuration.
 - Zone configuration.

- Basic building blocks, such as DNS, NTP, System Logging, and so on.
- Firewall policy enforcement between defined zones.
- Kali Linux server to emulate an attacker. This system emulates the following attack scenarios:
 - Generation of flooding attacks.
 - Generation of penetration testing attacks on webserver.
 - Generation and hosting of malware. Provides a reverse shell for exfiltration.
 - Assumes the role of C&C and hosts the malware for download.
- Linux server to host webserver services. This endpoint is protected from various attacks initiated by an attacker.
- Windows client to generate a web based traffic.
- Linux client to generate web based traffic and emulate malware download.

Validation Framework

IN THIS SECTION

- [Test Bed Overview | 6](#)
- [Platforms / Devices Under Test \(DUT\) | 7](#)
- [Test Bed Configuration | 7](#)

Test Bed Overview

The test bed provides provision to emulate an attack environment to test all the next-generation firewall features on the SRX Series Firewall. The test bed is comprised of the following zone configurations:

Table 2: Test Bed

Test Bed		
Zone	Emulated Role	Description
untrust	Internet facing interface	Simulated untrusted zone facing the Internet edge.
services	Zone hosting services in data center environment	Simulated zone with webservers/windows server hosting a range of services is configured.
trust	Zone hosting all trusted clients	Simulated environment with all trusted clients are connected that utilize services offered in the data center environment.

If this was a production environment, we need to configure public IP addresses on interfaces in the untrusted zone and private IP addresses on interfaces in the trust zone. NAT must be enabled for services that need access to Internet resources.

Platforms / Devices Under Test (DUT)

To review the software versions and platforms on which this JVD was validated by Juniper Networks, see the [Validated Platforms and Software](#) section in this document.

Test Bed Configuration

The appendix provides detailed next-generation firewall security configurations. [Figure 3 on page 11](#) shows a workflow diagram regarding the high-level architecture of this JVD environment.

Test Objectives

IN THIS SECTION

- [Test Goals | 8](#)
- [Test Non-Goals | 8](#)

Test Goals

The testing for this JVD was performed with the following goals in mind. See the Test Report for more information.

The goal for this testing was to test the following features and functions:

- Firewall configured as a data center WAN gateway.
- Implement features to protect hosted services in the services zone.
- Implement features to protect common services utilized within the data center environment.
- Implement data center WAN gateway in high availability architecture and test resiliency with different failure scenarios.
- Implement features to protect hosted services from DDoS attacks.
- Test performance of the Juniper SRX Series Firewall with long-lived and short-lived sessions and functionality of various security features with peak traffic conditions.

Test Non-Goals

The following roles were not tested in this JVD:

- Cloud/DCI
- Public Cloud
- Intra-DC

Recommendations

Ensure premium license is applied on the Juniper SRX Series Firewall to ensure availability of premium security features that are tested in the JVD.

Appendix: Next-Generation Firewall JVD Configuration

IN THIS SECTION

- [Generic Workflows and Operations for Creating the Data Center Next-Generation Firewall Topology | 10](#)
- [Chassis Configuration \(CLI\) | 12](#)
- [Baseline Configuration \(CLI\) | 13](#)
- [System and Security Logging Configuration \(CLI\) | 17](#)
- [Management Configuration \(CLI\) | 18](#)
- [Enroll Device to Juniper ATP Cloud After Device Discovery | 20](#)
- [Enable Logging on SRX Series Firewall to Log the Traffic to Juniper Security Director Cloud | 22](#)
- [Application Security | 22](#)
- [Intrusion Detection and Prevention \(IDP\) | 24](#)
- [Seclntel Configuration | 29](#)
- [Advanced Anti-Malware | 33](#)
- [DNS Security | 36](#)
- [Security Screens | 40](#)
- [Reverse SSL Proxy | 42](#)
- [Data Center Next-Generation Firewall Solution Validation | 44](#)
- [Application Security Validation | 47](#)
- [IDP Feature Validation | 49](#)
- [IDP Detailed Information | 50](#)
- [Seclntel Feature Validation | 50](#)

- Advanced Anti-Malware Feature Validation | [53](#)
- DNS Security Feature Validation | [59](#)
- Screens Feature Validation | [65](#)
- SYN Flood—(Apply Source and Destination Limits) | [67](#)
- Reverse SSL Proxy Validation | [69](#)

Generic Workflows and Operations for Creating the Data Center Next-Generation Firewall Topology

This overview illustrates how to use the Juniper SRX Series Firewall CLI and Juniper Security Director Cloud console (the GUI) to provision the data center next-generation firewall architecture. Conceptually, the Juniper SRX Series Firewall is configured on the data center edge to provide visibility and control of traffic that is originating from the following:

- Traffic originating from trusted clients outbound to the Internet. (South-North Traffic)
- Traffic originating from untrusted environment reaching inbound to services configured in the data center. (North-South Traffic)
- Traffic originating from the trusted clients using services hosted with in the data center. (East-West Traffic)

[Figure 3 on page 11](#) illustrates the workflow for configuring the Juniper SRX Series Firewall using the Junos OS CLI and Juniper Security Director Cloud console.

Figure 3: Data Center Next-Generation Firewall Configuration Workflow



The sequence of configuration tasks in this example is as follows:

1. Configure chassis cluster through CLI: Clustering enables high availability.
2. Load baseline configuration with interface, zones, addresses, services, firewall policies, NAT, and default routing: Baseline the configuration for the device to carry traffic and able to reach out to Internet.
3. Configuring logging to an external SIEM: You can have multiple log streams configured in SRX Series Firewall and point the SRX logging mechanisms to multiple SIEMs.
4. Enable web management: Enable web management so that you can access SRX Series Firewall using the on-box management solution through J-Web.
5. Discover the device and import baseline configuration to Juniper Security Director Cloud: Discover the device and import the baseline configuration to Juniper Security Director Cloud.
6. Enable logging for Juniper Security Director Cloud: Enable logging so that the traffic is logged to Juniper Security Director Cloud from SRX Series Firewall.
7. Enroll the device to Juniper ATP Cloud: Juniper ATP Cloud is the threat intelligence component of this solution and the source of Secintel threat feeds. It also can provide advanced malware detection.
8. Create security policies with application specific environment.

9. Create IDP profiles that cover the security landscape of the data center environment.
10. Assign the created IDP profile in a security policy.
11. Create SecIntel Profile: SecIntel Profile contains options for DNS, Command and Control (C&C), and Infected hosts.
12. Assign SecIntel Profile to rule: Assigning SecIntel Profile to rule ensures all the traffic using the rule is verified against the SecIntel feeds.
13. Create AAMW Profile: The AAMW profile allows you to select the type of traffic to be inspected for malware. Traffic includes HTTP, IMAP, SNB, and SMTP.
14. Assign AAMW Profile to Rule: Assign the profile to rule so that all traffic using the rule is inspected for malware based on the profile.
15. Create DNS security Meta Data Profile: DNS security allows you to identify DNS related threats such as DGA and DNS tunnelling.
16. Assign the DNS Meta Data to Zone Context: All the traffic between the zone set is inspected for DNS security.
17. Configure screen options to protect the untrust zone against DDoS attacks.
18. Configure reverse SSL proxy to analyze and protect webserver traffic. The traffic is subjected to advanced security services.

The configuration for each tested JVD feature is as follows:

Chassis Configuration (CLI)

```
# Step 1:
cli
# Configure chassis cluster configuration and Reboot
set chassis cluster cluster-id 1 node 0 reboot
set chassis cluster cluster-id 1 node 1 reboot
# NOTE: Device would reboot and each device would assume a role either as primary or secondary.
# Step 2:
set interfaces fab0 fabric-options member-interfaces ge-0/0/3
set interfaces fab1 fabric-options member-interfaces ge-5/0/3
# Step 3:
Set the interface count to configure redundant interfaces and create the redundant interfaces.
cli
```

```

configure
set chassis cluster reth-count 5
set interfaces reth0 redundant-ether-options redundancy-group 1
set interfaces reth1 redundant-ether-options redundancy-group 1
set interfaces reth2 redundant-ether-options redundancy-group 1
set interfaces reth3 redundant-ether-options redundancy-group 1
set interfaces reth4 redundant-ether-options redundancy-group 1
# Node 0 configuration
set interfaces ge-0/0/0 gigether-options redundant-parent reth0
set interfaces ge-0/0/1 gigether-options redundant-parent reth1
set interfaces ge-0/0/2 gigether-options redundant-parent reth2
set interfaces ge-0/0/3 gigether-options redundant-parent reth3
set interfaces ge-0/0/4 gigether-options redundant-parent reth4
# Node 1 configuration
set interfaces ge-5/0/0 gigether-options redundant-parent reth0
set interfaces ge-5/0/1 gigether-options redundant-parent reth1
set interfaces ge-5/0/2 gigether-options redundant-parent reth2
set interfaces ge-5/0/3 gigether-options redundant-parent reth3
set interfaces ge-5/0/4 gigether-options redundant-parent reth4
# Step 4 - Set Hostname and Management IP:
set groups node0 system host-name SRX-NODE0
set groups node0 interfaces fxp0 unit 0 family inet address 192.16.35.10/24
set groups node1 system host-name SRX-NODE1
set groups node1 interfaces fxp0 unit 0 family inet address 192.16.35.11/24
# Step 5: Enable interface monitoring.
set chassis cluster redundancy-group 1 interface-monitor ge-0/0/0 weight 255
set chassis cluster redundancy-group 1 interface-monitor ge-0/0/1 weight 255
set chassis cluster redundancy-group 1 interface-monitor ge-0/0/2 weight 255
# Step 6: Set chassis options.
set chassis cluster redundancy-group 1 node 0 priority 150
set chassis cluster redundancy-group 1 node 1 priority 100
set chassis cluster redundancy-group 1 preempt

```

Baseline Configuration (CLI)

```

UNTRUST:
set security zones security-zone untrust screen root-screen
set security zones security-zone untrust interfaces reth0.0 host-inbound-traffic system-services
ssh

```

```
set security zones security-zone untrust interfaces reth0.0 host-inbound-traffic system-services
ping
set security zones security-zone untrust interfaces reth0.0 host-inbound-traffic system-services
all
set security zones security-zone untrust interfaces reth5.2000 host-inbound-traffic system-
services ssh
set security zones security-zone untrust interfaces reth2.0 host-inbound-traffic system-services
ping
TRUST:
set security zones security-zone trust interfaces reth1.0 host-inbound-traffic system-services
all
set security zones security-zone trust interfaces reth3.0 host-inbound-traffic system-services
all
set security zones security-zone trust interfaces reth4.1200 host-inbound-traffic system-
services all
SERVICES:
set security zones security-zone services screen root-screen
set security zones security-zone services interfaces xe-1/1/2.0 host-inbound-traffic system-
services ping
DEFAULT ROUTE:
set routing-options static route 0.0.0.0/0 next-hop 80.80.80.1
set routing-options static route 90.0.0.0/16 next-hop 21.0.0.2
set routing-options static route 190.0.0.0/16 next-hop 30.30.30.2
NAT: Outgoing Internet Traffic
set security nat source pool abc address 50.0.0.0/24
set security nat source rule-set nat_to_internet from zone services
set security nat source rule-set nat_to_internet from zone trust
set security nat source rule-set nat_to_internet to zone untrust
set security nat source rule-set nat_to_internet rule 1 match source-address 0.0.0.0/0
set security nat source rule-set nat_to_internet rule 1 match destination-address 0.0.0.0/0
set security nat source rule-set nat_to_internet rule 1 match application any
set security nat source rule-set nat_to_internet rule 1 then source-nat pool abc
NAT: Incoming destination traffic for web server:
set security nat destination pool web-svr-pool address 172.16.0.11/32
set security nat destination pool web-svr-pool address port 443
set security nat destination rule-set WS-NAT rule 1 match destination-address 10.0.0.100/32
set security nat destination rule-set WS-NAT rule 1 match destination-port 443
set security nat destination rule-set WS-NAT rule 1 then destination-nat pool web-svr-pool
Global Addresses:
set security address-book global address WebSvr-Local 7.7.7.2/32
set security address-book global address win-server 172.16.0.10/32
set security address-book global address web-server 172.16.0.11/32
set security address-book global address client1 192.168.10.10/32
```

```
Set security address-book global address web-server-ext 10.0.0.100/32
Services:
set applications application-set Internet-services application junos-http
set applications application-set Internet-services application junos-https
set applications application-set Internet-services application junos-smtp
set applications application-set Internet-services application junos-smtpls
set applications application-set Internet-services application junos-imap
set applications application-set Internet-services application junos-imaps
set applications application-set Internet-services application junos-dns-udp
set applications application-set Internet-services application junos-dns-tcp
set applications application-set Internet-services application junos-icmp-all
Security Policies:
Security Policies between trust to untrust:
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
source-address any
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
destination-address any
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
application any
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
source-identity "domain08.net\ks_windows1_user_1"
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
source-identity "domain08.net\ks_user1_user_1"
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
source-identity unknown-user
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
source-identity unauthenticated-user
deactivate security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule
match source-identity
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule match
dynamic-application any
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule then permit
application-services idp-policy Recommended_WithAudit
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule then permit
application-services utm-policy junos-default-utm-policy
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule then permit
application-services security-intelligence-policy default-secintel
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule then permit
application-services advanced-anti-malware-policy default-antimalware
set security policies from-zone trust to-zone untrust policy t2u-allow_internet_rule then log
session-close
set security policies from-zone trust to-zone untrust policy Block_Offending_Apps match source-
address any
```

```
set security policies from-zone trust to-zone untrust policy Block_Offending_Apps match
destination-address any
set security policies from-zone trust to-zone untrust policy Block_Offending_Apps match
application junos-defaults
set security policies from-zone trust to-zone untrust policy Block_Offending_Apps match dynamic-
application Block_HighBW_Apps
set security policies from-zone trust to-zone untrust policy Block_Offending_Apps then deny
set security policies from-zone trust to-zone untrust policy Block_Offending_Apps then log
session-close
set security policies from-zone trust to-zone untrust application-services security-metadata-
streaming-policy apt_services
Security Policies between services to untrust:
set security policies from-zone services to-zone untrust policy s2u-allow_internet_rule match
source-address any
set security policies from-zone services to-zone untrust policy s2u-allow_internet_rule match
destination-address any
set security policies from-zone services to-zone untrust policy s2u-allow_internet_rule match
application any
set security policies from-zone services to-zone untrust policy s2u-allow_internet_rule match
dynamic-application any
set security policies from-zone services to-zone untrust policy s2u-allow_internet_rule then
permit application-services security-intelligence-policy default-secintel
set security policies from-zone services to-zone untrust policy s2u-allow_internet_rule then
permit application-services advanced-anti-malware-policy default-antimalware
set security policies from-zone services to-zone untrust policy s2u-allow_internet_rule then log
session-close
Security Policies between trust and services:
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule match
source-address any
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule match
destination-address any
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule match
application junos-http
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule match
application junos-https
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule match
dynamic-application junos:HTTP
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule match
dynamic-application junos:SSL
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule then
permit application-services idp-policy CS-To-Web-Protection-Rules
set security policies from-zone trust to-zone services policy t2s-allow_web_svcs_rule then log
session-close
```

```

Security Policies between untrust to services:
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs match
source-address any
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs match
destination-address WebSvr-Local
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs match
application junos-defaults
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs match
dynamic-application junos:HTTP
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs match
dynamic-application junos:SSL
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs then permit
application-services idp-policy CS-To-Web-Protection-Rules
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs then log
session-init
set security policies from-zone untrust to-zone services policy u2s-protect_web_svcs then log
session-close
NETCONF SERVICE:
set system services ssh sftp-server
set system services rlogin
set system services netconf ssh
set system services netconf rfc-compliant
set system services web-management https system-generated-certificate
set system services web-management limits debug-level 9
set system services web-management session idle-timeout 1440
DNS SERVER:
set system name-server 8.8.8.8

```

System and Security Logging Configuration (CLI)

```

set security log utc-timestamp
set security log mode stream
set security log format sd-syslog
set security log report
set security log source-interface reth0.0
set security log transport
set security log stream sd-cloud-logs category all
set security log stream sd-cloud-logs host srx.sdcloud.juniperclouds.net
set security log stream sd-cloud-logs host port 6514

```

```
set security log stream sd-cloud-logs transport division line-based
set security log stream sd-cloud-logs transport protocol tls
set security log stream sd-cloud-logs transport tls-profile syslog-profile
```

Management Configuration (CLI)

```
HTTP:
set system services web-management http interface reth1.0
HTTPS:
set system services web-management https system-generated-certificate
set system services web-management https interface reth1.0
set system services web-management https interface fxp0.0
HTTP:
set system services rest http
HTTPS:
set system services rest https server-certificate system-generated-certificate
set system services rest enable-explorer
```

GUI driven feature configuration through Juniper Security Director Cloud:

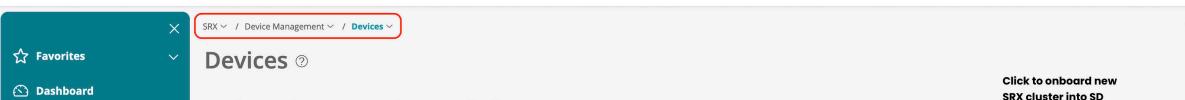
- Discover device in Juniper Security Director Cloud and import baselined configuration.
- Onboard device in Juniper Security Director Cloud.

To onboard the SRX Series Firewall, follow the procedure below:

1. Go to **SRX > Device Management > Device** and then click **+**.
2. Select **Adopt SRX Devices**.
3. Select **SRX Clusters**.
4. Enter **1** in the Number of SRX clusters to be adopted field.
5. Click **OK** and then click **Close**.

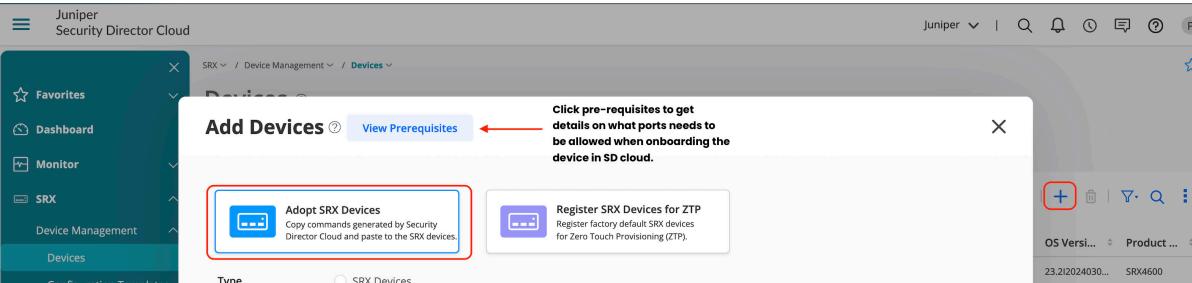
The action above creates a temporary device and to complete the on-boarding process, click **Adopt Cluster** as seen in [Figure 6 on page 20](#). Copy paste the CLI commands on to the node0 of the SRX Cluster.

Figure 4: Juniper Security Director Cloud Device Page



The Juniper Security Director Cloud interface is displayed. The left sidebar shows navigation options: Favorites, Dashboard, Monitor, SRX, Device Management (selected), Configuration Templates, Software Images, Security Packages, and Security Policy. The main content area is titled 'Devices' with a sub-breadcrumb 'SRX / Device Management / Devices'. The 'Devices' tab is selected, showing a list of devices including 'pmsnp03'. The list includes columns for Host Name, Device Group, Inve..., Device Config Status, Management Status, Device Health, Subscriptions, OS Version, and Product S...'. A red box highlights the breadcrumb area, and a red arrow points to the 'Add' button (+) in the top right corner of the device list table.

Figure 5: Juniper Security Director Cloud Device: Onboard SRX Cluster



Juniper Security Director Cloud

SRX / Device Management / Devices

Add Devices

View Prerequisites

Click pre-requisites to get details on what ports needs to be allowed when onboarding the device in SD cloud.

Adopt SRX Devices
Copy commands generated by Security Director Cloud and paste to the SRX devices.

Register SRX Devices for ZTP
Register factory default SRX devices for Zero Touch Provisioning (ZTP).

Type SRX Devices SRX Clusters

Adopt SRX clusters by copying commands generated by Security Director Cloud and pasting them to the primary device of the SRX cluster.

To adopt SRX cluster do the following.

1. Enter the number of SRX clusters you want to adopt and click OK.
2. Click the "Adopt Cluster" link on the landing page to copy the commands, paste and commit them to the primary device of the SRX cluster.

Number of SRX clusters to be adopted Junos version supported: 18.4R3 and above

Note: You can also adopt devices from J-Web and Security Director.

- > Adopt devices from J-Web
- > Adopt devices from Security Director

Cancel OK

Figure 6: Juniper Security Director Cloud: Adopt Device

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar is collapsed. The main header is 'Juniper Security Director Cloud'. The breadcrumb navigation shows 'SRX' > 'Device Management' > 'Devices'. The title bar has a search icon, a bell icon, and a refresh icon. The main content area is titled 'Devices' with a sub-section 'Devices'. Below this is a table with columns: Host Name, Device Group, Inve..., Device Config Status, Management Status, Device Healt..., Subscriptions, OS Versi..., and Product There are two rows of data. The first row has a red box around the 'Host Name' column, which contains 'srx171011543...'. The status for this row is 'Discovery Not Initiated | Adopt Cluster'. The second row has 'pmsnp03' in the 'Host Name' column, with a status of 'In Sync'. The table shows 2 items.

Figure 7: Juniper Security Director Cloud: Copy Paste CLI Commands to Onboard SRX Cluster

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar is expanded, showing 'Device Management' selected. The main header is 'Juniper Security Director Cloud'. The breadcrumb navigation shows 'SRX' > 'Device Management' > 'Devices'. The title bar has a search icon, a bell icon, and a refresh icon. A modal dialog box is open with the title 'Adopt Cluster'. The text inside the dialog reads: 'To adopt cluster, copy the commands, paste and commit them to the primary device of the SRX cluster.' Below this is a large text area containing a complex set of CLI commands. At the top of this area is a 'Copy to Clipboard' button. At the bottom of the dialog is a 'Close' button. The background shows a list of devices with 2 items.

Enroll Device to Juniper ATP Cloud After Device Discovery

1. Go to SRX > Device Management > Device.
2. Select Devices.
3. Click More and then select Enroll to ATP.

4. Log on to your SRX Series Firewall and paste the command into the Junos OS CLI.

Figure 8: Juniper Security Director Cloud—ATP Enrollment

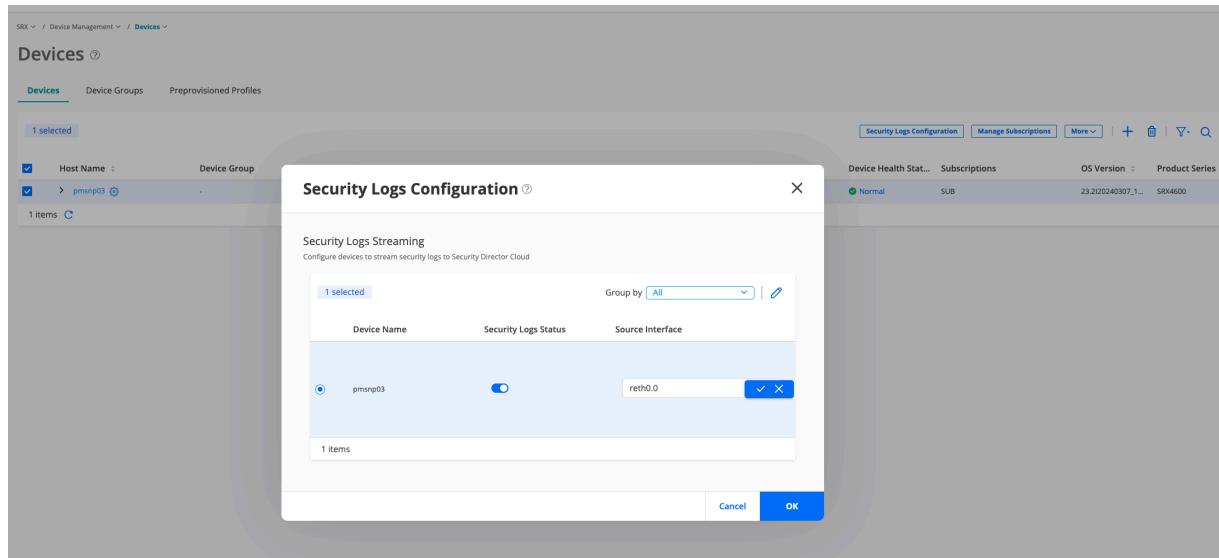
The screenshot shows the Juniper Security Director Cloud interface. The left sidebar is a navigation menu with sections like Favorites, Dashboard, Monitor, SRX, Device Management (selected), Devices, Configuration Templates, Software Images, Security Packages, Security Policy, Security Subscriptions, IPsec VPN, NAT, Identity, Secure Edge, Shared Services, and Administration. The main content area is titled 'Devices' and shows a table with one item: 'SRX_EDGE' (Host Name), 'Perimeter_Firewall' (Device Group), 'In Sync' (Inventory), 'In Sync' (Device Config Status), 'Up' (Management Status), 'Warning' (Device Health), and 'SUBSI' (Subscriptions). A context menu is open over the 'SRX_EDGE' row, with the 'Enroll to ATP' option highlighted by a red box. Other options in the menu include 'View Device Configuration', 'Resynchronize with Network', 'View Active Configuration', 'Configuration Versions', 'Reboot Device', 'Upgrade Devices', 'Export as CSV', 'Export Inventory', 'Disenroll from ATP', and 'Detail'.

Figure 9: Juniper Security Director Cloud—ATP Enrollment

The screenshot shows the Juniper Security Director Cloud interface with the ATP Enrollment dialog box in the foreground. The dialog is titled 'enroll_title' and contains instructions: 'Copy and run this command on eligible SRX Series devices to enroll them. This command will work for 7 days.' It provides two command options: 'For Junos 18.2 or later software versions:' (request services advanced-anti-malware enroll https://amer.sky.junipersecurity.net) and 'For Junos 18.1 or earlier software versions or other versions:' (op url https://amer.sky.junipersecurity.net/v2/skyatp/ui/api/bootstrap/enroll/cavfm). A note at the bottom states: 'Please Note: Running this command will commit any uncommitted configuration changes. It will also cause any previously generated enroll commands to stop working.' A blue 'OK' button is at the bottom right of the dialog. The background shows the same interface as Figure 8, with the 'SRX_EDGE' device selected in the list.

Enable Logging on SRX Series Firewall to Log the Traffic to Juniper Security Director Cloud

Figure 10: Juniper Security Director Cloud—Enable Juniper Security Director Cloud Logging



Application Security

Configure firewall policy to implement application security in a data center environment. We'll create a firewall policy to block any high bandwidth social media / shopping websites and apps (Facebook, Amazon) and video sharing websites such as YouTube, Vimeo, and so on.

Create an Application Group that you'll use in the firewall policy:

1. Go to **Shared Services > Applications**.
2. Click **Create** drop-down and then select **Signature group**.
3. Enter a name for the Application Group.
4. Click **+** to add all the applications that needs to be blocked.
5. Click **OK** to save the Application Group.

Figure 11: Juniper Security Director Cloud—Enable Juniper Security Director Cloud Logging

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar is a navigation menu with sections like Favorites, Dashboard, Monitor, SRX, Secure Edge, Shared Services, Firewall Profiles, Objects, Addresses, Geo IP, Services, and Applications. The Applications section is currently selected. The main content area is titled 'Application Signatures'. A table lists various application signatures, including 'Block_HighBW...' (selected), GRABOID, SUGARSYNC, FACEBOOK-AC..., GOOGLE-ADS, DROPSEND, and HTTP-AUDIO-... The table has columns for Name, Type, Category, Sub Cate..., Risk, Characteristics, Predefined / C..., Signature, Signature group, Created Version, and Order. A red box highlights the 'Create' button in the top right of the table header. Another red box highlights the 'Signature group' column header.

Figure 12: Juniper Security Director Cloud—Creating the Application Signature Group

The screenshot shows the 'EDIT APPLICATION SIGNATURE GROUP' dialog. The left sidebar is the same as in Figure 11. The dialog title is 'EDIT APPLICATION SIGNATURE GROUP'. It has fields for 'Name' (containing 'Block_HighBW_Apps'), 'Description' (containing 'Created from Import'), and 'Group members'. The 'Group members' section is a table with columns: Name, Type, Cat..., Sub cate..., Risk, and Characteristics. It lists applications like AMAZON-PRIMENOW, AMAZON-VIDEO, FACEBOOK-VIDEO, FACEBOOK-VIDEO-STREAM, VIMEO, and YOUTUBE. A red box highlights the 'Name' field in the table. A red box highlights the '+' button in the top right of the table. A red box highlights the 'OK' button in the bottom right corner of the dialog. A red box highlights the 'Description' field with the text 'Created from Import'.

Include the Application Group in a Security Policy for enforcement:

1. Go to SRX > Security Policy > SRX Policy.
2. Click + to add new firewall rule.
3. Enter Source Zone and Source Address.
4. Enter Destination Zone and Destination Address.
5. Select Services and Application Group that we created with apps that need to be blocked.

6. Select Action.

7. Enable Logging if needed from Options.

Figure 13: Juniper Security Director Cloud—Deployment of SRX Policy

Intrusion Detection and Prevention (IDP)

When implementing IDP, you can consider the following settings when designing the IDP policy:

- Environment (Services running within the data center)
- Applications (Applications that are currently being served through the firewall)
- Exempt any services or protocols that are not be scanned (for example, SSH)

Based on the services implemented for this JVD, we choose to clone the client-to-server based protection and add a few rules that cater to the server-to-client based traffic.

The policy created considers the following settings:

- Services running in the data center (HTTP, HTTPS, MAIL, ICMP, DB, DNS, and so on)
- Signatures to detect malicious activity
- Signatures to detect network / services scanning
- Signatures to detect any DOS and DDOS based attacks

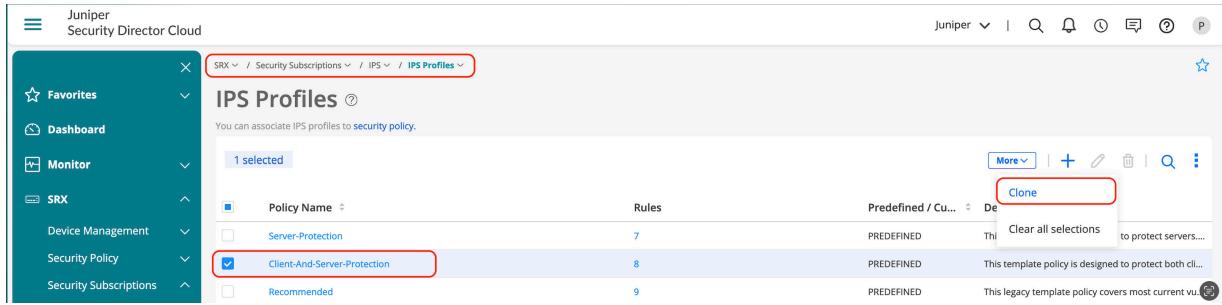
Workflow to create IDP policies and enforce the policies.

To clone predefined policy:

1. Go to **SRX > Security Subscription > IPS > IPS Profiles**.

2. Select the predefined policy to clone.
3. Click **More** and then select **Clone**.
4. Enter a new policy name.

Figure 14: Juniper Security Director Cloud—Creation of IPS Profile



Juniper Security Director Cloud

IPS Profiles

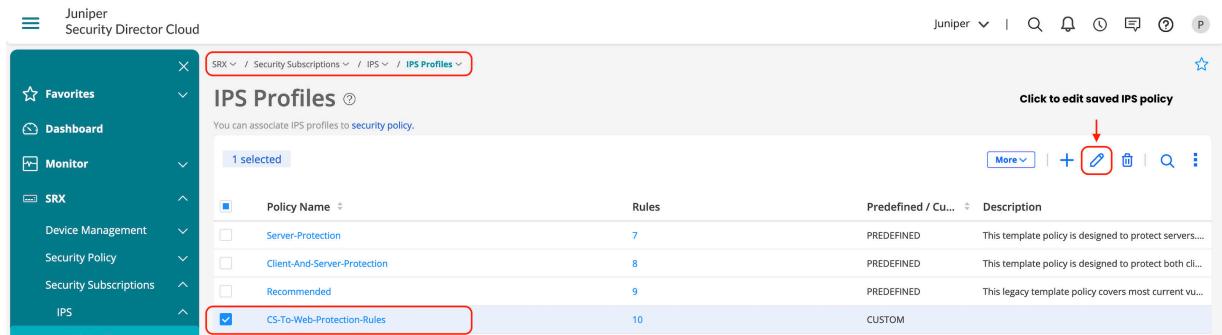
1 selected

Policy Name	Rules	Predefined / Cu...	Description
Server-Protection	7	PREDEFINED	This template policy is designed to protect servers....
Client-And-Server-Protection	8	PREDEFINED	This template policy is designed to protect both cli...
Recommended	9	PREDEFINED	This legacy template policy covers most current vu...

More | + | Clone | : |

In this JVD, we've named the policy **CS-To-Web-Protection-Rules** and added a few rules which caters to server-to-client protection.

Figure 15: Juniper Security Director Cloud—Creation of IPS Profile



Juniper Security Director Cloud

IPS Profiles

1 selected

Policy Name	Rules	Predefined / Cu...	Description
Server-Protection	7	PREDEFINED	This template policy is designed to protect servers....
Client-And-Server-Protection	8	PREDEFINED	This template policy is designed to protect both cli...
Recommended	9	PREDEFINED	This legacy template policy covers most current vu...
CS-To-Web-Protection-Rules	10	CUSTOM	

Click to edit saved IPS policy

More | + | **Edit** | : |

Figure 16: Juniper Security Director Cloud—Add New IPS Rule

Juniper Security Director Cloud

IPS Profiles

CS-To-Web-Protection-Rules

IPS Rules

Seq	Name	IPS Signatures	Action	Options
1	Custom_Signatures	SMB:LNX-KRNL-SESN-STP-DOS +1	No Action	⊕ ⚙
2	Transport-Services	[Recommended]ICMP +7	Recommended	⊕ ⚙
3	Internal-Services	[Recommended]DB +31	Recommended	⊕ ⚙
4	Web-Services-Low-Performance	[Recommended]Misc_SSL - Minor +19	Recommended	⊕ ⚙
5	Other-Activity	[Recommended]APP +9	Recommended	⊕ ⚙
6	Mail-Services	[Recommended]IMAP - Critical +29	Recommended	⊕ ⚙
7	Web-Services-Essential	[Recommended]DNS - Critical +15	Recommended	⊕ ⚙
8	Malicious-Activity	[Recommended]DDOS +23	Recommended	⊕ ⚙
9	Web-Services-Supplemental	[Recommended]DNS - Info +23	Recommended	⊕ ⚙
10	Scanning_Policy	SCAN:NMAP:XMAS +10	Drop Connection	⊕ ⚙

10 items

Click to add new IPS rules

Once new IPS rule is added, update the following:

1. Name of the IPS rule.
2. Add new IDP signatures.
3. Select action if a threat is detected.
4. Optional. Log detected attacks.
5. IPS rules also have advanced options to enable IP actions on detected attacks.

NOTE: Each signature that is added comes with a recommended action to take if detected. You can set the action as Recommended. For more information on the signatures and the recommended action, see: https://threatlabs.juniper.net/home/search/#/list/ips?page_number=1&page_size=20

Figure 17: Juniper Security Director Cloud—Add New IPS Rule

Seq	Name	IPS Signatures	Action	Options
1	Custom.Signatures	SMB:LNK-KRNL-SESN-TP-DOS +1	No Action	<input type="checkbox"/> <input checked="" type="checkbox"/>
2	Transport-Services	[Recommended]ICMP +7	Recommended	<input type="checkbox"/> <input checked="" type="checkbox"/>
3	Internal-Services	[Recommended]DB +31	Recommended	<input type="checkbox"/> <input checked="" type="checkbox"/>
4	Web-Services-Low-Performance	[Recommended]Misc_SSL - Minor +19	Recommended	<input type="checkbox"/> <input checked="" type="checkbox"/>
5	Other-Activity	[Recommended]APP +9	Recommended	<input type="checkbox"/> <input checked="" type="checkbox"/>
6	Mail-Services	[Recommended]MAP - Critical +29	Recommended	<input type="checkbox"/> <input checked="" type="checkbox"/>

Once IPS profile and rules are created, enforce the IPS profile on a security policy:

1. Click on the firewall rule where IPS needs to be enabled.
2. Click **Security Subscriptions**.
3. Either use the global options and turn on just the IPS toggle or click **Customize** to select a new policy.

Figure 18: Juniper Security Director Cloud—Deployment of Rule with IPS

Juniper Security Director Cloud

SRX / Security Policy / SRX Policy

pmsnpo3

Last update: 18 days ago by phattiangadi@juniper.net | Total Rules 6 | Deploy successful

Rule Analysis Set Default Rule Option Expand All Collapse All More Deploy

Seq	Name	Sources	Destinations	Applications/Services	Action	Security Subscriptions	Options
1	Block_Offending_Apps	trust Any	untrust Any	Block_HighBW_Apps defaults	Deny	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	
2	t2u-allow_internet_rule	trust Any	untrust Any	Any	Permit	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	
▼ InterZone: Services To Untrust (Rule 3)							
3	s2u-allow_internet_rule	services Any	untrust Any	Any	Permit	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	
▼ InterZone: Untrust To Services (Rules 4 to 5)							
4	temp_icmp_rule	untrust Any	services Any	Any	Permit	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	
5	u2s-protect_web_svcs	untrust Any	services WebSrv-Local	HTTP +1 defaults	Permit	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	

CS-To-Web-Protection-Rules

Figure 19: Juniper Security Director Cloud—Deployment of Rule with IPS

Juniper Security Director Cloud

SRX / Security Policy / SRX Policy

pmsnpo3

Last update: 18 days ago by phattiangadi@juniper.net | Total Rules 6 | Deploy successful

Rule Analysis Set Default Rule Option Expand All Collapse All More Deploy

Seq	Name	Sources	Destinations	Applications/Services	Action	Security Subscriptions	Options
1	Block_Offending_Apps	trust Any	untrust Any	Block_HighBW_Apps defaults	Deny	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	
2	t2u-allow_internet_rule	+ Sources trust Any	+ Destinations untrust Any	+ Applications/Services Any	Permit	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	<input checked="" type="checkbox"/> Schedule (Optional) <input checked="" type="checkbox"/> Content Security <input checked="" type="checkbox"/> Decrypt <input checked="" type="checkbox"/> Anti-malware <input checked="" type="checkbox"/> Sectintel <input checked="" type="checkbox"/> Secure Web Proxy <input type="checkbox"/> Customize

You can set the Global Options on the main SRX Policy page.

Figure 20: Juniper Security Director Cloud—Deployment of Rule with IPS

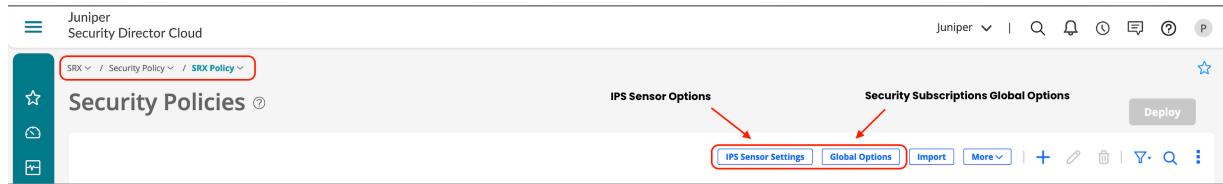
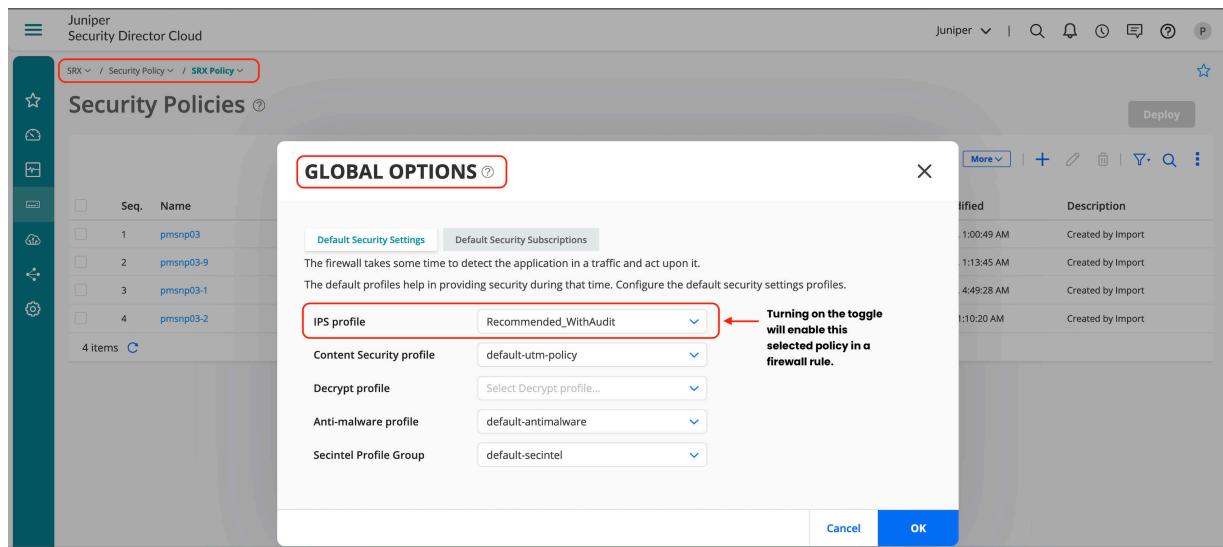


Figure 21: Juniper Security Director Cloud—Deployment of Rule with IPS



SecIntel Configuration

1. Go to SRX > Security Subscriptions > SecIntel > Profiles.
2. Click Create.
3. Configure the profiles for required services.

Figure 22: Juniper Security Director Cloud—Seclintel Profile Configuration

Juniper Security Director Cloud

SRX / Security Subscriptions / Seclintel / Profiles

Seclintel Profiles

1 selected

Name	Type	Block action	Descript
default-c2-profile	Command & Control	Close session	Command & Control
default-dns-profile	DNS	Sinkhole	DNS
default-infected-hosts-profile	Infected Hosts	Close session	Infected Hosts
org_cc_policy	Command & Control	Close session	
org_dns_policy	DNS	Sinkhole	
org_ih_policy	Infected Hosts	Close session	

6 items C

Create More

Figure 23: Juniper Security Director Cloud—Seclintel Command and Control Profile Configuration

Juniper Security Director Cloud

SRX / Security Subscriptions / Seclintel / Profiles

Edit Command & Control Profile

Name * org_cc_policy

Description

Default action for all feeds 3

Specific action for feeds

Feeds	Threat Score
No feeds added.	

Block action * Close session

Close session options * Redirect Message

Redirect Message * Malicious Activity Found! Connection Dropped.

Cancel OK

Figure 24: Juniper Security Director Cloud—Seclintel DNS Profile Configuration

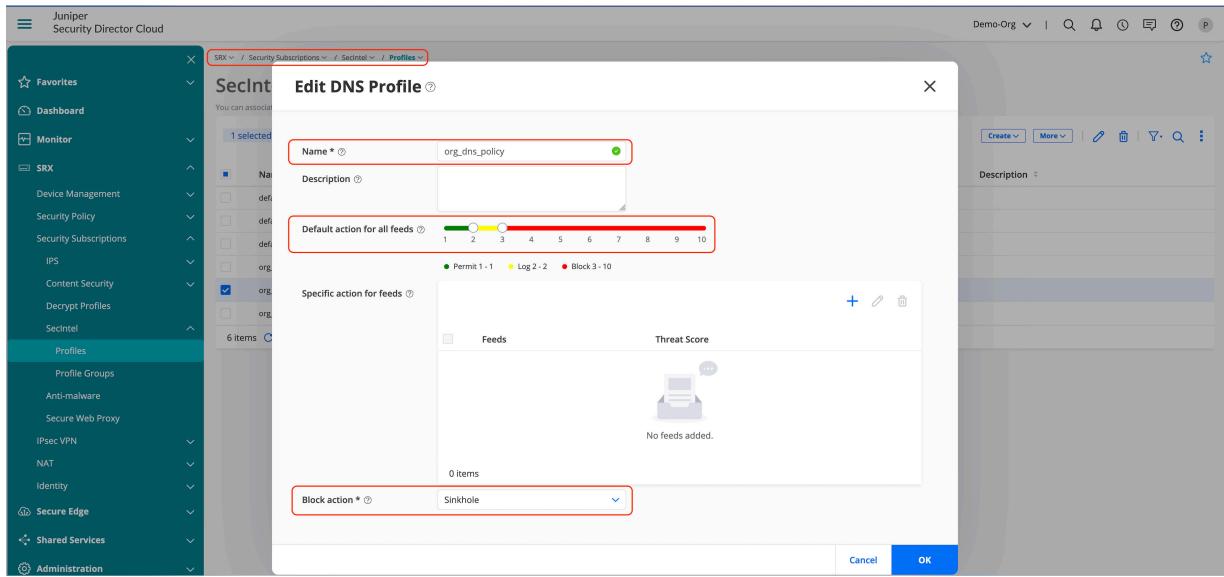
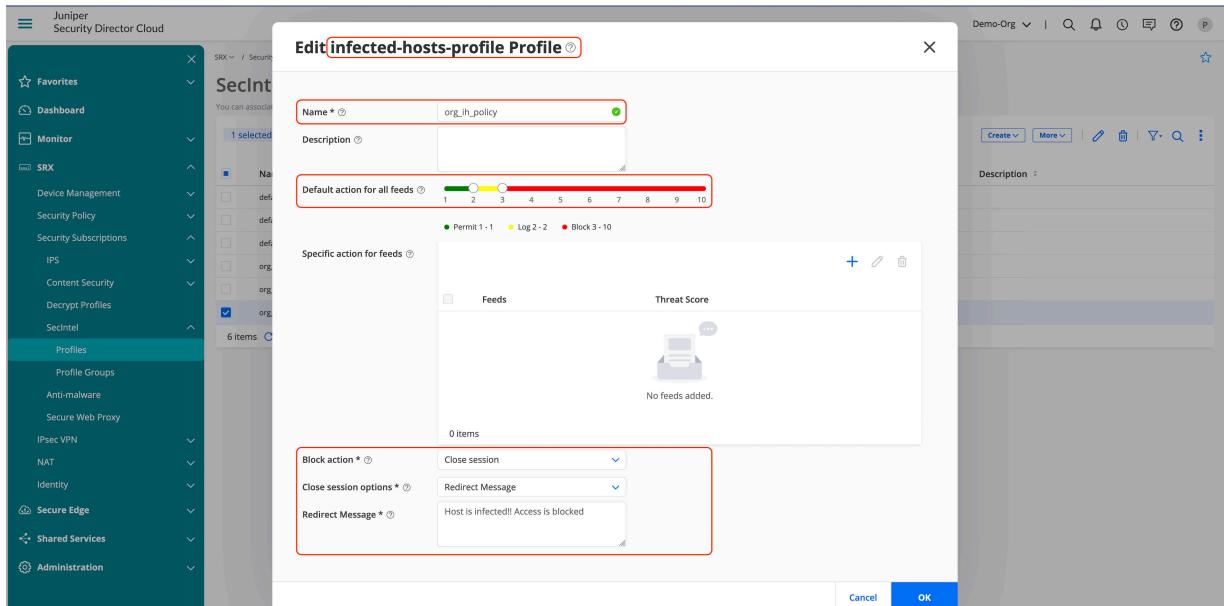


Figure 25: Juniper Security Director Cloud—Seclintel Infected-Hosts Profile Configuration



To create profile groups:

1. Go to SRX > Security Subscriptions > Seclintel > Profile Groups.
2. Click + to create a new profile group.

Figure 26: Juniper Security Director Cloud—Seclintel Profile Group

Name	Command & Control	DNS	Infected Hosts	Description
default-secintel	default-c2-profile	default-dns-profile	default-infected-hosts-profile	
org_secintel_pg	org_cc_policy	org_dns_policy	org_ih_policy	

Figure 27: Juniper Security Director Cloud—Seclintel Profile Group Configuration

As a final step, let's enable the Seclintel profile group in a security policy that enforces the detection and remediation for Seclintel profiles based on reputation.

To enable Seclintel profile group in a security policy:

1. Go to **SRX > Security Policy > SRX Policy**.
2. Select the policy you want to modify and click the pencil icon.
3. Edit policy to enable Seclintel profile group or click on **Create New** to select a different profile.

Figure 28: Juniper Security Director Cloud—Assign SecIntel Profile Group

Seq	Name	Sources	Destinations	Applications/Services	Action	Security Subscriptions	Options
1	Allow_drop_box	trust Any	untrust Any	DROPBOX-UPLOAD Any	Permit	IPS - Content Security Decrypt SecIntel - Secure Web Proxy Security Subscriptions org_secintel_pg	
2	Block_facebook	trust Any	untrust Any	FACEBOOK-UPLOAD Any	Deny	IPS - Content Security Decrypt SecIntel - Secure Web Proxy Anti-malware	
3	Allow_Internet_Rule	trust Any	untrust Block_Countries	Any Any	Permit	IPS - Content Security Decrypt SecIntel - Secure Web Proxy Anti-malware	
4	U2U	untrust Any	untrust Any	Any Any	Permit	IPS - Content Security Decrypt SecIntel - Secure Web Proxy Anti-malware	

Figure 29: Juniper Security Director Cloud—Assign SecIntel Group to Security Policy

1 selected
Seq Name Sources

ZONE (9 Rules)			
InterZone: Trust To Untrust (Rules 1 to 3)			
1	Allow_drop_box	+ Sources	<input checked="" type="checkbox"/> Description <input type="checkbox"/> Any
2	Block_facebook	+ Sources	<input type="checkbox"/> trust <input type="checkbox"/> Any
3	Allow_Internet_Rule	+ Sources	<input type="checkbox"/> trust <input type="checkbox"/> Any
4	U2U	+ Sources	<input type="checkbox"/> untrust <input type="checkbox"/> Any

SECURITY SUBSCRIPTIONS

IPS profile

Content Security profile

Decrypt profile

SecIntel group

Anti-malware

Secure Web Proxy

IPS

Content Security

Decrypt

Anti-malware

SecIntel

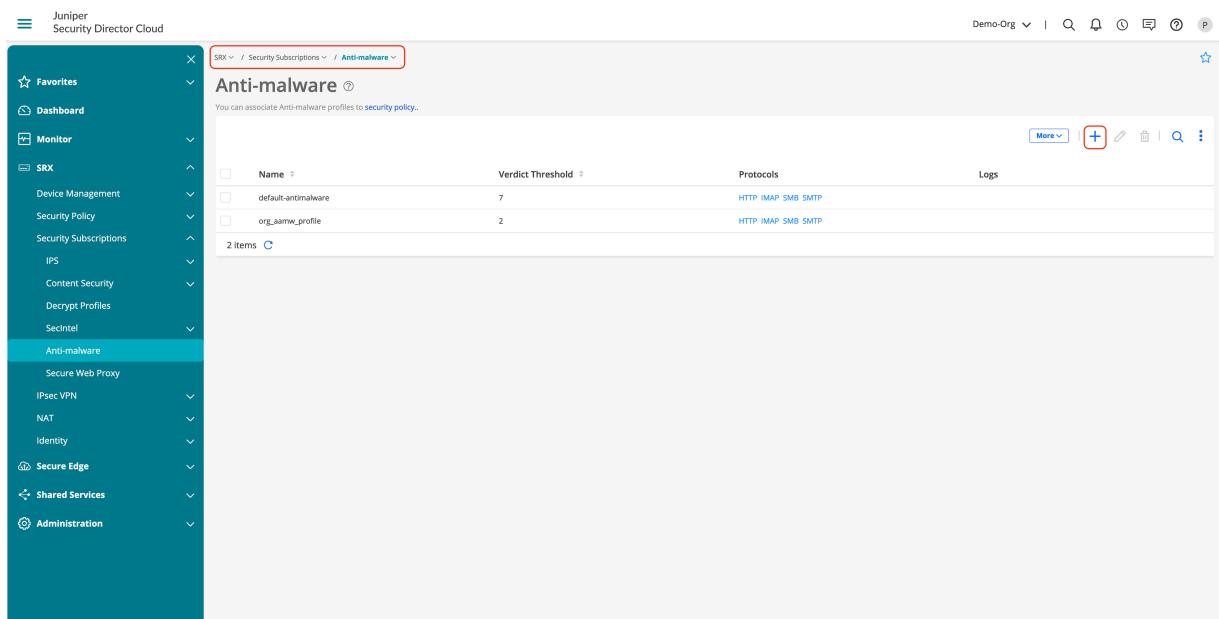
Secure Web Proxy

Cancel
OK

Advanced Anti-Malware

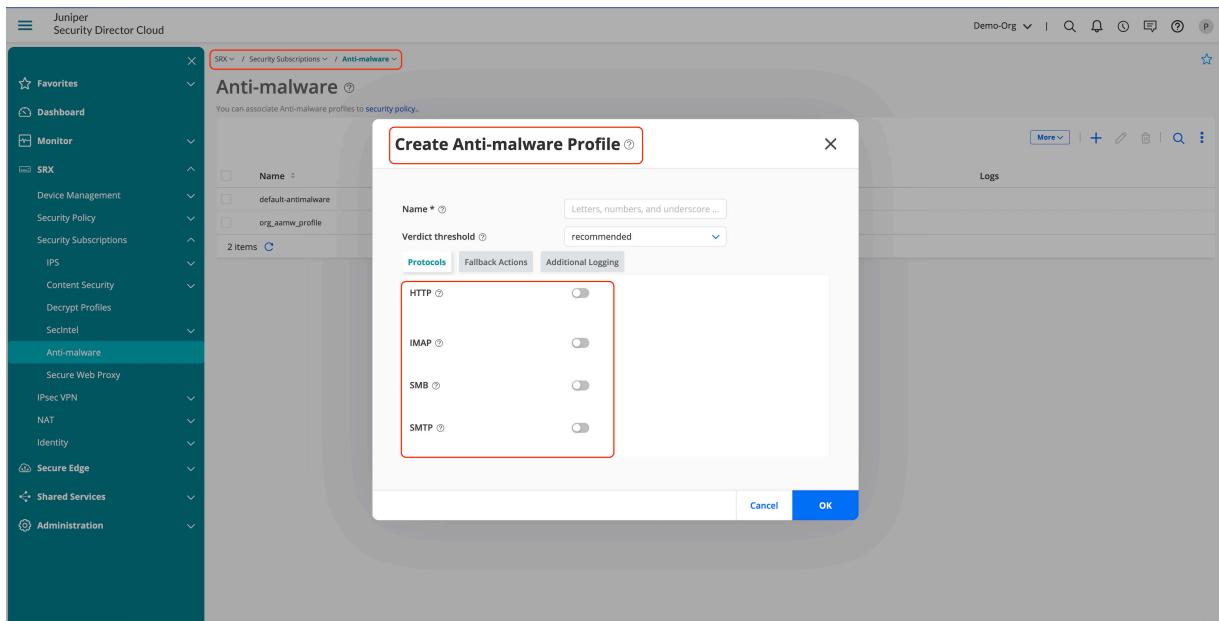
1. Go to SRX > Security Subscriptions > Anti-malware.
2. Click +.
3. Configure the protocols that you need to enable and click OK to save the AAMW profile.

Figure 30: Juniper Security Director Cloud—Advanced Anti-Malware Profiles



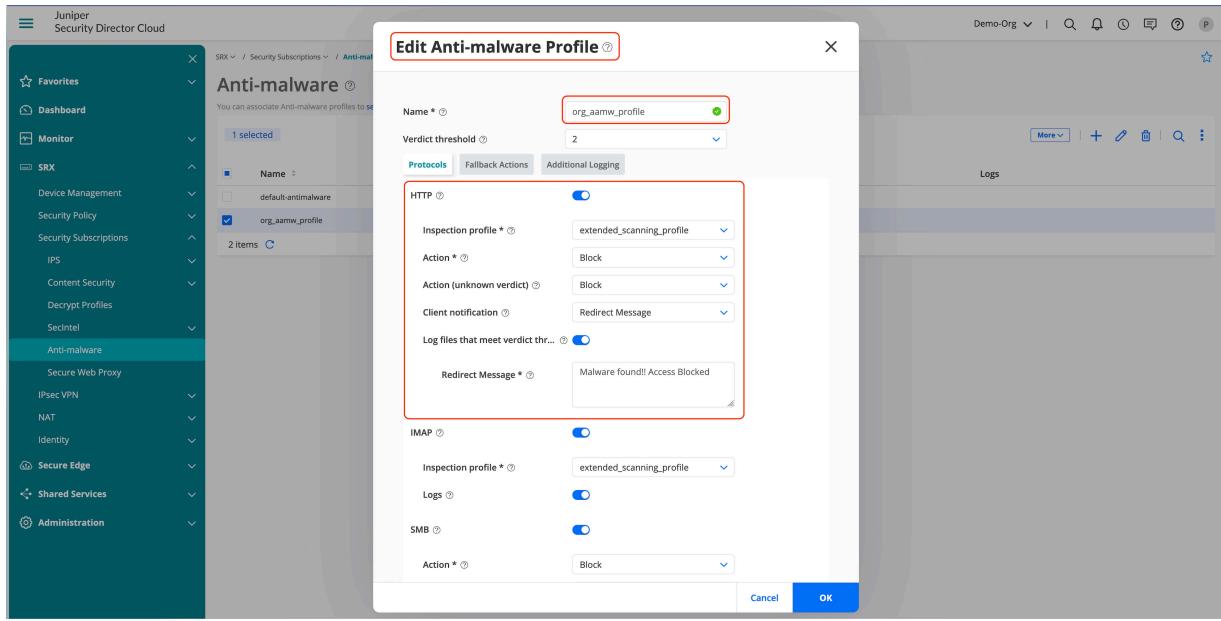
The screenshot shows the Juniper Security Director Cloud interface. The left sidebar is a navigation tree with sections like Favorites, Dashboard, Monitor, SRX (Device Management, Security Policy, Security Subscriptions, IPS, Content Security, Decrypt Profiles, Secintel), Anti-malware (Secure Web Proxy, IPsec VPN, NAT, Identity), Secure Edge, Shared Services, and Administration. The 'Anti-malware' section is currently selected. The main content area is titled 'Anti-malware' and shows a table of existing profiles. The table has columns for Name, Verdict Threshold, Protocols, and Logs. There are two items listed: 'default-antimalware' with a threshold of 7 and 'HTTP IMAP SMB SMTP' protocols, and 'org_aaamw_profile' with a threshold of 2 and the same protocols. A red box highlights the 'More' button and the '+' button in the top right of the table header.

Figure 31: Juniper Security Director Cloud—Advanced Anti-Malware Profile Configuration



The screenshot shows the Juniper Security Director Cloud interface with the 'Create Anti-malware Profile' dialog box in the foreground. The dialog has fields for 'Name' (a text input box) and 'Verdict threshold' (a dropdown menu set to 'recommended'). Below these are three tabs: 'Protocols', 'Fallback Actions', and 'Additional Logging'. The 'Protocols' tab is selected and shows checkboxes for 'HTTP', 'IMAP', 'SMB', and 'SMTP', all of which are currently unchecked. A red box highlights the 'Protocols' tab. At the bottom of the dialog are 'Cancel' and 'OK' buttons. The background shows the same Anti-malware profile list as in Figure 30, with a red box highlighting the 'Protocols' column in the table.

Figure 32: Juniper Security Director Cloud—Advanced Anti-Malware Profile Configuration

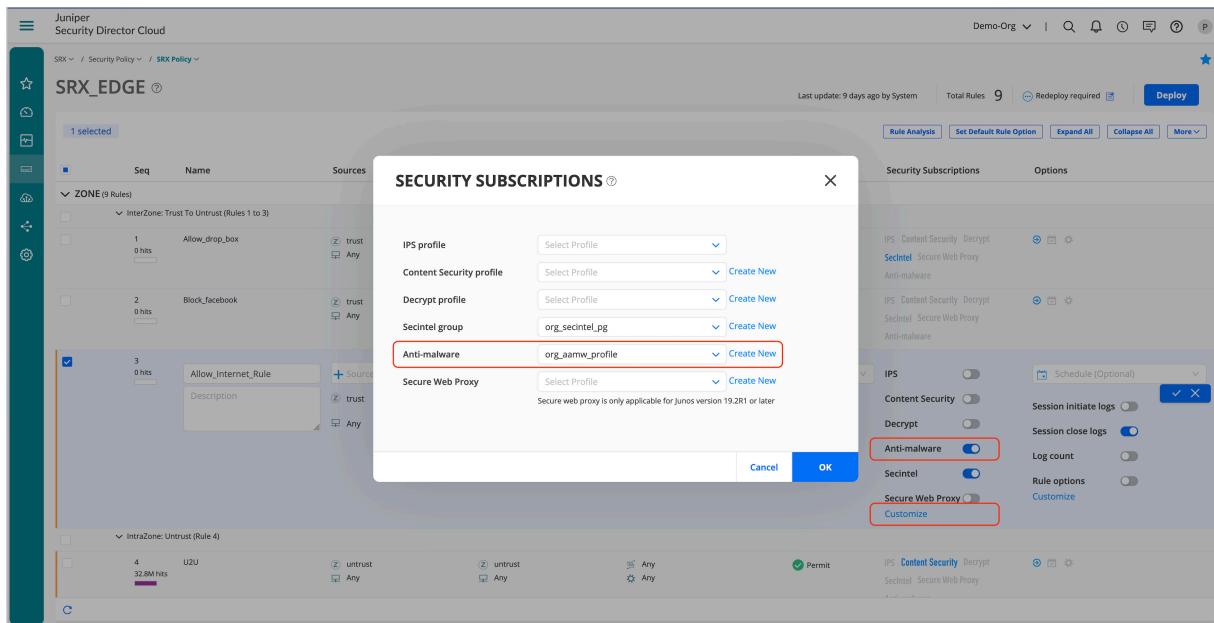


Created AAMW profile is configured in a security policy.

Figure 33: Juniper Security Director Cloud—Assign Advanced Anti-Malware Profile to Security Policy

Seq	Name	Sources	Destinations	Applications/Services	Action	Security Subscriptions	Options
1	Allow_drop_box	trust Any	untrust Any	DROPBOX-UPLOAD Any	Permit	IPS, Content Security, Decrypt SectInt, Secure Web Proxy Anti-malware	
2	Block_facebook	trust Any	untrust Any	FACEBOOK-UPLOAD Any	Deny	IPS, Content Security, Decrypt SectInt, Secure Web Proxy Anti-malware	
3	Allow_internet_rule	trust Any	untrust Block_Countries	Any Any	Permit	IPS, Content Security, Decrypt SectInt, Secure Web Proxy Anti-malware	
4	U2U	untrust Any	untrust Any	Any Any	Permit	IPS, Content Security, Decrypt SectInt, Secure Web Proxy Anti-malware	
5	at_zone_internet_traffic	at_zone_1 Any	untrust Any	Any Any	Permit	IPS, Content Security, Decrypt SectInt, Secure Web Proxy Anti-malware	
6	safeguard_webserver	untrust	at_zone_2	Any	Permit	IPS, Content Security, Decrypt	

Figure 34: Juniper Security Director Cloud—Assign Advanced Anti-Malware Profile to Security Policy



DNS Security

DNS security is configured in two phases:

- Enabling SeCintel phase, which is covered under the SeCintel section.
- Enabling core DNS security features such as DNS DGA and DNS Tunneling, which are covered in this section.

To enable DNS security, follow the path to configure the settings on Juniper Security Director Cloud:

1. Go to **SRX > Device Management > Devices**.
2. Click the device we want to configure DNS security.
3. Click **Junos Detailed Configurations**.
4. Enter **DNS filtering** in the search section.
5. Select **Services > Dns Filtering**.
6. Enter the details.
7. Click **Save** once done.

8. Optional. Click **Preview** if you want to view saved configuration.

9. Click **Deploy** to deploy the configuration to the device.

NOTE: You can always complete all the configuration sections and save before deploying the final configuration.

Also, this configuration is the same for implementing IoT Security as well.

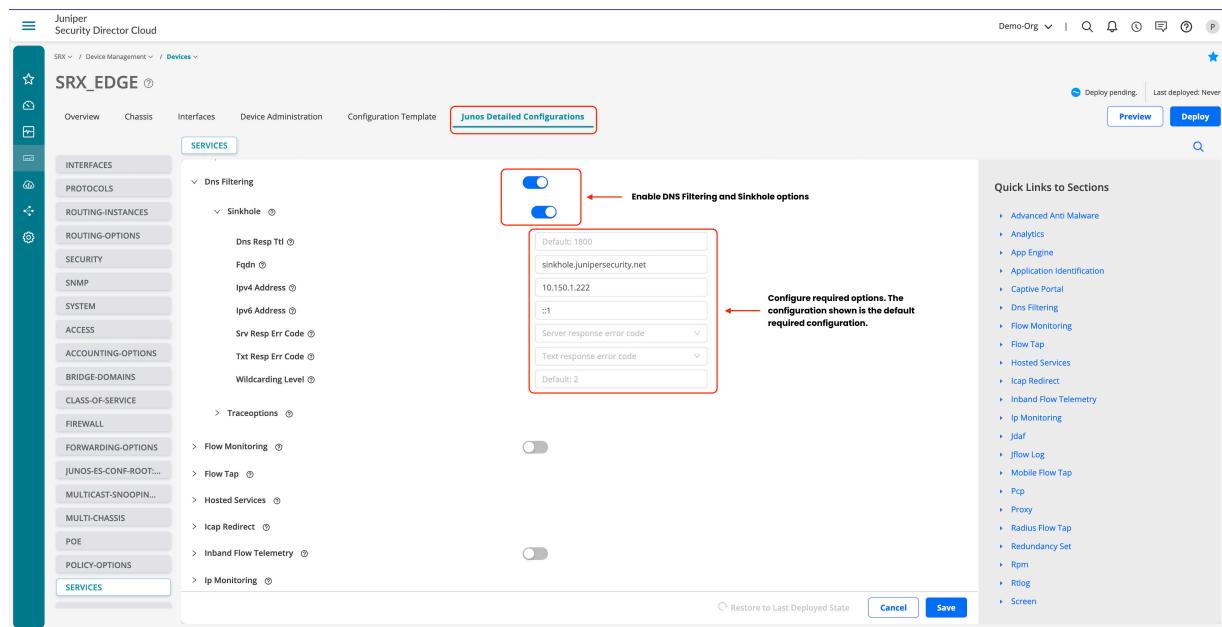
Figure 35: Juniper Security Director Cloud—DNS Security Configuration

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar is collapsed. The main header bar shows 'SRX' and 'Device Management'. The 'Devices' tab is selected. A sub-header 'Click on device that needs to be configured' is present. The table lists one item: 'SRX_EDGE'. A red box highlights the 'Host Name' column header. The table columns include 'Host Name', 'Device Group', 'Inventory ...', 'Device Config Status', 'Management Status', 'Device Health S...', 'Subscriptions', 'OS Version', and 'Product Seri...'. The 'SRX_EDGE' row shows 'Perimeter_Firewalls' under 'Device Group', 'In Sync' under 'Inventory ...', 'Device config changed. Resolve' under 'Device Config Status', 'Up' under 'Management Status', 'Warning' under 'Device Health S...', 'SUBS1' under 'Subscriptions', '23.2R1.13' under 'OS Version', and 'VSX' under 'Product Seri...'. A red box highlights the 'SRX_EDGE' row.

Figure 36: Juniper Security Director Cloud—Junos Detailed Configuration

The screenshot shows the Juniper Security Director Cloud interface for the 'SRX_EDGE' device. The left sidebar is expanded, showing various configuration tabs like Overview, Chassis, Interfaces, Device Administration, and Configuration Template. The 'INTERFACES' tab is selected. A sub-header 'Junos Detailed Configurations' is present. The 'INTERFACES' tab is highlighted with a red box. A search bar on the right contains the text 'dns filter', which is also highlighted with a red box. The search results show a list of Junos services related to DNS filtering. The results include: Services > Dns Filtering, Services > Dns Filtering > Sinkhole, Services > Dns Filtering > Traceoptions, Services > Dns Filtering > Sinkhole > Fqdn, Services > Dns Filtering > Traceoptions > Flag, Services > Dns Filtering > Traceoptions > File, Services > Dns Filtering > Traceoptions > Level, Services > Dns Filtering > Sinkhole > Ipv6 Address, Services > Dns Filtering > Sinkhole > Ipv4 Address, Services > Dns Filtering > Sinkhole > Dns Resp Tsl, Services > Dns Filtering > Traceoptions > File > Size. At the bottom, there are 'Cancel' and 'Save' buttons, and a link to 'Restore to Last Deployed State'.

Figure 37: Juniper Security Director Cloud—Junos Detailed Configuration—DNS Filtering



Let's configure the core DNS security features:

1. Enter **metadata** in the search section.
2. Select **Services > Security Metadata Streaming**.
3. Click to proceed to the configuration section.
4. Click **+** to enable DNS metadata configuration.
5. Click **Save** once done.
6. Optional. Click **Preview** if you want to view saved configuration.
7. Click **Deploy** to deploy the configuration to the device.

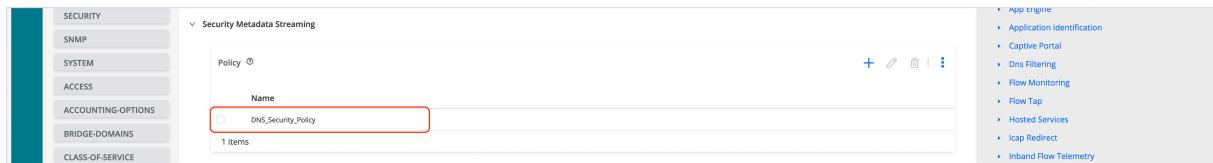
Figure 38: Juniper Security Director Cloud—Junos Detailed Configuration—Security Metadata

The screenshot shows the Juniper Security Director Cloud interface for the SRX_EDGE device. The 'Junos Detailed Configurations' tab is selected. Under the 'SERVICES' section, the 'Security Intelligence' category is expanded, and 'Security Metadata Streaming' is selected. A sub-section 'Policy' is shown with a 'Name' field and a 'No results found' message. A red box highlights the 'Add new security metadata policy' button. To the right, a search bar for 'metadata' is shown, along with a list of service categories including 'Advanced Anti Malware', 'Analytics', 'App Engine', 'Application Identification', 'Captive Portal', 'Dns Filtering', 'Flow Monitoring', 'Flow Tap', 'Hosted Services', 'Icap Redirect', 'Inband Flow Telemetry', 'Ip Monitoring', 'Jdraf', 'Iflow Log', 'Mobile Flow Tap', 'Pcp', 'Proxy', 'Radius Flow Tap', 'Redundancy Set', 'Rpm', 'Rtlog', and 'Screen'.

Figure 39: Juniper Security Director Cloud—Junos Detailed Configuration—Security Metadata

The screenshot shows the 'Add Policy' dialog box for the 'DNS_Security_Policy'. The 'Name' field is set to 'DNS_Security_Policy'. Under the 'Dynamic Filter' section, the 'Http' and 'Dns' options are listed. The 'Dns' section is expanded, showing 'Cache', 'Detections', and 'All' sections. The 'All' section is expanded, showing 'Dga' and 'Tunneling' sections. The 'Dga' section is highlighted with a red box, showing 'Action' (sinkhole), 'Fallback Options', 'Notification' (log), and 'Verdict Timeout' (100). The 'Tunneling' section is also highlighted with a red box, showing 'Action' (sinkhole), 'Fallback Options', 'Inspection Depth' (4), and 'Notification' (log). The 'OK' button is visible at the bottom right of the dialog box.

Figure 40: Juniper Security Director Cloud— Junos Detailed Configuration—Security Metadata Policy



Let's use CLI to configure the metadata streaming policy on a zone pair to enforce DNS security settings.

Ensure that the configuration is deployed before configuring the next steps through CLI.

```
# Add the security metadata streaming policy:
set security policies from-zone trust to-zone untrust application-services security-metadata-
streaming-policy DNS_Security_Policy
```

Security Screens

To configure Security IDS Screen option on Juniper Security Director Cloud:

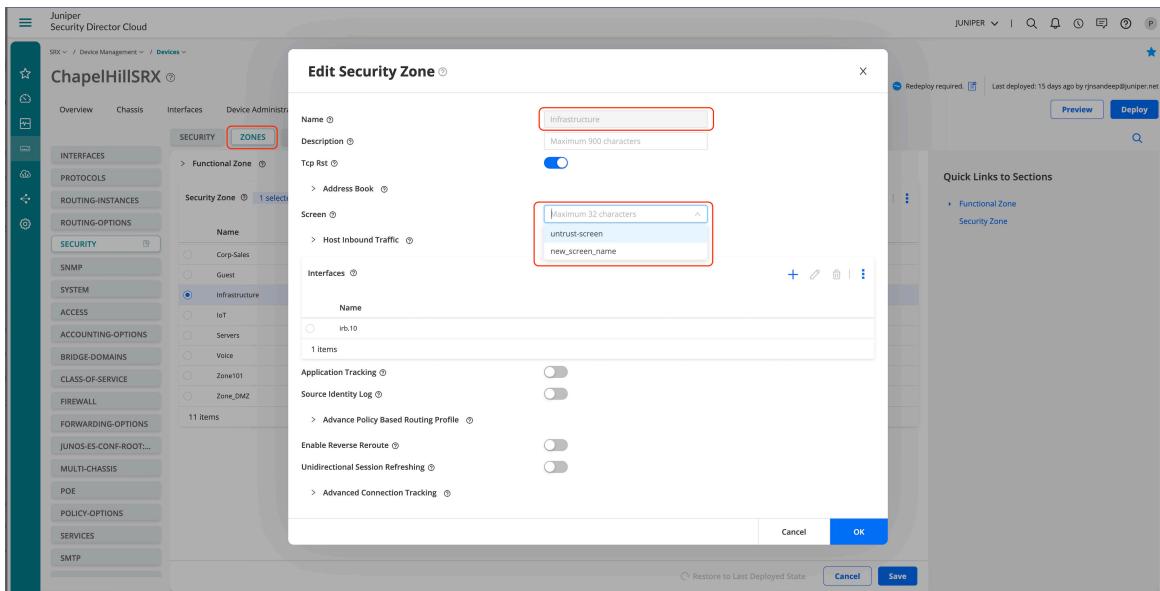
1. Go to **SRX > Device Management > Devices**.
2. Click on the device.
3. Click **Junos Detailed Configurations**.
4. Search for screens.
5. Select **Security > Screen**.
6. Click **+** to add a new profile.

Figure 41: Juniper Security Director Cloud—Screens Configuration

Figure 42: Juniper Security Director Cloud—Screens Flood Attack Options

7. Click **OK** to save the screen configuration once the desired configuration is completed.
8. Click **Zones** to enforce the screen on a specific zone.

Figure 43: Juniper Security Director Cloud—Assign Screens Options to Zone



9. Click **OK** to save the configuration once the new screen configuration is applied to the zone.
10. Click **Deploy** to deploy the configuration to the device.

Reverse SSL Proxy

As the data center next-generation firewall use case focuses on protecting internal resources such as webservers, we can optionally implement SSL reverse proxy. SSL reverse proxy ensures advanced services are applied to decrypted webserver traffic and inspected before leaving the firewall to gain the webserver resources.

The creation of the webserver certificates is not covered in this section. You must import this certificate into Juniper Security Director Cloud. This certificate is used when creating the SSL proxy profile.

To create the SSL reverse proxy profile:

1. Import webserver certificates.
2. Create the SSL reverse proxy profile.
3. Go to **SRX > Security Subscriptions > Decrypt Profiles**.
4. Click **+** to add a new profile.

Figure 44: Juniper Security Director Cloud—Assign Screens Options to Zone

Juniper Security Director Cloud

SRX < / Security Subscriptions < Decrypt Profiles

Decrypt Profiles

Click "+" to add new SSL Proxy profile.

	Name	Preferred Cipher	Custom Ciphers	Exempted Address	Description	Root Certificate
<input type="checkbox"/>	SSL_RP_PROXY	--	--	--		dc-websvr

1 items

Figure 45: Juniper Security Director Cloud—Assign Screens Options to Zone

Juniper Security Director Cloud

Edit Decrypt Profile

General Information

Name * **SSL_RP_PROXY**

Description

Preferred cipher Please select option(s.)

Custom ciphers Please select option(s.)

Flow trace

Root certificate * **dc-websvr**

Select the webserver certificate uploaded in Step 1. Ensure logging is enabled at the end of this page.

Trusted CAs

All Specific None

4 items aamw-ca sd_cloud_ca aamw-secintel-ca aamw-cloud-ca

0 item

Cancel OK

Include the profile in a firewall rule for enforcement:

1. Go to **SRX > Security Policy > SRX Policy**.
2. Click **+** to add new firewall rule.
3. Enter **Source Zone** and **Source Address**.
4. Enter **Destination Zone** and **Destination Address**.
5. Select **Services and Applications**.
6. Select **Advanced Services** under security subscriptions that must be enabled. In this example, **IPS** is selected.

7. Select the SSL Reverse proxy profile created in the previous step.

Figure 46: Juniper Security Director Cloud—Assign Screens Options to Zone

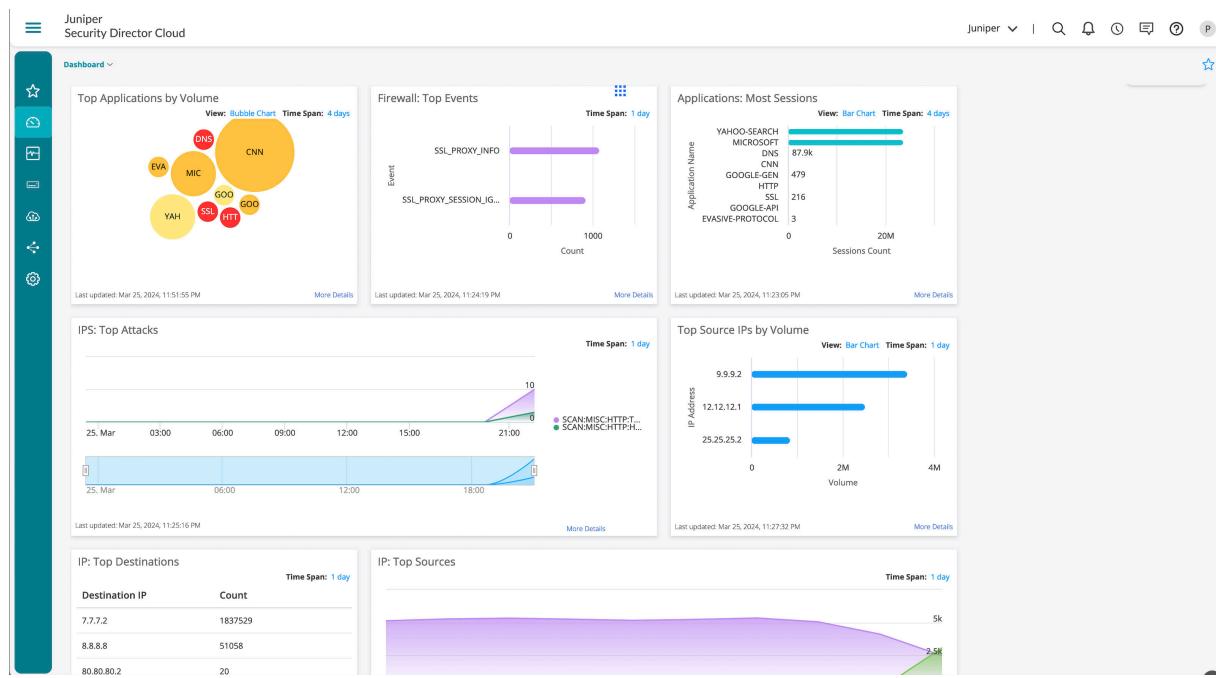
Seq	Name	Sources	Destinations	Action	Security Subscriptions	Options
4	temp_icmp_rule	untrust	services	Permit	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	
5	u2s-protect_web_svcs	Any	services WebSrv-Local	Permit	IPS Content Security Decrypt Sectintel Secure Web Proxy Anti-malware	SSL_RP_PROXY

Data Center Next-Generation Firewall Solution Validation

The configuration provides advanced security services in data center environment using next-generation firewalls. In this section, we'll focus on validating the solution that is implemented with this JVD.

Let's start with the Juniper Security Director Cloud Dashboard, which is the landing page when logged in. The Dashboard page provides a landscape of what is happening in the environment through various readily available widgets.

Figure 47: Juniper Security Director Cloud—Dashboard Page



The **Monitor > Logs > Session** page provides a snapshot of the traffic flow through the environment. Using Session page, you can filter information based on various options that's provided on the page.

Table 3: Filter Options

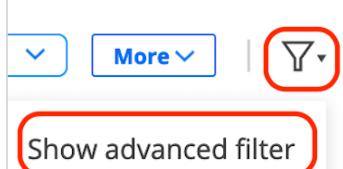
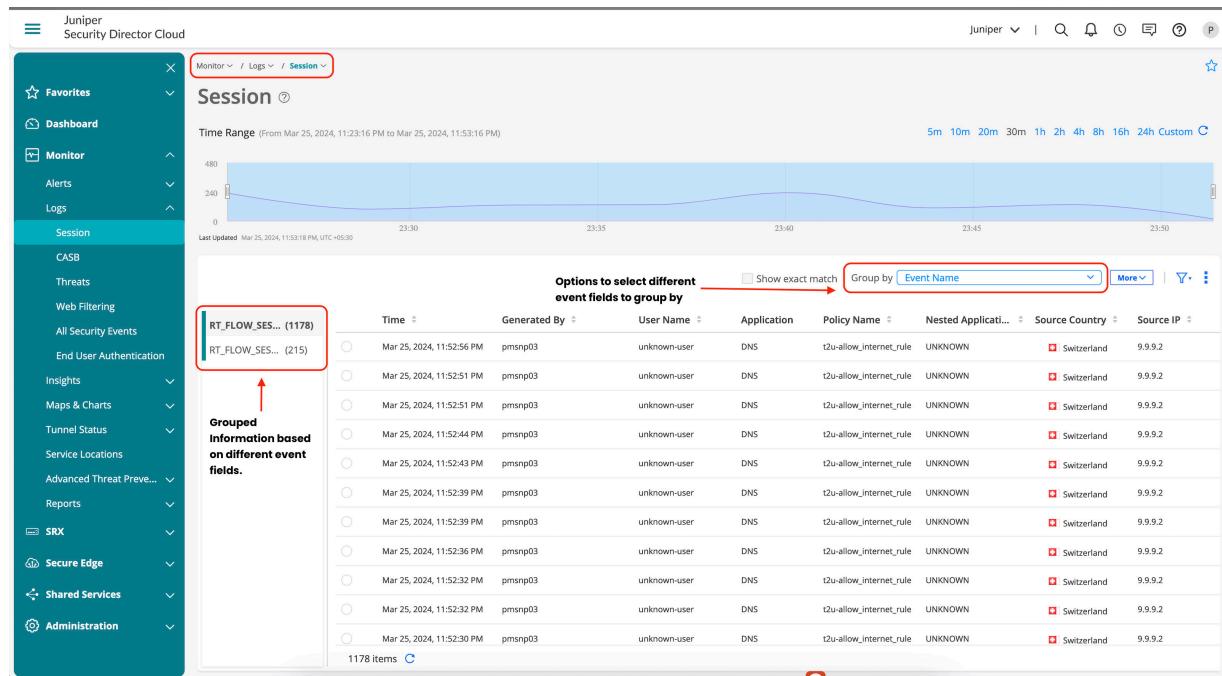
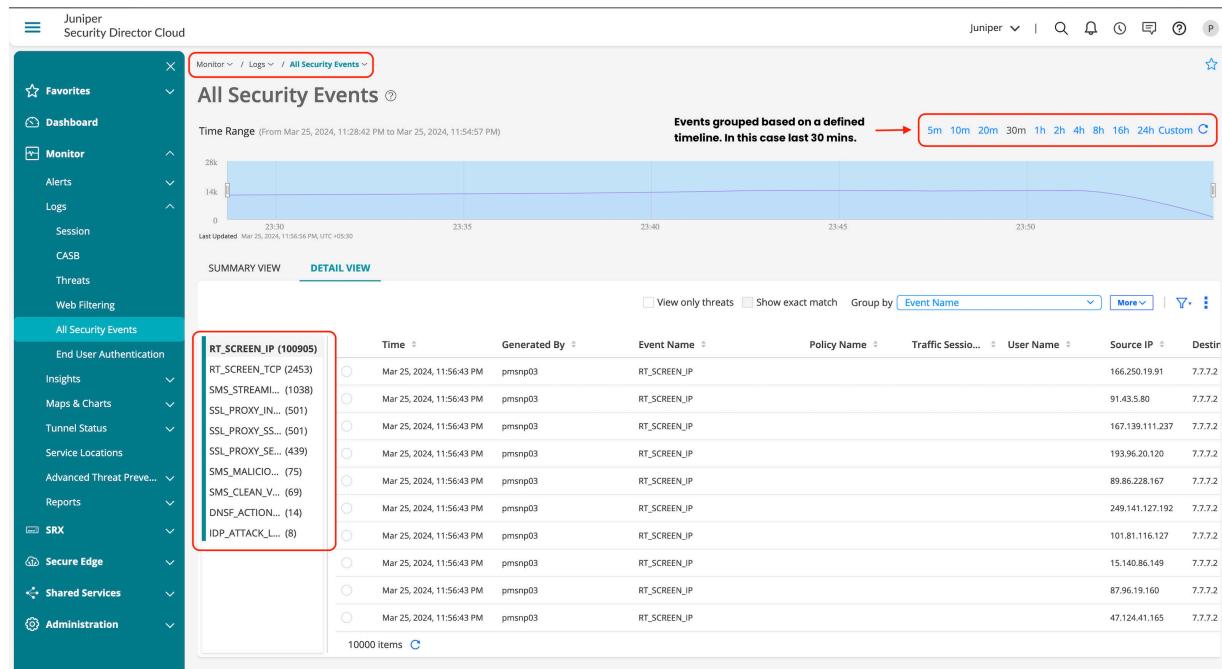
Filter Options	Description
	Use Show advanced filter to search through the logs. All the event fields are used to run through the search.
	Use Group by to sort through the logs based on predefined field. Which is shown in the next screenshots.

Figure 48: Juniper Security Director Cloud—Session Traffic Logs



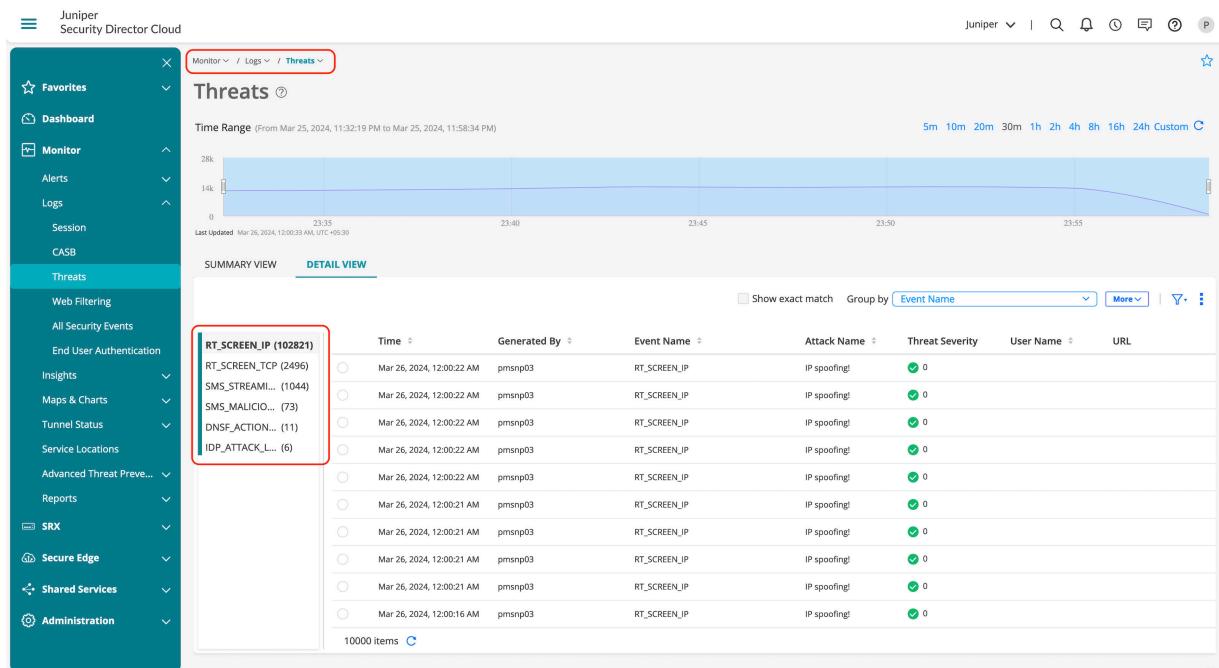
All Security Events page provide details on all the security events received from the device.

Figure 49: Juniper Security Director Cloud—Grouped Events



Threats page focuses only on the threats identified in the environment.

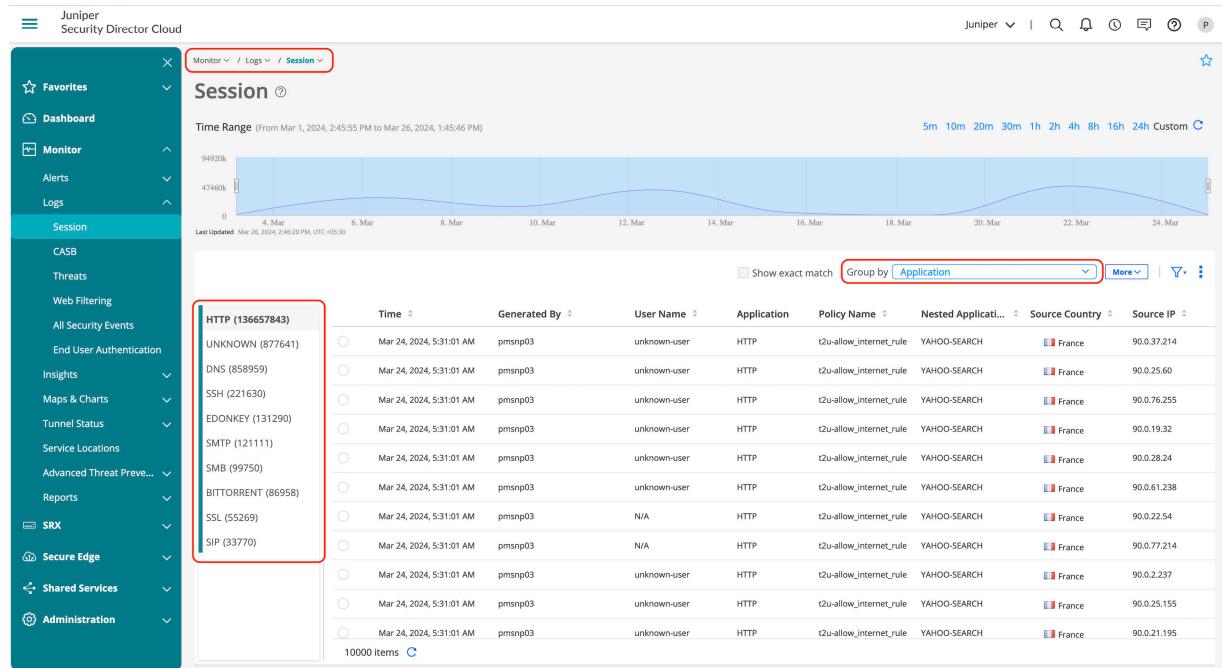
Figure 50: Juniper Security Director Cloud—Grouped Events



Application Security Validation

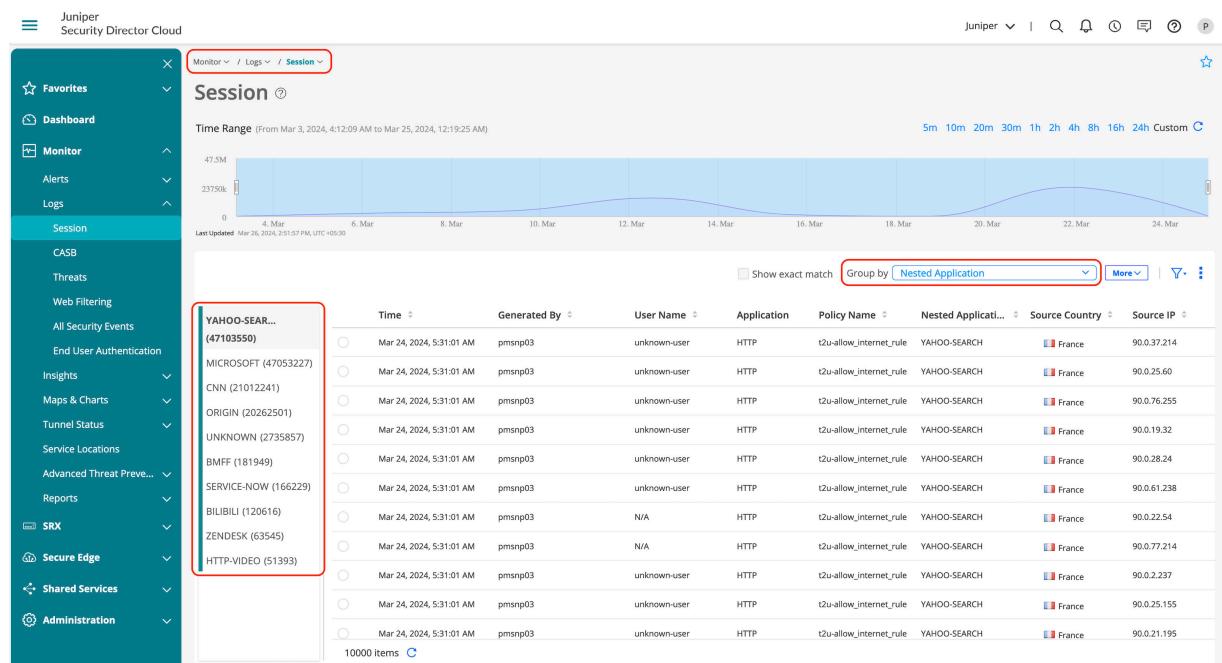
Grouped applications provide a view on identified applications from the traffic where the firewall has processed.

Figure 51: Juniper Security Director Cloud—Grouped Application View



Grouping using Nested Applications provides information on the actual applications using the applications that is shown in Figure 51 on page 48.

Figure 52: Juniper Security Director Cloud—Grouped Nested Application View

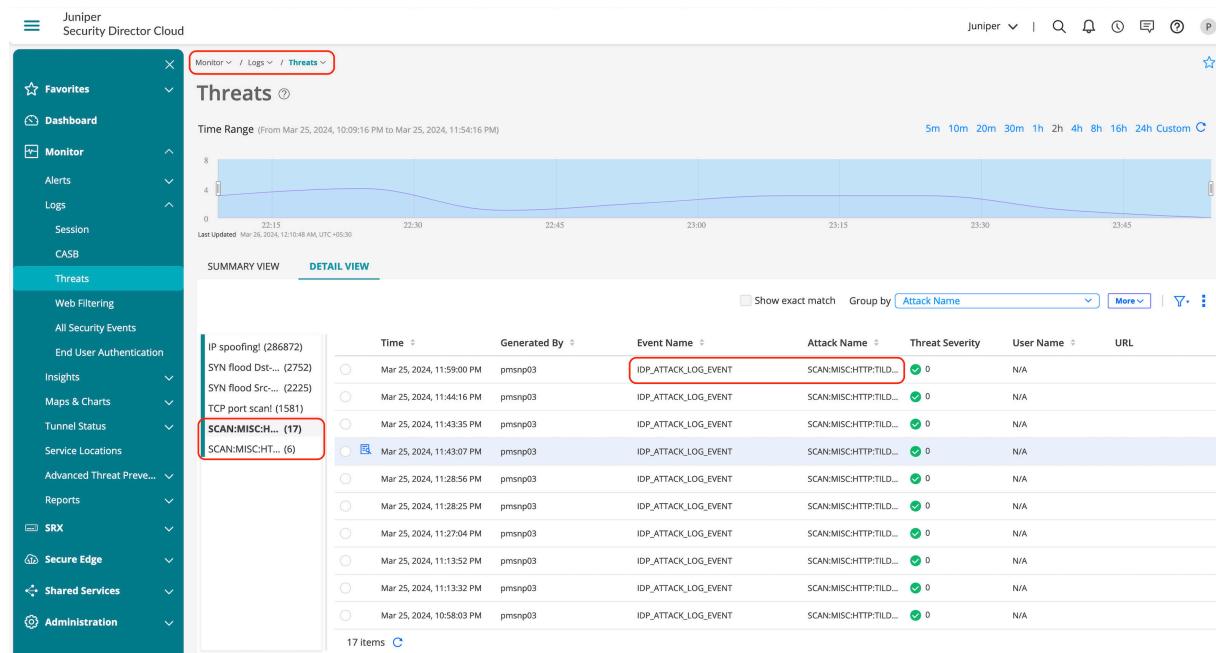


IDP Feature Validation

Threats page provides information on the detected IDP attacks in the environment. You can also view the detailed information of the following:

- Source and destination zone
- Source and destination IP addresses
- IDP policy and rule that triggered the detection
- Detected attack and its severity
- Action taken on the detected attack

Figure 53: Juniper Security Director Cloud—IDP Attacks



IDP Detailed Information

Figure 54: Juniper Security Director Cloud—IDP Attack Detail View

Event log details

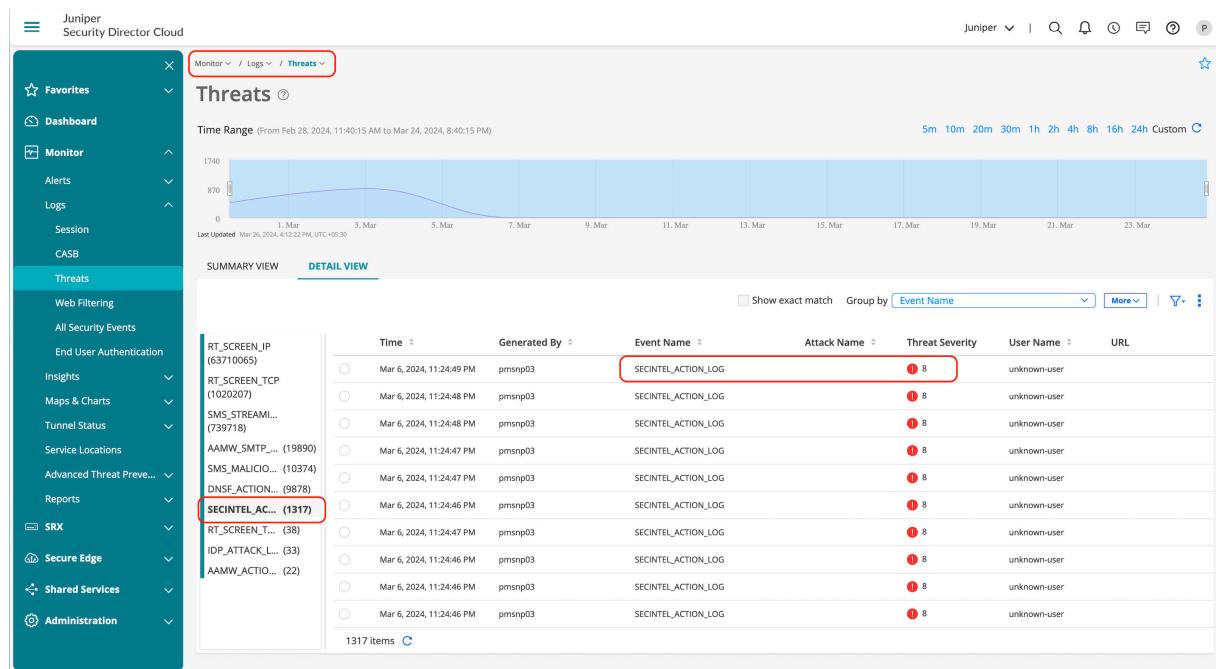
General		Source	Destination
Generated By	pmsnpo3	Source IP	25.25.25.2
Logical System Name	--	Source Port	51948
Log Generated Time	Mar 25, 2024, 11:59:00 PM	Source Zone	untrust
Event Category	ips	Source Country	United Kingdom
Threat Severity	INFO	NAT Source IP	0.0.0.0
Action	DROP	NAT Source Port	0
Reason	--	NAT Address	--
Traffic Session ID	115993466608	NAT Source Rule Name	--
Policy Name	CS-To-Web-Protection-Rules	User Name	N/A
Service Name	SERVICE_IDP	Roles	N/A
Application	HTTP	Client Hostname	--
Nested Application --			
Security			
Name --			
URL --			
Category --			
Attack Name SCAN/MISC:HTTP-TILDA-ROOT			
Malware Info --			

OK

SecIntel Feature Validation

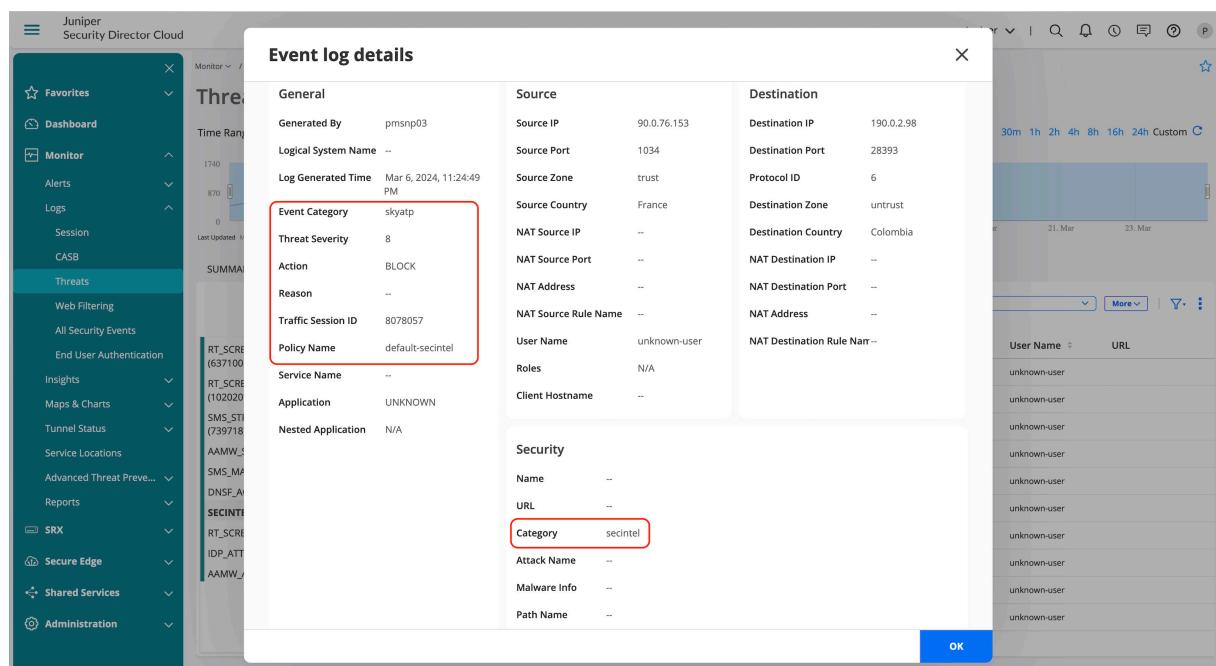
SecIntel feeds applied on the firewall policy generates logs when the traffic matches the configured risk level.

Figure 55: Juniper Security Director Cloud—SeIIntel Threat Logs



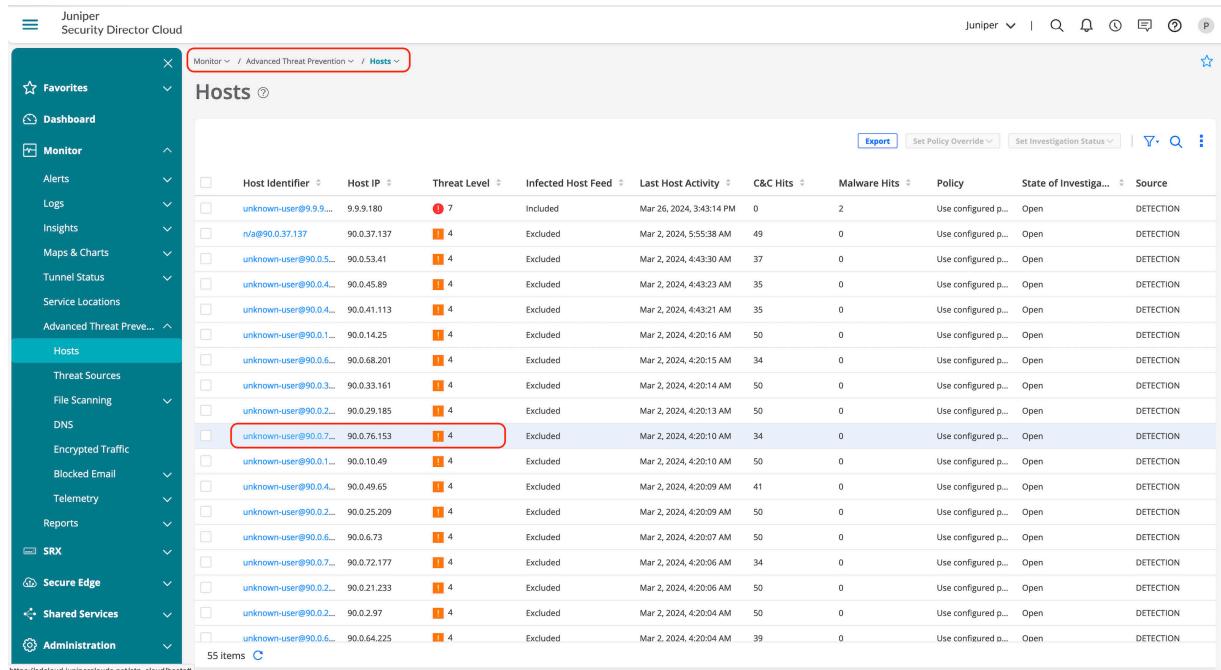
Detailed view shows information on the category and Seclntel policy that enforced the action including the source, destination, and corresponding zones.

Figure 56: Juniper Security Director Cloud—Seclntel Threat Log Detail View



Advanced Threat Prevention dashboard also provides details on the client that initiated the traffic and the history of when the event occurred.

Figure 57: Juniper Security Director Cloud—SeCIntel Identified Clients



The screenshot shows the Juniper Security Director Cloud interface with the following details:

- Left Sidebar:** Favorites, Dashboard, Monitor (selected), Alerts, Logs, Insights, Maps & Charts, Tunnel Status, Service Locations, Advanced Threat Prevention (selected), Hosts, Threat Sources, File Scanning, DNS, Encrypted Traffic, Blocked Email, Telemetry, Reports, SRX, Secure Edge, Shared Services, Administration.
- Top Header:** Juniper Security Director Cloud, Monitor / Advanced Threat Prevention / Hosts, Export, Set Policy Override, Set Investigation Status, Filter, and a three-dot menu.
- Table Headers:** Host Identifier, Host IP, Threat Level, Infected Host Feed, Last Host Activity, C&C Hits, Malware Hits, Policy, State of Investigation, and Source.
- Table Data:** A list of 55 items, each with a checkbox, host identifier, host IP, threat level (4), infected host feed (Included/Excluded), last host activity, C&C hits, malware hits, policy (Use configured p...), state (Open), and source (DETECTION). One row, 'unknown-user@90.0.76.153', is highlighted with a red box.
- Bottom:** 55 items.

Figure 58: Juniper Security Director Cloud—Seclntel Client Details

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar navigation includes Favorites, Dashboard, Monitor (selected), Alerts, Logs, Insights, Maps & Charts, Tunnel Status, Service Locations, Advanced Threat Prevention (selected), Hosts (selected), Threat Sources, File Scanning, DNS, Encrypted Traffic, Blocked Email, Telemetry, Reports, SRX, Secure Edge, Shared Services, and Administration.

The main content area displays the details for the host `unknown-user@90.0.76.153`. The General section shows the Host Identifier as `unknown-user@90.0.76.153`, Host IP as `90.0.76.153`, and Host Status as "Medium threat level, may warrant investigation". The Threat Settings section shows the Investigation Status as "Open" and the Policy Override for Host as "Use configured policy (not include...)". The Threat Stats section, which is highlighted with a red box, shows the From Date as `02/25/2024` and To Date as `03/26/2024`. Below these, there is a chart showing Threat Level (Y-axis, 0 to 4) over Time (X-axis, showing hours from 0 to 24). The chart shows a high level of threat activity between 02/25/2024 and 03/26/2024.

The bottom section displays a table titled "Past Threats (Feb 25, 2024 - Mar 26, 2024)". The table has columns for Event Time, Status, and Description. The table shows 10 items, all of which are CC hits. The descriptions indicate that the host attempted to contact a C&C server at `190.0.2.98` (block) multiple times.

Past Threats (Feb 25, 2024 - Mar 26, 2024)		
Event Time	Status	Description
Mar 6, 2024, 11:24:45 PM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 7:45:48 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 7:36:31 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 7:36:20 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 7:31:08 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 7:04:36 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 6:52:56 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 6:47:26 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 6:39:43 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
Mar 6, 2024, 6:32:51 AM	CC hit	Host attempted to contact a C&C server at <code>190.0.2.98</code> (block).
10 items		

Advanced Anti-Malware Feature Validation

Configured AAMW policy might result in several logs depending on what protocol is identified. Few key logs provide information on the action enforced by AAMW.

Table 4: Advanced Anti-Malware Logs

Log Information	Description
AAMW_ACTION_LOG	Action taken based on the verdict delivered based on the sandboxing result by Juniper ATP Cloud and defined risk profile on the SRX Series Firewall.
AAMW_HOST_INFECTED_EVENT_LOG	If the verdict found is malicious, the host infected event log is generated.
AAMW_MALWARE_EVENT_LOG	If the verdict as a result of the sandboxing is malicious, the malware event log is generated.

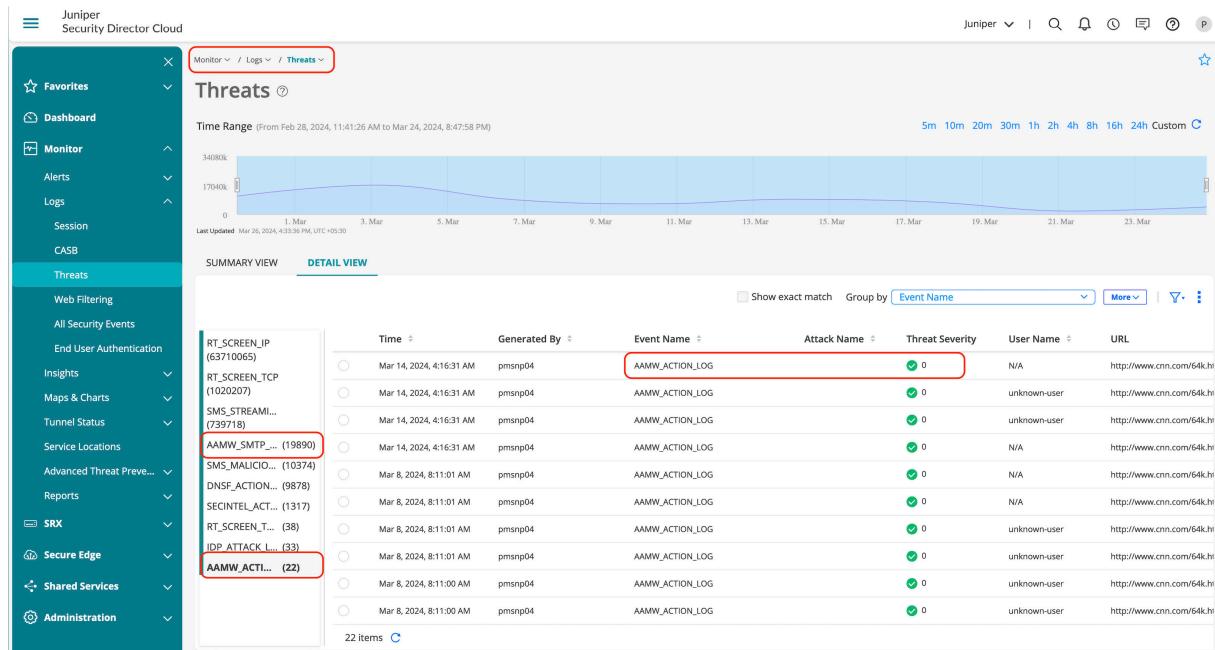
Figure 59: Juniper Security Director Cloud—AAMW Logs

Figure 60: Juniper Security Director Cloud—AAMW Log Detail

Juniper Security Director Cloud

Event log details

General		Source		Destination											
Generated By	pmsnp04	Source IP	90.0.8.23	Destination IP	190.0.0.5										
Logical System Name	--	Source Port	1134	Destination Port	80										
Log Generated Time	Mar 14, 2024, 4:16:31 AM	Source Zone	trust	Protocol ID	6										
Event Category	skyatp	Source Country	France	Destination Zone	untrust										
Threat Severity	--	NAT Source IP	--	NAT Destination Country	Colombia										
Action	PERMIT	NAT Source Port	--	NAT Destination IP	--										
Reason	--	NAT Address	--	NAT Destination Port	--										
Traffic Session ID	30647750	NAT Source Rule Name	--	NAT Address	--										
Policy Name	default-antimalware	User Name	N/A	NAT Destination Rule Name	--										
Service Name	--	Roles	N/A												
Application	HTTP	Client Hostname	--												
Nested Application N/A															
Security															
<table border="1"> <tr> <td>Name</td> <td>--</td> </tr> <tr> <td>URL</td> <td>http://www.cnn.com/64k.html</td> </tr> <tr> <td>Category</td> <td>--</td> </tr> <tr> <td>Attack Name</td> <td>--</td> </tr> <tr> <td>Malware Info</td> <td>--</td> </tr> </table>						Name	--	URL	http://www.cnn.com/64k.html	Category	--	Attack Name	--	Malware Info	--
Name	--														
URL	http://www.cnn.com/64k.html														
Category	--														
Attack Name	--														
Malware Info	--														

OK

Figure 61: Juniper Security Director Cloud—ATP Infected Host

Juniper Security Director Cloud

Hosts

Host Identifier	Host IP	Threat Level	Infected Host Feed	Last Host Activity	C&C Hits	Malware Hits	Policy	State of Investigation	Source
unknown-user@9.9.9....	9.9.9.180	7	Included	Mar 26, 2024, 3:43:14 PM	0	2	Use configured p...	Open	DETECTION
n/a@90.0.37.137	90.0.37.137	4	Excluded	Mar 2, 2024, 5:55:38 AM	49	0	Use configured p...	Open	DETECTION
unknown-user@90.0.5...	90.0.53.41	4	Excluded	Mar 2, 2024, 4:43:30 AM	37	0	Use configured p...	Open	DETECTION
unknown-user@90.0.4...	90.0.45.89	4	Excluded	Mar 2, 2024, 4:43:23 AM	35	0	Use configured p...	Open	DETECTION
unknown-user@90.0.4...	90.0.41.113	4	Excluded	Mar 2, 2024, 4:43:21 AM	35	0	Use configured p...	Open	DETECTION
unknown-user@90.0.1...	90.0.14.25	4	Excluded	Mar 2, 2024, 4:20:16 AM	50	0	Use configured p...	Open	DETECTION
unknown-user@90.0.6...	90.0.68.201	4	Excluded	Mar 2, 2024, 4:20:15 AM	34	0	Use configured p...	Open	DETECTION
unknown-user@90.0.3...	90.0.33.161	4	Excluded	Mar 2, 2024, 4:20:14 AM	50	0	Use configured p...	Open	DETECTION

Figure 62: Juniper Security Director Cloud—ATP Infected Host Detailed View

Juniper Security Director Cloud

Host unknown-user@9.9.9.180

General

Host Identifier *	unknown-user@9.9.9.180	Save	Reset
Host IP	9.9.9.180		
Mac Address	Not available. Policy Enforcer required		
Host Status	High threat level, recommend blocking host and investigating further		

Threat Settings

Investigation Status	Open
Policy Override for Host	Use configured policy (included in...)

Threat Stats

From Date	02/25/2024
To Date	03/26/2024

Past Threats (Feb 25, 2024 - Mar 26, 2024)

Event Time	Status	Description
Mar 26, 2024, 3:43:15 PM	Malware hit	Additional analysis updated score for file (score 9).
Mar 26, 2024, 3:43:14 PM	Malware hit	Additional analysis updated score for file (score 7).

ATP Infected host view provides the following details:

- Indicators of compromise (IOC).
- Static analysis of the identified malicious file.
- Behavior analysis to identify key behaviors based on the assigned threat level to derive how malicious is the identified file.
- Network activity provides details on the malware activity identified during sandboxing.
- Behavior details outline the behavioural steps identified during sandboxing.

Figure 63: Juniper Security Director Cloud—ATP Malware IOC

The screenshot shows the Juniper Security Director Cloud interface for ATP Malware IOC. The main content area is divided into several sections:

- Threat Level:** Shows a threat level of 9, with a note that the file is an executable (Extension: d...).
- Top Indicators:** Lists the Malware Name as Win32:Trojan:TROJAN_PATCHED, Behavior Signature as Utilizes known code obfuscation techniques, and Signature Match as TROJAN_PATCHED (Trojan).
- Prevalence:** Shows Global Prevalence as Medium, Unique Users as 1, and Protocols Seen as HTTP.
- General:** Provides detailed file information: File Name (ISV.doc), Category (executable), Size (72 KB), Platform (Win32), Malware Name (Win32:Trojan:TROJAN_PATCHED), Type (Trojan), and Strain (TROJAN_PATCHED). It also shows the threat level (9), global prevalence (Medium), and last scanned date (Mar 26, 2024 3:55 PM).
- File Information:** Lists the file name (ISV.doc), category (executable), size (72 KB), platform (Win32), malware name (Win32:Trojan:TROJAN_PATCHED), type (Trojan), and strain (TROJAN_PATCHED).
- Other Details:** Lists the sha256 hash (294997bccf6842ea8f4f58a2...), md5 hash (d3e525c0467c3756174d8d25e2b0408c), URL (http://25.25.25.2/malware/files/...), destination IP (25.25.25.2), and user name (unknown-user).
- HTTP Downloads:** A table showing the download history for the file. It includes columns for Host Identifier, Client IP Address, File Name, Date/Time Submitted, Device, URL, Destination IP, and User Name. One item is listed: Host Identifier (unknown-user@9.9.9.180), Client IP Address (9.9.9.180), File Name (ISV.doc), Date/Time Submitted (Mar 26, 2024, 3:43:08 PM), Device (JN1267E19JCA), URL (http://25.25.25.2/malware/files/...), Destination IP (25.25.25.2), and User Name (unknown-user).

Figure 64: Juniper Security Director Cloud—ATP Malware Static Analysis

The screenshot shows the Juniper Security Director Cloud interface for ATP Malware Static Analysis. The main content area is divided into several sections:

- Threat Level:** Shows a threat level of 9, with a note that the file is an executable (Extension: d...).
- Top Indicators:** Lists the Malware Name as Win32:Trojan:TROJAN_PATCHED, Behavior Signature as Utilizes known code obfuscation techniques, and Signature Match as TROJAN_PATCHED (Trojan).
- Prevalence:** Shows Global Prevalence as Medium, Unique Users as 1, and Protocols Seen as HTTP.
- General:** Provides detailed file information: File Name (ISV.doc), Category (executable), Size (72 KB), Platform (Win32), Malware Name (Win32:Trojan:TROJAN_PATCHED), Type (Trojan), and Strain (TROJAN_PATCHED). It also shows the threat level (9), global prevalence (Medium), and last scanned date (Mar 26, 2024 3:55 PM).
- Static Analysis:** The selected tab, showing the following details:
 - PE File Analysis:** Imports listed: MSVCRT.dll, KERNEL32.dll, and ADVAPI32.dll.
- Behavior Analysis:** Not selected.
- Network Activity:** Not selected.
- Behavior Details:** Not selected.

Figure 65: Juniper Security Director Cloud—ATP Malware Behavior Analysis

Juniper Security Director Cloud

Monitor / Advanced Threat Prevention / File Scanning / HTTP File Downloads

294997bccf6842ea8f4f...

Report False Positive

Download STIX Report Download zipped file Download PDF Report

File Name: ISV.doc
Category: executable (Extension: d...)

Malware Name: Win32:Trojan:TROJAN_PATCHED
Behavior Signature: Utilizes known code obfuscation techniques
Signature Match: TROJAN_PATCHED (Trojan)

Global Prevalence: Medium
Unique Users: 1
Protocols Seen: HTTP

General Static Analysis Behavior Analysis Network Activity Behavior Details

Threat Level: High Medium Low None, clean

Behaviors Seen

Threat Level	Behavior Category	Signature
4	Fine-grained behavior	Memory allocated in system DLL range

10 items

Figure 66: Juniper Security Director Cloud—ATP Malware Network Activity

Juniper Security Director Cloud

Monitor / Advanced Threat Prevention / File Scanning / HTTP File Downloads

294997bccf6842ea8f4f...

Report False Positive

Download STIX Report Download zipped file Download PDF Report

File Name: ISV.doc
Category: executable (Extension: d...)

Malware Name: Win32:Trojan:TROJAN_PATCHED
Behavior Signature: Utilizes known code obfuscation techniques
Signature Match: TROJAN_PATCHED (Trojan)

Global Prevalence: Medium
Unique Users: 1
Protocols Seen: HTTP

General Static Analysis Behavior Analysis Network Activity Behavior Details

Contacted Domains Contacted IPs DNS Activity

IP	Name	Reputation
192.168.1.1	www.google.com	Good

Figure 67: Juniper Security Director Cloud—ATP Malware Behavioral Details

DNS Security Feature Validation

DNS security logs are generated based on each DNS security features such as DGA and DNS tunneling, if any identified DNS traffic is found to be malicious appropriate logs are generated.

Table 5: DNS Security Logs

Log Information	Description
SMS_STREAMING	Log is generated for DNS REQ when 'notification log' is configured under any detections (dga, tunneling, and all).
SMS_CLEAN_VERDICT	Log is generated when the cloud verdict is 'clean' and 'notification log-detection' is configured under any detections (dga and all).
SMS_MALICIOUS_VERDICT	Log is generated when the cloud verdict is malicious or tunneling is detected and 'notification log-detection' is configured under any detections (dga, tunneling and all).
SMS_FALLBACK_EVENT	Log is generated when the cloud verdict is not received in verdict-timeout interval. Log is generated only when 'fallback-options notification log' is configured under any detection (dga, tunneling and all).

Apart from generated logs, you can also view the offense details from Advanced Threat Prevention section, which provides information on the following:

- Client which generated the offense.
- Offense details if its DGA or DNS Tunneling.
- Information on the IOC and exfiltration attempts.

Figure 68: Juniper Security Director Cloud—DNS Logs

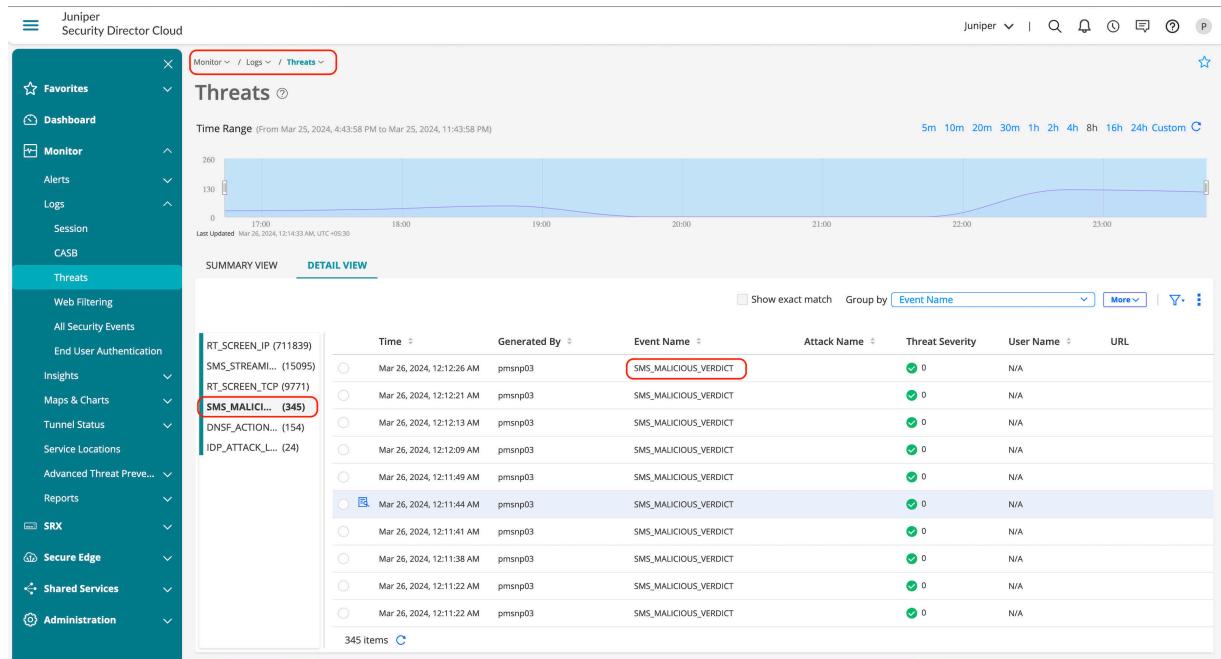


Figure 69: Juniper Security Director Cloud—DNS Log Detail

Figure 70: Juniper Security Director Cloud—Seclintel Based DNS Log

Time	Generated By	Event Name	Attack Name	Threat Severity	User Name	URL
Mar 26, 2024, 12:13:20 AM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 26, 2024, 12:13:29 AM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 26, 2024, 12:12:33 AM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 26, 2024, 12:09:40 AM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 26, 2024, 12:05:54 AM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 25, 2024, 11:57:35 PM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 25, 2024, 11:57:35 PM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 25, 2024, 11:56:43 PM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 25, 2024, 11:54:10 PM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	
Mar 25, 2024, 11:54:10 PM	pmsnp03	DNSF_ACTION_LOG	DNSF_ACTION_LOG	10	N/A	

Figure 71: Juniper Security Director Cloud—SeCInTEL Based DNS Log Details

Event log details

General		Source		Destination	
Generated By	pmsnp03	Source IP	9.9.9.2	Destination IP	8.8.8.8
Logical System Name	--	Source Port	33198	Destination Port	53
Log Generated Time	Mar 26, 2024, 12:09:40 AM	Source Zone	trust	Protocol ID	17
Event Category	skyatp	Source Country	Switzerland	Destination Zone	untrust
Threat Severity	10	NAT Source IP	--	Destination Country	United States
Action	drop	NAT Source Port	--	NAT Destination IP	--
Reason	--	NAT Address	--	NAT Destination Port	--
Traffic Session ID	115994183664	NAT Source Rule Name	--	NAT Address	--
Policy Name	t2u-allow_internet_rule	User Name	N/A	NAT Destination Rule Name	--
Service Name	--	Roles	--		
Application	--	Client Hostname	--		
Nested Application	--				

Security	
Name	--
URL	--
Category	dns
Attack Name	--
Malware Info	--

Figure 72: Juniper Security Director Cloud—ATP DNS DGA Offense

DNS

Click on the "Domain" to view more details on the event and if this associates to a C&C.

Domain	DNS Record Type	Last Hit Session...	Last Hit Source IP	Last Hit Destinat...	Total Hits	Verdict	Last Hit Time
ikopwdujykkko.com	CNAME	115994329388	9.9.9.2	8.8.8.8	6	DGA	Mar 26, 2024, 12:11:3...
ikopwdujykkko.com	NS	115994325301	9.9.9.2	8.8.8.8	10	DGA	Mar 25, 2024, 11:55:5...
ikopwdujykkko.com	SRV	115994057375	9.9.9.2	8.8.8.8	9	DGA	Mar 25, 2024, 11:41:2...
ikopwdujykkko.com	SOA	115993459573	9.9.9.2	8.8.8.8	4	DGA	Mar 25, 2024, 11:26:1...
hcbdekeytfulu.com	A	115993905720	9.9.9.2	8.8.8.8	54	DGA	Mar 25, 2024, 11:21:3...
lsnwugkijubu.com	CNAME	115993786657	9.9.9.2	8.8.8.8	27	DGA	Mar 25, 2024, 10:20:2...
xtumeqgbowj.com	A	115994157815	9.9.9.2	8.8.8.8	32	DGA	Mar 25, 2024, 10:55:3...
ikopwdujykkko.com	A	115994323577	9.9.9.2	8.8.8.8	6	DGA	Mar 25, 2024, 7:12:07...
gopkwtidol.com	NS	115994330362	9.9.9.2	8.8.8.8	7	DGA	Mar 25, 2024, 7:11:48...
kgkgtemikbb.com	TXT	115994096685	9.9.9.2	8.8.8.8	5	DGA	Mar 25, 2024, 7:11:40...
ggfujvjslmri.com	CNAME	115993135872	9.9.9.2	8.8.8.8	2	DGA	Mar 25, 2024, 7:11:19...
kdoknvrkkqo.com	TXT	115994080527	9.9.9.2	8.8.8.8	10	DGA	Mar 25, 2024, 7:10:02...
bssgdsbwobbn.com	TXT	115994121029	9.9.9.2	8.8.8.8	5	DGA	Mar 25, 2024, 7:09:53...

Figure 73: Juniper Security Director Cloud—ATP DNS DGA Offense Details

Juniper Security Director Cloud

No C&C hit for Ikopwdujvko.com

Threat Source Ikopwdujvko.com

Time Range (From Mar 19, 2024, 12:24:43 AM to Mar 26, 2024, 12:24:43 AM)

11. Jan 12. Jan 13. Jan 14. Jan 15. Jan 16. Jan 17. Jan

Last Updated: Mar 26, 2024, 12:24:43 AM, UTC +05:30

If DNS DGA resolves to a C&C server, additional details pertaining to the C&C will be shown here.

Figure 74: Security Director Clou—ATP DNS Tunnel Offense

Juniper Security Director Cloud

Monitor / Advanced Threat Prevention / DNS

DNS

Tunnel

Domain	DNS Record Type	Last Hit Session ID	Tunnel Data	Last Hit Source IP	Last Hit Destination...	Total Hits	Last Hit Time
ebfb0336b00000000515478913f743597740f10d3c2a67ac2...	MX	115993640913	9.9.9.2	8.8.8.8	1	1	Mar 26, 2024, 12:19:...
b6850329a800000000ee083f0a7d9ba9fbfa4b5341c198f0f...	CNAME	115994568815	9.9.9.2	8.8.8.8	1	1	Mar 26, 2024, 12:04:...
7799032bd1000000000d5e1d9fb8aa85b330b9a128cd863...	TXT	115993506921	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 11:49:...
8620032bd1000000000d5e1d9fb8aa85b330b9a128cd863...	CNAME	115994017932	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 11:49:...
89c03139f000000008aa6853fcfd729fb5091db86a4d5a3bbf5...	TXT	115994285084	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 11:34:...
b1c403b636000000008083b8f676975c2ff6c0de2aa8d87b218...	MX	115993738793	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 11:19:...
5b7003539a00000000a1191fedb505ab5ffbf4c7e7a5264413b0...	MX	115994164140	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 11:04:...
fd5103b270000000000ff2c6a29107db672d7634ad130f1e2...	CNAME	115994427981	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 10:49:...
9ab603b2f000000000ff2c6a29107df67d2df7634ad130f1e2...	CNAME	115994133211	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 10:49:...
ebc103348e0000000042f47028e94ac0b11feef6d53de4a1560f...	MX	115994114094	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 10:34:...
942023348e0000000042f47028e94ac0b11feef6d53de4a1560f...	MX	115993847267	9.9.9.2	8.8.8.8	1	1	Mar 25, 2024, 10:34:...
2ba30310610000000025b7e1bae0eaad78f08a87383652fa0c...	MX	55872143794	9.9.9.2	8.8.8.8	1	1	Mar 1, 2024, 2:19:38 ...
fba503cf0d00000000d982ac762b7533000feb29bab7afed3...	TXT	55872113660	9.9.9.2	8.8.8.8	1	1	Mar 1, 2024, 2:09:33 ...
582903cd0d00000000d982ac7622b7533000feb529daba7afed...	CNAME	55872130414	9.9.9.2	8.8.8.8	1	1	Mar 1, 2024, 2:09:31 ...

4603 Items

Figure 75: Juniper Security Director Cloud—ATP DNS Tunnel Offense Detail

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar includes 'Favorites', 'Dashboard', 'Monitor' (selected), 'Logs', 'Insights', 'Maps & Charts', 'Tunnel Status', 'Service Locations', 'Advanced Threat Preve...', 'Hosts', and 'Threat Sources'. The top navigation bar shows 'Monitor > Advanced Threat Prevention > DNS'. The main content area is titled 'DNS - Tunnel' and displays a table with the following columns: Client IP Address, Device Name, Incoming Bytes, Outgoing Bytes, and Last Seen. One row is highlighted for '9.9.9.2' with 'JN1267E19|CA'. A red box highlights the table row, and a red arrow points to the 'Shows data on the exfiltration attempt with the data that was attempted to transfer' text.

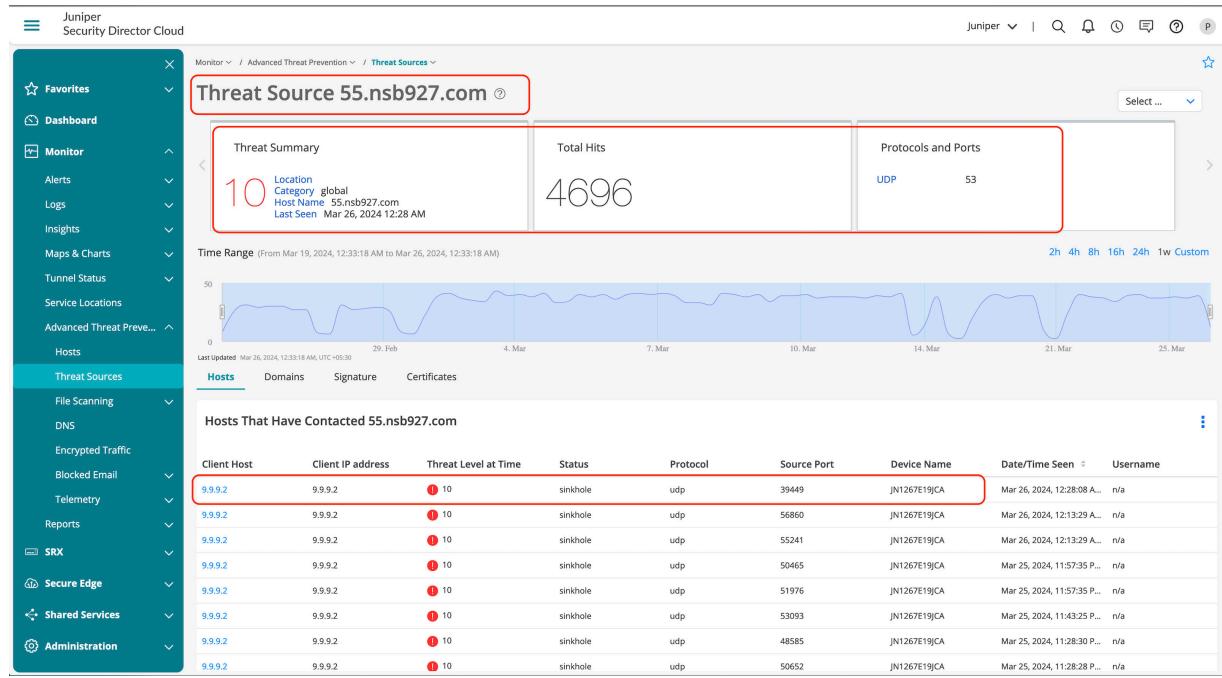
Client IP Address	Device Name	Incoming Bytes	Outgoing Bytes	Last Seen
9.9.9.2	JN1267E19 CA	0	209 B	Mar 26, 2024, 12:19:08 AM

Figure 76: Juniper Security Director Cloud—Seclintel Identified DNS Offense

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar includes 'Favorites', 'Dashboard', 'Monitor' (selected), 'Logs', 'Insights', 'Maps & Charts', 'Tunnel Status', 'Service Locations', 'Advanced Threat Preve...', 'Hosts', 'Threat Sources' (selected), 'File Scanning', 'DNS', 'Encrypted Traffic', 'Blocked Email', 'Telemetry', 'Reports', 'SRX', 'Secure Edge', 'Shared Services', and 'Administration'. The top navigation bar shows 'Monitor > Advanced Threat Prevention > Threat Sources'. The main content area is titled 'Threat Sources' and displays a table with the following columns: External Server, Blocked Via, Highest Threat L..., Count, Country, Last Seen, Protocol, Action, Category, DNS Record Type, and Report False Positive. One row is highlighted for '55.ns927.com'. A red box highlights the table row, and a red arrow points to the 'Click on "External Server" and more details pertaining to the event can be viewed.' text.

External Server	Blocked Via	Highest Threat L...	Count	Country	Last Seen	Protocol	Action	Category	DNS Record Type	Report False Positive
55.ns927.com	global_dns	10	4696		Mar 26, 2024, 12...	UDP	sinkhole	A	FP/FN	
108.wap517.net	global_dns	10	2557		Mar 26, 2024, 12...	UDP	sinkhole	CNAME	FP/FN	
144.wap517.net	global_dns	10	3242		Mar 26, 2024, 12...	UDP	sinkhole	A	FP/FN	
144.ns1631262.org	global_dns	10	4671		Mar 26, 2024, 12...	UDP	drop	MISC	FP/FN	
58.ns927.com	global_dns	10	32854		Mar 25, 2024, 11...	UDP	sinkhole		FP/FN	
58.ns927.com	global_dns	10	2039		Mar 25, 2024, 11...	UDP	sinkhole	MX	FP/FN	
342154736.corolain.ru	global_dns	8	3566		Mar 25, 2024, 11...	UDP	drop	MISC	FP/FN	
143.ns927.com	global_dns	10	2409		Mar 14, 2024, 8...	UDP	sinkhole	MX	FP/FN	
gilcsbqrpbch.com	global_dns	8	131		Mar 7, 2024, 5:...	UDP	sinkhole	CNAME	FP/FN	
190.0.2.98	Global Threat Feed...	8	17146	Colombia	Mar 6, 2024, 11...	TCP	block		FP/FN	
11.ns927.com	global_dns	10	2739		Mar 4, 2024, 11...	UDP	drop	MISC	FP/FN	
121.wap517.net	global_dns	10	2088		Feb 25, 2024, 11...	UDP	drop	MISC	FP/FN	
121.ns1631262.org	global_dns	10	1406		Feb 17, 2024, 10...	UDP	sinkhole	CNAME	FP/FN	
121.ns927.com	global_dns	10	1427		Feb 17, 2024, 10...	UDP	drop	MISC	FP/FN	
121.wap517.net	global_dns	10	876		Feb 17, 2024, 5...	UDP	sinkhole	MX	FP/FN	

Figure 77: Juniper Security Director Cloud—Seclntel Identified DNS Offense Detail



Screens Feature Validation

IP Spoofing

Figure 78: Juniper Security Director Cloud—IP Spoofing Log

Figure 79: Juniper Security Director Cloud—IP Spoofing Log Detail

Juniper Security Director Cloud

Event log details

General

Generated By	pmsnp03
Logical System Name	--
Log Generated Time	Mar 26, 2024, 12:01:42 AM
Event Category	screen
Threat Severity	--
Action	drop
Reason	--
Traffic Session ID	--
Policy Name	--
Service Name	--
Application	--
Nested Application	--

Source

Source IP	63.123.19.123
Source Port	--
Source Zone	untrust
Source Country	United States
NAT Source IP	--
NAT Source Port	--
NAT Address	--
NAT Source Rule Name	--
User Name	--
Roles	--
Client Hostname	--

Destination

Destination IP	7.7.7.2
Destination Port	--
Protocol ID	17
Destination Zone	--
Destination Country	United States
NAT Destination IP	--
NAT Destination Port	--
NAT Address	--
NAT Destination Rule Name	--

Security

Name	--
URL	--
Category	--
Attack Name	IP spoofing!
Malware Info	--

OK

30m 1h 2h 4h 8h 16h 24h Custom

23:45

User Name URL

SYN Flood—(Apply Source and Destination Limits)

Figure 80: Juniper Security Director Cloud—Syn Flood dst-ip Filter

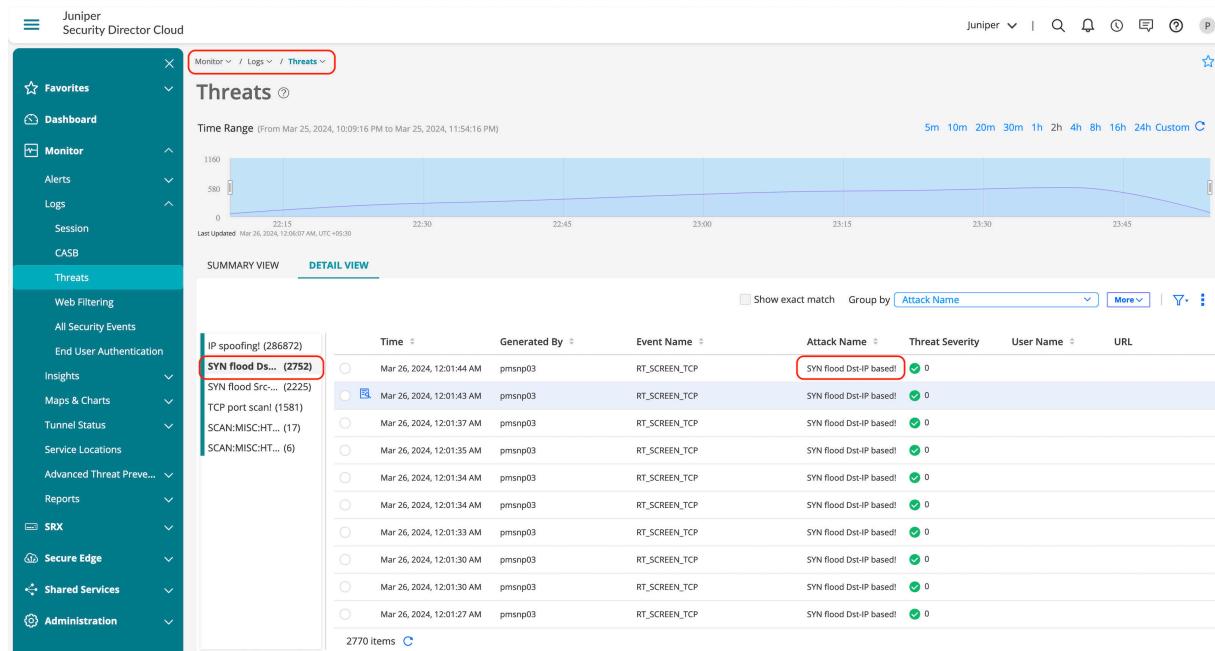


Figure 81: Juniper Security Director Cloud—Syn Flood dst-ip Filter Detail

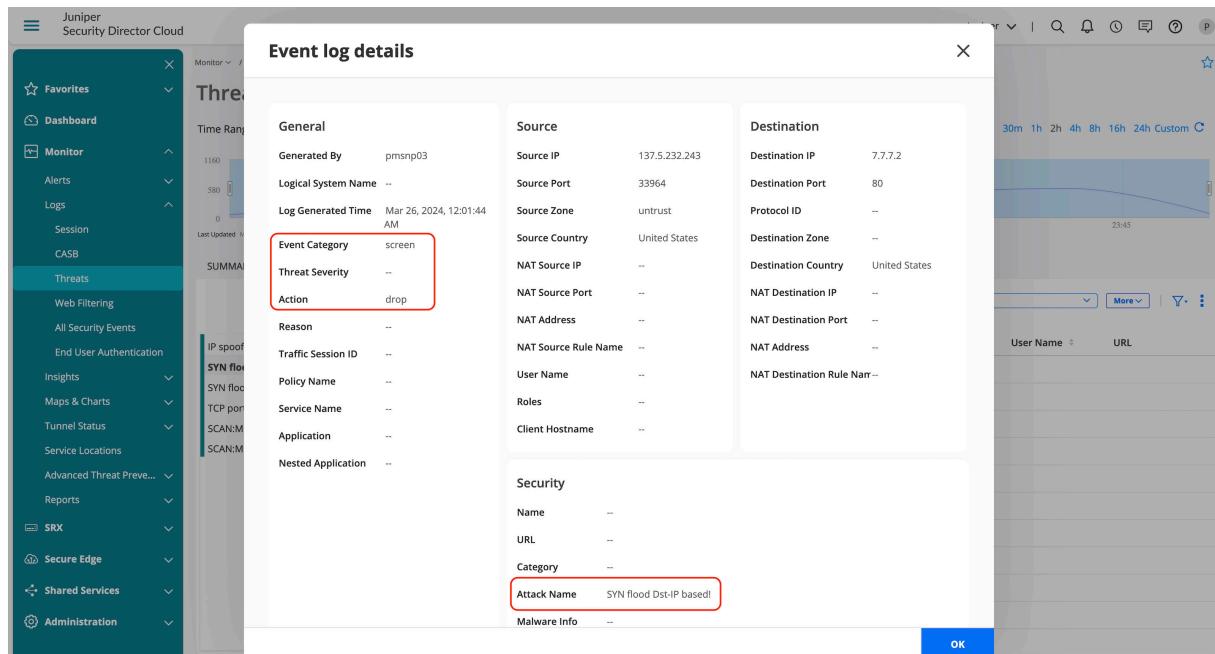


Figure 82: Juniper Security Director Cloud—Syn Flood src-ip Filter

The screenshot shows the Juniper Security Director Cloud interface. The left sidebar is a navigation menu with sections like Favorites, Dashboard, Monitor, Threats, Web Filtering, and others. The Threats section is currently selected. The main content area is titled 'Threats' with a sub-section 'SYN flood Src... (2225)'. A summary chart shows event counts over time. Below the chart is a table of threat details. The table has columns: Time, Generated By, Event Name, Attack Name, Threat Severity, User Name, and URL. One row in the table is highlighted with a red box around the 'Attack Name' column, which contains 'SYN flood Src-IP based!'. The table shows 2242 items.

Figure 83: Junioer Security Director Cloud – Syn Flood src-ip Filter Detail

The screenshot shows the Juniper Security Director Cloud interface with the Threats section selected. A specific event is detailed in a modal window titled 'Event log details'. The event is a 'SYN flood Src-IP based!' event. The modal is divided into sections: General, Source, Destination, Security, and Malware Info. The 'Event Category' and 'Attack Name' fields are highlighted with red boxes. The 'OK' button is visible at the bottom right of the modal.

Reverse SSL Proxy Validation

Reverse SSL proxy enables to decrypt specific traffic destined to a webserver for subjecting the traffic through advanced security services.

Once applied on a security policy, you'll notice several logs that might define the action that SSL proxy takes.

Table 6: Reverse SSL Proxy Logs

Log Information	Description
SSL_PROXY_SSL_SESSION_DR OP	Log is generated when SSL proxy drop a session.
SSL_PROXY_SSL_SESSION_ALL OW	Log is generated when SSL session is processed by SSL proxy even after encountering minor errors.
SSL_PROXY_SESSION_IGNORE	Log is generated after detection of non-SSL sessions which are initially mistaken as SSL sessions.
SSL_PROXY_SESSION_WHITELIST	Log is generated when a SSL proxy session is whitelisted.
SSL_PROXY_ERROR	Log is generated for reporting errors during SSL proxy.
SSL_PROXY_WARNING	Log is generated for reporting warnings during SSL proxy.
SSL_PROXY_INFO	Log is generated for reporting general information during SSL proxy.

Figure 84: Juniper Security Director Cloud—SSL Proxy Log

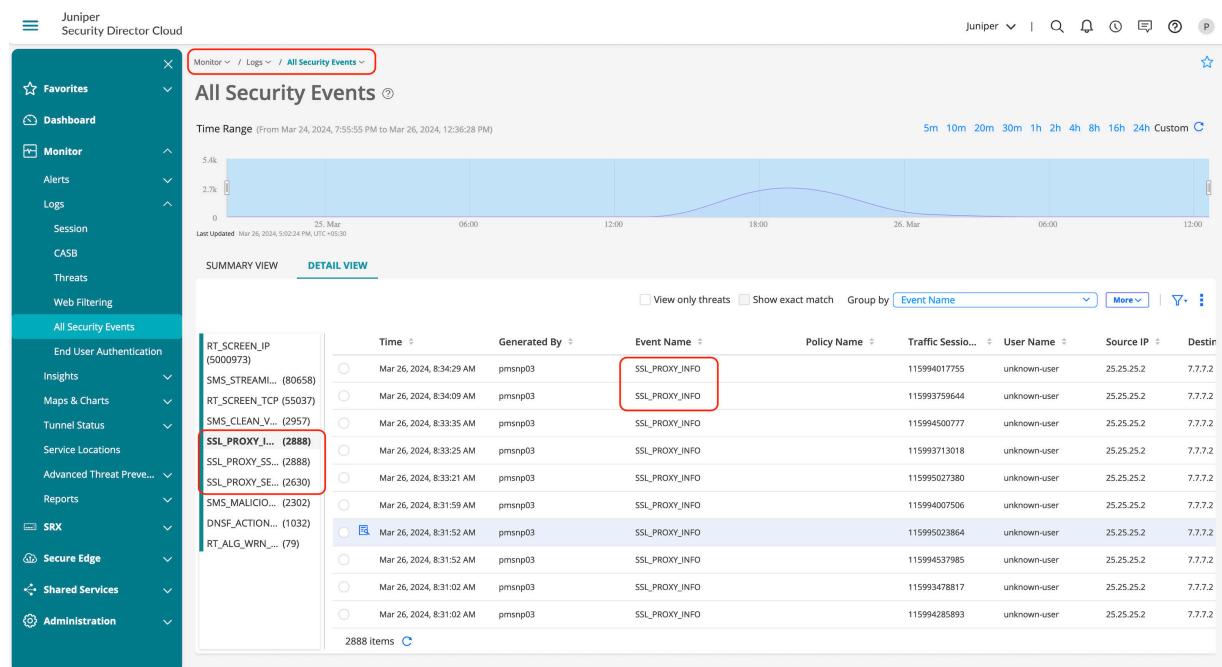
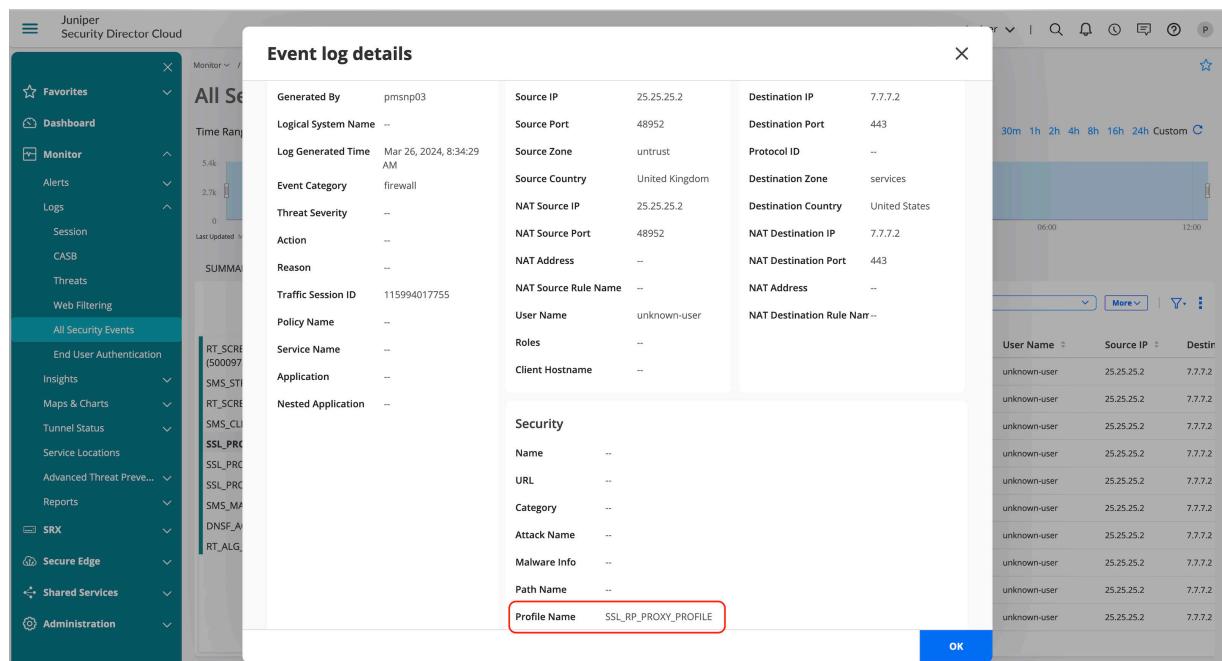


Figure 85: Juniper Security Director Cloud—SSL Proxy Log Details



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