

Hybrid Mesh Network Security

22 November 2026

CLOUDGUARD CONTROLLER

R82.10

Administration Guide

CHECK POINT™

Check Point Copyright Notice

© 2025 - 2026 Check Point Software Technologies Ltd.

All rights reserved. This product and related documentation are protected by copyright and distributed under licensing restricting their use, copying, distribution, and decompilation. No part of this product or related documentation may be reproduced in any form or by any means without prior written authorization of Check Point. While every precaution has been taken in the preparation of this book, Check Point assumes no responsibility for errors or omissions. This publication and features described herein are subject to change without notice.

RESTRICTED RIGHTS LEGEND:

Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.227-7013 and FAR 52.227-19.

TRADEMARKS:

Refer to the Copyright page for a list of our trademarks.

Refer to the Third Party copyright notices for a list of relevant copyrights and third-party licenses.

Important Information



Latest Software

We recommend that you install the most recent software release to stay up-to-date with the latest functional improvements, stability fixes, security enhancements and protection against new and evolving attacks.



Certifications

For third party independent certification of Check Point products, see the Check Point Certifications page.



Check Point R82.10

For more about this release, see the R82.10 home page.



Latest Version of this Document in English

Open the latest version of this document in a Web browser.
Download the latest version of this document in PDF format.



Feedback

Check Point is engaged in a continuous effort to improve its documentation.
Please help us by sending your comments.

Revision History

Date	Description
02 November 2026	Updated *"VMware vCenter Prerequisites" on page 68*
09 September 2026	Updated: ■ *"CloudGuard Controller for Kubernetes" on page 48* ■ *"Integrating with Data Center Servers" on page 93*
22 July 2026	Added: *"CloudGuard Controller for Claroty CTD Server" on page 82* *"CloudGuard Controller for Akamai Guardicore Server" on page 85* *"CloudGuard Controller for ServiceNow CMDB Server" on page 88* *"CloudGuard Controller for Nozomi Server" on page 90*
23 June 2026	Updated: ■ *"What's New" on page 15* ■ *"Azure Objects and Properties" on page 30* ■ *"OCI Objects and Properties" on page 57*
18 June 2026	Updated *"Limitations" on page 125*
13 May 2026	Updated *"Limitations" on page 125*
05 May 2026	Updated *"Limitations" on page 125*
14 April 2026	Updated *"Limitations" on page 125*
01 April 2026	Added *"CloudGuard Controller for Illumio Policy Compute Engine" on page 79*
24 March 2026	Updated *"CloudGuard Controller for Nutanix" on page 59*
05 March 2026	Updated *"CloudGuard Controller for Google Cloud Platform (GCP)" on page 34*
15 February 2026	Updated: ■ *"Configuring Permissions for Amazon Web Services" on page 24* ■ *"Configuring Permissions for Google Cloud Platform" on page 34*
29 December 2025	First release of this document

Table of Contents

Introduction to CloudGuard Controller ... *12*
Use Case ... *13*
What's New ... *15*
New for Google Cloud ... *15*
Getting Started with CloudGuard Controller ... *16*
Supported Security Gateways ... *16*
Activating the Identity Awareness Software Blade ... *17*
Support for Identity Awareness Identity Sharing ... *18*
Limitation ... *18*
Supported Data Centers ... *19*
CloudGuard Controller for Amazon Web Services (AWS) ... *20*
Connecting to an Amazon Web Services Data Center Server from SmartConsole ... *20*
Connecting to an Amazon Web Services Data Center Server with Management API ... *21*
Connecting to an Amazon Web Services Data Center Server with Terraform ... *21*
AWS Objects and Properties ... *22*
AWS Imported Objects ... *22*
AWS Import Options ... *23*
AWS Object Names (Tags) ... *23*
AWS Imported Properties ... *23*
Configuring Permissions for Amazon Web Services ... *24*
AWS STS Assume Role ... *26*
Auto Scaling in Amazon Web Services ... *27*
CloudGuard Controller for Microsoft Azure ... *28*
Connecting to a Microsoft Azure Data Center Server from SmartConsole ... *28*
Connecting to a Microsoft Azure Data Center Server with Management API ... *30*
Connecting to a Microsoft Azure Data Center Server with Terraform ... *30*
Azure Objects and Properties ... *30*

Azure Objects ... 30
Azure Imported Properties ... 32
Auto Scaling in Microsoft Azure ... 33
CloudGuard Controller for Google Cloud Platform (GCP) ... 34
Configuring Permissions for Google Cloud Platform ... 34
Google Cloud Platform APIs ... 35
Connecting to a Google Cloud Platform Data Center with SmartConsole ... 35
Connecting to a Google Cloud Platform Data Center Server with Management API ... 36
Connecting to a Google Cloud Platform Data Center Server with Terraform ... 36
Google Cloud Platform Objects and Properties ... 37
GCP Imported Objects ... 37
GCP Import Options ... 38
GCP Object Names ... 38
GCP Imported Properties ... 39
CloudGuard Controller for Cisco Application Centric Infrastructure (ACI) ... 40
Prerequisites ... 40
Connecting to a Cisco ACI Data Center Server with SmartConsole ... 40
Connecting to a Cisco ACI Data Center Server with Management API ... 41
Connecting to a Cisco ACI Data Center Server with Terraform ... 41
Cisco ACI Objects and Properties ... 42
Cisco ACI Imported Objects ... 42
Limitations ... 43
CloudGuard Controller for Cisco Identity Services Engine (ISE) ... 44
Prerequisites ... 45
Connecting to a Cisco ISE Data Center with SmartConsole ... 46
Connecting to a Cisco ISE Data Center Server with Management API ... 46
Connecting to a Cisco ISE Data Center Server with Terraform ... 46
Cisco ISE Objects and Properties ... 47
Cisco ISE Imported Objects ... 47
Automatic Failover ... 47

Limitations 47
CloudGuard Controller for Kubernetes 48
Adding Kubernetes to CloudGuard Controller 48
Prerequisite 48
Connecting to a Kubernetes Server 49
Kubernetes Imported Objects 55
Connecting to a Kubernetes Data Center Server with Management API 55
Connecting to a Kubernetes Data Center Server with Terraform 55
CloudGuard Controller for Oracle Cloud Infrastructure (OCI) 56
Connecting to an OCI Data Center with SmartConsole 56
Connecting to an OCI Data Center Server with Management API 57
Connecting to an OCI Data Center Server with Terraform 57
OCI Objects and Properties 57
OCI Objects 57
OCI Imported Properties 58
Enable IPv6 58
CloudGuard Controller for Nutanix 59
Connecting to a Nutanix Prism Server in SmartConsole 59
Connecting to a Nutanix Data Center Server with Management API 59
Connecting to a Nutanix Data Center Server with Terraform 59
Adding a user in Nutanix Prism Central with minimum permissions 60
Nutanix Objects 63
Nutanix Imported Properties 63
CloudGuard Controller for OpenStack 64
Prerequisites 64
Connecting to an OpenStack Server with SmartConsole 64
Connecting to an OpenStack Data Center Server with Management API 65
Connecting to an OpenStack Data Center Server with Terraform 65
OpenStack Objects and Properties 65
OpenStack Imported Objects 65

OpenStack Imported Properties ... 66
CloudGuard Controller for VMware Servers ... 67
Connecting to a VMware Server with SmartConsole ... 67
Connecting to a VMware Data Center Server with Management API ... 67
Connecting to a VMWare Data Center Server with Terraform ... 67
CloudGuard Controller for VMware vCenter ... 68
VMware vCenter Prerequisites ... 68
VMware vCenter Objects and Properties ... 69
VMware vCenter Imported Objects ... 69
VMware vCenter Imported Properties ... 69
CloudGuard Controller for VMware NSX-T Management Server ... 70
VMware NSX-T Prerequisites ... 70
VMware NSX-T Policy mode APIs ... 70
VMware NSX-T Imported Objects ... 71
CloudGuard Controller for VMware Global NSX-T Management Server ... 72
VMware Global NSX-T Prerequisites ... 72
VMware Global NSX-T Imported Objects ... 73
VMware NSX-T Imported Properties ... 73
VMware NSX-T Known Limitations ... 74
Limitations ... 74
CloudGuard Controller for Proxmox Virtual Environment ... 75
Prerequisites ... 75
Connecting to the Proxmox Server ... 75
Connecting to a Proxmox Data Center Server with SmartConsole ... 76
Connecting to a Proxmox Data Center Server with Management API ... 76
Connecting to a Proxmox Data Center Server with Terraform ... 77
Proxmox Objects and Properties ... 77
Proxmox Objects ... 77
Proxmox Imported Properties ... 77
Limitations ... 77

CloudGuard Controller for Illumio Policy Compute Engine ... 79
Prerequisites ... 79
Connecting to the Illumio Server ... 79
Connecting to an Illumio Data Center Server with SmartConsole ... 79
Connecting to an Illumio Data Center Server with Terraform ... 80
Illumio Objects and Properties ... 80
Illumio Objects ... 80
Illumio PCE advanced configuration ... 81
Limitations ... 81
CloudGuard Controller for Claroty CTD Server ... 82
Prerequisites ... 82
Connecting to the Claroty CTD Server ... 82
Connecting to a Claroty CTD Server with SmartConsole ... 82
Claroty CTD Objects and Properties ... 83
Claroty CTD Objects ... 83
Claroty CTD advanced configuration ... 83
Limitations ... 84
CloudGuard Controller for Akamai Guardicore Server ... 85
Prerequisites ... 85
Limitations ... 85
Connecting to the Akamai Guardicore Server ... 85
Connecting to an Akamai Guardicore Server with SmartConsole ... 85
Akamai Guardicore Objects and Properties ... 86
Akamai Guardicore Objects ... 86
Akamai Guardicore advanced configuration ... 86
CloudGuard Controller for ServiceNow CMDB Server ... 88
Limitations ... 88
Connecting to the ServiceNow CMDB Server ... 88
Connecting to a ServiceNow CMDB Server with SmartConsole ... 88
ServiceNow CMDB Objects and Properties ... 89

ServiceNow CMDB Objects ... 89
ServiceNow CMDB advanced configuration ... 89
CloudGuard Controller for Nozomi Server ... 90
Limitations ... 90
Connecting to the Nozomi Server ... 90
Connecting to a Nozomi Server with SmartConsole ... 91
Nozomi Objects and Properties ... 91
Nozomi Objects ... 91
Nozomi advanced configuration ... 92
Integrating with Data Center Servers ... **93**
Connecting to a Data Center Server ... 93
Automatic Trust of Public Trusted Certificate Authorities ... 94
Using Data Center in Policy ... 98
Data Center Query Objects ... 100
Overview ... 100
Creating Rules with Data Center Query Objects ... 102
Configuring Data Center Query Objects in SmartConsole ... 103
Configuring Data Center Query Objects using management API ... 103
Configuring Data Center Query Objects using Terraform ... 104
Automation and Monitoring ... 105
CloudGuard Controller Monitoring ... **106**
Data Center Updates ... 106
CloudGuard Controller Logs and Events ... 106
CloudGuard Controller Status ... 107
SNMP Traps ... 108
Creating a User-Defined Event and Sending Alerts ... 108
Integration Events & AIOps ... 110
Onboarding and Requirements ... 111
Limitation ... 111
CloudGuard Controller Alerts in Events & AIOps ... 111

SmartTask ... 112
CloudGuard Controller Command Line Interface ... **114**
Configuration Parameters ... **115**
Limitations ... **125**
Glossary ... **127**

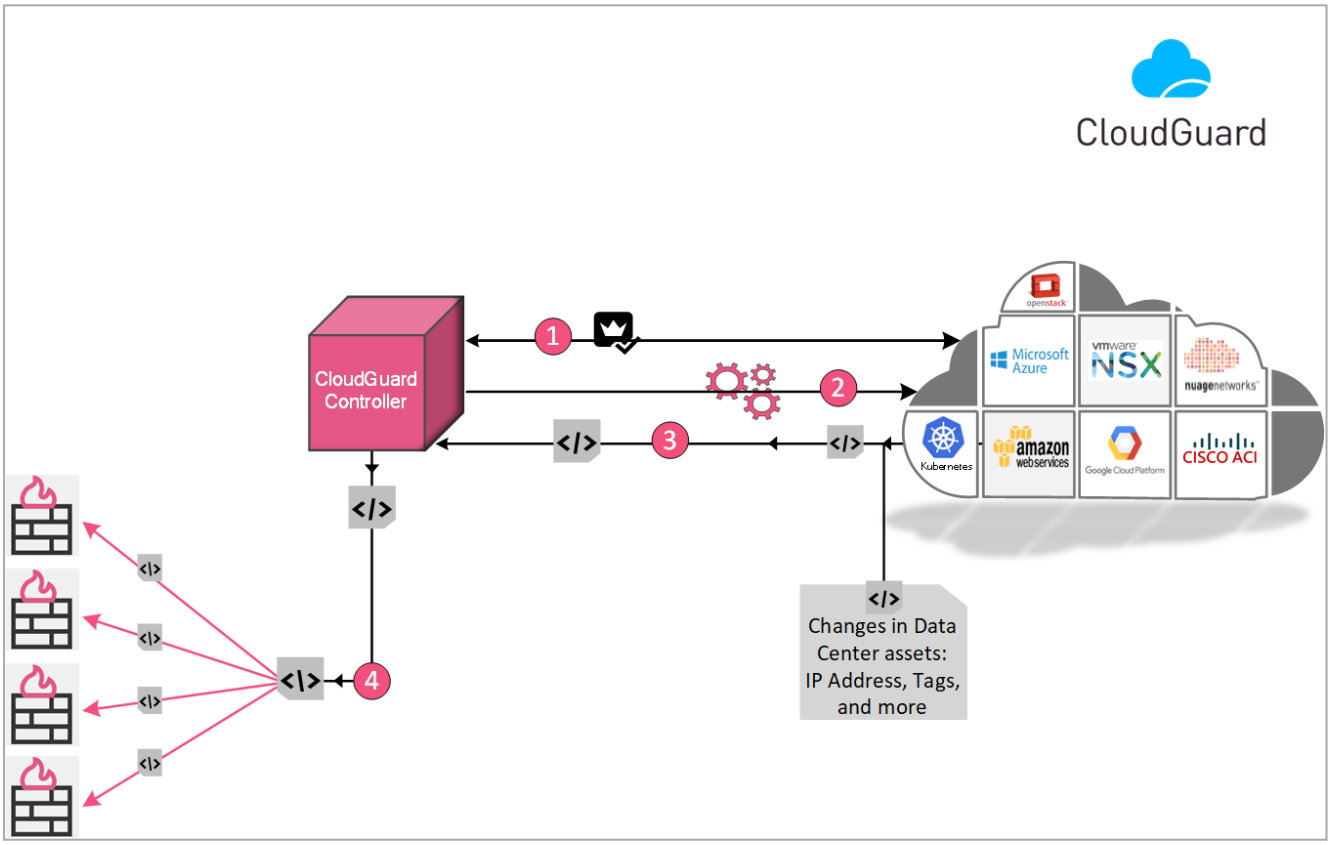
Introduction to CloudGuard Controller

A component of Check Point's Security Management Server, the CloudGuard Controller manages security in public and on-premises environments with one unified management solution.

The CloudGuard Controller dynamically learns about objects and attributes in data centers, such as changes in subnets, security groups, virtual machines, IP addresses, and tags.

After using the vendor's API to establish a trust relationship with a Data Center, CloudGuard Controller regularly polls the connected environments for changes in objects and object attributes used in the Security Policy.

Changes are automatically pushed to the Security Gateway.



Item	Description
1	CloudGuard Controller establishes a trusted relationship with the cloud environment.
2	With the use of the vendor's APIs, the CloudGuard Controller connects to the cloud environment and regularly polls it for changes.

Item	Description
3	Changes in the cloud environment are sent to the CloudGuard Controller.
4	The CloudGuard Controller pushes updates to attributes and objects in the Security Policy rules to Check Point Security Gateways.

Use Case

Dynamic environments such as public and on-premises data centers and clouds present a large challenge to security professionals.

The number of subnets, machines, and IP addresses changes quickly.

The legacy model of manual updates to the security policy and Security Gateways every two or three days is too slow for such environments.

In most organizations, personnel from several different departments have permission to add or remove assets in data centers.

This overlap creates a concern about the security and maintenance of assets in the data center.

The solution to manual updates is to protect the security and maintenance of the assets - automatically.

This is where the CloudGuard Controller comes in to assist.

With the CloudGuard Controller, the Security Operation Center (SOC) can configure the security policy to automatically detect changes in data centers and push these changes directly to the Security Gateway.

For example, an R&D team needed to add a separate R&D server for production and a separate R&D server for staging.

This required constant emails and service tickets between the server team and SOC team.

To add or remove an IP address, the server team had to open a ticket with IT.

Then IT had to manually update the information.

For example:

Source	Destination	Action
IP1	Internet	Allow
IP2	Internet	Allow
IP3	Internet	Allow
IP4	Internet	Allow
IP5	Internet	Allow

The problem grows by each request from R&D to remove `IPxx` or add `IPyy`.

With the possibility of hundreds of IP addresses, the chance of error and frustration from the two teams is inevitable.

This is where the CloudGuard Controller comes in to help.

The CloudGuard Controller changes a static, manual process into a dynamic, automatic flow of data.

The two teams only have to use one tag.

This one tag is representative of changes in the data center.

Rather than the manual, meticulous IP table, and the constant emails between the teams, the CloudGuard Controller removes the dependency on a manual procedure.

For example:

Source	Destination	Action
department=rnd	Internet	Allow

Note - "`department=rnd`" is the tag.

For more information, see *"Data Center Query Objects" on page 100*.

Check Point's CloudGuard Controller integrates with multiple virtual cloud environments. See *"Supported Data Centers" on page 19*.

What's New

- New CloudGuard Controller for Proxmox Virtual Environment.

  Starting in R82.10, CloudGuard Controller integrates the Check Point Security Management Server with a Proxmox Virtual Environment (VE).

  See *"CloudGuard Controller for Proxmox Virtual Environment" on page 75*

- **New for Google Cloud**

  Added new tag type: Secure Tags, starting R82.10 CloudGuard Controller self-updatable package Take 6.

  See *"CloudGuard Controller for Google Cloud Platform (GCP)" on page 34*

Getting Started with CloudGuard Controller

1. Activate the Identity Awareness blade on the Security Gateways: *"Activating the Identity Awareness Software Blade" on the next page*.
2. Connect to a Data Center server: *"Supported Data Centers" on page 19*.
3. Implement CloudGuard Controller monitoring: *"CloudGuard Controller Monitoring" on page 106*.

   Important - The CloudGuard Controller has a critical role in controlling the traffic that passes the Security Gateways. We strongly recommend that you implement CloudGuard Monitoring to warn you of potential issues early.
4. Add Data Center object to the security policy and install policy: *"Integrating with Data Center Servers" on page 93*

Important:

1. When you upgrade to R82.10 CloudGuard Controller, these files are overwritten:
   - `$MDS_FWDIR/conf/AWS_regions.conf`
   - `$MDS_FWDIR/conf/Azure_environments.conf`
   - `$MDS_FWDIR/conf/Oracle_regions.conf`
2. Before you start the upgrade, back up all files that you have changed.

Notes:

- During the upgrade, CloudGuard Controller does not communicate with the Data Center. Therefore, Data Center objects are not updated on the CloudGuard Controller or the Security Gateways.
- In R82.10, CloudGuard Controller updates are performed automatically. For more information, refer to sk181842.

Best Practice - Check Point recommends not to add sensitive information (for example, email address or employee name) to tags, VM names, or other objects.

Supported Security Gateways

For the Security Gateways that R82.10 CloudGuard Controller can manage, refer to *R82.10 Release Notes*.

Activating the Identity Awareness Software Blade

Note - Run this procedure only on the PDP Security Gateway that shares identities with other Security Gateways. Refer to the Identity Sharing configuration options below.

Step	Instructions
1	Connect with SmartConsole to the Management Server.
2	From the left navigation panel, click **Gateways & Servers**.
3	Create a new **Host** object with these settings: ■ Name: `LocalHost` ■ IPv4 address: `127.0.0.1`
4	Open the applicable Security Gateway / Cluster object.
5	From the left tree, click the **General Properties** page.
6	On the **Network Security** tab, select the **Identity Awareness** Software Blade: a. The **Identity Awareness Configuration** wizard opens. b. Click **Cancel** to close the wizard if the displayed methods are not needed.
7	From the left tree, click the **Identity Awareness** page.
8	Select **Identity Web API** and click **Settings**.
9	Configure the **Identity Web API** settings: a. In the **Authorized Clients**section, click **[+]** and select the Host object you created earlier (`LocalHost`). b. In the **Selected Client Secret** field, enter your secret word or generate a random secret. c. Click **OK**. **Note:** ■ If you add more than one authorized client host, the host that represent 127.0.0.1 must be the first item in the **Authorized Clients** list of the **Identity Web API**.
10	Click **OK**.

Step	Instructions
11	Install the Access Control Policy.

Support for Identity Awareness Identity Sharing

CloudGuard Controller supports sending updates to Security Gateways using the Identity Sharing configuration. Identity Sharing significantly reduces the load on Security Gateways.

With the Identity Sharing configuration, a Security Gateway configured as a PDP (Policy Decision Point) gets identity information and shares it with other Security Gateways configured as PEPs (Policy Enforcement Points). Only the PDP Identity Awareness Security Gateway performs the group membership query and calculates the Access Role object.

Limitation

- CloudGuard Controller does not support Identity Awareness Scaled Sharing for Policy Decision Point (PDP) Gateways in different Management Domains.

Note - The supported PDP and PEP Security Gateway versions are R81.10 and higher.

To configure Identity Sharing for the PDP Security Gateway that shares the identities:

1. In SmartConsole > Security Gateway properties > **Identity Awareness** > select **Identity Web API**. This makes the Security Gateway receive the CloudGuard Controller updates.
2. Click on **Settings** and add Authorized Clients.
3. In **Identity Awareness**> **Identity Sharing**, select **Share local identities with other gateways**.

For PEP Security Gateways that enforce traffic:

Note: Do not select Identity Web API.

1. In **Identity Awareness**> **Identity Sharing**, select **Get identities from other gateways**.
2. Select the PDP Security Gateway/s from which to pull identities.

Publish the SmartConsole session and install policy on the applicable Security Gateways.

Note - If you manually delete identities on the Security Gateway (for example, with the: `pdp __ed ra` command), the CloudGuard Controller on the Management Server is not aware of it and will not re-push these identities to the Security Gateway. In this scenario, you must use the `vsec_controller_cli` command to force an update for this Security Gateway.

For more information on Identity Awareness PDP sharing, refer to *R82.10 Identity Awareness Administration Guide*.

Supported Data Centers

There are multiple ways to configure Data Centers servers:

- SmartConsole.
- Check Point Management API. See Management API Reference > Data Center topic.
- Terraform through the Check Point Provider. See Check Point Provider and search for 'data_center'.

Check Point integrates the CloudGuard Controller with these Data Centers:

- *"CloudGuard Controller for Amazon Web Services (AWS)" on page 20*
- *"CloudGuard Controller for Microsoft Azure" on page 28*
- *"CloudGuard Controller for Google Cloud Platform (GCP)" on page 34*
- *"CloudGuard Controller for Cisco Application Centric Infrastructure (ACI)" on page 40*
- *"CloudGuard Controller for Cisco Identity Services Engine (ISE)" on page 44*
- *"CloudGuard Controller for Kubernetes" on page 48*
- *"CloudGuard Controller for OpenStack" on page 64*
- *"CloudGuard Controller for VMware vCenter" on page 68*
- *"CloudGuard Controller for VMware NSX-T Management Server" on page 70*
- *"CloudGuard Controller for Oracle Cloud Infrastructure (OCI)" on page 56*
- *"CloudGuard Controller for Nutanix" on page 59*
- *"CloudGuard Controller for Proxmox Virtual Environment" on page 75*
- *"CloudGuard Controller for Illumio Policy Compute Engine" on page 79*
- *"CloudGuard Controller for Claroty CTD Server" on page 82*
- *"CloudGuard Controller for Akamai Guardicore Server" on page 85*
- *"CloudGuard Controller for ServiceNow CMDB Server" on page 88*
- *"CloudGuard Controller for Nozomi Server" on page 90*

CloudGuard Controller for Amazon Web Services (AWS)

The CloudGuard Controller integrates Amazon Web Services (AWS) cloud with Check Point security.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Connecting to an Amazon Web Services Data Center Server from SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **New AWS**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **AWS**.
2	In the **Enter Object Name** field, enter a name.
3	Select the applicable authentication method: ■ **User Authentication**: Uses the Access keys to authenticate. ■ **Role Authentication**: Uses the AWS IAM role to authenticate. This option requires the Security Management Server to deploy in AWS and have an IAM Role.
4	If you choose **User Authentication**, enter your **Access key ID** and **Secret access key**.
5	In the **Region** field, select the AWS region you want to connect to.
6	Click **Test Connection**.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

Note - The CloudGuard Controller accesses these URL's in AWS:

- *https://ec2.<region_code>.amazonaws.com*
- *https://elasticloadbalancing.<region_code>.amazonaws.com*

<region_code> is the AWS region code.

Connecting to an Amazon Web Services Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **AWS**.

Connecting to an Amazon Web Services Data Center Server with Terraform

See checkpoint_management_aws_data_center_server.

AWS Objects and Properties

AWS Imported Objects

Object	Description
VPC	Amazon Virtual Private Cloud enables you to launch resources into your Virtual Network.
Availability Zone	A separate geographic area of a region. There are multiple locations with regions and availability zones worldwide.
Subnet	All the IP addresses from the Network Interfaces related to this subnet.
Instance	Virtual computing environments.
Tags	Groups all the instances that have the same Tag Key and Tag Value.
Security Group	Groups all the IP addresses and Security Groups from all objects associated with this Security Group.
Load Balancers	Load Balancer distributes incoming traffic across multiple targets such as EC2 Instances and IP addresses. Only Application and Network Load Balancers are supported.
VPC Endpoint	A VPC endpoint enables connections between a VPC and supported services, without requiring that you use an internet gateway, NAT device, VPN connection, or AWS Direct Connect connection.
VPN Gateways **VPN Connections** **Customer Gateway**	For VPN site-to-site connections.
ENI	Elastic Network Interface that represents a virtual network card.

AWS Import Options

All the AWS objects listed above can be imported and used in your policy.

Notes:

- CloudGuard Controller saves the Tags with Key and no Value as: `"Tag key="`
- CloudGuard Controller truncates leading and trailing spaces in Tag Keys and Tag Values.
- All changes in AWS are updated automatically with the Check Point Security Policy. Users with permissions to change resource tags in AWS can change their access permissions.

AWS Object Names (Tags)

Object names are the same as those in the AWS console.

VPC, Subnet, Instance, and Security Group use these names:

Tag Name	Object Name
Tag Name exists	`"<Object ID> (<Value of the Tag Name>)"`
Tag Name does not exist	`"<Object ID>"`
Tag Name is empty	`"<Object ID>"`

AWS Imported Properties

Property	Description
Name	Resource name as shown in the AWS console. User can edit the name after importing the object.
Name in Server	Resource name as shown in the AWS console.
Type in Server	Resource type.
IP	Associated private and public IP addresses.
Note	CIDR for subnets and VPC objects.
URI	Object path.
Tags	Tags (Keys and Values) that are attached to the object.

Configuring Permissions for Amazon Web Services

Recommended: To get automatic support for new object types, configure the permissions with *ReadOnlyAccess* policy (see https://docs.aws.amazon.com/aws-managed-policy/latest/reference/ReadOnlyAccess.html).

If you do not use the recommended permission setting above, you must set these minimum (mandatory) permissions for User or Role.

Note: These permissions do not automatically support new object types.

Minimum permissions for the User or Role

Item	Value
Effect	`Allow`
Actions	■ `ec2:DescribeInstances` ■ `ec2:DescribeNetworkInterfaces` ■ `ec2:DescribeSubnets` ■ `ec2:DescribeVpcs` ■ `ec2:DescribeSecurityGroups`
Resource	`All ("*")`

Additional optional permissions for the User or Role

Item	Value	Used for
Effect	`Allow`	
Actions	`"elasticloadbalancing:DescribeLoadBalancers",` `"elasticloadbalancing:DescribeTags"`	Using Load Balancers tags and using them in the policy

Actions	`"ec2:DescribeVpnGateways",`
	`"ec2:DescribeVpnConnections",`
	`"ec2:DescribeCustomerGateways"`
		Automatic configuration of Site-to-site VPN

Actions	`"ec2:DescribeVpcEndpoints"`	Describes VPC endpoints.

For more information about Roles and the IAM policy, see *Amazon Web Services documentation*.

AWS STS Assume Role

AWS's Security Token Service (STS) Assume Role allows administrators to give access to AWS resources across different AWS user accounts.

Use Case

This feature is especially helpful for CloudGuard Controller administrators who manage multiple data centers.

Instead of the need for administrators to create multiple AWS user accounts and configure access permissions to AWS resources for each account, the STS Assume Role, allows them to create the necessary permissions once for use across multiple AWS accounts. For the CloudGuard Controller, this means that it connects to a specific AWS account from a different AWS user account, which has the correct credentials configured.

For more information, see Amazon's IAM documentation or watch a short video here.

Configuring the STS Assume Role

The CloudGuard Controller AWS Data Center authentication supports STS Assume Role, in addition to user and IAM authentication.

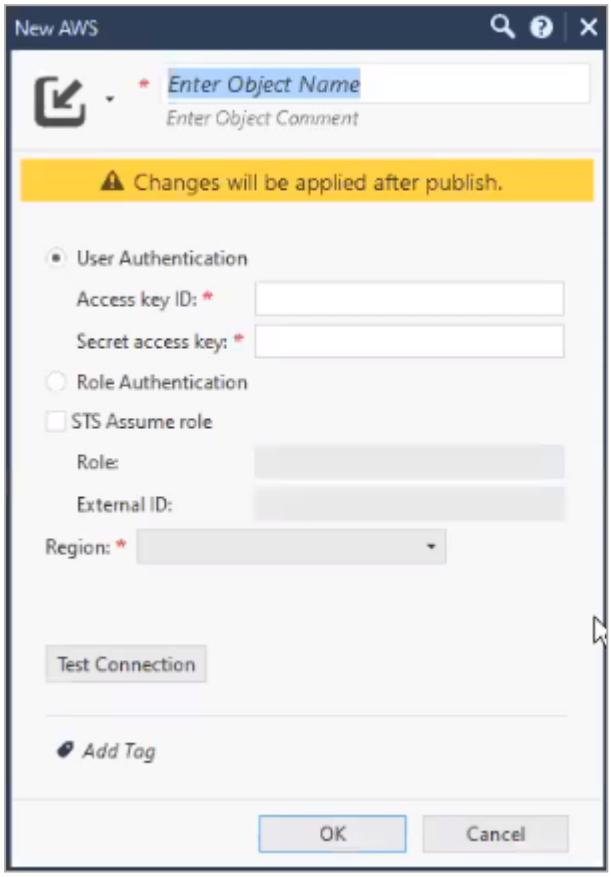
In R81 and lower, the only options for authentication were the Access key and Secret access key or Role Authentication.

In R81.10 and higher, authentication includes the addition of the **STS Assume Role** checkbox, which allows these:

- Access key and Secret access key with or without STS Assume Role.
- Role Authentication with or without STS Assume Role.

To use the STS Assume Role in SmartConsole:

1. Create a new AWS Data Center object.
2. Select the authentication type (**User** or **Role**).



3. Select the checkbox **STS Assume Role**.
4. Enter the Role and ID as you configured during the creation of the STS Assume Role.

Auto Scaling in Amazon Web Services

The AWS Auto Scaling service with the Check Point Auto Scaling group can increase or decrease the number of CloudGuard Gateways according to the current load.

The CloudGuard Controller for AWS works with the Check Point Auto Scaling Group.

The Check Point Security Management Server updates Data Center objects automatically on the Check Point Auto Scaling group.

CloudGuard CME for Amazon Web Services automatically configures CloudGuard Gateways in Auto Scaling group to support updates of Data Center Objects from the CloudGuard Controller.

CloudGuard Controller for Microsoft Azure

CloudGuard Controller integrates the Microsoft Azure cloud with Check Point security.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Connecting to a Microsoft Azure Data Center Server from SmartConsole

To connect to a Microsoft Data Center Server:

Best Practice - In Microsoft Azure create a service principal (see this article for details) and assign relevant rights.
The minimum recommended permission is **Reader**.
You can assign the **Reader** permission in one of these ways:

- Assign to all Resource Groups, from which you want to pull an item.
- Add the permission on a subscription level.

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **New Microsoft Azure**. ■ In the top right corner, click **Objects Pane** > **New**> **Cloud** > **Data Center** > **Microsoft Azure**.
2	In the **Enter Object Name** field, enter a name.
3	Select the applicable authentication method: ■ **Service Principal Authentication** - Uses the Service Principal to authenticate. ■ **Microsoft Entra ID User Authentication** - Uses the Microsoft Entra ID User to authenticate.

Step	Instructions
4	If you selected **Service Principal Authentication** (default): ■ Enter your **Application ID**, **Application Key**, and **Directory ID**. You can create the Service Principal in the Azure Portal, with Azure PowerShell, or with Azure CLI. If you selected **Microsoft Entra ID User Authentication** ■ Enter your **Username** and **Password**. The minimum recommended permission is **Reader**. You can assign the **Reader** permission in one of these ways: ■ Assign to all Resource Groups, from which you want to pull an item. ■ Add the permission on a subscription level. **Important** - If you do not have the necessary permissions, some of the functionality might not work.
5	Click **Test Connection**.
6	Click **OK**.
7	Import objects from your Microsoft Azure server to your policy (for more about these objects, see the next sections). ■ **Network by Subscriptions** - Import VNETS, subnets, Virtual Machines, or VMSS. ■ **Network Security Groups (NSG)** - Import all IP addresses that belong to a specific NSG. The NSG is used only as a container for the list of all IP addresses (assigned to NICs and subnets) that are attached to this group. ■ **Tags** - Imports all the IP addresses of Virtual Machines and VMSS that have specific tags and values. **Note** - All changes in Microsoft Azure are updated automatically with the Check Point Security Policy. Users with permissions to change **Resource Tags** in Microsoft Azure can change their access permissions.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

Connecting to a Microsoft Azure Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **Microsoft Azure**.

Connecting to a Microsoft Azure Data Center Server with Terraform

See checkpoint_management_azure_data_center_server.

Azure Objects and Properties

Azure Objects

Object	Description
Subscription	Helps you organize access to your cloud components.
Virtual Network	Represents your Microsoft Azure Virtual Network (VNET) in the cloud.
Subnet	A range of IP addresses in a VNET. You can divide a VNET into many subnets.
Virtual Machine (VM)	Virtual computing environment.
Virtual Machine Scale Set (VMSS)	Manages sets of Virtual Machines.
Network Security Group (NSG)	NSG contains a list of Access Control List (ACL) rules that allow or deny network traffic to the Virtual Machines instances in a Virtual Network. NSG can be associated with either subnets or individual Virtual Machine instances in that subnet.
Load Balancer	Load Balancer distributes incoming traffic that arrives at the Load Balancer's frontend to backend pool instances, according to rules and health probes.
Tags	Keys and values attached to the object.
Application Security Group	ASG enable you to configure network security as a natural extension of an application's structure, allowing you to group virtual machines and define network security policies based on those groups.

Object	Description

Application Gateway	Azure Application Gateway is a web traffic load balancer that helps you manage traffic to your web applications. It is supported starting from the R82.10 CloudGuard Controller self-updatable package Take 7.
	Note - This object is disabled by default. To enable it:
	1. Edit the *vsec.conf* file on the Management Server (*$FWDIR/conf/* on Security Management Server, *$MDSDIR/conf/* on Multi-Domain Security Management Server) and add the line:
	`azure.enableApplicationGateways=true`
	2. Restart the CloudGuard Controller with the command:
	`vsec stop;vsec start`

API Management service	Azure API Management is a hybrid, multicloud management platform for APIs across all environments. It is supported starting from the R82.10 CloudGuard Controller self-updatable package Take 7.
	Note - This object is disabled by default. To enable it:
	1. Edit the *vsec.conf* file on the Management Server (*$FWDIR/conf/* on Security Management Server, *$MDSDIR/conf/* on Multi-Domain Security Management Server) and add the line:
	`azure.enableApiManagementServices=true`
	2. Restart the CloudGuard Controller with the command:
	`vsec stop;vsec start`

Private Endpoint	A private endpoint is a network interface that uses a private IP address from your virtual network. This network interface connects you privately and securely to a service powered by Azure Private Link. By enabling a private endpoint, you're bringing the service into your virtual network.
Virtual network Gateway (VNET GW)	A virtual network gateway is composed of two or more VMs that are automatically configured and deployed to a specific subnet you create called the *gateway subnet*. The gateway VMs contain routing tables and run specific gateway services.
VPN Gateway	The gateway type '`VPN`' specifies that the type of virtual network gateway created is a 'VPN gateway'. This distinguishes it from an ExpressRoute gateway, which uses a different gateway type. A virtual network can have two virtual network gateways - one VPN gateway and one ExpressRoute gateway. This object is also supported by vWAN.

Object	Description
Public IP	The Azure Public IP Address resource represents a dedicated, routable IP assigned by Azure to cloud resources.

Azure Imported Properties

Imported Property	Description
Name	Name of the object and the object's Resource Group Format is: `obj_name (obj_resource_group_name)` The user can edit the name after importing the object.
Name in server	Name of the object and the object's Resource Group Format is: `obj_name (obj_resource_group_name)`
Type in server	Object type
IP address	■ Virtual Machines and VMSS: Public and Private IP addresses ■ Load Balancers: Frontend IP addresses ■ Subnets: VMs, VMSSs, and Internal Load Balancers Frontend IP addresses ■ NSGs: VMSSs and Subnets IP addresses associated with this NSG ■ Tags: VNETS, VMs, VMSSs, and Load Balancers IP addresses associated with this specific Tag Key or Tag Value
Note	Contains the address prefixes for VNETs and subnets
URI	Object path
Tags	Keys and Values attached to the Object
Location	Physical location in Microsoft Azure

Auto Scaling in Microsoft Azure

The Microsoft Azure Auto Scaling service with the Check Point Auto Scaling group can increase or decrease the number of CloudGuard Gateways according to the current load.

The CloudGuard Controller for Microsoft Azure collaborates with the Check Point Auto Scaling Group.

The Check Point Security Management Server automatically updates Data Center objects automatically on the Check Point Auto Scaling group.

CloudGuard CME for Microsoft Azure automatically configures CloudGuard Gateways in the Auto Scaling group to support updates of Data Center Objects from the CloudGuard Controller.

CloudGuard Controller for Google Cloud Platform (GCP)

The CloudGuard Controller integrates Google Cloud Platform (GCP) with Check Point security.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Configuring Permissions for Google Cloud Platform

You must authenticate and connect to your Google Cloud Platform account to retrieve objects.

Authentication is done by GCP Service Account credentials.

The CloudGuard Controller retrieves objects from all projects, to which the Service Account has access.

Note - Make sure the Compute Engine API is enabled in the relevant GCP projects in the Google Cloud Console.

You can use these authentication methods:

Authentication Method	Description
Service Account VM Instance Authentication	Uses the Service Account VM Instance to authenticate. This option requires the Security Management Server to be deployed in a GCP and run as a Service Account with the required permissions.
Service Account Key Authentication	Uses the Service Account private key file to authenticate. Use the GCP web console to create a Service Account Key JSON file.

Recommended: To get automatic support for new object types, configure the permissions with the *Reader* or *Viewer* role (see https://docs.cloud.google.com/iam/docs/roles-overview).

If you do not use the recommended permission setting above, you must set these minimum (mandatory) permissions for User or Role.

Note: These permissions do not automatically support new object types.

Minimum permissions for the service account

The service account must have read permissions for all the relevant resources (example: viewer role).

- Networks
- Instances
- Subnetworks

Google Cloud Platform APIs

You must enable the Cloud Resource Manager API for the project to which the service account belongs.

The Compute Engine API must be enabled for all the projects to which the Service Account has access.

This is made from the GCP API Library.

Connecting to a Google Cloud Platform Data Center with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **New Google Cloud Platform**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **Google Cloud Platform**.
2	In the **Enter Object Name** field, enter the applicable name.
3	Select the applicable authentication method: ■ **Service Account Key Authentication** ■ **Service Account VM Instance Authentication**

Step	Instructions
4	If you choose **Service Account Key Authentication**, import the **Service Account JSON** file.
5	Click **Test Connection**.
6	Click **OK**.
7	Publish the SmartConsole session.
8	Install the Access Control policy on the Security Gateway object.

Connecting to a Google Cloud Platform Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **Google Cloud Platform**.

Connecting to a Google Cloud Platform Data Center Server with Terraform

See checkpoint_management_gcp_data_center_server.

Google Cloud Platform Objects and Properties

GCP Imported Objects

Object	Description
VPC Networks	Your GCP VPC networks in the cloud
Subnet	All the IP addresses from the network interfaces related to this subnet
Instance	Virtual Machines instances
Tags	Groups all the instances that have the same network tag

Secure Tags	Group all the resources that have the same secure tags key and value.
	Secure Tags are supported starting R82.10 CloudGuard Controller self-updatable package Take 6.
	Notes:
	■ The **Secure Tags** object is disabled by default. To enable it:
	1. Edit the *vsec.conf* file on the Management Server (*$FWDIR/conf/* on Security Management Server, *$MDSDIR/conf/* on Multi-Domain Security Management Server) and in the Google Data Center configuration section, add the line:
	`google.enableSecureTags=true`
	2. Restart the CloudGuard Controller with the command:
	`vsec stop;vsec start`
	For more information, refer to *"Configuration Parameters" on page 115*.
	■ **Important:** To support the Secure Tags feature, make sure that your service account has the required permissions to query Cloud Asset Inventory resources and retrieve resource tags.
	Also, in the Google Cloud Console, make sure the Cloud Asset API is enabled in the relevant GCP projects.
	■ When searching for **Secure Tags** in Data Center Query:
	For security reasons, you must specify **both** the secure tags key and value.
	Leaving the value empty can cause matching unwanted assets on this rule.

GCP Import Options

Use **Projects** or **Tags** to import GCP objects to your policy:

Option	Description
Projects	Import VPC networks, subnets or instances from another project to your Security Policy
Tags	Import all instances that have a specific network tag
Secure Tags	Import all resources attached to specific secure tags.

Note - All changes in GCP are automatically updated with the Check Point Security Policy. Users with permissions to change network tags in GCP can change their access permissions.

GCP Object Names

Object names are the same as those in the GCP console.

Instance and Subnet use the following names:

Object	Object Name
Instance	"<*Instance Name*> (<*Zone Name*>)"
Subnet	"<*Subnet Name*> (<*Region Name*>)"

GCP Imported Properties

Property	Description
Name	Resource name as shown in the GCP console. User can edit the name after importing the object.
Name in server	Resource name as shown in the GCP console.
Type in server	Resource type.
IP	Associated private and public IP addresses.
Note	For instances, the list of VPC networks to which the instance belongs.
URI	Object path.
Tags	Network tags and Secure tags attached to the object.

CloudGuard Controller for Cisco Application Centric Infrastructure (ACI)

CloudGuard Controller integrates the Cisco ACI fabric with Check Point security.

Prerequisites

- Cisco ACI version 6.0 or lower.
- You must have a Cisco ACI user role with at least read permissions for Tenant EPG.

  Note - This role is sufficient for CloudGuard Controller functionality.

  More permissions may be required for device package installation (CloudGuard for ACI).
- Enable Bridge Domain unicast routing to allow IP address learning for EPGs on the Cisco ACI.
- Define a subnet on the Bridge Domain to help the fabric maintain IP address learning tables and prevent timeouts on silent hosts responding to ARP requests.
- Before you upgrade the Management Server, if you have a Cisco APIC server, keep only one URL. After the upgrade, add the other URLs.

Connecting to a Cisco ACI Data Center Server with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click the **Objects** menu > **Cloud** > **Data Center** > **New Cisco ACI**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **Cisco ACI**.
2	In the **Enter Object Name** field, enter the applicable name.
3	In the **URLs** field, enter the IP addresses of Cisco ACI Cluster Members. Multiple URLs allow support for APIC cluster for redundancy. **Important** - These IP addresses can be either HTTP or HTTPS, but not both. You must add `http://` or `https://` before the IP address. **Important** - When using multiple cluster members with HTTPS, all members must have the same HTTPS Certificate.

Step	Instructions
4	In the **Username** field, enter your Cisco APIC server User ID. When using Login Domains, use the following syntax: `apic:<domain>\<username>`
5	In the **Password** field, enter the Cisco APIC server password.
6	Click **Test Connection**.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control Policy on the Security Gateway object.

Connecting to a Cisco ACI Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **Cisco ACI**.

Connecting to a Cisco ACI Data Center Server with Terraform

See checkpoint_management_aci_data_center_server.

Cisco ACI Objects and Properties

Cisco ACI Imported Objects

Object	Description
Tenant	A logical separator for customers, BU, groups, traffic, administrators, visibility, and more.
Application Profile	A container of logically related EPGs, their connections, and the policies that define those connections.
End-Point Group (EPG)	A container for objects that require the same policy treatment. EPG examples: app tiers or services (usually, VLAN)
End-point Security Group (ESG)	A logical entity that contains a collection of physical or virtual network endpoints.
L2 Out	A bridged external network.
L2 External EPG	An EPG that represents external bridged network endpoints.

Note - Name Alias, A cosmetic substitute for a GUI entity, is also imported.

Limitations

- The supported fabric size must not be more than 100,000 for the total number of these objects:
  - Tenants
  - Application Profiles
  - EPGs
  - IP addresses

  For information regarding Cisco guidelines and limitations, refer to Guidelines and Limitations for Using the REST API.
- APIC HTTP URLs, which redirect to HTTPS, are not supported. Use either HTTPS URLs directly, or HTTP without redirection.
- When multiple APIC URLs are specified, the connectivity test will succeed, as long as one of the URLs connects. There is no requirement for initial verification for all the URLs.
- If all given APIC URLs fail to connect, the returned error message pertains to the first unsuccessful URL.
- If an object imported from Cisco APIC is deleted on the APIC, and created again, the object must be re-imported into Check Point Policy. Enforcement will work correctly once the object is recreated in APIC, but the re-import is required to maintain updates for the object in the Management Server.
- Changes to privileges of the APIC user that was used to create the Data Center Object, are not reflected during an active login session.

  For example, if a new security domain is added to the user, which allows him to see a new tenant, this is not visible to the APIC scanner.
  - To resolve: Run the *vsec_controller_stop* command on the CloudGuard Controller to restart the CloudGuard Controller services and force a new log in.

CloudGuard Controller for Cisco Identity Services Engine (ISE)

The CloudGuard Controller integrates Cisco ISE with Check Point security. It allows the use of TrustSec Security Groups in the Security Policy according to the static IP-to-SGT mappings in ISE. The ISE server is represented as the Data Center server in Check Point. It connects to the ISE administration nodes and automatically retrieves object data. For redundancy, it is possible to provide both primary and secondary ISE administration nodes.

The ISE External RESTful Services (ERS) API enables communication with ISE.

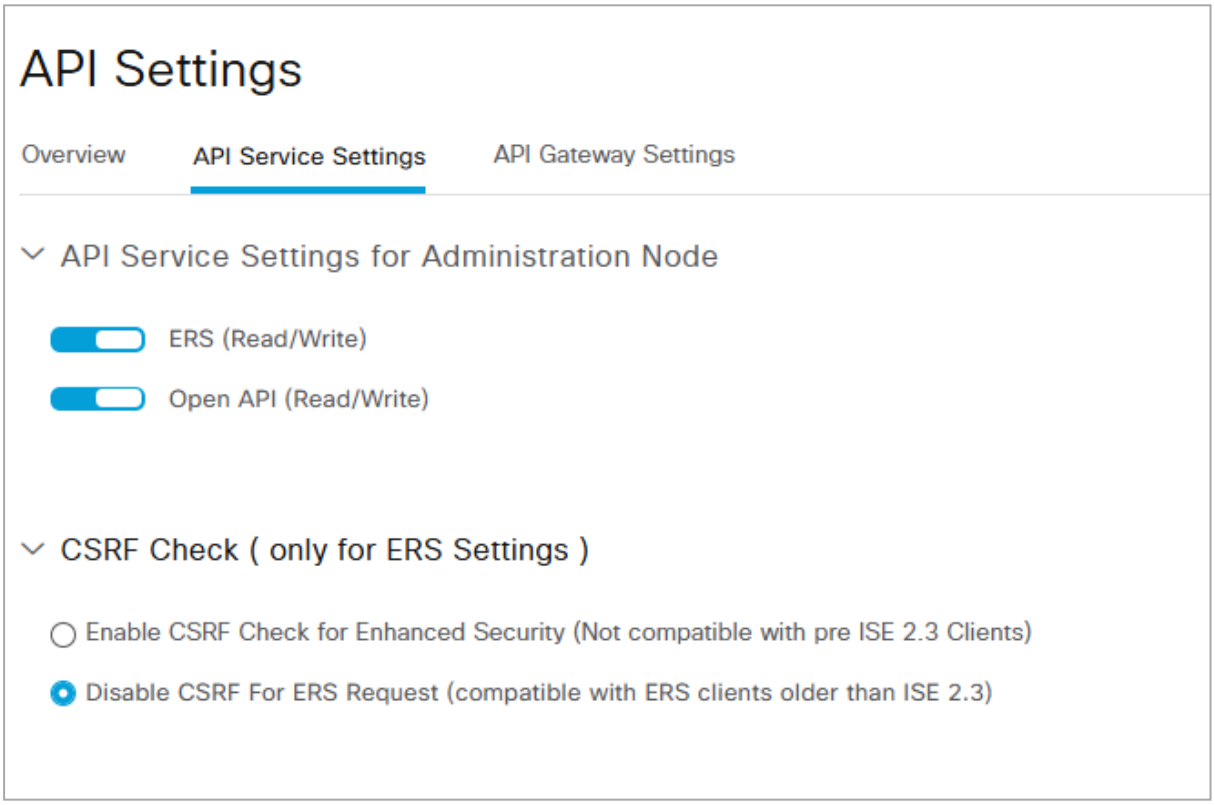
Prerequisites

- Cisco ISE version 3.2
- An ISE administrator with the ERS-Operator or ERS-Admin group assignment
- ERS enabled on the ISE administration nodes

  Enable ERS (port 9060)

  ERS uses HTTPS port 9060, which is closed by default. Clients attempting to access this port without first enabling ERS will face a timeout from the server. Therefore, the first requirement is to enable ERS from the Cisco ISE admin UI.

  Go to **Administration** > **Settings** > **API Settings** and enable the **ERS (Read/Write)** toggle button.



Connecting to a Cisco ISE Data Center with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **New Cisco ISE**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **Cisco ISE**.
2	In the **Enter Object Name** field, enter a name.
3	In the **Hostname(s)** field, add the ISE administration Node(s) IP address or hostname.
4	In the **Username** field, enter the ISE administrator username.
5	In the **Password** field, enter the ISE administrator password.
6	Click **Test Connection**.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control Policy on the Security Gateway object.

Connecting to a Cisco ISE Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **Cisco ISE**.

Connecting to a Cisco ISE Data Center Server with Terraform

See checkpoint_management_ise_data_center_server.

Cisco ISE Objects and Properties

Cisco ISE Imported Objects

Object	Description
Security Groups	Groups of users, endpoints, and resources that share Access Control policies. You define the Security Groups in Cisco ISE.

Note - Import of IP addresses is supported for Cloud Firewall Security Gateway for Cisco ISE. Import of IP ranges is not supported.

Automatic Failover

If there is a failure to communicate with the provided ISE administration nodes, CloudGuard Controller enters a recovery mode. In recovery mode, it automatically attempts to establish the connection again with the administration nodes. Connection is attempted with the nodes based on the order they were entered.

Important - Make sure that the secondary node is correctly synchronized with the primary node. If not, the IP-to-SGT data may not be up to date.

Limitations

- Filtering IP-to-SGT mappings by Security Gateway name uses a wildcard ('SG_NAME') search, so incorrect IPs may be returned, in case two Security Gateway's have overlapping names (one is contained in the other).

CloudGuard Controller for Kubernetes

Adding Kubernetes to CloudGuard Controller

Check Point CloudGuard Controller now protects North-South inspection for increased Kubernetes security.

The new Container security component is available in native Kubernetes and managed Kubernetes services such as Azure Kubernetes Service (AKS), Amazon EKS, Google Kubernetes Engine, and others.

Prerequisite

- Kubernetes version 1.12 and above

Note - Island Mode (NATed IP address for Nodes) is not supported.

Connecting to a Kubernetes Server

1. **Configure the settings in Kubernetes**

a. Create a service account for CloudGuard Controller that includes access to: endpoints, pods, services, and nodes.

   - **Standard CLI**

     Run these "`kubectl create`" commands in the order listed below:

     Example:

```
kubectl create serviceaccount cloudguard-controller
```

```
kubectl create clusterrole endpoint-reader --
verb=get,list --resource=endpoints
```

```
kubectl create clusterrolebinding allow-cloudguard-
access-endpoints --clusterrole=endpoint-reader --
serviceaccount=default:cloudguard-controller
```

```
kubectl create clusterrole pod-reader --
verb=get,list --resource=pods
```

```
kubectl create clusterrolebinding allow-cloudguard-
access-pods --clusterrole=pod-reader --
serviceaccount=default:cloudguard-controller
```

```
kubectl create clusterrole service-reader --
verb=get,list --resource=services
```

```
kubectl create clusterrolebinding allow-cloudguard-
access-services --clusterrole=service-reader --
serviceaccount=default:cloudguard-controller
```

```
kubectl create clusterrole node-reader --
verb=get,list --resource=nodes
```

```
kubectl create clusterrolebinding allow-cloudguard-
access-nodes --clusterrole=node-reader --
serviceaccount=default:cloudguard-controller
```

- **For OpenShift**

  Run these "`oc create`" commands in the order listed below:

  Example:

```
oc project chkp-cloudguard
```

```
oc create serviceaccount cloudguard-controller
```

```
oc create clusterrole endpoint-reader --
verb=get,list --resource=endpoints
```

```
oc create clusterrolebinding allow-cloudguard-
access-endpoints --clusterrole=endpoint-reader --
serviceaccount=chkp-cloudguard:cloudguard-
controller
```

```
oc create clusterrole pod-reader --verb=get,list --
resource=pods
```

```
oc create clusterrolebinding allow-cloudguard-
access-pods --clusterrole=pod-reader --
serviceaccount=chkp-cloudguard:cloudguard-
controller
```

```
oc create clusterrole service-reader --
verb=get,list --resource=services
```

```
oc create clusterrolebinding allow-cloudguard-
access-services --clusterrole=service-reader --
serviceaccount=chkp-cloudguard:cloudguard-
controller
```

```
oc create clusterrole node-reader --verb=get,list -
-resource=nodes
```

```
oc create clusterrolebinding allow-cloudguard-
access-nodes --clusterrole=node-reader --
serviceaccount=chkp-cloudguard:cloudguard-
controller
```

b. Get the Kubernetes URL:

```
kubectl cluster-info
```

Note - For **OpenShift**, use the `oc` command instead of `kubectl`.

c. It is necessary to have a service account token for the connection. Refer to the Kubernetes documentation for your version. For example:

- For Kubernetes version **1.24 and higher**, generate and export a token for the service account to a file. The token you create must not expire. If the token expires, the Data Center loses connectivity. To create a token that does not expire:

  i. Create a token that does not expire:

```
kubectl apply -f - <<EOF
apiVersion: v1
kind: Secret
metadata:
  name: cloudguard-controller-secret
  annotations:
    kubernetes.io/service-account.name:
cloudguard-controller
type: kubernetes.io/service-account-token
EOF
```

  ii. Read the token from the Secret and export it to a file:

```
kubectl get secret cloudguard-controller-secret
-o jsonpath="{.data.token}" | base64 --decode >
token_file
```

Notes:
- The `token_file` you use to add the data center in SmartConsole must be Base64 decoded.
- The Management API expects a Base64-encoded token.

- For Kubernetes version **1.23 and lower**, export the service account token to a Base64 encoded file.

```
kubectl get secret $(kubectl get serviceaccount
cloudguard-controller -o jsonpath="{.secrets
[0].name}") -o jsonpath="{.data.token}" | base64 --
decode > token_file
```

d. Verification (Optional)

For more information refer to Manually create a long-lived API token for a ServiceAccount.

To view the Secret, run:

```
kubectl get secret/cloudguard-controller-secret -o yaml
```

```
kubectl describe secrets/cloudguard-controller-secret
```

Best Practice - The service account is read-only by design. Protect the `token_file` and remove it from the local machine after the import; rotate the credential by re-creating the Secret.

2. **Configure the settings in SmartConsole**

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **Kubernetes** ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **Kubernetes**.
2	Enter a name for the Data Center object.
3	Enter the Kubernetes URL (from Step 1-b).
4	Import the service account token file (from Step 1-c).
5	Import CA certificate: connect to your Kubernetes Data Center and access kube/config. In the config, copy the *certificate-authority-data* of the relevant Data Center into a .txt file and use it as the CA certificate. **Note** - The CA Certificate needs to be double Base64 encoded (encoded once more on top of how you receive it from Kubernetes).
6	Click **Test Connections** and make sure that the connection works.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control Policy on the Security Gateway object.

Kubernetes Imported Objects

Object	Description
Namespace	Group of resources in a single cluster.
Node	A virtual or physical machine, depending on the Cluster.
Pod	The smallest deployable units of computing that you can create and manage in Kubernetes. A group of one or more containers, with shared storage and network resources, and a specification for how to run the containers.
Service	A method for exposing a network application that runs as one or more Pods in your Cluster.
Labels	Key-value pairs attached to Services and Nodes within a Kubernetes cluster.
Service Endpoint	Each Service object defines a logical set of endpoints (usually, these endpoints are Pods) along with a policy about how to make those pods accessible.
Tags	Keys and Values attached to the Object. **Note:** PODs get an implicit '__namespace' tag with the value of their namespace. You can use it, for example, when creating a Data Center Query to filter PODs by their namespace: ▪ Type in data center: pod ▪ Tag key=__namespace and Tag value=<the relevant namespace>

Connecting to a Kubernetes Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **Kubernetes**.

Notes:

- The token needs to be Base64 encoded (as you receive it from Kubernetes).
- The CA Certificate needs to be double Base64 encoded (encoded once more on top of how you receive it from Kubernetes).

Connecting to a Kubernetes Data Center Server with Terraform

See checkpoint_management_kubernetes_data_center_server.

CloudGuard Controller for Oracle Cloud Infrastructure (OCI)

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Connecting to an OCI Data Center with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **New Oracle Cloud**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **Oracle Cloud**.
2	In the **Enter Object Name** field, enter a name.
3	Select the applicable authentication method: ■ **API Key Authentication** A user generated API key will be uploaded to the Management machine to authenticate with OCI. This API key must be configured with read permissions for all resources in the tenancy. • **User id**: The id of the user the key belongs to • **Tenancy id**: The tenancy the key belongs to • **Region id**: The region to scan • **API key**: Secret key ■ **VM Instance Authentication** Tells the Management Server it is a VM in OCI with inspect permissions. It requires that the Management Server be installed in OCI and is part of a dynamic group with a policy that provides read permissions for all resources in the tenancy.
4	Click **Test Connection**.
5	Click **OK**.
6	Publish the SmartConsole session.
7	Install the Access Control policy on the Security Gateway object.

Connecting to an OCI Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **Oracle Cloud**.

Connecting to an OCI Data Center Server with Terraform

See https://registry.terraform.io/providers/CheckPointSW/checkpoint/latest.

OCI Objects and Properties

OCI Objects

Object	Description
VPC	Oracle Cloud Infrastructure enables you to launch resources into your Virtual Network.
Subnet	All the IP addresses from the Network Interfaces related to this subnet.
Instance	Virtual computing environments.
Tags	Groups all the objects that have the same Tag Key and Tag Value.

Notes:

- CloudGuard Controller truncates leading and trailing spaces in Tag Keys and Tag Values.
- All changes in OCI are updated automatically with the Check Point Security Policy.
  Users with permissions to change resource tags in OCI can change their access permissions.

OCI Imported Properties

Property	Description
Name	Resource name as shown in the OCI console. User can edit the name after importing the object.
Name in Server	Resource name as shown in the OCI console.
Type in Server	Resource type.
IP	Associated private and public IP addresses.
Note	CIDR for subnets and VPC objects.
URI	Object path.
Tags	Tags (Keys and Values) that are attached to the object.

Enable IPv6

Import of IPv6 addresses is disabled by default. To enable it, you must set the **oracle.collectIpv6** parameter in the *vsec.conf* file

1. Edit the *vsec.conf* file on the Management Server (*$FWDIR/conf/* on Security Management Server, *$MDSDIR/conf/* on Multi-Domain Security Management Server) and in the oracle (OCI) Data Center section, add the line:

   ```
   oracle.collectIpv6=true
   ```

2. Restart the CloudGuard Controller with the command:

   ```
   vsec stop;vsec start
   ```

For more information, refer to *"Configuration Parameters" on page 115*.

CloudGuard Controller for Nutanix

Connecting to a Nutanix Prism Server in SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **New Nutanix**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **Nutanix**.
2	In the **Enter Object Name** field, enter the applicable name.
3	In the **Hostname** field, enter the IP address or hostname of your Nutanix Prism Server.
4	In the **Username** field, enter your Nutanix Prism Central administrator username.
5	In the **Password** field, enter your Nutanix Prism Central administrator password
6	Click **Test Connection**.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

Connecting to a Nutanix Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **Nutanix**.

Connecting to a Nutanix Data Center Server with Terraform

See https://registry.terraform.io/providers/CheckPointSW/checkpoint/latest.

Important - Starting from R82.10 Darwin Take 6, CloudGuard Controller for Nutanix supports Nutanix REST API v4.
Compared to Nutanix REST API v3, API v4:

- Only categories with assigned values are displayed.
- Descriptions are available only for sub-categories; The API does not provide category-level descriptions.

New in Nutanix REST API v4
Nutanix supports up to 10,000 Categories.
A new parameter has been added to *vsec.conf* file to control the maximum number of categories:
`nutanix.maxCategoriesV4=10000`
To change this value in the *vsec.conf* file, refer to *"Configuration Parameters" on page 115*.

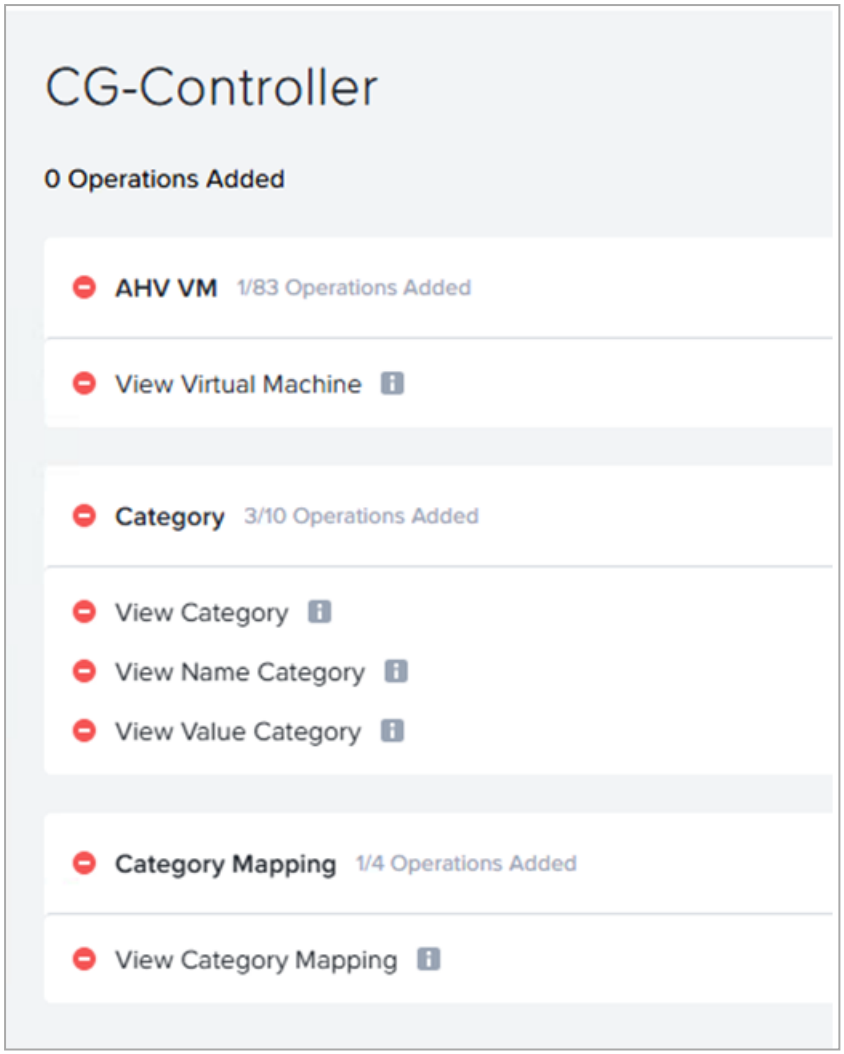
Adding a user in Nutanix Prism Central with minimum permissions

Note - This procedure is supported starting from Nutanix Prism Central Version pc.2024.2

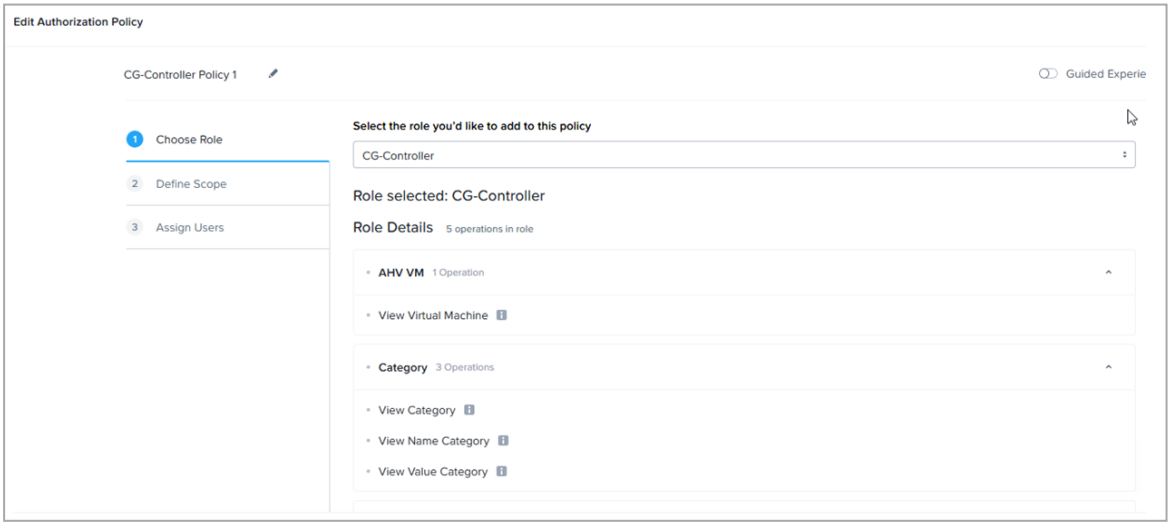
To add a user with minimum permissions, follow these steps:

1. Add a new local user.
2. Create a new **Role** with these **Operations**:
   a. In **AHV VM**:
      - View virtual machine
   b. In **Category**:
      - View Category
      - View Name Category
      - View Value Category
   c. In Category Mapping:
      - View Category Mapping

   For example:



3. Create an Authorization Policy:
   a. In the **Choose Role** tab, select the role you created before, for example:



4. In the **Define Scope** tab:

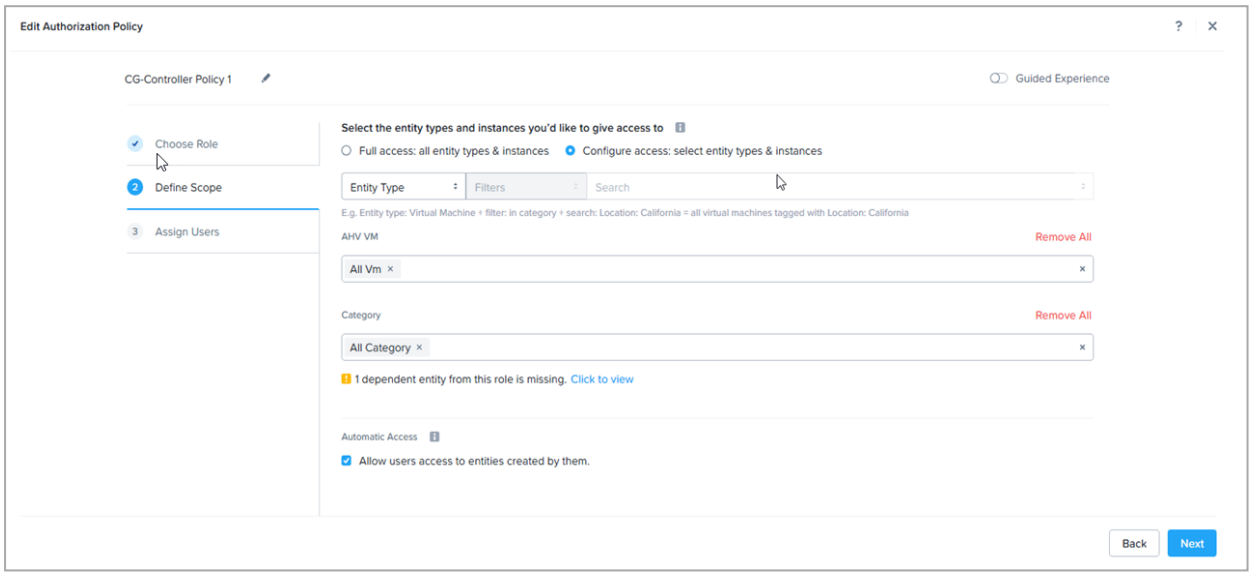
a. Check the **Configure access: select entry types & instances** check box.

b. In the **AHV VM** field, enter **All VM**.

c. In the **Category** field, enter **All Category**.

d. Check **Allow users access to entities created by them**.

For example:



5. In the **Assign Users** tab, add the local user you created in step 1.

   For example:



6. Click **Save**.

Nutanix Objects

Object	Description
VM	Represents an entity of type 'VM' in Nutanix Prism
Category	A category in Nutanix Prism contains values, and a VM can be assigned with values. In SmartConsole, a category contains all the VMs that are assigned with any of the values of that category.

The entities (objects) that are imported from the data center, whether a VM or a category, have the following properties:

Nutanix Imported Properties

Imported Property	Description
Name	Name of the entity
Name in data center	Name of the entity in Nutanix Prism data center:
Type in data center	Type of the entity in Nutanix Prism data center (e.g. VM, category)
IP	All the VM's IP addresses
Note	Description of the entity
URI	Object path

CloudGuard Controller for OpenStack

The CloudGuard Controller integrates the Check Point Security Management Server with OpenStack Keystone. Authentication is done through OpenStack Keystone and network objects are updated from OpenStack Neutron.

Prerequisites

Version "Ussuri" or lower.

Connecting to an OpenStack Server with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **New OpenStack**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **OpenStack**.
2	In the Enter Object Name field, enter the applicable name.

3	In the **Hostname** field, enter the URL of your OpenStack server in this format (HTTP or HTTPS):
	`http://1.2.3.4:5000/<keystone_version>`
	`https://1.2.3.4:5000/<keystone_version>`
	Example:
	`https://1.2.3.4:5000/v3`
	Note - If you do not know your keystone URL, run this command on the OpenStack server to find it:
	`openstack endpoint show keystone | grep publicurl`

4	In the **Username** field, enter your username for the OpenStack server.
5	In the **Password** field, enter your password for the OpenStack server.
6	Click **Test Connection**. If the certificate window opens, confirm the certificate and click **Trust**.
7	When the connection status changes to **Connected**, Click **OK**. If the status is not **Connected**, troubleshoot the issue before you continue.

Step	Instructions
8	Click **OK**.
9	Publish the SmartConsole session.
10	Install the Access Control policy on the Security Gateway object.

Connecting to an OpenStack Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **OpenStack**.

Connecting to an OpenStack Data Center Server with Terraform

See checkpoint_management_openstack_data_center_server.

Important - If it is necessary to log into an OpenStack Domain that is not your default Domain, use this format:

```
<OpenStack_domain_name>/<user_name>
```

OpenStack Objects and Properties

OpenStack Imported Objects

Object	Description
Instances	Virtual Machines inside the cloud.
Security Groups	Sets of IP address filter rules for networking access. They are applied to all instances within a project.
Subnet	A block of IP addresses and associated configuration states. Subnets are used to allocate IP addresses when new ports are created on a network.

OpenStack Imported Properties

Property	Description
IP	■ **VM** - Virtual Machine's IP address ■ **Security Group** - IP addresses of the Virtual Machines inside the group ■ **Subnets** - IP addresses of the Virtual Machines inside the subnet
Note	■ **Instances** - Empty ■ **Security Group** - Description of the group ■ **Subnet** - IP address and mask of the subnet
URI	Object path

CloudGuard Controller for VMware Servers

Connecting to a VMware Server with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click **Objects** menu > **Cloud** > **Data Center** > **VMware by Broadcom** > **New VMware vCenter**, **VMware NSX-T**, or **VMware Global NSX-T**. ■ In the top right corner, click **Objects Pane** > **New** > **Cloud** > **Data Center** > **VMware by Broadcom** > **VMware vCenter**, **VMware NSX-T**, or **VMware Global NSX-T**.
2	In the **Enter Object Name** field, enter the applicable name.
3	In the **Hostname** field, enter the IP address or hostname of your vCenter or NSX Manager server.
4	In the **Username** field, enter your VMware administrator username.
5	In the **Password** field, enter your VMware administrator password.
6	Click **Test Connection**.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

Connecting to a VMware Data Center Server with Management API

Go to Management API Reference > Click on **see arguments per Data Center Server type** and select **VMWare vCenter** or **VMWare NSX-T**.

Connecting to a VMWare Data Center Server with Terraform

See checkpoint_management_vmware_data_center_server.

CloudGuard Controller for VMware vCenter

VMware vCenter Prerequisites

- VMware vCenter versions 5.x, 6.x, 7.x, 8.0, 9.x.
- You must have a VMware user with Auditor (or higher) permission to access the CloudGuard Controller.

  For NSX operations, it is necessary to have at minimum read-only permissions.
- The CloudGuard Controller integrates the VMware NSX Manager Server with Check Point security.

VMware vCenter Objects and Properties

VMware vCenter Imported Objects

Object	Description
Cluster	A collection of ESXi hosts and associated Virtual Machines configured to work as a unit.
Datacenter	An aggregation of many object types required to work in a virtual infrastructure. These include hosts, Virtual Machines, networks, and datastores.
Folder	Lets you group similar objects.
Host	The physical computer where you install ESXi. All Virtual Machines run on a host.
Resource pool	Compartmentalizes the host or cluster CPU and memory resources.
Virtual machine	A virtual computer environment where a guest operating system and associated application software runs.
vSphere vApp	A packaging and managing application format. A vSphere vApp can contain multiple Virtual Machines.
Tags	All the Virtual Machines tagged with the vCenter tag. **Note** - This is supported with vCenter 6.5 and above.

VMware vCenter Imported Properties

Imported Property	Description
IP	IP address or Hostname of vCenter Server. You must install VMware Tools on each Virtual Machine to retrieve the IP addresses for each computer.
Note	VMware vCenter object notes.
URI	Object path.

CloudGuard Controller for VMware NSX-T Management Server

The CloudGuard Controller integrates the VMware NSX-T Management Server with Check Point security.

show this section

VMware NSX-T Prerequisites

- NSX-T versions 2.5, 3.0, 3.1.x, 3.2.1, 4.0.x, 4.1.x, 4.2.2.1.
- You must have a VMware NSX-T username with the minimum permission of an *Auditor* (or higher) to access the CloudGuard Controller.

  Note - This role is sufficient for CloudGuard Controller functionality. More permissions may be required for service registration (CloudGuard Gateway for NSX-T).

VMware NSX-T Policy mode APIs

- In NSX-T 4.0.0.x and higher versions, Manager Mode APIs are deprecated. The use of Policy Mode is recommended.
- Import NSX-T Tags (NSgroups and VMs) is supported.
- Import NSX-T Virtual Machine objects is supported.

Note - You can enable Virtual Machines Import only with Policy Mode APIs. When enabled, the number of API requests to the NSX-T Manager increases.

Migration from Manager Mode to Policy Mode:

1. Use VMware Promotion Process: Promote Manager Objects to Policy Objects.
2. Change NSX-T DC property to Policy Mode.

To use Policy Mode:

- For new NSX-T DC objects: Select the **Policy Mode (Recommended)** field.
- For all old NSX-T DC objects: Use the **usePolicyModeApis** parameter in the *vsec.conf* file.

  For more information refer to *"Configuration Parameters" on page 115*.

VMware NSX-T Imported Objects

Object	Description
Ns Group	Enables a static or dynamic grouping based on objects such as Virtual Machines, vNICs, vSphere clusters, logical switches, and so on.
Virtual Machine (VM)	A virtual computer environment that runs a guest operating system and applications software. You can import a VM only with Policy Mode API's.
Tag	All the NS Groups and Virtual Machines tagged with the NSX-T tag.

To import Virtual Machines:

- For new NSX-T DC objects: Select the **Import Virtual Machines** field.
- For all old NSX-T DC objects: Use the **importVms** parameter in the *vsec.conf* file.

  For more information refer to *"Configuration Parameters" on page 115*.

VMware NSX-T object import supports IPv4/IPv6 IP sets with ranges or CIDR block notations. Each object can be up to 1000 IP addresses.

Supported IP Ranges are in the format: a.b.c.x - a.b.c.y.

Important - This feature is disabled by default.
To enable the import of IPv4/IPv6 IP sets with ranges or CIDR block notations, add this parameter to the *vsec.conf* file in the NSX-T section:
`nsxt.ipRangeEnable=true`

To decrease the range value add this parameter to the *vsec.conf* file in the NSX-T section:

```
nsxt.ipRangeLimit = <max amount of IP addresses to import in a
single range>
```

CloudGuard Controller for VMware Global NSX-T Management Server

The CloudGuard Controller integrates the VMware Global NSX-T Management Server with Check Point security.

show this section

VMware Global NSX-T Prerequisites

- Global NSX-T version 4.1.
- You must have a VMware NSX-T username with the minimum permission of an *Auditor* (or higher) to access the CloudGuard Controller.

  Note - This role is sufficient for CloudGuard Controller functionality. More permissions may be required for service registration (CloudGuard Gateway for NSX-T).

VMware Global NSX-T Imported Objects

Object	Description
Region	A group for security and networking policies. Some regions are created automatically after you onboard locations in Global Manager. You can add more regions as necessary.
Ns Group	Enables a static or dynamic grouping based on objects such as Virtual Machines, vNICs, vSphere clusters, logical switches, and so on. **Note** - To enable the import of Virtual Interfaces (VIFs) IP expressions as part of the NSGroup, add this parameter to the *vsec.conf* file in the NSX-T section: `nsxt.importGlobalManagerVifs=true`

VMware Global NSX-T object import supports IPv4 IP sets with ranges or CIDR block notations. Each object can be up to 1000 IP addresses.

Supported IP Ranges are in the format: a.b.c.x - a.b.c.y.

Important - This feature is disabled by default.
To enable the import of IPv4 IP sets with ranges or CIDR block notations, add this parameter to the *vsec.conf* file in the NSX-T section:
`nsxt.ipRangeEnable=true`

Note - IPv4 IP sets with ranges or CIDR block notations import many IP Addresses, which can affect the CloudGuard Controller's performance.

The default number of IP addresses an object can hold is 1000 and you can not increase it.

To decrease the range value add this parameter to the *vsec.conf* file in the NSX-T section:

```
nsxt.ipRangeLimit = <max amount of IP addresses to import in a
single range>
```

Important - Global NSX-T and Local NSX-T Data center's configuration parameters are unified and use the **`nsxt.`** prefix.

VMware NSX-T Imported Properties

Imported Property	Description
IP	All the Ns Group IP addresses
Note	Description value of a Ns Group
URI	Object path

VMware NSX-T Known Limitations

- Logs for rules with VMware NSX-T Ns Groups will contain only the IP address. The logs will not contain the instance name.
- Because of an API change on VMware side in NSX-T Manager 3.2, the creation of NSX-T 3.2 Data Center in the Security Management fails. VMware made a fix in version 3.2.1.
- It is recommended to install official VMware Tools on a Virtual Machine for the VMware NSX-T Controller to pool IP addresses successfully. Install the VMware Tools for your specific version. You can find alternatives for IP discovery without VMware Tools in the *VMware NSX Administration Guide*.
- For information regarding VMware Deprecation announcement for NSX-T Manager API's, refer to sk180244.

Limitations

- Official VMware Tools must be installed on a VM for the CloudGuard Controller to pool IP addresses successfully.

CloudGuard Controller for Proxmox Virtual Environment

The CloudGuard Controller integrates the Check Point Security Management Server with a Proxmox Virtual Environment (VE).

Authentication is done with an API Token.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Prerequisites

- Proxmox VE Version 8.3 or higher.
- *qemu-guest-agent* installation is mandatory on endpoint machines for the CloudGuard Controller to be able to import IPv4/IPv6 addresses. See https://pve.proxmox.com/wiki/Qemu-guest-agent.
- API Token from the Proxmox server.

Connecting to the Proxmox Server

Step	Instructions
1	In the Proxmox Virtual Environment, go to **Datacenter** > **Permissions** > **Users**, and create a dedicated user.
2	Create an API Token: Go to **Datacenter** > **Permissions** > **API Tokens**. Select **Add**, attach the dedicated user to the API-Token, and enter a **Token ID** name.
3	Click **Add**, save the **token-id** (<user>@<realm>!<token-name>), and the **Secret**. **Important**: The Secret appears only once.
4	Grant permissions: In **Datacenter** > **Permissions** > **Add**: a. Select **User permission**. b. Select the dedicated user from step 1 and the applicable role (see below).
5	Select **API Token Permission**, click the API Token from step 2, and the applicable role.

Note - We strongly recommend that you assign the minimum necessary permissions to the API token. Both the user and the API token require the **Sys.Audit**, **VM.Audit** and **VM.Monitor** permissions. You can create a dedicated role with those permissions in **Datacenter** > **Permissions** > **roles** > **create**.

Connecting to a Proxmox Data Center Server with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click the **Objects** menu > **Cloud** > **Data Center** > **New Proxmox** ■ In the top right corner, click the **Objects** Pane > **New**> **Cloud** > **Data Center** > **Proxmox**
2	In **Enter Name**, enter the applicable name.

3	In the **Hostname** field, enter the IP address or the URL of your Proxmox server in this format (HTTP or HTTPS), for example:
	`pve.node.example`
	`172.0.1.2<:Port>`
	Note: The Proxmox port is optional and is set to 8006 by default. If your Proxmox server uses port 8006, you do not need to provide the port.

4	In the **Token ID** field, enter the Token ID from the Proxmox server. **Note:** The Token ID must be in the format: `<user>@<realm>!<token-name>`
5	In the **Secret** field, enter your Token ID secret from the Proxmox server.
6	Click **Test Connection**. If the certificate window opens, confirm the certificate and click **Trust**.
7	When the connection status changes to **Connected**, click **OK**. If the status is not **Connected**, troubleshoot the issue before you continue.
8	Click **OK**.
9	Publish the SmartConsole session.
10	Install the Access Control policy on the Security Gateway object.

Connecting to a Proxmox Data Center Server with Management API

Proxmox Data Center is available starting from Management API V2.1.

Go to Management API Reference > click on **see arguments per Data Center Server type** and select **Proxmox**.

Connecting to a Proxmox Data Center Server with Terraform

Refer to checkpoint_management_proxmox_data_center_server.

Proxmox Objects and Properties

Proxmox Objects

Object	Description
Cluster	Cluster that contains Proxmox nodes. Optional in a single-node scenario (node without cluster).
Nodes	Proxmox server.
VMs	Virtual Machines in the cloud.

Proxmox Imported Properties

Imported Property	Description
IP	▪ **Nodes** - IP addresses of the Proxmox nodes. ▪ **VM** - Virtual Machine's IP address.
Tags	You can apply Tags to VMs to categorize them by function, environment (e.g., development, production), or any other criteria applicable to the user.

Notes:

- A Virtual Machine can have multiple Tags, one Tag, or no Tags at all.
- **Important**:
  - Tags import is disabled by default. To enable it, you must set the **importTags** parameter in the *vsec.conf* file:
    `proxmox.importTags=true`
  - Import of IPv6 addresses is disabled by default. To enable it, you must set the **collectIpv6** parameter in the *vsec.conf* file:
    `proxmox.collectIpv6=true`
    For details, refer to the *"Configuration Parameters" on page 115* section.

Limitations

- *qemu-guest-agent* must be installed on a VM for the CloudGuard Controller to pool IP addresses successfully.

- The Virtual Machine IP address is not imported if the VM is turned off, *qemu-guest-agent* is not installed, or the IP address is localhost (127.0.0.1, ::1 or “localhost”).
- The server’s hardware specifications directly influence the performance of API daemons running on a Proxmox server. Factors such as CPU speed, memory capacity, and storage type significantly impact the response times and overall efficiency of these daemons.
- If a tag name is changed, the user continues to see the original tag name in the Tags column for the dedicated Virtual Machine.

CloudGuard Controller for Illumio Policy Compute Engine

The CloudGuard Controller integrates the Check Point Security Management Server with an Illumio Policy Compute Engine (PCE).

Authentication to the Illumio Data Center is performed using a username and a secret.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Prerequisites

- Illumio API Version v2 or higher.
- R82.10 SmartConsole Build 424 or higher. SmartConsole Build 424 was released in R82.10 Jumbo Hotfix Accumulator Take 19.

Connecting to the Illumio Server

Step	Instructions
1	In the Illumio PCE console, record the **PCE FQDN** and the **Organization ID** that appear in **My Profile** settings.
2	Create an API Token: Go to **My API Keys** and click **Add**. In the **Create API Key** window, enter a name for the key.
3	Click **Create** and save the **Authentication Username** and the **Secret**. **Important:** The Secret appears only once.

Connecting to an Illumio Data Center Server with SmartConsole

Step	Instructions
1	In SmartConsole, create a new Data Center object in one of these ways: ■ In the top left corner, click the **Objects** menu > **Cloud** > **Data Center** > **New Illumio** ■ In the top right corner, click the **Objects** Pane > **New**> **Cloud** > **Data Center** > **Illumio**

Step	Instructions
2	In **Enter Name**, enter the applicable name.

3	In the **Hostname** field, enter the PCE FQDN in this format (HTTP or HTTPS), for example:
	`example.illum.io`
	`172.0.1.2<:Port>`
	Note: The Illumio port is optional and defaults to 443 by. If your Illumio server uses port 443, you do not need to provide the port.

4	In the Organization ID field, enter the same name value from the Illumio Console.
5	In the Authentication Username and Secret field, enter the values you saved before.
6	Click **Test Connection**. If the certificate window opens, confirm the certificate and click **Trust**.
7	When the connection status changes to **Connected**, click **OK**. If the status is not **Connected**, troubleshoot the issue before you continue.
8	Click **OK**.
9	Click the Publish button to publish the SmartConsole session.
10	Install the Access Control policy on the Security Gateway object.

Connecting to an Illumio Data Center Server with Terraform

Refer to checkpoint_management_illumio_data_center_server.

Illumio Objects and Properties

Illumio Objects

Object	Description
Label	A tag that identifies a workload's role or context to control security policies.
Workload	Any compute resource (like a server or VM) that Illumio monitors and protects.

Notes:

- A Workload can have multiple Labels, one Label, or no Labels.
- **Important**:
  - Import of IPv6 addresses is disabled by default. To enable it, you must set the **illumio.collectIpv6** parameter in the *vsec.conf* file:
    `illumio.collectIpv6=true`
    For details, refer to the *"Configuration Parameters" on page 115* section.

Illumio PCE advanced configuration

To change the default settings of Illumio Data Center in CloudGuard Controller, you can:

1. Add this section to the *vsec.conf* file:

```
# Illumio Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
illumio.scannerInterval=30
illumio.scanSleepUpperLimitInSeconds=300
illumio.connectTimeoutInMilliseconds=5000000
illumio.readTimeoutInMilliseconds=120000
illumio.collectIpv6=false
```

2. Modify the default settings as required.
3. Save the file and restart the CloudGuard Controller service.

For details, refer to the *"Configuration Parameters" on page 115* section.

Limitations

- If the IP address of a Workload object is localhost (127.0.0.1, ::1, or “localhost”), it is not imported to the Management database.

CloudGuard Controller for Claroty CTD Server

Starting in R82.10 Jumbo Hotfix Accumulator Take 36, the CloudGuard Controller integrates the Check Point Security Management Server with a Claroty CTD Server.

Authentication to the Claroty CTD Data Center is performed using a username and a password.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Prerequisites

Claroty CTD API Version v2 or higher.

Connecting to the Claroty CTD Server

Use the existing credentials (username and password) to establish the connection to the Claroty CTD server.

Connecting to a Claroty CTD Server with SmartConsole

Step	Instructions
1	In SmartConsole, use one of these options to create a new Data Center object: ■ In the top left corner, click the **Objects** menu > **Cloud** > **Data Center** > **New Claroty CTD** Or ■ In the top right corner, click the **Objects** Pane > **New**> **Cloud** > **Data Center** > **Claroty CTD**
2	In **Enter Name**, enter the applicable name.

3	In the **Hostname** field, enter the Claroty CTD server FQDN,**or** the server IP address and port number. Example:
	`claroty_ctd_hostname`
	`Or:`
	`172.0.1.2<:Port>`
	Note: The Claroty CTD port is optional and defaults to port 443. If your Claroty CTD server uses port 443, you do not need to provide the port.

4	In the Username and Password field, enter the credentials.

Step	Instructions
5	Click **Test Connection**. If the certificate window opens, confirm the certificate and click **Trust**.
6	When the connection status changes to **Connected**, click **OK**. If the status is not **Connected**, troubleshoot the issue before you continue.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

Claroty CTD Objects and Properties

Claroty CTD Objects

Object	Description
Asset	Any device or system that Claroty CTD discovers and monitors.
Tag	Resembles an attribute of an asset.

Notes:

- An Asset can have one, multiple, or no Tags.
- **Important**:
  - Import of IPv6 addresses is disabled by default. To enable it, you must set the.
    To enable it, you must set the **claroty_ctd.collectIpv6** parameter in the *vsec.conf* file:
    `claroty_ctd.collectIpv6=true`
    For details, refer to the *"Configuration Parameters" on page 115* section.
  - The import filter for class_type is set to **OT** by default. To modify it, you must set the `claroty_ctd.classType` parameter in the *vsec.conf* file

Claroty CTD advanced configuration

To change the default settings of Claroty CTD Data Center in CloudGuard Controller:

1. Add this section to the *vsec.conf* file on the Management server:

```
# Claroty CTD Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
# claroty_ctd.classType valid values: 'OT', 'IT', 'IoT' and
'Any'.
claroty_ctd.scannerInterval=30
claroty_ctd.scanSleepUpperLimitInSeconds=300
claroty_ctd.connectTimeoutInMilliseconds=5000000
claroty_ctd.readTimeoutInMilliseconds=120000
claroty_ctd.collectIpv6=false
claroty_ctd.classType=OT
```

2. Modify the parameter values as required in your environment.
3. Save the file and restart the CloudGuard Controller service.

Limitations

- The Asset IP address is not imported if it is localhost (127.0.0.1, ::1 or “localhost”).

CloudGuard Controller for Akamai Guardicore Server

Starting in R82.10 Jumbo Hotfix Accumulator Take 36, the CloudGuard Controller integrates the Check Point Security Management Server with an Akamai Guardicore Server.

Authentication to the Akamai Guardicore Data Center is done with a username and password.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Prerequisites

- Akamai Guardicore API Version v4 or higher.

Limitations

- The Asset IP address is not imported if it is localhost (127.0.0.1, ::1 or “localhost”).

Connecting to the Akamai Guardicore Server

Use the existing credentials (username and password) to establish the connection to the Akamai Guardicore server.

Connecting to an Akamai Guardicore Server with SmartConsole

Step	Instructions
1	In SmartConsole, use one of these options to create a new Data Center object: ■ In the top left corner, click the **Objects** menu > **Cloud** > **Data Center** > **New Akamai Guardicore** Or ■ In the top right corner, click the **Objects** Pane > **New**> **Cloud** > **Data Center** > **Akamai Guardicore**
2	In **Enter Name**, enter the applicable name.

Step	Instructions

3	In the **Hostname** field, enter the Akamai Guardicore server FQDN,**or** the server IP address and port number. Example:
	`guardicore_hostname`
	`Or:`
	`172.0.1.2<:Port>`
	Note: The Akamai Guardicore port is optional and defaults to port 443. If your Akamai Guardicore server uses port 443, you do not need to provide the port.

4	In the **Username** and **Password** fields, enter the credentials.
5	Click **Test Connection**. If the certificate window opens, confirm the certificate and click **Trust**.
6	When the connection status changes to **Connected**, click **OK**. If the status is not **Connected**, troubleshoot the issue before you continue.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

Akamai Guardicore Objects and Properties

Akamai Guardicore Objects

Object	Description
Asset	Any device or system that Akamai Guardicore monitors and protects.
Tag	Resembles an attribute of an asset.

Notes:

- An Asset can have one, multiple, or no Tags.
- **Important**:
  - Import of IPv6 addresses is disabled by default. To enable it, you must set the **guardicore.collectIpv6** parameter in the *vsec.conf* file:
    `guardicore.collectIpv6=true`
    For details, refer to *"Configuration Parameters" on page 115*.

Akamai Guardicore advanced configuration

To change the default settings of Akamai Guardicore Data Center in CloudGuard Controller:

1. Add this section to the *vsec.conf* file on the Management server:

```
# Akamai Guardicore Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
guardicore.scannerInterval=30
guardicore.scanSleepUpperLimitInSeconds=300
guardicore.connectTimeoutInMilliseconds=5000000
guardicore.readTimeoutInMilliseconds=120000
guardicore.collectIpv6=false
```

   For details, refer to the *"Configuration Parameters" on page 115* section.

2. Modify the parameter values as required in your environment.
3. Save the file and restart the CloudGuard Controller service.

CloudGuard Controller for ServiceNow CMDB Server

Starting in R82.10 Jumbo Hotfix Accumulator Take 36, the CloudGuard Controller integrates the Check Point Security Management Server with a ServiceNow CMDB Server.

Authentication to the ServiceNow CMDB Data Center is done with a username and a password.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Limitations

- The Asset IP address is not imported if it is localhost (127.0.0.1, ::1 or “localhost”).

Connecting to the ServiceNow CMDB Server

Use the existing credentials (username and password) to connect to the ServiceNow CMDB server.

Connecting to a ServiceNow CMDB Server with SmartConsole

Step	Instructions
1	In SmartConsole, use one of these options to create a new Data Center object: ■ In the top left corner, click the **Objects** menu > **Cloud** > **Data Center** > **New ServiceNow CMDB** Or ■ In the top right corner, click the **Objects** Pane > **New**> **Cloud** > **Data Center** > **ServiceNow CMDB**
2	In **Enter Name**, enter the applicable name.

3	In the **Hostname** field, enter the ServiceNow CMDB FQDN,**or** the server IP address and port number. Example:
	`servicenow_cmdb_hostname`
	`Or:`
	`172.0.1.2<:Port>`
	Note: The ServiceNow CMDB port is optional and defaults to port 443. If your ServiceNow CMDB server uses port 443, you do not need to provide the port.

Step	Instructions
4	In the **Username** and **Password** fields, enter the credentials.
5	Click **Test Connection**. If the certificate window opens, confirm the certificate and click **Trust**.
6	When the connection status changes to **Connected**, click **OK**. If the status is not **Connected**, troubleshoot the issue before you continue.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

ServiceNow CMDB Objects and Properties

ServiceNow CMDB Objects

Object	Description
Configuration Item (CI)	Any device or system that ServiceNow CMDB discovers and maps.
Tag	Resembles an attribute of a CI.

Notes:

- A CI can have one, multiple, or no Tags.
- **Important**:
  - Import of IPv6 addresses is disabled by default. To enable it, you must set the **servicenow_cmdb.collectIpv6** parameter in the *vsec.conf* file:
    `servicenow_cmdb.collectIpv6=true`
    For details, refer to *"Configuration Parameters" on page 115*.

ServiceNow CMDB advanced configuration

To change the default settings of ServiceNow CMDB Data Center in CloudGuard Controller:

1. Add this section to the *vsec.conf* file on the Management server:

```
# ServiceNow CMDB Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
servicenow_cmdb.scannerInterval=30
servicenow_cmdb.scanSleepUpperLimitInSeconds=300
servicenow_cmdb.connectTimeoutInMilliseconds=5000000
servicenow_cmdb.readTimeoutInMilliseconds=120000
servicenow_cmdb.collectIpv6=false
```

   For details, refer to the *"Configuration Parameters" on page 115* section.

2. Modify the parameter values as required in your environment.
3. Save the file and restart the CloudGuard Controller service.

CloudGuard Controller for Nozomi Server

Starting in R82.10 Jumbo Hotfix Accumulator Take 36, the CloudGuard Controller integrates the Check Point Security Management Server with a Nozomi Server.

Authentication to the Nozomi Data Center is done with a username and a password.

Important - The CloudGuard Controller server clock must be synchronized with the current local time. Use of an NTP server is recommended. Time synchronization issues can cause polling information from the cloud to fail.

Limitations

- The Asset IP address is not imported if it is localhost (127.0.0.1, ::1 or “localhost”).

Connecting to the Nozomi Server

Use the existing credentials (username and password) to connect to the Nozomi server.

Connecting to a Nozomi Server with SmartConsole

Step	Instructions
1	In SmartConsole, use one of these options to create a new Data Center object: ■ In the top left corner, click the **Objects** menu > **Cloud** > **Data Center** > **New Nozomi** Or ■ In the top right corner, click the **Objects** Pane > **New**> **Cloud** > **Data Center** > **Nozomi**
2	In **Enter Name**, enter the applicable name.

3	In the **Hostname** field, enter the Nozomi server FQDN,**or** the server IP address and port number. Example:
	`nozomi_hostname`
	`Or:`
	`172.0.1.2<:Port>`
	Note: The Nozomi port is optional and defaults to port 443. If your Nozomi server uses port 443, you do not need to provide the port.

4	In the **Username** and **Password** fields, enter the credentials.
5	Click **Test Connection**. If the certificate window opens, confirm the certificate and click **Trust**.
6	When the connection status changes to **Connected**, click **OK**. If the status is not **Connected**, troubleshoot the issue before you continue.
7	Click **OK**.
8	Publish the SmartConsole session.
9	Install the Access Control policy on the Security Gateway object.

Nozomi Objects and Properties

Nozomi Objects

Object	Description
Asset	Any device or system that Nozomi discovers and monitors.
Tag	Resembles an attribute of an asset.

Notes:

- An Asset can have one, multiple, or no Tags.
- **Important**:
  - Import of IPv6 addresses is disabled by default. To enable it, you must set the **nozomi.collectIpv6** parameter in the *vsec.conf* file:
    `nozomi.collectIpv6=true`
    For details, refer to *"Configuration Parameters" on page 115*.
- The import filter for `asset_type` is set to **Any** by default. To modify it, you must set the **nozomi.assetType** parameter in the *vsec.conf* file
- The import filter for `technology_category` is set to **OT** by default. To modify it, you must set the **nozomi.technologyCategory** parameter in the *vsec.conf* file

Nozomi advanced configuration

To change the default settings of Nozomi Data Center in CloudGuard Controller:

1. Add this section to the *vsec.conf* file on the Management server:

```
# Nozomi Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
# nozomi.technologyCategory - filter assets by technology
category.
# Comma-separated list of categories to import (e.g.
OT,IT,IoT).
# Set to 'Any' to import all assets regardless of technology
category.
nozomi.scannerInterval=30
nozomi.scanSleepUpperLimitInSeconds=300
nozomi.connectTimeoutInMilliseconds=5000000
nozomi.readTimeoutInMilliseconds=120000
nozomi.collectIpv6=false
nozomi.assetType=Any
nozomi.technologyCategory=OT
```

   For details, refer to the *"Configuration Parameters" on page 115* section.

2. Modify the parameter values as required in your environment.
3. Save the file and restart the CloudGuard Controller service.

Integrating with Data Center Servers

Connecting to a Data Center Server

The Management Server connects to the Software-defined data center (SDDC) through the Data Center server object you create in SmartConsole. In addition, you can connect to the data center with management APIs and Terraform. See Management API Reference and the data_center_server Terraform such as checkpoint_management_azure_data_center_server.

To create a connection to the Data Center:

1. In SmartConsole, create a new Data Center object in one of these ways:
   - In the top left corner, click **Objects** menu > **More object types** > **Cloud** > **Data Center** > applicable Data Center.
   - In the top right corner, click **Objects Pane** > **New** > **More** > **Cloud** > **Data Center** > applicable Data Center.
2. In the **Enter Object Name** field, enter a name.
3. Enter the connection and credentials information.
4. To establish a secure connection, click **Test Connection**.

   If the certificate window opens, verify the certificate and click **Trust**.
5. Click **OK** when the **Connection Status** changes to **Connected**.

   If the status is not **Connected**, troubleshoot the issues before you continue.
6. Click **OK**.
7. Publish the SmartConsole session.

Important - The credentials used by a Data Center Server must be permanent or very-long-lived. If they expire, the CloudGuard Controller loses connectivity to the Data Center, Data Center objects stop being updated, and the object TTL on the Security Gateway expires, causing rules that use those objects not to be enforced.

Notes:

- After changing the connection properties of an existing Data Center Server (for example, credentials or URL), you can install the policy only on one Security Gateway that has Data Center Objects from this Data Center Server for the change to take effect.
- If the Data Center Server's certificate was changed, then communication with the Data Center Server fails.
  To repair:
  1. Open the Data Center Server object in SmartConsole.
  2. Click **Test Connection** again.
  3. Accept the new certificate.

You can use Data Center objects and Data Center Query objects in Access Control, Threat Prevention and HTTPS Inspection rules. In addition, you can use Data Center objects (but not Data Center Queries) in NAT rules in the Original Source and Original Destination columns.

Note - You can create a **Global Data Center object** and a **Global Data Center query** in the Multi-Domain Management Server Global Domain and add them to a rule in the Global Policy.

To add Data Center objects to the policy:

1. In the applicable rule, click **+** to add new items.
2. Click **Import**.
3. Do one of these:
   - Select an existing Data Center object.
   - Create a new Data Center object - click **Data Centers** > **New Data Center** > select the applicable Data Center type.
4. Install the Access Control Policy.

Note - New warning in the import from Data Center dialog:
When you import an object from a Data Center, a window opens to select an object from the Data Center.
A message on the top of the import window shows the status of the connection between the Security Management and the Data Center:
If there is a connection issue, an orange warning shows: **Last Update X Hour(s) ago**.
If the connection is stable, the message is: **Last update - a moment ago**.

Automatic Trust of Public Trusted Certificate Authorities

You can configure CloudGuard Controller to automatically trust Data Center certificates that are issued by trusted Certificate Authorities.

Automatic Trust is supported starting R81.20 CloudGuard Controller self-updatable package.

This feature is off by default. To turn the feature on, add this parameter to the *vsec.conf* file (see *"Configuration Parameters" on page 115* for more information):

```
useCAValidation=true
```

The CloudGuard Controller fetches and validates the certificate against the Trusted Root Certificate Authorities list is in the *$CPDIR/conf/ca-bundle-public-cloud.crt* file.

Example of the Root Certificate Authorities list:

```
GlobalSign Root CA
Entrust.net Premium 2048 Secure Server CA
Entrust Root Certification Authority
Comodo AAA Services root
Go Daddy Class 2 CA
DigiCert Assured ID Root CA
DigiCert Global Root CA
DigiCert High Assurance EV Root CA
COMODO Certification Authority
COMODO ECC Certification Authority
GlobalSign Root CA - R3
Go Daddy Root Certificate Authority - G2
DigiCert Assured ID Root G2
DigiCert Assured ID Root G3
DigiCert Global Root G2
DigiCert Global Root G3
DigiCert Trusted Root G4
COMODO RSA Certification Authority
USERTrust RSA Certification Authority
USERTrust ECC Certification Authority
GlobalSign ECC Root CA - R4
GlobalSign ECC Root CA - R5
IdenTrust Commercial Root CA 1
IdenTrust Public Sector Root CA 1
Entrust Root Certification Authority - G2
Entrust Root Certification Authority - EC1
ISRG Root X1
Amazon Root CA 1
Amazon Root CA 2
Amazon Root CA 3
Amazon Root CA 4
GlobalSign Root CA - R6
Entrust Root Certification Authority - G4
GlobalSign Root R46
GlobalSign Root E46
GlobalSign Root CA
GlobalSign Root CA - R2
Verisign Class 3 Public Primary Certification Authority - G3
Entrust.net Premium 2048 Secure Server CA
Baltimore CyberTrust Root
Entrust Root Certification Authority
Comodo AAA Services root
Comodo Secure Services root
Comodo Trusted Services root
```

```
Go Daddy Class 2 CA
StartCom Certification Authority
VeriSign Class 3 Public Primary Certification Authority - G5
COMODO Certification Authority
COMODO ECC Certification Authority
VeriSign Universal Root Certification Authority
VeriSign Class 3 Public Primary Certification Authority - G4
GlobalSign Root CA - R3
Go Daddy Root Certificate Authority - G2
StartCom Certification Authority
StartCom Certification Authority G2
COMODO RSA Certification Authority
GlobalSign ECC Root CA - R4
GlobalSign ECC Root CA - R5
Entrust Root Certification Authority - G2
Entrust Root Certification Authority - EC1
DST Root CA X3
Verisign Class 3 Public Primary Certification Authority
DigiCert Global Root CA
```

The advantages of using the automatic trust:

- **Automated Data Center Addition**: You can now add Private Cloud Data Centers without manually validating the fingerprint.
- **API Integration**: You can add Private Cloud Data Centers through API without manual fingerprint validation (The same API command, without providing certificate-fingerprint and unsafe-auto-accept).

  For example, to add Nutanix Data Center with Management API, run:

  ```
  mgmt_cli -r true add data-center-server name "myNutanix" type
  "nutanix" hostname "1.1.1.1" username "admin" password "****" 30
  10
  ```

- **Certificate Changes Handling**: If the certificate changes, the connection with the Data Center persists.

Using Data Center in Policy

You can use Data Center objects and Data Center Query objects in Access Control, Threat Prevention, and HTTPS Inspection rules. In addition, you can use Data Center objects (but not Data Center Queries) in NAT rules in the Original Source and Original Destination columns.

To add Data Center objects to the policy:

1. In the applicable rule, click **+** to add new items.
2. Click **Import**.
3. Do one of these:
   - Select an existing Data Center object.
   - Create a new Data Center object - click **Data Centers** > **New Data Center** > select the applicable Data Center type.
4. Install the Access Control Policy.

Data Center Query Objects

Overview

Support for Data Center Query Objects on Security Gateways is for versions R81 and higher.

With Data Center Query Objects, administrators can now create one **Query Object** based on attributes across multiple data centers. This simplifies the work when administrators create policies for multiple rules, because they only need to **use one query object for data center objects from multiple data centers**. Furthermore, admins can create the policy even before they configure a data center in SmartConsole. This makes it easier to separate responsibilities between security admins and other teams that possibly need to create data centers in SmartConsole.

The Query object is used in the same way as Data Center objects. As with Data Center Objects, when the Data Center Query is added to the Rule base the CloudGuard Controller pulls the assets from all the Data Centers in the query object and updates the Security Gateway accordingly.

Without Data Center Query	With Data Center Query
1. Create the Data Center account (s). 2. Import objects from each Data Center to the Rule base. 3. No choice for complex logic inside the rules.	■ Create Data Center Query objects and add them to the rule base before or after you create Data Center account(s). Create Data Center Query object with the **All Data Centers** option. The advantage is that if new Data Center Servers are added later on, then rules in the rule base with such Data Center Query object (with the 'All Data Centers' option) are automatically applied to assets in the new Data Centers. **Note** - After adding a new Data Center, you must install the policy on all the Security Gateways that have this Data Center Query in their policy. ■ One Data Center Query Object can use assets (objects) from more than one, or all, Data Centers. This results in simpler security rules. ■ The Query is more complex and larger than what is possible in the security rule's logic. ◦ `OR` logic inside each query rule, use `";"` between items ◦ `AND` logic between query rules

Example 1: Data Center Query Object

Applies to all current and future data centers.

This is the query logic:

- All assets from type instances `OR` Load Balancers

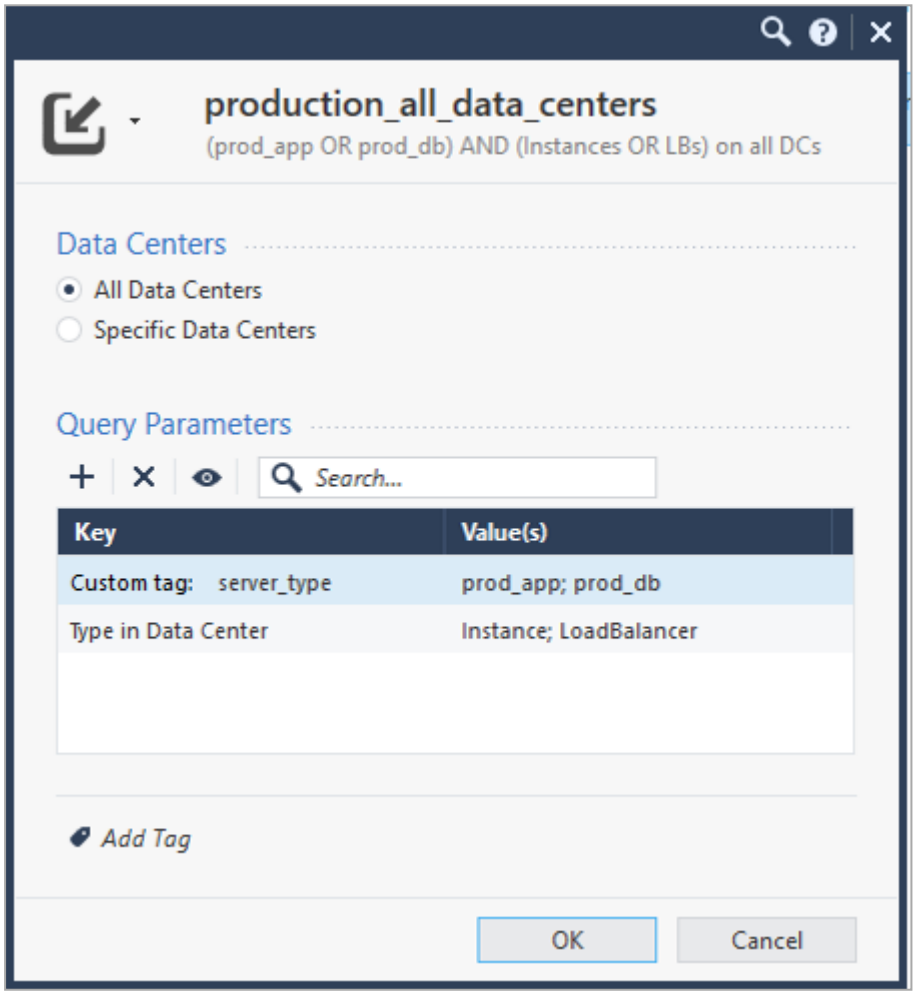
  AND

- Tagged with:

  `"server_type=prod_app"`

  OR

  `"server_type=prod_db"`



Example 2: Rule Base

Earlier versions require you to use multiple tag objects for multiple accounts.

- Rules must be updated for every data center added.
- Rules cannot have the logic for only Instances or Load Balancers.

With uses Data Center Query objects:

- No need to update the rule when new data center(s) is added.
- Rule can include complex `OR` and `AND` operations to better the policy.

No.	Name	Comments	Source	Destination
1		prod_app or prod_db from all AWS accounts.NOTES: 1. Must update rule for new new accounts. 2. Cannot include only Instances or LBs	* Any	server_type=prod_app server_type=prod_db server_type=prod_app server_type=prod_db server_type=prod_app server_type=prod_db
2		Only Instances and LBs tagged with prod_app or prod_db from all AWS accounts. No need to update rule when adding new accounts	* Any	production_all_data_centers

Note - Rule No. 1 is without Data Center Query, and Rule No 2 is with Data Center Query.

Creating Rules with Data Center Query Objects

To add Data Center Query to a rule:

You can add a Data Center Query in the same way you can add Data Center Object to a rule.

Configuring Data Center Query Objects in SmartConsole

Step 1: Create a Data Center Query Object.

a. Go to SmartConsole > **Cloud** > **Data Center Queries** > **New**.

b. Add the applicable Data Center(s).

c. Configure the **Query Rules** to match the value used for **Type**, **Name**, and **IP** in the **Import Data Center** window.

Type in Data Center	*Type* in Data Center, such as Instance, Virtual Machine, Load Balancer, Subnet, Availability Zone, and more. **Note**: You cannot query Tag, Tag Value, or Tag Key with **Type in data center**.
Name in Data Center	The asset's name (Not the Tag's name).
IP address	The asset's IP address.
Customer tag	Free text key and value. If you have only Tags with keys without values, you can set the Tag with key only and keep the value empty and the CloudGuard Controller enforce all the assets which have this Tag key. **Best Practice:** When Tags support both key and value, we recommend specifying both. The Tags evaluation is case insensitive. For example, if the Tag configured on the Cloud is KEY=VALUE, and the Data Center Query Tag is key=value, there is a match.

Note - All object IP addresses that match the query are updated on the Security Gateway.

d. **Optional:** To preview the query:

   i. Publish the changes.

   ii. Reopen the **Query Rules** section.

   iii. Click the eye icon on **Data Center Query**.

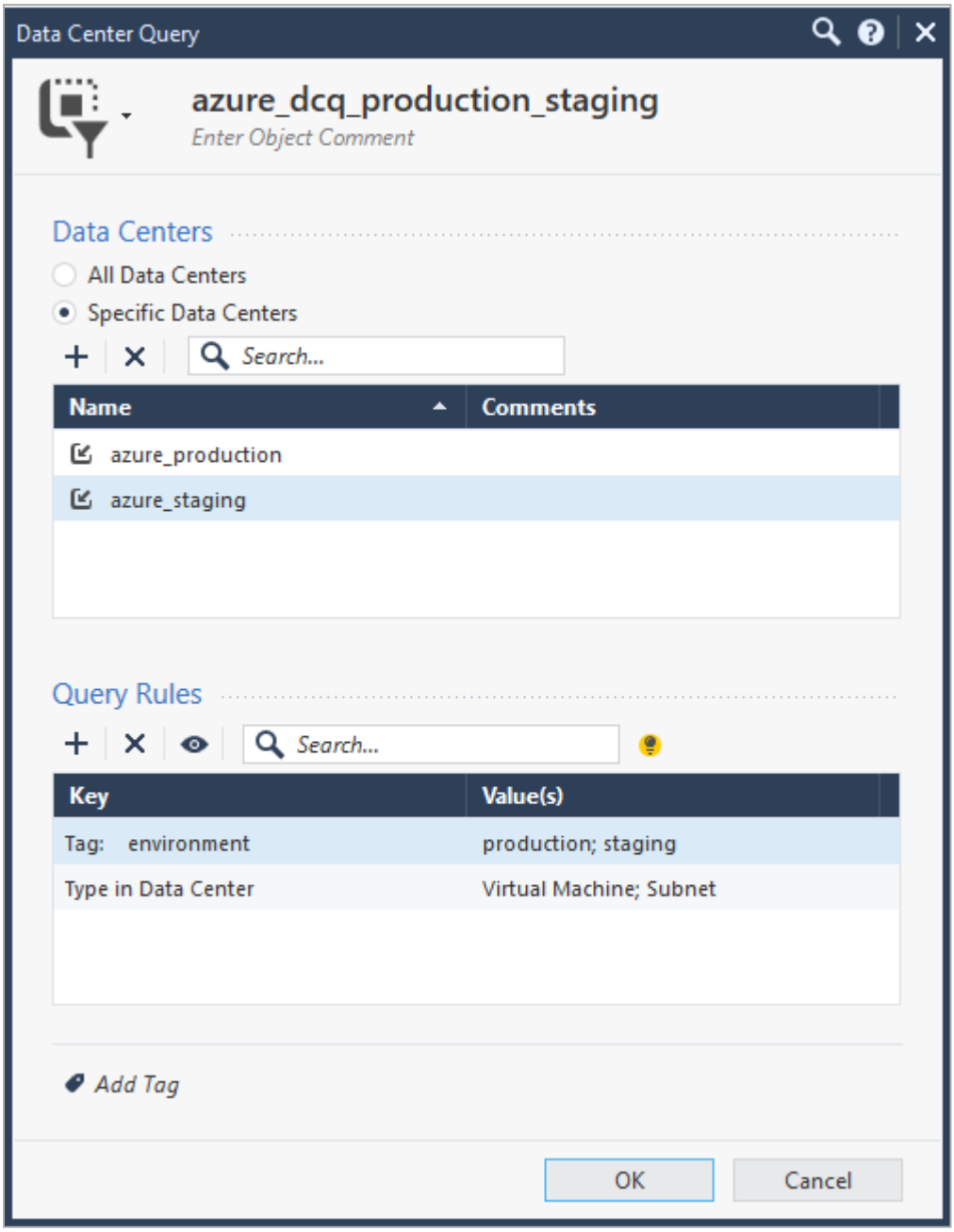
e. Click **OK**.

Configuring Data Center Query Objects using management API

See Management API Reference.

Configuring Data Center Query Objects using Terraform

See checkpoint_management_data_center_query.



Step 2: Add the Data Center Query object from Step 1 to the Rule base.

Step 3: Install the policy on the Security Gateway.

Automation and Monitoring

Check Point Management API and Terraform are available to add, delete, set, and show Data Center Servers and their contents, and to show, delete, and import Data Center objects and Data Center Query objects.

Use the API and resources to automate Data Center security management and monitoring.

See *Check Point Management API Reference* (at the top, select the correct version) .

See https://registry.terraform.io/providers/CheckPointSW/checkpoint/latest/docs and search for 'data_center'.

CloudGuard Controller Monitoring

Data Center Updates

CloudGuard Controller requires reliable connectivity to the Security Gateways to continuously update them with changes to the Data Center objects.

The updates of Data Center objects include:

- Adding new IP addresses to the rule base.
- Removing redundant IP addresses from the rule base.
- Extending the expiration time on existing objects in the rule base so they do not expire and automatically erase.

If the Security Gateway stops receiving updates for a Data Center Object, the Gateway has no way to verify that the object is still a valid object on the Data Center.

To create a balance between security and connectivity, each IP address of a Data Center object has a built-in expiration timer (aka Time To Live – TTL).

The CloudGuard Controller updates the IP addresses of the Data Center objects TTL on the Security Gateway to avoid TTL expiration.

However, if the Security Gateway(s) update fails continuously (for example, because of a lack of connectivity between the Management and the Security Gateway), the TTL of the IP address is not updated.

When the full TTL of the IP address is reached, the IP address expires, and security policy rules that use this Data Center object IP address are no longer enforceable.

Because of the critical nature of Data Center Objects, it is highly recommended to monitor CloudGuard Controller status.

You can configure the TTL from 5 minutes to 30 days.

For more information, see the *enforcementSessionTimeoutInMinutes* parameter in the *"Configuration Parameters" on page 115* section.

CloudGuard Controller Logs and Events

To monitor the CloudGuard Controller, use any of these options:

- Filter the logs in SmartConsole with this query syntax:

```
blade:"CloudGuard IaaS" AND severity:Critical
```

- Create a User Defined Event based on logs and severity, see *"Creating a User-Defined Event and Sending Alerts" on the next page*.
  - Connect the Event to an Automatic Reaction such as emails or scripts.

    See the *R82.10 Logging and Monitoring Administration Guide* > Section *Automatic Reactions*.

Note - As the CloudGuard Controller uses Identity Awareness on the Security Gateway, the Security Gateway's kernel table limit can be reached in a scenario when there is a large number of IP addresses.
You can monitor and get a notification for this issue in SmartLog.
For details, refer to sk113833.

CloudGuard Controller Status

Options for checking the CloudGuard Controller status

Option	Description
On the Management Server	Follow these steps: 1. Connect to the command line. 2. Run: `cpstat vsec`
In SmartConsole	Follow these steps: 1. From the left navigation panel, click **Gateways & Servers**. 2. Select your Management Server object. 3. At the bottom, from the **Summary** tab, click **Device & License Information** > **Device Status**.

Output table columns:

- **Imported objects** - Shows objects that are updated in the CPM process or in SmartConsole.
- **Controller Updates** -Shows the number of updates sent about imported objects since the last CloudGuard Controller restart.

Note: The `cpstat vsec` tool does not monitor *"Data Center Query Objects" on page 100*.

SNMP Traps

To configure custom SNMP traps, refer to sk124532.

Creating a User-Defined Event and Sending Alerts

The CloudGuard Controller is very critical component for the security of an organization.

If the CloudGuard Controller loses connection with a data center, for some reason, then there are no updates to the Gateways.

This is a serious situation for any security administrator.

While administrators can monitor the SmartConsole logs in the office, there is also option to send critical CloudGuard Controller Events to an administrator's smartphone or email.

To create a User-Defined Event

1. Enable the **SmartEvent** Software Blade on the Management Server.

   See the *R82.10 Logging and Monitoring Administration Guide* > Section *Deploying SmartEvent*.

2. Open the Legacy SmartEvent GUI client:

   a. From the left navigation panel, click **Logs & Events**.

   b. At the top, click the **+** tab.

   c. At the bottom, in the section **External Apps**, click **SmartEvent Settings & Policy**.

3. In the **SmartEvent Policy** tree, right-click **Event policy**.

   The **Event Definition** wizard opens.

   a. Step 1/6: In the Event Definition wizard window, below **Create an event**, select **that is completely new** > click **Next**.

   b. Step 2/6: In the **Name** field, enter a name for the Event.

   From the **Severity** list, select a severity for the event > click **Next**.

   c. Step 3/6: Select **a single log** > click **Next**.

d. Step 4/6: Click **Add product** > select the checkbox for **Cloud Firewall IaaS** > click **Next**.

e. Step 5/6: Below the **Define the condition that specifies which {your event name} logs are appropriate for this event**:

   i. Select **Show more fields** > **Existing field**.

      The **Select Log Fields** window opens.

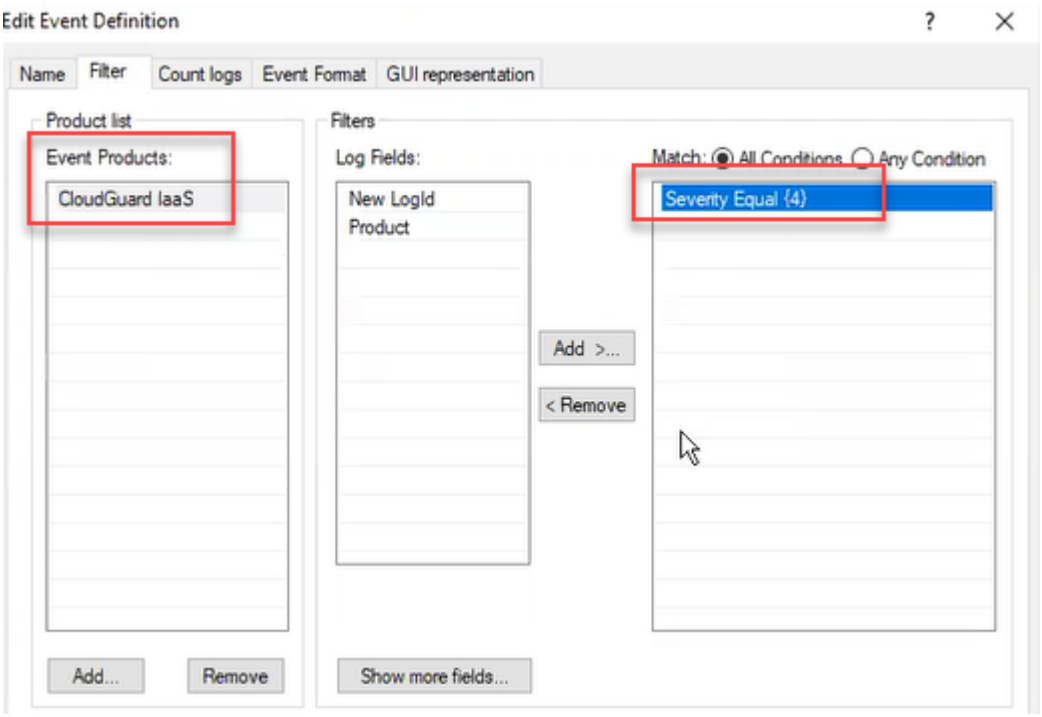
   ii. Below **Log Fields**, select **Severity** > click **OK**.

   iii. Below Available Log Fields, select **Severity**, click **Add**.

      The Severity Filter window opens.

   iv. Click **Add**, in the **Value** field enter the number '**4**' for the value (four is the highest, referred to as "critical") > click **OK**.

   v. Make sure that in the **Event Definition** wizard window, the right-side box now shows **Severity Equal {x}** > click **Next**.



   vi. Click **Finish**.

   vii. To install the policy, click **Yes**.

Note - In the SmartEvent window that opens, click **Yes** to install the policy.

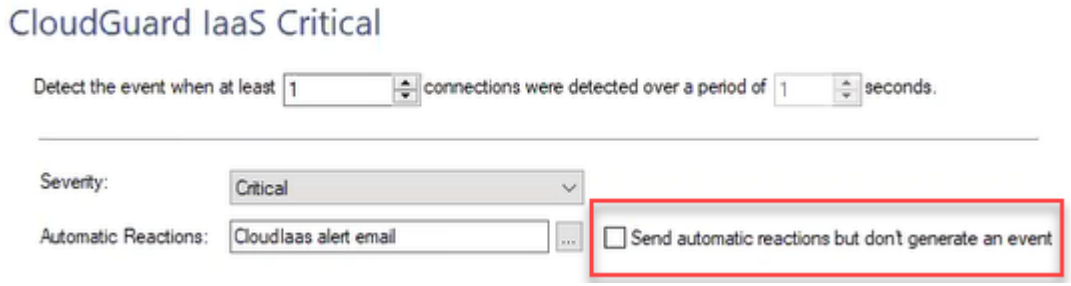
There is now a User Defined Event, in this example "**CloudGuard IaaS Critical**", that you can connect to Automatic Reaction which you create.

(Optional) To create an Automatic Reaction Alert

Use SmartEvent to send push notifications to your mobile device or email account.

This allows you to get notification even when your not in front of SmartConsole, and even when your are not in the office.

In SmartEvent, this is called "Automatic Reaction."



For more information about how to edit an event, see the *R82.10 Logging and Monitoring Administration Guide*

1. In the SmartEvent tree, right-click **User Defined Events** select the event.
2. In the top field, enter the parameters for detecting an Event.

   Example, "Detect the event when at least **2** connections where detected over a period of **120** seconds".
3. Select the button to the right of the **Automatic Reactions** tab.
4. Select **Add new** > select **Mail** or **External Script**.

   The Add Automatic Reaction window opens.

   For more information about External scripts, see the *R82.10 Logging and Monitoring Administration Guide* > Section *Creating an External Script Automatic Reaction*.
5. In the **Name** field, delete the default name and enter a different name. For example, "Cloud Firewall IaaS alert email".
6. In the **Command line** field, enter the path and the name of the script. For example, "`/var/log/myscript.sh`".
7. Click **Save**.
8. In the **Automatic Reactions** window, click **OK**.
9. From the **SmartEvent** toolbar, click the save icon > click **Yes**.

Integration Events & AIOps

Starting from the R82.10 CloudGuard Controller self-updatable package Take 10, CloudGuard Controller can integrate with Events & AIOps (formerly Infinity AIOps) in the Check Point Portal to provide centralized visibility of operational metrics and alerts for supported Check Point assets, including CloudGuard Controller management components.

Onboarding and Requirements

Before you go on board to Events & AIOps, make sure your environment meets the prerequisites for supported assets and versions. Then connect your Security Management Server to your Check Point Portal tenant and complete the Events & AIOps onboarding flow.

For prerequisites, supported assets and versions, onboarding steps, and limitations, see the Events & AIOps Administration Guide (refer to the On-boarding AIOps > Automatic Mode section).

Limitation

Multi-Domain Security Management Server (MDS) is not supported in AIOps.

To view alerts for monitored assets, go to **AIOps** > **Alerts** in **Events & AIOps**.

CloudGuard Controller Alerts in Events & AIOps

These are the available CloudGuard Controller Alerts in Events & AIOps:

- **CloudGuard Controller service stopped**

  This alert indicates that the Controller service has stopped. Managing dynamic cloud objects and enforcing policies are affected, which can cause policy mismatch failures.

  This alert is based on a default downtime threshold of 30 seconds. To change this value:

  1. Edit the *$FWDIR/conf/ vsec.conf* file on the Security Management Server, and add the line:

     ```
     downtimeThreshold=<VALUE>
     ```

  2. Restart the CloudGuard Controller with the command:

     ```
     vsec stop;vsec start
     ```

     For more information, refer to *"Configuration Parameters" on page 115*.

- **CloudGuard Controller memory limit reached**

  This alert indicates that CloudGuard Controller ran out of memory.

- **CloudGuard Controller gateway update failed**

  This alert indicates that the CloudGuard Controller failed to update the Data Center objects on the gateway.

- **CloudGuard Controller scanner mapping failed**

  This alert indicates that the Data Center mapping failed.

Note - For more details about alert structure, see the **AIOps Alerts** section in the Events & AIOps Administration Guide.

SmartTask

Starting in R81.20, there is a new SmartTask in SmartConsole for monitoring CloudGuard Controller.

SmartTasks let you configure automatic actions according to different triggers in the system. A SmartTask is a combination of trigger and action.

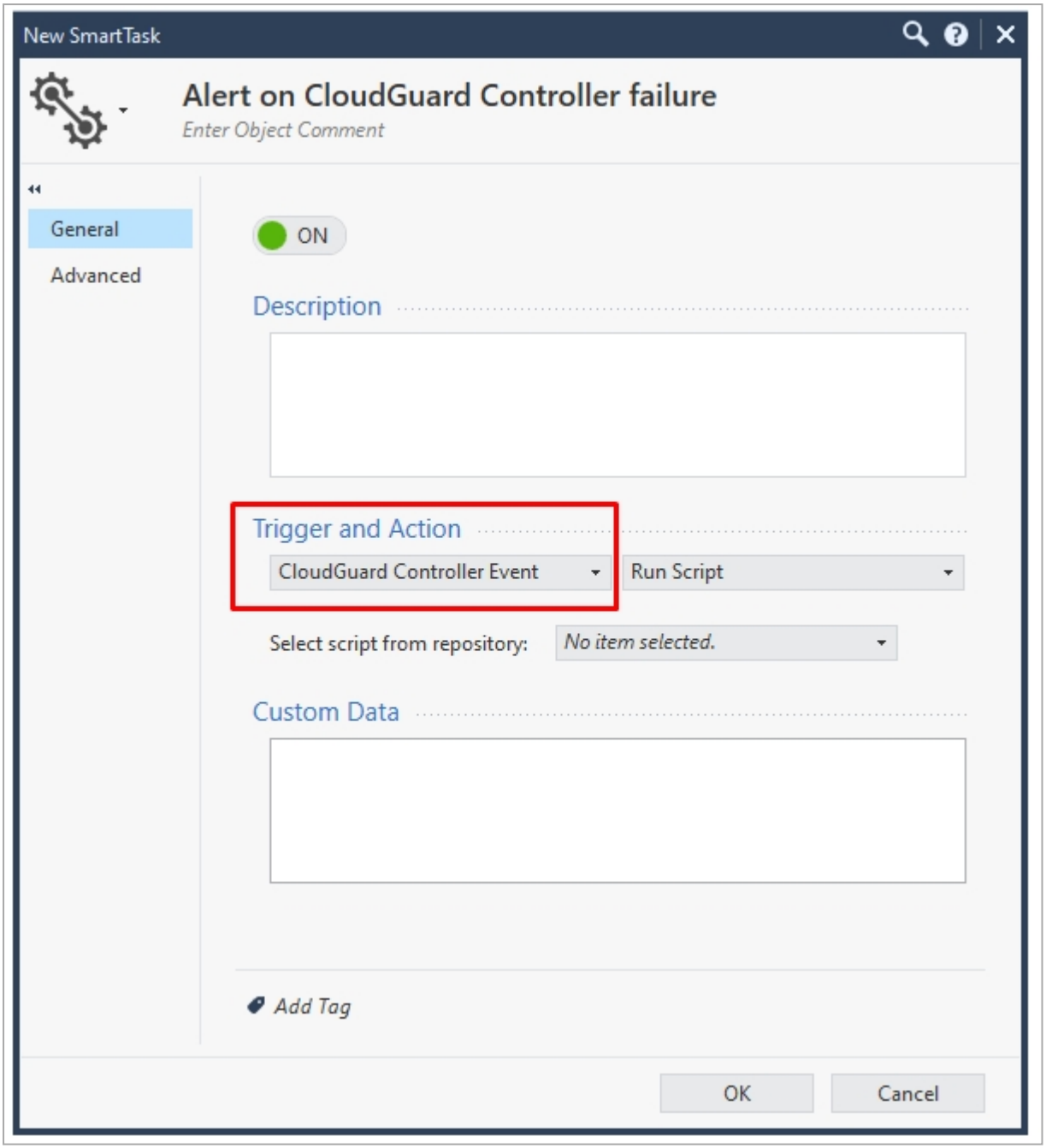
The trigger is a CloudGuard Controller Event that is activated when a new log is generated that matches this query in SmartConsole > **Logs & Events** view > **Logs** tab:

```
blade:"CloudGuard IaaS" AND severity:Critical
```

For the action you can select: **Run script**, **Execute a Web request**, or **Send mail**.

For more information on SmartTasks, see the *R82.10 Security Management Administration Guide*.

Example:


New SmartTask
Alert on CloudGuard Controller failure
Enter Object Comment
General
Advanced
ON
Description
Trigger and Action
CloudGuard Controller Event
Run Script
Select script from repository:
No item selected.
Custom Data
Add Tag
OK
Cancel

CloudGuard Controller Command Line Interface

Note - For other commands, see the *R82.10 CLI Reference Guide*.

The "`vsec_controller_cli`" command allows resending **all** the enforcement data to a Security Gateway you select from a list for troubleshooting purposes.

Reset the CloudGuard Controller state on the Security Gateway

Step	Instructions
1	Connect to the command line on the Management Server.
	Log in to the Gaia Clish, or Expert mode.
2	Run: `vsec_controller_cli`
3	Select: **Resend enforcement data to gateway**.
4	Select the Security Gateway to reset.

Note - If data is not synchronized after reset, contact your Check Point partner, or Check Point Support.

Configuration Parameters

The CloudGuard Controller uses configuration parameters that can be adjusted to your specific needs.

This section provides a list of the configuration parameters including their description, minimum and maximum value, and the command to force the parameter's update.

CloudGuard Controller can be configured through various parameters in the **vsec.conf** file. See the `vsec.conf` file for more information.

Locations of the `vsec.conf` file:

- On a Security Management Server:

  `$FWDIR/conf/vsec.conf`

- On a Multi-Domain Server:

  `$MDSDIR/conf/vsec.conf`

  Note - In a Multi-Domain Security Management High-Availability environment, the configuration file is synchronized from the Multi-Domain Management Server member who's its Global domain is active, to the other members. Restart the CloudGuard Controller service on the other member for the changes to take effect.

Important - All configuration values are read from the *vsec.conf* file only when CloudGuard Controller is loaded. If you change one of the parameters, you must restart the CloudGuard Controller with the "`vsec stop ; vsec start`" commands.

```
# ports for Management<-->Controller communications
# Do not change
wsPort=999
wsTaggerPort=1004


# delay time (secs) between Gateway policy update cycles
# Default value: 10
enforcementUpdateIntervalTime=10


# TTL (mins) for objects expiration on Gateway in case there are no
updates
# from the Controller
# min value=60
# max value=43200
# Default value: 20160
```

```
enforcementSessionTimeoutInMinutes=20160


# Update interval on changes of properties of imported data center in
# the Management/SmartConsole
# This value is used by the Management to pull changes from Controller
# When changing this value, Management need to restart
# Default value: 30
autoUpdateIntervalInSeconds=30


# Number of Gateways to update policy concurrently.
# Increasing to too high value will increase load on the server.
# Default value: 15
enforcementThreadPool=15

# Number of concurrent threads to use when checking for policy
changes.
# Increasing to too high value will increase load on the server.
# Default value: 15
enforcementUpdatingThreadPool=15

# Number of consecutive Gateway update failures which then will send
CRITICAL log
consecutiveNumOfGWFailureToCriticalLog = 5

# Number of consecutive scan failures which then will send CRITICAL
log
consecutiveNumOfScanFailureToCriticalLog = 5

# If sending Data Center updates directly to cluster Active member
# disabling this will send the updates to cluster VIP.
updateClusterMemberAndNotVip=true

# How long wait for threads
minMinuetsToWait=15

# If to use the system (Gaia) proxy when connecting to Data Centers.
# !! Enabling this will affect all Data Centers and can cause
connectivity issues !!
# This setting is not relevant to Azure+AWS+GCP.
useSystemProxy=false


# Interval (secs) for fetching the Gaia proxy settings for connections
# to data centers when 'useSystemProxy' is set to true
# Default value: 60
systemProxyUpdateIntervalSeconds=60
```

```
# Number of retries and delay (secs) between retries when sending
# policy updates to the Gateway
# Default value: 2, 1
sendAndRunScriptRetryTimes=2
sendAndRunScriptRetrySleep=1


# Delay time (millisecs) between each enforcement update chunk
# Default value 750
sleepBetweenEachEnforcementUpdateChunk=750


# The payload size (in bytes) of the update request to the Gateways.
# Too higher value might cause performance issue on the Gateway!!
# Too lower value might increase the time it takes to push updates to
the Gateway.
# This value can be configured separatly for each gateway version.
# Default and max value: 140000
gatewaysproperty.maxRequestSizeInBytes=140000
gatewaysproperty.maxRequestSizeInBytes.R80.30=50000
gatewaysproperty.maxRequestSizeInBytes.R80.40=140000
gatewaysproperty.maxRequestSizeInBytes.R81=140000
gatewaysproperty.maxRequestSizeInBytes.R81.10=140000
gatewaysproperty.maxRequestSizeInBytes.R81.20=140000
gatewaysproperty.maxRequestSizeInBytes.R82=140000



# Number of chunks to send at once
# Default value: 10
enforcementRequestChunksToSendAtOnce=10


# Number of retries and delay (milliseconds) between retries when
doing
# API calls to NSXT data center
# Default value: 5, 1000
failAPIRetryNumber=5
failAPIRetrySleepInMilliseconds=1000


# Controll Data Center scanning on Standby domain in management-ha
environment.
# In management-ha only the Controller on the Active domain is pushing
policy
# updates to the Gateways so there is no real need for the Controller
on the
# Standby domain to scan the data centers consume system resources.
# When the Standby domain will be promoted to Active, the Controller
on
```

```
# that new-Active domain will automatocally start pushing policy
updates
# to the Gateways
# Default value: false
scanStandbyManagement=false


# Sending logs interval (in secs)
# The allowed max value is 300 sec
# Default value: 10
sendLogInterval=10

# Number of minutes to keep and retry to send logs. Logs older than
that will be deleted.
# Default value: 30
latestLogToSendToSmartConsole=30

# Number of minutes to keep and retry to update CloudGuard Controller
SmartTask logs. Logs older than that will be deleted.
# Default value: 30
latestLogToSendToSmartTask=30

# How many logs to send in each send log interval
# Default value: 100
maxLogsToSend=100

# Collect ipv6 addresses for each Data Center type.
# Can Enable this for all Data Centers (global) or for a specific data
center type.
# (Azure \ AWS \ GCP \ NSXT \ vCenter).
# When enabled the ipv6 addresses will be collected, seen in the
picker and pushed to the Gateway.
global.collectIpv6=false


# Delay time (secs) between successfull Data Center scan intervals.
# This is a global setting that will be applied only to Data Centers
# without this setting
# Default value: 30
global.scannerInterval=30


# Upper limit value (secs) for delay between failed Data Center scan
# intervals. When Data Center scan fails, the delay between further
# scans will growth gradually up to this value.
# Default value: 300
global.scanSleepUpperLimitInSeconds=300
```

```
# Maximum sub-process TTL (milliseconds) when sub-process is used to
connect to a Data Center.
# If the Data Center mapping will reach this TTL, the sub-process will
be killed and the
# mapping will fail.
# This is relevant for AWS & Azure & GCP & Oracle.
# This is a global setting that will be applied only to data centers.
# without this setting
# Default value: 5000000
global.connectTimeoutInMilliseconds=5000000

# Maximum HTTP timeout (milliseconds) for API calls for public cloud
Data Centers.
# This is relevant for AWS & Azure & GCP & Oracle.
# This is a global setting that will be applied only to data centers
without this setting
# Default value: 60000
global.httpTimeoutInMilliseconds=60000


# Maximum timeout (milliseconds) when reading data from Data Center
APIs
# This is a global setting that will be applied only to data centers
# without this setting
# Default value: 120000
global.readTimeoutInMilliseconds=120000


# ACI Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
apic.scannerInterval=30
apic.scanSleepUpperLimitInSeconds=300
apic.connectTimeoutInMilliseconds=5000000
apic.readTimeoutInMilliseconds=120000

# NSX-T Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# global.collectIpv6
# Default value: 30, 300, 5000000, 120000, false
nsxt.scannerInterval=30
nsxt.scanSleepUpperLimitInSeconds=300
nsxt.connectTimeoutInMilliseconds=5000000
```

```
nsxt.readTimeoutInMilliseconds=120000
nsxt.collectIpv6=false

# Nutanix Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
nutanix.scannerInterval=30
nutanix.scanSleepUpperLimitInSeconds=300
nutanix.connectTimeoutInMilliseconds=5000000
nutanix.readTimeoutInMilliseconds=120000


# OpenStack Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
openstack.scannerInterval=30
openstack.scanSleepUpperLimitInSeconds=300
openstack.connectTimeoutInMilliseconds=5000000
openstack.readTimeoutInMilliseconds=120000


# vCenter Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# global.collectIpv6
# Default value: 30, 300, 5000000, 120000, false
vcenter.scannerInterval=30
vcenter.scanSleepUpperLimitInSeconds=300
vcenter.connectTimeoutInMilliseconds=5000000
vcenter.readTimeoutInMilliseconds=120000
vcenter.collectIpv6=false


# AWS Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.httpTimeoutInMilliseconds
```

```
# global.collectIpv6
# Default value: 30, 300, 5000000, 60000, false
aws.scannerInterval=30
aws.scanSleepUpperLimitInSeconds=300
aws.connectTimeoutInMilliseconds=5000000
aws.httpTimeoutInMilliseconds=60000
aws.collectIpv6=false

# Support search based on GroupName field of AWS SG object.
aws.supportSearchGroupName=true

# Control the VPN Cloud monitor (VCM).
# When set to true, VPN Cloud monitor will run after every Data Center
scan.
# VCM is responsible for analyzing the VPN configuration associated
with the
# imported VPN Gateway objects, and for determining if that
configuration
# is aligned with the cloud configuration.
aws.runVpnCloudMonitor=true


# Azure Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.httpTimeoutInMilliseconds
# global.collectIpv6
# Default value: 30, 300, 5000000, 60000, false
azure.scannerInterval=30
azure.scanSleepUpperLimitInSeconds=300
azure.connectTimeoutInMilliseconds=5000000
azure.httpTimeoutInMilliseconds=60000
azure.collectIpv6=false

# Number of threads to paralel the Azure scan
# If the value will be zero or less then default value 10 will be used
# Note: Using very high value might impact the process performance!
azure.numOfScanThread=10

# Control the VPN Cloud monitor (VCM).
# When set to true, VPN Cloud monitor will run after every Data Center
scan.
# VCM is responsible for analyzing the VPN configuration associated
with the
# imported VPN Gateway objects, and for determining if that
configuration
# is aligned with the cloud configuration.
azure.runVpnCloudMonitor=true
```

```
# AzureAD Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# Default value: 30, 300, 5000000
azure_ad.scannerInterval=30
azure_ad.scanSleepUpperLimitInSeconds=300
azure_ad.connectTimeoutInMilliseconds=5000000


# Updatable Objects Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# Default value: 300, 300
onlineservices.scannerInterval=300
onlineservices.scanSleepUpperLimitInSeconds=300


# Google Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.httpTimeoutInMilliseconds
# global.collectIpv6
# Default value: 30, 300, 5000000, 60000, false
google.scannerInterval=30
google.scanSleepUpperLimitInSeconds=300
google.connectTimeoutInMilliseconds=5000000
google.httpTimeoutInMilliseconds=60000
google.collectIpv6=false

# Number of threads to parallel the GCP scan
# If the value is zero or less, more than 1000, or not an integer, the
default value 1 will be used
# Value 1 scans all projects with one process, as in earlier versions
# Note: Using very high value might impact the process performance!
google.numOfScanThread=1

# Control the VPN Cloud monitor (VCM).
# When set to true, VPN Cloud monitor will run after every Data Center
scan.
# VCM is responsible for analyzing the VPN configuration associated
with the
# imported VPN Gateway objects, and for determining if that
configuration
```

```
# is aligned with the cloud configuration.
google.runVpnCloudMonitor=true


# oracle (OCI) Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.httpTimeoutInMilliseconds
# global.collectIpv6
# Default value: 30, 300, 5000000, 60000, false
oracle.scannerInterval=30
oracle.scanSleepUpperLimitInSeconds=300
oracle.connectTimeoutInMilliseconds=5000000
oracle.httpTimeoutInMilliseconds=60000
oracle.collectIpv6=false


# Kubernetes Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
kubernetes.scannerInterval=30
kubernetes.scanSleepUpperLimitInSeconds=300
kubernetes.connectTimeoutInMilliseconds=5000000
kubernetes.readTimeoutInMilliseconds=120000
# show or hide specific Kubernetes types of assets
kubernetes.displayServiceLabels=true
kubernetes.displayServices=true
kubernetes.displayNodes=true
kubernetes.displayNodeLabels=true
kubernetes.displayPods=true


# ISE Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
ise.scannerInterval=30
ise.scanSleepUpperLimitInSeconds=300
ise.connectTimeoutInMilliseconds=5000000
ise.readTimeoutInMilliseconds=120000
```

```
# number of concurrent worker threads that poll data from the ISE
server
ise.threadPoolSize=2
# the page size argument when calling ISE /sgt API
ise.maxPageSize=100


# IoTDiscovery scanner config
iotdiscovery.handleFirstPolicyRequestOnly=false
iotdiscovery.applyAccountingToRules=true
iotdiscovery.validPolicyPorts=["any", "ssh", "ftp", "telnet", "http",
"https"]
iotdiscovery.validPolicyProtocols=["any", "tcp", "udp", "icmp",
"igmp"]
iotdiscovery.validPolicyProperties=["src", "dst", "name", "action",
"service", "port", "protocol", "application"]
# policySource options: VISIBILITY_RULES, VENDOR, CHECKPOINT_BASELINE
iotdiscovery.policySource=VENDOR


# Generic Data Center scanner config
genericdatacenter.scannerInterval=60
genericdatacenter.deleteTemporaryFiles=true
genericdatacenter.ignoreInvalidContent=false
genericdatacenter.scanningLogsOn=false
genericdatacenter.scanFlatListFiles=false

# Proxmox Data Center configuration values.
# Overrides:
# global.scannerInterval
# global.scanSleepUpperLimitInSeconds
# global.connectTimeoutInMilliseconds
# global.readTimeoutInMilliseconds
# Default value: 30, 300, 5000000, 120000
proxmox.scannerInterval=30
proxmox.scanSleepUpperLimitInSeconds=300
proxmox.connectTimeoutInMilliseconds=5000000
proxmox.readTimeoutInMilliseconds=120000
proxmox.importTags=false
proxmox.collectIpv6=false
```

Limitations

- In a High-Availability deployment, the Standby server does not have complete Data Center information. The message "`Standby machine (partial data)`" appears in SmartView or when you run "`cpstat vsec`" from the CLI (**PMTR-8100**).
- Non-ASCII characters (non-English languages) in 'Data Center Server' properties (i.e., user, password and shared secret fields) are not supported. If an object name contains one of the above characters, enforcement will not work (**VSECC-1064**).
- If Data Center Object's name includes Non-ASCII characters (non-English languages), enforcement will work, but its name might not be displayed properly in Security Logs and Events (**VSECC-1064**).
- Policy Verification for overlapping, hiding, or contradicting rules that include Data Center Objects is not supported (**VSECC-1066**).
- If a Data Center Object name contains these characters in its name (**VSECC-1065**):
  - "`{`" - opening curly bracket
  - "`}`" - closing curly bracket
  - "`[`" - opening square bracket
  - "`]`" - closing square bracket
  - "<" - less than
  - ">" - greater than

    Then, the Data Center Object name will appear in SmartLog with double quotes "" without a content, instead of each of the above characters.

    For example: "`{Name1}`" will appear as "`Name1_`".
- Logs for rules with Subnets, AWS Security Groups, Microsoft Azure Network Security Groups or VMware NSX Security Groups will contain only the IP address and will not contain the instance name (**VSECC-1096**).
- Data Center Tags (**VSECC-1098**):
  - Tags keys and values longer than 100 characters will be truncated to the first 100 characters, and "..." will be padded to the end of the tag.
  - In Microsoft Azure, Tag keys are case-insensitive, whereas Tag values are case-sensitive. In CloudGuard Controller, both Tag key and Tag value will be treated as case sensitive. Meaning, the same key/value in different cases will be shown on 2 different lines in SmartConsole.

- The IP addresses of Data Center objects which were deleted from the Data Center while CloudGuard Controller was stopped are not removed from the Security Gateway when CloudGuard Controller starts and scans the Data Center again (**PMTR-84089**).
- VSNext is supported only when you use the IDA Identity Sharing mode (Remote PDP Gateway). This configuration supports VSNext out of the box and is the recommended architecture. In this configuration, the PDP Gateway can not be part of the VSNext (one of the VSs) (**PMTR-108505**).
- CloudGuard Controller is not supported with Maestro Dual-Site in VSLS mode.
- CloudGuard Controller does not support Identity Awareness Scaled Sharing for Policy Decision Point (PDP) Gateways in different Management Domains.
- CloudGuard Controller is not supported in a Multi-Version Cluster configuration.

Glossary

A

Anti-Bot
Software Blade on a Check Point Firewall that blocks botnet behavior and communication to Command and Control (C&C) centers. Acronyms: AB, ABOT.

Anti-Spam
Software Blade on a Check Point Firewall that provides comprehensive protection for email inspection. Synonym: Anti-Spam & Email Security. Acronyms: AS, ASPAM.

Anti-Virus
Software Blade on a Check Point Firewall that uses real-time virus signatures and anomaly-based protections from ThreatCloud to detect and block malware at the Check Point Firewall before users are affected. Acronym: AV.

Application Control
Software Blade on a Check Point Firewall that allows granular control over specific web-enabled applications by using deep packet inspection. Acronym: APPI.

ARM
Microsoft Azure Resource Manager. Technology to administer assets using Resource Group.

ASN
Autonomous System Number – Special number that used for the BGP

Audit Log
Log that contains administrator actions on a Management Server (login and logout, creation or modification of an object, installation of a policy, and so on).

Available Quota
The available license pool quota is the number of unallocated cores.

AWS
Amazon Web Services. Public cloud platform that offers global compute, storage, database, application and other cloud services.

AWS Region
In AWS, a geographic area to place resources. Each region has multiple, isolated locations known as Availability Zones.

AWS VPC
AWS Virtual Private Cloud. A private cloud that exists in the public cloud of Amazon. It is isolated from other Virtual Networks in the AWS cloud.

B

Bridge Mode
Check Point Firewall or Virtual System that works as a Layer 2 bridge device for easy deployment in an existing topology.

C

Central License
A Central License is a Cloud Firewall Gateway license. It is deployed and managed on the Security Management Server or Multi-Domain Security Management Server and distributed from a license pool to all Cloud Firewall Gateways connected to corresponding Management Servers.

Check Point Firewall
Dedicated Check Point server that runs Check Point software to inspect traffic and enforce Security Policies for connected network resources. Formerly: Security Gateway.

Cisco ACI
Cisco Application Centric Infrastructure. Comprehensive SDN architecture, policy-based automation solution for increased scalability through a distributed enforcement system with greater network visibility. Trademark of Cisco.

Cisco APIC
Cisco Application Policy Infrastructure Controller. Automation and management point for the Cisco ACI fabric. It centralizes access to fabric information, optimizes the application lifecycle for scale and performance, and supports flexible application provisioning across physical and virtual resources.

Cisco Contract
In Cisco ACI SDN, a policy between Endpoint Groups (EPGs), with one EPG providing and one EPG consuming, to virtualize a physical network cable connection.

Cisco ISE
Cisco [[[Undefined variable Vars_BladesFeatures.tp_cisco_ise_full]]]. Provides highly secure network access to users and devices to streamline security policy management and reduce operating costs. Trademark of Cisco.

CK
Certificate Keys (CKs) of Central Licenses in the License Pool.

Cloud Firewall Gateway
Check Point Virtual Security Gateway that protects dynamic virtual environments with policy enforcement. Cloud Firewall Gateway inspects traffic between Virtual Machines to enforce security, without changing the Virtual Network topology.

CloudGuard Controller
Provisions SDDC services as Virtual Data Centers that provide virtualized computer networking, storage, and security.

Cluster
Two or more Check Point Firewalls that work together in a redundant configuration - High Availability, or Load Sharing.

Cluster Member
Check Point Firewall that is part of a cluster.

Compliance
Software Blade on a Management Server to view and apply the Security Best Practices to the managed Check Point Firewalls. This Software Blade includes a library of Check Point-defined Security Best Practices to use as a baseline for good Check Point Firewall and Policy configuration.

Content Awareness
Software Blade on a Check Point Firewall that provides data visibility and enforcement. Acronym: CTNT.

Cores Quota
The Central License Cores Quota is the number of virtual cores the license covers. This number is specified when the license is purchased. The Central License can be used on multiple Security Gateways up to the cores quota. The number of cores in a Security Gateway determines how many cores that Security Gateway uses from the Central License cores quota.

CoreXL
Performance-enhancing technology for Check Point Firewalls on multi-core processing platforms. Multiple Check Point Firewall instances are running in parallel on multiple CPU cores.

CoreXL Firewall Instance
On a Check Point Firewall with CoreXL enabled, the Firewall kernel is copied multiple times. Each replicated copy, or firewall instance, runs on one processing CPU core. These firewall instances handle traffic at the same time, and each firewall instance is a complete and independent firewall inspection kernel. Synonym: CoreXL FW Instance.

CoreXL SND
Secure Network Distributor. Part of CoreXL that is responsible for: Processing incoming traffic from the network interfaces; Securely accelerating authorized packets (if SecureXL is enabled); Distributing non-accelerated packets between Firewall kernel instances (SND maintains global dispatching table, which maps connections that were assigned to CoreXL Firewall instances). Traffic distribution between CoreXL Firewall instances is statically based on Source IP addresses, Destination IP addresses, and the IP 'Protocol' type. The CoreXL SND does not really "touch" packets. The decision to stick to a particular FWK daemon is done at the first packet of connection on a very high level, before anything else. Depending on the SecureXL settings, and in most of the cases, the SecureXL can be offloading decryption calculations. However, in some other cases, such as with Route-Based VPN, it is done by FWK daemon.

CPUSE
Check Point Upgrade Service Engine for Gaia Operating System. With CPUSE, you can automatically update Check Point products for the Gaia OS, and the Gaia OS itself.

D

DAIP Firewall
Check Point Firewall with a Dynamically Assigned IP (DAIP) is a server, on which the IP address of the external interface is assigned dynamically (by a DHCP server, by an ISP).

Data Center
Virtual centralized repository, or a group of physical networked hosts, Virtual Machines, and datastores. They are collected in a group for secured remote storage, management, and distribution of data.

Data Loss Prevention
Software Blade on a Check Point Firewall that detects and prevents the unauthorized transmission of confidential information outside the organization. Acronym: DLP.

Data Type
Classification of data in a Check Point Security Policy for the Content Awareness Software Blade.

Default Pool
A pool created by the first Central License that is added with the Central License tool. The pool type is defined based on the blades package of the first added Central License. Cloud Firewall Gateways automatically receive licenses from that pool. When all licenses in the Default License Pool are removed, a random pool is set as a default. When there are multiple pools, the user can select the default license pool.

Distributed Deployment
Configuration in which the Check Point Firewall and the Security Management Server products are installed on different servers.

Dynamic Object
Special object type, whose IP address is not known in advance. The Check Point Firewall resolves the IP address of this object in real time.

E

Endpoint Policy Management
Software Blade on a Management Server to manage an on-premises Endpoint Security environment.

Expert Mode
The name of the elevated command line shell that gives full system root permissions in the Check Point Gaia operating system.

G

Gaia
Check Point security operating system that combines the strengths of both SecurePlatform and IPSO operating systems.

Gaia Clish
The name of the default command line shell in Check Point Gaia operating system. This is a restricted shell (role-based administration controls the number of commands available in the shell).

Gaia Portal
Web interface for the Check Point Gaia operating system.

GCP
See "Google Cloud Platform".

GCP Project
GCP Projects form the basis for creating, enabling, and using all Cloud Platform services. This includes managing APIs, enabling billing, adding and removing collaborators, and managing permissions for Cloud Platform resources.

GCP Regions and Zones
A region is a specific geographical location where you can run resources. Each region has one or more zones.

GCP VPC Network
A Virtual Private Cloud is a global private isolated Virtual Network partition that provides managed networking functionality for your GCP resources.

Generic Data Center
The Generic Data Center is an object that points to a JSON file on an external server that contains the IP addresses that you want to access. This way, when the Generic Data Center object is used in a policy, SmartConsole can retrieve the IP information from the JSON file as necessary.

Google Cloud Platform
A suite of products and services that includes hosting, cloud computing, database services and more. Acronym: GCP.

H

Hotfix
Software package installed on top of the current software version to fix a wrong or undesired behavior, and to add a new behavior.

HTTPS Inspection
Feature on a Check Point Firewall that inspects traffic encrypted by the Secure Sockets Layer (SSL) protocol for malware or suspicious patterns. Synonym: SSL Inspection. Acronyms: HTTPSI, HTTPSi.

I

ICA
Internal Certificate Authority. A component on Check Point Management Server that issues certificates for authentication.

Identity Awareness
Software Blade on a Check Point Firewall that enforces network access and audits data based on network location, the identity of the user, and the identity of the computer. Acronym: IDA.

Identity Logging
Software Blade on a Management Server to view Identity Logs from the managed Check Point Firewalls with enabled Identity Awareness Software Blade.

ILB
Internal Load Balancer, used to load balance traffic in a virtual network

Internal Network
Computers and resources protected by the Firewall and accessed by authenticated users.

IoT Cloud Adapter
IoT Cloud Adapters are connectors between IoT devices and cloud platforms. IoT adapters deliver data from the device to the cloud platform that stores it.

IPS
Software Blade on a Check Point Firewall that inspects and analyzes packets and data for numerous types of risks (Intrusion Prevention System).

IPsec VPN
Software Blade on a Check Point Firewall that provides a Site to Site VPN and Remote Access VPN access.

J

Jumbo Hotfix Accumulator
Collection of hotfixes combined into a single package. Acronyms: JHA, JHF, JHFA.

K

Kerberos
An authentication server for Microsoft Windows Active Directory Federation Services (ADFS).

Kubernetes
Kubernetes is a portable, extensible, open-source platform for managing containerized workloads and services that facilitates both declarative configuration and automation.

L

License Pool
A License Pool is a group of Cloud Firewall Central Licenses with the same blades and valid contracts. A Security Management Server or Multi-Domain Security Management Server can have multiple license pools. Each pool is defined by: Pool Type, Total Quota, Available Quota, Certificate Keys, Subscribed Security Gateways

Log Server
Dedicated Check Point server that runs Check Point software to store and process logs.

Logging & Status
Software Blade on a Management Server to view Security Logs from the managed Check Point Firewalls.

M

Management Interface
(1) Interface on a Gaia Check Point Firewall or Cluster Member, through which Management Server connects to the Check Point Firewall or Cluster Member. (2) Interface on Gaia computer, through which users connect to Gaia Portal or CLI.

Management Server
Check Point Single-Domain Security Management Server or a Multi-Domain Security Management Server.

Manual NAT Rules
Manual configuration of NAT rules by the administrator of the Check Point Management Server.

Microsoft Azure
Collection of integrated cloud services that developers and IT professionals use to build, deploy, and manage applications through a global network of data centers managed by Microsoft.

Mobile Access
Software Blade on a Check Point Firewall that provides a Remote Access VPN access for managed and unmanaged clients. Acronym: MAB.

Multi-Domain Log Server
Dedicated Check Point server that runs Check Point software to store and process logs in a Multi-Domain Security Management environment. The Multi-Domain Log Server consists of Domain Log Servers that store and process logs from [[[Undefined variable tp_cpfws]]] that are managed by the corresponding Domain Management Servers. Acronym: MDLS.

Multi-Domain Security Management Server
Dedicated Check Point server that runs Check Point software to host virtual Security Management Servers called Domain Management Servers. Synonym: Multi-Domain Security Management Server. Acronym: MDS.

N

Network Object
Logical object that represents different parts of corporate topology - computers, IP addresses, traffic protocols, and so on. Administrators use these objects in Security Policies.

Network Policy Management
Software Blade on a Management Server to manage an on-premises environment with an Access Control and Threat Prevention policies.

Nutanix
Nutanix is a private and hybrid cloud software provider that offers software for virtualization, Kubernetes, database-as-a-service, software-defined networking, security, as well as software-defined storage for file, object, and block storage.

NVA
Network Virtual Appliance - A resource deployed in Azure's Virtual Hub that includes Security Gateways and other networking infrastructure.

O

Open Server
Physical computer manufactured and distributed by a company, other than Check Point.

OpenStack
An open source cloud-computing infrastructure for service providers and enterprises. It includes modules for administration, storage, networking and Virtual Machine deployment and control.

Oracle Cloud
Oracle Cloud is a cloud computing service offered by Oracle Corporation. It provides servers, storage, networks, applications, and services through a global network of Oracle Corporation-managed data centers.

P

Private Network (L3)
A Layer 3 network that separates routing instances, and can be used as an administrator separation.

Provisioning
Software Blade on a Management Server that manages large-scale deployments of Check Point Firewalls using configuration profiles. Synonyms: SmartProvisioning, SmartLSM, Large-Scale Management, LSM.

Proxmox VE
Proxmox Virtual Environment - complete, open-source server management platform for enterprise virtualization.It integrates the KVM hypervisor and Linux Containers (LXC), software-defined storage and networking functionality, on a single platform.

Q

QoS
Software Blade on a Check Point Firewall that provides policy-based traffic bandwidth management to prioritize business-critical traffic and guarantee bandwidth and control latency.

R

Resource Group for Microsoft Azure
Object used in ARM to monitor, control access, provision and manage billing for collections of assets that are required to run an application, or used by a client or company department.

Rule
Set of traffic parameters and other conditions in a Rule Base (Security Policy) that cause specified actions to be taken for a communication session.

Rule Base
All rules configured in a given Security Policy. Synonym: Rulebase.

S

SD-WAN
Software Defined – Wide Area Network (WAN), more information on this solution: https://www.checkpoint.com/cyber-hub/network-security/what-is-sd-wan/

SDDC
Software-Defined Data Center. Data Center infrastructure components that can be provisioned, operated, and managed through an API for full automation.

SDN
Software-Defined Network. Virtualization of topology, traffic, and functionality.

SecureXL
Performance-enhancing technology on a Check Point Firewall that accelerates IPv4 and IPv6 traffic that passes through the Check Point Firewall.

Security Group for AWS
Acts as a virtual firewall that controls the traffic for one or more instances in AWS. Security Groups are associated with network interfaces.

Security Group for VMware NSX
A collection of virtual objects that defines the Distributed Firewall protection policy in VMware NSX.

Security Management Server
Dedicated Check Point server that runs Check Point software to manage the objects and policies in a Check Point environment within a single management Domain. Synonym: Single-Domain Security Management Server.

Security Policy
Collection of rules that control network traffic and enforce organization guidelines for data protection and access to resources with packet inspection.

Service Graph
Ordered set of function nodes between terminals, which identifies network service functions required by an application. Required for Cloud Firewall integration.

Service Manager
Component that manages the communication between Check Point products, CloudGuard Controller and the VMware NSX, through the VMware REST API.

SIC
Secure Internal Communication. The Check Point proprietary mechanism with which Check Point computers that run Check Point software authenticate each other over SSL, for secure communication. This authentication is based on the certificates issued by the ICA on a Check Point Management Server.

SLB
Software Load Balancer, used to distribute tenant and tenant customer network traffic to virtual network resources. SLB enables multiple servers to host the same workload, providing high availability and scalability

SmartConsole
Check Point GUI application used to manage a Check Point environment - configure Security Policies, configure devices, monitor products and events, install updates, and so on.

SmartDashboard
Legacy Check Point GUI client used to create and manage the security settings in versions R77.30 and lower. In versions R80.X and higher is still used to configure specific legacy settings.

SmartProvisioning
Software Blade on a Management Server (the actual name is "Provisioning") that manages large-scale deployments of Check Point Firewalls using configuration profiles. Synonyms: Large-Scale Management, SmartLSM, LSM.

SmartUpdate
Legacy Check Point GUI client used to manage licenses and contracts in a Check Point environment.

SNAT
Source Network Address Translation (Source NAT)

Software Blade
Specific security solution (module): (1) On a Check Point Firewall, each Software Blade inspects specific characteristics of the traffic (2) On a Management Server, each Software Blade enables different management capabilities.

Standalone
Configuration in which the Check Point Firewall and the Security Management Server products are installed and configured on the same server.

Subscribed Security Gateways
All Security Gateways on the Management Server are subscribed to the Default License Pool (unless configured differently) and get their licenses automatically. The user can exclude each Security Gateway from the automatic license distribution.

T

Tenant for ACI
Group of users, to isolate access to resources in Cisco ACI. Also known as "Project".

Threat Emulation
Software Blade on a Check Point Firewall that monitors the behavior of files in a sandbox to determine whether or not they are malicious. Acronym: TE.

Threat Extraction
Software Blade on a Check Point Firewall that removes malicious content from files. Acronym: TEX.

Total Quota
The total license pool quota is the sum of all Central Licenses' cores.

Traditional VSX Firewall
Physical server that hosts Traditional VSX virtual networks, including all Virtual Devices that provide the functionality of physical network devices. It holds at least one Virtual System, which is called VS0.

U

Updatable Object
Network object that represents an external service, such as Microsoft 365, AWS, Geo locations, and more.

URL Filtering
Software Blade on a Check Point Firewall that allows granular control over which web sites can be accessed by a given group of users, computers or networks. Acronym: URLF.

User Directory
Software Blade on a Management Server that integrates LDAP and other external user Management Servers with Check Point products and security solutions.

V

Virtual Network
Environment of logically connected Virtual Machines.

VMware ESXi
A VMware physical hypervisor server that hosts one or more Virtual Machines and other virtual objects. All references to ESX are also relevant for ESXi unless specifically noted otherwise.

VMware Global NSX-T
Refers to the capabilities of VMware NSX-T Federation, which uses a Global Manager to provide a centralized management plane for multiple, geographically dispersed VMware NSX-T deployments (Local Managers). This allows for consistent policy enforcement and simplified operations across multiple data centers or cloud regions.

VMware NSX
A network virtualization and security platform that enables the virtual cloud network, a software-defined approach to networking that extends across data centers, clouds, and application frameworks

VMware NSX-T
A network virtualization and security platform that operates within a single data center or cloud environment. It provides software-defined networking, security (like distributed firewall and micro-segmentation), and load balancing for virtualized workloads, containers, and bare-metal servers.

VMware NSX Manager
Basic network and security functionality for virtual computer environments. A VMware product family for SDN of Virtual Machines on the cloud (previously known as "vShield").

VMware vCenter
Centralized management tool for VMware vSphere. It manages many VMware ESX servers and Virtual Machines from different ESX servers, from one console application.

VMware vSphere
VMware cloud computing virtualization operating system. The VMware vSphere Client is the GUI to manage Virtual Machines and their objects.

vNIC
Virtual Network Interface Card. Software-based abstraction of a physical interface that supplies network connectivity for Virtual Machines.

vsec_lic_cli
The Central License Tool that runs on Management Servers and Multi-Domain Security Management Servers. It deploys and manages licenses for all subscribed Security Gateways. The tool can be used only in the Expert mode of the Management Server CLI.

vSwitch
A software abstraction of a physical Ethernet switch. It can connect to physical switches through physical network adapters to join virtual networks with physical networks. It can also be a Distributed Virtual Switch (dvSwitch), for definition and use on multiple ESXi hosts.

VSX
Virtual System Extension. Check Point virtual networking solution, hosted on a computer or cluster with virtual abstractions of Check Point Firewalls and other network devices. These Virtual Devices provide the same functionality as their physical counterparts.

Z

Zero Phishing
Software Blade on a Check Point Firewall (R81.20 and higher) that provides real-time phishing prevention based on URLs. Acronym: ZPH.