Multi-Domain Security Management

R80

Administration Guide
Important Information

Check Point R80
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Revision History

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<tbody>
<tr>
<td>30 March 2016</td>
<td>First release of this document</td>
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</tbody>
</table>
Terms

**Active Domain Server**
The only Domain Server in a High Availability deployment that can manage a specified Domain.

**Administrator**
A SmartConsole user with permissions to manage Check Point security products and the network environment.

**Best Practice**
A set of processes methods, systems, or techniques that consistently shows better results than those achieved in other ways.

**Domain**
A network or a collection of networks related to an entity, such as a company, business unit or geographical location.

**Domain Log Server**
A log server for a specified Domain.

**Domain Server**
A virtual Security Management Server that manages Security Gateways for one Domain as part of a Multi-Domain Management environment.

**Global Configuration**
All Policies defined in a global Domain that can be assigned to Domains, or to specified groups of Domains.

**Global Objects**
1. For Security Management Server, network and other objects used in global configuration rules.
2. For Multi-Domain Management, all network and objects defined in a global Domain.

**Management Server**
A Security Management Server or Multi-Domain Server that manages one or more Security Gateways and security policies.

**Multi Domain Log Server**
Physical server that contains the log database for all Domains.

**Multi-Domain Security Management**
A centralized management solution for large-scale, distributed environments with many different Domain networks.

**Multi-Domain Server**
A physical server that contains system information and Policy databases for all Domains in an enterprise environment.

**Network Objects**
Logical representations of every part of corporate topology (physical machines, software components, IP Address ranges, services, and so on).

**Permission Profile**
A predefined group of SmartConsole access permissions assigned to Domains and administrators. This feature lets you configure complex permissions for many administrators with one definition.

**Policy Package**
A collection of different types of Security Policies, such as Access Control, Threat Prevention, QoS, and Desktop Security. After installation, Security Gateways enforce all Policies in the Policy Package.

**Primary Multi-Domain Server**
The first Multi-Domain Server that you define and log into in a High Availability deployment.

**Rule**
A set of traffic parameters and other conditions that cause specified actions to be taken for a communication session.
**Rule Base**
The database that contains the rules in a security policy and defines the sequence in which they are enforced.

**Secondary Multi-Domain Server**
All Multi-Domain Servers in a High Availability deployment created after the Primary Multi-Domain Server.

**Security Gateway**
A computer or appliance that inspects traffic and enforces Security Policies for connected network resources.

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

**SmartConsole**
A Check Point GUI application used to manage security policies, monitor products and events, install updates, provision new devices and appliances, and manage a multi-domain environment.

**Standby Domain Server**
All Domain Servers for a Domain that are not designated as the Active Domain Server.

**VPN Community**
A named collection of VPN domains, each protected by a VPN gateway.
Getting Started

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Welcome

Check Point Multi-Domain Security Management is a centralized management solution for large-scale, distributed environments with many discrete network segments, each with different security requirements. This solution lets administrators create Domains based on geography, business units or security functions to strengthen security and simplify management.

Each Domain has its own Security Policies, network objects and other configuration settings. You use the Global Domain for common security Policies that apply to all or to specified Domains. The Global Domain also includes network objects and other configuration settings that are common to all or to specified Domains.

About this Guide

This Administration Guide includes conceptual information and procedures for working with Check Point Multi-Domain Management features only.

- To learn how to use SmartConsole to work with Security Policies, the Rule Base, network objects, and security configuration, see the Security Management Administration Guide http://supportcontent.checkpoint.com/documentation_download?ID=46534.

- To learn how to work with logs, monitoring, and reports, see the Logging and Monitoring Administration Guide http://supportcontent.checkpoint.com/documentation_download?ID=46535.

- To learn how to work with Software Blades and their features, see the applicable Administration Guide[s].
Basic Multi-Domain Management Components

This section is a brief introduction to the main components of the Multi-Domain Management environment.

The Multi-Domain Server

A Multi-Domain Server is a physical server that contains the Domain Servers, Security Policies, system data, and Multi-Domain Management system software. You connect to a Multi-Domain Server to work with Multi-Domain Management features, objects, and configuration settings. This includes:

- Domain Servers and their configuration settings
- Global Policies and objects
- Administrators and permission profiles
- Logs and monitoring features
- System configuration settings

You can create a High Availability and/or Load Sharing deployment with two or more, synchronized Multi-Domain Servers.

Domain Servers

A Domain is a virtual object that defines a network or a collection of networks related to an entity. You can define a Domain for a company, business unit, department, branch or geographical location. For example, a cloud service provider typically has one Domain for each customer. A bank can have one Domain for each geographical region, state, or country.

A Domain Server is the functional equivalent of a Security Management Server in a single-domain environment. You connect directly to a Domain Server with SmartConsole to manage a Domain and its components:

- Domain Security Gateways
- Domain Security Policies, rules, and other Domain level security settings
- Domain system objects, such as services, users, and VPN Communities.
- Domain Software Blades and their related configuration settings

To learn more about working with SmartConsole to manage Domains, see the Security Management Administration Guide http://supportcontent.checkpoint.com/documentation_download?ID=46534.

There can be more than one Domain Server for a Domain in a High Availability deployment, each on a different Multi-Domain Server. One Domain Server is Active, and the other, fully synchronized Domain Servers are Standby.

Domain Log Servers

A typical Multi-Domain Management deployment includes at least one Multi-Domain Log Server to hold log files generated by Domain Security Gateways. Each Domain can have its own Domain Log Server on the Multi-Domain Log Server. This deployment strategy keeps log traffic isolated from other network traffic for better throughput.
This illustration shows a sample deployment with two Multi-Domain Servers and two Domains. The Multi-Domain Log Server contains two Domain Log Servers, one for each Domain.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>London Multi-Domain Server with an Active Domain Server for London and a Standby Domain Server for Tokyo</td>
</tr>
<tr>
<td><strong>AA</strong></td>
<td>London network</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Tokyo Multi-Domain Server with an Active Domain Server for Tokyo and a Standby Domain Server for London</td>
</tr>
<tr>
<td><strong>BB</strong></td>
<td>Tokyo network</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Multi-Domain Log Server with Domain Log Servers for London and Tokyo</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Active Domain Server</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Standby Domain Server</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Domain Log Server</td>
</tr>
</tbody>
</table>

**SmartConsole**

SmartConsole makes it easy to manage your Multi-Domain Management environment. Before you start to configure your network security environment and Policies, we recommend that you become familiar with the SmartConsole application.

**Multi-Domain View**

Use the *Multi-Domain view* to manage Multi-Domain Servers, Domains, system objects, configuration settings and other features. You must log into a Multi-Domain Server to see the Multi-Domain view.
For a guided tour of Multi-Domain view, click the What’s New button at the bottom left of the window. Click the < and > icons to scroll between the different What’s New screens.

**Multi-Domain view elements**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>View, as selected from the Navigation Toolbar and View tree. (This example shows the Multi-Domain &gt; Domains view)</td>
</tr>
<tr>
<td>2</td>
<td>Navigation toolbar</td>
</tr>
<tr>
<td>3</td>
<td>Menu</td>
</tr>
<tr>
<td>4</td>
<td>View tree</td>
</tr>
<tr>
<td>5</td>
<td>Actions toolbar</td>
</tr>
<tr>
<td>6</td>
<td>Session Management toolbar</td>
</tr>
<tr>
<td>7</td>
<td>Validation tab</td>
</tr>
<tr>
<td>8</td>
<td>Logged in administrator</td>
</tr>
<tr>
<td>9</td>
<td>Server details area</td>
</tr>
<tr>
<td>10</td>
<td>Task information area</td>
</tr>
<tr>
<td>11</td>
<td>Management script commands and API</td>
</tr>
</tbody>
</table>
Connecting to SmartConsole

Use SmartConsole to connect to a Multi-Domain Server when you work with Multi-Domain Management objects and settings. Use SmartConsole to connect to a Domain Server when you work with Domain Security Policies, rules, objects and configuration settings. You can also connect to Domains or specified Domain Servers from within the Multi-Domain view.

To connect to a Multi-Domain Server:
1. Run SmartConsole.
2. Enter your user name and password.
3. Enter the Multi-Domain Server IP address, and then click Login.
4. In the Welcome screen, select MDS from the list, and then click Proceed.
   SmartConsole opens in the Domains view.

To connect directly to a Domain:
1. Run SmartConsole.
2. Enter your user name and password.
3. Enter the Multi-Domain Server IP address, and then click Login.
4. In the Welcome screen, select a Domain from the list, and then click Proceed.
   SmartConsole opens with the active Domain Server in the Gateways & Servers view.

To connect to a Domain Server from the SmartConsole Multi-Domain view:
1. Connect to a Multi-Domain Server with SmartConsole.
2. In the Multi-Domain > Domains view, right-click the active Domain Server in the grid.
3. Select Connect to Domain Server.

Note: In a High Availability deployment (see “Working with High Availability” on page 54), you can only make changes to a Domain from the active Domain Server. The active Domain Server shows with a black icon. If you connect to a standby Domain Server (white icon), SmartConsole opens in the Read Only mode.

To work with Security Gateways, Domain Servers or Domain Log Servers in different Domains:
1. Connect to a Multi-Domain Server with SmartConsole.
2. In the Gateways & Servers view, double-click an object.
   The configuration window opens in SmartConsole for the applicable Domain.
3. Change the configurations.
Gateways & Servers View

The Gateways & Servers view shows all Security Gateway, Domain Server, and Domain Log Server objects in the Multi-Domain Management environment. This feature lets administrators, with applicable permissions, see and work with them in one convenient location.

You can double-click an object in this view to open its configuration window in SmartConsole. For example, if you double-click, GW105 on the example below, the London_Server Domain Server opens in SmartConsole and shows the GW105 configuration window.

The Gateways & Servers view

<table>
<thead>
<tr>
<th>Status</th>
<th>Name</th>
<th>Domain</th>
<th>IP</th>
<th>Version</th>
<th>Active Blades</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GW105</td>
<td>London</td>
<td>192.168.3.105</td>
<td>R77.20</td>
<td></td>
<td>4000 Appliances</td>
</tr>
<tr>
<td></td>
<td>GW105</td>
<td>NewYork</td>
<td>192.168.3.106</td>
<td>R77.20</td>
<td></td>
<td>12000 Appliances</td>
</tr>
<tr>
<td></td>
<td>GW107</td>
<td>Tokyo</td>
<td>192.168.3.107</td>
<td>R77.20</td>
<td></td>
<td>13000 Appliances</td>
</tr>
<tr>
<td></td>
<td>GW115</td>
<td>London</td>
<td>192.168.3.115</td>
<td>R77.30</td>
<td></td>
<td>21000 Appliances</td>
</tr>
<tr>
<td></td>
<td>GW117</td>
<td>NewYork</td>
<td>192.168.3.116</td>
<td>R77.30</td>
<td></td>
<td>13000 Appliances</td>
</tr>
<tr>
<td></td>
<td>GW117</td>
<td>Tokyo</td>
<td>192.168.3.117</td>
<td>R77.30</td>
<td></td>
<td>61000 Appliances</td>
</tr>
<tr>
<td></td>
<td>London_Server</td>
<td>London</td>
<td>192.168.3.150</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>London_Server_2</td>
<td>NewYork</td>
<td>192.168.3.161</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>London_Server_3</td>
<td>London</td>
<td>192.168.3.170</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>London_Server_4</td>
<td>London</td>
<td>192.168.3.180</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>New_York_Server</td>
<td>NewYork</td>
<td>192.168.3.160</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>New_York_Server</td>
<td>NewYork</td>
<td>192.168.3.151</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>New_York_Server</td>
<td>NewYork</td>
<td>192.168.3.171</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>New_York_Server</td>
<td>NewYork</td>
<td>192.168.3.181</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>Tokyo_Server</td>
<td>Tokyo</td>
<td>192.168.3.152</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>Tokyo_Server_2</td>
<td>Tokyo</td>
<td>192.168.3.162</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>Tokyo_Server_3</td>
<td>Tokyo</td>
<td>192.168.3.172</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
<tr>
<td></td>
<td>Tokyo_Server_4</td>
<td>Tokyo</td>
<td>192.168.3.182</td>
<td>R80</td>
<td></td>
<td>Open server</td>
</tr>
</tbody>
</table>
Architecture and Processes

Server Architecture

This section is an overview of the new management architecture introduced in R80, as shown in this diagram:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R80 SmartConsole application</td>
</tr>
<tr>
<td>2</td>
<td>CPMI - Legacy Check Point Policy installation protocol</td>
</tr>
<tr>
<td>3</td>
<td>Web Services - Handles communication with the new CPM process</td>
</tr>
<tr>
<td>4</td>
<td>FWM - Legacy management server process</td>
</tr>
<tr>
<td>5</td>
<td>CPM - R80 main management server process</td>
</tr>
<tr>
<td>6</td>
<td>PostgreSQL - Relational database system that contains the Rule Base, management objects and configuration settings</td>
</tr>
<tr>
<td>7</td>
<td>Solr - Query and search platform</td>
</tr>
</tbody>
</table>
Communication between the SmartConsole application (1) and the CPM (5) process uses Web Services (3). CPM communicates directly with the PostgreSQL (7) database to update tables or records. CPM can also use a use Solr (6) to run a query to get information or locate records in the PostgreSQL database.

SmartConsole uses the CPMI (2) protocol to communicate with the legacy FWM (4) process. This is necessary for backward compatibility with pre-R80 Security Gateways. In this case, CPM and FWM communicate directly with each other.

In a Multi-Domain Management environment, only one CPM, PostgreSQL, and Solr instance is necessary to handle transactions with all Domain Servers. In the backward compatibility mode, there is one FWM instance for each Domain Server.

**CPM**

CPM is the Check Point main management server process for this release. It is a multi-threaded, Java process that uses Web services to expose its functionality and to efficiently handle many, concurrent requests.

- CPM uses port 19009 for remote communication and port 9009 for local SIC traffic
- Log files are located in In $MDS_TEMPLATE/log/\{file_name\}.elg
- Jar files are located in In $MDS_TEMPLATE/cpm-server

**PostgreSQL**

PostgreSQL is the relational database manager that handles all Multi-Domain Management data, and configuration parameters. It also manages a connection pool to support concurrent connections, where each connection is a different process. The pool size is between 10 to 50 concurrent connections.

- PostgreSQL uses port 5432
- The PostgreSQL database is located at $CPDIR/database/postgresql (Also known as $PGDIR)
- PostgreSQL logs are in $MDS_TEMPLATE/log/postgres.elg

**Solr**

Solr is the enterprise search platform that handles the state-of-the-art search capabilities in SmartConsole. When a user searches for data in SmartConsole, Solr handles the request and gets the data from the PostgreSQL tables. Solr stores some partial data in a cache for better search performance.

- Solr uses port 8983
- Solr is deployed at $FWDIR/solr
Multi-Domain Server Processes

Each Multi-Domain Server process has one instance on every Multi-Domain Server/Multi-Domain Log Server machine, when it is running. These processes run on the Multi-Domain Server.

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpd</td>
<td>SVN Foundation infrastructure process</td>
</tr>
<tr>
<td>c pca</td>
<td>The Certificate Authority management process</td>
</tr>
<tr>
<td>fwd</td>
<td>Audit Log server process</td>
</tr>
<tr>
<td>fwm</td>
<td>Legacy Check Point management server main process (R77.x and earlier)</td>
</tr>
</tbody>
</table>

For proper operation of the Multi-Domain Server, these processes must run together with CPM, postres, and solr. An exception to this rule is instances where c pca must not run, such as for Domain Log Servers. c pca must always run for Domain Servers.

Domain Server Processes

Each one of these processes runs a different instance for each Domain Server:

<table>
<thead>
<tr>
<th>Process</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cpd</td>
<td>SVN Foundation infrastructure process</td>
</tr>
<tr>
<td>c pca</td>
<td>The Certificate Authority manager process (Domain Servers only)</td>
</tr>
<tr>
<td>fwd</td>
<td>Log server process</td>
</tr>
<tr>
<td>fwm</td>
<td>Legacy Check Point management server main process (R77.x and earlier)</td>
</tr>
<tr>
<td>status_proxy</td>
<td>Status collection of SmartLSM Security Gateways</td>
</tr>
<tr>
<td>sms</td>
<td>Manages communication with UTM-1 Edge Security Gateways</td>
</tr>
</tbody>
</table>

For proper operation of the Domain Server, cpd, c pca, fwd and fwm must run, except for specified configurations where c pca cannot run. Other processes are required only as necessary for applicable functionality.
Multi-Domain Server File System

Multi-Domain Server Directories on /opt and /var File Systems

Subdirectories created under /opt:

<table>
<thead>
<tr>
<th>Subdirectory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPsuite-R80</td>
<td>Contains configuration, state and log files for Check Point Security Gateway management</td>
</tr>
<tr>
<td>CPshrd-R80</td>
<td>Contains the configuration of Check Point SVN Foundation, as well as the registry files</td>
</tr>
<tr>
<td>CPEdgecmp-R80</td>
<td>Contains configuration files for the CPEdgecmp package</td>
</tr>
<tr>
<td>CPngcmp-R80x</td>
<td>Contains configuration files for the CPngcmp-R80 package</td>
</tr>
<tr>
<td>CPmds-R80</td>
<td>Contains configuration of the Multi-Domain Server, Multi-Domain Server-level logs and configuration/state/log files of Domain databases</td>
</tr>
</tbody>
</table>

Structure of Domain Server Directory Trees

On Multi-Domain Servers, the Domain Server directories are at /var/opt/CPmds-R80/customers

There is a different directory under this path for each Domain Server, which contains these subdirectories:

<table>
<thead>
<tr>
<th>Subdirectory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPsuite-R80</td>
<td>Contains the configuration, state and log files of this Domain, as well as links to the shared binaries and library files</td>
</tr>
<tr>
<td>CPshrd-R80</td>
<td>Contains the configuration for the SVN Foundation for the Domain owning this Domain Server, as well as links to shared binaries and library files</td>
</tr>
<tr>
<td>CPEdgecmp</td>
<td>Contains configuration files of the CPEdgecmp package for the Domain owning this Domain Server, as well as links to shared binaries and library files</td>
</tr>
<tr>
<td>CPngcmp-R80</td>
<td>Contains configuration files of the CPngcmp-R80 package for the Domain owning this Domain Server, as well as links to shared binaries and library files</td>
</tr>
</tbody>
</table>
Check Point Registry

The Check Point registry, at $CPDIR/registry/HKLM_registry.data, contains installation and version information for the different components of Check Point products. Each Multi-Domain Server, Multi-Domain Log Server, Domain Server, and Log Server has its own registry. The $CPDIR environment variable points to the registry location on each platform or context.

Automatic Start of Multi-Domain Server Processes

The script for the automatic start of Multi-Domain Server processes upon boot is at /etc/init.d. The name of the file is firewall1. A link to this file appears in /etc/rc3.d directory under the name S95firewall1.

Environment Variables

Different Multi-Domain Server processes require standard environment variables that:

- Point to the installation directories of different components
- Contain management IP addresses
- Hold data important for correct initialization and operation of the processes

Additionally, specific environment variables control certain parameters of different functions of Multi-Domain Server.

Multi-Domain Server installation contains shell scripts for C-Shell and for Bourne Shell, which define the necessary environment variables:

- The C-Shell version is /opt/CPshrd-R80/tmp/.CPprofile.csh
- The Bourne Shell version is /opt/CPshrd-R80/tmp/.CPprofile.sh

Sourcing these files (or in other words, using "source" command in C-Shell or "." command in Bourne Shell) will define the environment necessary for the Multi-Domain Server processes to run.
### Standard Check Point Environment Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FWDIR</td>
<td>Location of Check Point Security Gateway binary/configuration/library files</td>
</tr>
<tr>
<td>MSDIR</td>
<td>• In the Multi-Domain Server environment, this environment variable is equal to <code>MDSDIR</code></td>
</tr>
<tr>
<td></td>
<td>• In Domain Server environment, it contains <code>/opt/CPmds-R80/customers/&lt;Domain Server Name&gt;/CPsuite-R80/fw1</code></td>
</tr>
<tr>
<td>PGDIR</td>
<td>Location of the PostgreSQL database - <code>$CPDIR/database/postgresql</code></td>
</tr>
<tr>
<td>MDS_TEMPLATE</td>
<td>Location of log files and JARs</td>
</tr>
<tr>
<td>CPDIR</td>
<td>Location of Check Point SVN Foundation binary/configuration/library files that point to different directories in Multi-Domain Server and Domain Server environments</td>
</tr>
<tr>
<td>MDSDIR</td>
<td>Location of the Multi-Domain Server installation (<code>/opt/CPmds-R80</code>)</td>
</tr>
<tr>
<td>SUROOT</td>
<td>Points to the location of SmartUpdate packages</td>
</tr>
</tbody>
</table>
Deploying Multi-Domain Management

In This Section:

- Planning your Deployment ................................................................. 21
- Protecting the Multi-Domain Management Deployment .................... 24
- Multi-Domain Management Configuration Workflow ......................... 26

This chapter includes information to help you plan your deployment and gives a general overview of the deployment process.

Planning your Deployment

This section includes best practices and other suggestions to help make your Multi-Domain Management deployment work efficiently.

Multi-Site High Availability Deployment

Large enterprises use Multi-Domain Management in a multi-site, High Availability deployment, with many Multi-Domain Servers located at remote sites, often in different countries. Each Multi-Domain Server and Multi-Domain Log Server continuously synchronizes with its remote peers.

The advantages of this type of deployment are:

- Full Multi-Domain Server, Multi-Domain Log Server, and Domain Server redundancy
- Domain Server load sharing that can balance traffic based on geographic location
- Many administrators can connect to different Multi-Domain Servers to manage Security Policies and system configuration from different locations

Single Site Deployments

Small organizations, with moderate traffic volumes can use a single-site deployment, with one Multi-Domain Server that manages a set of Domains. For this type of deployment, we recommend that you use a backup solution that periodically saves the system databases and settings to another device.
This example shows a single-site Multi-Domain Server deployment with three Domains at remote locations. Each Domain has many gateways to protect the internal networks and resources. This example has only one Multi-Domain Server and does not use High Availability.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Multi-Domain Server</td>
</tr>
<tr>
<td>2</td>
<td>SmartConsole clients, typically at a network control center.</td>
</tr>
<tr>
<td>A</td>
<td>London Domain and networks</td>
</tr>
<tr>
<td>AA</td>
<td>London Domain Server</td>
</tr>
<tr>
<td>B</td>
<td>New York (Headquarters) Domain and networks</td>
</tr>
<tr>
<td>BB</td>
<td>New York Domain Server</td>
</tr>
<tr>
<td>C</td>
<td>Tokyo Domain and networks</td>
</tr>
<tr>
<td>CC</td>
<td>Tokyo Domain Server</td>
</tr>
</tbody>
</table>
This illustration shows the configuration grid in the SmartConsole Multi Domain view for the example deployment:

![Multi-Domain Management Configuration Grid](image)

**Note** - The system automatically creates the Global Domain when you install Multi-Domain Management.

### Platform & Performance Issues

Make sure that your Multi-Domain Management system hardware is compliant with the system requirements for this release. If your Multi-Domain Server has more than one interface, make sure that the total traffic load complies with the performance load recommendations for that Multi-Domain Server.

### Topology, IP Addresses and Routing

All Multi-Domain Servers must have at least one interface with a routable IP address. You must configure these Multi-Domain Servers to run DNS server queries and to resolve the IP addresses and host names.

Configure your network routing for IP communication between:
- All Multi-Domain Servers, Domain Servers and Multi-Domain Log Servers
- Different Domains, if necessary
- Domain Servers, Domain Log Servers and Security Gateways in a Domain
- A Domain Server and its Domain High Availability peers
- SmartConsole and Multi-Domain Servers, Domain Servers and Domain Log Servers

Make sure that IP addresses and routing configuration can handle special issues, such as Multi-Domain Servers in different physical locations.

### Using More than one Interface on a Multi-Domain Server

If there is more than one interface on a Multi-Domain Server, you must configure at least one interface to be the leading interface. Multi-Domain Servers (Primary and Secondary) and Multi-Domain Log Servers use the leading interface to communicate with each other for database synchronization.

Make sure that all Multi-Domain Server interfaces are routable. Domain Servers must be able to communicate with their Domain Security Gateways. Domain Log Servers must be able to communicate with their Domain Security Gateways.
Changing the Leading Interface

You define the leading interface during the installation procedure, but you can change it later. If you add a new interface to a Multi-Domain Server after installation, define the Leading Interface manually.

To add a New Leading Interface:
1. From the Multi-Domain Server command line, run: mdsconfig
2. Select Leading VIP Interfaces, and then select Add external IPv4 interface.
3. Enter the interface name and press Enter.

Changing the Leading Interface:
1. From the Multi-Domain Server command line, run: mdsconfig
2. Do steps 2-3, in the above procedure, to add new interface.
3. Select Leading VIP Interfaces.
4. Select Remove External IPv4 interface.
5. Enter the interface name to remove and press Enter.

Synchronizing Clocks

All Multi-Domain Server system clocks must synchronize to approximately one second. Before you create a new Multi-Domain Server or Multi-Domain Log Server, you must synchronize its clock with other system components.

Clock synchronization is important for these reasons:

- SIC trust can fail if devices are not synchronized correctly
- SmartEvent correlation uses time stamps, which must be accurate
- Make sure that cron jobs run at the correct time
- Certificate validation is based on the correct time

Use these resources to synchronize component system clocks:

- Network Time Protocol (NTP)
- Manually, using the WebUI or the operating system CLI
- A third-party synchronization utility

Protecting the Multi-Domain Management Deployment

It is a security best practice to deploy a Check Point Security Gateway that protects the Multi-Domain Servers, Multi-Domain Log Server and other components. You can manage this Security Gateway with a Domain Server or a Security Management Server that is not part of a Multi-Domain Management environment.
This simple use case shows a small High Availability deployment with a Security Gateway protecting each Multi-Domain Server. One of the Domain Servers manages these Security Gateways.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Primary Multi-Domain Server with Active and Standby Domain Servers</td>
</tr>
<tr>
<td>2</td>
<td>Secondary Multi-Domain Server with Active and Standby Domain Servers</td>
</tr>
<tr>
<td>3</td>
<td>Active Domain Servers</td>
</tr>
<tr>
<td>4</td>
<td>Standby Domain Servers</td>
</tr>
<tr>
<td>5</td>
<td>Security Gateways</td>
</tr>
</tbody>
</table>

**Security Gateway Managed by a Domain Server**

You can create a Domain and Domain Server to manage the Policies for Security Gateways that protect Multi-Domain Servers in your environment.

**Workflow for this scenario:**

1. Run SmartConsole and log into the Multi-Domain Server.
2. Create a new Domain and Domain Server.
3. Connect to the new Domain SmartConsole and create a Security Gateway object.
4. Enable the **Firewall** and other Software Blades on this gateway.
Defining an Access Control Policy for Multi-Domain Server Components

You must create rules in your Security Policies to allow communication between the different Multi-Domain Management components. You can define these rules in Global Configurations or in local Domain Policies.

Use this table as a guideline to allow connections between specified components:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Source</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow connections between SmartConsole and the Multi-Domain Server</td>
<td>SmartConsole</td>
<td>Multi-Domain Server</td>
</tr>
<tr>
<td></td>
<td>Multi-Domain Server</td>
<td>SmartConsole</td>
</tr>
<tr>
<td>Allow connections between Multi-Domain Servers</td>
<td>Multi-Domain Servers</td>
<td>Multi-Domain Servers</td>
</tr>
<tr>
<td>Allow connections between Domain Servers and Security Gateways</td>
<td>Domain Server</td>
<td>Security Gateway</td>
</tr>
<tr>
<td></td>
<td>Security Gateway</td>
<td>Domain Server</td>
</tr>
<tr>
<td>Allow Domain Server status data and certificate exchange between Domain Server High Availability peers</td>
<td>Domain Server peer</td>
<td>Domain Server peer</td>
</tr>
<tr>
<td>Allow Domain Server synchronization between peers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See the [R80 Security Management Administration Guide](http://supportcontent.checkpoint.com/documentation_download?ID=46534) to learn how to create a Security Policy.

Multi-Domain Management Configuration Workflow

This section shows the general workflow for installing and configuring Multi-Domain Management.

2. Download and install R80 SmartConsole.
3. Define administrators ("Configuring Administrators" on page 48) and Permission Profiles ("Working with Permission Profiles" on page 49).
5. Define Domains and Domain Servers.
6. Define High Availability environment (see "Working with High Availability" on page 54).
7. Define Global Policies and objects in the Global Domain (see "Global Management" on page 37).
Managing Domains

In This Section:

Creating a New Domain ........................................................... 27
Changing an Existing Domain Configuration .......................... 29
Connecting to a Domain Server ............................................ 29
Working with Policy Layers .................................................. 30
Working with Cross-Domain Management ............................ 33
Creating a Secondary Multi-Domain Server ......................... 34
Changing an Existing Multi-Domain Server ......................... 35
Deleting a Secondary Multi-Domain Server or Multi-Domain Log Server .......... 36
Setting the Domain Server Display Format ......................... 36

A Domain Server is the functional equivalent of a Security Management Server in a single-domain environment. You connect directly to a Domain Server with SmartConsole to manage a Domain and its components:

- Domain Security Gateways
- Domain Security Policies, rules, and other Domain level security settings
- Domain system objects, such as services, users, and VPN Communities.
- Domain Software Blades and their related configuration settings

This chapter shows how to create and manage Domains and Domain Servers. Also included in this chapter are procedures for creating and configuring a Secondary Multi-Domain Server.

Creating a New Domain

Use this procedure to create a new Domain together with the first Domain Server for this Domain.

To create a new Domain:

1. Connect to the Multi-Domain Server with SmartConsole.
2. In the Multi-Domain > Domains view, click New.
3. In the Domain window, enter a unique Domain name.
4. Click the + icon in the General > Domain Servers section.
   In a High Availability deployment, you must select a Multi-Domain Server from the list.
   a) Enter a unique Domain Server name or accept the default name.
   b) Enter the Domain Server IP address, or click Resolve IP to get the IP Address from the Multi-Domain Server address pool.
   c) Accept the default Domain Server type and click OK.
   d) Click Trusted Clients and select one or more trusted clients from the list that can connect to this Domain Server.
   e) Optional: Click Additional Information and enter contact information for the person responsible for this Domain Server.
5. Click OK to save the new Domain and Domain Server.
Notes:

- When you create a new Domain, you must always create one new Domain Server with it.
- You can also use this procedure to create Standby Domains and Domain Servers for Domain Server for redundancy and Load Sharing. To do this, there must be at least one Secondary Multi-Domain Server in the deployment.
- To create a Log Server, you must have a Multi-Domain Log Server or a Secondary Multi-Domain Server in your environment.

Assigning Trusted Clients to Domains

You must assign all Domains to one or more trusted SmartConsole clients before you can connect to them. If you do not do this, an error message will show when you try to connect.

Each Domain assignment identifies trusted SmartConsole clients based on one of these criteria:

- An IP address
- A host name
- A range of IP addresses
- Net mask
- IP addresses with wildcard characters
- Any - All SmartConsole clients can connect

To assign a trusted client to a Domain:

1. Connect to the Multi-Domain Server with SmartConsole
2. Select Multi-Domain > Permissions & Administrators > Trusted Clients.
3. Click New.
4. In the New Trusted Client window, enter a unique name for this Domain assignment.
5. Select an identification criterion from the Type list and enter the applicable information.
6. Add one or more Domains to the Domain Assignment list.
7. Optional: Select Multi-Domain Server Trusted Client to apply this assignment to Multi-Domain Servers in addition to the specified Domains.

To add another Domain to an existing trusted client:

1. Select Multi-Domain > Permissions & Administrators > Trusted Clients.
2. Double-click the trusted client name.
3. In the Trusted Client window, add one or more Domains to the Domains Assignment list.

To change a Domain assignment:

1. Select Multi-Domain > Permissions & Administrators > Trusted Clients.
2. Double-click an existing trusted client name.
3. Select an identification criterion from the Type list and enter or change the applicable information.
4. Add or delete one or more Domains in the Domain Assignment list.
5. Optional: Select Multi-Domain Server Trusted Client to apply this assignment to Multi-Domain Servers in addition to the specified Domains.
Changing an Existing Domain Configuration

To change an existing Domain configuration:
1. Connect to the Multi-Domain Server with SmartConsole.
2. In the Multi-Domain > Domains view, double-click the applicable Domain.
3. In the Domain window, select the Domain Server and click the pencil icon (edit).
   Note - In a High Availability deployment, you can only make changes to a Domain from the active Domain Server. The active Domain Server shows with a black icon. If you connect to a standby Domain Server (white icon), SmartConsole opens in the Read Only mode.
   You cannot change the Domain name. If you try to do this, an error message shows.
4. Add, delete or change the other Domain definitions as necessary.

Creating a New Domain Server for an Existing Domain

You can add another Domain Server to an existing Domain on a different Multi-Domain Server. Typically, this is a standby Domain Server in a High Availability environment. A Domain can have only one Domain Server on each Multi-Domain Server.

To create a new Domain Server for an existing Domain, follow the procedure in Adding a Secondary Domain Server (on page 58), which is in the Working with High Availability chapter.

Deleting a Domain Server

To Delete a Domain Server:
1. Connect to the Multi-Domain Server with SmartConsole and go to the Domains view.
2. Right click a Domain Server in the grid, and then select Delete.

Deleting a Domain

To delete a Domain:
1. In the Domains section, right-click a Domain.
2. Select Delete from the context menu.

This action automatically deletes the active and secondary Domain Servers, Domain Log Servers, and the Domain object.

Connecting to a Domain Server

To connect directly to a Domain:
1. Run SmartConsole.
2. Enter your user name and password.
3. Enter the Multi-Domain Server IP address, and then click Login.
4. In the **Welcome** screen, select a Domain from the list, and then click **Proceed**.

SmartConsole opens with the active Domain Server in the **Gateways & Servers** view.

**To connect to a Domain Server from the SmartConsole Multi-Domain view:**

1. Connect to a Multi-Domain Server with SmartConsole.
2. In the **Multi-Domain > Domains** view, right-click the active Domain Server in the grid.
3. Select **Connect to Domain Server**.

**Note** - In a High Availability deployment, you can only make changes to a Domain from the active Domain Server. The active Domain Server shows with a black icon. If you connect to a standby Domain Server (white icon), SmartConsole opens in the Read Only mode.

---

**Working with Policy Layers**

Each Domain has one or more local, Policy packages that enforce security for its Security Gateways. Typically, there is also a **global configuration** (see "Global Management" on page 37), which includes Security Policies and object definitions that apply to all or to selected Domains.

A Policy package is a collection of different types of Policies. After installation, the Security Gateway enforces all the Policies in the installed package. A Policy package can have one or more of these Security Policy types:

- **Access Control** - includes these rule types:
  - Firewall
  - Application Control and URL Filtering

- **Threat Prevention** - includes:
  - Anti-Bot - Detects bot-infected machines, prevents bot damage by blocking bot commands
  - Anti-Virus - Heuristic malware analysis for protection against viruses, worms, and other malware at the gateway
  - Threat Emulation - detects zero-day and advanced polymorphic attacks by opening suspicious files in a sandbox
  - IPS protections and Rule Base

- **QoS** - Rules to prioritize mission-critical traffic over lower priority traffic.

- **Desktop Security** - the Firewall Policy for endpoint computers with Endpoint Security VPN remote access client installed as a standalone client

Policy Layers help you to organize and manage your Security Policies more effectively. You can create granular sets of rules with many administrators responsible for different Software Blades or Policy segments. Policy Layers make it easy for you to define the order in which rule types are enforced.
Configuring a Policy Package

To configure a Policy Package:

1. In a Domain SmartConsole, click **Menu > Manage Policies**.
   The **Manage Policies** window opens.

2. Click **New** to create a new Policy package, or select an existing Policy package and then click **Edit**.
   The Policy window opens.

3. Enter a name for the Policy package.

4. In the **General** view, select one or more Policy Types:
   - **Access Control**
   - **QoS**, select **Recommended** or **Express**
   - **Desktop Security**
   - **Threat Prevention**

5. In the **Installation targets** view, select the gateways the Policy will be installed on:
   - **All gateways**
   - **Specific gateways** - For each gateway, click the [+ ] sign and select it from the list

   To install Policy Packages correctly and eliminate errors, we recommend that you explicitly define installation targets.

   **To create an Access Control Policy Layer:**

   1. In the **Policy** window > **General** view, click the + icon in the **Access Control** section.
      A **Layer Selection** window opens.

   2. Select an existing, shared Layer or click **New Layer** to create a new Layer.
      A new Access Control Policy Layer shows in the list.

   3. To change the Layer configuration, double-click it in the list.
      The **Layer Editor** opens.

   4. Configure these other settings in the **General** view.
      - Select to enable a Software Blade or clear to disable it.
      - Select **Multiple Policies can use this Layer** to make this a shared Layer.

      Shared Layers can be used in other Policies.

   5. Configure these settings in the **Advanced** view:
      - **Proxy Configuration** - Select to detect users behind an HTTP proxy.
      - **Implicit Cleanup Rule** - Select to configure the implicit rule for this Layer to **Drop** or **Accept** traffic.

   6. In the **Permissions** view, add or remove Permission Profiles that have permissions to work with this Policy Layer.
      The upper list shows those Permission Profiles that have default permissions for this Layer. You cannot change these defaults.

   7. Click **OK** to close the **Layer Editor**.
To create a Threat Prevention Policy Layer:

1. In the Policy window > General view, click the + icon in the Threat Prevention section.
   The Threat Prevention Layer window opens.
2. Enter a unique name for this Policy Layer.
3. Click OK to close the Threat Prevention Layer window.

Completing the Configuration:

1. Close the Policy window.
2. Close the Manage Policies window.
3. Publish your changes.

Notes:

- When you work with an R77.xx or lower Security Gateway with Application Control and URL Filtering, the system automatically divides the Rule Base into Network and Application Policy Layers.
- When you work with an R77.xx or lower Security Gateway with Threat Prevention, the system automatically divides the Rule Base into IPS and Threat Prevention Policy Layers.
- The QoS Policy type is available only when one Security Gateway in the domain has the QoS Software Blade enabled.
- The Desktop Security Policy type is available if at least one Security Gateway in the Domain has the IPSec VPN Software Blade enabled with the Policy Server option.

Managing Policy Layers

You can use the Manage Layers window to work with Policy Layers in the selected Domain. To open the Manage Layers window, select Menu > Manage Layers in SmartConsole for a Domain. The Manage Layers shows:

- **Layer** - Layer name
- **Number of Rules** - Number of rules in the Layer
- **Policy Package** - Policy packages that use the Layer
- **Mode**:
  - **Ordered** - A Policy Layer that includes global rules and a placeholder for local, Domain rules
  - **Domain** - A Policy Layer that includes only local, Domain rules
  - **Not in use** - A Policy Layer that is not used in a Policy package
- **Administrator** - The administrator who last changed the Layer configuration
- **Created By** - The administrator who created the Layer
- **Date Created** - Date the Layer was created
- **Rule Grid** - Shows the rules in the selected Layer
To create a new Policy Layer:
1. Click the **New** icon in the upper toolbar.
2. Configure the settings in the **Layer Editor** window.
   - See Configuring a Policy Package (on page 31) for the full procedure.
   - It is a best practice to share Policy Layers with other Policy packages when possible.
3. Close the window and publish the session.
   - This Policy Layer is not yet assigned to a Policy Package.

To change an existing Policy Layer configuration, right-click it in the **Layer Editor**, and then select **Edit layer**.

To share a Policy Layer with many Policy packages:
1. In a Domain SmartConsole, click **Menu > Manage Policies**.
   - The **Manage Policies** window opens.
2. Select an existing Policy package and then click **Edit**.
   - The **Policy** window opens.
3. Double-click a Layer.
   - The **Policy Editor** opens.
4. In the **General** view, select **Multiple Policies can use this Layer**.
5. Close the windows and publish the session.

You can export Policy Layer rules to a .csv text file for backup or reference.

To export Layer rules to a .csv file:
1. In a Domain SmartConsole, select a Policy Layer.
2. Click **Actions > Export**.
3. Enter a path and file name.

**Working with Cross-Domain Management**

The Multi-Domain Management **Gateways & Servers** view lets administrators see and work with Domain Servers, Security Gateways, and other objects for all Domains in one convenient window. You must have the applicable permissions to see and work with these objects.

To open the **Gateways & Servers** view:
1. Connect to a Multi-Domain Server with SmartConsole.
2. Click **Gateways & Servers**.
   - The **Gateways & Servers** view shows all Security Gateway and Domain Server objects.
To work with a Security Gateway, double-click gateway object. A SmartConsole instance for the applicable Domain Server opens and automatically shows the Gateway window for the selected Security Gateway. In a High Availability environment, the Active Domain Server opens.

To work with a Domain, double-click its Domain Server object. A SmartConsole instance for the applicable opens and automatically shows the Host window for the selected Domain Server. In a High Availability environment, make sure that you select the Active Domain Server, which opens in the Read/Write mode. Standby Domain Servers open as Read-Only and you cannot make any changes to Domain objects.

Creating a Secondary Multi-Domain Server

This section shows you how to create a new secondary Multi-Domain Server.

**Important:** Before you start this procedure, make sure to define the physical server as the correct server type (Secondary Multi-Domain Server or Multi-Domain Log Server) during installation. An incorrect definition can cause deployment failure.

**To create a new, secondary Multi-Domain Server:**

1. If you did not do so, install a new R80 secondary Multi-Domain Server.
   Follow the procedures in the [R80 Installation and Upgrade Guide](http://supportcontent.checkpoint.com/documentation_download?ID=46530). Make sure to define this server as a secondary Multi-Domain Server in the First Time Wizard. Connect to the Primary Multi-Domain Server with SmartConsole and go the Domains view.
2. In the Multi-Domain navigation toolbar, click New > Multi-Domain Server.
3. Enter a unique name for this Multi-Domain Server.
   To get the IP address automatically, the name must be in the DNS.
4. Enter the IPv4 address or click Resolve IP to get the IP address from the DNS.
5. Select the platform operating system, software version, and hardware type.
6. Click Connect to establish SIC trust.
The new Multi-Domain Server automatically synchronizes with all existing Multi-Domain Servers and Multi-Domain Log Servers. The synchronization operation can take some time to complete, during which a notification indicator shows in the task information area.

Configuring Automatic Domain IP Address Assignment
You can configure a Multi-Domain Server to assign an IP address to Domain Servers managed by this Multi-Domain Server from a predefined pool of IP addresses. This makes sure that the assigned IP address is not in use by other Multi-Domain Servers or Domain Servers.

To configure a Multi-Domain Server to assign IP addresses to Domain Servers:
1. In the Multi-Domain Server window, click Multi-Domain.
2. In the IP Range section, enter the first and last IP address in the range.

Changing an Existing Multi-Domain Server
You can change the settings for an existing Multi-Domain Server or Multi-Domain Log Server.

To change the settings for an existing Multi-Domain Server:
1. Double-click the Multi-Domain Server or Multi-Domain Log Server in the top row of the Domains grid.
2. In the Multi-Domain Server window, change the parameters in the General, Multi-Domain ("Configuring Automatic Domain IP Address Assignment" on page 35) and Log Settings views.

Note - You cannot change the Multi-Domain Server name.

Re-Establishing SIC Trust for a Secondary Multi-Domain Server

Important - You can only re-establish SIC trust on a Secondary Multi-Domain Server or Multi-Domain Log Servers. There is no option to establish SIC trust on the Primary Multi-Domain Server.

It is occasionally necessary to re-establish trust between a Primary and secondary Multi-Domain Server or Multi-Domain Log Server. This can occur for many reasons, including:
• Changes to the IP address of the Primary Multi-Domain Server, Secondary Multi-Domain Server or Multi-Domain Log Servers
• Changes to the name of the Primary Multi-Domain Server, Secondary Multi-Domain Server or Multi-Domain Log Server
• Failure and recovery of the Primary Multi-Domain Server
• Promotion of a Secondary Multi-Domain Server to Primary Multi-Domain Server
• Internal Certificate Authority (ICA) failure on the Primary Multi-Domain Server

To re-establish SIC trust:
1. Open a command line interface to the Secondary Multi-Domain Server or Multi-Domain Log Server.
2. Log in and run: mdsconfig
3. Enter the number for Secure Internal Communication, and then press Enter.
4. Enter y to confirm.
5. Enter and confirm the activation key.
6. Enter the number for Exit.
7. Wait for Check Point processes to stop and automatically restart.
8. In the SmartConsole Multi-Domain view, double-click a Secondary Multi-Domain Server or Multi-Domain Log Server object.
9. In the Multi-Domain Server window, click Connect.
10. In the Initialize SIC window, enter activation key that you entered in step 5 above.
   If successful, the Certificate State field shows Trust established.

Deleting a Secondary Multi-Domain Server or Multi-Domain Log Server

To delete a secondary Multi-Domain Server:
1. Change the Active Domain Server for each Domain on this secondary Multi-Domain Server to a different Multi-Domain Server.
2. In the SmartConsole Multi-Domain view, delete all Active Domain Servers on this secondary Multi-Domain Server.
   This step automatically deletes Standby Domain Servers.
3. Connect to the command line on the Multi-Domain Server to be deleted and run: mdsstop
4. In SmartConsole, right-click the secondary Multi-Domain Server, and then select Delete Multi-Domain Server.
5. Confirm the action and click OK.
6. Publish the change.

Note - This procedure deletes all standby and non-primary Domain Servers on the Secondary Multi-Domain Server. You cannot delete the Primary or Active Domain Server.

Setting the Domain Server Display Format

You can change how Domain Servers show in the Domains grid.

To set the Domain Server display format:
1. Go to Multi-Domain > Preferences.
2. Select a display format:
   • Domain Server Name and IP (default)
   • Domain Server IP
   • Domain Server Name
The Global Domain

The Global Domain is a collection of rules, objects and settings shared with all Domains or with specified Domains. The system automatically creates the Global Domain when you install Multi-Domain Management. You cannot delete the Global Domain.

You organize global rules, objects and settings into global configurations. Each global configuration can include one or more of these components:

- One Global Access Control Policy - Global rules that control access to network resources. This includes rules for Firewall, Application Control, URL Filtering, and IPsec VPN. The Network Policy Layer is created automatically after installation or upgrade. You can manually create an Application or other global Policy Layers as necessary.

- One Global Threat Prevention Policy - Global rules that prevent malware, intrusions and other threats. This includes rules for IPS, Anti-Bot, Anti-Virus, and other Threat Prevention features. The Threat Prevention Policy Layer is created automatically after installation or upgrade.

- Global Objects - System objects and configuration settings that are common to all or to specified Domains. Connect to the Global Domain with SmartConsole to create and configure global objects.

Connecting to the Global Domain

To connect to the global Domain:

1. Connect to the Multi-Domain Server with SmartConsole.
2. In the Domains view, right-click the global Domain, and then click Connect to Domain. A SmartConsole instance opens for the global Domain.

Changing the Global Domain

This section includes basic procedures for working the contents of the global Domain.

When connected to the Global domain you can:

- Create, delete and change global Access Control and Threat Prevention Policies.
- Create, delete and change rules in global Policies.
- Create, delete and change new global objects.

These activities are not supported in this release:

- Create a new global Domain.
- Define Security Gateways as installation targets in global configuration rules. You must use local Policies to do this.
Working with global configuration Objects

Use global objects in global configuration rules. Global objects work much in the same way as objects in local Policy rules.

The global Domain includes many, predefined global objects for your convenience. These default global objects are visible (read only), in the global Domain. You cannot delete or change them.

You can create, change or delete user-defined global objects in the global Domain only. Global objects are visible in local Domains in the read-only mode.

**Important** - Before you delete a global object, make sure that no global or local Policy rules use this global object. This can cause errors when you reassign global configurations.

To add a new global object:

1. Connect to the global Domain with SmartConsole.
2. Click the **Objects** menu, and then select an object type from the menu.
   - You can also create a new global object with the **Object Explorer**.
3. Configure the required parameters.
4. Click **OK** to save the new object.

To change a user-defined global object, select it in the **Object Explorer**, and then change the applicable settings.

To delete a user-defined object, select it in the **Object Explorer** and click **Delete**.

**Important** - After you complete the global object task, assign or reassign the global configuration to the applicable Domains. This action automatically:

- Updates the local Domain and its Rule Base
- Publishes the changes

Working with Global Configuration Rules

This section is a general overview of the procedure for defining rules in global configurations. To learn more about Policy rules and their configuration procedures, see the **R80 Security Management Administration Guide**

http://supportcontent.checkpoint.com/documentation_download?ID=46534

Global Policy Layers have one placeholder for local Domain rules. You can create global rules above and below this placeholder. In the Domain Policy Layer, you define local rules in the placeholder. If there are no local Domain rules, the placeholder can be empty.

The position of rules in local Policy Layers defines the order in which they are enforced. It is important to put rules in the correct sequence. Global Policy Layers do not have implied rules, but implied rules can be inherited from global properties in local Domains. It is a good practice to define a global cleanup rule in each Policy Layer.

There is no NAT Rule Base in the global Domain and you cannot define NAT settings there. You must define NAT rules manually in Domain Policy Layers.

Workflow for global Policy Layers:

1. Connect to the Multi-Domain Server with SmartConsole.
2. In the **Domains** view, right-click the global Domain, and then click **Connect to Domain**.
   
   A SmartConsole instance opens for the global Domain.
3. Select **Access Control** and **Threat Prevention** Policy Layers and configure their rules.

4. Publish your changes.

5. Go to **Multi-Domain > Global Assignments**, and then reassign the global ["Reassigning" on page 45] configuration.

   The system creates a task, during which these actions occur:
   - Makes sure that all global and Domain Layer rules are consistent and work together correctly. For example, it makes sure that new Policy Layers are connected to existing Domain Policy Layers.
   - Updates the local Domain and its Rule Base.
   - Publish the changes again.
   - The assignment status changes to **Up to Date**.

6. Log into each Domain and install Policies.

**Sample Access Control Policy Layer**

Global Access Control rules use a placeholder for local Domain rules. The position of this placeholder in the Rule Base controls the order that Security Gateways handle global and local Policy rules. For simplicity of presentation, this example shows one global Policy Layer that has both Network and Application rules. In the real world, there are different Policy Layers for these two rule types.

**Sample global Policy Layer**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Source</th>
<th>Destination</th>
<th>VPN</th>
<th>Services &amp; Applications</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Management to Gateway traffic</td>
<td>Gateways Management</td>
<td>Management Gateways</td>
<td>Any</td>
<td>Any</td>
<td>Accept</td>
</tr>
<tr>
<td>2</td>
<td>FB &amp; Twitter</td>
<td>Internal Net</td>
<td>Any</td>
<td>Any</td>
<td>Facebook, Twitter</td>
<td>Drop</td>
</tr>
<tr>
<td>3</td>
<td>Placeholder for Domain Rules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>DMZ Notify</td>
<td>Internal Net</td>
<td>DMZ Net</td>
<td>Any</td>
<td>Any</td>
<td>Inform</td>
</tr>
<tr>
<td>5</td>
<td>Cleanup</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Drop</td>
</tr>
</tbody>
</table>

In this example, the Domain placeholder is rule number three. Global rules one and two run before the Domain rules. Global rule four and the cleanup rule run after the local Domain rules.
Each Domain Policy includes both global Policy rules and local rules that apply to its Security Gateways. Domain Policy rules show in a Domain Layer under a parent rule.

### Sample Domain Policy Layer with global and local Domain Rules

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Source</th>
<th>Destination</th>
<th>VPN</th>
<th>Services &amp; Applications</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Management to Gateway traffic</td>
<td>Gateways</td>
<td>Management</td>
<td>Any</td>
<td>Any</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Management</td>
<td>Gateways</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>FB &amp; Twitter</td>
<td>Internal Net</td>
<td>Any</td>
<td>Any</td>
<td>Facebook Twitter</td>
<td>Drop</td>
</tr>
<tr>
<td>3</td>
<td>Parent Rule for Domain Policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>External to SD server</td>
<td>External Net</td>
<td>Host_10.10.10.11</td>
<td>Any</td>
<td>Any</td>
<td>Accept</td>
</tr>
<tr>
<td>3.2</td>
<td>Finance</td>
<td>Finance Top Mgmt.</td>
<td>Finance Dept</td>
<td>Any</td>
<td>Any</td>
<td>Accept</td>
</tr>
<tr>
<td>3.3</td>
<td>File Sharing Allowed</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Dropbox Google Docs CP Threat Cloud</td>
<td>Accept</td>
</tr>
<tr>
<td>4</td>
<td>DMZ Notify</td>
<td>Internal Net</td>
<td>DMZ Net</td>
<td>Any</td>
<td>Any</td>
<td>Inform</td>
</tr>
<tr>
<td>5</td>
<td>Cleanup</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Any</td>
<td>Drop</td>
</tr>
</tbody>
</table>

In this example, the Security Gateways handle the global configuration rules (one and two) and then the local Domain rules. If there is still no match in the local rules, the Security Gateways handle the last two global rules, including the cleanup rule.

Although a local Domain can define implied rules, it is a best practice to put critical global rules at the beginning of the Rule Base. Put the global cleanup rule at the end. This overrides the implicit cleanup rule and gives you flexibility to define an effective sequence for local Domain rules.
**Sample Threat Prevention Policy Layer**

Global Threat Prevention rules use a placeholder for local Domain rules. The position of this placeholder in the Rule Base controls the order that Security Gateways handle global and local Policy rules. The first rule that matches traffic generates the specified action.

**Sample global Policy Rule Base**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Protected Scope</th>
<th>Protection Site</th>
<th>Action</th>
<th>Track</th>
<th>Install On</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Max Security</td>
<td>Portal Server, Finance, Server</td>
<td>N/A</td>
<td>Strict</td>
<td>Alert Packet Capture</td>
<td>Policy Targets</td>
</tr>
<tr>
<td>2</td>
<td>Printers &amp; Other Devices</td>
<td>Peripheral Net</td>
<td>N/A</td>
<td>Basic</td>
<td>Log Packet Capture</td>
<td>Policy Targets</td>
</tr>
<tr>
<td>3</td>
<td>Parent Rule for Domain Policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Domain Layer</td>
</tr>
<tr>
<td>4</td>
<td>Cleanup</td>
<td>Any</td>
<td>N/A</td>
<td>Optimized</td>
<td>Log Packet Capture</td>
<td>Policy Targets</td>
</tr>
</tbody>
</table>

**Global Exceptions (No Rules)**

<table>
<thead>
<tr>
<th>E-1.1</th>
<th>MS Office False Positives</th>
<th>Any</th>
<th>MS Word, MS Publisher, MS Excel</th>
<th>Detect</th>
<th>Log Packet Capture</th>
<th>Policy Targets</th>
</tr>
</thead>
</table>

| 2     | Printers & Other Devices      | Peripheral Net              | N/A                             | Basic  | Log Packet Capture     | Policy Targets   |

In this example, the Domain placeholder is rule number three. Global rules one and two run before the Domain rules. Global rule four is the default rule that runs after the local Domain rules.
Each Domain Policy includes both global rules and local rules that apply to its Security Gateways. Domain Policy rules show in a Domain Layer under a parent rule.

**Sample Domain Rule Base with global and local Domain Rules**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Protected Scope</th>
<th>Protection Site</th>
<th>Action</th>
<th>Track</th>
<th>Install On</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Max Security</td>
<td>Portal Server</td>
<td>Finance</td>
<td>N/A</td>
<td>Alert</td>
<td>Policy Targets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Finance Server</td>
<td></td>
<td></td>
<td>Packet Capture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Printers &amp; Other Devices</td>
<td>Peripheral</td>
<td>N/A</td>
<td>Basic</td>
<td>Log</td>
<td>Policy Targets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Net</td>
<td></td>
<td></td>
<td>Packet Capture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Placeholder for Domain Policy</td>
<td>Domain Layer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Management Threats</td>
<td>Management</td>
<td>N/A</td>
<td>Optimized</td>
<td>Log Packet</td>
<td>Policy Targets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Capture</td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Guests</td>
<td>Guest</td>
<td>N/A</td>
<td>Strict</td>
<td>Log</td>
<td>Policy Targets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Packet Capture</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cleanup</td>
<td>Any</td>
<td>N/A</td>
<td>Optimized</td>
<td>Log Packet</td>
<td>Policy Targets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Capture</td>
<td></td>
</tr>
</tbody>
</table>

This example shows Policy Layer with Global rules together with the local Domain rules.

**Using Layers with the Global Domain**

- The global Network Policy Layer is created automatically, but you can manually create a global Application Layer. The global Threat Prevention Layer is created automatically. These are the only Policy Layers that are supported for this version. Do not create any more Policy Layers.
- In each Policy Layer, the position of the Domain Policy Layer is defined by the position of its placeholder in the Rule Base. You can add global rules above or below the placeholder. You can define Threat Prevention rule exceptions for global and local Domain Policy Layers.
• You can temporarily disable the local Domain Policy Layer. In SmartConsole for the applicable local Domain, right-click in the No. column of the placeholder, and then select Disable. The Domain Policy shows as grayed-out. To re-enable it, right-click the same cell, and select Disable again. Publish the session.

  Note - You cannot disable local Policy Layers in the global Domain. This option is not available.

• To delete the Domain Layer, click the pencil icon in the Action column, and select No domain rules. Publish the session.

• To use a different Domain Policy Layer, click the pencil icon in the Action column, and select a different Domain Policy Layer from the list. Publish the session.

**Upgrade Issues**

When you upgrade an R77.x or earlier Multi-Domain Server, existing Policies are converted in this manner:

• If a pre-R80 Policy has a global Access Control Policy with no defined rules (placeholder only), its mode is automatically set to no global Policy after upgrade to R80. You can change the mode as necessary for both R80 and pre-R80 Policies.

• The Firewall Policy is converted into an R80 Network Policy Layer. Its implicit cleanup rule is set to Drop.

  Note – Do not change the Action of these implicit cleanup rules, or the order of the Policy Layers. If you do this, the Policy installation can fail.

• The Application & URL Filtering Policy is converted to the Application Policy Layer. The implicit cleanup rule for it is set to Accept.

• If a Domain contains IPS rules, an IPS Layer is automatically created in the R80 Threat Prevention Policy for the applicable Domain.

When you create a new Policy package, make sure that the first Access Control Layer is the Network Layer, and that the Firewall blade is enabled. If the Application Control and URL Filtering blade is enabled, the second Layer must be Application. Do not create any other Policy Layers. If you do so, Policy installation will fail.

Each new Policy Layer has an explicit default rule set to Drop. We recommend you set the Action to Drop for the Network Policy Layer and Accept for the Application Policy Layer.

**Notes:**

• If you remove the default rule, the Implicit Cleanup Rule is enforced. The Implicit Cleanup Rule is not visible in the Rule Base.

• Make sure the Implicit Cleanup Rule Action property is set to:
  • Drop for the Network Policy Layer.
  • Accept for the Application Policy Layer.
  
  If you do not do this, Policy installation will fail.

**Policy Layers and Administrator Permissions**

The use of Policy Layers lets you define granular permissions for different aspects of security management. In a typical organization, only administrators with Global Management or Superuser privileges can work with global Policy Layers. Domain Managers or Domain Level Only administrators typically have permissions to work with specified Policy Layers in their local Domains.
Global Assignments

A *global assignment* is a Multi-Domain Management system object that assigns a global configuration to one specified Domain. You create global assignments to assign different combinations of global Access Control Policies, global Threat Prevention Policies, and global object definitions to different Domains.

When you create a new global assignment, it automatically assigns the specified global configuration to that Domain. It also publishes the assignment and updates local Domain Policies. When you create a new Domain, it is a best practice to create a global assignment for that Domain at the same time.

When you do one or more of these actions, you must publish the global Domain and *reassign* the global configuration:

- Add, delete, or change rules in a global configuration
- Add, delete, or change user-defined objects in a global configuration
- Change the definition of a global assignment

The assign/reassign action does not automatically install Policies. It is a best practice to install Policies after you assign or reassign a global assignment.

Configuring an Assignment

To create a new global assignment:

1. Connect to the Multi-Domain Server with SmartConsole.
2. Go to **Multi-Domain > Global Assignments**.
3. Click **Assign > New Assignment**.
4. In the **Assignment** window, select a **Local Domain**.
5. Optional: Select a global **Access Control Policy** for this local Domain.
   
   You can click **Advanced** to open the **Advanced Assignment** window to assign the selected Policy:
   
   - Only to the specified, local Domain Policies
   - To all local Domain Policies, except for those explicitly specified

6. Optional: Select a global **Threat Prevention Policy** for this local Domain.
   
   You can click **Advanced** to open the **Advanced Assignment** window to assign the selected Policy:
   
   - Only to the specified, local Domain Policies
   - To all local Domain Policies, except for those explicitly specified

7. Optional: Enable **Manage protection actions**.
   
   This option lets you change IPS protection actions for Security Gateways on the local Domain.

8. Click **Assign**.
9. In the confirmation window, click **Publish & Assign**.
   
   The system creates a task, during which these actions occur:
   
   - Update the local Domain and its Rule Base
   - Publish the changes
   - The assignment status changes to **Up to Date**
To change an existing global assignment:
1. Connect to the Multi-Domain Server with SmartConsole.
2. In the Global Assignments view, double-click a Domain.
3. In the Assignment window, follow steps 4-6 above.
4. Click Assign.
5. In the confirmation window, click Publish & Assign.
   The system creates a task, during which these actions occur:
   • Updates the local Domain and its Rule Base
   • Publish the changes
   • The assignment status changes to Up to Date

Important: You can create a global assignment that does not include a global Access Control and Threat Prevention Policy. To do this, select the None value to both Policy types. The global configuration assigns only the defined global objects and settings to Domains.

Reassigning

When you make changes to the global configuration items, the assignment status changes to Not up to date. The assignment status does not change if you make changes to the local Domain Policies.

To reassign global configurations:
1. Connect to the Multi-Domain Server with SmartConsole, and then click Global Assignments.
2. In the Global Assignments window, right-click one or more Domains.
   You can reassign to more than one Domain at the same time.
3. Click Reassign.
   The system creates a task, during which these actions occur:
   • Updates the local Domain and its Rule Base
   • Publish the changes
   • The assignment status changes to Up to Date.

Handling Assignment Errors

Global assignments run as a task that you can monitor while you work on other tasks.

To monitor assignment/reassignment tasks:
1. In the Multi-Domain view, click the task information area.
   The Recent Tasks window opens.
2. Find the assignment task.
   If your task does not show, click Show More.
3. Click Details.
   The Assignment Task Details window shows the task progress and details.
4. If the task fails and returns an error message, correct the error, and then try to assign/reassign the global configuration again.
Some common errors include:

- Global objects with duplicate or illegal names
- Deleted global objects used in a rule
- Global rule validation errors

Deleting a Global Assignment

When you delete a global assignment, the global configuration rules and objects no longer apply to its Domain. We recommend that you immediately create a new global assignment so that Domain Security Gateways continue to enforce global configuration rules.

⚠️ **Important** - You must remove global objects from all local Domain rules before you can delete a global assignment. If there is a rule that uses a global object when you try to delete a global assignment, the delete operation fails.

To delete a global assignment:

1. In the **Global Assignments** view, select a Domain.
2. Click the **Delete** icon on the **Actions** toolbar.
3. In the **Remove** window, select an assignment, and then click **Remove**.

Global Assignment Status

You can see the global assignment status in the **Assignment Up to Date** column, in the **Multi-Domain > Global Assignments** view. For each Domain, the date of the last assignment shows together with a status icon:

- ![✅](✅) Assignment is up to date - no action necessary.
- ![⚠️](⚠️) The global configuration is not assigned or the assignment is not up to date. Assign or update the global configuration as soon as possible.

Updating IPS Protections

Check Point continuously develops and improves its protections against emerging threats. You can manually update the database with latest IPS protections. You must also configure the global Domain to automatically download contracts and other important data.

**Note** - Security Gateways with IPS enabled only get the updates after you install Policy.

For troubleshooting or for performance tuning, you can revert to an earlier IPS protection package.

To manually update the IPS protections:

1. Connect to the global Domain with SmartConsole.
2. Click **Security Policies > Threat Prevention**.
3. In the **Related Tools** section, click **Updates**.
4. In the **IPS** section, click **Update Now**.
5. Connect to the Multi-Domain Server with SmartConsole.
6. Reassign the global configuration.
To revert to an earlier protection package:
1. Connect to the global Domain with SmartConsole.
3. In the IPS section of the Threat Prevention Updates page, click Switch to version.
4. In the window that opens, select an IPS Package Version, and click OK.
5. Connect to the Multi-Domain Server with SmartConsole.
6. Reassign the global configuration.

To make sure that Contract Downloads is enabled:
1. Connect to the global Domain with SmartConsole.
2. From the main menu, select Global Properties.
3. In the Global Properties window, click Security Management.
4. Make sure that Automatically download contracts and other important data is selected.
   This parameter is enabled by default. If it is not enabled, select it.
5. If you enabled the parameter, connect to Multi-Domain Server and reassign the global configuration.

Updating the Application Control and URL Filtering Database

Check Point constantly develops and improves its protections against the latest threats. You can manually update the Application Control and URL Filtering database with the latest applications and URLs.

To manually update the Application Control and URL Filtering protections:
1. Connect to the global Domain with SmartConsole.
2. Click Security Policies > Access Control.
3. In the Related Tools section, click Updates.
4. In the Application Control and URL Filtering section, click Update Now.
5. Connect to the Multi-Domain Server with SmartConsole.
6. Assign or reassign the global configuration.
Managing Administrators and Permissions

In This Section:

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* Working with Permission Profiles ......................................................... 49

In a Multi-Domain Management environment, administrators manage system objects and settings, such as:

- Multi-Domain Servers and Multi-Domain Log Servers
- Domains and Domain Servers
- High Availability configuration and synchronization
- Domain Security Gateways, networks and other objects
- Domain Security Policies and rules
- Global Domain

Permission profiles let you assign permissions to Multi-Domain Management administrators, based on their area of responsibility. You can assign granular permissions to administrators that manage different elements of the Multi-Domain Management environment.

Configuring Administrators

To configure an administrator:

1. Connect to the Multi-Domain Server with SmartConsole, and go to Permissions & Administrators > Administrators.
2. Click New, or select an existing administrator and then click Edit.
3. In the Administrator view, configure the settings described in the next sections.

Administrator - General

Authentication

- **Name** - Enter a unique administrator name.
- **Authentication Method** - Select an authentication method and enter other authentication parameters as necessary.
  
  To set a default value for this parameter, go to Permissions & Administrators > Advanced > Administrator Settings > Authentication Default Values. Select a default authentication from the list.
- **Certificate Information** - Optional: Click Create to generate a new certificate.
  
  - You can use a certificate with or without an authentication method.
  - For an existing administrator definition, you can revoke an existing certificate and create a new one.
Permissions

- **Multi-Domain Permission Profile** - Select a Multi-Domain permission profile from the list. Accept the default permission profile or select a different one. You can also create a new permission profile to assign. For an existing administrator, the currently selected permission profile shows.

  Click the **View** icon to see details of the currently assigned permission profile.

  If the **Edit** icon shows, you have permissions to see and change the currently selected permission profile. Click the **Edit** icon to change the settings.

  **Permission Profiles per Domain** - Select one or more Domains, and then select a Domain permission profile for each one.

    + - Click to select a Domain to add to the profile.

    X - Click to remove the selected Domain from the profile.

  **Note** - The **Permission Profiles per Domain Section** does not show for superusers, because Read/Write Domain permission profiles are assigned automatically.

- **Expiration** - Define when this administrator account expires.

  - **Never** - The administrator account does not expire.

  - **Expire at** - Select an expiration date for this administrator.

  To set a default value for this parameter, go to **Permissions & Administrators > Advanced > Administrator Settings > Default Expiration Values**.

Contact Options

You can optionally add contact information for this user:

- **Email** - Enter the administrator email address.

- **Contact Details** - Enter additional contact information.

- **Phone** - Enter the administrator telephone number.

  **Note** - If you upgraded from an earlier release, the system copies these values into the new release.

Working with Permission Profiles

A permission profile is a predefined set of permissions that you assign to administrators in a Multi-Domain Management environment. This lets you manage complex, granular permissions for many different administrators with one definition.

There are two types of permission profiles:

- **Multi-Domain permission profiles** - Defines administrator permissions for the full Multi-Domain Management environment

- **Domain permission profiles** - Defines the permission set per Domain

Predefined Multi-Domain Permission Profiles

Multi-Domain Management includes predefined Multi-Domain and Domain permission profiles that are ready to use. You cannot delete or change these profiles. You can create custom permission profiles as necessary for your environment.
When you assign an administrator to Domain, you must also assign a Domain Permission Profile. You can assign a predefined Permission Profile or a custom Permission Profile for this administrator.

These are the predefined Multi-Domain permission profiles available in this release:

<table>
<thead>
<tr>
<th>Permission Profile</th>
<th>Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multi-Domain Superuser</strong></td>
<td>Manage all elements of the Multi-Domain Management environment, including: Multi-Domain Servers, Multi-Domain Log Servers, Domains, Domain Servers, Global Policies, administrators and permission profiles. Multi-Domain Superusers can also manage all Domain objects, including gateways, Policies, rules, networks and other objects.</td>
</tr>
<tr>
<td><strong>Domain Superuser</strong></td>
<td>Manage all Domains, Domain Servers, Domain networks, global objects, and global configurations. They can also manage Domain objects, including gateways, Policies, rules, networks and other objects. Domain Superusers can create and manage other administrators and permission profiles at the same or lower levels. Domain Superusers cannot create or change the settings for Multi-Domain Servers or Multi-Domain Log Servers.</td>
</tr>
<tr>
<td><strong>Global Manager</strong></td>
<td>Manage global Domains, global configurations, global rules, and global assignments. Global Managers cannot manage Domains, Multi-Domain Servers or non-global administrators. Global Managers can create new global assignments and can assign Global Policies to Domains that they have permissions to manage. Domain-Level permissions are based on the assigned Domain permission profile.</td>
</tr>
<tr>
<td><strong>Domain Manager</strong></td>
<td>Manage Domain Policies, networks and objects based on their permission profile. Domain Managers can create Domain-Level administrators. Domain Managers can reassign Global Policies to Domains that they have permissions to manage. They cannot create new global assignments. Domain-Level permissions are based on the assigned Domain permission profile.</td>
</tr>
<tr>
<td><strong>Domain Level Only</strong></td>
<td>Manage Domain Policies, networks and objects based on their permission profile. These administrators cannot manage the Multi-Domain Management system or its configuration settings. Domain-Level permissions are based on the assigned Domain permission profile.</td>
</tr>
</tbody>
</table>
Pre-Defined Domain Permission Profiles

<table>
<thead>
<tr>
<th>Permission Profile</th>
<th>Permissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read/Write</td>
<td>Read and write permissions for all Domain settings and data.</td>
</tr>
<tr>
<td>Read Only</td>
<td>Read only permissions for all Domain activities.</td>
</tr>
</tbody>
</table>

Working with Multi-Domain Permission Profiles

Use this procedure to create or change customized Multi-Domain permission profiles. Only administrators with superuser permissions can do this.

To create a custom permission profile:
1. Connect to the Multi-Domain Server with SmartConsole, and go to Permissions & Administrators > Permission Profiles.
2. In the Permission Profile page, click New.
3. Select New Multi-Domain Permission Profile.
4. In the New Multi-Domain Permission Profile window, select an administrator role and configure the permission settings. The next section explains the available settings and parameters.

To change an existing Multi-Domain permission profile:
1. Select a permission profile on the Permission Profiles page.
2. Click Edit and change the administrator role and permission settings as necessary.

To delete an existing Multi-Domain permission profile:
1. Select a permission profile on the Permission Profiles page.
2. Click Delete.

Multi-Domain Permission Profile Parameters

Multi-Domain Levels
Select an administrator role:
- **Superuser** - Manage all aspects of the Multi-Domain Management environment.
- **Manager** - Manage Domains as specified in the Permissions section of Administrator definition.
- **Domain Level Only** - Same as Manager, but with no Multi-Domain permissions.
Multi-Domain Management Activities

Enable or disable permissions for these activities:

- **MDS Provisioning** - Create and manage Multi-Domain Servers and Multi-Domain Log Servers. Only superusers can select this option.
- **Manage All Domains** - Create and manage all Domains and Global Domains. This option is enabled by default for superusers. Managers can select it.
- **Manage Administrators** - Create and manage Multi-Domain Management administrators with the same or lower permission level. For example, a Domain manager cannot create superusers or global managers. This option is enabled automatically for superusers. Managers can select it.
- **Manage Sessions** - Connect/disconnect Domain sessions, publish changes, and delete other administrator sessions.

Global Management Activities

All options are enabled automatically for superusers. Managers can select them.

- **Manage Global Assignments** - Create and update global assignments.
- **Default profile for all Global Domains** - Change the default permission profile for all global Domains.
- **View global objects in Domains** - This profile controls only the default Domain permissions when you create a new administrator. You can change the Domain profile for each administrator.

Domain Management

This profile defines the default Domain permissions that automatically apply when you create a new administrator account. After you create the administrator account, you can change its Domain profile as necessary.

Select a default profile from the list. This option is enabled automatically for superusers and Managers can optionally select it.

Creating Custom Domain Permissions

Customized Domain permission profiles are a set of granular permissions for Domain level activities in SmartConsole.

To configure custom permission profiles:

1. In the **Domain Profile** window, click **Customize**.
2. In the next window, configure read/write permissions for each of these categories:
   - **Overview** - Select default or custom permission options
   - **Gateways** - Work with Security Gateway management tasks and VSX provisioning
   - **Access Control** - Work with Access Control rules and install Access Control Policies
   - **Threat Prevention** - Work with Threat Prevention rules, profiles, and protections. Install Threat Prevention Policies
   - **Others** - Work with different features not in other categories
   - **Monitoring and Logging** - See and manage logs, monitoring features and related reports
   - **Events and Reports** - Work with SmartEvent and related reports
   - **Management** - Manage sessions and High Availability options
3. Set permissions for each Software Blade, feature, resource, and the API as necessary:
   - To let the administrator see an item (but not change it), select the option and then select **Read**.
   - To let the administrator see and configure a resource, select the option and select **Write** from the drop-down box.
   - To prevent administrators from working with an item, clear its option.

**Notes:**
- You cannot prevent administrators from seeing some resources. You cannot change their options.
- Some resources do not have **Read** or **Write** options. You can only select or clear them.

**Overview**
Select one of these permission options:
- **Read/Write All** - Full read/write permissions for all Domain activities.
- **Auditor** - Read only permissions for all Domain activities.
- **Customized** - Manually configure granular permissions for some or all Domain activities.

The settings that you can configure in a permission profile are based on these permission options.
Overview of High Availability

Multi-Domain Management implements High Availability at these levels:

- **Multi-Domain Server High Availability** is an Active/Active redundancy solution that uses two or more fully synchronized Multi-Domain Servers for continuous redundancy. All Multi-Domain Servers are Active. You can log into and work with the primary or secondary Multi-Domain Servers.

- **Domain Server High Availability** is both a redundancy and a Load Sharing solution for Domains. You create a Domain Server on two or more Multi-Domain Servers. These Domain Servers synchronize fully for continuous redundancy.
  
  One Domain Server is Active and the others are Standby. You can configure the Active Domain Server on different Multi-Domain Servers for effective load sharing.

All High Availability deployments include one Primary Multi-Domain Server and one or more Secondary servers. Synchronization occurs automatically when administrators publish sessions with changes to Policies, objects or configuration settings. You can manually synchronize Multi-Domain Servers and Domain Servers, as necessary.

**Primary and Secondary Multi-Domain Servers**

The order in which you install Multi-Domain Servers is significant. You must define the first physical server as a Primary Multi-Domain Server in the First Time Wizard. You must define all other Multi-Domain Servers as Secondary in the First Time Wizard.

**Active and Standby Domain Servers**

You can only use the Active Domain Server to manage Domain gateways, networks, Security Policies objects and system configuration. Standby Domain Servers synchronize fully for redundancy. You can connect to a Standby Domain Server in the Read Only mode to look at current object configurations and Rule Base.

There is only one Active Domain Server for each Domain. All others are Standby Domain Servers. If the Active Domain Server fails, you must manually change a Standby Domain Servers to Active.
Multi-Site High Availability Deployment Example

This example shows a Multi-Site, High Availability deployment with two Multi-Domain Servers and one Multi-Domain Log Server. A real-life deployment will have many more assets.

Each Multi-Domain Server has two Domains configured for Load Sharing, where a different Domain Server is Active at each location. Administrators can connect to all Multi-Domain Servers. For best performance, connect to the Multi-Domain Server nearest to your geographical location.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>London Multi-Domain Server with an Active Domain Server for London and a Standby Domain Server for Tokyo</td>
</tr>
<tr>
<td>AA</td>
<td>London network</td>
</tr>
<tr>
<td>B</td>
<td>Tokyo Multi-Domain Server with an Active Domain Server for Tokyo and a Standby Domain Server for London</td>
</tr>
<tr>
<td>BB</td>
<td>Tokyo network</td>
</tr>
<tr>
<td>C</td>
<td>Multi-Domain Log Server with Domain Log Servers for London and Tokyo</td>
</tr>
<tr>
<td>D</td>
<td>Active Domain Server</td>
</tr>
<tr>
<td>D</td>
<td>Standby Domain Server</td>
</tr>
<tr>
<td>E</td>
<td>Domain Log Server</td>
</tr>
</tbody>
</table>
This illustration shows the configuration grid in the SmartConsole Multi Domain view for the example deployment:

The system automatically creates the global Domain when you install Multi-Domain Management.

## Synchronization

The system automatically synchronizes Multi-Domain Servers, Multi-Domain Log Servers, and Domain Servers:

- Once every minute
- When you add or delete a secondary Multi-Domain Server or Multi-Domain Log Server
- When add or delete a Domain Server or Domain Log Server
- When you publish changes
- When a Multi-Domain Server, Multi-Domain Server or a Domain Server recovers from a failure

You can also synchronize manually as necessary due to connectivity issues or other synchronization failures.

### How Synchronization Works

During synchronization, the system follows these steps without user intervention:

1. Locks the Policy and object databases on the Active Domain Server.
2. Takes a snapshot of the databases and save it to local disk.
3. Unlocks Policy and object databases.
4. Compresses snapshot data and copies the snapshot from Active management server to all standby management servers.
5. The standby Domain Servers overwrite their databases with the snapshot.
6. Standby Domain Servers send a Restore status notification to the Active management server.
7. The Active and Standby servers delete the snapshots.

While the Active Domain Server takes a snapshot (step 2 above), the databases are locked and you cannot add, change or delete these system objects:

- Security Gateways, management servers and other network objects
- VPN Communities
- Services, resources and OPSEC applications
- Policies and rules
- Reports and queries

This is necessary to prevent database corruption and other errors.
**Multi-Domain Server ICA Database Synchronization**

When you create a new secondary Multi-Domain Server, the Internal Certificate Authority (ICA) on the Primary Multi-Domain Server generates a certificate when you establish SIC trust. The ICA can generate a certificate for a new administrator, if required by the authentication method. In a High Availability deployment with more than one Multi-Domain Server, the system synchronizes the ICA databases as necessary.

**Initial Synchronization**

Initial synchronization occurs automatically when you create a secondary Multi-Domain Server, Multi-Domain Log Server, or Domain Server. The system generates a task to copy all databases and system information from the connected server to the new server. The task shows in the SmartConsole Task Information area. You can synchronize a Domain Server only when connected to the Active Domain Server.

*Note* - Multi-Domain Server and Multi-Domain Log Server synchronization tasks show in the Multi-Domain view, in SmartConsole. SmartConsole synchronization tasks show in the Domain SmartConsole to which you are connected.

**Periodic Synchronization**

Connected Multi-Domain Servers synchronize with all other peers and Multi-Domain Log Servers. Periodic synchronization occurs automatically, once every minute and when an administrator publishes a session. Private (non-published) sessions do not synchronize.

Periodic synchronizations are incremental. Only database changes synchronize with peers. Active Domain Servers synchronize to the standby Domain Servers.

**Manual Synchronization**

You can manually synchronize connected Multi-Domain Servers, Multi-Domain Log Servers, and Domain Servers with their High Availability peers as necessary. Manual synchronization is a full synchronization that overwrites all data on the peers. It disconnects all connected clients and overrides active sessions and running tasks. We recommend that you use this option with caution, and only in cases of synchronization error.

For Domain Servers, you can only run a manual synchronization from the active Domain Server to the standby peers.

**Manually Synchronizing a Multi-Domain Server**

You can manually synchronize the connected Multi-Domain Server with a peer Multi-Domain Server.

**To manually synchronize Multi-Domain Servers:**

1. Click the Synchronization Status area at the bottom of the SmartConsole window.
2. In the High Availability Status window, select a peer Multi-Domain Server to synchronize.
3. Click Sync Peer.

Synchronization starts immediately and the status shows in the window. The synchronization operation can take many minutes to complete.

*Warning:* Use manual synchronization with caution. This can overwrite all data on the peer Multi-Domain Server if they do not synchronize correctly.
**Manually Synchronizing Domain Servers**

You can manually synchronize a Standby Domain Server with the Active Domain Server on a different Multi-Domain Server.

**To manually synchronize Domain Servers for a Domain:**

1. Open SmartConsole for the active Domain Server.
2. Click **Menu > High Availability**.
3. In the **High Availability Status** window, click **Actions > Sync Peer**.

Synchronization starts immediately and the status shows in the window. The synchronization operation can take many minutes to complete.

**Domain Server High Availability and Load Sharing**

This section includes procedures for configuring the Multi-Domain Management environment for secondary Multi-Domain Servers and a Multi-Domain Log Server. When you install Multi-Domain Management for the first time, select **Primary Multi-Domain Server** in the First Time Wizard. For High Availability and Load Sharing, select **Secondary Multi-Domain Server** in the First Time Wizard.

Each Domain has one Active and one or more Standby Domain Servers, each on a different Multi-Domain Server. For example, if a deployment has three Multi-Domain Servers, each Domain can have one Active and two Standby Domain Servers. Each Multi-Domain Server can have both Active and Standby Domain Servers.

**Example of Domain Server High Availability with Load Sharing:**

By default, the Primary Domain Server is Active. All other Domain Servers for that Domain are Standbys. You can change a Standby Domain Server to Active as necessary.

All Domain management operations, such as working with Security Policies, users, networks and other objects, occur on the Active Domain Server. Standby Domain Servers automatically synchronize with the Active Domain Server. Security Gateways can get a Security Policy and a Certificate Revocation List (CRL) from either the Active or Standby Domain Servers.

**Adding a Secondary Domain Server**

When you first create a Domain, you also define the Primary Domain Server. Use this procedure to create Secondary Domain Servers for existing Domains.

**To create a secondary Domain Server:**

1. Connect to the Multi-Domain Server with SmartConsole.
2. In the Domains view, right-click the empty cell at the intersection of the applicable Multi-Domain Server and Domain in the grid.
3. Select **New Domain Server**.
4. In the **Domain Server** window, configure the Domain Server name and IP address.
Domain Server synchronization starts automatically and can take some time to complete.

**Note** - You cannot change settings for an existing Domain Server. You must first delete the Domain Server and then create a new one.

To delete a secondary Domain Server configuration, right-click the applicable cell and select **Delete**.

### Changing the Active Domain Server

If the current Active Domain Server is responsive, use this procedure to set a different Domain Server to Active.

**To change an Active Domain Server:**

1. Right-click the cell for a Standby Domain Server, and then select **Connect to Domain Server**.

2. In the Domain SmartConsole instance, click **Menu > High Availability**.

3. In the **High Availability Status** window, click a Standby Domain Server **Actions > Set Active**.

4. Close SmartConsole and re-connect to the newly Active Domain SmartConsole.

The Standby Domain Server changes to Active and the formerly Active Domain Server automatically changes to Standby. The Standby Domain Servers automatically synchronize, and a confirmation message shows in the **High Availability** Status window. The synchronization operation can take many minutes to complete.

If the formerly Active Domain Server does not automatically change to Standby, use this procedure to manually change its status. This can occur if the formerly Active Domain Server goes down or cannot communicate.

**To manually set the Active Domain Server to Standby**

1. Right-click the cell for the Active Domain Server, and select **Connect to Domain Server**.

2. Click **Menu > Management High Availability**.

3. In the **High Availability Status** window, click **Actions > Set Standby**.

4. Confirm when prompted.

The Active Domain Server changes to Standby. Continue the procedure to set a different Domain Server to Active. Until you do this, Domain SmartConsole clients open in the Read Only mode and you cannot work with Domain objects or Policies.

**Note** - SmartConsole clients connected to the Active Domain Server will be disconnected during the procedure for changing the Active Domain Server.
Connecting to Domain Servers

To connect to a Domain Server from the SmartConsole Multi-Domain view:

1. Connect to a Multi-Domain Server with SmartConsole.
2. In the Multi-Domain > Domains view, right-click the active Domain Server in the grid.
3. Select Connect to Domain Server.

**Note** - In a High Availability deployment, you can only make changes to a Domain from the active Domain Server. The active Domain Server shows with a black icon. If you connect to a standby Domain Server (white icon), SmartConsole opens in the Read Only mode.

Looking at Synchronization Status

To see Multi-Domain Server and Multi-Domain Log Server synchronization status:

1. Select Management High Availability from the SmartConsole menu.

The **High Availability Status window** shows all Multi-Domain Servers and Multi-Domain Log Servers in your environment, together with their synchronization status.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Multi-Domain Server (that you are connected to) - Synchronization OK</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Multi-Domain Server Synchronization OK</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Multi-Domain Log Server Synchronization OK</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Multi-Domain Server - Not synchronized - No connection with peer</td>
</tr>
</tbody>
</table>

To see Domain Server synchronization status:

1. Connect to a Domain with SmartConsole.
   By default, SmartConsole connects to the Active Domain Server.
2. Select Management High Availability from the SmartConsole menu.

The **High Availability Status** window shows the status of all Domain Servers for the selected Domain. You can manually synchronize the peer servers with the Domain Server to which you are connected. You can also connect with SmartConsole to a peer Domain Server in the Read Only mode.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Active Domain Server - Synchronization OK</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Standby Domain Server - Synchronization OK</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Domain Log Server - Synchronization OK</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Domain Server not synchronized - No connection with peer</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>Domain Server synchronization in process or has a problem</td>
</tr>
</tbody>
</table>
Failure Recovery

In many cases, you can recover a failed Primary Multi-Domain Server in a High Availability deployment. To do this, promote an existing Secondary Multi-Domain Server to become the Primary. Promote a Secondary Domain Server to become Primary Domain Server. You can then install and configure a new secondary Multi-Domain Server.

**Important:** Use Domain Server promotion only to recover a failed Multi-Domain Server.

Connecting to a Secondary Multi-Domain Server

To connect to a secondary Multi-Domain Server:

1. Make sure that all functional, Secondary Multi-Domain Servers and Multi-Domain Log Servers are up and running.
2. Connect to a secondary Multi-Domain Server with SmartConsole.
3. If the Global Domain Server to be promoted to Primary is not Active, change it to Active:
   a) In the **Domains** view, right-click the **Global Domain**, and then click **Connect to Domain**. A SmartConsole instance opens for the Global Domain.
   b) Go to **Menu > Management High Availability**.
   c) In the **High Availability Status** window, click **Actions > Set Active** for the connected global Domain.

Promoting the Secondary Multi-Domain Server to Primary

This procedure is necessary because there are no automatic steps to promote a Secondary Multi-Domain Server when the Primary Multi-Domain Server fails.

To promote a Secondary Multi-Domain Server to Primary:

1. Run these commands on the Secondary Multi-Domain Server to be promoted:
   - cpprod_util FwSetPrimary 1
   - cpprod_util CPPROD_SetValue PROVIDER-1 Primary 4 1 1
   - cpprod_util CPPROD_SetValue SIC ICASstate 4 3 1
   - ckp_regedit -d //SOFTWARE//CheckPoint//SIC OTP
   - ckp_regedit -d //SOFTWARE//CheckPoint//SIC ICAip
   These commands update the Secondary Multi-Domain Server registry.
2. Connect to the Check Point Database tool with the Secondary Multi-Domain Server IP address.
   - C:\Program Files (x86)\CheckPoint\SmartConsole\R80\PROGRAM\GuiDBedit.exe /mds
3. On the **Tables** tab, select **Other** and then select (or search for) Multi-Domain Servers.

4. Delete the failed Domain Server object from the **Object Name** column.

5. Select the Multi-Domain Server to promote.

6. Double-click the **Primary** field in the bottom pane.

7. Change the value to **true**.

8. Save the database (**File** > **Save All** or **Ctl-s**).

**Restoring Domain Servers**

Follow these instructions for each Domain on the failed Primary Domain Server.

**Important** - To use this procedure, there must be at least one Active Domain Server on a different Multi-Domain Server.
To restore the Domain Servers:
1. In SmartConsole Domain view, select a Domain Server to promote to Primary Domain Server.
2. If the selected Domain Server is Standby, change it to Active:
   a) Open the selected Domain Server in SmartConsole.
   b) Go to Menu > Management High Availability.
   c) In the High Availability Status window, click Actions > Set Active.
   d) Close SmartConsole.
3. Run these commands on the Multi-Domain Server command line to change the active Domain Server from Secondary to Primary:
   ```bash
   > mdsenv <domain_server_name>
   > promote_util
   ```
   These steps set the Multi-Domain Server context to the specified Domain Server.
4. Open the newly promoted Domain Server in SmartConsole.
5. Find (with Where Used) and delete all instances of the failed Domain Server, including the failed Domain Server itself.
6. Publish the changes.
7. If necessary, manually synchronize the Domain Servers.
9. If the promoted Domain Server is using a High Availability Domain Server license, replace it with a standard Domain Server license.

To make Domain Server Active when there is no corresponding peer and the High Availability Status window is not available, run these commands:

```bash
# mdsenv <domain_name>
# mgmt_cli make-server-active force true --domain <domain_name> --user <user_name> --password <password>
```

These commands set the Domain Server to the Active state. Do this for all Domain Servers that do not have a High Availability peer.

**Finishing the Promotion**

To restore your High Availability deployment, run these commands:

```
mdsstop
mdsstart
```
Logging and Monitoring

In This Section:

- Working with Log Servers ................................................................. 65
- Configuring Logging ........................................................................... 65
- Log Server Deployment Scenarios ......................................................... 67
- Using the Log View ........................................................................... 68
- Monitoring Multi-Domain Management .............................................. 68

This chapter includes information that is directly related to Multi-Domain Management, with some general background information and basic procedures. See the Logging & Monitoring Administration Guide http://supportcontent.checkpoint.com/documentation_download?ID=46535 for the full set of conceptual information and procedures.

With R80, logging, event management, reporting, and monitoring, are more tightly integrated than ever before. Security data and trends easy to understand at a glance, with Widgets and chart templates that optimize visual display. Logs are now tightly integrated with the Policy rules so that you can access all logs associated with a specific rule by simply clicking on that rule. Free-text search also lets you enter specific search terms to retrieve results from millions of logs in seconds.

One-click exploration makes it easy to move from high-level overview to specific event details such as type of attack, timeline, application type and source. After you investigate an event, it is easy to act on it. Depending on the severity of the event, you can choose to ignore it, act on it later, or block it immediately. You can also easily toggle over to the rules associated with the event to refine your Policy. Send reports to your manager or auditors that show only the content that is relevant to each stakeholder.

In R80, SmartReporter and SmartEvent functionality is integrated into SmartConsole.

Using rich and customizable views and reports, R80 introduces a new experience for log and event monitoring.

The new views are available from two locations:

- SmartConsole > Logs & Monitor
- SmartView Web Application. By browsing to: https://<Server IP>/smartview/
  Where Server IP is IP address of the Multi-Domain Server or Multi-Domain Log Server.
  Note - Include the final backward slash: /
Working with Log Servers

A Domain Log Server is a dedicated host for Domain log files. A Multi-Domain Log Server is a dedicated container for Domain Log Servers. Log Servers also handle these log management activities:

- Automatically start a new log file when an existing log file is larger than the specified maximum size
- Log file backup and restoration
- Export and import log files
- Index logs for faster log queries.

It is a best practice to use Multi-Domain Log Servers and Domain Log Servers to handle logs for a Multi-Domain Management environment because of the large volume of logs.

To see the logs for a Domain and its Security Gateways, click Logs & Monitor in SmartConsole for that Domain. To see logs for all Domains in one view, click Logs & Monitor in the Multi-Domain Server SmartConsole. You can filter the logs for specified Security Gateways, Domain Servers, or Domain Log Servers.

Configuring Logging

Creating a Multi-Domain Log Server with Domain Log Servers

This section shows you how to create a new Multi-Domain Log Server and its related Domain Log Servers.

Important: Before you start this procedure, make sure that you define the physical servers as the correct server type (Secondary Multi-Domain Server or Multi-Domain Log Server) during installation. An incorrect definition can cause deployment failure.

To create a new Multi-Domain Log Server:

2. In the Multi-Domain navigation toolbar, click New > Multi-Domain Log Server.
3. Enter a unique name for this Multi-Domain Log Server.
4. Enter the IPv4 address or click Resolve IP to get the IP address from the DHCP.
5. Select the platform operating system, software version, and hardware type.
6. Click Connect to establish SIC trust.

To create Domain Log Servers:

1. In the SmartConsole Multi-Domain view, right-click the Domain Log Server cell for each Domain in the Multi-Domain Log Server column.
2. Accept the default name or enter a different, unique name.
3. Enter the IPv4 address or click Resolve IP to automatically assign the IPv4 address.
   
The Domain Log Servers synchronize automatically.

5. In the SmartConsole Multi-Domain view, click Menu > Install Database.
   
The new Multi-Domain Log Server automatically synchronizes with all existing Multi-Domain Servers. The synchronization operation can take many minutes to complete, during which a notification indicator shows in the task information area.

Configuring Security Gateways to Send Logs to a Log Server

Logs are not automatically forwarded to a Log Server. You must manually configure each relevant Security Gateway to send its logs to the new Domain Log Server.

To configure Domain gateways to send logs to a Log Server:

1. Connect to the applicable Domain Server with SmartConsole, and then double-click the applicable Security Gateway.
2. In the Logs section, select the new Log Server from the list.
   
   You can delete or ignore other Log Server in the list as necessary.
3. Select the new Log Server from the list and click OK.
4. Configure other log settings as applicable.
5. Install Policy on the applicable Security Gateways.
6. Install the database on the Log Servers.

Deleting a Domain Log Server

To delete a Domain Log Server in SmartConsole:

1. Go to SmartConsole > Multi-Domain > Domains.
2. In the Multi-Domain Log Server column, right-click the Domain Log Server and then select Delete.

Configuring Log Settings

Disk cleanup deletes the oldest log files when the available disk space is less than a specified value. Disk cleanup settings are controlled at the Multi-Domain Server level and apply to all to all Domains and Domain Servers. Disk cleanup settings configured at the Domain Server level are ignored.

These other log management activities, when configured on a Multi-Domain Server, apply only to that Multi-Domain Server:

- Run script before cleanup
- Alerts
- Stop logging
- Create new log file

Configure these activities individually for each Domain Server and Log Server.
To configure log settings for a Multi-Domain Server:

1. In SmartConsole, go to **Multi-Domain > Domains**.
2. Double-click the applicable Multi-Domain Server.
3. Click **Log Settings**.
4. In the **General** view, configure these settings:
   - **Cleanup when free disk space is below** - Start the disk cleanup procedure when available disk space is less than the specified quantity. Select to enable (default) or clear to disable. Enter the minimum disk space and unit of measure (Default = 5 GB).
     
     This parameter applies to the Multi-Domain Server and its Domain Servers.
   - **Run the following script before cleanup** - Enter a predefined script to run before the cleanup starts.
   - **Send Alert when free disk space is below** - Send an alert when available disk space is less than the specified quantity. Select to enable (default). Clear to disable. Enter the minimum disk space and unit of measure (Default = 3 GB).

5. In the **Advanced** view, configure these settings:
   - **Accept Syslog messages** - Include syslog messages in the log files.
   - **Stop Logging** - Stop all logging activity when the available disk space is less than the specified quantity. Enter the minimum disk space and unit of measure (Default = 100 MB).
   - **Create a new log file** - Close and save the active log file when the active log file is larger than the specified size. The log file has an extension that is a sequential number. You can move these saved log files to external storage or export them to an external database. Enter the maximum log file size. (Default = 1 GB).

**Log Server Deployment Scenarios**

Security Gateways generate logs. The Security Policy on each Security Gateway controls which rules generate log entries. In a Multi-Domain Management environment, the Security Gateways send logs to a Domain Server or to Domain Log Servers.

Domain Servers and Multi-Domain Servers also generate audit logs. The system typically saves audit logs on a Multi-Domain Server, which automatically synchronizes to other Multi-Domain Servers in a High Availability deployment.

You can use one of these strategies to deploy Domain Log Servers in a Multi-Domain Management environment:

1. Each Domain has one Domain Log Server on a Multi-Domain Server (default).
2. Each Domain keeps its Domain Log Servers on one or more Multi-Domain Log Servers. If this Domain has more than one Domain Log Server, you must install each one on a different Multi-Domain Log Server. We recommend this scenario for large, geographically distributed environments.
3. Each Domain Security Gateway works as the Log Server for its own logs. This is known as local logging.
Using the Log View

This is an example of the Log view.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Queries</td>
<td>Predefined and favorite search queries.</td>
</tr>
<tr>
<td>2. Time Period</td>
<td>Search with predefined custom time periods.</td>
</tr>
<tr>
<td>3. Query search bar</td>
<td>Define custom queries in this field. You can use the GUI tools or manually enter query criteria. Shows the query definition for the most recent query.</td>
</tr>
<tr>
<td>4. Log statistics pane</td>
<td>Tab hidden - Top results of the most recent log query.</td>
</tr>
<tr>
<td>5. Log Servers</td>
<td>All Multi-Domain Log Servers, Domain Log Servers, and other Log Server objects in the Multi-Domain Management deployment. Select one or more Log Servers from this list to include in a query.</td>
</tr>
<tr>
<td>6. Results pane</td>
<td>All log entries for the most recent query.</td>
</tr>
</tbody>
</table>

Monitoring Multi-Domain Management

R80 includes many powerful, integrated features that let monitor your Multi-Domain Management environment directly in SmartConsole. Additionally, you can use the SmartView Monitor client application to work with advanced monitor features, such as:

- Custom queries to filter monitor data
- Custom monitor views
- Monitor Cooperative enforcement
- Monitor users and user activity
Monitoring Multi-Domain Server Status

To see status and general information for Multi-Domain Servers or Multi-Domain Log Servers, select Multi-Domain in the SmartConsole Multi-Domain Management window. This information shows in the System Information area:

- Multi-Domain Server/Multi-Domain Log Servers IP address
- Server type
- SIC trust status
- Last change date and the administrator who worked on it

You can use SmartView Monitor to see other, detailed status information, such as:

- Errors
- CPU, Disk, and Memory utilization
- Active events
- Alert destination

Monitoring Domain Server Status

Use the SmartConsole Logs & Monitor view to see Domain and Domain Server status. You can also show the combined statistics, in real time, for all Security Gateways in the Domain:

- **Device Status** - Shows Security Gateway device and Software Blade status information
- **License Status** - Shows license status for Software Blades and features
- **System Counters** - Shows operational and performance statistics

You can apply filters and show different types of graphical displays. You can also save the results to your local computer in these formats:

- HTML
- JPG
- CSV file (compatible with Microsoft Excel)
- Plain text file

To see Security Gateway status and monitoring information:

1. Open the Domain SmartConsole.
2. Select a Security Gateway.
3. Click **Monitor** on the **Actions** toolbar.
   
   The **Monitor Information** window opens.
4. Use the toolbar to filter data and change the graph type.
Monitoring Security Gateway Status

You can use the SmartConsole Logs & Monitor view to see Security Gateway status and show operational statistics in real time:

- **Device Status** - Shows Security Gateway device and Software Blade status information
- **License Status** - Shows license status for Software Blades and features
- **System Counters** - Shows operational and performance statistics
- **Traffic information** - Shows traffic, throughput, and other related statistics

You can apply filters and show different types of graphical presentation. You can also save the results to your local computer in these formats:

- HTML
- JPG
- CSV file (compatible with Microsoft Excel)
- Plain text file

To see Security Gateway status and monitoring information:

1. Open the Domain SmartConsole.
2. Select a Security Gateway.
3. Click **Monitor** on the **Actions** toolbar.
   - The **Monitor Information** window opens.
4. Use the toolbar to filter data and change the graph type.
Managing Security through API and CLI

You can configure and control the management server with the new command line tools and through web services. You must first configure the API server.

The API server runs scripts that automate daily tasks and integrate the Check Point solutions with third party systems such as virtualization servers, ticketing systems, and change management systems.

You can use these tools to run API scripts on the Security Management Server:

- Standalone management tool, included with SmartConsole. You can copy this tool to Windows or Gaia computers.
  - mgmt_cli.exe (Windows)
  - mgmt_cll (Gaia)
- Web Services API that allows communication and data exchange between the clients and the Security Management Server through the HTTP protocol. It also lets other Check Point processes communicate with the management server through the HTTPS protocol. The API commands are stored in XML format.

All API clients use the same port as the Gaia portal.

To learn more about the management APIs, to see code samples, and to take advantage of user forums, see the Developers Network section of the Exchange Point Portal https://community.checkpoint.com.

Configuring the API Server

To configure the API Server:

1. In SmartConsole, go to Manage & Settings > Blades.
2. In the Management API section, click Advanced Settings.
   - The Management API Settings window opens.
3. Configure the Startup Settings and the Access Settings.
API Settings

Select **Automatic start** to automatically start the API server when you start or reboot the management server.

The **Automatic start** option is activated by default during Security Management Server installation if the management server has more than 4GB of RAM installed. If the Security Management Server has less than 4GB of RAM, **Automatic Start** is deactivated.

If you change **Automatic start** option:

1. Publish the session changes.
2. Run `api restart` on the management server.

Access Settings

Select one of these options to configure which SmartConsole clients connect to the API server:

- **Management server only** - Only the Security Management Server itself can connect to the API Server. This option only lets you use the `mgmt_cli` utility to send API requests. You cannot use SmartConsole or web services to send API requests.

- **All IP addresses that can be used for GUI clients** - You can send API requests from all IP addresses defined as **Trusted Clients** in SmartConsole. You can send API requests from all IP addresses. This includes requests from SmartConsole, Web services and the `mgmt_cli` utility.

- **All IP addresses** - You can send API requests from all IP addresses. This includes requests from SmartConsole, Web services and the `mgmt_cli` utility.

Command Line Reference

This section includes documentation CLI Commands that are associated with Multi-Domain Management.

**cpmiquerybin**

`cpmiquerybin` connects to a specified database, runs a user-defined query and shows the query results. The results can be a collection of Firewall sets or a tab-delimited list of specified fields from each retrieved object. The default database of the query tool is based on the shell environment settings.

To connect to a Domain Server database, run `mdsenv` (on page 75) and define the necessary environment variables. Use the Domain Server name or IP address as the first parameter.

**Note** - The **MISSING_ATTR** string shows when you use an attribute name that does not exist in the objects in query result.
## Syntax

```
cpmiquerybin <query_result_type> <database> <table> <query> [-a <attributes_list>]
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;query_result_type&gt;</code></td>
<td>Query result in one of these formats:</td>
</tr>
<tr>
<td></td>
<td>• <strong>attr</strong> – Returns values from one or more specified fields for each object. Use the <code>-a</code> parameter followed by a comma separated list of fields.</td>
</tr>
<tr>
<td></td>
<td>• <strong>object</strong> – display FW-1 sets containing data of each retrieved object.</td>
</tr>
<tr>
<td><code>&lt;database&gt;</code></td>
<td>Name of the database file in quotes. For example, &quot;mdsdb&quot;. Use &quot;&quot; to run the query on the default database.</td>
</tr>
<tr>
<td><code>&lt;table&gt;</code></td>
<td>Name of the database table that contains the data.</td>
</tr>
<tr>
<td><code>&lt;query&gt;</code></td>
<td>One or more query strings in a comma separated list. Use the null (&quot;&quot;&quot;) query to return all objects in the database table. You can use wildcard character (*) as a replacement for one or more matching characters in your query string.</td>
</tr>
<tr>
<td><code>-a &lt;attributes_list&gt;</code></td>
<td>If you use the <code>query_result_type</code> parameter, you must specify one or more attributes in a comma-delimited list (without spaces) of object fields. You can return all object names with the special string: <code>__name__</code></td>
</tr>
</tbody>
</table>

You can see complete documentation of the `cpmiquerybin` utility, with the full query syntax, examples and a list of common attributes in sk65181.

https://supportcenter.checkpoint.com/supportcenter/portal?eventSubmit_doGoviewsolutiondetails=&solutionid=sk65181

### Return Values

- **0** - Query returns data successfully
- **1** - Query does not return data or there is a query syntax error

### Example:

```
# cpmiquerybin attr "" network_objects "" -a __name__
DMZZone
WirelessZone
ExternalZone
InternalZone
AuxiliaryNet
LocalMachine_All_Interfaces
CPDShield
InternalNet
LocalMachine
DMZNet
```

This example shows the names of the currently defined network objects.
**mds_backup**

`mds_backup` backs up binaries and data from a Multi-Domain Server to a user specified working directory. You then copy the backup files from the working directory to external storage. This command requires Multi-Domain Superuser privileges.

`mds_backup` runs the `gtar` and `dump` commands to backup all databases. The collected information is stored in one `.tgz` file. The file name is a combination of the backup date and time and is saved in the current working directory. For example, `13Sep2015-141437.mdsbk.tgz`

To back up a Multi-Domain Server:

1. Run `mds_backup` from a location outside the product directory tree to be backed up. This becomes the working directory.
2. After the backup completes, copy the backup `.tgz` file, together with the `mds_restore`, `gtar` and `gzip` command files, to your external backup location.

**Syntax**

```
mds_backup [-g -b {-d <target_directory>} -v -l -h -s]
mds_backup [-g -b {-d <target_directory>} -v -h -s]
mds_backup -h
```

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-g</td>
<td>Executes without prompting to disconnect GUI clients.</td>
</tr>
<tr>
<td>-b</td>
<td>Batch mode - executes without asking anything [-g is implied].</td>
</tr>
<tr>
<td>-d</td>
<td>Target directory for the backup file. If not specified, the backup file is saved to the current directory. You cannot save the backup file to the root directory.</td>
</tr>
<tr>
<td>-v</td>
<td>“Dry run” - Show all files to be backed up, but does not perform the backup operation.</td>
</tr>
<tr>
<td>-l</td>
<td>Exclude logs from the backup.</td>
</tr>
<tr>
<td>-s</td>
<td>Stop Multi-Domain processes before the backup starts.</td>
</tr>
<tr>
<td>-h</td>
<td>Shows help text.</td>
</tr>
</tbody>
</table>

**Comments**

- Do not create or delete Domains or Domain Servers until the backup operation completes.
- It is important not to run `mds_backup` from directories that will be backed up. For example, when backing up a Multi-Domain Server, do not run `mds_backup` from `/opt/CPmds-<current_release>` because it is a circular reference (backing up directory that you need to write into).
- Active log files are not backed up. This is necessary to prevent inconsistencies during the read-write operations. We recommend that you do a log switch before you start the backup procedure.
- You can back up the Multi-Domain Server configuration without the log files. This backup is typically significantly smaller than a full backup with logs. To back up without log files, add this line to the file `$MDSDIR/conf/mds_exclude.dat` configuration file:
  ```
  log/*
  ```
mds_restore

Use this command to restore a Multi-Domain Server that was backed up with mds_backup. It is best practice to restore to a clean install of the previous version. Use the Installation and Upgrade Guide for major versions, or the Release Notes for minor versions or hotfixes.

If the Multi-Domain Management environment has multiple Multi-Domain Servers, restore all Multi-Domain Servers at the same time.

To restore a Multi-Domain Server:
1. Go to the directory where the backup was created.
2. Log in to expert mode.
3. Run: ./mds_restore <backup_file>
4. If you restore a Multi-Domain Server to a new IP address, configure the new address.

mdsenv

Use mdsenv to set shell environment variables to run commands on a specified Domain Server. When run without an argument, the command sets the shell for Multi-Domain Server level commands (mdsstart, mdsstop, and so on).

Syntax
mdsenv [<name>]

<table>
<thead>
<tr>
<th>parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;name&gt;</td>
<td>Domain Server name.</td>
</tr>
</tbody>
</table>

mdsquerydb

mdsquerydb is an advanced database query tool that lets administrators use shell scripts to get information from Check Point Security Management Server databases. Use mdsquerydb to get information from the Multi-Domain Server, Domain Server and global databases.

The system comes with pre-defined queries, defined in the $MDSDIR/confqueries.conf configuration file. Do not change or delete these queries.

Syntax
mdsquerydb <key_name> [-f <output_file_name>]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;key_name&gt;</td>
<td>Query key, which must be defined in the pre-defined queries configuration file.</td>
</tr>
<tr>
<td>-f &lt;output_file_name&gt;</td>
<td>Send the query results to the specified file name. If this parameter is not specified, the data is sent to the standard output.</td>
</tr>
</tbody>
</table>
Pre-Defined Query Keys

Keys for Multi-Domain environment:
----------------------------------
GlobalNetworkObjects    Get name and type of all global network objects
NetworkObjects          Get all Domains' internal Check Point installed network objects
Domains                 Get names of all Domains Irit B comment from QA Draft
Administrators          Get names of all Administrators
MDSs                    Get names and IPs of all MDSs
DomainManagementServers Get names of all Domain Servers
GuiClients              Get names and IPs of all gui clients
CMAs                    Backwards Compatibility (DomainManagementServers)
Customers               Backwards Compatibility (Domains)

Keys for Domain environment:
----------------------------
NetworkObjects          Get name and type of all network objects
Gateways                Get names and IPs of all gateways

Examples:
To retrieve list of all defined keys, run: # mdsquerydb

To send a list of Domains in the Multi-Domain Server database to the standard output, run:
# mdsenv
# mdsquerydb Domains

To send a list of network objects in the global database to /tmp/gateways.txt, run:
mdsenv
mdsquerydb NetworkObjects -f /tmp/gateways.txt

To get a list of gateway objects in the Domain Server DServer1, run:
mdsenv DServer1
mdsquerydb Gateways -f /tmp/gateways.txt

mdsstart

Use mdsstart to start the Multi-Domain Server and all Domain Servers and mdsstop to stop the Multi-Domain Server and all Domain Servers.

Syntax
mdsstart [-m|-s]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-m</td>
<td>Starts only the Multi-Domain Server and not the Domain Servers.</td>
</tr>
<tr>
<td>-s</td>
<td>Starts the Domain Servers sequentially. The system waits for each Domain Server to come up before it starts the next one.</td>
</tr>
</tbody>
</table>

You can decrease the amount of time it takes to start and stop the Multi-Domain Server when there are many Domain Servers. To do this, set the environment variable NUM_EXEC_SIMUL to a smaller number of Domain Servers that start or stop at the same time. By default, the system attempts to start or stop up to 10 Domain Servers at the same time.
**mdsstat**

`mdsstat` shows the status of processes on the Multi-Domain Server and Domain Servers. The status can be UP or Down.

**Syntax**

```
mdsstat [-h] [-m] [<name>]
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-h</td>
<td>Displays help message.</td>
</tr>
<tr>
<td>-m</td>
<td>Test status for Multi-Domain Server only.</td>
</tr>
<tr>
<td>&lt;name&gt;</td>
<td>Enter the name of a Domain Server to show its status.</td>
</tr>
</tbody>
</table>

**Status:**

- **up:** The process is up.
- **down:** The process is down.
- **pnd:** The process is pending initialization.
- **init:** The process is initializing.
- **N/A:** The process’s PID is not yet available.
- **N/R:** The process is not relevant for this Multi-Domain Server.

**Example:**

```
# mdsstat
+--------------------------------------------------------------------------------------+
|                              Processes status checking                               |
| Type| Name           | IP address      | FWM        | FWD      | CPD      | CPCA     |
+-----+----------------+-----------------+------------+----------+----------+----------+
| MDS | -              | 192.168.3.101   | up 17284   | up 17266 | up 17251 | up 17753 |
+-----+----------------+-----------------+------------+----------+----------+----------+
| CMA | DOM211_Server  | 192.168.3.211   | up 32227   | up 32212 | up 25725 | up 32482 |
| CMA | DOM212_Server  | 192.168.3.212   | up 4248    | up 4184  | up 4094  | up 4441  |
+-----+----------------+-----------------+------------+----------+----------+----------+
| Total Domain Management Servers checked: 2   2 up   0 down | |
| Tip: Run mdsstat -h for legend |
+--------------------------------------------------------------------------------------+
```

**migrate_global_policies**

This utility transfers (and upgrades, if necessary) the global configuration database from one Multi-Domain Server to another Multi-Domain Server. `migrate_global_policies` replaces all existing global configurations. Each existing global configuration is saved with a `*.pre_migrate` extension.

If you migrate only the global configurations (without the Domain Servers) to a new Multi-Domain Server, disable all Security Gateways that are enabled for global use.

**Note** - You can only use `migrate_global_policies` when the target Multi-Domain Server does not have global configurations defined.

You can migrate global Policies from these Multi-Domain Management versions:

- R75.x
- R76.x
- R77.x
You can only use `migrate_global_policies` to import files created with `export_database` from Multi-Domain Servers with the above versions. You cannot export an R80 global configuration database and then use `migrate_global_policies` on an R80 Multi-Domain Server.

**Syntax**

```
migrate_global_policies <path>
```

<table>
<thead>
<tr>
<th>parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;path&gt;</code></td>
<td>The <em>fully qualified</em> path to the directory where the global policies files, originally exported from the source Multi-Domain Server ($MDSDIR/conf), are located.</td>
</tr>
</tbody>
</table>

**Example**

```
# migrate_global_policies /tmp/exported_global_db.22Jul2007-124547.tgz
```

**threshold_config**

Use `threshold_config` to configure Policy thresholds. You must be in expert mode to run this command. After you run `threshold_config`, follow the on-screen instructions to make selections and configure the global settings and each threshold.

**Syntax**

```
threshold_config
```

When you run `threshold_config`, you get these options:

- **Show Policy name** - Shows you the name configured for the threshold Policy.
- **Set Policy name** - Lets you set a name for the threshold Policy.
- **Save Policy** - Lets you save the Policy.
- **Save Policy to file** - Lets you export the Policy to a file.
- **Load Policy from file** - Lets you import a threshold Policy from a file.
- **Configure global alert settings** - Lets you configure global settings for how frequently alerts are sent and how many alerts are sent.
- **Configure alert destinations** - Lets you configure a location or locations where the SNMP alerts are sent.
- **View thresholds overview** - Shows a list of all thresholds that you can set.
- **Configure thresholds** - Open the list of threshold categories to let you select thresholds to configure.
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