



CommandCenter Secure Gateway Administrators Guide

Release 11.0

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What's New in the CC-SG Administrators Help

The following sections have changed or information has been added to the CommandCenter Secure Gateway Administrators Help based on enhancements and changes.

- For new installations, default network config option is DHCP
- Strong passwords are enabled in CC-SG by default: **Security Defaults** (on page 278)
- Ciphers for TLS can be configured by all users: **Configure Encryption Mode** (on page 280)
- CIM details are displayed: **Device Profile Screen** (on page 43)
- Custom view set as system view can be set as default for all users: **Using Custom Views in the Admin Client** (on page 207)
- AKC client launch needs trusted certificate: **Prerequisites for Using AKC** (on page 248)
- Admin passwords of SX2 and KX3 devices can be set: **Configuring Administrator Passwords of the Devices** (on page 58)
- New changes in WS-API
- Support for new iLO and DRAC versions

See the Release Notes for a more detailed explanation of the changes applied to this version of the CC-SG.

Introduction

The CommandCenter Secure Gateway (CC-SG) Administrators Guide offers instructions for administering and maintaining your CC-SG.

This guide is intended for administrators who typically have all available privileges.

Users who are not administrators should see Raritan's **CommandCenter Secure Gateway User Guide**.

In This Chapter

Terminology/Acronyms	2
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Terminology/Acronyms

Terms and acronyms found in this document include:

Access Client - HTML-based client intended for use by normal access users who need to access a node managed by CC-SG. The Access Client does not allow the use of administration functions.

Admin Client - Java-based client for CC-SG useable by both normal access users and administrators. It is the only client that permits administration.

Associations - relationships between categories, elements of a category, and ports or devices or both. For example, if you want to associate the "Location" category with a device, create associations before adding devices and ports in CC-SG.

Category - a variable that contains a set of values or elements. An example of a Category is Location, which may have elements such as "New York City," "Philadelphia," or "Data Center 1." When you add devices and ports to CC-SG, you will associate this information with them. It is easier if you set up associations correctly first, before adding devices and ports to them. Another example of a Category is "OS Type," which may have elements such as "Windows" or "Unix" or "Linux."

CIM (Computer Interface Module) - hardware used to connect a target server and a Raritan device. Each target requires a CIM, except for the Dominion KX101 V2, which is attached directly to one target and therefore does not require a CIM. Target servers should be powered on and connected to CIMs, and CIMs should be connected to the Raritan device BEFORE adding the device and configuring ports in CC-SG. Otherwise, a blank CIM name will overwrite the CC-SG port name. Servers must be rebooted after connecting to a CIM.

Device Group - defined group of devices that are accessible to a user. Device groups are used when creating a policy to control access to the devices in the group.

Devices - Raritan products such as Dominion KX III, SX II, and KX IV-101 that are managed by CC-SG. These devices control the target servers and systems, or "nodes" that are connected to them. Check the CC-SG Compatibility Matrix on the Raritan Support web site for a list of supported devices.

Elements - values of a category. For example, the "New York City" element belongs to the "Location" category, and the "Windows" element belongs to the "OS Type" category.

Hostname - can be used if DNS server support is enabled. See **About Network Setup** (on page 250).

The hostname and its Fully-Qualified Domain Name (FQDN = Hostname + Suffix) cannot exceed 257 characters. It can consist of any number of components, as long as they are separated by ".".

Each component has a maximum size of 63 characters and the first character must be alphabetic. The remaining characters can be alphabetic, numeric, or “-” (hyphen or minus).

The last character of a component may not be “-”.

While the system preserves the case of the characters entered into the system, the FQDN is case-insensitive when used.

iLO/RILOE - Hewlett Packard's Integrated Lights Out/Remote Insight Lights Out servers that can be managed by CC-SG. Targets of an iLO/RILOE device are powered on/off and recycled directly. iLO/RILOE devices cannot be discovered by CC-SG; they have to be manually added as nodes. In this guide, the term iLO/RILOE includes all supported versions of iLO/RILOE.

In-band Access - going through the TCP/IP network to correct or troubleshoot a target in your network. KVM and Serial devices can be accessed via these in-band applications: RemoteDesktop Viewer, SSH Client, RSA Client, VNC Viewer.

IPMI Servers (Intelligent Platform Management Interface) - servers that can be controlled by CC-SG. IPMI are discovered automatically but can be added manually as well.

Out-of-Band Access - using applications such as HKC, Virtual KVM Client (VKC) or Active KVM Client (AKC) to correct or troubleshoot a KVM or serial managed node in your network.

Policies - define a user group's access within the CC-SG network. Policies are applied to a user group and have several control parameters to determine the level of control, such as date and time of access.

Nodes - target systems, such as servers, desktop PCs, and other networked equipment, that CC-SG users can access.

Interfaces - the different ways a Node can be accessed, whether through an out-of-band solution such as a Dominion KX2 connection, or through an in-band solution, such as a VNC server.

Node Groups - a defined group of nodes that are accessible to a user. Node groups are used when creating a policy to control access to the nodes in the group.

Ports - connection points between a Raritan device and a node. Ports exist only on Raritan devices, and they identify a pathway from that device to a node.

SASL (Simple Authentication and Security Layer) - method for adding authentication support to connection-based protocols.

SSH - clients, such as PuTTY or OpenSSH, that provide a command line interface to CC-SG. Only a subset of CC-SG commands is provided via SSH to administer devices and CC-SG itself.

User Groups - sets of users that share the same level of access and privileges.

Client Browser Requirements

For a complete list of supported browsers, see the Compatibility Matrix on the Raritan Support web site.

Accessing CC-SG

You can access CC-SG in several ways:

- Browser Access for Users and Admins: The CC-SG Access Client and Admin Client can be accessed with numerous supported web browsers. For a complete list of supported browsers, choose Administration > Compatibility Matrix.
- Desktop Admin Client: The Windows, Mac, and Linux desktop versions of the Admin Client are installed on your client computer and function exactly like the browser-based Admin Client, but uses an embedded Java library. You are not required to install Java on your PC.
- Thick Client: You can install a Java Web Start thick client on your client computer. The thick client functions exactly like the browser-based Admin Client.
- SSH: Remote devices connected via the serial port can be accessed using SSH.
- Diagnostic Console: Provides emergency repair and diagnostics only and is not a replacement for the browser-based GUI to configure and operate CC-SG.

Note: Users can be connected simultaneously, using the browser, thick client, and SSH while accessing CC-SG.

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CC-SG Admin Client Using a Browser

The CC-SG Admin client is a Java-based client that provides a GUI for both administrative and access tasks, depending on your permissions.

1. Using a supported Internet browser, allow pop-ups, then type the URL of the CC-SG and then type /admin: `http(s)://IP address/admin`, for example, **`http://10.0.3.30/admin`** (**`https://10.0.3.30/admin`**) or `https://10.0.3.30/admin`.

*If you see the JRE Incompatibility Warning window, select the JRE version that is appropriate for your client computer and install it. Once JRE is installed, try this procedure again. See **JRE Incompatibility** (on page 6) and **Install a Supported Java Runtime Environment (JRE) Version**.*

Or, you can continue without installing a new JRE version.

2. If you see a Restricted Service Agreement, read the agreement text and select the I Understand and Accept the Restricted Service Agreement checkbox.
3. Type your Username and Password and click Log In.
4. Upon valid login, the CC-SG Admin Client opens.

JRE Incompatibility

If you do not have the minimum required version of JRE installed on your client computer, you will see a warning message before you can access the CC-SG Admin Client. The JRE Incompatibility Warning window opens when CC-SG cannot find the required JRE file on your client computer.

If you see the JRE Incompatibility Warning window, select the JRE version that is appropriate for your client computer and install it, or you can continue without installing a new JRE version.

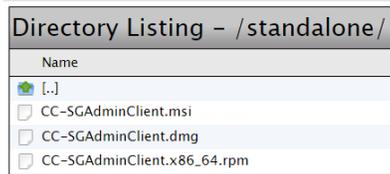
You must launch CC-SG again once JRE is installed.

Administrators can configure the JRE minimum version that is recommended and the message that appears in the JRE Incompatibility Warning window. See **Configuring Custom JRE Settings** (on page 264).

CC-SG Desktop Admin Clients

Desktop Admin Clients are installed onto your client machine. A desktop icon is provided to launch the client.

Installation files can be downloaded directly from your CommandCenter Secure Gateway by going to: **https://<CC-SG IP address or hostname>/standalone**



Follow these links to specific instructions for your client type.

- **Windows Desktop Admin Client** (on page 7)
- **Mac Desktop Admin Client** (on page 9)
- **Linux Desktop Admin Client** (on page 10)

Windows Desktop Admin Client

The Windows Desktop Admin Client is a version of the Admin Client that does not require Java to be installed on your PC. The Windows Admin Client is installed with a standard Windows installer onto your PC. A desktop icon is provided to launch the client.

The client uses an embedded Java library that is internal to the client, so you can have all the features of the Java-based Admin Client, and avoid issues surrounding Java.

- No Java Applets. Insecure NPAPI protocol is not used.
- No Java virtual machine running on your PC.
- No Java updates required.
- No Java incompatibility between applications.
- No browser used.
- No Java/browser security issues.

Install the Windows Desktop Admin Client

► **To install the Windows Desktop Admin Client:**

1. Download the install file directly from the CC-SG by going to:
<https://<CC-SG IP address or hostname>/standalone>
2. For the Windows client, choose the **.msi file**.



3. Launch the installer and click Next to start the installation.
4. Follow the prompts to setup the installation. Accept security prompts if they appear.
5. When the installation is complete, you will find the CC-SG Admin Client icon on your desktop.



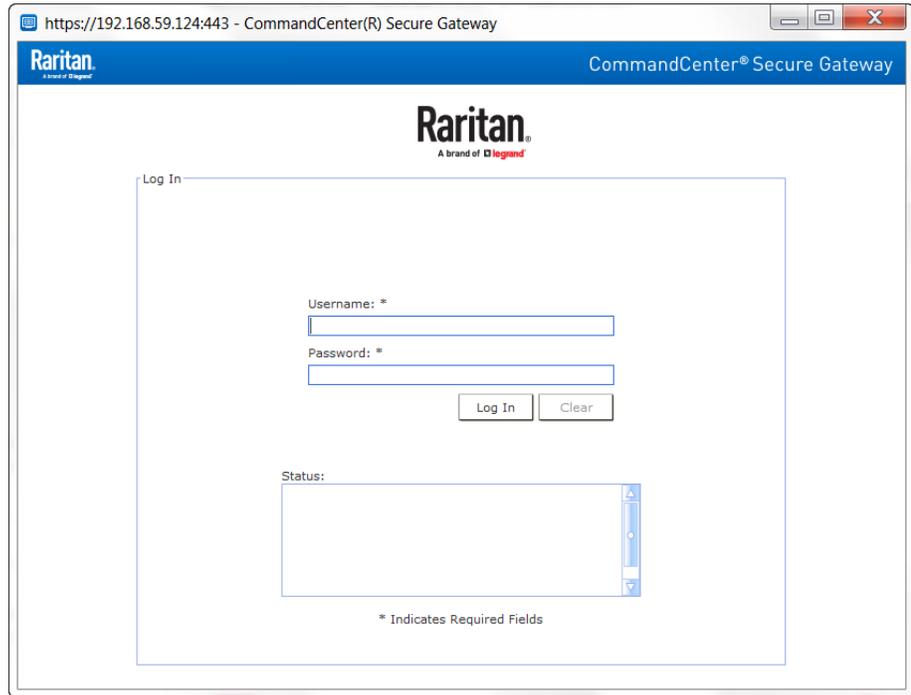
Launch the Windows Desktop Admin Client

▶ **To launch the Windows Desktop Admin Client:**

1. Double-click the desktop icon, then enter a CC-SG IP address and click Start.



2. The Admin Client login page opens.



Interface Support in CC-SG Desktop Admin Client

The CC-SG Desktop Admin Client does not support connections to the following interfaces because they require JRE add-ons in a browser:

- DRAC5
- DRAC6

Mac Desktop Admin Client

▶ To download

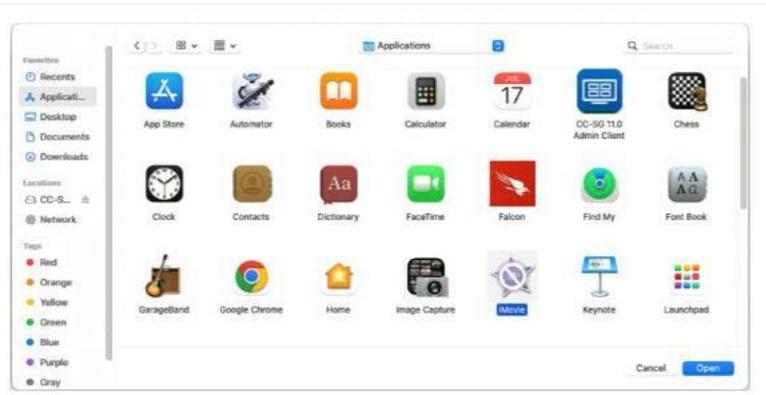
1. Download the install file directly from the CC-SG by going to:
https://<CC-SG IP address or hostname>/standalone
2. For the Mac client, choose the **.dmg** file.

▶ To install

- Double-click the downloaded Mac Desktop Admin Client installation file (.dmg).



To allow all users to run the client, drag it to the Applications folder:



► **To launch:**

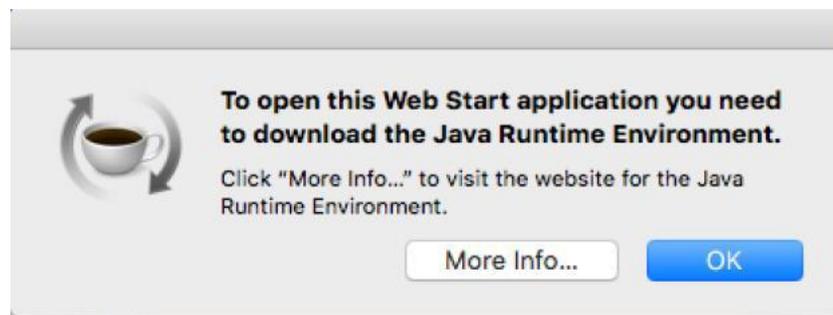
- Double-click client icon to launch the Mac Desktop Admin Client.

You may see the following warning upon first launch, **without** an Open button that allows you to continue. Choose one of the options below to fix this if needed.



- Option #1:
Go to System Preference > Security & Privacy, select "App Store and identified developers" under "Allow apps downloaded from." The warning will display with a button to "Open Anyway".
- Option #2:
Instead of downloading the .dmg file directly from the Mac machine, download it on a Windows machine, save the file to a USB drive, then copy the file back to the MAC machine to install; or SCP from another machine into MAC to install the client.

Note: When making a target connection with a Java web start application (jnlp), install the latest Java runtime from the Java website.



Linux Desktop Admin Client

► **To download**

1. Download the install file directly from the CC-SG by going to:
<https://<CC-SG IP address or hostname>/standalone>
2. For the Linux client, choose the **.rpm file**.

▶ **To install**

- Run the following command as root user on any Linux that supports rpm installation:

```
rpm -i CC-SGAdminClient.x86_64.rpm
```

Or run with sudo if you are not logged in as system administrator:

```
sudo rpm -i CC-SGAdminClient.x86_64.rpm
```

▶ **To launch:**

- Find CC-SG Admin Client under Applications/Internet.
Or
- Run `ccadmin` command.

▶ **Note for Fedora 29 or later:**

- If Java Web Start applications, such as VKC, SSH, and so on do not launch when you connect to a target from CC-SG, install the following package:

```
dnf install libnsl
```

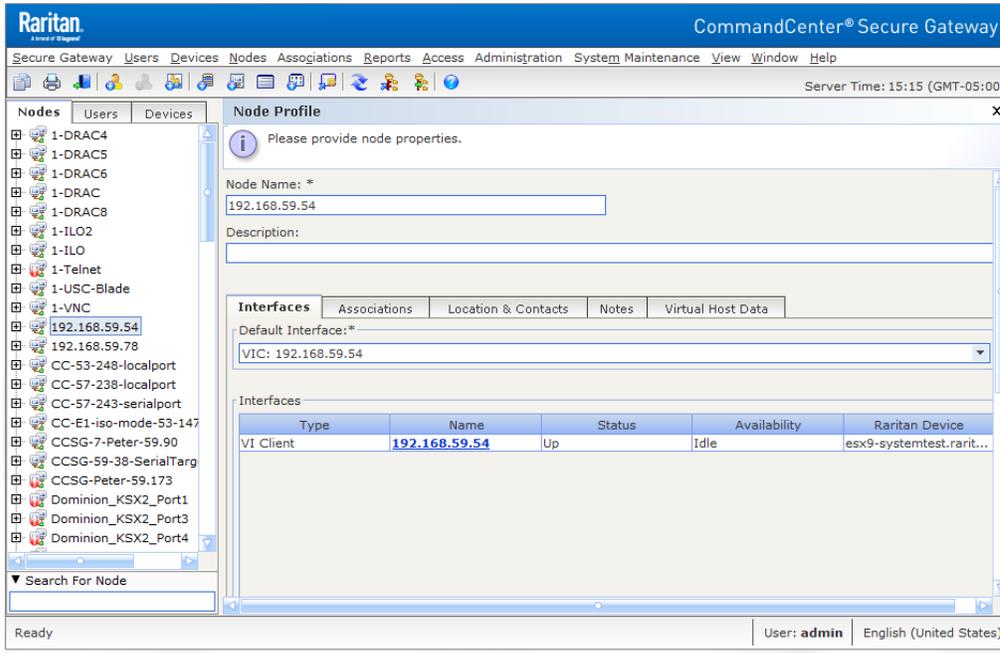
▶ **To uninstall:**

- `rpm -e CC-SGAdminClient`
Or
- `sudo rpm -e CC-SGAdminClient`

Note: When making a target connection with a Java web start application, a warning message about Java upgrade might appear at the background of the CC-SG client. Click the Later button for connection to be launched properly and prevent further warning messages.

CC-SG Admin Client Overview

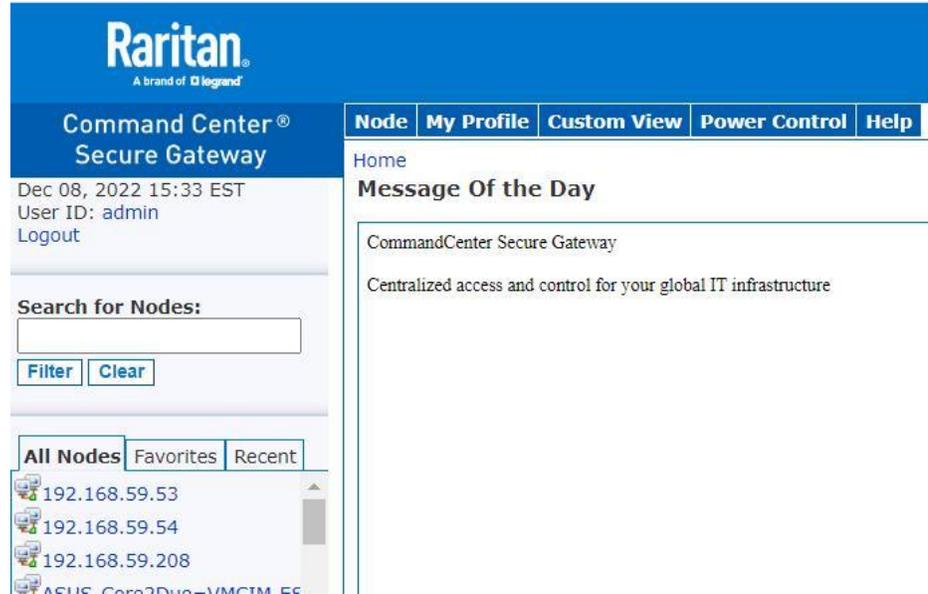
This overview shows the Admin Client. The Admin Client looks the same, whether you reach it via browser or using the installed desktop version. There are a couple of functional differences between the two versions: See **Interface Support in CC-SG Desktop Admin Client** (on page 8).



- **Nodes tab:** Click the Nodes tab to display all known target nodes in a tree view. Click a node to view the Node Profile. Interfaces are grouped under their parent nodes. Click the + and - signs to expand or collapse the tree. Right-click an interface and select Connect to connect to that interface. You can sort the nodes by Node Name (alphabetically) or Node Status (Available, Busy, Unavailable). Right-click the tree view, select Node Sorting Options, and then select By Node Name or By Node Status.
- **Users tab:** Click the Users tab to display all registered Users and Groups in a tree view. Click the + and - signs to expand or collapse the tree.
- **Devices tab:** Click the Devices tab to display all known Raritan devices in a tree view. Different device types have different icons. Ports are grouped under their parent devices. Click the + and - signs to expand or collapse the tree. Click a port to view the Port Profile. Right-click a port and select Connect to connect to that port. You can sort the ports by Port Name (alphabetical), Port Status (Available, Busy, Unavailable) or Port Number (numerical). Right-click the tree view, select Port Sorting Options, and then select By Node Name or By Node Status.
- **Quick Commands toolbar:** This toolbar offers shortcut buttons for executing common commands.
- **Operation and Configuration menu bar:** These menus contain commands to operate and configure CC-SG. You can access some of these commands by right-clicking on the icons in the Nodes, Users, and Devices Selection tabs. The menus and menu items you see are based on your user access privileges.
- **Server time:** The current time and time zone as configured on CC-SG in Configuration Manager. This time is used when scheduling tasks in Task Manager. See **Task Manager** (on page 291). This time may be different than the time your client PC uses.

CC-SG Access Client Using a Browser

The CC-SG Access client is an HTML-based client that provides non-administrator CC-SG users with a GUI for access tasks, based on your permissions.



1. Using a supported Internet browser, type the URL of the CC-SG: `http(s)://IP address`, for example, **`http://10.0.3.30`** (**`https://10.0.3.30`**) or `https://10.0.3.30`. The login page opens.
2. If the CC-SG Administrator has enabled the Restricted Service Agreement, read the agreement text, and then select the I Understand and Accept the Restricted Service Agreement checkbox.
3. Type your Username and Password then click Log In.
4. Upon valid login, the CC-SG Access Client's Home page opens.

Thick Client

The CC-SG thick client allows you to connect to CC-SG by launching a Java Web Start application instead of running an applet through a web browser. The thick client can be faster than a browser. You must install a supported version of Java to use the thick client.

Install the Thick Client

▶ To download the thick client from CC-SG:

1. Launch a web browser and type this URL:
`http(s)://<IP_address>/install` where <IP_address> is the IP address of the CC-SG.
 - If a security warning message appears, click Start to continue the download.
2. When the download is complete, a new window in which you can specify the CC-SG IP address opens.
3. Type the IP address of the CC-SG unit you want to access in the IP to Connect field. Once you have connected, this address will be available from the IP to Connect drop-down list. The IP addresses are stored in a properties file that is saved to your desktop.
4. Click Start.
 - A warning message appears if you are using an unsupported Java Runtime Environment version on your machine. Follow the prompts to either download a supported Java version, or continue with the currently installed version.
5. The login screen appears.
6. If the Restricted Service Agreement is enabled, read the agreement text, and then select the I Understand and Accept the Restricted Service Agreement checkbox.
7. Type your Username and Password in the corresponding fields, and then click Login to continue.

Use the Thick Client

Once the thick client is installed, there are two ways to access it on your client computer.

▶ To access the thick client:

- Launch the thick client from the Java Control Panel's Java Application Cache Viewer.
- Use the Java Control Panel's Java Application Cache Viewer to install a shortcut icon on your desktop for the thick client.

Getting Started

Before you can begin configuring and working in CC-SG, you must have valid licenses installed. Then, upon first login, you should confirm the IP address, install certificates, set the CC-SG server time, and check the firmware and application versions installed. You may need to upgrade the firmware and applications.

Once you have completed your initial configurations, proceed to Guided Setup. See **Configuring CC-SG with Guided Setup** (on page 26).

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Licensing

Licenses are based on the number of nodes configured in CC-SG.

Your purchase of a physical or virtual appliance includes a license to use a specific number of nodes. This "base license" enables CC-SG functionality and includes licensing for up to the set number of nodes. If you need more nodes, you will also purchase an Add-On license for additional nodes. If you want to use the WS-API feature, you must also purchase an Add-On license for WS-API access.

License files for physical appliances and for virtual appliances are associated with a specific CC-SG unit's or virtual CC-SG virtual machine's Host ID.

This means that license files are not transferable.

► Limited Operation Before License Install

Until you have installed and checked out the proper licenses, CC-SG operations are limited. Only the following menu choices are enabled.

- Diagnostic Console: To retrieve necessary information and logs, configure network interfaces.

Note: You can access both the Administrator Console and Status Console interfaces via VGA/Keyboard/Mouse Port (if applicable), serial port (if applicable) or SSH. Status Console interface is also available from a Web interface when enabled.

- Change Password
- Secure Gateway: To view Message Of The Day, Print, Print Screen, Logout, and Exit.
- Administration > Cluster Configuration: To configure the cluster and assign roles to the cluster nodes. Building the cluster is a pre-requisite for operating with a cluster-based license. Clusters are available on physical appliances only.
- Administration > License Manager: To allow uploading and removing license files, and license check-out and check-in.
- System Maintenance: The following menu choices are enabled.
 - Restore: To allow restore of licenses to CC-SG, in case you do a full reset and remove the licenses by mistake.
 - Maintenance Mode: To enter and exit Maintenance Mode as needed to create cluster or perform upgrades.
 - Restart
 - Upgrade
 - Shutdown
- View
- Help: To view online help documentation.

Getting, Installing, and Checking Out Licenses

Follow these instructions to ensure that you have valid licenses installed and activated. If you are using clusters, see **Cluster Kit Licensing vs. Standalone Licensing** (on page 19).

▶ Step 1 - Get your license:

1. The license administrator designated at time of purchase will receive an email from Raritan Licensing Portal when licenses are available. Use the link in the email, or go directly to www.raritan.com/support. Create a user account and login, then click "Visit The License Key Management Tool". The licensing account information page opens.
2. Click the Product License tab. The licenses you purchased display in a list. You may have only 1 license, or multiple licenses. See **Available Licenses** (on page 20).
3. To get each license, click Create next to the item in the list, then enter the CommandCenter Secure Gateway Host ID. For clusters, enter both Host IDs. You can copy and paste the Host ID from the License Management page. See **Find Your Host ID and Check Number of Nodes In Database** (on page 20).
4. Click Create License. The details you entered display in a pop-up. Verify that your Host ID is correct. For clusters, verify both Host IDs.

Warning: Make sure the Host ID is correct! A license created with an incorrect Host ID is not valid and requires Raritan Technical Support's help to fix.

5. Click OK. The license file is created.
6. Click Download Now and save the license file.

▶ Step 2: Install your license

1. In the CC-SG Admin Client, choose Administration > License Management.
2. Click Add License.
3. Read the license agreement and scroll down the whole text area, then select the I Agree checkbox.
4. Click Browse, then select the license file and click OK.

▶ Step 3: Check out the licenses you want to activate:

You must check out licenses to activate the features.

- Select a license from the list then click Check Out. Check out all the licenses you want to activate.

Cluster Kit Licensing vs. Standalone Licensing

Physical hardware clusters can operate under standalone licensing or cluster kit licensing. Virtual appliance clusters use standalone licensing only.

A Cluster Kit license enables 2 physical units operating as a cluster to share licenses. The system will allow limited operations until the cluster is created and actively operating, and the license is installed and checked out on the primary cluster node. The CC-SG units in the cluster can temporarily operate as standalone units to allow for independent maintenance of each unit. The 2 CC-SG units must be re-joined for continuous full functionality. These restrictions only apply to physical hardware clusters operating under Cluster Kit licenses.

In all clusters, each CC-SG in the cluster must be able to take over as primary, so they must have identical licensed node capacity at all times. Cluster kit licenses automatically ensure this since they are copied from the primary onto the backup. When operating a cluster with standalone licenses, this is enforced through a licensed node capacity check when you join the cluster.

Note: If the 30-day standalone grace period of a cluster license expires, CC-SG operations are limited until the cluster is joined.

When creating a cluster license file on the Raritan Licensing Portal, you must enter the Host IDs for each CC-SG unit. Find these numbers on the Administration > License Management page of each CC-SG unit.

► **To deploy a physical hardware cluster with a Cluster Kit license:**

See **Configuring CC-SG Clusters** (on page 268) for full details on CC-SG clusters.

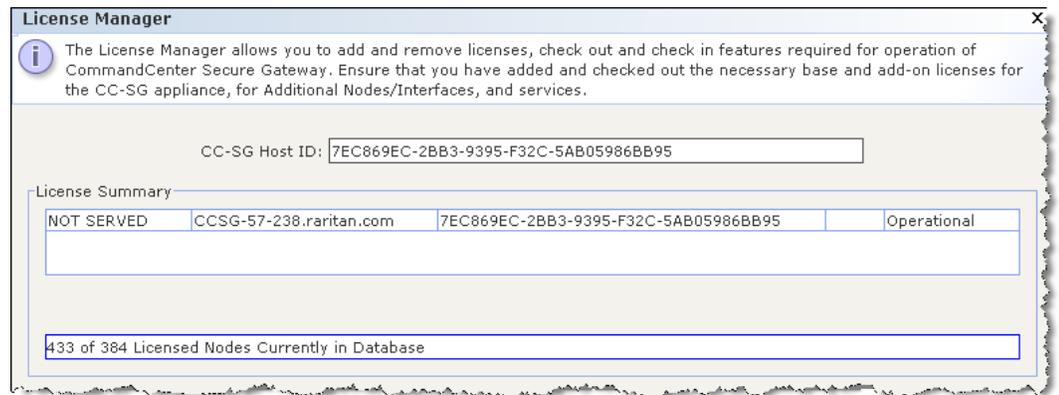
1. Find the Host IDs for each unit. See **Find Your Host ID and Check Number of Nodes In Database** (on page 20).
2. Get the Cluster Kit license file. See **Getting, Installing, and Checking Out Licenses** (on page 18).
3. Create the cluster. See **Create a Cluster** (on page 269).
4. Install the license file on the primary node in the cluster. The file will be copied to the secondary node when the cluster is created. Check out the licenses you want to activate. Make sure to check out the Cluster Kit license. See **Getting, Installing, and Checking Out Licenses** (on page 18).

Find Your Host ID and Check Number of Nodes In Database

The License Manager page contains information about your licenses, including the number of licensed nodes currently in your database. You can retrieve the Host ID from the License Management page. You must enter your CommandCenter Secure Gateway's Host ID when creating a license file on the Raritan Licensing portal. See **Getting, Installing, and Checking Out Licenses** (on page 18) for details.

► **To view your Host ID and check number of nodes in database:**

1. Choose Administration > License Management.
2. The Host ID of the CommandCenter Secure Gateway unit you are logged into displays in the License Management page. You can copy and paste the Host ID.
3. Check the number of nodes in your database on this page. You can determine how many more nodes you can add up to your licensed limit.



Available Licenses

CC-SG product	Description	Information needed to create license for first time
CC-E1-128	CC-SG E1 Appliance, includes 128 Node License	Host ID of the CC-SG unit
CC-E1-256	CC-SG E1 Appliance, includes 256 Node License	Host ID of the CC-SG unit
CC-E1-512	CC-SG E1 Appliance, includes 512 Node License	Host ID of the CC-SG unit
CC-V1-128	CC-SG V1 Appliance, includes 128 Node License	Host ID of the CC-SG unit

CC-SG product	Description	Information needed to create license for first time
CC-V1-256	CC-SG V1 Appliance, includes 256 Node License	Host ID of the CC-SG unit
CCSG64-VA	CC-SG Virtual Appliance, includes 64 Node Licenses	Host ID of the CC-SG virtual appliance machine
CCSG128-VA	CC-SG Virtual Appliance, includes 128 Node License	Host ID of the CC-SG virtual appliance machine
CC-2XE1-512	Cluster Kit: 2 CC-SG E1 Appliances, includes 512 Node License	Host IDs of each CC-SG unit in the cluster
CC-2XE1-1024	Cluster Kit: 2 CC-SG E1 Appliances, includes 1024 Node License	Host IDs of each CC-SG unit in the cluster
CC-2XV1-256	Cluster Kit: 2 CC-SG V1 Appliances, includes 256 Node License	Host IDs of each CC-SG unit in the cluster
Add-on Licenses	Licenses for additional nodes and value added services, such as WS-API.	Host ID of the CC-SG unit

Install or Upgrade VMware Tools

VMware Tools is recommended by VMware for all virtual machine deployments. Once you install VMware Tools on your CommandCenter Secure Gateway virtual appliance, you can follow this process to upgrade it when VMware makes a new release.

The virtual CC-SG OVF package has a version of VMware Tools installed by default.

► To install or upgrade VMware Tools:

1. Login to the vSphere client and connect to the ESX host that is hosting the CC-SG virtual appliance.
2. Select the virtual machine then click the Console tab. The Diagnostic Console displays.
3. Right-click the virtual machine, then choose Guest > Install/Upgrade VMware Tools. Select Interactive Tools Upgrade, and click OK. This mounts the files onto the virtual machine so that CC-SG can do the installation.
4. Open a browser and login to the Admin Client.
5. Choose System Maintenance > Install / Upgrade VMware Tools. When the installation is complete, a success message displays.

Configure Backups and Snapshots of Virtual Appliance and Storage Servers

Once the CC-SG virtual appliance is deployed, make sure to configure backups of the virtual appliance through VMware®, and of the storage servers used by the virtual appliance.

You should also enable snapshots through VMware.

See the VMware documentation at http://www.vmware.com/support/pubs/vs_pubs.html for details on configuring these features.

Virtual Appliances with Remote Storage Servers

If your CC-SG virtual appliance uses a remote server for file storage, and access to that storage is lost, you may experience an interruption in accessing CC-SG until the storage server has completely booted up. You may see a Problems Retrieving Configuration Data message.

Confirming IP Address

1. Choose Administration > Configuration.
2. Click the Network Setup tab.
3. Check that the network settings are correct, and make changes if needed. See **About Network Setup** (on page 250). **Optional.**
4. Click Update Configuration to submit your changes.
5. Click Restart Now to confirm your settings and restart CC-SG.

Create and Install Certificates

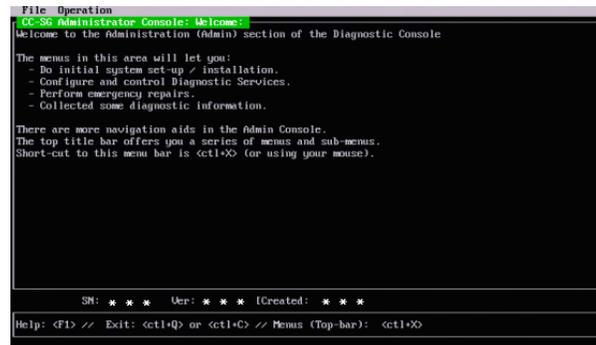
It is strongly recommended to install your own Certificate in CC-SG. This security "best practice" reduces the number of browser and Java™ warning messages, and avoids man-in-the-middle attacks. It also prevents future Java versions and browser versions from blocking access to your CC-SG.

For information on creating and installing certificates, see **Certificates** (on page 286)

Log in to Diagnostic Console to Set CC-SG IP Address

1. Log in as *admin/raritan*. Usernames and passwords are case-sensitive.
2. You will be prompted to change the local console password.
 - a. Type the default password (*raritan*) again.
 - b. Type and then confirm the new password.

- Press CTRL+X when you see the Welcome screen.



- Choose Operation > Network Interfaces > Network Interface Config. The Administrator Console appears.
- In the Configuration field, select DHCP or Static. If you select Static, type a static IP address. If needed, specify DNS servers, netmask, and gateway address.
- Select Save.

Default CC-SG Settings

IP Address: DHCP

Subnet Mask: 255.255.255.0

Username/Password: admin/raritan

Setting CC-SG Server Time

CC-SG's time and date must be accurately maintained to provide credibility for its device-management capabilities.

Important: The Time/Date configuration is used when scheduling tasks in Task Manager. See *Task Manager* (on page 291). The time set on your client PC may be different than the time set on CC-SG.

Only the CC Super-User and users with similar privileges can configure Time and Date.

Changing the time zone is disabled in a cluster configuration.

► **To configure the CC-SG server time and date:**

- Choose Administration > Configuration.
- Click the Time/Date tab.
 - To set the date and time manually:
 - Date - click the drop-down arrow to select the Month, use the up and down arrows to select the Year, and then click the Day in the calendar area.

- Time - use the up and down arrows to set the Hour, Minutes, and Seconds, and then click the Time zone drop-down arrow to select the time zone in which you are operating CC-SG.
- a. To set the date and time via NTP: Select the Enable Network Time Protocol checkbox at the bottom of the window, and then type the IP addresses for the Primary NTP server and the Secondary NTP server in the corresponding fields.

Note: Network Time Protocol (NTP) is the protocol used to synchronize the attached computer's date and time data with a referenced NTP server. When CC-SG is configured with NTP, it can synchronize its clock time with the publicly available NTP reference server to maintain correct and consistent time.

3. Click Update Configuration to apply the time and date changes to CC-SG.
4. Click Refresh to reload the new server time in the Current Time field.

Choose System Maintenance > Restart to restart CC-SG.

Log in to CC-SG

1. Launch a supported browser and type the URL of the CC-SG: `https://<IP address>/admin`.

For example, `https://192.168.0.192/admin`.

Note: The default setting for browser connections is HTTPS/SSL encrypted.

2. When the security alert window appears, accept the connection.
3. You will be warned if you are using an unsupported Java Runtime Environment version. Follow the prompts to either download the correct version, or continue. The Login window appears.
4. Type the default username (*admin*) and password (*raritan*) and click Login. The CC-SG Admin Client opens. You are prompted to change your password. Strong passwords are enforced for *admin*.

Checking the Compatibility Matrix

The Compatibility Matrix lists the firmware versions of Raritan devices and software versions of applications that are compatible with the current version of CC-SG. CC-SG checks against this data when you add a device, upgrade device firmware, or select an application for use. If the firmware or software version is incompatible, CC-SG displays a message to warn you before you continue. Each version of CC-SG will support only the current and previous firmware versions for Raritan devices at the time of release. You can view the compatibility matrix on the Raritan Support web site.

► **To check the Compatibility Matrix:**

- Choose Administration > Compatibility Matrix.

Checking and Upgrading Application Versions

Check and upgrade applications used for accessing nodes.

▶ **To check an application version:**

1. Choose Administration > Applications.
2. Select an Application name from the list. Note the number in the Version field. Some applications do not automatically show a version number.

▶ **To upgrade an application:**

If the application version is not current, you must upgrade the application. You can download the application upgrade file from the Raritan website. For a complete list of supported application versions, see the Compatibility Matrix on the Raritan Support website.

The best practice is to enter Maintenance Mode before upgrading applications. See **Entering Maintenance Mode** (on page 316).

1. Save the application file to your client PC.
2. Click the Application name drop-down arrow and select the application that must be upgraded from the list. If you do not see the application, you must add it first. See **Add an Application** (on page 247).
3. Click Browse, locate and select the application upgrade file from the dialog that appears then click Open.
4. The application name appears in the New Application File field in the Application Manager screen.
5. Click Upload. A progress window indicates that the new application is being uploaded. When complete, a new window will indicate that the application has been added to the CC-SG database and is available to use.
6. If the Version field does not automatically update, type the new version number in the Version field. The Version field will automatically update for some applications.
7. Click Update.

*Note: Users who were logged in during the upgrade must log out of CC-SG then log in again to ensure that the new version of the application is launched. Also, see **Older Version of Application Opens After Upgrading** (on page 247).*

Configuring CC-SG with Guided Setup

Guided Setup offers a simple way to complete initial CC-SG configuration tasks once the network configuration is complete. The Guided Setup interface leads you through the process of defining Associations, discovering and adding devices to CC-SG, creating device groups and node groups, creating user groups, assigning policies and privileges to user groups, and adding users. Once you have completed Guided Setup, you can always edit your configurations individually.

Guided Setup is divided into four tasks:

- Associations - Define the categories and elements that you use to organize your equipment. See **Associations in Guided Setup** (on page 27).
- Device Setup - Discover devices in your network and add them to CC-SG. Configure device ports. See **Device Setup** (on page 28).
- Create Groups - Categorize the devices and nodes that CC-SG manages into groups and create full access policies for each group. See **Creating Groups** (on page 30).
- User Management - Add users and user groups to CC-SG, and select the policies and privileges that govern user access within CC-SG and to devices and nodes. See **User Management** (on page 32).

See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.

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Before You Use Guided Setup

Before proceeding with CC-SG configuration, you must complete system configuration.

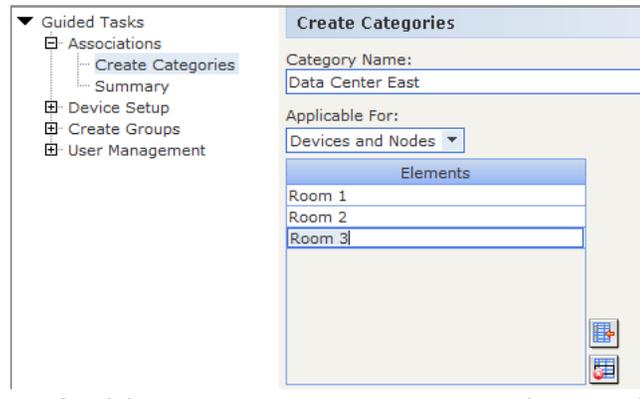
- Configure and install KVM and serial devices, including assigning an IP address.

Associations in Guided Setup

Create Categories and Elements

► **To create categories and elements in Guided Setup:**

1. In the Guided Setup window, click Associations, and then click Create Categories in the left panel to open the Create Categories panel.
2. In the Category Name field, type the name of a category into which you want to organize your equipment, such as "Location."
3. In the Applicable for field, indicate whether you want the category to be available for devices, nodes, or both. Click the Applicable for drop-down menu and select a value from the list.
4. In the Elements table, type the name of an element within the category, such as "Raritan US."
 - Click the Add New Row icon  to add more rows to the Elements table.
 - To delete an element, select its row, and then click the Delete Row icon .
5. Repeat these steps until you have added all the elements within the category to the Elements table.



6. To create another category, click Apply to save this category, and then repeat the steps in this section to add additional categories. **Optional**
7. When you have finished creating categories and elements, click OK. The Association Summary panel displays a list of the categories and elements that you created.
8. Click Continue to start the next task, Device Setup. Follow the steps in the next section.

Device Setup

The second task of Guided Setup is Device Setup. Device Setup allows you to search for and discover devices in your network, and add those devices to CC-SG. When adding devices, you may select one element per category to be associated with the device.

Important: Ensure that no other users are logged on to the device during CC-SG configuration.

Discover and Add Devices

The Discover Devices panel opens when you click Continue at the end of the Associations task. You can also click Device Setup, and then click Discover Devices in the Guided Tasks tree view in the left panel to open the Discover Devices panel.

See *Discovering and Adding IPv6 Network Devices* (on page 46) for details on supported devices and how to add them.

The screenshot shows the 'Discover Devices' window. At the top, there is an information icon and the text 'Please provide IP range.' Below this is a 'Discover' section with two input fields: 'From IP Address' containing '192.168.59.0' and 'To IP Address' containing '192.168.59.255'. Underneath these fields is a list of 'Device Types' including Dominion KSX2, Dominion KX2, Dominion KX2-101, Dominion KX3, and Dominion KX4-101. A checkbox for 'Broadcast Discovery' is checked. At the bottom of the input section are 'Discover' and 'Stop' buttons. Below the input section is a table of discovered devices.

IPv4 Address	Device Type	Device Name	Mana...	Description
192.168.59...	Domination PX	DPCS20-20	Yes	Domination PX, Model = PX (DPCS20A-16)
192.168.59...	Domination PX	DPXS20-20	No	Domination PX, Model = PX (DPXS20-20)
192.168.59...	Domination SX	SX_59_86	No	Domination SX model SX32 ver. 3.5.0.5.5
192.168.59...	Domination KSX2	kxs2_5992	No	Domination KSX2 model DKXS2_188 ver. 2.7.0...
192.168.59...	Domination KX3	DKX3-100	No	Domination KX3 model DKX3-416 ver. 3.6.0.1...
192.168.59...	Domination SX2	SX2	Yes	Domination SX2 model DSX2-32M ver. 2.2.0.5...
192.168.59...	Domination KX...	PilotUnit#52_DKX4-101	No	Domination KX4-101 model DKX4-101 ver. 4.0...
192.168.59...	Domination KX3	MYSDDKX3-116	No	Domination KX3 model DKX3-116 ver. 3.5.0.5...
192.168.59...	Domination KX3	DKX3-832_STTTesting...	No	Domination KX3 model DKX3-832 ver. 3.5.0.5...
192.168.59...	Domination SX2	sx2-59-138-subadra	No	Domination SX2 model DSX2-16 ver. 2.1.0.5.1...
192.168.59...	Domination KX3	KX3-59-139	No	Domination KX3 model DKX3-808 ver. 3.4.0.1...
192.168.59...	Domination KX3	KX3-Monica	Yes	Domination KX3 model DKX3-232 ver. 3.5.0.5...
192.168.59...	Domination KX...	DKX4-101	No	Domination KX4-101 model DKX4-101 ver. 4.0...
192.168.59...	Domination KX...	KX4-101-11T8B00011...	No	Domination KX4-101 model DKX4-101 ver. 4.0...
192.168.59...	Domination KX3	DominationKX	No	Domination KX3 model DKX3-232 ver. 3.6.0.1...
192.168.59...	Domination KX...	KX4-101	No	Domination KX4-101 model DKX4-101 ver. 4.0...

▶ To discover and add devices in Guided Setup:

1. Type the IP address range in which you want to search for devices in the From address and To address fields.

2. In the Device types list, select the type of device you want to search for in the range specified. Press and hold down the Ctrl key while you click device types to select multiple device types.
3. Select the Broadcast discovery checkbox if searching for devices on the same subnet on which CC-SG resides. Deselect the Broadcast discovery checkbox to discover devices across all subnets.
4. Click Discover.
5. If CC-SG has discovered devices of the specified type and in the specified address range, the devices appear in a table in the bottom section of the Discover Devices panel. Click the black arrow at the top of the panel to hide the top section, expanding your view of the discovery results in the bottom section of the panel.
6. In the table of discovered devices, select the device you want to add to CC-SG, and then click Add. The Add Device panel opens. The Add Device panel is slightly different, depending on the type of device you are adding.
7. You can change the Device name and Description by typing new information in the corresponding fields.
8. Confirm that the IP address you assigned when you prepared the device to be added to CC-SG displays in the Device IP or Hostname field, or type the correct address in the field if necessary.
9. The TCP Port Number field will be populated automatically based on the device type.
10. Type the Username and Password you created when you prepared the device to be added to CC-SG in the corresponding fields.
11. In the Heartbeat timeout field, type the number of seconds that should elapse before timeout between the device and CC-SG.
12. If you are adding SX, SX2, KX2, KX3, KX4-101, KXS2 version 2.2 or later device, select the Allow Direct Device Access checkbox if you want to allow local access to the device. Deselect the Local access: Allowed checkbox if you do not want to allow local access to the device.
13. If you are manually adding a PowerStrip device, click the Number of ports drop-down arrow and select the number of outlets the PowerStrip contains.
14. If you are adding an IPMI Server, type an Interval, used to check for availability, and an Authentication Method, which needs to match what has been configured on the IPMI Server, in the corresponding fields.
15. If you want to configure all available ports on the device, select the Configure all ports checkbox. CC-SG will add all ports on the device to CC-SG and create a node for each port.
16. In the Device Associations section at the bottom of the panel, click the drop-down arrow in the Element column that corresponds to each Category you want to assign to the device, and then select the element you want to associate with the device from the list.

Note: A node or device that has more than one element of the same category assigned to it will appear more than once in a Custom View based on categories and elements.

17. If you want the Element to apply to the device and to the nodes connected to the device, select the Apply to Nodes checkbox.
18. If you want to add another device, click Apply to save this device, and repeat these steps. **Optional.**
19. When you have finished adding devices, click OK. The Device Summary panel displays a list of the devices that you added.
20. Click Continue to start the next task, Create Groups. Follow the steps in the next section.

Creating Groups

The third task of Guided Setup is Create Groups. Create Groups allows you to define groups of devices and groups of nodes and specify the set of devices or nodes included in each group. Administrators can save time by managing groups of similar devices and nodes, rather than managing each device or node individually.

Add Device Groups and Node Groups

► **To add device groups and node groups in Guided Setup:**

1. The Device Group: New panel opens when you click Continue at the end of the Device Setup task. You can also click Create Groups, and then click Add Device Groups in the Guided Tasks tree view in the left panel to open the Device Group: New panel.
2. In the Group Name field, type a name for a device group you want to create.
3. There are two ways to add devices to a group, Select Devices and Describe Devices. The Select Devices tab allows you to select which devices you want to assign to the group by selecting them from the list of available devices. The Describe Devices tab allows you to specify rules that describe devices, and the devices whose parameters follow those rules will be added to the group.
 - **Select Devices**
 - a. Click the Select Devices tab in the Device Group: New panel.
 - b. In the Available list, select the device you want to add to the group, and then click Add to move the device into the Selected list. Devices in the Selected list will be added to the group.
 - c. To remove a device from the group, select the device name in the Selected list, and then click Remove.
 - d. You can search for a device in either the Available or Selected list. Type the search terms in the field below the list, and then click Go.

- **Describe Devices**
 - a. Click the Describe Devices tab in the Device Group: New panel. In the Describe Devices tab, you create a table of rules that describe the devices you want to assign to the group.
 - b. Click the Add New Row icon  to add a row to the table.
 - c. Double-click the cell created for each column to activate a drop-down menu. Select the rule components you want to use from each list.
- 4. Select the Create Full Access Policy for Group checkbox if you want to create a policy for this device group that allows access to all nodes and devices in the group at all times with control permission.
- 5. To add another device group, click Apply to save this group and repeat these steps. **Optional.**
- 6. When you have finished adding device groups, click OK. The Node Group: New panel opens. You can also click Create Groups, and then click Add Node Groups in the Guided Tasks tree view in the left panel to open the Node Group: New panel.
- 7. In the Group Name field, type a name for a node group you want to create.
- 8. There are two ways to add nodes to a group, Select Nodes and Describe Nodes. The Select Nodes section allows you to select which nodes you want to assign to the group by selecting them from the list of available nodes. The Describe Nodes section allows you to specify rules that describe nodes, and the nodes whose parameters follow those rules will be added to the group.
 - **Select Nodes**
 - a. Click the Select Nodes tab in the Node Group: New panel.
 - b. In the Available list, select the node you want to add to the group, and then click Add to move the node into the Selected list. Nodes in the Selected list will be added to the group.
 - c. To remove a node from the group, select the node name in the Selected list and click Remove.
 - d. You can search for a node in either the Available or Selected list. Type the search terms in the field below the list, and then click Go.
 - **Describe Nodes**
 - a. Click the Describe Nodes tab in the Node Group: New panel. In the Describe Nodes tab, you create a table of rules that describe the nodes you want to assign to the group.
 - b. Click the Add New Row icon  to add a row to the table.
 - c. Double-click the cell created for each column to activate a drop-down menu. Select the rule components you want to use from each list. See ***Policies for Access Control*** (on page 201).

9. Select the Create Full Access Policy for Group checkbox if you want to create a policy for this node group that allows access to all nodes in the group at all times with control permission.
10. To add another node group, click Apply to save this group and repeat these steps. **Optional.**
11. When you have finished adding node groups, click OK. The Groups Summary panel displays a list of the groups that you added.
12. Click Continue to start the next task, User Management. Follow the steps in the next section.

User Management

The fourth task of Guided Setup is User Management. User Management allows you to select the Privileges and Policies that govern the access and activities of groups of users. Privileges specify which activities the members of the user group can perform in CC-SG. Policies specify which devices and nodes the members of the user group can view and modify. Policies are based on Categories and Elements. When you have created the user groups, you can define individual users and add them to the user groups.

Add User Groups and Users

The Add User Group panel opens when you click Continue at the end of the Create Groups task. You can also click User Management, and then click Add User Group in the Guided Tasks tree view in the left panel to open the Add User Group panel.

► **To add user groups and users in Guided Setup:**

1. In the User Group Name field, type a name for the user group you want to create. User group names can contain up to 64 characters.
2. In the Description field, type a description of the user group.
3. To set a maximum number of KVM sessions per user in this user group when accessing devices that have this feature enabled, select the Limit Number of KVM Sessions per Device checkbox, and select the number of sessions allowed in the Max KVM Sessions (1-8) field. **Optional.** See ***Limit the Number of KVM Sessions per User*** (on page 186) for details.
4. Click the Privileges tab, and then select the checkboxes that correspond to the Privileges, or types of CC-SG activities, that you want to assign to the user group.
5. In the Node Access section, you can specify whether you want the user group to have access to In band and Out of band nodes, and to Power Management functions. Select the checkboxes that correspond to the types of access you want to assign to the group.
6. Click the Policies tab.

7. In the All Policies list, select the Policy that you want to assign to the user group and click Add to move the Policy to the Selected Policies list. Policies in the Selected Policies list will be assigned to the user group. Repeat this step to add additional policies to the user group.
8. To remove a policy from the user group, select the policy name in the Selected Policies list, and then click Remove.
9. If you want to associate remotely authenticated users with Active Directory modules, click the Active Directory Associations tab when the AD-configured Active Directory Associations tab is not hidden. Select the checkbox that corresponds with each Active Directory module you want to associate with the user group.
10. To add another user group, click Apply to save this group and repeat these steps. **Optional.**
11. When you have finished adding user groups, click OK. The Add User panel opens. You can also click User Management, and then click Add User in the Guided Tasks tree view in the left panel to open the Add User panel.
12. In the Username field, type the name that the user you want to add will use to log in to CC-SG.
13. Select the Login Enabled checkbox if you want the user to be able to log in to CC-SG.
14. Select the Remote Authentication checkbox only if you want the user to be authenticated by an outside server, such as TACACS+, RADIUS, LDAP, or AD. If you are using remote authentication, a password is not required. The New Password and Retype New Password fields will be disabled when Remote Authentication is checked.
15. In the New Password and Retype New Password fields, type the password that the user will use to log in to CC-SG.
16. Check the Force Password Change on Next Login if you want the user to be forced to change the assigned password the next time the user logs in.
17. Select the Force Password Change Periodically checkbox if you want to specify how often the user will be forced to change the password.
18. In the Expiration Period (Days) field, type the number of days that the user will be able to use the same password before being forced to change it.
19. In the Email address field, type the user's email address.
20. Click the User Group drop-down arrow and select the user group to which you want to assign the user from the list.
21. If you want to add another user, click Apply to save this user, and then repeat the steps in this section to add additional users.
22. When you have finished adding users, click OK. The User Summary panel displays a list of the user groups and users that you added. **Optional.**

Associations, Categories, and Elements

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About Associations

You can set up Associations to help organize the equipment that CC-SG manages. Each Association includes a Category, which is the top-level organizational group, and its related Elements, which are subsets of a Category. For example, you may have Raritan devices that manage target servers in data centers in America, Asia Pacific, and Europe. You could set up an Association that organizes this equipment by location. Then, you can customize the CC-SG to display your Raritan devices and nodes according to your chosen Category-Location, and its associated Elements - America, Asia Pacific, and Europe, in the CC-SG interface. You can customize the CC-SG to organize and display your servers however you like.

Association Terminology

- Associations - the relationships between categories, elements of a category, and nodes and devices.
- Category - a variable that contains a set of values called elements. An example of a category is Location, which may have elements such as "America" and "Asia Pacific." Another example of a category is "OS Type," which may have elements such as "Windows" or "Unix" or "Linux."
- Elements - the values of a category. For example, the "America" element belongs to the "Location" category.

Associations - Defining Categories and Elements

Raritan devices and nodes are organized by categories and elements. Each category/element pair is assigned to a device, a node, or both.

A category is a group of similar elements.

Category	Elements
OS Type	Unix, Windows, Linux
Department	Sales, IT, Engineering

Policies also use categories and elements to control user access to servers. For example, the category/element pair Location/America can be used to create a Policy to control user access to servers in America. See ***Policies for Access Control*** (on page 201).

You can assign more than one element of a category to a node or device via CSV file import.

As you add devices and nodes to CC-SG, you will link them to your predefined categories and elements. When you create node and device groups and assign policies to them, you will use your categories and elements to define which nodes and devices belong in each group.

How to Create Associations

There are two ways to create associations, Guided Setup and Association Manager.

- Guided Setup combines many configuration tasks into an automated interface. Guided Setup is recommended for your initial CC-SG configuration. Once you have completed Guided Setup, you can always edit your configurations individually. See ***Configuring CC-SG with Guided Setup*** (on page 26).
- Association Manager allows you to work only with associations, and does not automate any configuration tasks. You can use Association Manager to edit your Associations after using Guided Setup, too. See ***Adding, Editing, and Deleting Categories and Elements*** (on page 35).

Adding, Editing, and Deleting Categories and Elements

Association Manager allows you to add, edit, or delete Categories and Elements.

Note: By default, CC-SG keeps default category names "System Type" and "US States and territories" in English.

Add a Category

► **To add a category:**

1. Choose Associations > Association.
2. Click Add. The Add Category window opens.
3. Type a category name in the Category Name field. See ***Naming Conventions*** (on page 442) for details on CC-SG's rules for name lengths.
4. Select the Data Type for Elements.
 - Select String if the value is read as text.
 - Select Integer if the value is a number.

5. In the Applicable For field, select whether this category applies to: Devices, Nodes, or Device and Nodes.
6. Click OK to create the new category. The new category name appears in the Category Name field.

Delete a Category

Deleting a category deletes all of the elements created within that category. The deleted category will no longer appear in the Nodes or Devices trees once the screen refreshes or the user logs out and then logs back into CC-SG.

▶ **To delete a category:**

1. Choose Associations > Association.
2. Click the Category Name drop-down arrow and select the category you want to delete.
3. Click Delete in the Category panel of the screen to delete the category. The Delete Category window opens.
4. Click Yes to delete the category.

Add an Element

▶ **To add an element:**

1. Choose Associations > Association.
2. Click the Category Name drop-down arrow and select the category to which you want to add a new element.
3. Click the Add a new row icon.
4. Type the new element name in the blank row. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths. Element names are case-sensitive.
5. Click OK to save your changes.

Adding Categories and Elements with CSV File Import

You can add categories and elements to CC-SG by importing a CSV file that contains the values. You must have the User Security Management and CC Setup and Control privileges to import and export categories and elements.

Categories and Elements CSV File Requirements

The categories and elements CSV file defines the categories, their associated elements, their type, and whether they apply to devices, nodes or both.

- All CATEGORY and CATEGORYELEMENT records are related. A CATEGORY record must have one or more CATEGORYELEMENT records.
- CATEGORYELEMENT records can be present without a corresponding CATEGORY record if that CATEGORY already exists in CC-SG. For example, if you are adding more elements to an existing category, then you do not have to include a row to redefine the category that the new elements belong to.
- Export a file from CC-SG to view the Comments, which include all tags and parameters needed to create a valid CSV file. See **Export Categories and Elements** (on page 38).
- Follow the additional requirements for all CSV files. See **Common CSV File Requirements** (on page 410).

▶ **To add a category to the CSV file:**

Column 1	Column 2	Column 3	Column 4	Column 5
ADD	CATEGORY	Category Name	Type	Apply
			Values: <ul style="list-style-type: none"> ▪ Integer ▪ String Default is String.	Values: <ul style="list-style-type: none"> ▪ Nodes ▪ Devices ▪ Both Default is Both.

▶ **To add an element to the CSV file:**

Column 1	Column 2	Column 3	Column 4
ADD	CATEGORYELEMENT	Category Name	Element Name

Sample Categories and Elements CSV File

ADD, CATEGORY, OS, String, Node
ADD, CATEGORYELEMENT, OS, UNIX
ADD, CATEGORYELEMENT, OS, WINDOWS
ADD, CATEGORYELEMENT, OS, LINUX
ADD, CATEGORY, Location, String, Device
ADD, CATEGORYELEMENT, Location, Aisle 1
ADD, CATEGORYELEMENT, Location, Aisle 2
ADD, CATEGORYELEMENT, Location, Aisle 3

Import Categories and Elements

Once you've created the CSV file, validate it to check for errors then import it. Duplicate records are skipped and are not added.

► **To import the CSV file:**

1. Choose Administration > Import > Import Categories.
2. Click Browse and select the CSV file to import. Click Open.
3. Click Validate. The Analysis Report area shows the file contents.
 - If the file is not valid, an error message appears. Click OK and look at the Problems area of the page for a description of the problems with the file. Click Save to File to save the problems list. Correct your CSV file and then try to validate it again. See **Troubleshoot CSV File Problems** (on page 412).
4. Click Import.
5. Check the Actions area to see the import results. Items that imported successfully show in green text. Items that failed import show in red text. Items that failed import because a duplicate item already exists or was already imported also show in red text.
6. To view more import results details, check the Audit Trail report. See **Audit Trail Entries for Importing** (on page 411).

Export Categories and Elements

The export file contains comments at the top that describe each item in the file. The comments can be used as instructions for creating a file for importing.

► **To export categories and elements:**

1. Choose Administration > Export > Export Categories.
2. Click Export to File.
3. Type a name for the file and choose the location where you want to save it
4. Click Save.

The first time you save the file in Excel, you must choose Save As and MAKE SURE to select CSV as the file type. After that, Excel will continue to save the file as CSV.

If you don't set the file type correctly, the file will be corrupted and cannot be used to import.

Devices, Device Groups, and Ports

To add Raritan PowerStrip Devices that are connected to other Raritan devices to CC-SG, see **Managed Powerstrips** (on page 99).

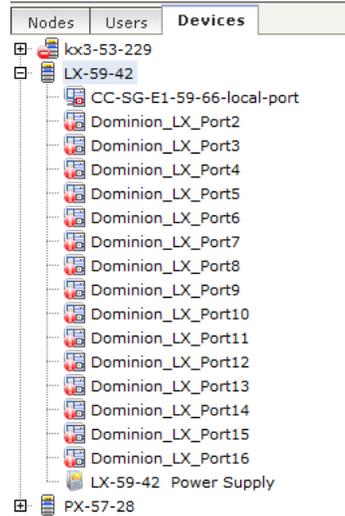
*Note: To configure iLO/RILOE devices, IPMI devices, Dell DRAC devices, IBM RSA devices, or other non-Raritan devices, use the Add Node menu and add these items as an interface. See **Nodes, Node Groups, and Interfaces** (on page 104).*

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Viewing Devices

Click the Devices tab to display all devices under CC-SG management.



Each device's configured ports are nested under the devices they belong to. Devices with configured ports appear in the list with a + symbol. Click the + or - to expand or collapse the list of ports.

Device and Port Icons

For easier identification, KVM, Serial, and Power devices and ports have different icons in the Devices tree. Hold the mouse pointer over an icon in the Devices tree to view a tool tip containing information about the device or port.

Icon	Meaning
	Device available
	KVM port available or connected
	KVM port inactive
	Serial port available
	Serial port unavailable
	Ghosted port (See Raritan's Paragon II User Guide for details on Ghosting Mode.)

Icon	Meaning
	Device paused
	Device unavailable
	Power strip
	Outlet port
	Blade chassis available DSAM port available
	Blade chassis unavailable DSAM port unavailable
	Blade server available
	Blade server unavailable

Port Sorting Options

Configured ports are nested under their parent devices in the Devices tab. You can change the way ports are sorted. Ports arranged by status are sorted alphabetically within their connection status grouping. Devices will also be sorted accordingly.

► **To sort the ports in the Devices tab:**

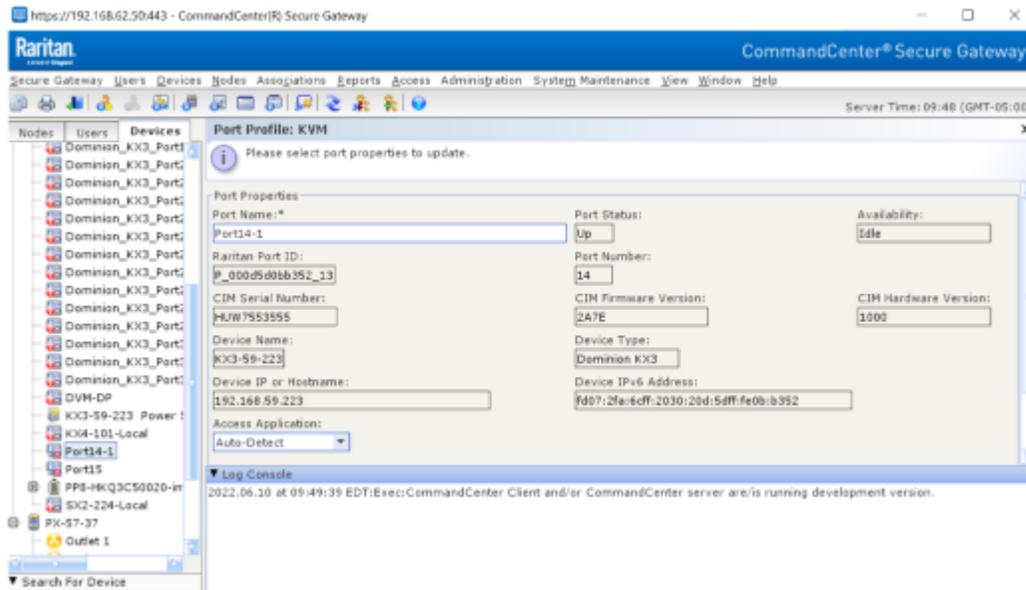
1. Choose Devices > Port Sorting Options.
2. Select By Port Name, By Port Status or By Port Number to arrange the ports within their devices alphabetically by name or by availability status or numerically by port number.

*Note: For blade servers without an integrated KVM switch, such as HP BladeSystem servers, their parent device is the virtual blade chassis that CC-SG creates, not the KX2 device. These servers will be sorted only within the virtual blade chassis device so they will not appear in order with the other KX2 ports unless you restore these blade servers ports to normal KX2 ports. See **Restore Blade Servers Ports to Normal KX2/KX3 Ports** (on page 72).*

Device Profile Screen

When you select a device in the Devices tab, the Device Profile screen appears, displaying information about the selected device.

When a device is down, the information in the Device Profile screen is read-only. You can delete a device that is down. See **Deleting a Device** (on page 62).



Click a live port of the connected device to see the information about the connected CIM.

Note: The CIM information will not be seen when CIM is removed.

▶ **Associations tab**

The Associations tab contains all categories and elements assigned to the node. You can change the associations by making different selections. See **Associations, Categories, and Elements** (on page 34).

▶ **Location & Contacts tab**

The Location & Contacts tab contains information about a device's location and contact information, such as phone numbers, that you may need when working on a device. You can change the information in the fields by typing in new information. See **Adding Location and Contacts to a Device Profile** (on page 61).

▶ **Notes tab**

The Notes tab contains a tool that enables users to leave notes about a device for other users to read. All notes display in the tab with the date, username, and IP address of the user who added the note.

If you have the Device, Port, and Node Management privilege, you can clear all notes from the node profile by clicking Clear.

See **Adding Notes to a Device Profile** (on page 61).

▶ **Blades tab**

Blade chassis nodes, such as IBM BladeCenter, include the Blades tab. The Blades tab contains information about the blade servers residing in the blade chassis.

In addition to viewing the blade and connected CIM information, you can configure the unconfigured blade servers by selecting the checkboxes that correspond to them in this tab.

See **Configuring Slots on a Blade Chassis Device** (on page 69).

Topology View

Topology View displays the structural setup of all connected appliances in your configuration.

Until you close the Topology View, this view replaces the Device Profile screen that normally appears when a device is selected.

▶ **To open the topology view:**

1. Click the Devices tab and select the device whose topological view you want to see.

2. Choose Devices > Device Manager > Topology View. The Topology View for the selected device appears.
 - Click + or - to expand or collapse the view.

Right Click Options in the Devices Tab

You can right-click a device or port in the Devices tab to display a menu of commands available for the selected device or port.

Searching for Devices

The Devices tab provides the ability to search for devices within the tree. Searching will only return devices as results and will not include port names. The method of searching can be configured in My Profile. See ***Change your default search preference*** (on page 198).

▶ To search for a device:

- At the bottom of the Devices Tab, type a search string in Search For Device field, then press the Enter key.
- Wildcards are supported in the search string. See ***Wildcards for Search*** (on page 45).

Wildcards for Search

Wildcard	Description
?	Indicates any character.
[-]	Indicates a character in range.
*	Indicates zero or more characters.

Wildcard Examples

Example	Description
KX?	Locates KX2, and KXZ, but not KX2Z.
KX*	Locates KX2, KX, and KX2Z.
KX[0-9][0-9]T	Locates KX95T, KX66T, but not KXZ and KX5PT.

Discovering and Adding IPv6 Network Devices

IPv6 must be enabled to discover and add IPv6 network devices. See **Configuring the CC-SG Network** (on page 250)

Over IPv6, CC-SG can discover and add:

- KX4-101
- SX2: See **Adding SX2 by Hostname** (on page 56)
- KX3
- KX2 release 2.5 or later
- KSX2 2.5 or later
- KX2-101-V2 3.5 or later

IPv6 is not supported for Dominion SX devices.

If you attempt to add a supported device with an earlier version, CC-SG will alert you with a message.

"Device firmware does not support CC-SG communicating on a IPv6 address. You may try upgrading the device. Do you wish to continue adding the device? If so device will be managed only on IPV4 address."

You must upgrade the device to the supported release to operate with IPv6 under CC-SG management.

When adding devices via CSV file import, all information in messages is logged to the audit trail report. See **Audit Trail Entries for Importing** (on page 411).

Configure the DNS Server to Listen on IPv6

CC-SG uses DNS when a device is added using a hostname.

Make sure the DNS server is listening on the same address that CC-SG has configured for the DNS. The DNS is configured in Administration > Configuration, Network Setup tab. See **Configuring the CC-SG Network** (on page 250).

Refer to [http://technet.microsoft.com/en-us/library/cc783049\(ws.10\).aspx](http://technet.microsoft.com/en-us/library/cc783049(ws.10).aspx) for details. These instructions are an example for a Windows DNS server, where CC-SG is configured with an IPv6 address for DNS.

► **To configure the DNS server to listen on IPv6:**

1. Install Windows Support Tools.
2. Open the command prompt.
3. Type the following command: `dnscmd /config /EnableIPv6 1`
4. Restart the DNS Server service.

Discovering Devices

Discover Devices initiates a search for all devices on your network. After discovering the devices, you may add them to CC-SG if they are not already managed.

► **To discover devices:**

1. Choose Devices > Discover Devices.
2. Type the range of IP addresses where you expect to find the devices in the From Address and To Address fields. The To Address should be larger than the From Address. From and To field are pre-populated with the IP range of the local subnet or local link.

Note: The pre-populated range may be very large. You can edit the fields, or click Stop once discovery begins to stop the search.

When operating in IP Isolation mode, the broadcast/multicast will apply to both the eth0 and eth1 interfaces. The specified address range is used to filter the display of discovered devices.

3. Select the Broadcast discovery checkbox if searching for devices on the same subnet on which CC-SG resides. Clear Broadcast Discovery to discover devices across different subnets.
4. To search for a particular type of device, select it in the list of Device types. By default, all device types are selected. Use CTRL+click to select more than one device type.
5. Select the Include IPMI Agents checkbox to find targets that provide IPMI power control.
6. Click Discover to start the search. At any time during the discovery, you can click Stop to discontinue the discovery process. Discovered devices appear in a list. When operating in dual-stack mode, the list includes hostname, IPV6 address, and IPV4 address for each discovered device.
7. To add one or more discovered devices to CC-SG, select the devices from the list and click Add. The Add Device screen appears with some of the data already populated.

If you selected more than one device to add, you can click Previous and Skip at the bottom of the screen to navigate through the Add Device screens for the devices you want to add.

8. The Add Device page is different for different device types. See the instructions on adding each device type CC-SG discovered.
 - For KVM or Serial devices, see **Add a KVM or Serial Device** (on page 49).
 - For Powerstrips, see **Add a PowerStrip Device** (on page 51).
 - For Dominion PX powerstrips on the IP network, see **Add a Dominion PX Device** (on page 51).

9. Click Apply to add a discovered device and continue to the next discovered device. Click OK to add the current discovered device and stop the process of adding the discovered devices.

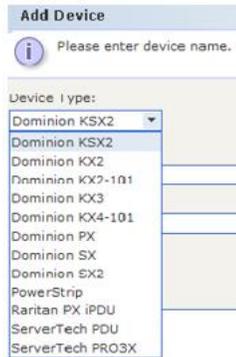
Adding a Device

Devices must be added to CC-SG before you can configure ports or add interfaces that provide access to the nodes connected to ports. The Add Device screen is used to add devices whose properties you know and can provide to CC-SG. To search for devices to add, use the Discover Devices option. See **Discovering Devices** (on page 47).

To add Raritan PowerStrip Devices that are connected to other Raritan devices to CC-SG, see **Managed Powerstrips** (on page 99).

► **To add a device to CC-SG:**

1. Choose Devices > Device Manager > Add Device.
2. Click the Device Type drop-down arrow and then select the type of device you are adding from the list. Depending on the device type you select, you will see a slightly different Add Device page.
 - For instructions on adding KVM or serial devices, see **Add a KVM or Serial Device** (on page 49).
 - For instructions on adding Powerstrip devices, see **Add a PowerStrip Device** (on page 51).
 - For instructions on adding Dominion PX devices, see **Add a Dominion PX Device** (on page 51).



Add a KVM or Serial Device

KVM and serial devices may support 256-bit AES encryption, which CC-SG also supports. If the device is set to the default encryption mode "auto-negotiate", the device will negotiate with CC-SG to select an appropriate encryption level to function with CC-SG.

Note: Before adding devices, check that the Security Settings > Login Limitations > Enable Single Login Limitation is disabled on the device. This setting prevents consistent, successful connections when the device is managed by CC-SG.

Add Device

Please enter device name.

Device Type:
 Dominion KX2

Device Name:* Device IP or Hostname:* Configure All Ports

Username:* Password:*

Heartbeat (seconds):* Discovery Port: * Allow Direct Device Access

Description:

1. Type a name for the device in the Device name field. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
2. Type the IP Address or Hostname of the device in the Device IP or Hostname field. See **Terminology/Acronyms** (on page 2) for hostname rules.

*Note: If the device supports IPv6, see **Discovering and Adding IPv6 Network Devices** (on page 46)*

*Note about SX2: You must add SX2 devices with hostname instead of IPv6 address, because connections via IE 11 fail if IPv6 address is used. For more details, see **Adding SX2 by Hostname** (on page 56).*

3. Type the number of the TCP communication port used to communicate with the device in the Discovery Port field. The maximum is five numeric characters, from 1 to 65535. The default port number for most Raritan devices is 5000.
4. Type the name used to log into this device in the Username field. The user must have administrative access.
5. Type the password needed to access this device in the Password field. The user must have administrative access.
6. Type the time (in seconds) that should elapse before timeout between the new device and CC-SG in the Heartbeat timeout (sec) field.

7. When adding a KX4-101, KX3, KSX2, SX, SX2, KX2 version 2.2 or later, or KX2-101-V2 version 3.5 or later device, the Allow Direct Device Access checkbox enables access to targets directly through the device even while it is under CC-SG management.
8. Type a short description of this device in the Description field. **Optional.**
9. Select the Configure all ports checkbox to automatically add all ports on this device to the Devices tab and to create a Node for each port on this device in the Nodes tab.
 - Corresponding nodes and ports will be configured with matching names.
 - A new node will be created for each port and an out-of-band interface will be created for that node except for a blade chassis node or a generic analog KVM Switch node.
 - A node may or may not be created for a blade chassis appliance or generic analog KVM switch connected to a KX2 or KX3 port, depending on whether an IP address or hostname for the blade chassis or generic analog KVM switch has been entered in KX2. See the KX II or KX III User Guide. A Web Browser interface is assigned to a blade chassis node in CC-SG by default.
 - A virtual blade chassis device will be created in the Devices tab for blade servers that are directly connected to KX2 ports, if blade port groups have been configured properly for these blade servers in KX2 or KX3. See the KX II or KX III User Guide.
10. A list of Categories and Elements can be configured to better describe and organize this device and the nodes connected to it. See **Associations, Categories, and Elements** (on page 34).
11. For each Category listed, click the Element drop-down menu, and then select the element you want to apply to the device from the list. Select the blank item in the Element field for each Category you do not want to use.

If you want to assign the Element to the related nodes as well as the device, select the Apply to Nodes checkbox.
12. If you do not see the Category or Element values you want to use, you can add more through the Associations menu. See **Associations, Categories, and Elements** (on page 34).
13. When you are done configuring this device, click Apply to add this device and open a new blank Add Device screen that allows you to continue adding devices, or click OK to add this device without continuing to a new Add Device screen.
14. If the firmware version of the device is not compatible with CC-SG, a message appears. Click Yes to add the device to CC-SG. You can upgrade the device firmware after adding it to CC-SG. See **Upgrading a Device** (on page 88).

Add a PowerStrip Device

The process of adding a PowerStrip Device to CC-SG varies, based on which Raritan device the powerstrip is connected to physically. See **Managed Powerstrips** (on page 99).

To add a Dominion PX that is not connected to another Raritan device, see **Add a Dominion PX Device** (on page 51).

Add a Dominion PX Device

Choose the Dominion PX option when adding a Dominion PX1 device to CC-SG. If you have PX2 or PX3 PDUs, use the Dominion PX iPDU option. See **Add a Raritan PX iPDU Device** (on page 53).

Dominion PX devices are powerstrips that are connected only to your IP network. A Dominion PX device is not managed by another Raritan device. If you want to add a powerstrip that is managed by another Raritan device, there is a different procedure. See **Managed Powerstrips** (on page 99).

1. Type a name for the device in the Device Name field. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
2. Type the IP Address or Hostname of the device in the IP Address/Hostname field. See **Terminology/Acronyms** (on page 2) for hostname rules.
3. Type the name used to log into this device in the Username field. The user must have administrative access.
4. Type the password needed to access this device in the Password field. The user must have administrative access.

*Warning: CC-SG will lose connectivity with the Dominion PX device if the username or password changes. If you change the password on the PX, you must modify the password for the PX device in CC-SG. See **Editing a Device** (on page 58).*

5. Type a short description of this device in the Description field. **Optional.**
6. Select the Configure All Outlets checkbox to automatically add all outlets on this Dominion PX to the Devices tab.
7. A list of Categories and Elements can be configured to better describe and organize this device.
 - For each Category listed, select the element you want to apply to the device from the list. Select the blank item in the Element field for each Category you do not want to use.
 - If you do not see the Category or Element values you want to use, you can add others. See **Associations, Categories, and Elements** (on page 34).
8. When you are done configuring this device, click Apply to add this device and open a new blank Add Device screen that allows you to continue adding devices, or click OK to add this device without continuing to a new Add Device screen.

Add a Raritan PX iPDU Device

Choose the Raritan PX iPDU option when adding PX2 or PX3 PDUs to CC-SG. If you have Dominion PX1 PDUs, choose the Dominion PX option. See **Add a Dominion PX Device** (on page 51).

Raritan PX iPDU devices are PX2 or PX3 PDUs that are connected only to your IP network. Once you add the Raritan PX iPDU and configure the outlets as shown here, you can associate nodes with outlets. Users can perform power control on these nodes in CC-SG. The power control menus in the KVM and Serial Clients will not work.

▶ To add a PX2 or PX3:

Add Device

 Please provide values for the required device parameters.

Device Type:

Device Name:* IP Address/Hostname:* Configure All Outlets

Username:* Password:*

SNMP Version: * Heartbeat:*

SNMP v1/v2c Parameters:
 Read-Only Community:* Read-Write Community:*

SNMP v3 Parameters:
 Authentication Protocol: Authentication Passphrase:
 Privacy Protocol: Privacy Passphrase:

Description:

1. Select Raritan PX iPDU.
2. Type a name for the device in the Device Name field. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
3. Type the IP Address or Hostname of the device in the IP Address/Hostname field. See **Terminology/Acronyms** (on page 2) for hostname rules.
4. Type the name used to log into this device in the Username field. The user must have administrative access.
5. Type the password needed to access this device in the Password field. The user must have administrative access.
6. Select the PDU's SNMP Version: 1/2c or 3, then enter the parameters:
 - SNMP v1/2c: Enter the Read-Only Community and Read-Write Community strings.

- SNMP v3: Enter the Authentication Protocol, Authentication Passphrase, Privacy Protocol and Privacy Passphrase.
7. Type a short description of this device in the Description field. **Optional.**
 8. Select the Configure All Outlets checkbox to automatically add all outlets to the Devices tab.
 9. A list of Categories and Elements can be configured to better describe and organize this device.
 - For each Category listed, select the element you want to apply to the device from the list. Select the blank item in the Element field for each Category you do not want to use.
 - If you do not see the Category or Element values you want to use, you can add others. See **Associations, Categories, and Elements** (on page 34).
 10. When you are done configuring this device, click Apply to add this device and open a new blank Add Device screen that allows you to continue adding devices, or click OK to add this device without continuing to a new Add Device screen.
 11. When the outlets have been configured, associate each outlet with the node it powers. See **Interfaces for Power Control using Managed Powerstrips and PDUs** (on page 143).

Add a ServerTech PDU or ServerTech PRO3X

CC-SG supports several ServerTech PDUs. Select the correct Device Type for your model and configuration.

ServerTech PDU: includes ServerTech CDU1 and PRO2 PDUs

- Linking configurations are supported. Link units must be physically connected to the Master Unit before you add the PDU to CC-SG. After adding the PDU to CC-SG, if the physical connectivity of Master and Link is changed, you must delete the PDU from CC-SG and add it again.

ServerTech PRO3X: includes only the ServerTech PRO3X

- Single PDU configurations only. Linking, Bridging, and primary/secondary configurations are not supported in CC-SG.

► To add a ServerTech PDU or ServerTech PRO3X:

Add Device

 Please provide values for the required device parameters.

Device Type:
ServerTech PDU

Device Name:* ServerTechPRO IP Address/Hostname:* 192.168.55.155 Configure All Outlets

Username:
admin

SNMP Version: * 3 Heartbeat:* 66

SNMP v1/v2c Parameters:
 Read-Only Community: Read-Write Community:*

SNMP v3 Parameters:
 Authentication Protocol: MD5 Authentication Passphrase: *****
 Privacy Protocol: DES Privacy Passphrase: *****

Description:

1. Select the correct Device Type for your PDU: ServerTech PDU or ServerTech PRO3X.
2. Type a name for the device in the Device Name field. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
3. Type the IP Address or Hostname of the device in the IP Address/Hostname field. See **Terminology/Acronyms** (on page 2) for hostname rules.
4. Use the Username field for an SNMPv3 username. PRO3X also requires a password.
5. Select the PDU's SNMP Version: 1/2c or 3, then enter the parameters:
 - SNMP v1/2c: Enter the Read-Only Community and Read-Write Community strings.
 - SNMP v3: Enter the Authentication Protocol, Authentication Passphrase, Privacy Protocol and Privacy Passphrase.
6. Type a short description of this device in the Description field. Optional.
7. Select the Configure All Outlets checkbox to automatically add all outlets to the Devices tab.
8. A list of Categories and Elements can be configured to better describe and organize this device.
9. For each Category listed, select the element you want to apply to the device from the list. Select the blank item in the Element field for each Category you do not want to use.
10. If you do not see the Category or Element values you want to use, you can add others. See **Associations, Categories, and Elements** (on page 34).

11. When you are done configuring this device, click Apply to add this device and open a new blank Add Device screen that allows you to continue adding devices, or click OK to add this device without continuing to a new Add Device screen.
12. When the outlets have been configured, associate each outlet with the node it powers.

Adding a Device by Hostname

Adding a device by hostname only implies that the device, CC-SG and the client are all in the same domain. If they are not all in the same domain, add the device using the fully qualified domain name (FQDN). This will allow CC-SG to provide the FQDN when an interface is launched.

When adding a dual-stack enabled device by hostname, if the hostname resolution does not return both the IPV4 and IPV6 addresses, the device should be added by IP address instead. CC-SG will display a message to alert you that the hostname could not be resolved to both addresses.

Adding SX2 by Hostname

You must add SX2 devices with their hostname instead of IPv6 address, because connections via IE 11 fail if IPv6 address is used.

The SX2 hostname must contain a period, such as:

<https://sxdevice.company.org/>

Hostnames without a period, such as <https://sxdevice/> may prevent IE from loading HSC properly. IE may put the page in the intranet zone, which does not work properly.

► Solutions that prevent these issues:

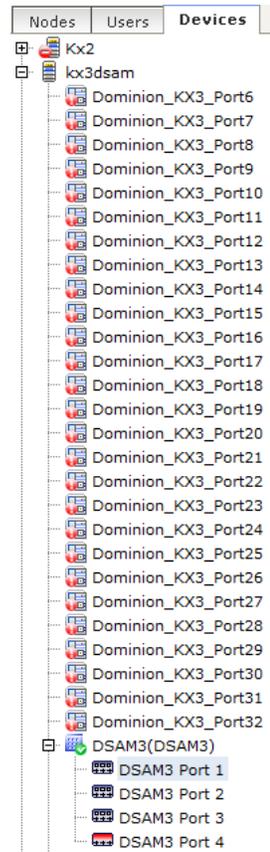
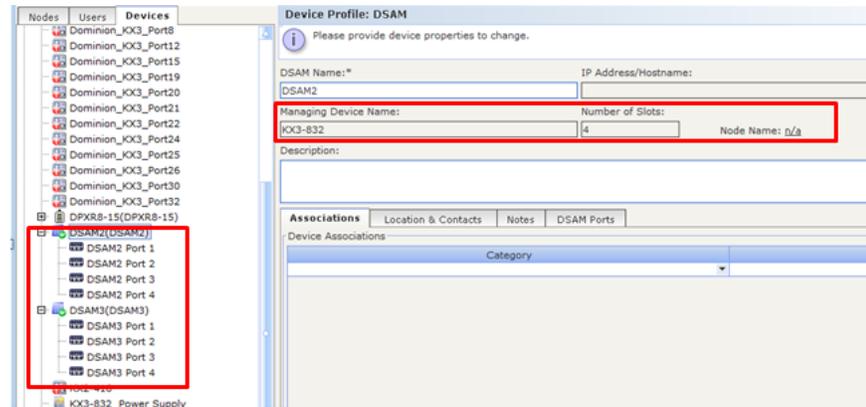
1. Add the SX2 with a fully qualified hostname.domain_name. This will put it into the internet zone rather than the intranet zone.
2. Disable Compatibility mode for intranet access. Instructions on how to do this can be found here :

<https://www.sonicwall.com/support/knowledge-base/how-to-turn-off-compatibility-view-mode-in-microsoft-ie10-and-ie11-for-accessing-gms-and-analyzer/170502904412584/>

Adding a KX3 or KX4-101 Device with DSAM

When you add a Dominion KX3 or KX4-101 device with a Dominion Serial Access Module (DSAM) connected to it, the DSAM will be detected automatically by CC-SG.

See **Add a KVM or Serial Device** (on page 49).



Editing a Device

You can edit a device to rename it and modify its properties, including the change of a PX device's username and password.

Changes made to a device profile are logged to the audit trail, including Device Name, Device IP/Hostname, Discovery Port, HTTP Port, HTTPS Port, Subnet Mask, Default Gateway, Allow Direct Device Access, Heartbeat, Associations, and Locations. See **Audit Trail Report** (on page 235).

▶ To edit a device:

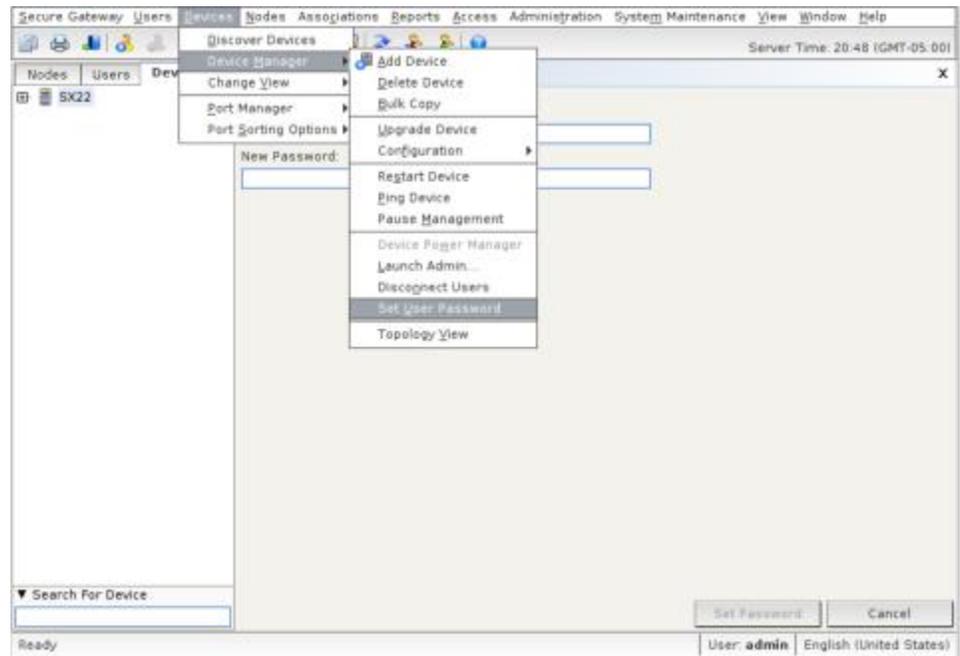
1. Click the Devices tab and select the device you want to edit.
2. In the Device Profile page, change the parameters as needed.
 - When a device is operating in dual-stack mode, you can edit the IPV6 address, Prefix Length, and IPV6 Default Gateway.
 - If a device is operating with DHCP, setting an IPV4 address will configure the IPV4 address as static.
 - If a device is operating with Router Discovery, setting an IPV6 address will configure the IPV6 address as static.
3. Click OK to save your changes.
4. To set password of a device:

Configuring Administrator Passwords of the Devices

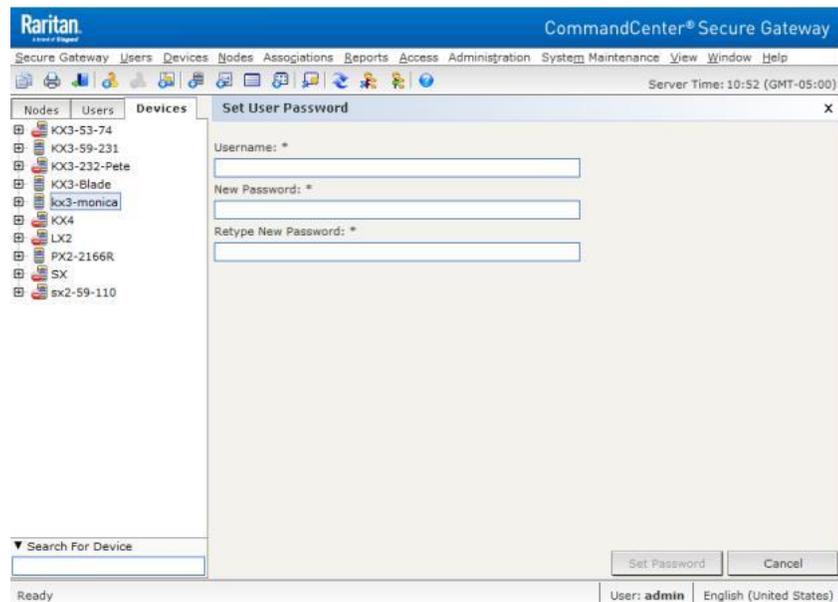
You can set any user password (admin or non-admin) of supported devices from CommandCenter Secure Gateway.

1. Click the Devices tab and select the device you want to set the password for.

2. Click Devices > Device Manager > Set User Password



3. Enter the Username, New password, and Retype password for verification then click Set Password.



Change the HTTP and HTTPS Ports for a Device

Change the HTTP and HTTPS ports for the following devices:

- KX4-101
- KX3
- KX2
- KSX2
- KX2-101-V2
- SX2

CC-SG propagates the new port numbers to the device.

The new ports will be used for communication between CC-SG and the device, or for communication by client applications, such as AKC and VKC, directly with the device. The new port numbers are not used for communication between the user's client computer and CC-SG.

▶ **To change the HTTP and HTTPS ports:**

1. Click the Devices tab and select the device you want to edit.
2. In the Device Profile page, enter new values for HTTP and HTTPS port.
3. Click OK.

Editing a PowerStrip Device or a Dominion PX Device

You can edit a Managed PowerStrip device or a Dominion PX device to rename it, modify its properties, and view outlet configuration status.

▶ **To edit a powerstrip device:**

1. Click the Devices tab and select the PowerStrip device you want to edit.
2. Type the new device properties in the appropriate fields on this screen. If necessary, edit the Categories and Elements associated with this device.
3. Click the Outlet tab to view all outlets of this PowerStrip.
4. If an outlet is associated with a node, click the Node hyperlink to open the Node Profile.
5. If an outlet is associated with a node, select the outlet, and then click Power Control to open the Power Control screen for the associated node.
6. To delete an outlet, deselect the checkbox next to the outlet name.
7. To configure an outlet, select the checkbox next to the outlet name.
8. Click OK to save your changes. A message appears when the device has been modified.

Adding Notes to a Device Profile

You can use the Notes tab to add notes about a device for other users to read. All notes display in the tab with the date, username, and IP address of the user who added the note.

If you have the Device, Port, and Node Management privilege, you can clear all notes that display in the Notes tab.

▶ **To add notes to the device profile:**

1. Select a device in the Devices tab. The Device Profile page opens.
2. Click the Notes tab.
3. Type your note in the New Note field.
4. Click Add. Your note appears in the Notes list.

▶ **To clear all notes:**

1. Click the Notes tab.
2. Click Clear Notes.
3. Click Yes to confirm. All notes are deleted from the Notes tab.

Adding Location and Contacts to a Device Profile

Enter details about the location of the device and contact information for the people who administer or use the device.

▶ **To add location and contacts to a device profile:**

1. Select a device in the Devices tab. The Device Profile page opens.
2. Click the Location & Contacts tab.
3. Enter Location information.
 - Department: Maximum 64 characters.
 - Site: Maximum 64 characters.
 - Location: Maximum 128 characters.
4. Enter Contacts information.
 - Primary Contact Name and Secondary Contact Name: Maximum 64 characters.
 - Telephone Number and Cell Phone: Maximum 32 characters.
5. Click OK to save your changes.

Deleting a Device

You can delete a device to remove it from CC-SG management.

Important: Deleting a device will remove all ports configured for that device. All interfaces associated with those ports will be removed from the nodes. If no other interface exists for these nodes, the nodes will also be removed from CC-SG.

▶ **To delete a device:**

1. Click the Devices tab and select the device you want to delete.
2. Choose Devices > Device Manager > Delete Device.
3. Click OK to delete the device. A message appears when the device has been deleted.

Certificates for IPv6 Enabled KX II Devices

To prevent certificate errors with IPv6-enabled Raritan devices managed by CC-SG, and added to CC-SG with IP address, ensure that the CN in the certificate has the leading zero suppressed value enclosed in [].

When interacting with a CC-SG managed Raritan device, CC-SG provides a "leading zero suppressed host" in the URL for jar downloads. This means that certs should have leading zero suppressed value enclosed in [] as the CN.

You could also use the hostname for the KX II device as the CN, or use Subject Alternative Names (SAN) in the Certificate Signing Request (CSR), get that CSR signed by an external Certificate Authority, and upload that certificate to the Raritan device.

▶ **Examples:**

- Correct CN:

```
[fd00:c:d:2400:0:2:3:4]
```

- Incorrect:

```
[fd00:c:d:2400::2:3:4]
```

- Incorrect:

```
[fd00:000c:000d:2400:0000:0002:0003:0004]
```

Configuring Ports

If all ports of a device were not automatically added by selecting Configure all ports when you added the device, use the Configure Ports screen to add individual ports or a set of ports on the device to CC-SG.

Once you configure ports, a node is created in CC-SG for each port, and the default interface is also created. See **Nodes Created by Configuring Ports** (on page 64).

Configure a Serial Port

► **To configure a serial port:**

1. Click the Devices tab and select a serial device.
2. Choose Devices > Port Manager > Configure Ports.
 - If all ports are configured, and you want to change a port's properties, see **Editing a Port** (on page 64).

Click a column header to sort the ports by that attribute in ascending order. Click the header again to sort the ports in descending order.

3. Click the Configure button that corresponds to the serial port you want to configure.
4. Type a name in the Port Name field. For ease of use, name the port after the target that is connected to the port. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
5. Type a node name in the Node Name field to create a new node with an Out-of-Band interface from this port. For ease of use, name the node after the target that is connected to the port. This means that you will type the same name in the Port name and Node Name fields.
6. Click the Access Application drop-down menu and select the application you want to use when you connect to this port from the list. To allow CC-SG to automatically select the correct application based on your browser, select Auto-Detect.
7. Click OK to add the port.

Configure a KVM Port

► **To configure a KVM port:**

1. Click the Devices tab and select a KVM device.
2. Choose Devices > Port Manager > Configure Ports.
 - Click a column header to sort the ports by that attribute in ascending order. Click the header again to sort the ports in descending order.
3. Click the Configure button that corresponds to the KVM port you want to configure.

4. Type a port name in the Port Name field. For ease of use, name the port after the target that is connected to the port. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
5. Type a node name in the Node Name field to create a new node with an Out-of-Band interface from this port. For ease of use, name the node after the target that is connected to the port. This means that you will type the same name in the Port name and Node Name fields.
6. Click the Access Application drop-down menu and select the application you want to use when you connect to this port from the list. To allow CC-SG to automatically select the correct application based on your browser, select Auto-Detect.
7. Click OK to add the port.

Nodes Created by Configuring Ports

When you configure the ports of a device, a node is created automatically for each port. An interface is also created for each node.

When a node is automatically created, it is given the same name as the port to which it is associated. If this node name already exists, an extension is added to the node name. For example, Channel1(1). The extension is the number in parentheses. This extension is not included as part of the character count for the node name. If you edit the node name, the new name will be restricted to the maximum number of characters. See **Naming Conventions** (on page 442).

Editing a Port

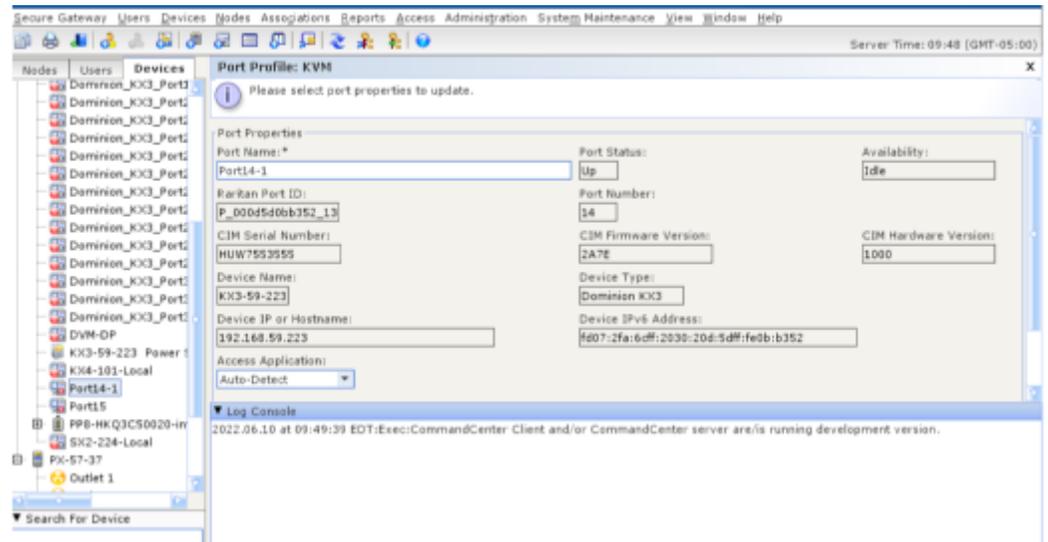
You can edit ports to change various parameters, such as port name, access application, and serial port settings. The changes you can make vary, based on port type and device type.

► **To edit a KVM or serial port name or access application:**

Some ports support only one access application, so you cannot change the access application preference.

1. Click the Devices tab and select a port you want to edit.
2. Type a new name for the port in the Port Name field, if necessary.
3. Click the Access Application drop-down menu and select the application you want to use when you connect to this port from the list. To allow CC-SG to automatically select the correct application based on your browser, select Auto-Detect.

- Click OK to save your changes.

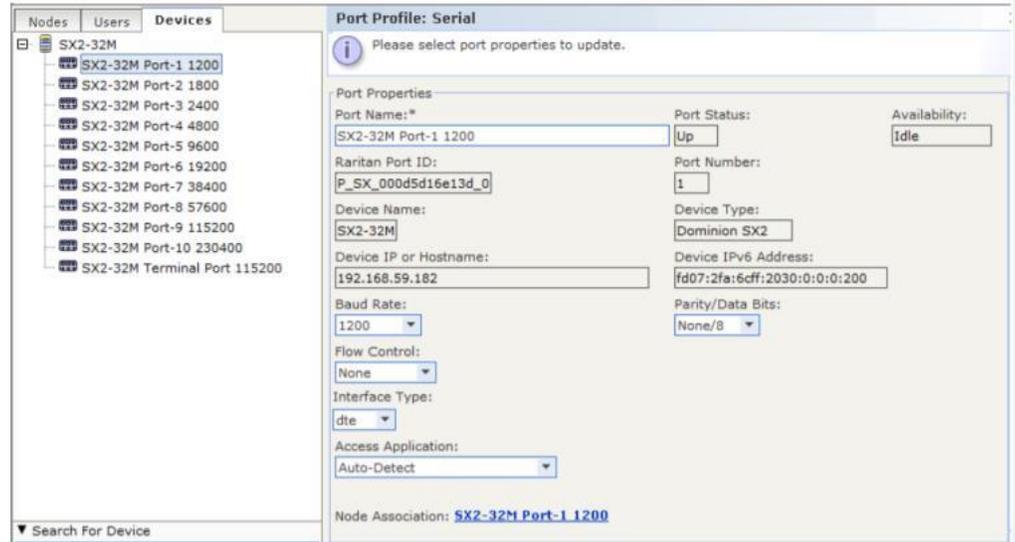


► **To edit a KX2 or SX2 serial port's settings, such as baud rate, flow control, or parity/data bits:**

- Click the Devices tab and select the serial port you want to edit, or just select the device that contains the port you want to edit.
- Choose Devices > Device Manager > Launch Admin. The device's administrative page opens.
- Click Port Configuration.
- Click the serial port application you want to edit.
- Edit the port settings.
- Click OK to save your changes. Close the administrative page and return to CC-SG.

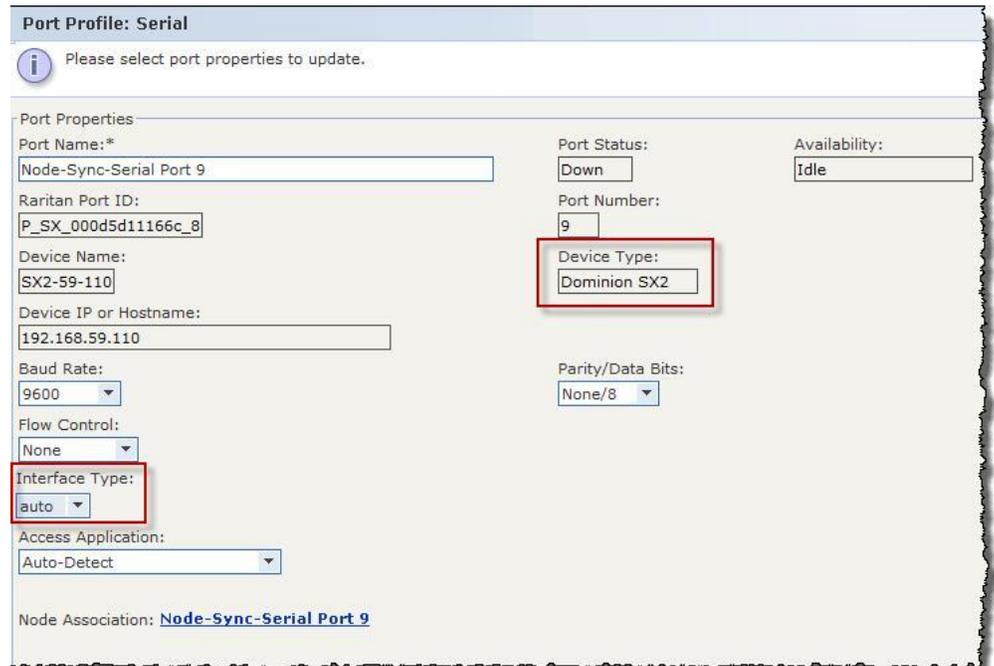
► **To edit an SX or SX2 serial port's settings, such as baud rate, flow control, or parity/data bits:**

1. Click the Devices tab and select a port you want to edit. The Port Profile page opens.



2. Edit the port settings.
3. Click OK to save your changes.

Note: Interface type option is available in SX2 2.5.



Deleting a Port

Delete a port to remove the port entry from a Device. When a port is down, the information in the Port Profile screen is read-only. You can delete a port that is down.

Important: If you delete a port that is associated with a node, the associated out-of-band KVM or Serial interface provided by the port will be removed from the node. If the node has no other interfaces, the node will also be removed from CC-SG.

► **To delete a port:**

1. Click the Devices tab and select a device whose ports you want to delete.
2. Choose Devices > Port Manager > Delete Ports.
3. Select the checkbox of the port you want to delete.
4. Click OK to delete the selected port. A message appears when the port has been deleted.

Configuring a Blade Chassis Device Connected to KX2 or KX3

Blade Chassis Overview

There are two types of blade chassis devices: one is with an integrated KVM switch, which can function as an IP-enabled KVM switch, and the other is without.

Blade Chassis with an Integrated KVM Switch

A blade chassis with an integrated KVM switch, such as Dell PowerEdge and IBM BladeCenter series, is connected to KX2 via a CIM. As only one CIM is available to access all blade servers in that chassis, when a user accesses one blade server, there are no paths left to the others.

When configuring all KX2 ports in CC-SG, the *blade chassis* connected to the KX2 device is configured. See **Add a Blade Chassis Device** (on page 68). The blade servers in this type of blade chassis are not configured yet, so you must configure the blade servers later. See **Configuring Slots on a Blade Chassis Device** (on page 69).

Blade Chassis without an Integrated KVM Switch

A blade chassis without an integrated KVM switch, such as HP BladeSystem series, allows each blade server to connect to KX2/KX3 respectively via a CIM. As each blade server in that chassis has a CIM for access, when a user accesses one blade server, others still can access the other blade servers.

When configuring all KX2/KX3 ports in CC-SG, the *blade servers* connected to the KX2/KX3 device are configured. If you have properly configured a blade port group for these blade servers on the KX2/KX3 device, CC-SG then creates a *virtual* blade chassis at the KX2/KX3 port level as the container for these blade servers. See **Add a Blade Chassis Device** (on page 68). Otherwise, these blade servers appear as normal KX2/KX3 ports in the Devices tab of CC-SG.

Add a Blade Chassis Device

The procedure to add a blade chassis device varies depending on the blade chassis type.

A blade chassis device always show two names in the Devices tab: the name without the parentheses is retrieved from the KX2/KX3 device, and the name within the parentheses is the chassis name saved on CC-SG.

► To add a blade chassis device *with* an integrated KVM switch:

1. Configure the blade chassis in KX2/KX3 properly. See the KX II or KX III User Guide.
2. Configure the KX2/KX3 device in CC-SG properly. See **Add a KVM or Serial Device** (on page 49).
3. CC-SG detects the blade chassis device and adds the blade chassis icon in one or two tabs:
 - In the Devices tab, the blade chassis device appears beneath the KX2/KX3 device to which it is connected.
 - In the Nodes tab, if you have entered the IP address or hostname for the blade chassis on the KX2/KX3 device, the blade chassis appears as a node with a Web Browser interface added to it.

*Note: For this type of blade chassis, you must configure blade servers later. See **Configuring Slots on a Blade Chassis Device** (on page 69).*

► To add a blade chassis device *without* an integrated KVM switch:

1. Configure a blade port group for the blade servers in KX2/KX3 properly. See the KX II or KX III User Guide.
2. Configure the KX2/KX3 device in CC-SG properly. See **Add a KVM or Serial Device** (on page 49).
3. CC-SG automatically creates a *virtual* blade chassis and adds the blade chassis icon in one tab. Note that a virtual blade chassis never appears as a node in the Nodes tab.

- In the Devices tab, the virtual blade chassis device appears beneath the KX2/KX3 device, as a virtual container to the blade servers, which appear beneath the virtual blade chassis.

*Note: If you did not configure a blade port group for the blade servers before configuring the KX2/KX3 ports in CC-SG, you can choose Devices > Device Manager > Launch Admin to set the blade port group. Then configure the blade servers in CC-SG. See **Configuring Slots on a Blade Chassis Device** (on page 69).*

Configuring Slots on a Blade Chassis Device

If the blade servers or slots are not configured yet in CC-SG, you must configure them by following the procedure in this section, or the blade servers do not appear in the Devices and Nodes tabs. An Out-of-Band KVM interface is automatically added to a blade server node.

► To configure slots from the blade chassis profile:

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the blade chassis device.
2. Select the blade chassis device whose slots you want to configure.
3. In the Device Profile screen, select the Blades tab.
4. Select the checkbox for each slot you want to configure, and then click OK.

► To configure slots from the Configure Ports screen:

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the blade chassis device.
2. Select the blade chassis device whose slots you want to configure.
3. Choose Devices > Port Manager > Configure Ports.
 - To configure multiple slots with the default names shown on the screen, select the checkbox for each slot you want to configure, and then click OK to configure each slot with the default name.
 - To configure each slot individually, click the Configure button next to the slot. Then type a name for the slot in the Port Name field, and type a node name in the Node Name field. The default Access Application is set according to the default application selected for "Blade Chassis: KVM" in the Application Manager. To change it, click the Access Application drop-down menu to select the one you prefer from the list. Click OK to configure the slot.

► To configure slots using the Configure Blades command:

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the blade chassis device.
2. Select the blade chassis device whose slots you want to configure.
3. Choose Nodes > Configure Blades.

- To configure multiple slots with the default names shown in the screen, select the checkbox for each slot you want to configure, and then click OK to configure each slot with the default name.
- To configure each slot individually, click the Configure button next to the slot. Then type a name for the slot in the Port Name field, and type a node name in the Node Name field. The default Access Application is set according to the default application selected for "Blade Chassis: KVM" in the Application Manager. To change it, click the Access Application drop-down menu to select the one you prefer from the list. Click OK to configure the slot.

Changing the Blade Server Status

This section applies only to the blade chassis with an integrated KVM switch, such as Dell PowerEdge and IBM BladeCenter series.

If the "Installed" status for the corresponding blade server or slot is not enabled on the KX2/KX3 device, CC-SG always shows "Down" as the port status of the blade server. When you are sure some blade slots are live with blade servers installed, you should change their status on the KX2/KX3 device to make CC-SG reflect the status properly.

► To change the blade server status:

1. Click the Devices tab and select the KX2/KX3 device whose blade slot status you want to change.
2. Choose Devices > Device Manager > Launch Admin. The KX2 or KX3 Admin Client opens.
3. Choose Device Settings > Port Configuration.
4. Click the blade chassis port that you want to configure.
5. Scroll down the page until you see the blade slots section. Select the Installed checkbox next to the blade slots that are live with blade servers installed.
6. Click OK to save the changes.

Deleting Slots on a Blade Chassis Device

You can delete unused blade servers or slots so they do not appear in the Devices and Nodes tabs.

► To delete a slot from the Delete Ports screen:

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the blade chassis device.
2. Select the blade chassis device whose slots you want to delete.
3. Choose Devices > Port Manager > Delete Ports.
4. Select the checkbox for each slot you want to delete, and then click OK to delete the slot.

► **To delete a slot using the Delete Blade command:**

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the blade chassis device.
2. Click the + next to the blade chassis device whose slots you want to delete.
3. Right-click the blade slot that you want to delete.
4. Select Delete Blade, and then click OK to delete the slot.

Edit a Blade Chassis Device

You can edit a blade chassis device to rename it, modify its properties, and view slot configuration status.

► **To edit a blade chassis:**

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the blade chassis device.
2. Select the blade chassis device you want to edit.
3. Type the new device properties in the appropriate fields on this screen. If necessary, edit the Categories and Elements associated with this device.
4. Click the Blades tab to view all slots of this blade chassis device.
5. If a slot has been configured as a node, you can click the Node hyperlink to open the Node Profile. **Optional.**
6. Click OK to save your changes. A message appears when the device has been modified.

Delete a Blade Chassis Device

You can delete a blade chassis device connected to a KX2 or KX3 device from CC-SG. When you delete the blade chassis device from the KX2/KX3 device, the blade chassis device and all configured blade servers or slots disappear from the Devices tab as well as from the Nodes tab.

► **To delete a blade chassis device:**

1. Click the Devices tab and select a KX2/KX3 device whose blade chassis device you want to delete.
2. Choose Devices > Port Manager > Delete Ports.
3. Select the checkbox of the blade chassis port you want to delete.
4. Click OK to delete the selected blade chassis port. A message appears asking you to confirm the deletion of the blade chassis device along with all of its blade servers.

Move a Blade Chassis Device to a Different Port

When physically moving a blade chassis device from one KX2/KX3 device or port to another device or port, CC-SG cannot detect and automatically update the configuration data of the blade chassis device to the new port. You must configure the blade chassis device on CC-SG once again.

► **To move a blade chassis device to a different KX2 device or port:**

1. Delete the blade chassis device from CC-SG. See **Delete a Blade Chassis Device** (on page 71).
2. Disconnect and reconnect the blade chassis to another KX2 or KX3 device or port.
3. Add the blade chassis device in CC-SG. See **Add a Blade Chassis Device** (on page 68).

Restore Blade Servers Ports to Normal KX2/KX3 Ports

This section applies only to the blade chassis without an integrated KVM switch, such as HP BladeSystem series.

You may re-configure blade servers beneath the virtual blade chassis as normal KX2/KX3 ports in the Devices tab.

► **To restore blade servers to normal KX2/KX3 ports:**

1. In the Devices tab, select the KX2/KX3 device whose blade servers you want to re-configure as normal KVM ports.
2. Change the blade port group for these blade servers to a non-blade port group.
 - a. In CC-SG, choose Devices > Device Manager > Launch Admin. The KX2 or KX3 Admin Client opens.
 - b. Click Port Group Management.
 - c. Click the blade port group whose group property you want to change.
 - d. Deselect the Blade Server Group checkbox.
 - e. Click OK and exit the client.
3. The virtual blade chassis disappears in the Devices tab. Now you can re-configure the blade server ports as normal KX2/KX3 ports in CC-SG. See **Configure a KVM Port** (on page 63).

Bulk Copying for Device Associations, Location and Contacts

The Bulk Copy command allows you to copy categories, elements, location and contact information from one device to multiple other devices. Note that the selected information is the only property copied in this process. If you have the same type of information existing on any selected devices, performing the Bulk Copy command will REPLACE the existing data with newly assigned information.

► **To bulk copy device associations, location, and contact information:**

1. Click the Devices tab and select a device from Devices tree.
2. Choose Devices > Device Manager > Bulk Copy.
3. In the Available Devices list, select the devices to which you are copying the associations, location, and contact information of the device in the Device Name field.
4. Click > to add a device to the Selected Devices list.
5. Select the device and click < to remove it from the Selected Devices list.
6. In the Associations tab, select the Copy Associations checkbox to copy all categories and elements of the device.
 - You may change, add or delete any data in this tab. The modified data will be copied to multiple devices in the Selected Devices list as well as the current device displayed in the Device Name field. **Optional.**
7. In the Location and Contacts tab, select the checkbox for the information you want to copy:
 - Select the Copy Location Information checkbox to copy the location information displayed in the Location section.
 - Select the Copy Contact Information checkbox to copy the contact information displayed in the Contacts section.
 - You may change, add or delete any data in these tabs. The modified data will be copied to multiple devices in the Selected Devices list as well as the current device displayed in the Device Name field. **Optional.**
8. Click OK to bulk copy. A message appears when the selected information has been copied.

Configuring Analog KVM Switches Connected to KX2 or KX3

KX2 version 2.3 or later, and KX3 enable you to connect a generic analog KVM switch to a target port. The generic analog KVM switch and its ports will be available as nodes to CC-SG.

You must configure this first in the KX2 or KX3 web interface, and then add the KX2/KX3 to CC-SG.

Add a KVM Switch Connected to KX2 or KX3

This procedure adds a KVM switch connected to KX2/KX3 via the Admin Client. You can also add KVM switches via CSV import. See **Devices CSV File Requirements** (on page 81).

▶ **To add a KVM switch connected to KX2/KX3:**

1. Configure the KVM switch in KX2 or KX3 properly.
 - See Configuring and Enabling Tiering, and Configuring KVM Switches in the Dominion KX II or Dominion KX III user guides. You can access the online help at help.raritan.com.
2. Configure the KX2/KX3 device in CC-SG properly. See **Add a KVM or Serial Device** (on page 49).
3. CC-SG detects the KVM switch and adds the device icon in one or two tabs:
 - In the Devices tab, the KVM switch device appears beneath the KX2/KX3 device to which it is connected.
 - In the Nodes tab, if you have entered a URL for accessing the KVM switch on the KX2/KX3 device, the KVM switch appears as a node with a Web Browser interface added to it.

Configuring Ports on an Analog KVM Switch Device Connected to KX2 or KX3

If the analog KVM switch device ports are not configured yet in CC-SG, you must configure them by following the procedure in this section, or the analog KVM switch and its ports do not appear in the Devices and Nodes tabs. An Out-of-Band KVM interface is automatically added to a KVM Switch node.

▶ **To configure ports from the KVM switch device profile:**

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the KVM switch device.
2. Select the KVM switch whose ports you want to configure.
3. In the Device Profile screen, select the KVM Switch Ports tab.
4. Select the checkbox for each slot you want to configure, then click OK.

▶ **To configure slots from the Configure Ports screen:**

1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the KVM switch device.
2. Select the KVM switch device whose ports you want to configure.
3. Choose Devices > Port Manager > Configure Ports.
 - To configure multiple ports with the default names shown on the page, select the checkbox for each port you want to configure, and then click OK to configure each port with the default name.

- To configure each port individually, click the Configure button next to the port. Then type a name for the port in the Port Name field, and type a node name in the Node Name field. The default Access Application is set according to the default application selected for "KVM Switch: KVM" in the Application Manager. To change it, click the Access Application drop-down menu to select the one you prefer from the list. Click OK to configure the port.
- ▶ **To configure slots using the Configure Blades command:**
1. In the Devices tab, click the + next to the KX2/KX3 device that is connected to the KVM switch device.
 2. Select the KVM switch device whose ports you want to configure.
 3. Choose Nodes > Configure Ports.
 - To configure multiple ports with the default names shown on the page, select the checkbox for each port you want to configure, and then click OK to configure each port with the default name.
 - To configure each port individually, click the Configure button next to the port. Then type a name for the port in the Port Name field, and type a node name in the Node Name field. The default Access Application is set according to the default application selected for "KVM Switch: KVM" in the Application Manager. To change it, click the Access Application drop-down menu to select the one you prefer from the list. Click OK to configure the port.

Device Group Manager

Use the Device Groups Manager to add device groups, edit device groups, and remove device groups. When you add a new device group, you can create a full access policy for the group. See ***Policies for Access Control*** (on page 201).

Device Groups Overview

Device groups are used to organize devices into a set. The device group will become the basis for a policy either allowing or denying access to this particular set of devices. See **Adding a Policy** (on page 202). Devices can be grouped manually, using the Select method, or by creating a Boolean expression that describes a set of common attributes, using the Describe method.

If you used Guided Setup to create categories and elements for nodes, some means to organize devices along common attributes have already been created. CC-SG automatically creates default access policies based on these elements. See **Associations, Categories, and Elements** (on page 34) for details on creating categories and elements.

The screenshot shows the configuration window for a device group named "All Devices". At the top, a blue header reads "Device Group : All Devices". Below it is an information icon and a message: "The All Devices group is a system group and cannot be modified or deleted." The "Group Name" field is set to "All Devices". A "Describe Devices" tab is active, showing a table with columns: Prefix, Category, Operator, Element, and Rule Name. The table contains one row: Prefix (empty), Category (Device Na...), Operator (LIKE), Element (%), and Rule Name (Rule0). Below the table, the "Short Expression" field contains "Rule0" and a "Validate" button. The "Normalized Expression (description)" field contains "Device Name LIKE %". A "View Devices" button is located at the bottom right.

► To view device groups:

- Choose Associations > Device Groups. The Device Groups Manager window appears. A list of existing device groups is displayed on the left, while details about the selected device group appear in the main panel.
 - A list of existing device groups is displayed on the left. Click a device group to view the details of the group in the device group manager.
 - If the group was formed arbitrarily, the Select Devices tab will be displayed showing a list of devices in the group and a list of devices not in the group.
 - If the group was formed based on common attributes, the Describe Devices tab will appear, showing the rules that govern selection of the devices for the group.

- To search for a device in the device group list, type a string in the Search field at the bottom of the list, and then click Search. The method of searching is configured through the My Profile screen. See **Users and User Groups** (on page 180).
- If viewing a group based on attributes, click View Devices to display a list of devices currently in the Device Group. A Devices in Device Group window opens, displaying the devices and all their attributes.
- Choose Reports > Devices > Device Group Data. A list of existing device groups is displayed. Double-click a row to view devices for any device group.

Add a Device Group

▶ To add a device group:

1. Choose Associations > Device Groups. The Device Groups Manager window opens. Existing device groups appear in the left panel.
2. Click the New Group icon  in the toolbar. The Device Group: New panel appears.
3. In the Group Name field, type a name for a device group you want to create. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
4. There are two ways to add devices to a group, Select Devices and Describe Devices. The Select Devices tab allows you to choose which devices you want to assign to the group by selecting them from the list of available devices. The Describe Devices tab allows you to specify rules that describe devices, and the devices whose parameters follow those rules will be added to the group.

▶ To add a device group with the Select Devices option:

1. Click the Select Devices tab in the Device Group: New panel.
2. In the Available list, select the device you want to add to the group, then click Add to move the device into the Selected list. Devices in the Selected list will be added to the group.
 - To remove a device from the group, select the device name in the Selected list and click Remove.
 - You can search for a device in either the Available or Selected list. Type the search terms in the field below the list, and then click Go.
3. Select the Create Full Access Policy for Group checkbox to create a policy for this device group that allows access to all devices in the group at all times with control permission.
4. To add another device group, click Apply to save this group, then repeat these steps. **Optional.**
5. If you have finished adding device groups, click OK to save your changes.

► **To add a device group with the Describe Devices option:**

1. Click the Describe Devices tab in the Device Group: New panel. In the Describe Devices tab, you can create a table of rules that describe the devices you want to assign to the group.
2. Click the Add New Row icon  to add a row to the table.
3. Double-click the cell created for each column to activate a drop-down menu. Select the rule components you want to use from each list.
 - Prefix - Leave this blank or select NOT. If NOT is selected, this rule will filter for values opposite of the rest of the expression.
 - Category - Select an attribute that will be evaluated in the rule. All categories you created in the Association Manager are available here. If any blade chassis has been configured in the system, a Blade Chassis category is available by default.
 - Operator - Select a comparison operation to be performed between the Category and Element items. Three operators are available: = (is equal to), LIKE (used for find the Element in a name) and <> (is not equal to).
 - Element - Select a value for the Category attribute to be compared against. Only elements associated with the selected category will appear here (for example: if evaluating a “Department” category, “Location” elements will not appear here).
 - Rule Name - This is a name assigned to the rule in this row. It is not editable; it is used for writing descriptions in the Short Expression field.
4. To add another rule, click the Add New Row icon , and then make the necessary configurations. Configuring multiple rules will allow more precise descriptions by providing multiple criteria for evaluating devices.
5. The table of rules only makes available criteria for evaluating nodes. To write a description for the device group, add the rules by Rule Name to the Short Expression field. If the description requires only a single rule, type that rule's name in the field. If multiple rules are being evaluated, type the rules into the field using a set of logical operators to describe the rules in relation to each other:
 - & - the AND operator. A node must satisfy rules on both sides of this operator for the description (or that section of a description) to be evaluated as true.
 - | - the OR operator. A device needs to satisfy only one rule on either side of this operator for the description (or that section of a description) to be evaluated as true.

- (and) - grouping operators. This breaks the description into a subsection contained within the parentheses. The section within the parentheses is evaluated before the rest of the description is compared to the node. Parenthetical groups can be nested inside other parenthetical groups.

Example1: If you want to describe devices that belong to the engineering department, create a rule that says Department = Engineering. This will become Rule0. Type Rule0 in the Short Expression field.

Example 2: If you want to describe a group of devices that belong to the engineering department or are located in Philadelphia, and specify that all of the machines must have 1 GB of memory, you must create three rules. Department = Engineering (Rule0) Location = Philadelphia (Rule1) Memory = 1GB (Rule2). These rules must be arranged in relation to each other. Since the device can either belong to the engineering department or be located in Philadelphia, use the OR operator, |, to join the two: Rule0 | Rule1. Make this comparison first by enclosing it parentheses: (Rule0 | Rule1). Since the devices must both satisfy this comparison AND contain 1GB of memory, use the AND connector, &, to join this section with Rule2: (Rule0 | Rule1) & Rule2. Type this final expression in the Short Expression field.

Note: You should have a space before and after operators & and |. Otherwise, the Short Expression field may return to the default expression, that is, Rule0 & Rule1 & Rule2 and so on, when you delete any rule from the table.

- To remove a row from the table, select the row, and then click the Remove Row icon .
 - To see the list of devices whose parameters follow the rules you have defined, click View Devices.
6. Click Validate when a description has been written in the Short Expression field. If the description is formed incorrectly, you will receive a warning. If the description is formed correctly, a normalized form of the expression appears in the Normalized Expression field.
 7. Click View Devices to see what nodes satisfy this expression. A Devices in Device Group Results window opens, displaying the devices that will be grouped by the current expression. This can be used to check if the description was correctly written. If not, you can return to the rules table or the Short Expression field to make adjustments.
 8. Select the Create Full Access Policy for Group checkbox to create a policy for this device group that allows access to all devices in the group at all times with control permission.
 9. To add another device group, click Apply to save this group, then repeat these steps. **Optional.**
 10. If you have finished adding device groups, click OK to save your changes.

Describe Method versus Select Method

Use the describe method when you want your group to be based on some attribute of the node or devices, such as the categories and elements. The advantage of the describe method is that when you add more devices or nodes with the same attributes as described, they will be pulled into the group automatically.

Use the select method when you just want to create a group of specific nodes manually. New nodes and devices added to CC-SG are not pulled into these groups automatically. You must manually add the new nodes or devices to the group after you add them to CC-SG.

These two methods cannot be combined.

Once a group is created with one method, you must edit it using the same method. Switching methods will overwrite the current group settings.

Edit a Device Group

► **To edit a device group:**

1. Choose Associations > Device Groups. The Device Groups Manager window opens.
2. Existing device groups appear in the left panel. Select the Device Group whose name you want to edit. The Device Group Details panel appears.
3. Type a new name for the device group in the Group Name field. **Optional.**
4. Edit the device group's included devices using the Select Device or Describe Devices tabs. See **Add a Device Group** (on page 77).
5. Click OK to save your changes.

Delete a Device Group

► **To delete a device group:**

1. Choose Associations > Device Groups. The Device Groups Manager window opens.
2. Existing device groups appear in the left panel. Select the device group you want to delete. The Device Group Details panel appears.
3. Choose Groups > Delete.
4. The Delete Device Group panel appears. Click Delete.
5. Click Yes in the confirmation message that appears.

Adding and Deleting Devices and PDUs or Updating Passwords with CSV File Import

You can add or delete devices and PDUs by importing a CSV file that contains the values with an "Add" command. You can update the passwords of the SX2 (2.5.0 & greater) and KX3 (3.8.4 & greater) managed devices by importing a CSV file with an "Update" command. You must have the Device, Port, and Node Management and CC Setup and Control privileges to import and export devices.

You must be assigned a policy that gives you access to all relevant devices and nodes. A full access policy for All Nodes and All Devices is recommended.

Devices CSV File Requirements

The devices CSV file defines the devices, ports, and their details required to add them to CC-SG. You can also delete a device from CC-SG using this file type.

- For devices that support power strips connected to a port (SX, SX2, KX3, KX2, KSX2), configuring the port will configure the power strip.
- For Dominion PX PDUs, use Device Type "PX". For Raritan PX2 or PX3, use Device Type "iPDU". For ServerTech PDUs, use Device Type "ServerTech" for CDU1 and PRO2 model PDUs; use Device Type "ServerTechPRO3X" for PRO3X model PDUs.
- If device ports are configured, CC-SG also adds a node with out-of-band KVM or out-of-band Serial interface for each port.
- To add blades, the blade server must be connected to a KX2 or KX3 device via a CIM. The KX2/KX3 device must either already be added to CC-SG, or be included in the same CSV file.
- When adding IPv6 enabled devices, see **Discovering and Adding IPv6 Network Devices** (on page 46) for details on support.
- The delete command can only delete a device, including all ports. You cannot delete individual ports or other details of a device.
- Export a file from CC-SG to view the Comments, which include all tags and parameters needed to create a valid CSV file. See **Export Devices CSV File** (on page 88).
- Follow the additional requirements for all CSV files. See **Common CSV File Requirements** (on page 410).

▶ **To add a device to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	DEVICE	Enter the tag as shown. Tags are not case sensitive.

Column number	Tag or value	Details
3	Device Type	<p>Required field.</p> <p>Enter the device type as shown here: KX2, KX3, KX4-101, KSX2, KX2-101, SX, SX2, PX, iPDU, ServerTech, ServerTechPRO3X.</p> <p>Note: For Dominion PX1 PDUs, use Device Type "PX". For Raritan PX2 or PX3, use Device Type "iPDU".</p> <p>For ServerTech CDU1 and PRO2 PDUs, use Device Type "ServerTech". For ServerTech PRO3X, use Device Type "ServerTechPRO3X".</p>
4	Device Name	<p>Required field.</p> <p>Device names cannot contain spaces or certain special characters.</p> <p>Dominion PX device names cannot include periods. Upon import, periods are converted to hyphens.</p>
5	IP Address or Hostname	<p>Required field.</p> <p>IPv4 or IPv6 address for supported devices.</p>
6	Username	Required field.
7	Password	Required field.
8	Heartbeat	Default is configured in the Admin Client in Administration > Configuration > Device Settings tab.
9	TCP Port	Default is configured in the Admin Client in Administration > Configuration > Device Settings tab.
10	Configure All Ports	<p>TRUE or FALSE</p> <p>Default is TRUE for Dominion PX devices.</p> <p>Default is FALSE for all other device types.</p> <p>When set to TRUE, all ports are configured and nodes with the appropriate out-of-band interface are created.</p> <p>When set to FALSE, only ports that have</p>

Column number	Tag or value	Details
		a corresponding ADD DEVICE-PORT record in the CSV file are configured.
11	Allow Direct Device Access	TRUE or FALSE Default is FALSE. This setting is for SX, SX2, KX3, KX4-101, KX2-101-V2 version 3.5 or later device, and KX2 version 2.2 or later devices only.
12	Description	Optional.
13	SNMP Version	1 or 3 Applies to Device Type iPDU, ServerTech, and ServerTechPRO3X only. v1/2c = 1 v3 = 3
14	Read-Only Community	
15	READ-Write Community	
16	Authentication Protocol	MD5 or SHA-1
17	Authentication Passphrase	
18	Privacy Protocol	AES-128 or DES
19	Privacy Passphrase	

► **To enter a request to delete a device from CC-SG:**

Column number	Tag or value	Details
1	DELETE	The first column for all tags is the command.
2	DEVICE	Enter the tag as shown. Tags are not case sensitive.
3	Device Type	Required field. Enter the device type as shown here: KX2, KX3, KX4-101, KSX2, KX2-101, SX, SX2, PX, iPDU, ServerTech, or ServerTechPRO3X.
4	Device Name	Required field. Device names cannot contain spaces or

Column number	Tag or value	Details
		certain special characters. Dominion PX device names cannot include periods. Upon import, periods are converted to hyphens.

► **To add a port to the CSV file:**

Use the DEVICE-PORT tag only if you add a device with Configure All Ports set to FALSE, and you want to specify ports individually. The ports you add must be un-configured in CC-SG when you import the CSV file.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command ADD.
2	DEVICE-PORT	Enter the tag as shown. Tags are not case sensitive.
3	Device Name	Required field.
4	Port Type	Required field. Enter the port type as shown here: KVM SERIAL OUTLET or POWER Use "OUTLET" or "POWER" for configuring outlets on a PX device.
5	Port or Outlet Number	Required field.
6	Port or Outlet Name	Optional. If left blank, a default name or the name already assigned at the device level will be used.
7	Node Name	For KVM and Serial ports, enter a name for the node that is created when this port is configured.

► **To add a blade to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	DEVICE-BLADE	Enter the tag as shown. Tags are not case sensitive.

Column number	Tag or value	Details
3	Device Name	Required field.
4	Port Number	Required field.
5	Blade Number	Required field.
6	Blade Name	Optional. If left blank, the name assigned at the device level is used. If a name is entered in the CSV file, it will be copied to the device level.
7	Node Name	Enter a name for the node that will be created when this blade is configured.

► **To add a Dominion Serial Access Module (DSAM):**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	DEVICE-DSAM	Enter the tag as shown. Tags are not case sensitive.
3	Device Name	Required field.
4	Port Number	Required field.
5	DSAM Number	Required field.
6	DSAM Name	Optional. If left blank, the name assigned at the device level is used. If a name is entered in the CSV file, it will be copied to the device level.
7	Node Name	Enter a name for the node that will be created when this DSAM is configured.

► **To add a tiered KVM switch connected to a KX2 or KX3:**

KX2/KX3 ports with tiered KVM switches connected must be imported as type "KVM".

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command ADD.
2	DEVICE-KVMSWITCHPORT	Enter the tag as shown. Tags are not case sensitive.

Column number	Tag or value	Details
3	Device Name	Required field.
4	Port Number	The port that the KVM Switch is connected to. Required field.
5	KVM Switch Port Number	Required field.
6	KVM Switch Port Name	Optional. If left blank, the name assigned at the device level is used. If a name is entered in the CSV file, it will be copied to the device level.
7	Node Name	Enter a name for the node that will be created when this KVM Switch port is configured.

► **To assign a category and element to a device to the CSV file:**

Categories and elements must already be created in CC-SG.

You can assign multiple elements of the same category to a device in the CSV file.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	DEVICE-CATEGORYELEMENT	Enter the tag as shown. Tags are not case sensitive.
3	Device Name	Required field.
4	Category Name	Required field.
5	Element Name	Required field.

► **To update password of a managed device:**

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	DEVICE-PASSWORD	Enter the tag as shown. Tags are not case sensitive.
3	Device Name	Required field.
4	Username	Required field.
5	New Password	Required field.

Sample Devices CSV File

```
ADD, DEVICE, KX3, Lab-Test,192.168.50.123,ST Lab KVM,
username, password,,,,
ADD, DEVICE-PORT, Lab-Test, KVM, 1, Mail Server, Mail
Server
ADD, DEVICE-PORT, Lab-Test, KVM, 2, DNS Server, DNS Server
ADD, DEVICE-PORT, Lab-Test, KVM, 3
ADD, DEVICE-PORT, Lab-Test, KVM, 4
ADD, DEVICE-CATEGORYELEMENT, Lab-Test, Location, Rack17
DELETE, DEVICE, KX3, SampleKX3
UPDATE, DEVICE-PASSWORD, LabTest-KX3, username,
newpassword
```

Import Devices CSV File

Once you've created the CSV file, validate it to check for errors then import it. Duplicate records are skipped and are not added.

► **To import devices:**

1. Choose Administration > Import > Import Devices.
2. Click Browse and select the CSV file to import. Click Open.

3. Click Validate. The Analysis Report area shows the file contents.
 - If the file is not valid, an error message appears. Click OK and look at the Problems area of the page for a description of the problems with the file. Click Save to File to save the problems list. Correct your CSV file and then try to validate it again. See **Troubleshoot CSV File Problems** (on page 412).
4. Click Import.
5. Check the Actions area to see the import results. Items that imported successfully show in green text. Items that failed import show in red text. Items that failed import because a duplicate item already exists or was already imported also show in red text.
6. To view more import results details, check the Audit Trail report. See **Audit Trail Entries for Importing** (on page 411).

Export Devices CSV File

The export file contains comments at the top that describe each item in the file. The comments can be used as instructions for creating a file for importing.

Note: P2SC devices are not exported.

▶ **To export devices:**

1. Choose Administration > Export > Export Devices.
2. Click Export to File.
3. Type a name for the file and choose the location where you want to save it.
4. Click Save.

Upgrading a Device

You can upgrade a device when a new versions of device firmware is available.

Important: Check the Compatibility Matrix to make sure the new device firmware version is compatible with your CC-SG firmware version. If you need to upgrade both CC-SG and a device or group of devices, perform the CC-SG upgrade first, and then perform the device upgrade.

▶ **To upgrade a device:**

1. Click the Devices tab and select a device from the Devices tree.
2. Choose Devices > Device Manager > Upgrade Device.
3. Firmware Name: Select the appropriate firmware from the list. Raritan or your reseller will provide this information.
4. Click OK to upgrade the device.
 - Upgrading SX devices takes about 20 minutes.

- If the firmware version of the device is not compatible with CC-SG, a message appears. Click Yes to upgrade the device. Click No to cancel the upgrade.
5. A message appears. Click Yes to restart the device. A message appears when the device has been upgraded.
 6. To ensure that your browser loads all upgraded files, close your browser window, and then login to CC-SG in a new browser window.

Backing Up a Device Configuration

You can back up all user configuration and system configuration files for a selected device. If anything happens to the device, you can restore the previous configurations from CC-SG using the backup file created.

The maximum number of backup files that can be stored on CC-SG is 3 per device. If you need more backups, you can save a backup file to your network then delete it from CC-SG. Or, you can opt to allow CC-SG to delete the oldest backup file for you. This option will appear as an alert when you attempt to do a fourth backup. See **Restore All Configuration Data to a KX4-101, KX3, KX2, KSX2, SX2, or KX2-101-V2 Device** (on page 91).

Each device may back up different components of the configuration. See the User Guide for the device you want to back up for details.

Note: A KX2 backup file can be restored to a KX3 device of similar model. For example a DKX2 232 model backup can be restored to a DKX3 232 device.

Note: When you back up an SX 3.0.1 device, attached PowerStrip configurations are not backed up. If you restore the SX 3.0.1 device from the backup, you must reconfigure the PowerStrips.

► To backup a device configuration:

1. Click the Devices tab and select the device you want to back up.
2. Choose Devices > Device Manager > Configuration > Backup.
3. Type a name in the Backup name field to identify this backup.
4. Type a short description of the backup in the Description field. **Optional.**
5. Click OK to back up the device configuration. A message appears when the device configuration has been backed up.

Restoring Device Configurations

CC-SG allows you to restore a full backup of the device configuration.

KX3, KX4-101, KX2, KSX2, SX2, and KX2-101-V2 devices allow you to choose which components of a backup you want to restore to the device.

- **Protected:** The entire content of the selected backup file, except the network settings (personality package) and, for KX3 and KX2 devices, the port configuration settings, will be restored to the device. You can use the Protected option to restore a backup of one device to another device of the same model (KX4-101, KX3, KX2, KSX2, and KX2-101-V2 only).
- **Full:** The entire content of the selected backup file will be restored to the device.
- **Custom:** Allows you to restore Device Setting, User and User Group Data Settings, or both. Not supported on KX4-101

Note: A KX2 backup file can be restored to a KX3 device of similar model. For example a DKX2 232 model backup can be restored to a DKX3 232 device.

Restore a Device Configuration for SX

You can restore a full backup configuration to SX devices.

► **To restore a full backup device configuration:**

1. Click the Devices tab and select the SX you want to restore to a backup configuration.
2. Choose Devices > Device Manager > Configuration > Restore.
3. In the Available Backups table, select the backup configuration you want to restore to the device.
4. Click OK.
5. Click Yes to restart the device. A message appears when all data has been restored.

Restore All Configuration Data Except Network Settings to a KX4-101, KX3, KX2, KSX2, , SX2, or KX2-101-V2 Device

The Protected restore option allows you to restore all configuration data in a backup file, except network settings, to a KX4-101, KX3, KX2, KSX2, SX2, or KX2-101-V2 device. You can use the Protected option to restore a backup of one device to another device of the same model (KX4-101, KX3, KX2, KSX2, SX2, and KX2-101-V2 only).

► **To restore all configuration data except network settings to a KX4-101, KX3, KX2, KSX2, SX2, or KX2-101-V2 device:**

1. Click the Devices tab and select the device you want to restore to a backup configuration.

2. Choose Devices > Device Manager > Configuration > Restore.
3. In the Available Backups table, select the backup configuration you want to restore to the device.
4. Restore Type: select Protected.
5. Click OK.
6. Click Yes to restart the device. A message appears when all user and system configuration data has been restored.

Restore Only Device Settings or User and User Group Data to a KX3, KX2, KSX2, SX2, or KX2-101-V2 Device

The Custom restore option allows you restore Device Settings, User and User Group Data, or both.

▶ **To restore only device settings or user and user group data to a KX3, KX2, KSX2, SX2, or KX2-101-V2 device:**

1. Click the Devices tab and select the device you want to restore to a backup configuration.
2. Choose Devices > Device Manager > Configuration > Restore.
3. In the Available Backups table, select the backup configuration you want to restore to the device.
4. Restore Type: select Custom.
5. Restore Options: select the components you want to restore to the device: Device Settings, User and User Group Data.
6. Click OK.
7. Click Yes to restart the device. A message appears when data has been restored.

Restore All Configuration Data to a KX4-101, KX3, KX2, KSX2, SX2, or KX2-101-V2 Device

The Full restore option allows you to restore all configuration data in a backup file to a KX4-101, KX3, KX2, KSX2, or KX2-101-V2 device.

▶ **To restore all configuration data to a KX4-101, KX3, KX2, KSX2, SX2, or KX2-101-V2 device:**

1. Click the Devices tab and select the device you want to restore to a backup configuration.
2. Choose Devices > Device Manager > Configuration > Restore.
3. In the Available Backups table, select the backup configuration you want to restore to the device.
4. Restore Type: select Full.
5. Click OK.

6. Click Yes to restart the device. A message appears when all user and system configuration data has been restored.

Save, Upload, and Delete Device Backup Files

You can save the device backup files in the Restore Device Configuration page to a location on your network or local machine. If you need to make space for new backups to be stored on CC-SG, you can delete device backup files. You can also upload device backup files saved on your network back to CC-SG to use them to restore a device configuration.

▶ **Save a device backup file from CC-SG:**

1. Click the Devices tab and select a device.
2. Choose Devices > Device Manager > Configuration > Restore.
3. Select the device backup file you want to save. Click Save to File.
4. Navigate to the location where you want to save the file. Click Save.

▶ **Delete a device backup file from CC-SG:**

1. Click the Devices tab and select a device.
2. Choose Devices > Device Manager > Configuration > Restore.
3. Select the device backup file you want to delete. Click Delete.
4. Click Yes to confirm.

▶ **Upload a device backup file to CC-SG:**

1. Click the Devices tab and select a device.
2. Choose Devices > Device Manager > Configuration > Restore.
3. Click Upload. Navigate to and select the device backup file. The file type is .rfp. Click Open.

The device backup file uploads to CC-SG and appears in the page.

Copying Device Configuration

The following device types allow you to copy configurations from one device to one or more other devices.

- KX4-101
- KX3
- KX2
- KSX2
- KX2-101-V2
- SX
- SX2

In most devices, configuration can be copied only between the same models with the same number of ports. One exception: DKX2 configurations can be restored to DKX3 devices with the same model type. For example, you can copy configuration from one DKX2-864 device to a DKX3-864 devices.

The Copy Configuration command copies all configuration data except for network settings (personality package), and for KX3 and KX2 devices, the port configuration settings. Device Settings, and User and User Group Data are all copied in this process.

► **To copy a device configuration:**

1. Click the Devices tab and select the device whose configuration you wish to copy to other devices from the Devices tree.
2. Choose Devices > Device Manager > Configuration > Copy Configuration.
3. Select the configuration-copying method.
 - To copy current configuration data, select Copy From Device.
 - To copy the configuration data in a backup file previously saved on CC-SG, select Copy From Backup File and then select the file from the drop-down list. If no backup file is available, this option is disabled.
4. Click the Device Group drop-down arrow and select a device group from the list. All devices of the selected device group display in the Available column.
5. Highlight the devices to which you want to copy this configuration in the Available column, and then click the right arrow to move them to the Selected column. The left arrow moves selected devices out of the Selected column.
6. Click OK to copy the configuration to the devices in the Selected column.
7. When the Restart message appears, click Yes to restart the device. A message appears when the device configuration has been copied.

Restarting a Device

Use the Restart Device function to restart a device.

▶ **To restart a device**

1. Click the Devices tab and select the device you want to restart.
2. Choose Devices > Device Manager > Restart Device.
3. Click OK to restart the device.
4. Click Yes to confirm that all users accessing the device will be logged off.

Pinging a Device

You can ping a device to determine if the device is available in your network.

If a device is operating in dual-stack mode, CC-SG pings each address in sequence and shows a result for each address. If the device is being managed by hostname, the hostname displays in the ping results.

▶ **To ping a device:**

1. Click the Devices tab and select the device you want to ping.
2. Choose Devices > Device Manager > Ping Device. The Ping Device screen appears, showing the result of the ping.

Pausing CC-SG's Management of a Device

You can pause a device to temporarily suspend CC-SG control of it without losing any of the configuration data stored within CC-SG.

To schedule a task that pauses or resumes devices, see **Schedule a Task** (on page 293).

▶ **To pause CC-SG management of a device:**

1. Click the Devices tab and select the device for which you want to pause CC-SG management.
2. Choose Devices > Device Manager > Pause Management. The device's icon in the Device Tree will indicate the device's paused state.

Resuming Management of a Device

You can resume CC-SG management of a paused device to bring it back under CC-SG control.

When resuming management of a dual-stack device, dual stack may have been enabled or disabled while the device was out of management. CC-SG must check for IPV6 address conflict with other devices being managed. If a conflict is detected, the device is placed under management using the IPV4 address only, and an error is logged.

Error text includes: "An IPv6 address conflict was detected. Device management resumed with IPv4 address only."

▶ **To resume CC-SG's management of a paused device:**

1. Click the Devices tab and select the paused device from the Devices tree.
2. Choose Devices > Device Manager > Resume Management. The device icon in the Device Tree will indicate the device's active state.

Pause and Resume Management of Devices Using a Scheduled Task

To pause or resume multiple devices or device groups at once, schedule a task to perform the operation on the group of devices sequentially.

The Pause/Resume Device Management task does not apply to blade chassis attached to managed devices, power strips attached to managed devices, and managed power strips.

When the task runs, it will be logged as successful if all device operations succeed. The task is logged as successful with exceptions if the task completes, but some device operations fail even after the allowed number of retries are attempted. The task is logged as failed if all device operations fail.

▶ **To bulk pause and resume devices using a scheduled task:**

1. Choose Administration > Tasks. See **Schedule a Task** (on page 293) for details on creating a new task, and completing the Main, Recurrence, Retry, and Notification tabs.
 - Recurrence: The recurrence intervals are limited to hours and days.
 - Retry: CC-SG will only retry the operation on devices that fail to pause or resume.
2. In the Task Data tab, select Pause/Resume Device Management in the Task Operation field.
3. Select Pause Management or Resume Management. If you need to perform both tasks, schedule a task for each, and coordinate the timing between the 2 tasks.
4. In the Interval (seconds) field, select the number of seconds you want CC-SG to delay after completing one operation before starting the next operation.

5. Select the Skip Device if Restart Required checkbox if you want CC-SG to skip the pause or resume operation for any devices selected that would require a restart.
6. Select the devices to include in the task by selecting a device group from the Device Group drop-down list. Select the devices to include in the Available list, then use the arrow buttons to move the devices to the Selected list. Devices in the Selected list will be included in the pause or resume operation.
 - Any devices selected that would require a restart will be skipped when the task runs, if you have selected the Skip Device if Restart Required checkbox.
7. Click OK.

Device Power Manager

Use the Device Power Manager to view the status of a PowerStrip device and to manage all power outlets on the PowerStrip device. Device Power Manager provides a PowerStrip-centric view of its outlets.

► **To view the device power manager:**

1. In the Devices tab, select a PowerStrip device.
2. Choose Devices > Device Power Manager.
3. The outlets are listed in the Outlets Status panel. You may have to scroll to view all outlets.
 - Select Power On or Power Off from the drop-down list for each outlet to power ON or power OFF the outlet.
 - Select Power Cycle from the drop-down list to restart the device connected to the outlet.

Launching a Device's Administrative Page

If available for the device selected, the Launch Admin command provides access to the device's administrator interface.

► **To launch a device's administrative page:**

1. Click the Devices tab and select the device whose administrator interface you want to launch.
2. Choose Devices > Device Manager > Launch Admin. The administrator interface for the selected device appears.

Note: Edge or Chrome browsers do not allow the connection to the Admin client of KSX2 and PX1 devices. An error of "ERR_SSL_VERSION_OR_CIPHER_MISMATCH" is seen. You can use Firefox to access the Admin client in these cases.

Disconnecting Users

Administrators can terminate any user's session on a device. This includes users who are performing any kind of operation on a device, such as connecting to ports, backing up the configuration of a device, restoring a device's configuration, or upgrading the firmware of a device.

Firmware upgrades and device configuration backups and restores are allowed to complete before the user's session with the device is terminated. All other operations will be terminated immediately.

For Dominion SX devices only, you can disconnect users who are directly logged into the device as well as those who are connected to the device via CC-SG.

▶ **To disconnect users from a device:**

1. Click the Devices tab and select the device from which you want to disconnect users.
2. Choose Devices > Device Manager > Disconnect Users.
3. Select the users whose session you want to disconnect in the Disconnect users table.
4. Click Disconnect to disconnect the users from the device.

Set User Password

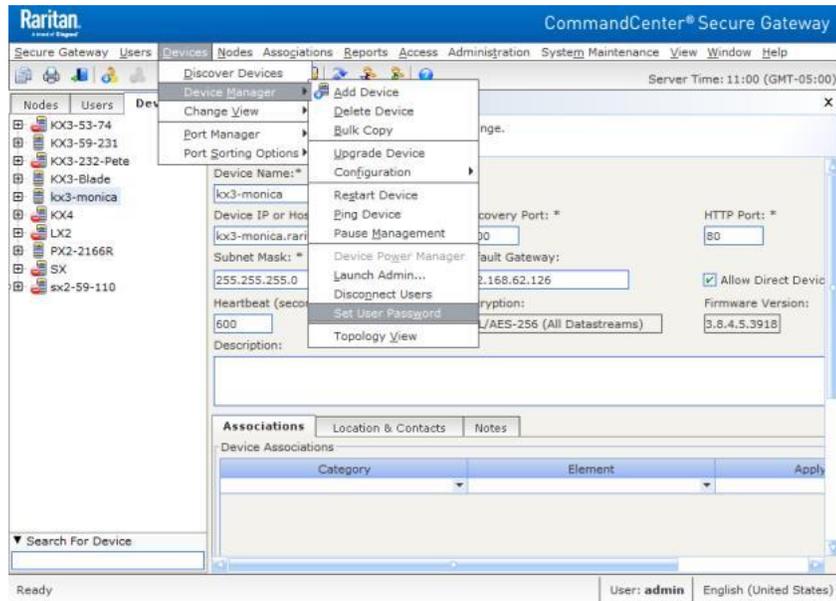
You can set password on managed devices.

Note: Set password on managed devices is supported on SX2 release 2.5.0 and greater, and KX3 release 3.8.4 and greater.

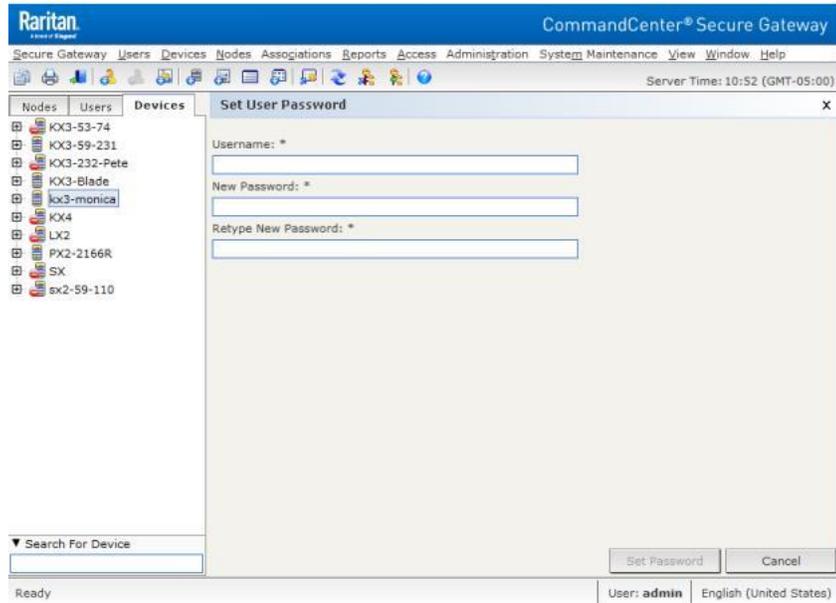
▶ **To set password on managed devices:**

1. Click the Devices tab and select the device whose password you want to set.

2. Choose Devices >Device Manager > Set User Password.



3. Enter the Username, New password, and Retype password for verification then click Set Password.



Managed Powerstrips

There are three ways to configure power control using powerstrips (PDUs) in CC-SG.

1. All supported Raritan-brand, and ServerTech-brand powerstrips can be connected to another Raritan device and added to CC-SG as a Powerstrip device. Raritan-brand powerstrips include Dominion PX and RPC powerstrips. Check the Compatibility Matrix for supported versions. To configure this type of managed powerstrip in CC-SG, you must know to which Raritan device the powerstrip is physically connected. See ***Configuring Powerstrips that are Managed by Another Device in CC-SG*** (on page 101).
2. Dominion PX1, PX2, PX3 PDUs, and ServerTech PDUs can be connected directly to the IP network and added to CC-SG as devices. Note that there are 3 device types: PX1 PDUs are designated as Dominion PX devices, PX2 & PX3 are Raritan PX iPDU devices, and ServerTech PDU & ServerTech Pro3X are ServerTech PDU devices. These PDUs do not need to be connected to another Raritan device.
3. Multi-vendor support of PDUs is available by configuration of a Raritan's Power IQ service interface. See ***Power Control of Power IQ IT Devices*** (on page 379).

With all methods, you must add Managed Powerstrip interfaces to nodes to create power associations between the outlets and the nodes they power. See **Interfaces for Power Control using Managed Powerstrips and PDUs** (on page 143).

► **Special Note about Dominion PX**

Regardless of which method you choose to configure a PX, you should configure all power associations using a single method, that is, as a powerstrip of the managed device or as a PX device, but not both. If the Dominion PX is managed by Power IQ, you can create a Power Control - Managed Power Strip interface or a Power Control – Power IQ Proxy interface for a node but not both.

In addition, you can connect the PX to a managing device and configure power associations, and also connect the same PX device to the IP network so that you can use the PX web client to view and collect power data. See the Raritan **Dominion PX User Guide**, located in the Support section of the Raritan website under Firmware and Documentation.

Note: Managed Power strip will show connected CIM serial number and CIM firmware version but not CIM hardware version on its device profile page.

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Configuring Powerstrips that are Managed by Another Device in CC-SG

In CC-SG, managed powerstrips can be connected to one of the following devices:

- Dominion KX3
- Dominion KX2
- Dominion KX2-101
- Dominion SX2
- Dominion SX 3.4 and 3.5
- Dominion KSX2
- Power IQ - See **Power Control of Power IQ IT Devices** (on page 379)

You must know which Raritan device the managed powerstrip is connected to physically.

*Note: You can also have a PX powerstrip that is connected to your IP network, but not connected to any other Raritan device. See **Managed Powerstrips** (on page 99) for details on configuring power control for these powerstrips.*

► To configure managed powerstrips in CC-SG:

1. Complete all physical connections between the device, the powerstrip, and the nodes that are powered by the powerstrip.
2. Add the managing device to CC-SG. The procedure varies for different Raritan devices. See the section that corresponds to the device the powerstrip is connected to:
 - **Configuring PowerStrips Connected to KX3, KX2, KX2-101-V2, KSX2, and SX2** (on page 101)
 - Configuring PowerStrips Connected to SX 3.0
 - Configuring PowerStrips Connected to SX 3.1.
3. Configure outlets. See **Configuring Outlets on a Powerstrip** (on page 102).
4. Associate each outlet with the node that it powers. See **Interfaces for Power Control using Managed Powerstrips and PDUs** (on page 143).

Configuring PowerStrips Connected to KX3, KX2, KX2-101-V2, KSX2, and SX2

CC-SG automatically detects PowerStrips connected to KX3, KX2, KX2-101-V2, KSX2, and SX2 devices. You can perform the following tasks in CC-SG to configure and manage PowerStrips connected to these devices.

Add a PowerStrip Device Connected to a KX3, KX2, KX2-101-V2, KSX2, or SX2 Device

When you add a KX3, KX2, KX2-101-V2, KSX2, or SX2 device that is connected to a PowerStrip to CC-SG, the PowerStrip is added automatically. The PowerStrip will appear in the Devices tab, beneath the device to which it is connected.

Next Steps:

1. Configure outlets. See *Configuring Outlets on a Powerstrip* (on page 102).
2. Associate each outlet with the node that it powers. See *Interfaces for Power Control using Managed Powerstrips and PDUs* (on page 143).

Move a KX3, KX2, KX2-101-V2, KSX2, or SX2's PowerStrip to a Different Port

When you physically move a PowerStrip from one KX3, KX2, KX2-101-V2, KSX2, or SX2 device or port to another device or port, CC-SG automatically detects the PowerStrip and updates its association to the correct device. You do not have to add the PowerStrip to CC-SG separately.

Delete a PowerStrip Connected to a KX3, KX2, KX2-101-V2, KSX2, or SX2 Device

You cannot delete a PowerStrip connected to a KX3, KX2, KX2-101-V2, KSX2, or SX2 device from CC-SG. You must physically disconnect the PowerStrip from the device to delete the PowerStrip from CC-SG. When you physically disconnect the PowerStrip from the device, the PowerStrip and all configured outlets disappear from the Devices tab.

Configuring Outlets on a Powerstrip

Before associating Powerstrip outlets with nodes, you must configure the outlets by adding the Managed Powerstrip interface to the node. See *Interfaces for Power Control using Managed Powerstrips and PDUs* (on page 143).

► **To configure outlets from the PowerStrip profile:**

1. In the Devices tab, click the + next to the device that is connected to the PowerStrip.
2. Select the PowerStrip whose outlets you want to configure.
3. In the Device Profile: PowerStrip screen, select the Outlets tab.
4. Select the checkbox for each outlet you want to configure, and then click OK.

The outlets will appear beneath the PowerStrip icon in the Devices tab.

▶ **To configure outlets from the Configure Ports screen:**

1. In the Devices tab, click the + next to the device that is connected to the PowerStrip.
2. Select the PowerStrip whose outlets you want to configure.
3. Choose Devices > Port Manager > Configure Ports.
 - To configure multiple outlets with the default names shown in the screen, select the checkbox for each outlet you want to configure, and then click OK to configure each outlet with the default name.
 - To configure each outlet individually, click the Configure button next to the outlet, and then type a name for the outlet in the Port name field. Click OK to configure the port.

▶ **To delete an outlet:**

1. In the Devices tab, click the + next to the device that is connected to the PowerStrip.
2. Click the + next to the PowerStrip.
3. Choose Devices > Port Manager > Delete Ports.
4. Select the checkbox for each outlet you want to delete, and then click OK to delete the outlet.

Nodes, Node Groups, and Interfaces

This section covers how to view, configure, and edit nodes and their associated interfaces, and how to create node groups. For details on connecting to nodes, see the CC-SG User Guide.

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Nodes and Interfaces Overview

About Nodes

Each node represents a target that is accessible through CC-SG, via either In-Band (direct IP) or Out-of Band (connected to a Raritan device) methods. For example, a node can be a server in a rack connected to a Raritan KVM over IP device, a server with an HP iLO card, a PC on the network running VNC, or a piece of networking infrastructure with a remote serial management connection.

You can manually add nodes to CC-SG after you have added the devices to which they are connected. Nodes can also be created automatically by selecting the Configure all ports checkbox on the Add Device screen when you are adding a device. This option allows CC-SG to automatically add all device ports, and add a node and an out-of-band KVM or serial interface for each port. You can edit these nodes, ports, and interfaces at any time.

Node Names

Node names must be unique. CC-SG will prompt you with options if you attempt to manually add a node with an existing node name. When CC-SG automatically adds nodes, a numbering system ensures that node names are unique.

See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.

About Interfaces

In CC-SG, nodes are accessed through interfaces. You must add at least one interface to each new node.

You can add different types of interfaces to provide different kinds of access, such as Out-of-Band KVM or serial, power control, In-Band SSH/RSA/VNC, DRAC/RSA/ILO, web, or Telnet access, depending on the node type.

A node can have multiple interfaces, but only one out-of-band serial or KVM interface. For example, a Windows Server may have an out-of-band KVM interface for the keyboard, mouse, and monitor ports, and a power interface to manage the outlet to which the server is connected.

Some interfaces only work in Direct mode even though you configure CC-SG to use Proxy mode. These interfaces include ILO, RSA, DRAC, Web Browser and VMware Viewer. Java RDP interfaces can be used in proxy mode. See **About Connection Modes** (on page 259).

Viewing Nodes

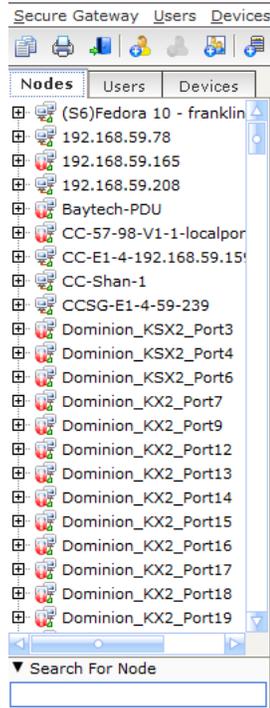
In CC-SG, you can view all nodes in the Nodes tab and select a node to view its specific Node Profile.

Nodes Tab

When you click the Nodes tab, all nodes to which you have access appear in a tree structure.

Nodes are displayed alphabetically by name or grouped by their availability status. Nodes grouped by availability status are sorted alphabetically within their availability grouping. To switch between sorting methods, right-click the tree, click Node Sorting Options, then click By Node Name or By Node Status.

See **Custom Views for Devices and Nodes** (on page 206) for details on viewing the Nodes tab in different ways.



Node Profile

Click a Node in the Nodes tab to open the Node Profile page. The Node Profile page includes tabs that contain information about the node.

▶ Interfaces tab

The Interfaces tab contains all the node's interfaces. You can add, edit, and delete interfaces on this tab, and select the default interface. Nodes that support virtual media include an additional column that shows whether virtual media is enabled or disabled.

▶ Associations tab

The Associations tab contains all categories and elements assigned to the node. You can change the associations by making different selections.

See ***Associations, Categories, and Elements*** (on page 34).

▶ Location & Contacts tab

The Location & Contacts tab contains information about a device's location and contact information, such as phone numbers, that you may need when working on a device. You can change the information in the fields by typing in new information.

See ***Adding Location and Contacts to a Node Profile*** (on page 114).

▶ Notes tab

The Notes tab contains a tool that enables users to leave notes for about a device for other users to read. All notes display in the tab with the date, username, and IP address of the user who added the note.

If you have the Device, Port, and Node Management privilege, you can clear all notes from the node profile. Click the Clear button.

See ***Adding Notes to a Node Profile*** (on page 114).

▶ Audit tab

You can view the reasons that a node was accessed in the Audit tab. Users must enter a reason for access before connecting to a node when node auditing has been enabled for the user group.

The Audit tab is hidden if the feature is disabled, or if no reasons for access have been entered.

See ***Configuring Access Auditing for User Groups*** (on page 186).

▶ Control System Data tab

Control system server nodes, such as VMware's Virtual Center, include the Control System Data tab. The Control System Data tab contains information from the control system server that is refreshed when the tab opens. You can access a topology view of the virtual infrastructure, link to associated node profiles, or connect to the control system and open the Summary tab.

▶ **Virtual Host Data tab**

Virtual host nodes, such as VMware's ESX servers, include the Virtual Host Data tab. The Virtual Host Data tab contains information from the virtual host server that is refreshed when the tab opens. You can access a topology view of the virtual infrastructure, link to associated node profiles, or connect to the virtual host and open the Summary tab. If you have Device, Port, and Node Management permission, you can Reboot and Force Reboot the virtual host server.

▶ **Virtual Machine Data tab**

Virtual machine nodes, such as VMware's Virtual Machines, include the Virtual Machine Data tab. The Virtual Machine Data tab contains information from the virtual machine that is refreshed when the tab opens. You can access a topology view of the virtual infrastructure, link to associated node profiles, or connect to the virtual host and open the Summary tab.

▶ **Blades tab**

Blade chassis nodes, such as IBM BladeCenter, include the Blades tab. The Blades tab contains information about the blade servers residing in the blade chassis.

Node and Interface Icons

For easier identification, nodes have different icons in the Nodes tree. Hold the mouse pointer over an icon in the Nodes tree to view a tool tip containing information about the node.

Icon	Meaning
	Node available - the node has at least one interface that is up.
	Node unavailable - the node does not have an interface that is up.

Service Accounts

Service Accounts Overview

Service accounts are special login credentials that you can assign to multiple interfaces. You can save time by assigning a service account to a set of interfaces that often require a password change. You can update the login credentials in the service account, and the change is reflected in every interface that uses the service account.

Service accounts cannot be used for Out-of-Band interfaces or Managed Powerstrip interfaces.

- For DRAC, iLO, and RSA interfaces, the login credentials apply to the embedded processor card, not the underlying OS.
- For RDP, SSH, and Telnet interfaces, the login credentials apply to the OS.
- For VNC interfaces, the login credentials apply to the VNC server.
- For Web Browser interfaces, the login credentials apply to the form available at the URL specified in the interface.

▶ **To view service accounts:**

- Choose Nodes > Service Accounts. The Service Accounts page opens.
- Click the column header to sort the table by that attribute in ascending order. Click the header again to sort the table in descending order.

Optional.

Field	Description
Service Account Name	This name is used to identify the service account in the interface dialogs and in the Assign Service Account page.
Username	This username is used as part of the login credentials when the service account is assigned to an interface.
Password	This password is used as part of the login credentials when the service account is assigned to an interface.
Retype Password	This field is used to ensure the password is typed correctly.
Description	This description can contain any extra information you want to add about the service account.

Add, Edit, and Delete Service Accounts

▶ **To add a service account:**

1. Choose Nodes > Service Accounts. The Service Accounts page opens.



2. Click the Add Row icon  to add a row to the table.
3. Enter a name for this service account in the Service Account Name field.
4. Enter the username in the Username field.
5. Enter the password in the Password field.
6. Re-type the password in the Retype Password field.
7. Enter a description of this service account in the Description field.
8. Click OK.

▶ **To edit a service account:**

1. Choose Nodes > Service Accounts. The Service Accounts page opens.
2. Find the service account you want to edit.
3. Edit the fields. You cannot edit the Service Account Name.

Note: CC-SG updates all interfaces that use the service account to use the new login credentials when you change the username or password.

4. Click OK.

▶ **To delete a service account:**

1. Choose Nodes > Service Accounts. The Service Accounts page opens.
2. Select the service account you want to delete.



3. Click the Delete Row button. 
4. Click OK.

Change the Password for a Service Account

▶ **To change the password for a service account:**

1. Choose Nodes > Service Accounts. The Service Accounts page opens.
2. Find the service account whose password you want to change.
3. Enter the new password in the Password field.
4. Re-type the password in the Retype Password field.
5. Click OK.

Note: CC-SG updates all interfaces that use the service account to use the new login credentials when you change the username or password.

Assign Service Accounts to Interfaces

You can assign a service account to multiple interfaces. Each interface that is assigned the service account uses the same login information for connections. CC-SG updates all interfaces that use the service account to use the new login credentials when you change the username or password.

You can also select a service account when you configure an interface. See ***Adding, Editing, and Deleting Interfaces*** (on page 134).

You must have the Device, Port, and Node Management privilege to assign service accounts to interfaces. See ***Adding, Editing, and Deleting User Groups*** (on page 182).

► **To assign a service account to interfaces:**

1. Choose Nodes > Assign Service Accounts. The Assign Service Accounts page opens.
2. In the Service Account Name field, select the service account you want to assign to the nodes.
3. In the Available list, select the interfaces you want to assign the service account to. Use Ctrl+click or Shift+click to select multiple interfaces at once.

*Tip: Type a node name in the Find field to highlight it in the list. Type * after a partial name to highlight all similar names in the list.*

Click the column headers to sort the lists alphabetically.

4. Click Add to move the selected interfaces into the Selected list.
5. Click OK. The service account is assigned to all nodes in the Selected list.

Note: CC-SG updates all interfaces that use the service account to use the new login credentials when you change the username or password.

Adding, Editing, and Deleting Nodes

Add a Node

► **To add a node to CC-SG:**

1. Click the Nodes tab.

- Choose Nodes > Add Node.

- Type a name for the node in the Node Name field. All node names in CC-SG must be unique. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
- Type a short description for this node in the Description field. **Optional.**
- You must configure at least one interface. Click Add in the Interfaces area of the Add Node screen to add an interface. See **Add an Interface** (on page 134).
- A list of Categories and Elements can be configured to better describe and organize this node. See **Associations, Categories, and Elements** (on page 34). **Optional.**
 - For each Category listed, click the Element drop-down menu, and then select the element you want to apply to the node from the list.

Note: By default, CC-SG keeps default category names "System Type" and "US States and territories" in English.

- Select the blank item in the Element field for each Category you do not want to use.
 - If you do not see the Category or Element values you want to use, you can add them through the Associations menu. See **Associations, Categories, and Elements** (on page 34).
- Click OK to save your changes. The node will be added to the node list.

Important: If you move a blade chassis from one Dominion device port to another Dominion device port, interfaces that were added to the blade chassis node in CC-SG will be lost in CC-SG. All other information will be retained.

Nodes Created by Configuring Ports

When you configure the ports of a device, a node is created automatically for each port. An interface is also created for each node.

When a node is automatically created, it is given the same name as the port to which it is associated. If this node name already exists, an extension is added to the node name. For example, Channel1(1). The extension is the number in parentheses. This extension is not included as part of the character count for the node name. If you edit the node name, the new name will be restricted to the maximum number of characters. See **Naming Conventions** (on page 442).

Edit a Node

You can edit a node to change its name, description, interfaces, default interface, or associations.

► **To edit a node:**

1. Click the Nodes tab, and then select the node you want to edit. The Node Profile appears.
2. Edit the fields as needed.
3. Click OK to save your changes.

*Note 1: Changing the node name of a blade chassis does not change its chassis name. To modify the chassis name, edit it in the Device Profile screen. See **Edit a Blade Chassis Device** (on page 71).*

Note 2: Changing the node name of a Virtual Host or Virtual Control System node also changes the name in the Virtualization table.

Delete a Node

Deleting a node removes it from the Nodes tab. The node will no longer be available for users to access. When you delete a node, all interfaces, associations, and associated ports are deleted.

► **To delete a node:**

1. In the Nodes tab, select the node you want to delete.
2. Choose Nodes > Delete Node. The Delete Node screen appears.
3. Click OK to delete the node.
4. Click Yes to confirm that deleting the node also deletes all interfaces and associated ports. A list of all deleted items appears when the deletion is complete.

Adding Location and Contacts to a Node Profile

Enter details about the location of the node, and contact information for the people who administer or use the node.

▶ **To add location and contacts to a node profile:**

1. Select a node in the Nodes tab. The Node Profile page opens.
2. Click the Location & Contacts tab.
3. Enter Location information.
 - Department: Maximum 64 characters.
 - Site: Maximum 64 characters.
 - Location: Maximum 128 characters.
4. Enter Contacts information.
 - Primary Contact Name and Secondary Contact Name: Maximum 64 characters.
 - Telephone Number and Cell Phone: Maximum 32 characters.
5. Click OK to save your changes.

Adding Notes to a Node Profile

You can use the Notes tab to add notes about a node for other users to read. All notes appear in the tab with the date, username, and IP address of the user who added the note.

If you have the Device, Port, and Node Management privilege, you can clear all notes that appear in the Notes tab.

▶ **To add notes to the node profile:**

1. Select a node in the Nodes tab. The Node Profile page opens.
2. Click the Notes tab.
3. Type your note in the New Note field.
4. Click Add. Your note appears in the Notes list.

▶ **To clear all notes:**

1. Click the Notes tab.
2. Click Clear Notes.
3. Click Yes to confirm. All notes are deleted from the Notes tab.

Adding a Video Group to a Node Profile

The video group feature allows you to have access to multiple video card outputs of a target server that is connected to one or multiple KVM devices. When connected to the node, you will see all video outputs simultaneously. The mouse will sync if it is configured properly in the target server. The mouse, virtual media and audio menu are only available on the first video. You can include targets connected to different KVM devices in a video group. There can be up to 6 KVM connections per video group. You can create one video group per node.

The first step to create a video group is to configure multiple out-of-band KVM interfaces to the node, one for each video target. Then, you can configure the video group by specifying each interface that should be part of the group, and the video layout you require. Videos will be arranged by column, side by side.

Note: When ports are in a video group, accessing them individually is not fully supported: you can connect to each port and view the video, but the mouse, virtual media and audio are only accessible on the first listed interface of the group.

Video Groups are supported by the following devices:

- KX3 version 3.8 or later
- KX4-101 4.1.5 or later

Video Group connections are supported in AKC/VKC, but not HKC. When launching, the application configured in the first listed interface is used, so make sure that AKC/VKC is specified.

You must have the Device, Port and Node Management privilege to configure Video Groups. Users who are connecting to the video group must have Node Out of Band permission.

Note: Video groups cannot be accessed through bookmark or WS-API connections.

► To configure multiple interfaces to a node:

Ports should be configured as interfaces to a node. To do this devices are added without configuring its ports or ports are deleted from the devices if they are already added. There are 3 ways to configure multiple interfaces to a node:

From Device:

- Select Devices tab, right click device > Configure Ports.
- Click Configure on the right of the port, change Node Name to the name of the node to which you want to add this as interface.
- Click Add Interface option on info dialog box.
- Repeat the above steps to configure other ports.

From Node:

- Select Nodes tab > select the node which you want to add interfaces to.
- Click Add button on Node Profile window. Choose Interface type:Out-Of-Band KVM, select Raritan Device Name, Raritan Port Name from the list, type Description and click OK.
- Repeat the above steps to add more interfaces.

By Importing:

- Choose Administration > Import> Import Nodes or Import Devices.
- In the import file make sure to replace node names of all the interfaces with the node name of the node where all the interfaces are added.
- Click Validate and then Import.

► **To add a video group:**

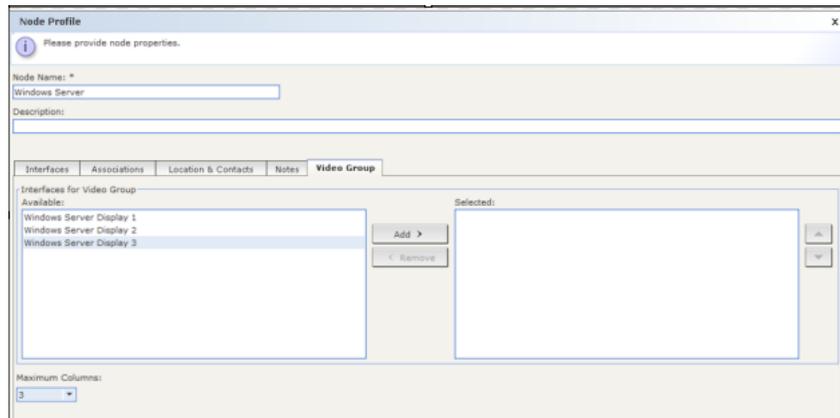
You must configure multiple interfaces to a node.

1. Select the node in the Nodes tab. The Node Profile page opens.
2. Click the Video Group tab.
3. You will see the configured interfaces that support video groups in the Available section.
4. Select one or all by pressing Ctrl+A and click Add.

Select Maximum Columns from the list. Based on the selection (1-6) you will see the port connections arranged in that many columns. For example, if you set Maximum Columns to 2, and configure 6 interfaces in the video group, the videos are arranged in a 3 x 2 grid.

1	2
3	4
5	6

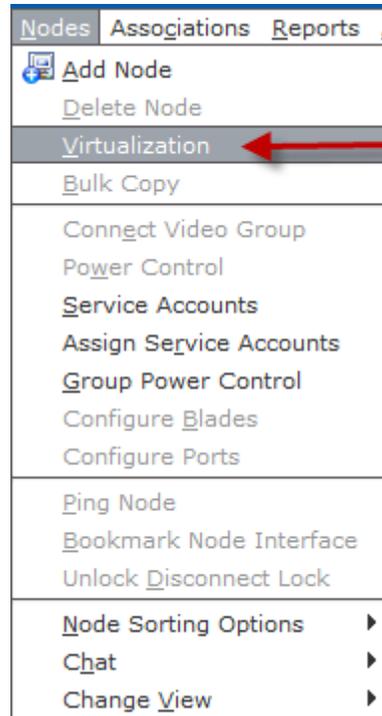
5. Click Apply.



► **To connect to a video group:**

1. In Nodes tab, right-click the node, and select Connect Video Group. OR, select the node, then choose Nodes > Connect Video Group.
2. The video group opens with all the ports connected.

Configuring the Virtual Infrastructure in CC-SG



You can configure your virtual infrastructure for access in CC-SG. The Virtualization page offers two wizard tools, Add Control System wizard and Add Virtual Host wizard, that help you add control systems, virtual hosts, and their virtual machines properly.

Once you complete the configuration, all control systems, virtual hosts, and virtual machines are available for access as nodes in CC-SG. Each type of virtual node is configured with an interface for access and an interface for power.

- Control system nodes and virtual host nodes are configured with a VI Client interface. The VI Client interface provides access to the virtualization system's infrastructure client. For VMware control centers, the VI Client interface provides access to the control center server via VMware Virtual Infrastructure Web Access. For VMware ESX servers, the VI Client interface provides access to the ESX server via VMware Virtual Infrastructure Web Access.
- Virtual machine nodes are configured with a VMW Viewer interface and a VMW Power interface. The VMW Viewer interface provides access to the virtual machine's viewer application. For VMware virtual machines, the VMW Viewer interface provides access to the virtual machine remote console. The VMW Power interface provides power control for the node through CC-SG.

CC-SG cannot manage or access ESXi virtual nodes that use a license for a free-trial version of the VMware product.

Terminology for Virtual Infrastructure

CC-SG uses the following terminology for virtual infrastructure components.

Term	Definition	Example
Control System	The Control System is the managing server. The Control System manages one or more Virtual Hosts.	VMware's Virtual Center
Virtual Host	The Virtual Host is the physical hardware that contains one or more Virtual Machines.	VMware's ESX
Virtual Machine	A Virtual Machine is a virtual server that resides on a Virtual Host. A Virtual Machine can be relocated from one Virtual Host to a different Virtual Host.	VMware's Virtual Machine or VM
VI Client interface	Control system nodes and virtual host nodes have a VI Client interface that provides access to the virtualization system's infrastructure client application.	VMware's Virtual Infrastructure Web Access
VMW Viewer interface	Virtual machine nodes have a VMW Viewer interface that provides access to the virtual machine's viewer application.	VMware's Virtual Machine Remote Console
VMW Power interface	Virtual machine nodes have a VMW Power interface that provides power control for the node through	N/A

Term	Definition	Example
	CC-SG.	

Add a Control System with Virtual Hosts and Virtual Machines

When you add a control system, a wizard guides you through adding the virtual hosts and virtual machines included in the control system.

► **To add a control system with virtual hosts and virtual machines:**

1. Choose Nodes > Virtualization.
2. Click Add Control System.
3. Hostname/IP Address: Enter the IP Address or hostname of the control system. Maximum 255 characters. IPV6 is supported.
4. TCP Port: Enter the TCP port. The default port is 443.
5. Check Interval (seconds): Enter the time in seconds that should elapse before timeout between the control system and CC-SG.
6. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.

or

- Enter a Username and Password for authentication. Maximum 64 characters each.
- 7. To allow users who access this control system to automatically log into the VI Client interface, select the Enable Single Sign On For VI Client checkbox.
Optional.
- 8. Click Next. CC-SG discovers the control system's virtual hosts and virtual machines, including virtual machines that are stored in vApps.
 - Click the column header to sort the table by that attribute in ascending order. Click the header again to sort the table in descending order.
Optional.
- 9. Add virtual machines to CC-SG. One node will be created for each virtual machine. Each associated virtual host will also be configured. Only one virtual host node will be added, even if the virtual host is associated with multiple virtual machines.
 - To add one virtual machine:
 - Select the Configure checkbox next to the virtual machine that you want to add.
 - To add a VNC, RDP, or SSH interface to the virtual host node and the virtual machine node, select the checkboxes next to the virtual machine. **Optional.**
 - To add all virtual machines:
 - Select the topmost checkbox in the Configure column to select all virtual machines.
 - To add a VNC, RDP, or SSH interface to all virtual host nodes and all virtual machine nodes, select the topmost checkboxes in the VNC, RDP, or SSH columns. **Optional.**
 - To add more than one virtual machine:

- Use Ctrl+click or Shift+click to select multiple virtual machines that you want to add.
 - In the Check/Uncheck Selected Rows section, select the Virtual Machine checkbox.
 - To add a VNC, RDP, or SSH interface to the virtual host nodes and virtual machine nodes that will be created, select the VNC, RDP or SSH checkboxes in the Check/Uncheck Selected Rows section.
- Optional.**
- Click Check.

Edit Control System

Select the virtual machines and interfaces for the virtual machine nodes that will be created for you

Total Virtual Machines Found: Virtual Machines Configured:

Discovered Virtual Machines:

Configure	Virtual Host	Virtual Machine	Interfaces To Configure		
			VNC	RDP	SSH
<input type="checkbox"/>	▲ Virtual Host	▲ Virtual Machine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	an -centos63ccsg-nov06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	C 53ga-q	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	C 55Build-q	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	C SG-CentOS63-V	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	d _vccsg_54050	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	_ _vccsg_eval_54051	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	esx6-systemtest.rarita...	DNS-server-Windows2008(32bit)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	-CC-59-68	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	windows2008-59-56-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx7-systemtest.rarita...	CC60-q	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx7-systemtest.rarita...	CC-59-91	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	esx7-systemtest.rarita...	CC-Eval-5-4-0-5-1-59-74	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

A VI Client interface will automatically be added to each control system and virtual host node. VMware Viewer and a Virtual Power interface will automatically be added to each virtual machine.

Check/Uncheck Selected Rows

Virtual Machine
 VNC
 RDP
 SSH

10. Click Next. CC-SG displays a list of interface types that will be added. You can add names and login credentials for each type.
11. For each interface type, enter a name and login credentials. The name and login credentials will be shared by all the interfaces added to each virtual machine node and virtual host node configured. **Optional.**

Leave these fields blank if you prefer to add names and login credentials to each interface individually.

The interface will take the name of the node if the field is left blank.

- a. Enter names for interfaces. Maximum 32 characters.

- Virtual Host VI Client Interfaces
 - VMware Viewer Interfaces
 - Virtual Power Interfaces
 - RDP, VNC, and SSH Interfaces, if specified
- b. Enter login credentials, if needed. Some interface types do not require login credentials.:
- To use a Service Account, select the Use Service Account Credentials checkbox then select the name of the service account.
- or
- Enter a username and password for the interface type. Maximum 64 characters each.

Edit Control System

Common interface names and credentials can be assigned to each interface type for all nodes associated with the control system. For any interface that you do not want common information leave the field(s) blank.

VI Client Interfaces

Interface Name:

Use Service Account Credentials

Service Account Name:

Username:

Password:

VMware Viewer Interfaces

Interface Name:

Virtual Power Interfaces

Interface Name:

Back Finish Cancel

12. Click OK.

CC-SG creates:

- One node for each virtual machine. Each virtual machine node has a VMW Viewer interface, a VMW Power interface, and any other in-band interfaces you specified. Virtual machine nodes are named with their virtual machine names from the virtual host systems.
- One node for each virtual host. Each virtual host node has a VI Client interface. Virtual Host nodes are named with their IP addresses or host names.
- One node for the control system. The control system node has a VI Client interface. Control System nodes are named "Virtual Center" plus the IP address. For example, "Virtual Center 192.168.10.10."

Add a Virtual Host with Virtual Machines

When you add a virtual host, a wizard guides you through adding the virtual machines included in the virtual host.

► To add a virtual host with virtual machines:

1. Choose Nodes > Virtualization.
2. Click Add Virtual Host.
3. Hostname/IP Address: Enter the IP Address or hostname of the virtual host. Maximum 255 characters. IPV6 is supported.
4. TCP Port: Enter the TCP port. The default port is 443.
5. Check Interval (seconds): Enter the time in seconds that should elapse before timeout between the virtual host and CC-SG.
6. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.
 - or
 - Enter a Username and Password for authentication. Maximum 64 characters each.

7. To allow users who access this virtual host to automatically login to the VI Client interface, select the Enable Single Sign On For VI Client checkbox.
Optional.
8. Click Next. CC-SG discovers the virtual host's virtual machines.
 - Click the column header to sort the table by that attribute in ascending order. Click the header again to sort the table in descending order.
Optional.
9. Add virtual machines to CC-SG. One node will be created for each virtual machine. Each associated virtual host will also be configured. Only one virtual host node will be added, even if the virtual host is associated with multiple virtual machines.
 - To add one virtual machine:
 - Select the Configure checkbox next to the virtual machine that you want to add.
 - To add a VNC, RDP, or SSH interface to the virtual host node and the virtual machine node, select the checkboxes next to the virtual machine. **Optional.**
 - To add all virtual machines:
 - Select the topmost checkbox in the Configure column to select all virtual machines.
 - To add a VNC, RDP, or SSH interface to all virtual host nodes and all virtual machine nodes, select the topmost checkboxes in the VNC, RDP, or SSH columns. **Optional.**
 - To add more than one virtual machine:
 - Use Ctrl+click or Shift+click to select multiple virtual machines that you want to add.
 - In the Check/Uncheck Selected Rows section, select the Virtual Machine checkbox.
 - To add a VNC, RDP, or SSH interface to the virtual host nodes and virtual machine nodes that will be created, select the VNC, RDP or SSH checkboxes in the Check/Uncheck Selected Rows section.
Optional.
 - Click Check.
10. Click Next. CC-SG displays a list of interface types that will be added. You can add names and login credentials for each type.
11. For each interface type, enter a name and login credentials. The name and login credentials will be shared by all the interfaces added to each virtual machine node and virtual host node configured. **Optional.**

Leave these fields blank if you prefer to add names and login credentials to each interface individually.

The interface will take the name of the node if the field is left blank.

- a. Enter names for interfaces. Maximum 32 characters.

- VI Client Interfaces
 - VMware Viewer Interfaces
 - Virtual Power Interfaces
 - RDP, VNC, and SSH Interfaces, if specified
- b. Enter login credentials, if needed. Some interface types do not require login credentials.:
- To use a Service Account, select the Use Service Account Credentials checkbox then select the name of the service account.
- or
- Enter a username and password for the interface type. Maximum 64 characters each.
12. Click OK.

CC-SG creates:

- One node for each virtual machine. Each virtual machine node has a VMW Viewer interface, a VMW Power interface, and any other in-band interfaces you specified. Virtual machine nodes are named with their virtual machine names from the virtual host systems.
- One node for each virtual host. Each virtual host node has a VI Client interface. Virtual host nodes are named with their IP addresses or host names.

Edit Control Systems, Virtual Hosts, and Virtual Machines

You can edit the control systems, virtual hosts, and virtual machines configured in CC-SG to change their properties. You can delete virtual machine nodes from CC-SG by deselecting the Configure checkbox for the virtual machine.

*Note: To change the node name for a virtual host or control system node, edit the node. See **Edit a Node** (on page 113). The name change also displays in the Virtualization table.*

► **To edit control systems, virtual hosts, and virtual machines:**

1. Choose Nodes > Virtualization.
2. Click the column header to sort the table by that attribute in ascending order. Click the header again to sort the table in descending order.
Optional.
3. Select the control system or virtual host you want to edit.
4. Click Edit.
5. Change the information as needed. See **Add a Control System with Virtual Hosts and Virtual Machines** (on page 119) and **Add a Virtual Host with Virtual Machines** (on page 123) for complete field descriptions.

6. Click Next.

Edit Control System

i Select the virtual machines and interfaces for the virtual machine nodes that will be created for you

Total Virtual Machines Found:
Virtual Machines Configured:

Discovered Virtual Machines:

Configure	Virtual Host	Virtual Machine	Interfaces To Configure		
			VNC	RDP	SSH
<input type="checkbox"/>	esx6-systemtest.rarita...	an -centos63ccsg-nov06	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	C 53ga-q	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	C 55Build-q	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	C SG-CentOS63-V	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	d _vccsg_54050	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	_vccsg_eval_54051	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	esx6-systemtest.rarita...	DNS-server-Windows2008(32bit)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	-CC-59-68	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx6-systemtest.rarita...	windows2008-59-56-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx7-systemtest.rarita...	CC60-q	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	esx7-systemtest.rarita...	CC-59-91	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	esx7-systemtest.rarita...	CC-Eval-5-4-0-5-1-59-74	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

A VI Client interface will automatically be added to each control system and virtual host node. VMware Viewer and a Virtual Power interface will automatically be added to each virtual machine.

Check/Uncheck Selected Rows
 Virtual Machine
 VNC
 RDP
 SSH

7. Delete one or multiple virtual machines from CC-SG.
 - To delete a virtual machine, deselect the Configure checkbox.
 - To delete multiple virtual machines, use Ctrl+click or Shift+click to select multiple virtual machines. Then select the Virtual Machine checkbox in the Check/Uncheck Selected Rows section, and click Uncheck.
8. To add VNC, RDP, or SSH interfaces to the virtual host node and the virtual machine node, select the checkboxes next to each virtual machine.

*You cannot remove SSH, VNC and RDP interfaces from virtual machine nodes or virtual host nodes from this page. You must delete the interfaces from the node profile. See **Delete an Interface** (on page 149).*

9. Click Next. If you chose to delete virtual machines, a message appears to alert you.
10. For each interface type, enter a name and login credentials. The name and login credentials will be shared by all the interfaces added to each virtual machine node and virtual host node configured. **Optional.** You can leave these fields blank if you prefer to add names and login credentials to each interface individually.
 - a. Enter names for interfaces (maximum 32 characters).

- Virtual Host VI Client Interfaces
 - VMware Viewer Interfaces
 - Virtual Power Interfaces
 - RDP, VNC, and SSH Interfaces, if specified
- b. Enter login credentials:
- To use a Service Account, select the Use Service Account Credentials checkbox then select the name of the service account.
- or
- Enter a username and password for the interface type. Maximum 64 characters each.
11. Click OK.

Delete Control Systems and Virtual Hosts

You can delete control systems and virtual hosts from CC-SG.

When you delete a control system, the virtual hosts and virtual machines associated with it are not deleted.

When you delete a virtual host, the control systems and virtual machines associated with it are not deleted.

Virtual machine nodes are not automatically deleted when their associated control systems or virtual hosts are deleted. See **Delete a Virtual Machine Node** (on page 128).

Virtualization				
▲ Node Name	Type	Node Status	Last Synchronization	C
esx6-systemtest.raritan.com	Virtual Host	Up	April 17, 2013 at 16:15 EDT	1 V
esx7-systemtest.raritan.com	Virtual Host	Up	April 17, 2013 at 16:15 EDT	3 V
VirtualCenter 192.168.59.99	Control System	Up	April 17, 2013 at 16:15 EDT	2 H

► **To delete control systems and virtual hosts:**

1. Choose Nodes > Virtualization.
2. Select the control systems and virtual hosts you want to delete from the list. Use Ctrl+click to select multiple items.
3. Click Delete.

Delete a Virtual Machine Node

There are two ways to delete virtual machine nodes:

- Use the Delete Node feature. See **Delete a Node** (on page 113).
- Deselect the Configure checkbox for the virtual machine. See **Edit Control Systems, Virtual Hosts, and Virtual Machines** (on page 125).

Delete a Virtual Infrastructure

Follow these steps to delete a whole virtual infrastructure from CC-SG, including the control system, virtual hosts, and virtual machines.

▶ **To delete a virtual infrastructure:**

1. Delete all virtual machine nodes by deselecting the Configure checkbox for each virtual machine. See **Edit Control Systems, Virtual Hosts, and Virtual Machines** (on page 125).
2. Delete the control system and virtual hosts. See **Delete Control Systems and Virtual Hosts** (on page 127).

All components of the virtual infrastructure are deleted, including control system nodes, virtual host nodes, and virtual machine nodes and their interfaces.

Minimum Permissions Required in VCenter

You must set some minimum permissions in the VCenter application to allow CC-SG to access VCenter and manage the nodes and interfaces associated with it.

▶ **To set minimum permissions:**

- Host > Configuration > System Management
- Host > Configuration > Maintenance
- Virtual Machine > Interaction > Power On
- Virtual Machine > Interaction > Power Off
- Virtual Machine > Interaction > Suspend
- Virtual Machine > Interaction > Reset
- Virtual Machine > Interaction > Console Interaction
- Tasks > Create
- Scheduled Task > Create Tasks
- Scheduled Task > Run Task

In addition, Virtual Machine > Interaction > Device Connection should be provided to be able to connect/disconnect media and network devices from the VMware Remote Console.

Add the CC-SG IP Address to Internet Explorer Trusted Sites Internet Zone

When using the Internet Explorer browser with VMware virtual machine nodes, you must add the CC-SG IP address to the browser's Trusted Sites Internet Zone for successful connections.

See also *Install the VMware Remote Console Plugin Manually When VCenter is Not Added* (on page 129).

Check the following prerequisites below to ensure your VMviewer will launch.

- Launch VMviewer
- Launch VMware VMs via IE-11 browser in Win 10, Win 7, Win 2012 server

▶ VMware and IE 11:

- Virtual Center IP address and ESXi Hosts IP are in "Intranet zone", Compatibility view enabled for intranet zone [IE Browser > Tools > Compatibility View Settings > Make sure "Display intranet sites in Compatibility View is unchecked".
- CC IP address is also added in intranet zone.
- Launch VM in CC-SG and install certificate window is displayed. Click on ok, and continue and open ESXi page. Close it and then open the same VM target again. VM target Window is displayed.

Install the VMware Remote Console Plugin Manually When VCenter is Not Added

When VCenter is present in CC-SG, Internet Explorer prompts you to download the VMware remote console plugin automatically, and the plugin is retrieved from VCenter.

You may see this error message: "Failed to run vmware remote console plugin. Either the browser is not supported or you have a previous version of the console installed".

If you have not added VCenter, but only added a host, the plugin prompt does not appear. You must manually download the plugin from the web.

The plugin file name is "vmware-vmrc-win32-x86.exe". You may need to download a different plugin file for 64-bit OS.

Add an IPv6 VCenter Accessed Across VPN

When a VCenter with an IPv6 address is accessed across a VPN, you may need to change the MTU rate to 1300 to allow the VCenter to be added to CC-SG.

Accessing VI Client from a Linux Client

You cannot directly launch the VI client from CC-SG when using a Linux client because a supported version of Adobe Flash Player is not available. Make sure your browser supports the vSphere client.

Synchronizing the Virtual Infrastructure with CC-SG

Synchronization ensures that the CC-SG has the most up-to-date information about your virtual infrastructure. Synchronization updates information specific to each virtual machine node and virtual infrastructure topology information.

You can configure an automatic daily synchronization of all control systems and virtual hosts configured. You can also perform a synchronization of selected control systems and virtual hosts at any time.

Synchronize the Virtual Infrastructure

You can perform a synchronization of CC-SG with your virtual infrastructure.

When you select a control system for synchronization, the associated virtual hosts will also be synchronized, whether or not you select the virtual hosts.

Virtualization				
Node Name	Type	Node Status	Last Synchronization	Configured in Secure Gateway
esx7-systemtest.raritan.c...	Virtual Host	Up	April 18, 2013 at 14:11 EDT	3 Virtual Machines
esx6-systemtest.raritan.c...	Virtual Host	Up	April 18, 2013 at 14:11 EDT	1 Virtual Machine
VirtualCenter 192.168.59...	Control System	Up	April 18, 2013 at 14:11 EDT	2 Hosts

► **To synchronize the virtual infrastructure:**

1. Choose Nodes > Virtualization.
2. In the list of nodes, select the nodes you want to synchronize. Use Ctrl+click to select multiple items.
3. Click Synchronize. If the virtual infrastructure had changed since the last synchronization, the information in CC-SG updates.
 - The Configured in Secure Gateway column shows the number of virtual machines or hosts that are configured in CC-SG.
 - The Last Synchronization Date shows the date and time of the synchronization.
 - The Node Status column shows the status of the virtual node.

Enable or Disable Daily Synchronization of the Virtual Infrastructure

You can configure an automatic synchronization of CC-SG with your virtual infrastructure. The automatic synchronization occurs daily at the time you specify.

The screenshot shows a web interface for configuring virtualization. At the top, there is a 'Virtualization' header. Below it, there are two buttons: 'Synchronize' and 'Apply'. The main section is titled 'Setup Automatic Synchronization' and contains a checkbox labeled 'Enable Daily Automatic Synchronization' which is checked. To the right of the checkbox is a 'Start Time' field with a dropdown menu showing '00:01'. Below the checkbox and start time field is an 'Update' button.

► **To enable daily synchronization of the virtual infrastructure:**

1. Choose Nodes > Virtualization. Scroll to the bottom of the page.
2. Select the Enable Daily Automatic Synchronization checkbox.
3. Enter the time when you want the daily synchronization to occur in the Start Time field.
4. Click Update.

► **To disable daily synchronization of the virtual infrastructure:**

1. Choose Nodes > Virtualization.
2. Deselect the Enable Daily Automatic Synchronization checkbox.
3. Click Update.

Reboot or Force Reboot a Virtual Host Node

You can reboot or force reboot the virtual host server. A Reboot operation performs a normal reboot of the virtual host server when it is in maintenance mode. A Force Reboot operation forces the virtual host server to reboot, even if the server is not in maintenance mode.

To access these commands, you must have the Node In-Band Access and Node Power Control privilege. You must also be in a user group that is assigned a policy to access the node you want to reboot or force reboot.

► **To reboot or force reboot a virtual host node:**

1. Select the virtual host node you want to reboot or force reboot.
2. Click the Virtual Host Data tab.

3. Click Reboot or Force Reboot.

Accessing the Virtual Topology View

The Topology View is a tree structure that shows the relationships of the control system, virtual hosts, and virtual machines associated with the selected node.

You must have the Device, Port, and Node Management privilege to open the topology view.

► **Open the topology view from the virtual node profile:**

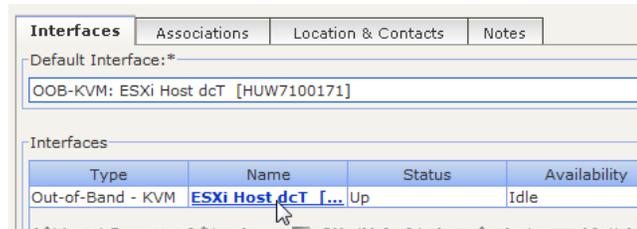
1. In the node profile, click the tab that contains virtualization information about the node: Virtual Machine Data tab, Virtual Host Data tab or Control System tab, depending on the node type.
2. Click the Topology View link. The topology view opens in a new window. Virtual nodes that are configured in CC-SG display as links.
 - Double-click a node's link to open the node profile for the virtual node.
 - Double-click an interface link to either connect to the node.
 - Double-click a virtual power interface link to open the Power Control page for the node.

Connecting to a Node

Once a node has an interface, you can connect to that node through the interface in several different ways. See Raritan's **CommandCenter Secure Gateway User Guide**.

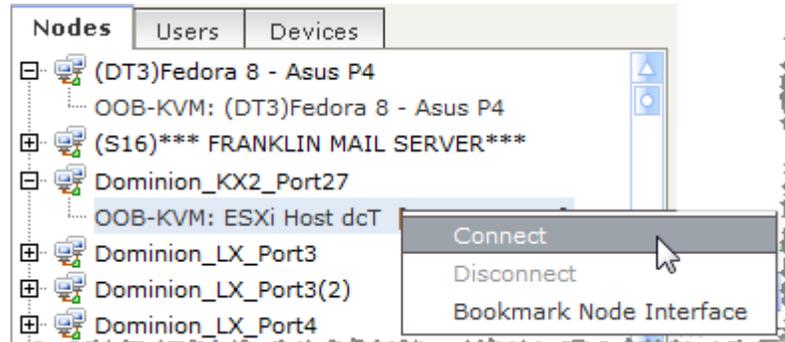
► **To connect to a node:**

1. Click the Nodes tab.
2. Select the node to which you want to connect and:
 - In the Interfaces table, click the name of the interface with which you want to connect.



OR

- In the Nodes tab, expand the list of interfaces underneath the node to which you want to connect. Double-click the name of the interface to which you want to connect, or right-click the interface and select Connect.



Firefox Users of the Access Client Must Download JNLP File

Firefox, Chrome and Internet Explorer users of the Access Client are prompted to download a .JNLP file each time an out-of-band KVM port connection is made.

In Firefox, select the "Do this automatically for files like this from now on" checkbox, so that Firefox can automatically download the file for future connections.

Pinging a Node

You can ping a node from CC-SG to make sure that the connection is active.

► To ping a node:

1. Click the Nodes tab, and then select the node you want to ping.
2. Choose Nodes > Ping Node. The ping results appear in the screen.

Adding, Editing, and Deleting Interfaces

Add an Interface

IPv6 is supported for some interface types. See **Adding Interfaces for Nodes Using IPv6** (on page 149).

*Note: Interfaces for virtual nodes, such as control system, virtual hosts, and virtual machines, can only be added using the Virtualization tools under Nodes > Virtualization. See **Configuring the Virtual Infrastructure in CC-SG** (on page 117).*

▶ To add an interface:

- For an existing node: click the Nodes tab, and then select the node to which you want to add an interface. In the Node Profile screen that appears, click Add in the Interfaces section.
If you are adding a new node: click Add in the Interfaces section of the Add Node screen.
The Add Interface Window opens.
- Click the Interface Type drop-down menu and select the type of connection being made to the node:

In-Band Connections:

- **In-Band - DRAC KVM:** Select this item to create a KVM connection to a Dell DRAC server through the DRAC interface. You will be required to configure a DRAC Power interface as well.
- **In-Band - iLO Processor KVM:** Select this item to create a KVM connection to an HP server through an iLO or RILOE interface.
- **In-Band - RDP:** Select this item to create a KVM connection to a node using Multiplatform, Java or Microsoft Remote Desktop Protocol.

- In-Band - RSA KVM: Select this item to create a KVM connection to an IBM RSA server through its RSA interface. You will be required to configure an RSA Power interface as well.
- In-Band - SSH: Select this item to create an SSH connection to a node.
- In-Band - Telnet
- In-Band - UCS KVM: Select this item to create a KVM connection to a blade in a Cisco UCS chassis, using the Cisco Integrated Management Controller (CIMC).
- In-Band - VNC: Select this item to create a KVM connection to a node through VNC server software.

See ***Interfaces for In-Band Connections - RDP, VNC, SSH, RSA KVM, iLO Processor KVM, DRAC KVM, TELNET*** (on page 136).

See ***Interfaces for Cisco UCS KVM Connections*** (on page 141)

Out-of-Band Connections:

- Out-of-Band - KVM: Select this item to create a KVM connection to a node through a Raritan KVM device (KX3, KX2).
- Out-of-Band - Serial: Select this item to create a serial connection to a node through a Raritan serial device (SX, KSX2).

See ***Interfaces for Out-of-Band KVM, Out-of-Band Serial Connections*** (on page 140).

Power Control Connections:

- Power Control - DRAC: Select this item to create a power control connection to a Dell DRAC server.
- Power Control - iLO Processor: Select this item to create a power control connection to an HP iLO/RILOE server.
- Power Control - IPMI: Select this item to create a power control connection to a node with an IPMI connection.
- Power Control - Integrity ILO2: Select this item to create a power control connection to an HP Integrity server or other servers that support Integrity ILO2.
- Power Control - Power IQ Proxy: Select this item to create a power control connection to a Power IQ IT device.
- Power Control - RSA: Select this item to create a power control connection to an RSA server.

See ***Interfaces for DRAC Power Control Connections*** (on page 141)

Interfaces for ILO Processor, Integrity ILO2, ILO3, ILO4, ILO5, and RSA2 Power Control Connections (on page 142)

Interfaces for Power IQ Proxy Power Control Connections (on page 145)

Managed Powerstrip Connections:

- Managed PowerStrip: Select this item to create a power control connection to a node powered through a Raritan PowerStrip or Dominion PX device.

See **Interfaces for Power Control using Managed Powerstrips and PDUs** (on page 143).

Web Browser Connections:

- Web Browser: Select this item to create a connection to a device with an embedded Web server.

See **Web Browser Interface** (on page 146).

3. A default name appears in the Name field depending on the type of interface you select. You can change the name. This name appears next to the interface in the Nodes list. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.

Interfaces for In-Band Connections - RDP, VNC, SSH, RSA KVM, iLO Processor KVM, DRAC KVM, TELNET

In-band connections include RDP, VNC, SSH, RSA KVM, iLO Processor KVM, DRAC KVM, and TELNET.

MultiPlatform RDP*, Microsoft RDP, SSH, Telnet, VNC and DRAC (iDRAC6 and higher only) interfaces support IPv6 addresses.

**For MultiPlatform RDP, you must enclose the IPv6 address in square brackets.*

Java RDP, RSA KVM, and iLO Processor KVM interfaces do not support IPv6 addresses. See **Adding Interfaces for Nodes Using IPv6** (on page 149).

Telnet is not a secure access method. All usernames, passwords, and traffic are transmitted in clear text.

► **To add an interface for in-band connections:**

1. Type the IP Address or Hostname for this interface in the IP Address/Hostname field.
2. Type a TCP Port for this connection in the TCP Port field. **Optional.**
3. For RDP interfaces, select MultiPlatform, Java, or Microsoft. For Java and Microsoft, then select Console or Remote User. When a Console user accesses a node, all other users are disconnected. Multiple Remote Users can access a node simultaneously.

*MultiPlatform RDP must be downloaded and installed. Go to <http://CCSG-IP/download> to get the installer. See **Install MultiPlatform RDP Client** (on page 137) for details.*

4. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.

or

- Enter a Username and Password for authentication. For VNC interfaces, only a password is required.
5. Select the Keyboard layout for your language. This option is not available for Microsoft RDP interfaces.
 6. Type a description of this interface in the Description field. **Optional.**
 7. Click OK to save your changes.

MultiPlatform RDP Client Connection Details

The MultiPlatform RDP client does not require Java. It is the default RDP client option for new interfaces. You must install MultiPlatform RDP client before CC-SG can use it for connections: See **Install MultiPlatform RDP Client** (on page 137). Your browser may ask for permission to run MultiPlatform RDP.

- Targets supported: Windows 10, Windows 2012, Windows 2016, Windows 2019.
- Add square brackets around IPv6 addresses in the interface's address field.
- The error dialog box for a failed client connection may appear behind the browser window. The dialog is visible in the Windows task bar.
- If MultiPlatform RDP client has not been installed, and a connection is attempted, the connection fails, but an error does not appear.

▶ **Does not support:**

- Full screen
- Proxy mode (always uses direct mode)
- Smart card
- Drive sharing
- USB device sharing
- Control-Alt-Delete support. Control-Alt-Delete will be sent to the target but the client host will also receive it. You can use Control-Alt-Delete and cancel the local response.

Install MultiPlatform RDP Client

▶ **To download and install:**

The MultiPlatform RDP client runs on Windows only. You must download and install it before CC-SG can use it for connections.

1. Download the .msi from the CC-SG by going to: <http://CCSG-IP/download>

- Run the installer. You will choose the install location and specify to install only for current user or all users. Confirm permission to install. Restart the browser to recognize the new application association.



Microsoft RDP Connection Details

- Internet Explorer only.
- Microsoft RDP cannot be used for proxy mode IPv6 connections. See **About Connection Modes** (on page 259).
- Targets supported: Windows 10, Windows server 2012, Windows server 2016.
- When connecting to a Microsoft RDP interface with "Use Local Drives in Remote Session" selected, make sure the CC-SG's IP address is included in the browser's Trusted Sites Zone.

Java RDP Connection Details

- The Java RDP interface supports Windows 2003 targets.
- Java RDP can be used for proxy mode connections. See **About Connection Modes** (on page 259).
- When adding RDP interfaces to Windows 7, make sure that ICMPv4 and ICMPv6 are allowed by the Windows 7 firewall.

VNC Connection Details

► Support for IPv6:

Not all VNC versions support IPv6.

RealVNC supports IPv6. You must select Prefer On in the RealVNC server settings or IPv6 and VNC will not work with CC-SG.

The TightVNC client will work with CC-SG if the server setting is changed to Prefer On.

Free edition of RealVNC does NOT support IPv6

Personal Edition of RealVNC supports IPv6, but it is a 30 day trial version, and then you must buy a license.

Enterprise edition of RealVNC supports IPv6 when you buy a license.

► VNC connections to Windows 7:

When adding VNC interfaces for Windows 7, make sure that ICMPv4 and ICMPv6 are allowed by the Windows 7 firewall.

DRAC 5 Connection Details**▶ Tip for Hostnames:**

In CC-SG, when adding the DRAC interface, make sure hostname is entered exactly as it is on the DRAC machine locally, including case-sensitivity. Verification will fail if the case does not match.

▶ 2020 update:

By default, the DRAC5 applet is not able to be launched with a current JRE. However, modification of the java.security file to enable currently disabled functions can be done on the client that will allow the application to launch properly. These edits are required as of JRE 1.8.0_131 and newer.

- Comment out the following lines in the java.security file:
 - jdk.certpath.disabledAlgorithms=....
 - jdk.tls.disabledAlgorithms=....
 - jdk.jar.disabledAlgorithms=....

▶ Certificate information:

When using Internet Explorer and connecting to DRAC 5 servers, you must have a valid certificate installed on DRAC 5, or Internet Explorer will give an error. If the certificate is not signed by a trusted CA, also install the certificate of the CA used to sign the DRAC certificate into the Trusted Root CA of the browser. You must also disable the information bar for Internet Explorer downloads to allow the DRAC5 .jnlp file to be accessed.

Note: Java applets are blocked by all the browsers except IE11.

▶ To disable the Internet Explorer downloads information bar:

1. Choose Tools > Internet Options.
2. In the Security tab, select the Internet zone.
3. Click Custom Level. Scroll down to Downloads.
4. Under "Automatic prompting for file downloads" click Enable.
5. Click OK. You are returned to the Internet Options dialog.
6. In the Security tab, select the Intranet zone.
7. Click Custom Level. Scroll down to Downloads.
8. Under "Automatic prompting for file downloads" click Enable.
9. Click OK.

DRAC 8/9 Connection Details

▶ **Tip for Hostnames:**

In CC-SG, when adding the DRAC interface, make sure hostname is entered exactly as it is on the DRAC machine locally, including case-sensitivity. Verification will fail if the case does not match.

▶ **Tip for SSL Certificates:**

Upon connection, you may see the following message: "You have an SSL certificate for remote presence port. You have to close this window now."

To prevent this in Internet Explorer, add the DRAC IP/hostname to Trusted Sites in IE. Internet Options> Security> "Trusted sites". Other browsers may show this message briefly before making a connection.

Note: DRAC applications fail to launch from MAC clients with Safari, Chrome or Firefox. The DRAC java application requires native libraries to function, and uses specific dynamic libraries which are unavailable on MAC OS installs.

Interfaces for Out-of-Band KVM, Out-of-Band Serial Connections

▶ **To add an Interface for out-of-band KVM or out-of-band serial connections:**

1. Application name: select the application you want to use to connect to the node with the interface from the list.
 - To allow CC-SG to automatically select the application based on your browser, select Auto-Detect.
 - There are prerequisites for using Active KVM Client. See **Prerequisites for Using AKC** (on page 248).
 - Raritan Device Name: select the Raritan device providing access to this node. Note that a device must be added to CC-SG before it appears in this list.
2. Raritan Port Name: select the port on the Raritan device providing access to this node. The port must be configured in CC-SG before it appears in this list. On serial connections the Baud Rate, Parity and Flow Control values will populate based on the port's configuration.
3. Type a description of this interface in the Description field. **Optional.**
4. Click OK to save your changes.

Interfaces for Cisco UCS KVM Connections

A UCS-KVM connection gives you KVM access to blades in a Cisco UCS chassis using the Cisco Integrated Management Controller (CIMC).

▶ To add an interface for Cisco UCS KVM connections:

1. Enter a name for the interface. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
2. Enter the Cisco UCS IP address or hostname in the Chassis IP/Hostname field.
3. Enter the TCP Port for this connection in the TCP Port field. The default port is 443.
4. Enter the blade's IP address or hostname in the Blade IP/Hostname field.
5. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.

or

 - Enter a Username and Password for authentication. Specify a username and password for an account that has access to both the chassis and the blade.
6. Type a description of this interface in the Description field. **Optional.**
7. Click OK to save your changes.

Cisco UCS Details

The Cisco UCS 5100 series blade server chassis and its components are part of the Cisco Unified Computing System (UCS). Once configured, CC-SG users can access KVM and IPMI functions via the blades Cisco Integrated Management Controller (CIMC).

▶ To add power control of a blade in a Cisco UCS:

Add an IPMI Power Control interface to the node. See **Interfaces for IPMI Power Control Connections** (on page 144).

▶ To add Serial Over Lan (SOL) access to a blade in a Cisco UCS:

Add an SSH interface to the node. See **Interfaces for In-Band Connections - RDP, VNC, SSH, RSA KVM, iLO Processor KVM, DRAC KVM, TELNET** (on page 136).

Interfaces for DRAC Power Control Connections

▶ To add an interface for DRAC power control connections:

1. Type the IP Address or Hostname for this interface in the IP Address/Hostname field.

2. Type a TCP Port for this connection in the TCP Port field.
3. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.or
 - Enter a Username and Password for authentication.
4. Type a description of this interface in the Description field. **Optional.**
5. Click OK to save your changes.

Interfaces for ILO Processor, Integrity ILO2, ILO3, ILO4, ILO5, and RSA2 Power Control Connections

IPv6 is not supported for connections to iLO or RSA.

1. Type the IP Address or Hostname for this interface in the IP Address/Hostname field.
2. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.or
 - Enter a Username and Password for authentication.
3. Type a description of this interface in the Description field. **Optional.**
4. Click OK to save your changes.

RSA Interface Details

When you create an In-Band RSA KVM or Power interface, CC-SG discards the username and password associated with the interface, and creates two user accounts on the RSA server. This allows you to have simultaneous KVM and power access to the RSA server.

New usernames:

- cc_kvm_user
- cc_power_user

These usernames replace the username you entered when you created the interfaces. CCSG uses these new user accounts to connect to the RSA server through the interfaces.

Do not delete, edit, or change the passwords for these user accounts on the RSA server, or CC-SG will not be able to connect using the interfaces.

If you used a Service Account to create the interfaces, CC-SG does not create user accounts on the RSA server. You cannot have simultaneous KVM and power access to the RSA server when using a Service Account on the interfaces.

Interfaces for Power Control using Managed Powerstrips and PDUs

Create a Power Control - Managed Power Strip interface to associate an outlet with a node. The interface will enable you to control power to the node.

When you create a Managed Power Strip interface that specifies a KX as the managing device, the outlet you specify will be renamed with the associated node's name.

► To add an interface for managed powerstrip connections:

1. Managing Device:
 - Select the Raritan device to which the Power Strip is connected. The device must be added to CC-SG.
 - or
 - Select Dominion PX if this node is powered by an outlet on a PX1 device that is not connected to another Raritan device.
 - or
 - Select Raritan PX iPDU if this node is powered by an outlet on a PX2 or PX3 PDU.
 - or
 - Select ServerTech PDU if this node is powered by an outlet on a ServerTech PDU.
 - or
 - Select ServerTechPRO3X if this node is powered by an outlet on a ServerTechPRO3X PDU.

2. Managing Port: select the port the PDU is connected to on the Raritan device. This field is disabled when you select Dominion PX, Raritan PX iPDU, ServerTech PDU, or ServerTech PRO3X as the Managing Device.
3. Power Strip Name: select the PDU. The PDU must be configured in CC-SG before it appears in this list.
4. Outlet Name: select the name of the outlet the node is plugged into.
Optional.
5. Type a description of this interface in the Description field.
6. Click OK to save your changes.

Note: A Managed Power Strip interface can be added to a blade chassis node, but not to a blade server node.

► **View the Power Control Interface:**

- Select the node to view the interface:

Node Profile

Please provide node properties.

Node Name: *
Test

Description:

Interfaces | Associations | Location & Contacts | Notes

Default Interface:*
PWR-PDU: Test

Type	Name	Status	Availability	Raritan Device
Power Control - Managed Power Strip	Test	Up	Power On	PX3-5660SNMPv2

Interfaces for IPMI Power Control Connections

► **To add an interface for IPMI power control connections:**

1. Type the IP Address or Hostname for this interface in the IP Address/Hostname field.
2. Type a UDP Port number for this interface in the UDP Port field.
3. Authentication: select an authentication scheme for connecting to this interface.
4. Type a check interval for this interface in the Check Interval (seconds) field.
5. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.

or

- Enter a Username and Password for authentication. **Optional.**
6. Type a description of this interface in the Description field. **Optional.**
 7. Click OK to save your changes.

IBM IMM Module Connection Details

You can connect to an IBM IMM module, standard version, through CC-SG for power control operations, using an IPMI Power Control interface. Power on, power off, and power cycle functions are supported.

See **Interfaces for IPMI Power Control Connections** (on page 144).

Note: KVM access to IBM IMM modules is not available through CC-SG.

Interfaces for Power IQ Proxy Power Control Connections

Add a Power IQ Proxy power control interface when you want to use CC-SG to control power to a Power IQ IT device that you've added to CC-SG as a node. This enables you to control power to nodes connected to PDUs not managed by CC-SG.

► **To add an interface for Power IQ Proxy power control connections:**

1. Enter the IT device's External Key. The External Key must match between Power IQ and CC-SG. Maximum of 255 characters. Commas are not allowed. The default value is the node name. You can change this value.
 - If the IT device has already been added to Power IQ, find the external key on the IT device's page in the Data Center tab, then enter the text in the External Key field.
 - If the IT device has not been added to Power IQ yet, accept the default value for the external key or change it, but make sure to use the same value when adding the IT device to Power IQ. You can quickly make a file of all node and interface information by exporting. See **Export Nodes** (on page 174).
2. Select the Power IQ that manages the IT device in the Managing Device field. You must add information about this Power IQ to CC-SG before it appears in this field. See **Configuring Power IQ Services** (on page 380).
3. Type a description of this interface in the Description field.
4. Click OK to save your changes.

Web Browser Interface

You can add a Web Browser Interface to create a connection to a device with an embedded web server, such as a Dominion PX. See **Example: Adding a Web Browser Interface to a PX Node** (on page 148). For a blade chassis with an integrated KVM switch, if you have assigned a URL or IP address to it on the KX2 device, a Web Browser interface is automatically added.

A Web Browser interface can also be used to connect to any web application, such as the web application associated with an RSA, DRAC or ILO Processor card.

A Web Browser Interface may not allow automatic login if the web application requires information other than username and password, such as a session ID. Use the extra parameter fields to add this information. For details on parameters required by various devices, contact Raritan Technical Support. Users must have the Node In-Band Access privilege to access a Web Browser Interface.

You must have DNS configured or URLs will not resolve. You do not need to have DNS configured for IP addresses.

Web browser interfaces support IPv6 addresses. See **Adding Interfaces for Nodes Using IPv6** (on page 149).

► To add a web browser interface:

1. The default name for a Web Browser Interface is Web Browser. You can change the name in the Name field. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
2. Type a TCP Port for this connection in the TCP Port field. If you are using HTTPS in the URL, you must set the TCP port to 443. **Optional.**
3. Type the URL or domain name for the web application in the URL field. Note that you must enter the URL at which the web application expects to read the username and password. Maximum is 255 characters. Follow these examples for correct formats:
 - http(s)://192.168.1.1/login.asp
 - http(s)://www.example.com/cgi/login
 - http(s)://example.com/home.html
 - http(s)://[fd07:2fa:6cff:2500:20f:3dff:fef6:fa1e]/index.html
4. Enter authentication information: **Optional.**
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.or
 - Enter a Username and Password for authentication. Type the username and password that will allow access to this interface.

Note: Do not enter authentication information for DRAC, ILO, and RSA web applications, or the connection will fail.

5. Type the field names for the username and password fields used in the login screen for the web application in the Username Field and Password Field. You must view the HTML source of the login screen to find the field names, not the field labels. See **Tips for Adding a Web Browser Interface** (on page 147).
6. Type a description of this interface in the Description field. **Optional.**
7. Add Extra Parameters to the URL. **Optional.** Click  to add a row, then double click each field to enter the Parameter Name and Parameter Value.
8. Click OK to save your changes.

Tips for Adding a Web Browser Interface

To configure the Web Browser Interface, you must gather some information from the HTML source to help identify the actual field names of the Username and Password fields. All vendors implement these authentication fields differently, and the names of these fields vary from device to device, as well as among firmware versions for a particular device. For this reason, there isn't a single method for finding the field names. See the procedure below for one possible method.

You may want the help of a software engineer or system administrator to locate and identify the proper field names.

► **Tip for locating field names:**

1. In the HTML source code for the login page of the web application, search for the field's label, such as Username and Password.
2. When you find the field label, look in the adjacent code for a tag that looks like this: `name="user"`

The word in quotes is the field name.

Example: Adding a Web Browser Interface to a PX Node

A Dominion PX-managed PDU can be added to CC-SG as a node. Then you can add a Web Browser Interface that enables users to access the Dominion PX's Web-based administration application to the node.

► **Use the following values to add a Web Browser Interface for a Dominion PX node:**

- URL: <DOMINION PX IP ADDRESS>/auth.asp
- TCP Port: 80
- Username: The Dominion PX administrator's username
- Password: The Dominion PX administrator's password
- Username Field = login
- Password Field = password
- Extra Parameters:
 - Parameter Name: action_login
 - Value: Login

Results of Adding an Interface

When you add an interface to a node, it appears in the Interfaces table and the Default Interface drop-down menu of the Add Node or Node Profile screen. You can click the drop-down menu to select the default interface to use when making a connection to the node.

After saving changes to the Add Node or Node Profile screen, the name of the interface(s) also appears on the Nodes list, nested under the node it provides access to.

When you add a Managed Power Strip interface that specifies a KX as the managing device, the outlet you specify will be renamed with the associated node's name.

Edit an Interface

► **To edit an interface:**

1. Click the Nodes tab and select the node with the interface you want to edit. The Node Profile page opens.
2. In the Interfaces tab, select the row of the interface you want to edit.
3. Click Edit.
4. Edit the fields as needed. See **Add an Interface** (on page 134) for field details. Some fields are read-only.
5. Click OK to save your changes.

Delete an Interface

You can delete any interface from a node except for these:

- A VMW Viewer interface or a VMW Power interface on a virtual machine node.
- A Web Browser interface on a blade chassis which has an integrated KVM switch and has a URL or IP address assigned to it on the KX2 device.

▶ **To delete an interface from a node:**

1. Click the Nodes tab.
2. Click the node with the interface you want to delete.
3. In the Interfaces table, click the row of interface you want to delete.
4. Click Delete. A confirmation message appears.
5. Click Yes to delete the interface.

Adding Interfaces for Nodes Using IPv6

CC-SG supports access to nodes using IPv6 with the following interface types:

- MultiPlatform RDP and Microsoft RDP, in Direct Mode only
- SSH
- Telnet
- VNC
- Web
- DRAC for iDRAC6 and higher only

CC-SG considers IPv6 network IP addresses configured for other interface types invalid destinations.

Configuring Direct Port Access to a Node

You can configure Direct Port Access to a node using the Bookmark Node Interface feature.

See [Bookmarking an Interface](#).

Bulk Copying for Node Associations, Location and Contacts

The Bulk Copy command allows you to copy categories, elements, location and contact information from one node to multiple other nodes. Note that the selected information is the only property copied in this process. If you have the same type of information existing on any selected nodes, performing the Bulk Copy command will REPLACE the existing data with newly assigned information.

► **To bulk copy node associations, location and contact information:**

1. Click the Nodes tab and select a node.
2. Choose Nodes > Bulk Copy.
3. In the Available Nodes list, select the nodes to which you are copying the associations, location, and contact information of the node in the Node Name field.
4. Click > to add a node to the Selected Nodes list.
5. Select the node and click < to remove it from the Selected Nodes list.
6. In the Associations tab, select the Copy Node Associations checkbox to copy all categories and elements of the node.
 - You may change, add or delete any data in this tab. The modified data will be copied to multiple nodes in the Selected Nodes list as well as the current node displayed in the Node Name field. **Optional.**
7. In the Location and Contacts tab, select the checkbox for the information you want to copy:
 - Select the Copy Location Information checkbox to copy the location information displayed in the Location section.
 - Select the Copy Contact Information checkbox to copy the contact information displayed in the Contacts section.
 - You may change, add or delete any data in this tab. The modified data will be copied to multiple nodes in the Selected Nodes list as well as the current node displayed in the Node Name field. **Optional.**
8. Click OK to bulk copy. A message appears when the selected information has been copied.

Using Chat

Chat provides a way for users connected to the same node to communicate with each other. You must be connected to a node to start a chat session for that node. Only users on the same node can chat with each other.

► **To start a chat session:**

1. Choose Nodes > Chat > Start Chat Session.

2. Type a message in the lower left field and click Send. The message appears in the upper left field for all users to see.

▶ **To join a chat session already in progress:**

- Choose Nodes > Chat > Show Chat Session.

▶ **To end a chat session:**

1. Click Close in the chat session. A confirmation message appears.
 - Click Yes to close the chat session for all participants.
 - Click No to exit the chat session but leave it running for other participants.

Adding, Updating, and Deleting Nodes with CSV File Import

You can add, update, and delete nodes and interfaces in CC-SG by importing a CSV file that contains the values.

You must have the Device, Port, and Node Management and CC Setup and Control privileges to import and export nodes.

You must be assigned a policy that gives you access to all relevant devices and nodes. A full access policy for All Nodes and All Devices is recommended.

You must be assigned a policy that gives you access to all relevant devices to import or export Out of Band KVM or Out of Band Serial interfaces, and Power interfaces.

Virtual Infrastructure nodes and interfaces, such as Control Systems, Virtual Hosts, and Virtual Machines are not exported or imported.

You can add, update, and delete nodes and interfaces all in the same CSV file import.

Add Nodes CSV File Requirements

The nodes CSV file defines the nodes, interfaces, and their details required to add them to CC-SG.

- Node names must be unique. If you enter duplicate node names, CC-SG adds a number in parentheses to the name to make it unique, and then adds the node. If you are also assigning categories and elements to nodes in the CSV file, and you have duplicate node names, categories and elements may be assigned to the wrong nodes. To prevent this, give each node a unique name. Or, import nodes first, check their names in CC-SG, and then import a separate file to assign categories and elements to the correct node names.
- To add out-of band interfaces, the associated port must not be configured in CC-SG.
- You cannot import virtual infrastructure nodes and interfaces. Use the options in Nodes > Virtualization.
- The first interface in the CSV file after the ADD NODE command is assigned as the node's default interface.
- Export a file from CC-SG to view the Comments, which include all tags and parameters needed to create a valid CSV file. See **Export Nodes** (on page 174).
- Follow the additional requirements for all CSV files. See **Common CSV File Requirements** (on page 410).
- Some interfaces support IPv6. See **Interfaces for In-Band Connections - RDP, VNC, SSH, RSA KVM, iLO Processor KVM, DRAC KVM, TELNET** (on page 136) and **Web Browser Interface** (on page 146). For more details, see **Microsoft RDP Connection Details** (on page 138), **Java RDP Connection Details** (on page 138), **VNC Connection Details** (on page 138).

► **To add a node to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Description	Optional.

► **To add an out-of-band KVM interface to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-OOBKVM-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Enter the same value as entered for Raritan Port Name.
4	Raritan Device Name	Required field. The device must already be added to CC-SG.
5	Port Number	Required field.
6	Blade Slot/KVM Switch Port/DSAM Port	If the node is associated with a blade, enter the slot number. If the node is associated with a tiered generic analog KVM Switch, enter the port number. If the node is associated with a DSAM port, enter the port number.
7	Raritan Port Name	If left blank, CC-SG will use the existing port name from the device. If you enter a new name, the name will be copied to the device, with the exception of SX devices.
8	Interface Name	Enter the same value as entered for Raritan Port Name.
9	Description	Optional.

► **To add an out-of-band serial interface to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-OOBSERIAL-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Enter the same value as entered for Raritan Port Name.

Column number	Tag or value	Details
4	Raritan Device Name	Required field.
5	Port Number	Required field.
6	Raritan Port Name	If left blank, CC-SG will use the existing port name from the device. If you enter a new name, the name will be copied to the device, with the exception of SX devices.
7	Interface Name	Enter the same value as entered for Raritan Port Name.
8	Baud Rate	Valid for SX ports only.
9	Parity	Valid for SX ports only.
10	Flow Control	Valid for SX ports only.
11	Description	Optional.

► **To add an RDP interface to the CSV file:**

Column number in CSV file	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-RDP-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	IP Address or Hostname	Required field.
6	TCP Port	Default is 3389.
7	Service Account Name	Optional.
8	Username	Optional.
9	Password	Optional.
10	User Type	REMOTE or CONSOLE Default is REMOTE.
11	Keyboard Type	US, UK, Arabic, Danish, German, Spanish, Finnish, French, Belgian, Croatian, Italian, Japanese,

Column number in CSV file	Tag or value	Details
		Lithuanian, Latvian, Macedonian, Norwegian, Polish, Portuguese, Brazilian, Russian, Slovenian, Swedish, or Turkish Default is US.
12	Description	Optional.
13	RDP Type	Java or Microsoft Default is Java .

► **To add an SSH or TELNET interface to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-SSH-INTERFACE for SSH interfaces NODE-TELNET-INTERFACE for TELNET interfaces	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	IP Address or Hostname	Required field.
6	TCP Port	Default is 22 for SSH. Default is 23 for TELNET.
7	Service Account Name	Optional. Leave blank if specifying username and password.
8	Username	Optional. Leave blank if specifying service account.
9	Password	Optional.
10	Description	Optional.

► **To add a VNC interface to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.

Column number	Tag or value	Details
2	NODE-VNC-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	IP Address or Hostname	Required field.
6	TCP Port	Default is 5900.
7	Service Account Name	Optional. Leave blank if specifying password.
8	Password	Optional. Leave blank if specifying service account.
9	Description	Optional.

► **To add a DRAC KVM, DRAC Power, iLO KVM, iLO Power, Integrity iLO2 Power, or RSA Power interface to the CSV file:**

When importing DRAC, iLO and RSA interfaces, you must specify both the KVM interface and the Power interface, or the import will fail.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-DRAC-KVM-INTERFACE for DRAC KVM interfaces NODE-DRAC-POWER-INTERFACE for DRAC Power interfaces NODE-ILO-KVM-INTERFACE for iLO KVM interfaces NODE-ILO-POWER-INTERFACE for iLO Power interfaces NODE-INT-ILO2-POWER-INTERFACE for Integrity iLO2 Power interfaces NODE-RSA-POWER-INTERFACE for RSA Power interfaces	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	IP Address or Hostname	Required field.

Column number	Tag or value	Details
6	Service Account Name	You must enter either a service account or a username and password. Leave blank if specifying username and password.
7	Username	You must enter either a service account or a username and password. Leave blank if specifying service account.
8	Password	You must enter either a service account or a username and password. Leave blank if specifying service account.
9	Description	Optional.
10*	TCP Port	*For NODE-DRAC-POWER-INTERFACE only, specify a TCP port. Default is 22.

► **To add a UCS KVM interface to the CSV file:**

Specify a username and password for an account that has access to both the chassis and the blade.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-UCS-KVM-INTERFA CE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	UCS Chassis IP address or hostname	Required field.
6	TCP Port	Default is 443.
7	Blade IP address or hostname	
8	Service Account Name	Optional. Leave blank if specifying username and password.
9	Username	Optional. Leave blank if specifying service account.
10	Password	Optional. Leave blank if specifying

Column number	Tag or value	Details
		service account.
11	Description	Optional.

► **To add an RSA KVM interface to the CSV file:**

When importing DRAC, ILO and RSA interfaces, you must specify both the KVM interface and the Power interface, or the import will fail.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-RSA-KVM-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	IP Address or Hostname	Required field.
6	TCP Port	Default is 2000
7	Service Account Name	Leave blank if specifying username and password.
8	Username	Leave blank if specifying service account.
9	Password	Leave blank if specifying service account.
10	Description	Optional.

► **To add an IPMI power control interface to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-IPMI-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	IP Address or Hostname	Required field.
6	UDP Port	Default is 623

Column number	Tag or value	Details
7	Authentication	MD5, None, OEM, or PASSWORD Default is PASSWORD.
8	Interval	Enter the check interval in seconds. Default is 550.
9	Service Account Name	Leave blank if specifying username and password.
10	Username	Leave blank if specifying service account.
11	Password	Leave blank if specifying service account.
12	Description	Optional.

► **To add a managed powerstrip interface to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-POWER-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	Powerstrip Name	Required field.
6	Outlet	Required field.
7	Managing Device	The name of the device that the power strip is connected to. Required field for all power strips except Dominion PX or iPDU.
8	Managing Port	The name of the port on the device that the power strip is connected to. Required field for all power strips except Dominion PX or iPDU.
9	Description	Optional.

► To add a Web Browser interface to the CSV file:

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-WEB-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	URL	Required field.
6	TCP Port	Default is 80.
7	Service Account Name	Optional. Leave blank if specifying username and password.
8	Username	Optional. Leave blank if specifying service account. Apostrophe character ' is not supported.
9	Password	Optional. Leave blank if specifying service account. Apostrophe character ' is not supported.
10	Username Field	Optional. See Tips for Adding a Web Browser Interface (on page 147)
11	Password Field	Optional. See Tips for Adding a Web Browser Interface (on page 147)
12	Description	Optional.
13	Extra Parameter Field Name	Optional. See Web Browser Interface (on page 146).
14	Extra Parameter Field Value	Optional. See Web Browser Interface (on page 146).
		Use remaining columns in pairs if you need to add more parameter field names and values.

► **To add a Power IQ Proxy power control interface to the CSV file:**

See **Power Control of Power IQ IT Devices** (on page 379) for details about configuring this interface type.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command ADD.
2	NODE-POWER-PIQ-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	External Key	<ul style="list-style-type: none"> ▪ If the IT device has already been added to Power IQ, find the external key on the IT device's page in the Data Center tab, and enter the text in this field. ▪ If the IT device has not been added to Power IQ yet, enter a text value, but make sure to use the same value when adding the IT device to Power IQ. You can quickly make a file of all node and interface information by exporting. See Export Nodes (on page 174).
6	Managing Power IQ Name	Enter the name of the Power IQ that manages the IT device. The name must match the value in the Power IQ Device Name field on the Access > Power IQ Services > "Power IQ Device Name" Configuration dialog. See Configuring Power IQ Services (on page 380).
7	Description	Optional.

► **To assign categories and elements to a node to the CSV file:**

Categories and elements must already be created in CC-SG.

You can assign multiple elements of the same category to a node in the CSV file.

Only the ADD command is supported for categories and elements. You cannot update or delete categories and elements using CSV import.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	NODE-CATEGORYELEMENT	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Category Name	Required field.
5	Element Name	Required field.

Update Nodes CSV File Requirements

When updating nodes and interfaces using a CSV file, the file must use the UPDATE command, and define the former and new names for all name changes.

CC-SG processes each line of the CSV file sequentially. After a name change, the former name will not exist and the node can only be found using its new name.

When you include name changes in a CSV file, all lines that occur in the file after the name change must use the new node name when referring to the node. For example, if you rename a node in line 1 and update one of the node's interfaces in line 2, you must identify the node with its new name in line 2.

- Node names must be unique. If your CSV file contains a new name that is found to be a duplicate, you will receive a warning message during validation. You must fix the duplicate name before you can import the file.
- To update details of an interface without updating the interface name, enter the current interface name for both the "interface name" and "new interface name" columns in the CSV file.
- You cannot update categories and elements.
- You cannot update the access application selection for out of band KVM or serial interfaces.
- You cannot update virtual infrastructure nodes and interfaces. Use the options in Nodes > Virtualization.
- You cannot update Power IQ Proxy power control interfaces. Use Power IQ Synchronization. See **Synchronize Power IQ and CC-SG** (on page 383).
- Export a file from CC-SG to view the Comments, which include all tags and parameters needed to create a valid CSV file. See **Export Nodes** (on page 174).
- Follow the additional requirements for all CSV files. See **Common CSV File Requirements** (on page 410).

Updating a Node Name with CSV

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field. The current node name.
4	New Node Name	Required field. The new node name.

Column number	Tag or value	Details
		Use the new name when referring to this node in other lines in the CSV file.
5	Description	Optional.

Updating an Out of Band KVM or Serial Interface with CSV

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-OOBKVM-INTERFACE for out of band KVM interfaces NODE-OBSERIAL-INTERFACE for out of band serial interfaces	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field. The node this interface belongs to.
4	Interface Name	Required field. The current interface name.
5	New Interface Name	Required field. The new interface name.
6	Description	Optional field.

Updating an RDP Interface with CSV

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-RDP-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field. The node this interface belongs to.
4	Interface Name	Required field.

Column number	Tag or value	Details
		The current interface name.
5	New Interface Name	Required field. The new interface name.
6	IP Address/Hostname	
7	TCP Port	Default is 3389.
8	Service Account Name	Optional.
9	Username	Optional.
10	Password	Optional.
11	User Type	REMOTE or CONSOLE Default is REMOTE.
12	Keyboard Type	US, UK, Arabic, Danish, German, Spanish, Finnish, French, Belgian, Croatian, Italian, Japanese, Lithuanian, Latvian, Macedonian, Norwegian, Polish, Portuguese, Brazilian, Russian, Slovenian, Swedish, or Turkish Default is US.
13	Description	Optional.
14	RDP Type	Java or Microsoft Default is Java .

Updating an SSH or Telnet Interface with CSV

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-SSH-INTERFACE for SSH interfaces NODE-TELNET-INTERFAC E for TELNET interfaces	Enter the tag as shown. Tags are not case sensitive.

Column number	Tag or value	Details
3	Node Name	Required field.
4	Interface Name	Required field.
5	New Interface Name	Required field.
6	IP Address or Hostname	Required field.
7	TCP Port	Default is 22 for SSH. Default is 23 for TELNET.
8	Service Account Name	Optional. Leave blank if specifying username and password. Enter the new service account name to update it.
9	Username	Optional. Leave blank if specifying service account. Enter the new username to update it.
10	Password	Optional. Enter the new password to update it.
11	Description	Optional.

Updating a VNC Interface with CSV

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-VNC-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	New Interface Name	Required field.
6	IP Address or Hostname	Required field.
7	TCP Port	Default is 5900.
8	Service Account Name	Optional. Leave blank if specifying password. Enter the new service account name to update it.

Column number	Tag or value	Details
9	Password	Optional. Leave blank if specifying service account. Enter the new password to update it.
10	Description	Optional.

Updating a Web Browser Interface with CSV

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-WEB-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field.
5	New Interface Name	Required field.
6	URL	Required field.
7	TCP Port	Default is 80.
8	Service Account Name	Optional. Leave blank if specifying username and password. Enter the new service account name to update it.
9	Username	Optional. Leave blank if specifying service account. Apostrophe character ' is not supported. Enter the new username to update it.
10	Password	Optional. Leave blank if specifying service account. Apostrophe character ' is not supported. Enter the new password to update it.
11	Username Field	Optional. See <i>Tips for Adding a Web Browser Interface</i> (on page 147)
12	Password Field	Optional. See <i>Tips for Adding a Web Browser Interface</i> (on page 147)
13	Description	Optional.

Column number	Tag or value	Details
14	Extra Parameter Field Name	Optional. See Web Browser Interface (on page 146).
15	Extra Parameter Field Value	Optional. See Web Browser Interface (on page 146).
		Use remaining columns in pairs if you need to add more parameter field names and values.

Updating a DRAC KVM, DRAC Power, iLO KVM, iLO Power, Integrity iLO2 Power, or RSA Power Interface with CSV

When importing DRAC, ILO and RSA interfaces, you must specify both the KVM interface and the Power interface, or the import will fail.

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-DRAC-KVM-INTERFACE for DRAC KVM interfaces NODE-DRAC-POWER-INTERFACE for DRAC Power interfaces NODE-ILO-KVM-INTERFACE for iLO KVM interfaces NODE-ILO-POWER-INTERFACE for iLO Power interfaces NODE-INT-ILO2-POWER-INTERFACE for Integrity ILO2 Power interfaces NODE-RSA-POWER-INTERFACE for RSA Power interfaces	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field. The current interface name.
5	New Interface Name	Required field. The new interface name.
6	IP Address or Hostname	Required field.
7	Service Account Name	You must enter either a service account or a username and password. Leave blank if specifying username and

Column number	Tag or value	Details
		password. Enter the new service account name to update it.
8	Username	You must enter either a service account or a username and password. Leave blank if specifying service account. Enter the new username to update it.
9	Password	You must enter either a service account or a username and password. Leave blank if specifying service account. Enter the new password to update it.
10	Description	Optional.
11*	TCP Port	*For NODE-DRAC-POWER-INTERFACE only, specify a TCP port. Default is 22.

Updating an RSA KVM Interface with CSV

When importing DRAC, ILO and RSA interfaces, you must specify both the KVM interface and the Power interface, or the import will fail.

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-RSA-KVM-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field. The current interface name.
5	New Interface Name	Required field. The new interface name.
6	IP Address or Hostname	Required field.
7	TCP Port	Default is 2000
8	Service Account Name	Leave blank if specifying username and

Column number	Tag or value	Details
		password. Enter the new service account name to update it.
9	Username	Leave blank if specifying service account. Enter the new username to update it.
10	Password	Leave blank if specifying service account. Enter the new password to update it.
11	Description	Optional.

Updating an IPMI Interface with CSV

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-IPMI-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field. The current interface name.
5	New Interface Name	Required field. The new interface name.
6	IP Address or Hostname	Required field.
7	UDP Port	Default is 623
8	Authentication	MD5, None, OEM, or PASSWORD Default is PASSWORD.
9	Interval	Enter the check interval in seconds. Default is 550.
10	Service Account Name	Leave blank if specifying username and password. Enter the new service account name to update it.

Column number	Tag or value	Details
11	Username	Leave blank if specifying service account. Enter the new username to update it.
12	Password	Leave blank if specifying service account. Enter the new password to update it.
13	Description	Optional.

Updating a UCS KVM Interface with CSV

Specify a username and password for an account that has access to both the chassis and the blade.

Column number	Tag or value	Details
1	UPDATE	The first column for all tags is the command.
2	NODE-UCS-KVM-INTERFACE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.
4	Interface Name	Required field. The current interface name.
5	New Interface Name	Required field. The new interface name.
6	Chassis IP address or hostname	Required field.
7	TCP Port	Default is 443.
8	Blade IP address or hostname	Required field.
9	Service Account Name	Optional. Leave blank if specifying username and password. Enter the new service account name to update it.
10	Username	Optional. Leave blank if specifying service account. Enter the new username to update it.

Specify a username and password for an account that has access to both the chassis and the blade.

Column number	Tag or value	Details
11	Password	Optional. Leave blank if specifying service account. Enter the new password to update it.
12	Description	Optional.

Delete Nodes CSV File Requirements

When deleting an interface using a CSV file, the node must still have at least one interface, or the delete operation will fail.

You cannot delete categories and elements of a node.

Deleting a Node with CSV

Column number	Tag or value	Details
1	DELETE	The first column for all tags is the command.
2	NODE	Enter the tag as shown. Tags are not case sensitive.
3	Node Name	Required field.

Deleting an Interface with CSV

Column number	Tag or value	Details
1	DELETE	The first column for all tags is the command.
2	NODE-OOBKVM-INTERFAC E NODE-OBSERIAL-INTER FACE NODE-RDP-INTERFACE NODE-SSH-INTERFACE NODE-TELNET-INTERFAC E	Enter the tag as shown. Tags are not case sensitive. All interfaces can be deleted.

Column number	Tag or value	Details
	NODE-VNC-INTERFACE NODE-WEB-INTERFACE NODE-DRAC-KVM-INTERFACE NODE-DRAC-POWER-INTERFACE NODE-ILO-KVM-INTERFACE NODE-ILO-POWER-INTERFACE NODE-INT-ILO2-POWER-INTERFACE NODE-RSA-KVM-INTERFACE NODE-RSA-POWER-INTERFACE NODE-IPMI-INTERFACE NODE-UCS-KVM-INTERFACE	
3	Node Name	Required field.
4	Interface Name	Required field.

Sample Nodes CSV File

#					
# IF TAG = NODE	NODE	Col 3* = Node Name	Col 4 = Description		
ADD	NODE	RDP	This is a RDP Node		
# IF TAG = NODE-RDP-INTERFACE	NODE-RDP-INTERFACE	Col 3* = Node Name	Col 4* = Interface Name	Col 5* = IP Address/Hostname	Col 6 = TCP
ADD	NODE-RDP-INTERFACE	RDP	RDP	192.168.51.163	
#					
# IF TAG = NODE	NODE	Col 3* = Node Name	Col 4* = New Node Name	Col 5 = Description	
UPDATE	NODE	RDP	RDPUPDATE	This is UPDATE Nodename	
# IF TAG = NODE-RDP-INTERFACE	NODE-RDP-INTERFACE	Col 3* = Node Name	Col 4* = Interface Name	Col 5* = New Interface Name	Col 6* = IP Ad
UPDATE	NODE-RDP-INTERFACE	RDPUPDATE	RDP	RDPInterfaceUPDATE	192.168.51
#					
# IF TAG = NODE	NODE	Col 3* = Node Name			
DELETE	NODE	RDPUPDATE			
# IF TAG = NODE-RDP-INTERFACE	NODE-RDP-INTERFACE	Col 3* = Node Name	Col 4* = Interface Name		
DELETE	NODE-RDP-INTERFACE	RDPUPDATE	RDPInterfaceUPDATE		

Import Nodes

Once you've created the CSV file, validate it to check for errors then import it.

Duplicate records are skipped and are not added.

1. Choose Administration > Import > Import Nodes.
2. Click Browse and select the CSV file to import. Click Open.
3. Click Validate. The Analysis Report area shows the file contents.
 - If the file is not valid, an error message appears. Click OK and look at the Problems area of the page for a description of the problems with the file. Click Save to File to save the problems list. Correct your CSV file and then try to validate it again. See **Troubleshoot CSV File Problems** (on page 412).
4. Click Import.
5. Check the Actions area to see the import results. Items that imported successfully show in green text. Items that failed import show in red text. Items that failed import because a duplicate item already exists or was already imported also show in red text.
6. To view more import results details, check the Audit Trail report. See **Audit Trail Entries for Importing** (on page 411).

Export Nodes

The export file contains comments at the top that describe each item in the file. The comments can be used as instructions for creating a file for importing.

► **To export nodes:**

1. Choose Administration > Export > Export Nodes.
2. Click Export to File.
3. Type a name for the file and choose the location where you want to save it.
4. Click Save.

Adding, Editing, and Deleting Node Groups

Node Groups Overview

Node groups are used to organize nodes into a set. The node group will become the basis for a policy either allowing or denying access to this particular set of nodes. See **Adding a Policy** (on page 202). Nodes can be grouped manually, using the Select method, or by creating a Boolean expression that describes a set of common attributes, using the Describe method.

If you used Guided Setup to create categories and elements for nodes, some means to organize nodes along common attributes have already been created. CC-SG automatically creates default access policies based on these elements. See **Associations, Categories, and Elements** (on page 34) for details on creating categories and elements.

▶ To view node groups:

- Choose Associations > Node Groups. The Node Groups Manager window appears. A list of existing node groups is displayed on the left, while details about the selected node group appear in the main panel.
 - A list of existing node groups is displayed on the left. Click a node group to view the details of the group in the node group manager.
 - If the group was formed arbitrarily, the Select Nodes tab will be displayed showing a list of nodes in the group and a list of nodes not in the group.
 - If the group was formed based on common attributes, the Describe Nodes tab will appear, showing the rules that govern selection of the nodes for the group.
 - To search for a node in the node group list, type a string in the Search field at the bottom of the list, and then click Search. The method of searching is configured through the My Profile screen. See **Users and User Groups** (on page 180).
 - If viewing a group based on attributes, click View Nodes to display a list of nodes currently in the Node Group. A Nodes In Node Group window opens, displaying the nodes and all their attributes.

Add a Node Group

▶ To add a node group:

1. Choose Associations > Node Group. The Node Groups Manager window appears
2. Choose Groups > New. A template for a node group appears.

3. In the Group Name field, type a name for a node group you want to create. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
4. There are two ways to add nodes to a group, Select Nodes and Describe Nodes. The Select Nodes method allows you to arbitrarily assign nodes to the group by selecting them from the list of available nodes. The Describe Nodes method allows you to specify rules that describe nodes; nodes that match the description will be included in the group.

Describe Method versus Select Method

Use the describe method when you want your group to be based on some attribute of the node or devices, such as the categories and elements. The advantage of the describe method is that when you add more devices or nodes with the same attributes as described, they will be pulled into the group automatically.

Use the select method when you just want to create a group of specific nodes manually. New nodes and devices added to CC-SG are not pulled into these groups automatically. You must manually add the new nodes or devices to the group after you add them to CC-SG.

These two methods cannot be combined.

Once a group is created with one method, you must edit it using the same method. Switching methods will overwrite the current group settings.

Select Nodes

► To add a node group with the Select Nodes option:

1. Click the Select Nodes tab.
2. Click the Device Name drop-down menu and select a device to filter the Available list to display only nodes with interfaces from that device. The device names are sorted alphabetically.
3. In the Available list, select the nodes you want to add to the group, and then click Add to move the node into the Selected list. Nodes in the Selected list will be added to the group.
 - To remove a node from the group, select the node name in the Selected list and click Remove.
 - You can search for a node in either the Available or Selected list. Type the search terms in the field below the list, and then click Go
4. If you want to create a policy that allows access to the nodes in this group at any time, select the Create Full Access Policy for Group checkbox.
5. When you are done adding nodes to the group, click OK to create the node group. The group will be added to the list of Node Groups on the left.

Describe Nodes

▶ To add a node group with the Describe Nodes option:

1. Click the Select Nodes tab.
2. Click the Add New Row icon  to add a row in the table for a new rule. Rules take the form of an expression which can be compared against nodes.
3. Double-click each column in the row to turn the appropriate cell into a drop-down menu, then select the appropriate value for each component:
 - Prefix - Leave this blank or select NOT. If NOT is selected, this rule will filter for values opposite of the rest of the expression.
 - Category - Select an attribute that will be evaluated in the rule. All categories you created in the Association Manager will be available here. Also included are Node Name and Interface. If any blade chassis has been configured in the system, a Blade Chassis category is available by default.
 - Operator - Select a comparison operation to be performed between the Category and Element items. Three operators are available: = (is equal to), LIKE (used for find the Element in a name) and <> (is not equal to).
 - Element - Select a value for the Category attribute to be compared against. Only elements associated with the selected category will appear here (for example: if evaluating a "Department" category, "Location" elements will not appear here).
 - Rule Name- This is a name assigned to the rule in this row. You cannot edit these values. Use these values for writing descriptions in the Short Expression field.
An example rule might be Department = Engineering, meaning it describes all nodes that the category "Department" set to "Engineering." This is exactly what happens when you configure the associations during an Add Node operation.
4. If you want to add another rule, click the Add New Row icon again, and make the necessary configurations. Configuring multiple rules will allow more precise descriptions by providing multiple criteria for evaluating nodes.
 - To remove a rule, highlight the rule in the table, and then click the Remove Row icon .

- The table of rules makes available criteria for evaluating nodes. To write a description for the node group, add the rules by Rule Name to the Short Expression field. If the description only requires a single rule, then type that rule's name in the field. If multiple rules are being evaluated, type the rules into the field using a set of logical operators to describe the rules in relation to each other:

- & - the AND operator. A node must satisfy rules on both sides of this operator for the description (or that section of a description) to be evaluated as true.
- | - the OR operator. A node only needs to satisfy one rule on either side of this operator for the description (or that section of a description) to be evaluated as true.
- (and) - grouping operators. This breaks the description into a subsection contained within the parentheses. The section within the parentheses is evaluated first before the rest of the description is compared to the node. Parenthetical groups can be nested inside another parenthetical group.

Example 1: If you want to describe nodes that belong to the engineering department, create a rule that says Department = Engineering. This will become Rule0. Then, type Rule0 in the Short Expression field.

Example 2: If you want to describe a group of devices that belong to the engineering department or are located in Philadelphia, and specify that all of the machines must have 1 GB of memory, you must create three rules. Department = Engineering (Rule0) Location = Philadelphia (Rule1) Memory = 1GB (Rule2). These rules must be arranged in relation to each other. Since the device can either belong to the engineering department or be located in Philadelphia, use the OR operator, |, to join the two: Rule0 | Rule1. Make this comparison first by enclosing it parentheses: (Rule0 | Rule1). Since the devices must both satisfy this comparison AND contain 1GB of memory, use the AND connector, &, to join this section with Rule2: (Rule0 | Rule1) & Rule2. Type this final expression in the Short Expression field.

Note: You should have a space before and after operators & and |. Otherwise, the Short Expression field may return to the default expression, that is, Rule0 & Rule1 & Rule2 and so on, when you delete any rule from the table.

- Click Validate when a description has been written in the Short Expression field. If the description is formed incorrectly, a warning appears. If the description is formed correctly, a normalized form of the expression appears in the Normalized Expression field.

7. Click View Nodes to see what nodes satisfy this expression. A Nodes in Node Group window opens, displaying the nodes that will be grouped by the current expression. This can be used to check if the description was correctly written. If not, you can return to the rules table or the Short Expression field to make adjustments.
8. If you know you want to create a policy that allows access to the nodes in this group at all times, select the Create Full Access Policy for Group checkbox.
9. When you are done describing the nodes that belong in this group, click OK to create the node group. The group will be added to the list of Node Groups on the left.

Edit a Node Group

Edit a node group to change the membership or description of the group.

► **To edit a node group:**

1. Choose Associations > Node Group. The Node Groups Manager window opens.
2. Click the node you want to edit in the Node Group List. The details of that node appear in the Node Groups window.
3. Refer to the instructions in the Select Nodes or Describe Nodes sections for details on how to configure the node group.
4. Click OK to save your changes.

Delete a Node Group

► **To delete a node group:**

1. Choose Associations > Node Group. The Node Groups Manager window opens.
2. Select the node you want to delete in the Node Group List to the left.
3. Choose Groups > Delete.
4. The Delete Node Group panel appears. Click Delete.
5. Click Yes in the confirmation message that appears.

Users and User Groups

User accounts are created so that users can be assigned a username and password to access CC-SG.

A User Group defines a set of privileges for its members. You cannot assign privileges to users themselves, only to user groups. All users must belong to at least one user group.

CC-SG maintains a centralized user list and user group list for authentication and authorization.

You can also configure CC-SG to use external authentication. See **Remote Authentication and Authorization** (on page 213).

You must also create policies for access that you can assign to user groups. See **Policies for Access Control** (on page 201).

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The Users Tab

Click the Users tab to display all user groups and users in CC-SG.

Users are nested underneath the user groups to which they belong. User groups with users assigned to them appear in the list with a + symbol next to them. Click the + to expand or collapse the list. Active users - those currently logged into CC-SG - appear in bold.

The Users tab provides the ability to search for users within the tree.

Default User Groups

CC-SG is configured with three default user groups: CC-Super User, System Administrators, and CC Users.



CC Super-User Group

The CC Super-User group has full administrative and access privileges. Only one user can be a member of this group. The default username is `admin`. You can change the default username. You cannot delete the CC-Super User group. You cannot change the privileges assigned to the CC-Super User group, add members to it, or delete the only user from the group. Strong passwords are always enforced for the member of the CC-Super User group. Strong password requirements are:

- Passwords must contain at least one lowercase letter.
- Passwords must contain at least one uppercase letter.
- Passwords must contain at least one number.
- Passwords must contain at least one special character (for example, an exclamation point or ampersand).

Note: You cannot make any changes to the CC Super-User Group via CSV file import.

System Administrators Group

The System Administrators group has full administrative and access privileges. You cannot change the privileges. You can add or delete members.

CC Users Group

The CC Users group has in-band and out-of-band nodes access. You can change the privileges and add or delete members.

Important: Many menu items cannot be selected unless the appropriate User Group or User is first selected.

Adding, Editing, and Deleting User Groups

Add a User Group

Creating user groups first will help you organize users when the users are added. When a user group is created, a set of privileges is assigned to the user group. Users assigned to the group will inherit those privileges. For example, if you create a group and assign it the User Management privilege, all users assigned to the group will be able to see and execute the commands on the User Manager menu. See **User Group Privileges** (on page 399).

Configuring user groups involves four basic steps:

- Name the group and give it a description.
- Select the privileges the user group will have.
- Select the interface types the user group can use to access nodes.
- Select policies that specify which nodes the user group can access.

► **To add a user group:**

1. Choose Users > User Group Manager > Add User Group. The Add User Group screen appears
2. Type a name for the user group in the User Group Name field. User Group names must be unique. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
3. Type a short description for the group in the Description field. **Optional.**
4. To set a maximum number of KVM sessions per user in this user group when accessing devices that have this feature enabled, select the Limit Number of KVM Sessions per Device checkbox, and select the number of sessions allowed in the Max KVM Sessions (1-8) field. **Optional.** See **Limit the Number of KVM Sessions per User** (on page 186) for details.
5. Click the Privileges tab.
6. Select the checkbox that corresponds with each privilege you want to assign to the user group.

7. Below the privileges table is the Node Access area with privileges for three kinds of node access: Node Out-of-Band Access, Node In-Band Access, and Node Power Control. Select the checkbox that corresponds to each type of node access you want to assign to the user group.

Add User Group

Please select policies for the user group.

User Group Name: *
Data Center East Group

Description:

Limit Number of KVM Sessions per Device Maximum KVM Sessions (1-8):
5

Privileges Device/Node Policies

Administration

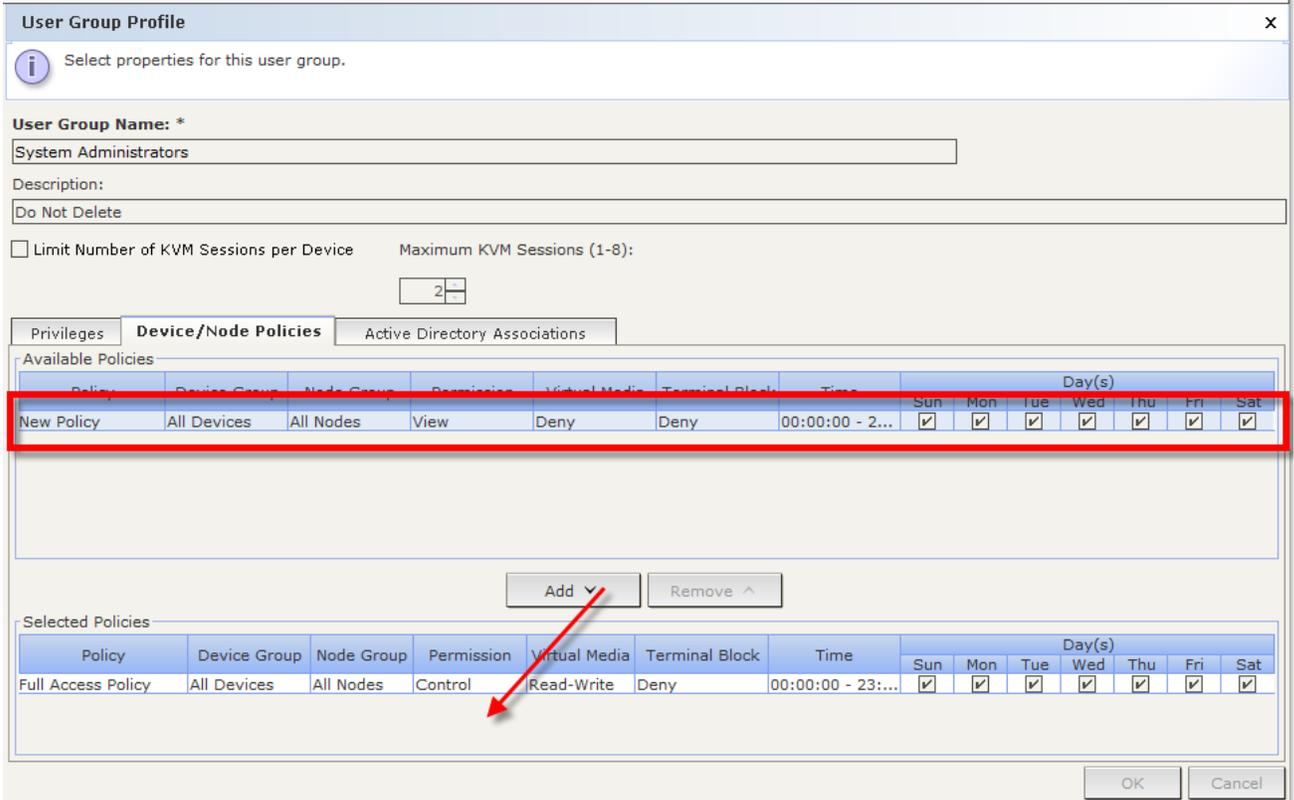
Selected	Privilege
<input type="checkbox"/>	CC Setup And Control
<input type="checkbox"/>	Device Configuration And Upgrade Management
<input checked="" type="checkbox"/>	Device, Port and Node Management
<input type="checkbox"/>	User Management
<input type="checkbox"/>	User Security Management

Node Access

Selected	Privilege
<input checked="" type="checkbox"/>	Node In-band Access
<input checked="" type="checkbox"/>	Node Out-of-band Access
<input checked="" type="checkbox"/>	Node Power Control

8. Click the Device/Node Policies tab. A table of policies appears. The All Policies table lists all the policies available on CC-SG. Each policy represents a rule allowing or denying access to a group of nodes. See ***Policies for Access Control*** (on page 201) for details on policies and how they are created.
9. In the All Policies list, select a policy that you want to assign to the user group, and then click Add to move the policy to the Selected Policies list. Policies in the Selected Policies list allow or deny access to the nodes or devices controlled by the policy. See ***Assigning Policies To User Groups*** (on page 205) for details on how policies interact.
- Repeat this step to add additional policies to the user group.
- If you want to allow this group to access all available nodes, select the Full Access Policy in the Add Policies list, and then click Add.

- If you want to remove a policy from the user group, select the policy name in the Selected Policies list, and then click Remove.



10. When you are done configuring policies for this group, click Apply to save this group and create another. Repeat the steps in this section to add user groups. **Optional.**
11. Click OK to save your changes.

Edit a User Group

Edit a User Group to change the existing privileges and policies for that group.

Note: You cannot edit the Privileges or Policies of the CC-Super User group.

▶ To edit a user group:

1. Click the Users tab.
2. Click the user group in the Users tab. The User Group Profile appears.
3. Type a new name for the user group in the User Group Name field. **Optional.**
4. Type a new description for the user group in the Description field. **Optional.**

5. To set a maximum number of KVM sessions per user in this user group when accessing devices that have this feature enabled, select the Limit Number of KVM Sessions per Device checkbox, and select the number of sessions allowed in the Max KVM Sessions (1-8) field. **Optional.** See ***Limit the Number of KVM Sessions per User*** (on page 186) for details.
6. Click the Privileges tab.
7. Select the checkbox that corresponds to each privilege you want to assign to the user group. Deselect a privilege to remove it from the group.
8. In the Node Access area, click the drop-down menu for each kind of interface you want this group to have access through and select Control.
9. Click the drop-down menu for each kind of interface you do not want this group to have access through and select Deny.
10. Click the Policies tab. Two tables of policies appear.
11. For each policy you want to add to the group, select policy in the All Policies, then click Add to move the policy to the Selected Policies list. Policies in the Selected Policies list will allow or deny users access to the node (or devices) controlled by this policy.
12. For each policy you want to remove from the user group, select the policy name in the Selected Policies list and click Remove.
13. Click OK to save your changes.

Delete a User Group

You can delete a user group if it does not have any members.

► **To delete a User Group:**

1. Click the Users tab.
2. Click the user group you want to delete.
3. Choose Users > User Group Manager > Delete User Group.
4. Click OK to delete the User Group.

Limit the Number of KVM Sessions per User

You can limit the number of KVM sessions allowed per user for sessions with KX3, KX2, and KSX2 devices. This prevents any single user from using all available channels at once.

When a user attempts a connection to a node that would exceed the limit, a warning message displays with information on the current sessions. The event is logged in the Access Report with the message *Connection Denied*. The user must disconnect a session on the device before starting another new session.

The full message text is:

Connection Denied: Exceeds the allotted number of sessions for the KVM switch this node is attached to. If possible, please disconnect an existing session to the same KVM switch.

A list of the active connections to the KVM switch is included in the message.

*Note: You can filter the Access Report by message text to find out which devices have high traffic. See **Access Report** (on page 237).*

Limits on number of KVM sessions are set per user group. You can enable limits when you add or edit a user group manually, in Guided Setup, or by CSV import. See **Add a User Group** (on page 182).

KX3 and KX2 devices ONLY give a warning when the maximum number of connections for the device has been reached. The event is logged in the Access Report with the message *Connection Denied*.

The full message text is:

Connection Denied: Exceeds the number of available video channels on the KVM switch this node is attached to.'

Configuring Access Auditing for User Groups

You can require members of a user group to enter the reason why they are accessing the node before access is permitted. A dialog will appear to all users in the user groups you select. Users must enter the reason for access before the node connection is made. This feature applies to all types of access with all interface types, including power control.

The reasons for access are logged in the Audit Trail and in the Node Profile's Auditing tab.

► **To configure access auditing for user groups:**

1. Choose Users > Node Auditing.
2. Select the Require Users to Enter Access Information When Connecting to a Node checkbox.

- In the Message to Users field, enter a message that users will see when attempting to access a node. A default message is provided. 256 character maximum.
- Move the user groups to enable access auditing for the group into the Selected list by clicking the arrow buttons. Use Ctrl+click to select multiple items.

*Tip: Type the name of a user group in the Find field to highlight it in the list. Type * after a partial name to highlight all similar names in the list.*

Click the column headers to sort the lists alphabetically.

- Click Update.

Adding, Editing, and Deleting Users

Add a User

When you add a user to CC-SG, you must specify a user group to give the user the access privileges assigned to the user group.

User Profile [X]

Choose user properties to edit.

Username: *
 Login Enabled Remote Authentication

New Password (Local Authentication Only):
 Strong passwords are not required.

Retype New Password: *

Force Password Change on Next Login

Force Password Change Periodically

Expiration Period (Days): * Date of Next Password Change:

Full Name:

Email Address: Telephone Number:

User Group(s):

Require User to Enter Access Information When Connecting to a Node

OK Cancel

► To add a user:

- In the Users tab, select the group to which you want to add a user.
- Choose Users > User Manager > Add User.

3. In the Username field, type the user name of the user you want to add. This name is used to log in to CC-SG. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
4. In the Full Name field, type the user's full first and last name. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
5. Select the Login Enabled checkbox if you want the user to be able to log in to CC-SG.
6. Select the Check Remote Authentication checkbox only if you want the user to be authenticated by an external server, such as TACACS+, RADIUS, LDAP, or AD. If you are using remote authentication, a password is not required and the New Password and Retype New Password fields will be disabled.
7. In the New Password and Retype New Password fields, type the password that the user will use to log in to CC-SG.

*Note: See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.*

*If strong passwords are enabled, the password entered must conform to the established rules. The information bar at the top of the screen will display messages to assist with the password requirements. See **Advanced Administration** (on page 245) for details on strong passwords.*

8. Select the Force Password Change on Next Login checkbox to force the user to change the assigned password the next time they log in.
9. Select the Force Password Change Periodically checkbox to specify how often the user will be forced to change their password.
10. If selected, in the Expiration Period (Days) field, type the number of days that the user will be able to use the same password before being forced to change it.
11. In the Email address field, type the user's email address. This will be used to send the user notifications.
12. In the Telephone Number field, type the user's telephone number.
13. Click the User Groups drop-down menu and select the group to which the user will be added.
 - Depending on the user group you select, the Require User to Enter Information When Connecting to a Node checkbox may or may not be selected. If selected, then this user is required to enter information when accessing a node. See **Configuring Access Auditing for User Groups** (on page 186).
14. When you are done configuring this user, click Apply to add this user and create another one, or click OK to add the user without creating more. The users you create appear in the Users tab, nested underneath the user groups to which they belong.

Edit a User

You cannot edit a user to change what group they belong to. See **Assigning a User to a Group** (on page 191).

► **To edit a user:**

1. In the Users tab, click the + symbol to expand the user group that contains a user you want to edit, and then select the user. The User Profile appears.
2. Deselect the Login enabled checkbox to prevent this user from logging into CC-SG. Select the Login enabled checkbox to allow this user to log into CC-SG.
3. Select the Remote Authentication only checkbox if you want the user to be authenticated by an external server such as TACACS+, RADIUS, LDAP, or AD. If you are using remote authentication, a password is not required and the New Password and Retype New Password fields will be disabled.
4. In the New Password and Retype New Password fields, type a new password to change this user's password.

*Note: If Strong Passwords are enabled, the password entered must conform to the established rules. The information bar at the top of the screen will assist with the password requirements. See **Advanced Administration** (on page 245) for details on strong passwords.*

5. Select the Force Password Change on Next Login checkbox if you want to force the user to change the assigned password the next time they log in.
6. In the Email address field, type a new email address to add or change the user's configured email address. This will be used to send the user notifications.
7. Click OK to save your changes.

Delete a User

Deleting a user completely removes the user from CC-SG. This is useful for removing user accounts that are no longer needed.

This procedure deletes all instances of a user, even if the user exists in multiple user groups. See **Deleting a User From a Group** (on page 192) to remove the user from a group without deleting the user from CC-SG.

► **To delete a user:**

1. In the Users tab, click the + symbol to expand the user group that contains a user you want to delete, and then select the user. The User Profile appears.
2. Choose Users > User Manager, Delete User.
3. Click OK to permanently delete the user from CC-SG.

Configure User SSH Keys

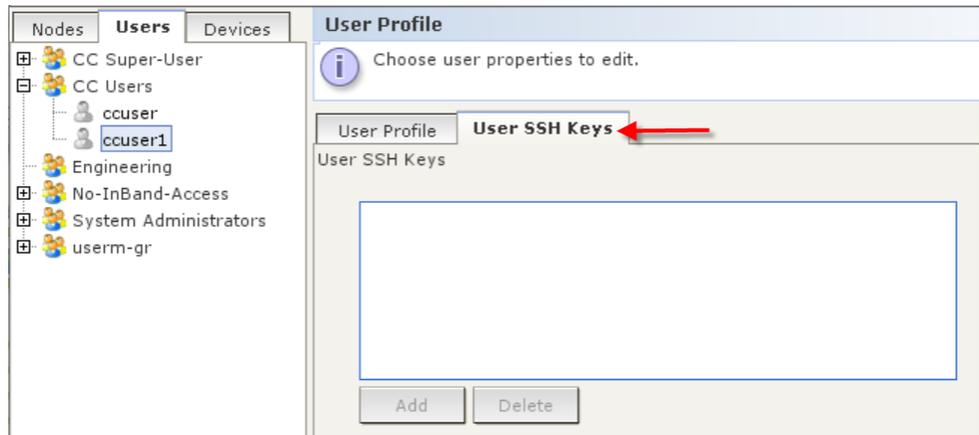
If needed, SSH (Secure Shell) Client Authentication keys can be added to a user. The user must first be created before the client certificate can be added.

Each user can have up to 10 unique keys added for authentication. CC Super User and System Administrators can edit their own keys, as well as keys of other users.

Keys are composed of the type followed by the key data, for example "ssh-rsa AAAB..."

► **To configure user SSH keys:**

1. In the Users tab, click the + symbol to expand the user group that contains a user you want to configure, and then select the user. The User Profile appears.
2. Click the User SSH Keys tab. When a user does not have an SSH key configured, the field is empty, as shown here.



3. Paste the SSH key data in the User SSH Keys box. This data is the rsa_id.pub key generated for your client.
Linux users should delete "name@local host" that appears at the end of the generated key when adding public keys.
4. Click Add.

The SSH key data is validated in several ways:

 - a. Specified keytype is validated: [ssh-rsa |ssh-dsa |ecdsa-sha2-nistp256 | ecdsa-sha2-nitsp384| ecdsa-sha2-nitsp512]
 - b. Keytype is followed by whitespace, followed by the base64 data.
 - c. Base64 data is validated.

- d. Whitespace and any characters after the base64 are dropped from the key data.

User Profile

Choose user properties to edit.

User Profile **User SSH Keys**

User SSH Keys

ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGCxmtX+4y6qEAEr+scr93vt4ib9yiFaXnC0Z0zMYbueqZHg42YsAzEhVQkeP7e7SXQ1kw4FW5srteznRdP2qhlc60nLdu3lyaPJ4c0un1gInATKm1ZL6Owc7tKk1pQ2ncIov5mpxSawYJgIGfGVu4Y+opaL/Ls+mDGjC8nS78Gqt0IX9oDuLdq8OcAqd3/tjduwg/sAcgj6hKsJwM9p+Rbg8Mv4Qt7dV4k/ie9IvM/2+uyiZvq7Cf7IE/pyjCH5sVH3hL6ThpfTWMLGbj0nocOV+2QZKku9OFUpMSPvJ8SWgZwC+iV3FddRc/0ZnkAeoyT9WEbKyudPGE7FxiNQbnYdipUv6oI71PyKJOLpb0LT9GKWoU9URhLf8n4ZJkGSMY0v2d4rz/gKu/U8Ur9QYDf8QBgdB60FAF39SZkoDsmgkfgWTwAN8sh5NUfEhO01tcjY7nGoi vsoB6Zi20zGkGEzeIu2RDWh7Wg2heTEaTrrc+NXH8Ju1IWJ2CHb9/Rfb0=

Add Delete

5. When SSH access is enabled, the key data should be used for authentication and you should not have to enter a password. See **Enable SSH Access** (on page 301).

► **To delete an SSH key:**

1. Click the checkbox next to the key you want to delete.
2. Click Delete.
3. Click OK when prompted to confirm.

Assigning a User to a Group

Use this command to assign an existing user to another group. Users assigned in this way will be added to the new group while still existing in any group they were previously assigned to. To move a user, use this command in conjunction with Delete User From Group.

► **To assign a user to a group:**

1. In the Users tab, select the user group to which you want to assign a users.
2. Choose Users > User Group Manager > Assign Users To Group.
3. The user group you selected appears in the User group name field.
4. Users who are not assigned to the target group appear in the Users not in group list.

- Select the users you want to add from this list, and then click > to move them to the Users in group list.
 - Click the >> button to move all users not in the group to the Users in group list.
 - Select the users you want to remove from the Users in group list, and then click the < button to remove them.
 - Click the << button to remove all users from the Users in group list.
5. When all the users have been moved to the appropriate column, click OK. The users in the Users in group list will be added to the selected User Group.

Deleting a User From a Group

When you delete a user from a group, the user is removed only from the specified group. The user remains in all other assigned groups. Deleting a user from a group does not delete the user from CC-SG.

If a user belongs to only one group, you cannot delete the user from the group. You can only delete the user from CC-SG.

► **To delete a user from a group:**

1. In the Users tab, click the + symbol to expand the user group that contains the user you want to delete from the group, and then select the user. The User Profile appears.
2. Choose Users > User Manager > Delete User From Group. The Delete User screen appears.
3. Click OK to delete the user from the group.

Adding Users with CSV File Import

You can add user information to CC-SG by importing a CSV file that contains the values.

If you have multiple CC-SG units in a neighborhood, exporting users from one CC-SG then importing the users into another CC-SG is a quick way to ensure all locally authenticated users are present on both members.

You must have the User Management and CC Setup and Control privileges to import and export user information.

Users CSV File Requirements

The import enables you to add user groups, users, and AD modules, and assign policies and permissions and user groups.

- Policies must already be created in CC-SG. The import assigns the policy to a user group. You cannot create new policies via import.
- User Group names are case sensitive.
- User names are not case sensitive.
- Each USERGROUP defined must have a USERGROUP-PERMISSIONS and a USERGROUP-POLICY tag defined in the CSV file to create the user group.
- Export a file from CC-SG to view the Comments, which include all tags and parameters needed to create a valid CSV file. See **Export Users** (on page 197).
- Follow the additional requirements for all CSV files. See **Common CSV File Requirements** (on page 410).

► **To add a user group to the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	USERGROUP	Enter the tag as shown. Tags are not case sensitive.
3	User Group Name	Required field. User Group names are case sensitive.
4	Description	Required field.
5	Limit Max Number of KVM Sessions per Device	TRUE or FALSE Default is FALSE.
6	Maximum number of KVM sessions allowed per user	Enter just the number, from 1–8. Default is 2.

► **To assign permissions to a user group in the CSV file:**

Enter the value TRUE to assign a permission to the user group. Enter the value FALSE to deny the permission to the user group.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	USERGROUP-PERMISSIONS	Enter the tag as shown. Tags are not case sensitive.

Column number	Tag or value	Details
3	User Group Name	Required field. User Group names are case sensitive.
4	CC Setup and Control	TRUE or FALSE
5	Device Configuration Upgrade Management	TRUE or FALSE
6	Device Port Node Management	TRUE or FALSE
7	User Management	TRUE or FALSE
8	User Security Management	TRUE or FALSE
9	Node IBA	TRUE or FALSE Default is TRUE
10	Node OOB	TRUE or FALSE Default is TRUE
11	Node Power	TRUE or FALSE

► **To assign a policy to a user group in the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	USERGROUP-POLICY	Enter the tag as shown. Tags are not case sensitive.
3	User Group Name	Required field. User Group names are case sensitive.
4	Policy Name	Required field.

► **To associate an AD module to a user group in the CSV file:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	USERGROUP-ADMODULE	Enter the tag as shown. Tags are not case sensitive.
3	User Group Name	Required field. User Group names are case sensitive.

Column number	Tag or value	Details
4	AD Module Name	Required field.

► **To add a user to CC-SG:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	USER	Enter the tag as shown. Tags are not case sensitive.
3	User Group Name	Required field. User Group names are case sensitive. You must add the user to one user group. You can add the user to more user groups with the USERGROUP-MEMBER tag.
4	User Name	Required field.
5	Password	Required field.
6	User's Full Name	Optional.
7	Email Address	Optional. Email address is used with system notifications.
8	Telephone Number	Optional.
9	Login Enabled	TRUE or FALSE Default is TRUE Enable login to allow the user to log in to CC-SG.
10	Remote Authentication	TRUE or FALSE
11	Force Password Change Periodically	TRUE or FALSE
12	Expiration Period	If Force Password Change Periodically is set to TRUE, specify the number of days after which password must be changed. Enter just the number, from 1 to 365.

► **To add a user to a user group:**

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	USERGROUP-MEMBER	Enter the tag as shown. Tags are not case sensitive.
3	User Group Name	Required field. User Group names are case sensitive.
4	User Name	Required field.

Sample Users CSV File

```
ADD, USERGROUP, Windows Administrators, MS IT Team
ADD, USERGROUP-PERMISSIONS, Windows Administrators, FALSE, TRUE, TRUE,
TRUE, TRUE, TRUE, TRUE, TRUE
ADD, USERGROUP-POLICY, Windows Administrators, Full Access Policy
ADD, USERGROUP-ADMODULE, Windows Administrators, AD-USA-57-120
ADD, USERGROUP-MEMBER, Windows Administrators, user1
ADD, USERGROUP-MEMBER, Windows Administrators, user2
ADD, USER, Windows Administrators, user1, password, userfirstname
userlastname, user1@company.com, 800-555-1212, TRUE,,,
ADD, USER, Windows Administrators, user2, password, userfirstname
userlastname, user2@raritan.com, 800-555-1212, TRUE,,,
ADD, USERGROUP-MEMBER, System Administrators, user1
ADD, USERGROUP-MEMBER, CC Users, user2
```

Import Users

Once you've created the CSV file, validate it to check for errors then import it. Duplicate records are skipped and are not added.

1. Choose Administration > Import > Import Users.
2. Click Browse and select the CSV file to import. Click Open.
3. Click Validate. The Analysis Report area shows the file contents.
 - If the file is not valid, an error message appears. Click OK and look at the Problems area of the page for a description of the problems with the file. Click Save to File to save the problems list. Correct your CSV file and then try to validate it again. See **Troubleshoot CSV File Problems** (on page 412).

4. Click Import.
5. Check the Actions area to see the import results. Items that imported successfully show in green text. Items that failed import show in red text. Items that failed import because a duplicate item already exists or was already imported also show in red text.
6. To view more import results details, check the Audit Trail report. See ***Audit Trail Entries for Importing*** (on page 411).

Export Users

The export file contains all users that have a user account created in CC-SG. This excludes AD-authorized users, unless they also have a user account created on CC-SG.

The export file includes user and the details from the user profile, user groups, user group permissions and policies, associated AD modules.

Passwords export as a blank field.

► **To export users:**

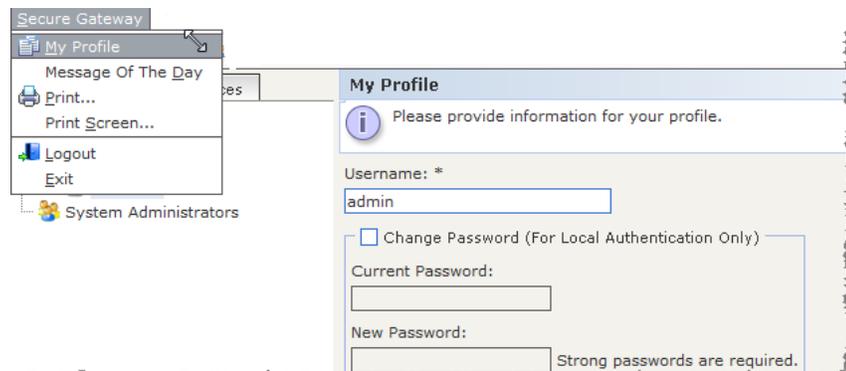
1. Choose Administration > Export > Export Users.
2. Click Export to File.
3. Type a name for the file and choose the location where you want to save it
4. Click Save.

Your User Profile

My Profile allows all users to view details about their account, change some details, and customize usability settings. It is the only way for the CC Super User account to change the account name.

► **To view your profile:**

Choose Secure Gateway > My Profile. The My Profile screen appears, displaying details about your account.



Change your password

1. Choose Secure Gateway > My Profile.
2. Check the Change Password (For Local Authentication Only) checkbox.
3. Type your current password in the Old Password field.
4. Type your new password in the New Password field. A message appears if password is not a strong password.
5. Type your new password again in the Retype New Password field.
6. Click OK to save your changes.

Change your name

You cannot change your user name. You can change the first and last name associated with your user name.

► **To change your name:**

1. Choose Secure Gateway > My Profile.
2. Type your first and last name in the Full Name field. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.

Change your default search preference

1. Choose Secure Gateway > My Profile.
2. In the Search Preference area, select a preferred method to search nodes, users, and devices:
 - Filter by Search Results - Allows the use of wildcards and will limit the display of nodes, users, or devices to all names that contain the search criteria.
 - Find Matching String - Does not support the use of wildcards and will highlight the closest match in the nodes, users, or devices as you type. The list will be limited to those items that contain the search criteria after clicking Search.
3. Click OK to save your changes.

Change the CC-SG default font size

1. Choose Secure Gateway > My Profile.
2. Click the Font Size drop-down menu to adjust the font size the standard CC-SG client uses.
3. Click OK to save your changes.

Change your email address

1. Choose Secure Gateway > My Profile.

2. Type a new address in the Email address field to add or change the address CC-SG will use to send you notifications.
3. Click OK to save your changes.

Change the CC-SG Super User's Username

You must be logged into CC-SG using the CC Super User account to change the CC Super User's username. The default CC Super User username is *admin*.

1. Choose Secure Gateway > My Profile.
2. Type a new name in the Username field.
3. Click OK to save your changes.

Logging Users Out

You can log active users out of CC-SG, either individually or by user group.

▶ To log out users:

1. In the Users tab, click the + symbol to expand the user group that contains a user you want to log out of CCSG, and then select the user.
 - To select multiple users, hold the Shift key as you click additional users.
2. Choose Users > User Manager > Logout Users. The Logout Users screen appears with the list of selected users.
3. Click OK to log the users out of CC-SG.

▶ To log out all users of a User Group:

1. In the Users tab, select the user group you want to log out of CC-SG.
 - To log out multiple user groups, hold the Shift key as you click additional user groups.
2. Choose Users > User Group Manager > Logout Users. The Logout Users screen appears with a list of active users from the selected groups.
3. Click OK to log the users out of CC-SG.

Bulk Copying Users

You can use Bulk Copy for users to copy one user's user group affiliations to another user or list of users. If the users receiving the affiliations have existing group affiliations, the existing affiliations will be removed.

▶ To perform a Bulk Copy for users:

1. In the Users tab, click the + symbol to expand the user group that contains the user whose policies and privileges you want to copy, and then select the user.
2. Choose Users > User Manager > Bulk Copy. The Username field displays the user whose policies and privileges you are copying.

3. In the All Users list, select the users that will be adopting the policies and privileges of the user in the Username field.
 - Click > to move a user name to the Selected Users list.
 - Click >> to move all users to the Selected Users list.
 - Select the user in the Selected Users list, and then click < to remove the user.
 - Click << to remove all users from the Users in group list.
4. Click OK to copy.

Policies for Access Control

Policies are rules that define which nodes and devices users can access, when they can access them, and whether virtual-media permissions are enabled, where applicable. The easiest way to create policies is to categorize your nodes and devices into node groups and device groups, and then create policies that allow and deny access to the nodes and devices in each group. After you create a policy, you assign it to a user group. See **Assigning Policies To User Groups** (on page 205).

CC-SG includes a Full Access Policy. If you want to give all users access to all nodes and devices at all times, assign the Full Access Policy to all user groups. If you completed Guided Setup, a number of basic policies may already have been created. See **Configuring CC-SG with Guided Setup** (on page 26).

▶ **To control access using policies:**

- Create Node Groups to organize the nodes you want to create access rules for. See **Add a Node Group** (on page 175).
- Create Device Groups to organize the devices you want to create access rules for. See **Add a Device Group** (on page 77).
- Create a policy for a node or device group specifying when access to that node or device group can occur. See **Adding a Policy** (on page 202).
- Apply the policy to a user group. See **Assigning Policies To User Groups** (on page 205).

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Adding a Policy

If you create a policy that denies access (Deny) to a node group or device group, you also must create a policy that allows access (Control) for the selected node group or device group. Users will not automatically receive Control rights when the Deny policy is not in effect.

KX3 version 3.1 and above and KX2 version 2.7 and above support KVM "View-only" permission. SX2 version 2.1 and above supports Serial "View-only" permission. For other devices, "View" is the same as "Control" for KVM access.

▶ To add a policy:

1. Choose Associations > Policies. The Policy Manager window opens.
2. Click Add. A dialog window appears, requesting a name for the policy.
3. Type a name for the new policy in the Enter policy name field. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
4. Click OK. The new policy will be added to the Policy Name list in the Policy Manager screen.
5. Click the Device Group drop-down arrow, and select the Device Group to which this policy governs access.
6. Click the Node Group drop-down arrow and select the Node Group to which this policy governs access.
7. If the policy will cover only one type of group, select a value only for that type.

8. Click the Days drop-down arrow, and then select which days of the week this policy covers: All days, Weekday (Monday through Friday only) and Weekend (Saturday and Sunday only), or Custom (select specific days).
9. Select Custom to select your own set of days. The individual day checkboxes will become enabled.
10. Select the checkbox that corresponds to each day you want this policy to cover.
11. In the Start Time field, type the time of day this policy goes into effect. The time must be in 24-Hour format.
12. In the End Time field, type the time of day this policy ends. The time must be in 24-Hour format.
13. In the Device/Node Access Permission field, select Control to define this policy to allow access to the selected node or device group for the designated times and days. Select Deny to define this policy to deny access to the selected node or device group for the designated times and days. Select View to allow view-only access, not supported on all devices.
14. If you selected Control in the Device/Node Access Permission field, the Virtual Media Permission section will become enabled. In the Virtual Media Permission field, select an option to allow or deny access to virtual media available in the selected node or device groups for the designated times and days:
 - Read-Write allows both read and write permission to virtual media
 - Read-only allows only read permission to virtual media
 - Deny denies all access to virtual media
15. Select the Terminal Block Permission checkbox to allow access to the terminal block.
16. Click Update to add the new policy to CC-SG, and then click Yes in the confirmation message that appears.

Editing a Policy

When you edit a policy, the changes do not affect users who are currently logged into CC-SG. The changes will go into effect at the next login.

To ensure that your changes go into effect sooner, first enter Maintenance Mode, and then edit policies. When you enter Maintenance Mode, all current users are logged out of CC-SG until you exit Maintenance Mode, when users can log in again. See **Maintenance Mode** (on page 315).

▶ To edit a policy:

1. On the Associations menu, click Policies. The Policy Manager window opens.
2. Click the Policy Name drop-down arrow, and then select the policy you want to edit from the list.

3. To edit the name of the policy, click Edit. An Edit Policy window opens. Type a new name for the policy in the field, and then click OK to change the name of the policy. **Optional.**
4. Update options as needed, then click Update to save your changes. See **Adding a Policy** (on page 202) for details.
5. Click Yes in the confirmation message that appears.

Deleting a Policy

You can delete a policy that is no longer needed.

▶ **To delete a policy:**

1. Choose Associations > Policies. The Policy Manager window opens.
2. Click the Policy Name drop-down arrow, and then select the policy you want to delete.
3. Click Delete.
4. Click Yes in the confirmation message that appears.

Support for Virtual Media

CC-SG provides remote virtual media support for nodes connected to virtual media-enabled Raritan devices. For detailed instructions on accessing virtual media with your device, see the online help for the product.

See **Adding a Policy** (on page 202) for details on creating policies to assign virtual media permission to user groups in CC-SG.

Assigning Policies To User Groups

Policies must be assigned to a User Group before they take effect. Once a policy is assigned to a User Group, the members of the group will have their access governed by that policy. See **Users and User Groups** (on page 180) for details on assigning policies to a user group.

If a user belongs to more than 1 group, the more permissive policy out of the groups they are assigned to will apply to the user.

► **For example:**

Policy 123: Allows access to servers 1 2 3.

Policy 456: Allows access to servers 4 5 6.

Group A: Group is assigned Policy123.

Group B: Group B is assigned Policy456.

User belongs to both Group A and B. This allows user access servers 1 2 3 4 5 6.

Then, create Policy Deny 1: Denies access to server 1.

Assign Policy Deny 1 to Group A. User will only have access to 2 3 4 5 6.

If Policy Deny 1 is switched from Group A to Group B, user has access to 1 2 3 4 5 6.

Custom Views for Devices and Nodes

Custom Views enable you to specify different ways to display the nodes and devices in the left panel, using Categories, Node Groups, and Device Groups.

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Types of Custom Views

There are three types of custom views: View by Category, Filter by Node Group, and Filter by Device Group.

View by Category

All nodes and devices described by the categories you specify will appear in the nodes or devices lists when a View by Category custom view is applied. Nodes or devices that do not have a category assigned will also display as "unassociated."

Filter by Node Group

Only the node groups you specify will appear in the nodes list when a Filter by Node Group custom view is applied. The first level of organization is the node group name. A node may appear several times in the list if the node belongs to more than one node group defined in the custom view. Nodes that do not belong to a node group specified by the custom view will not appear in the list.

Filter by Device Group

Only the device groups you specify will appear in the devices list when a Filter by Device Group custom view is applied. The first level of organization is the device group name. A device may appear several times in the list if the device belongs to more than one device group defined in the custom view. Devices that do not belong to a device group specified by the custom view will not appear in the list.

Using Custom Views in the Admin Client

Custom Views for Nodes

Add a Custom View for Nodes

▶ **To add a custom view for nodes:**

1. Click the Nodes tab.
2. Choose Nodes > Change View > Create Custom View. The Custom View screen appears.
3. In the Custom View panel, click Add. The Add Custom View window opens.
4. Type a name for the new custom view in the Custom View Name field.
5. In the Custom View Type section:
 - Select Filter by Node Group to create a custom view that displays only the node groups you specify.
 - Select View by Category to create a custom view that displays nodes according to the categories you specify.
6. Click OK.
7. In the Custom View Details section:
 - a. In the Available list, select the item you want to include in the custom view, and then click Add to add the item to the list. Repeat this step to add as many items as you want.
 - b. Arrange the items in the Selected list in the order you would like each grouping to display in the Nodes tab. Select an item and click the up and down arrow buttons to move the item into the desired sequence.
 - c. If you must remove an item from the list, select it and click Remove.
8. Click Save. A message confirms that the custom view has been added.
9. To apply the new custom view, click Apply View.

Apply a Custom View for Nodes

▶ **To apply a custom view to the nodes list:**

1. Choose Nodes > Change View > Custom View. The Custom View screen appears.
 2. Click the Name drop-down arrow and select a custom view from the list.
 3. Click Apply View.
- or
- Choose Nodes > Change View. All defined custom views are options in the pop-up menu. Choose the custom view you want to apply.

Change a Custom View for Nodes

1. Click the Nodes tab.
2. Choose Nodes > Change View > Create Custom View. The Custom View screen appears.
3. Click the Name drop-down arrow and select a custom view from the list. Details of the items included and their order appear in the Custom View Details panel

▶ To change a custom view's name:

1. In the Custom View panel, click Edit. The Edit Custom View window opens.
2. Type a new name for the custom view in the Enter new name for custom view field, and then click OK. The new view name appears in the Name field in the Custom View screen.

▶ To change the custom view's contents:

1. In the Custom View Details section:
 - a. In the Available list, select the item you want to include in the custom view, and then click Add to add the item to the list. Repeat this step to add as many items as you want.
 - b. Arrange the items in the Selected list in the order you would like each grouping to display in the Nodes tab. Select an item and click the up and down arrow buttons to move the item into the desired sequence.
 - c. If you must remove an item from the list, select it and click Remove.
2. Click Save. A message confirms that the custom view has been added.
3. To apply the new custom view, click Apply View.

Delete a Custom View for Nodes

▶ To delete a custom view for nodes:

1. Click the Nodes tab.
2. Choose Nodes > Change View > Create Custom View. The Custom View screen appears.
3. Click the Name drop-down arrow, and select a custom view from the list. Details of the items included and their order appear in the Custom View Details panel
4. In the Custom View panel, click Delete. The Delete Custom View confirmation message appears.
5. Click Yes.

Assign a Default Custom View for Nodes**▶ To assign a default custom view for nodes:**

1. Click the Nodes tab.
2. Choose Nodes > Change View > Create Custom View. The Custom View screen appears.
3. Click the Name drop-down arrow, and select a custom view from the list.
4. In the Custom View panel, click Set as Default. The next time you log in, the selected custom view will be used by default.

Assign a Default Custom View of Nodes for All Users

If you have the CC Setup and Control privilege, you can assign a default custom view for all users. The System View is set as default view for all user until each user sets their own default view.

▶ To assign a default custom view of nodes for all users:

1. Click the Nodes tab.
2. Choose Nodes > Change View > Create Custom View.
3. Click the Name drop-down arrow, and select the custom view you want assign as a system-wide default view.
4. Select the System View checkbox, and then click Save.

All users who log into the CommandCenter Secure Gateway will see the Nodes tab sorted according to the selected System View (Custom View set as System View).

Custom Views for Devices**Add a Custom View for Devices****▶ To add a custom view for devices:**

1. Click the Devices tab.
2. Choose Devices > Change View > Create Custom View. The Custom View screen appears.
3. In the Custom View panel, click Add. The Add Custom View window appears.
4. Type a name for the new custom view in the Custom View Name field.
5. In the Custom View Type section:
 - Select Filter by Device Group to create a custom view that displays only the device groups you specify.
 - Select View by Category to create a custom view that displays devices according to the categories you specify.
6. Click OK.

7. In the Custom View Details section:
 - a. In the Available list, select the item you want to include in the custom view, and then click Add to add the item to the list. Repeat this step to add as many items as you want.
 - b. Arrange the items in the Selected list in the order you would like each grouping to display in the Nodes tab. Select an item and click the up and down arrow buttons to move the item into the desired sequence.
 - c. If you must remove an item from the list, select it and click Remove.
8. Click Save. A message confirms that the custom view has been added.
9. To apply the new custom view, click Apply View.

Apply a Custom View for Devices

► **To apply a custom view to the devices list:**

1. Choose Devices > Change View > Custom View. The Custom View screen appears.
2. Click the Name drop-down arrow, and select a custom view from the list.
3. Click Apply View.

or

Choose Devices > Change View. All defined custom views are options in the pop-up menu. Choose the custom view you want to apply.

Change a Custom View for Devices

1. Click the Devices tab.
2. Choose Devices > Change View > Create Custom View. The Custom View screen appears.
3. Click the Name drop-down arrow, and select a custom view from the list. Details of the items included and their order appear in the Custom View Details panel.

► **To change a custom view's name:**

1. In the Custom View panel, click Edit. The Edit Custom View window opens.
2. Type a new name for the custom view in the Enter new name for custom view field, and then click OK. The new view name appears in the Name field in the Custom View screen.

► **To change the custom view's contents:**

1. In the Custom View Details section:
 - a. In the Available list, select the item you want to include in the custom view, and then click Add to add the item to the list. Repeat this step to add as many items as you want.

- b. Arrange the items in the Selected list in the order you would like each grouping to display in the Nodes tab. Select an item and click the up and down arrow buttons to move the item into the desired sequence.
 - c. If you must remove an item from the list, select it and click Remove.
2. Click Save. A message confirms that the custom view has been added.
3. To apply the new custom view, click Apply View.

Delete a Custom View for Devices

► To delete a custom view for devices:

1. Click the Devices tab.
2. Choose Devices > Change View > Create Custom View. The Custom View screen appears.
3. Click the Name drop-down arrow, and select a custom view from the list. Details of the items included and their order appear in the Custom View Details panel
4. In the Custom View panel, click Delete. The Delete Custom View confirmation message appears.
5. Click Yes.

Assign a Default Custom View for Devices

► To assign a default custom view for devices:

1. Click the Devices tab.
2. Choose Devices > Change View > Create Custom View. The Custom View screen appears.
3. Click the Name drop-down arrow, and select a custom view from the list.
4. In the Custom View panel, click Set as Default. The next time you login the selected custom view will be used by default.

Assign a Default Custom View of Devices for All Users

If you have the Device, Port, and Node Management privilege, you can assign a custom view for all users by enabling it as system view. The System View is set as the default view for all users until they set their own default view.

► To set a custom view as system view

1. Click the Devices tab.
2. Choose Devices > Change View > Create Custom View.
3. Click the Name drop-down arrow, and select the custom view you want assign as a system-wide default view.
4. Select the System View checkbox, and then click Save.

Appendix A: Custom Views for Devices and Nodes

All users who log into CommandCenter Secure Gateway will see the devices sorted on the Devices tab as per the System View (Custom View set as System View).

Remote Authentication and Authorization

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Authentication and Authorization (AA) Overview

Users of CC-SG can be locally authenticated and authorized on the CC-SG or remotely authenticated using the following supported directory servers:

- Microsoft Active Directory (AD)
- Lightweight Directory Access Protocol (LDAP)
- TACACS+
- RADIUS

Any number of remote servers can be used for external authentication. For example, you could configure three AD servers, two iPlanet (LDAP) servers, and three RADIUS servers.

AD and TACACS+ can be used for remote authorization of users.

LDAP implementations use LDAP v3.

IPv6 is supported for all directory servers.

Flow for Authentication and Authorization

When remote authentication/authorization is enabled, the process follows these steps:

1. The user logs into CC-SG with the appropriate username and password.

2. CC-SG connects to the external server and sends the username and password.
3. Username and password are either accepted or rejected and sent back. If authentication is rejected, this results in a failed login attempt.
4. If authentication is successful, and remote authorization is enabled, it is performed. CC-SG checks if the username entered matches a group that has been created in CC-SG or imported from AD, and grants privileges according to the assigned policy.

When remote authentication/authorization is disabled, both authentication and authorization are performed locally on CC-SG.

User Accounts

User Accounts must be added to the authentication server for remote authentication. Except when using AD for both authentication and authorization, all remote authentication servers require that users be created on CC-SG. The user's username on both the authentication server and on CC-SG must be the same, although the passwords may be different. The local CC-SG password is used only when remote authentication is disabled. See **Users and User Groups** (on page 180) for details on adding users who will be remotely authenticated.

Note: If remote authentication is used, users must contact their Administrators to change their passwords on the remote server. Passwords cannot be changed on CC-SG for remotely authenticated users.

Distinguished Names for LDAP and AD

Configuration of remotely authenticated users on LDAP or AD servers requires entering usernames and searches in Distinguished Name format. The full Distinguished Name format is described in RFC2253 (<http://www.rfc-editor.org/rfc/rfc2253.txt>).

To configure CC-SG, you must know how to enter Distinguished Names and the order in which each component of the name should be listed.

Specify a Distinguished Name for AD

Distinguished Names for AD should follow this structure. You do not have to specify both common name and organization unit:

- common name (cn), organizational unit (ou), domain component (dc)

Specify a Distinguished Name for LDAP

Distinguished Names for eDirectory LDAP should follow this structure:

- user id (uid), organizational unit (ou), organization (o)

Specify a Username for AD

When authenticating CC-SG users on an AD server by specifying `cn=administrator,cn=users,dc=xyz,dc=com` in username, if a CC-SG user is associated with an imported AD group, the user will be granted access with these credentials. Note that you can specify more than one common name, organizational unit, and domain component.

Specify a Base DN

You also enter a Distinguished Name to specify where the search for users begins. Enter a Distinguished Name in the Base DN field to specify an AD container in which the users can be found. For example, entering: `ou=DCAdmins,ou=IT,dc=xyz,dc=com` will search all users in the DCAdmins and IT organizational units under the xyz.com domain.

Specifying Modules for Authentication and Authorization

Once you have added all the external servers as modules in CC-SG, specify whether you want CC-SG to use each of them for either authentication only, or both authentication and authorization.

► **To specify modules for authentication and authorization:**

1. Choose Administration > Security.
2. Click the Authentication tab. All configured external Authorization and Authentication Servers appear in a table.
3. For each server listed:
 - a. Select the Authentication checkbox if you want CC-SG to use the server for authentication of users.
 - b. Select the Authorization checkbox if you want CC-SG to use the server for authorization of users. Only AD and TACACS+ servers can be used for authorization.
4. Click OK to save your changes.

Establishing Order of External AA Servers

CC-SG will query the configured external authorization and authentication servers in the order that you specify. If the first checked option is unavailable, CC-SG will try the second, then the third, and so on, until it is successful.

► **To establish the order in which CC-SG uses external authentication and authorization servers:**

1. Choose Administration > Security.
2. Click the Authentication tab. All configured external Authorization and Authentication Servers appear in a table.

3. Select a server from the list, and then click the up and down arrows to prioritize the order of engagement.
4. Click Update to save your changes.

AD and CC-SG Overview

CC-SG supports authentication and authorization of users imported from an AD domain controller, without requiring that users be defined locally in CC-SG. This allows users to be maintained exclusively on the AD server. Once your AD server is configured as a module in CC-SG, CC-SG can query all domain controllers for a given domain. You can synchronize your AD modules in CC-SG with your AD servers to ensure that CC-SG has the most current authorization information on your AD user groups.

Do not add duplicate AD modules. If your users see a message that says "You are not a member of any group" when attempting to login, you may have configured duplicate AD modules. Check the modules you have configured to see if they describe overlapping domain areas.

Adding an AD Module to CC-SG

Important: Create appropriate AD user groups and assign AD users to them before starting this process. Also, make sure that you have configured the CC-SG DNS and Domain Suffix in Configuration Manager. See *Configuring the CC-SG Network* (on page 250).

► **To add an AD module to CC-SG:**

1. Choose Administration > Security.
2. Click the Authentication tab.
3. Click Add to open the Add Module window.
4. Click the Module Type drop-down menu and select AD from the list.
5. Type a name for the AD server in the Module name field.
 - The maximum number of characters is 31.
 - All printable characters may be used.
 - The module name is optional and is specified only to distinguish this AD server module from any others that you configure in CC-SG. The name is not connected to the actual AD server name.
6. Click Next to proceed. The General tab opens.

AD General Settings

In the General tab, you must add the information that allows CC-SG to query the AD server.

Do not add duplicate AD modules. If your users see a message that says "You are not a member of any group" when attempting to login, you may have configured duplicate AD modules. Check the modules you have configured to see if they describe overlapping domain areas.

1. Type the AD domain you want to query in the Domain field. For example, if the AD domain is installed in the xyz.com domain, type xyz.com in the Domain field. CC-SG and the AD server you want to query must be configured either on the same domain or on different domains that trust each other.

Note: CC-SG will query all known domain controllers for the domain specified.

2. Type the IP addresses of the Primary and Secondary DNS servers in the Primary DNS Server IP Address and Secondary DNS Server IP Address fields respectively, or select the Use default CC-SG DNS checkbox to use the DNS configured in the Configuration Manager section of CC-SG. See **Advanced Administration** (on page 245).
3. Select the Anonymous Bind checkbox if you want to connect to the AD server without specifying a username and password. If you use this option, ensure that the AD server allows anonymous queries.
4. If you are not using anonymous binding, type the username of the user account you want to use to query the AD server in the "User name" field. The format required depends on your AD version and configuration. Use one of the following formats.

A user named User Name with a login name UserN in the raritan.com domain could be entered as:

- cn=UserName,cn=users,dc=Raritan,dc=com
- UserName@raritan.com
- Raritan/UserName

Note: The user specified must have permission to execute search queries in the AD domain. For example, the user may belong to a group within AD that has Group scope set to Global, and Group type set to Security.

5. Type the password for the user account you want to use to query the AD server in the Password and Confirm Password fields. Maximum length is 32 characters.

Note: The Test Connection button is enabled after you complete the Advanced, Group and Trust settings. Return to this tab to test the connection to the AD server using the given parameters. You should receive a confirmation of a successful connection. If you do not see a confirmation, review the settings carefully for errors and try again.

- Click Next to proceed. The Advanced tab opens. See **AD Advanced Settings** (on page 218).

AD Advanced Settings

► **To configure advanced AD settings:**

- Click the Advanced tab.
- Type the port number on which the AD server is listening. The default port is 389. If you are using secure connections for LDAP, you may need to change this port. The standard port for secure LDAP connections is 636.
- Select the Secure Connection for LDAP checkbox if you want to use a secure channel for the connection. If checked, CC-SG uses LDAP over SSL to connect to AD. This option may not be supported by your AD configuration.
- Specify a Base DN (directory level/entry) under which the authentication search query will be executed. CommandCenter Secure Gateway can do a recursive search downward from this Base DN.

Example	Description
dc=sunbird,dc=com	The search query for the user entry will be made over the whole directory structure.
cn=Administrators,cn=Users,dc=sunbird,dc=com	The search query for the user entry will be performed only in the Administrators sub-directory (entry).

- Type a user's attributes in the Filter field so the search query will be restricted to only those entries that meet this criterion. The default filter is objectclass=user, which means that only entries of the type user are searched.
- Specify the way in which the search query will be performed for the user entry.
 - Select the Use Bind checkbox if the user logging in from the applet has permissions to perform search queries in the AD server. If a username pattern is specified in Bind username pattern, the pattern will be merged with the username supplied in the applet and the merged username will be used to connect to the AD server.

Example: If you specify `cn={0},cn=Users,dc=raritan,dc=com` and TestUser has been supplied in the applet, then CC-SG uses `cn=TestUser,cn=Users,dc=raritan,dc=com` to connect to the AD server.

- Select the Use Bind After Search checkbox to use the username and password you specified in the General tab to connect to the AD server. The entry is searched in the specified Base DN and is found if it meets the specified filtering criterion and if the attribute “samAccountName” is equal to the username entered in the applet. Then, a second connection is attempted using the username and password supplied in the applet. This second bind assures that the user provided the correct password.
 - Select the Follow Referrals checkbox to allow AD to follow referrals to complete a search if referral objects are encountered while CC-SG is searching the AD server.
 - Select the Enable Integrated Windows Authentication checkbox to allow user single-sign-on via IWA for users accessing CC-SG in Internet Explorer if already logged into the domain. See **Setup SSO with Integrated Windows Authentication** (on page 230).
7. Click Next to proceed. The Groups tab opens.

AD Group Settings

In the Groups tab, you can specify the exact location from which you want to import AD user groups.

Important: You must specify Group settings before you can import groups from AD.

1. Click the Groups tab.
2. Specify a Base DN (directory level/entry) under which the groups, containing the user to be authorized, will be searched.

Example	Description
<code>dc=raritan,dc=com</code>	The search query for the user in the group will be made over the whole directory structure.
<code>cn=Administrators,cn=Users,dc=raritan,dc=com</code>	The search query for the user in the group will be performed only in the Administrators sub-directory (entry).

3. Type a user's attributes in the Filter field so the search query for the user in the group will be restricted to only those entries that meet this criterion. For example, if you specify `cn=Groups,dc=raritan,dc=com` as the Base DN and `(objectclass=group)` as the Filter, then all entries that are in the Groups entry and are of type group will be returned.

4. Click Next to proceed. The Trusts tab opens. See **AD Trust Settings** (on page 220)

AD Trust Settings

In the Trusts tab, you can set up trust relationships between this new AD domain and any existing domains. A trust relationship allows resources to be accessible by authenticated users across domains. Trust relationships can be incoming, outgoing, bidirectional, or disabled. You should set up trust relationships if you want AD modules that represent different forests in AD to be able to access information from each other. The trusts you configure in CC-SG should match the trusts configured in AD.

1. Click the Trusts tab. If you have configured more than one AD domain, all other domains are listed in the Trusts tab.
2. For each domain in the Trust Partner column, click the Trust Direction drop-down menu, and then select the direction of trust you want to establish between the domains. Trust directions are updated in all AD modules when you make changes to one AD module.
 - Incoming: information will be trusted coming in from the domain.
 - Outgoing: information will be trusted going to the selected domain.
 - Bidirectional: information will be trusted in both directions from each domain.
 - Disabled: information will not be exchanged between the domains.
3. Click Apply to save your changes, and then click OK to save the AD module and exit the window.

The new AD module appears in the Security Manager screen under External AA Servers.

4. Select the Authentication checkbox if you want CC-SG to use the AD module for authentication of users. Select the Authorization checkbox if you want CC-SG to use the AD module for authorization of users.
5. Click Update to save your changes.
6. Click the General tab then click Test Connection to verify your settings. You should receive a confirmation of a successful connection. If you do not see a confirmation, review the settings carefully for errors and try again.

Editing an AD Module

Once you have configured AD modules, you can edit them at any time.

► **To edit an AD module:**

1. Choose Administration > Security.
2. Click the Authentication tab. All configured external Authorization and Authentication Servers appear in a table.
3. Select the AD module you want edit, and then click Edit.

4. Click each tab in the Edit Module window to view the configured settings. Make changes as needed. See **AD General Settings** (on page 217), **AD Advanced Settings** (on page 218), **AD Group Settings** (on page 219), and **AD Trust Settings** (on page 220).
5. If you change the connection information, click Test Connection to test the connection to the AD server using the given parameters. You should receive a confirmation of a successful connection. If you do not see a confirmation, review the settings carefully for errors and try again.
6. Click OK to save your changes.
7. You must synchronize the AD user groups you changed, or you can synchronize all AD modules to synchronize all groups and users in all modules. See **Synchronize All User Groups with AD** (on page 223) and **Synchronize All AD Modules** (on page 223).

Importing AD User Groups

You must specify Group settings in the AD module before you can import groups from the AD server. See **AD Group Settings** (on page 219).

After making a change to imported groups or users, you must synchronize the AD user groups you changed so that the imported groups are mapped to the appropriate groups on AD and synchronize all AD modules to synchronize all groups and users in all modules. See **Synchronize All User Groups with AD** (on page 223) and **Synchronize All AD Modules** (on page 223).

You can import nested groups from AD.

*Note: Make sure that you have configured the CC-SG DNS and Domain Suffix in Configuration Manager before attempting to import AD user groups. See **Advanced Administration** (on page 245).*

► To import AD user groups:

1. Choose Administration > Security.
2. Click the Authentication tab. All configured Authorization and Authentication Servers appear in a table.
3. Select the AD server whose AD user groups you want to import.
4. Click Import AD User Groups to retrieve a list of user group values stored on the AD server. If any of the user groups are not already on the CC-SG, you can import them here and assign them an access policy.
5. Select the groups you want to import to CC-SG.
 - Imported user group names can include up to 64 characters.
 - To search for user groups, type a search string in the Search for User Group field, and then click Go.
 - Click a column header to sort the list of user groups by the information in that column.
 - Click Select all to select all user groups for import.

- Click Deselect all to deselect all selected user groups.
6. In the Policies column, select a CC-SG access policy from the list to assign the policy to the selected group.
 7. Click Import to import the selected user groups.

Tip: To check that the group imported properly and to view the privileges of the group just imported, click the Users tab, then select the imported group to open the User Group Profile screen. Verify the information in the Privileges and Device/Node Policies tab. Click the Active Directory Associations tab to view information on the AD module associated with the user group.

Synchronizing AD with CC-SG

There are several methods for synchronizing the information on CC-SG with the information on your AD server.

- Daily synchronization of all modules: You can enable scheduled synchronization to allow CC-SG to synchronize all AD modules daily at the time you choose. See **Synchronize All AD Modules** (on page 223). This synchronization is necessary only when you are using AD for authorization.
- Scheduled synchronization using Task Manager: See **Schedule a Task** (on page 293).
- On Demand Synchronization: You can perform two types of synchronization whenever you choose:
 1. **All Active Directory Modules:** This option performs the same operation as daily synchronization of all modules, but you can use it to synchronize at any time on demand. This synchronization is necessary only when you are using AD for authorization. See **Synchronize All AD Modules** (on page 223).
 2. **All User Groups:** Use this option when you have changed a user group. Synchronizing all user groups allows you to map imported and local user groups to user groups identified as part of an AD module. Synchronizing user groups does not update access information in CC-SG. You must synchronize all AD modules, either by waiting for daily synchronization to run or by running the on-demand synchronization of all modules, to update access information. See **Synchronize All User Groups with AD** (on page 223).

Synchronize All User Groups with AD

You should synchronize all user groups if you have made a change to a user group, such as moving a user group from one AD module to another. You can also change the AD association of a user group manually, in the User Group Profile's Active Directory Associations tab.

If you have made changes to users or domain controllers, you should synchronize all AD modules. See **Synchronize All AD Modules** (on page 223).

When you synchronize AD user groups, CC-SG retrieves the groups for the selected AD module, compares their names with the user groups in CC-SG, and identifies the matches. CC-SG will present the matches and allow you to select which groups in AD you want to associate with CC-SG. This does not update user access information in CC-SG. Synchronizing AD User Groups only maps the group names from AD to CC-SG.

► **To synchronize all user groups with AD:**

1. Choose Administration > Security.
2. Click the Authentication tab. All configured Authorization and Authentication Servers appear in a table.
3. Select the AD server whose user groups you want to synchronize with the user groups in CC-SG.
4. In the On Demand Synchronization list, select All User Groups, then click Synchronize Now.
5. A list of all user groups found in the AD module whose names match user groups in CC-SG appears. Select the user groups you want to synchronize then click OK.

A confirmation message appears when all imported user groups in the selected module have been successfully synchronized.

Synchronize All AD Modules

You should synchronize all AD Modules whenever you change or delete a user in AD, change user permissions in AD, or make changes to a domain controller.

When you synchronize all AD modules, CC-SG retrieves the user groups for all configured AD modules, compares their names with the user groups that have been imported into CC-SG or associated with the AD module within CC-SG, and refreshes the CC-SG local cache. The CC-SG local cache contains all domain controllers for each domain, all user groups that are associated with modules in CC-SG, and the user information for the known AD users. If user groups have been deleted from the AD modules, CC-SG removes all associations to the deleted group from its local cache as well. This ensures that CC-SG has the most current AD user group information.

► **To synchronize all AD modules:**

1. Choose Administration > Security.

2. Click the Authentication tab. All configured Authorization and Authentication Servers appear in a table.
3. In the On Demand Synchronization list, select All Active Directory Modules, then click Synchronize Now. A confirmation message appears when all AD modules have been successfully synchronized.

Enable or Disable Daily Synchronization of All AD Modules

To set more frequent synchronization, schedule a task to synchronize all AD modules. See **Schedule a Task** (on page 293).

▶ **To enable daily synchronization of all AD modules:**

1. Choose Administration > Security.
2. Click the Authentication tab. All configured Authorization and Authentication Servers appear in a table.
3. Select the Daily synchronization of All Modules checkbox.
4. In the Synchronization Time field, click the up and down arrows to select the time at which you want CC-SG to perform the daily synchronization of all AD modules.
5. Click Update to save your changes.

▶ **To disable daily synchronization of all AD modules:**

1. Choose Administration > Security.
2. Click the Authentication tab. All configured Authorization and Authentication Servers appear in a table.
3. Deselect the Daily synchronization of All Modules checkbox.
4. Click Update to save your changes.

Change the Daily AD Synchronization Time

When daily synchronization is enabled, you can specify the time at which automatic synchronization occurs. By default, daily synchronization occurs at 23:30.

▶ **To change the daily AD synchronization time:**

1. Choose Administration > Security.
2. Select the Authentication tab. Ensure that the Daily synchronization of All Modules checkbox is selected.
3. In the Synchronization Time field at the bottom of the screen, click the up and down arrows to select the time at which you want CC-SG to perform the daily synchronization of all AD modules.
4. Click Update to save your changes.

Renaming and Moving AD Groups

▶ Renaming a group in AD:

When an AD group that has been imported into CC-SG changes its name in AD, CC-SG reports a warning in the Audit Trail when the name change is detected, either at synchronization or when an affected AD user logs in for the first time after.

```
"User group <group name> has been renamed to <group new name> in AD module <module name>."
```

▶ Deleting or moving a group in AD:

When an AD group that has been imported into CC-SG has been deleted or moved out of the group's search base, CC-SG reports a warning in the Audit Trail. The AD association for the group is removed.

```
"User group <group name> cannot be found in AD module <module name>."
```

▶ Moving a group in AD within the search base:

When an AD group moves within the search base, no warning is reported, and the group functions as usual.

About LDAP and CC-SG

Once CC-SG starts and a username and password are entered, a query is forwarded either through CC-SG or directly to the LDAP server. If the username and password match those in the LDAP directory, the user is authenticated. The user will then be authorized against the local user groups on the LDAP server.

Add an LDAP Module to CC-SG

▶ To add an LDAP module to CC-SG:

1. Choose Administration > Security.
2. Click the Authentication tab.
3. Click Add to open the Add Module window.
4. Click the Module Type drop-down menu and select LDAP from the list.
5. Type a name for the LDAP server in the Module name field.
6. Click Next to proceed. The General tab opens.

LDAP General Settings

1. Click the General tab.

2. Type the IP address or hostname of the LDAP server in the IP Address/Hostname field. See **Terminology/Acronyms** (on page 2) for hostname rules.
3. Type the port value in the Port field. The default port is 389.
4. Select "LDAP over SSL" if using a secure LDAP server.
5. Select Anonymous Bind if your LDAP server allows anonymous queries. You do not need to enter a user name and password with anonymous binding.
6. If you are not using anonymous binding, type a username in the User name field. Type a Distinguished Name (DN) to specify the credentials used to query the LDAP server. For DN, enter the common name, organizational unit, and domain.
For example, type
uid=admin,ou=Administrators,ou=TopologyManagement,o=Root. Separate the values with commas but do not use spaces before or after the comma. The values can include spaces, for example, Command Center.
7. Type the password in the Password and Confirm Password fields.
8. To specify where the search for users begins, enter a Distinguished Name in Base DN. For example,
ou=Administrators,ou=TopologyManagement,o=Root, searches all organizational units under the domain.
9. To narrow searching to only particular types of objects, type a value in the Filter field. For example, (objectclass=person) will narrow searching to only person objects.
10. Click Test Connection to test the LDAP server using the given parameters. You should receive a confirmation of a successful connection. If not, review the settings carefully for errors and try again.
11. Click Next to proceed to the Advanced tab to set advanced configuration options for the LDAP server.

LDAP Advanced Settings

1. Click the Advanced tab.
2. Select Base 64 if your LDAP server returns passwords with encryption. Select Plain Text if your LDAP server returns passwords as plain text.
3. Default Digest: select the default encryption of user passwords.
4. Type the user attribute and group membership attribute parameters in the User Attribute and Group Membership Attribute fields. These values should be obtained from your LDAP directory schema.
5. Type the bind pattern in the Bind Username Pattern field.
 - Check Use bind if you want CC-SG to send the username and password entered at login to the LDAP server for authentication. If Use Bind is not checked, CC-SG will search the LDAP server for the user name, and if found, will retrieve the LDAP object and locally compare the associated password with the one entered.

- On some LDAP servers, the password cannot be retrieved as part of the LDAP object. Select the Use bind after search checkbox to instruct CC-SG to bind the password to the LDAP object again and send it back to the server for authentication.
6. Click OK to save your changes. The new LDAP module appears in the Security Manager screen, under External AA Servers.
 7. Select the Authentication checkbox if you want CC-SG to use the LDAP module for authentication of users.
 8. Click Update to save your changes.

Sun One LDAP (iPlanet) Configuration Settings

If using a Sun One LDAP server for remote authentication, use this example:

Parameter Name	SUN One LDAP Parameters
IP Address/Hostname	<Directory Server IP Address>
User Name	CN=<Valid user id>
Password	<Password>
BaseDN	O=<Organization>
Filter	(objectclass=person)
Passwords (Advanced Screen)	Plain Text
Password Default Digest (Advanced)	SHA
Use Bind	unchecked
Use Bind After Search	Checked

OpenLDAP (eDirectory) Configuration Settings

If using an OpenLDAP server for remote authentication, use this example:

Parameter Name	Open LDAP Parameters
IP Address/Hostname	<Directory Server IP Address>
User Name	CN=<Valid user id>, O=<Organization>
Password	<Password>
User Base	O=accounts, O=<Organization>
User Filter	(objectclass=person)
Passwords (Advanced screen)	Base64
Password Default Digest (Advanced)	Crypt
Use Bind	Unchecked

Parameter Name	Open LDAP Parameters
Use Bind After Search	Checked

IBM LDAP Configuration Settings

If using an IBM LDAP server for remote authentication, use this example:

Parameter Name	IBM LDAP Parameters
IP Address/Hostname	<Directory Server IP Address>
User Name	CN=<Valid user id>
Password	<Password>
User Base	For example: cn=users,DC=raritan,DC=com,DC=us
User Filter	(objectclass=person)
Passwords (Advanced screen)	Base64
Password Default Digest (Advanced)	None
User Attribute	uid
Group Membership Attribute	Leave blank.
Bind Username Pattern	For example: cn={0},cn=users,DC=raritan,DC=com,DC=us
Use Bind	Unchecked
Use Bind After Search	Checked

About TACACS+ and CC-SG

If remote authorization is enabled for TACACS+, the TACACS+ user group should be created in CC-SG. You do not need to create the user in CC-SG. See **Users and User Groups** (on page 180).

Configuration on the TACACS+ server:

- Configure the service name as “ccsg” for TACACS+ user groups.
- The user group attribute to map to the CC-SG user group is “user-group”. Since CC-SG allows one user to belong to multiple user groups, you can use different attribute names starting with “user-group” to configure in TACACS+, such as user-group, user-group1, user-group2 and so on, to authorize with multiple CC-SG user groups.

Add a TACACS+ Module

▶ **To add a TACACS+ module:**

1. Choose Administration > Security.
2. Click the Authentication tab.
3. Click Add to open the Add Module window.
4. Choose Module Type > TACACS+.
5. Type a name for the TACACS+ server in the Module name field.
6. Click Next. The General tab opens. Go to **TACACS+ General Settings** (on page 229).

TACACS+ General Settings

1. Type the IP address or hostname of the TACACS+ server in the IP Address/Hostname Name field. See **Terminology/Acronyms** (on page 2) for hostname rules.
2. Type the port number on which the TACACS+ server is listening in the Port Number field. The default port number is 49.
3. Type the authentication port in the Authentication Port field.
4. Type the shared key in the Shared Key and Shared key confirm fields. Maximum length is 128 characters.
5. Click OK to save your changes. The new TACACS+ module appears in the Security Manager screen under External AA Servers.
6. Select the Authentication checkbox if you want CC-SG to use the TACACS+ module for authentication of users.
7. Select the Authorization checkbox to use the TACACS+ module for authorization. Authentication is selected automatically when Authorization is selected.
8. Click OK to save your changes.

About RADIUS and CC-SG

CC-SG users who are remotely authenticated by a RADIUS server must be created on the RADIUS server and on CC-SG. The user name on the RADIUS server and on CC-SG must be the same, although the passwords may be different. See **Users and User Groups** (on page 180).

Add a RADIUS Module

▶ **To add a RADIUS module:**

1. Choose Administration > Security.
2. Click the Authentication tab.

3. Click Add to open the Add Module window.
4. Click the Module Type drop-down menu and select RADIUS from the list.
5. Type a name for the RADIUS server in the Module name field.
6. Click Next.

RADIUS General Settings

1. Type the IP address or hostname of the RADIUS server in the IP Address/Hostname field. See **Terminology/Acronyms** (on page 2) for hostname rules.
2. Type the port number in the Port Number field. The default port number is 1812.
3. Type the shared key in the Shared Key and Shared key confirm fields. Maximum length is 128 characters.
4. Click OK to save your changes.
5. The new RADIUS module appears in the Security Manager screen under External AA Servers. Select the Authentication checkbox if you want CC-SG to use the RADIUS module for authentication of users.
6. Click OK to save your changes.

Two-Factor Authentication Using RADIUS

By using an RSA RADIUS Server that supports two-factor authentication in conjunction with an RSA Authentication Manager, CC-SG can make use of two-factor authentication schemes with dynamic tokens.

In such an environment, users logs into CC-SG by first typing their usernames in the Username field, then typing their fixed passwords, and then the dynamic token value in the Password field.

Configuration of CC-SG is identical to standard RADIUS remote authentication described above. See **Two-Factor Authentication (on page 415)**.

Setup SSO with Integrated Windows Authentication

Single-sign-on via Integrated Windows Authentication allows users to access CC-SG from some browsers without explicitly providing their credentials if they are already logged into the domain.

Requirements and Support for SSO with IWA

- SSO for the Access client is supported in Internet Explorer 11, Chrome, Firefox, Edge
- SSO for the Admin client is supported in Internet Explorer 11 only.
- Only Kerberos is supported for SSO.
- Windows clients that support Kerberos and IWA enabled.

Configuring SSO with IWA

For these instructions, the examples use the following assumptions.

Domain: raritan.com

Domain Login Name: example_user

Hostname: example

Trusted Domains: nj.raritan.com; eu.raritan.com

1. Configure Service Principal Name at AD server.
 - a. Create a user account "example_user" in Active Directory under the CC-SG's domain. In these instructions, "raritan.com" is domain and login name is "example_user".
 - b. Disable 'User has to change password at next logon'.
 - c. Assign the password.
 - d. Assume your CC-SG hostname is "example". Run the following command on the AD server to setup the service principal name for CC-SG.

```
Setspn -A HTTP/example example_user
```

```
Setspn -A HTTP/example.raritan.com example_user
```

2. Enable SSO in CC-SG
 - a. Login to CC-SG Admin Client.
 - b. Edit Example AD module: In the General tab, use Service Principal Name for Username. Domain name should be all capitals in the Username.

```
example_user@EXAMPLE.RARITAN.COM
```

- c. Change the password. Whenever password for example_user gets changed in AD, you must change the password here too.

Note: You don't need to make these changes for all other trusted domains. Keep login as it was in other domains.

- d. In the Advanced tab, select the "Enable Integrated Windows Authentication" checkbox under "Other". Enable this option for all other trusted domains that you would like to allow SSO.
 - e. Click OK to save.

Note: The users that login into trusted domains such as nj.raritan.com, eu.raritan.com and so on, should be able to access example.raritan.com through SSO too if you have enabled Integrated Windows Authentication for those modules.

3. Configure Internet Explorer Browser to use Windows authentication. Most settings are the defaults in IE.
 - a. Configure Local Intranet Domains

- Choose Tools > Internet Options > Security > Local intranet > Sites.
 - In the Local intranet popup, make sure that the "Include all sites that bypass the proxy server" and "Include all local (intranet) sites not listed in other zones" options are selected.
 - Or click Advanced. In the Local intranet (Advanced) dialog box, add all relative domain names that will be used by user to access CC-SG. For example, example.raritan.com and example), then click OK.
- b. Configure Intranet Authentication
- Choose Tools > Internet Options > Security > Local intranet > Custom Level.
 - In the Security Settings dialog, scroll to the User Authentication section. Select Automatic logon only in Intranet zone. Click OK.
 - Choose Tools > Internet Options > Advanced > Security > Check "Enable Integrated Windows Authentication".

Troubleshooting for SSO with IWA

- Make sure CC-SG has the correct time set that synchronizes with the domain's time setting. Default maximum tolerance is 5 minutes.
- Use hostname to access CC-SG, such as example or example.raritan.com to make sure it is intranet accessible.
- Make sure the client machine's OS can acquire a Kerberos ticket from Active Directory by enabling DES and RC4 on Window 10 OS client PC. The settings can be verified and enabled using the following steps. Note that the client PC must be Windows 10 Pro. It cannot be set on Windows 10 Home Edition. To verify:
 1. Open "Administrative Tools" and select "Local Security Policy".
 2. Under "Local Policies" expand "Security Options".
 3. Double click on "Network security: Configure encryption types allowed for Kerberos."
 4. Enable "DES_CBC_CRC", "DES_CBC_MD5", RC4_HMAC_MD5".

Reports

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Using Reports

The default filter for any report is the user policy. For example, the nodes or devices that the user has no access permission will not display in the reports.

Sort Report Data

- Click a column header to sort report data by the values in that column. The data will refresh in ascending order alphabetically, numerically, or chronologically.
- Click the column header again to sort in descending order.

Resize Report Column Width

The column widths you choose become the default report view the next time you log in and run reports.

1. Hold your mouse pointer on the column divider in the header row until the pointer becomes a double-headed arrow.
2. Click and drag the arrow to the left or right to adjust column width.

View Report Details

- Double-click a row to view details of the report.
- When a row is highlighted, press the Enter key to view details.

All details of the selected report display in a dialog that appears, not just the details you can view in the report screen. For example, the Access Report screen for nodes does not display the Interface Type and Message, but these are available in the Node Access Details dialog.

Navigate Multiple Page Reports

- Click the arrow icons at the bottom of the report to navigate through multiple page reports.

Print a Report

There are two printing options in CC-SG. You can print a report page as it appears in your screen (print a screenshot), or you can print a full report, including all details for each item.

Note: Printing options work for all CC-SG pages.

▶ **To print a screenshot of a report:**

1. Generate the report you want to print.
2. Choose Secure Gateway > Print Screen.

▶ **To print all report details:**

1. Generate the report you want to print. Make sure to select All in the Entries to Display field.
2. Choose Secure Gateway > Print.

Save a Report to a File

You can save a report to a .CSV file, which can be opened in Excel. When you save a report to a file, all the report's details are saved, not just the details you can view in the report screen. For example, the Access Report screen for nodes does not display the Type and Message columns, but these columns are available after saving and opening the Access Report in Excel.

1. Generate the report you want to save to a file.
2. Click Save to File.
3. Type a name for the file and choose the location where you want to save it
4. Click Save.

Purge a Report's Data From CC-SG

You can purge the data that appears in these reports:

- Audit Trail
- Access Report
- Error Log

Purging these reports deletes all data that satisfy the search criteria used. For example, if you search for all Audit Trail entries from March 26, 2022 through March 27, 2022, only those records will be purged. Entries earlier than March 26 or later than March 27 will remain in the Audit Trail.

Purged data is removed from CC-SG permanently.

► **To purge a report's data from CC-SG:**

1. Generate the report whose data you want to delete from CC-SG.
2. Click Purge.
3. Click Yes to confirm.

Hide or Show Report Filters

Some reports offer a set of filtering criteria at the top of the report screen. You can hide the filtering section, which will allow the report area to expand.

► **To hide or show the report filters:**

- Click the Filter toolbar at the top of the screen to hide the filtering section.
- Click the Filter toolbar again to show the filtering section.

IP Addresses in Reports

When running CC-SG in dual stack mode, which allows both IPV4 and IPV6 addresses, report column labels will change to accommodate both types of addresses.

Audit Trail Report

CC-SG maintains an Audit Trail of events in the system. The Audit Trail logs events such as adding, editing, or deleting devices or ports, and other modifications to the system.

Note: The Audit Trail records an entry when a user connects to a bookmarked port, but doesn't record the logout entry until the browser instance used to make the connection is closed.

► **To generate the Audit Trail report:**

1. Choose Reports > Audit Trail.

2. Set the date range for the report in the Start Date and Time and End Date and Time fields. Click each component of the default date (month, day, year, hour, minute) to select it then click the up and down arrows to reach the desired number.
3. You can limit the data that the report will contain by entering additional parameters in the Message Type, Message, Username, and User IP address fields. Wildcards are accepted in these fields except for the Message Type field.
 - To limit the report to a type of message, select a type in the Message Type field.
 - To limit the report by the message text associated with an activity, type the text in the Message field.
 - To limit the report to a particular user's activities, type the user's username in the Username field.
 - To limit the report to a particular IP address's activities, type the user's IP address in the User IP address field.
4. In the Entries to Display field, select the number of entries to display in the report screen.
5. Click Apply to generate the report.
 - To purge the records in the report, click Purge. See ***Purge a Report's Data From CC-SG*** (on page 235).

Error Log Report

CC-SG stores error messages in a series of Error Log files, which can be accessed and used to help troubleshoot problems. The Error Log includes a subset of the Audit Trail entries that are associated with an error condition.

► **To generate the Error Log report:**

1. Choose Reports > Error Log.
2. Set the date range for the report in the Start Date and Time and End Date and Time fields. Click each component of the default date (month, day, year, hour, minute) to select it then click the up and down arrows to reach the desired number.
3. You can limit the data that the report will contain by entering additional parameters in the Message, Username, and User IP address fields. Wildcards are accepted in these fields.
 - To limit the report by the message text associated with an activity, type the text in the Message field.
 - To limit the report to a particular user's activities, type the user's username in the Username field.
 - To limit the report to a particular IP address's activities, type the user's IP address in the User IP address field.

4. In the Entries to Display field, select the number of entries to display in the report screen.
5. Click Apply to generate the report.
 - Click Purge to delete the Error Log. See *Purge a Report's Data From CC-SG* (on page 235).

Access Report

Generate the Access report to view information about accessed devices and nodes, when they were accessed, and the user who accessed them.

Access report message	Definition
▪ Connection allowed	CC-SG Authorized connection (based on policy) and device is allowed to connect to the target
▪ Connection opened	Client machine connected to target
▪ Connection closed	User closed the connection that opened by same user
▪ Connection terminated	Connection is closed by other user/admin
▪ Connection expired	Session timeout occurred

► To generate the Access Report:

1. Choose Reports > Access Report.
2. Select Devices or Nodes.
3. Set the date and time range for the report in the Start Date and Time and End Date and Time fields. Click each component of the default date (month, day, year, hour, minute) to select it then click the up and down arrows to reach the desired number.
4. You can limit the data that the report will contain by entering additional parameters in the Device name, Node name, Username, and User IP address fields. Wildcards are accepted in these fields.
 - To limit the report by the message text associated with an activity, type the text in the Message field.
 - To limit the report to a particular device, type the device name in the Device Name(s) field.
 - To limit the report to a particular node, type the port name in the Node Name(s) field.
 - To limit the report to a particular user's activities, type the user's username in the Username(s) field.
 - To limit the report to a particular IP address's activities, type the user's IP address in the IP Address(es) field.
5. In the Entries to Display field, select the number of entries to display in the report screen.
6. Click Apply to generate the report.

- To purge the records in the report, click Purge. See **Purge a Report's Data From CC-SG** (on page 235).

Availability Report

The Availability report displays the status of all connections to devices or nodes. This report gives you full availability information for all devices or nodes in your CC-SG-managed network.

▶ **To generate the Availability Report:**

1. Choose Reports > Availability Report.
2. Select Nodes or Devices.
3. Click Apply.

Active Users Report

The Active Users report displays current users and user sessions. You can select active users from the report and disconnect them from CC-SG.

▶ **To generate the Active Users report:**

- Choose Reports > Users > Active Users.

▶ **To disconnect a user from an active session in CC-SG:**

1. In the Active Users report, select the user name you want to disconnect.
2. Click Logout.

Locked Out Users Report

The Locked Out Users report displays users who are currently locked out of CC-SG because they made too many unsuccessful login attempts. You can unlock users from the report. See **Lockout settings** (on page 283).

▶ **To generate the Locked Out Users report:**

- Choose Reports > Users > Locked Out Users.

▶ **To unlock a user who has been locked out of CC-SG:**

- Select the user you want to unlock then click Unlock User.

All Users Data Report

The User Data report displays certain data on all users in the CC-SG database.

▶ **To generate the All Users Data report:**

- Choose Reports > Users > All User Data.
 - The User Name field displays the user names of all CC-SG users.

- The Enabled field displays true if the user is able to log in to CC-SG or false if the user is not able to log in to CC-SG, based on whether the Login Enabled option is selected in the User Profile. See **Add a User** (on page 187).
- The Password Expiration field displays the number of days that the user can use the same password before being forced to change it. See **Add a User** (on page 187).
- The Groups field displays the user groups to which the user belongs.
- The Privileges field displays the CC-SG privileges assigned to the user. See **User Group Privileges** (on page 399).
- The Email field displays the email address for the user, as specified in the User Profile.
- The User Type field displays local or remote, depending on the user's access method.

User Group Data Report

The User Group Data report displays data on users and the groups with which they are associated.

▶ **To generate the User Group Data report:**

1. Choose Reports > Users > User Group Data.
2. Double-click the User Group to view the assigned policies.

Device Asset Report

The Device Asset report displays data on devices currently managed by CC-SG. Devices added by hostname display by hostname only in the report. Devices added by IP address display by IP address. When CC-SG is configured in dual stack mode, the report and details dialog include IPv4 and IPv6 addresses for devices that support IPv6.

▶ **To generate the Device Asset report:**

- Choose Reports > Devices > Device Asset Report. The report is generated for all devices.

▶ **To filter the report data by device type:**

- Select a device type then click Apply. The report is generated again with the selected filter applied.
 - Devices whose versions do not comply with the Compatibility Matrix will appear in red text in the Device Name field.

Device Group Data Report

The Device Group Data report displays device group information. Device hostname and IP address display in the details dialog only.

▶ **To generate the Device Group Data report:**

1. Choose Reports > Devices > Device Group Data.
2. Double-click a row to display the list of devices in the group.

Query Port Report

The Query Port Report displays all ports according to port status.

▶ **To generate the Query Port report:**

1. Choose Reports > Devices > Query Port.
2. In the Port Status/Availability section, select the port states you want to include in the report. Selecting more than one checkbox will include ports with all selected states. You must select at least one Availability option when a Status option is specified.

State Type	Port State	Definition
	All	All ports.
Status:		
	Up	
	Down	Connection to port is not possible since the device is down and unavailable.
Availability:		
	Idle	Port has been configured and connection to port is possible.
	Connected	
	Busy	A user is connected to this port.
	Power on	
	Power off	
Unconfigured:		
	New	Port has a target server attached, but the port has not been configured.
	Unused	Port does not have a target server connected, and the port has not been

State Type	Port State	Definition
		configured.

1. Select Paused Ports or Locked Ports to include ports that are paused or locked. Paused ports occur when a CC-SG management of a device is paused. Locked ports occur when a device is being upgraded. **Optional.**
2. Select the number of rows of data to display in the report screen in the Entries to Display field.

Note: This preference doesn't apply when generating the report as a task.

3. Click Apply to generate the report.

The screenshot shows the 'Query Port' dialog box with the following filter settings:

- Port Status/Availability:
 - All
 - Paused Ports
 - Locked Ports
- Status:
 - Up
 - Down
- Availability:
 - Idle
 - Connected
 - Busy
 - Power On
 - Power Off
- Unconfigured:
 - New
 - Unused
- Entries To Display: 20

Buttons: Apply, Clear

Device N...	Port Name	Associated Node	Co...	Port Type	P...	Availability	CIM Serial Number
HP-C3000-...	Blade_Cha...		No	KVM Port	...		
HP-C3000-...	Blade_Cha...		No	KVM Port	...		
HP-C3000-...	Blade_Cha...		No	KVM Port	...		
HP-C3000-...	Blade_Cha...		No	KVM Port	...		
HP-C3000-...	Blade_Cha...		No	KVM Port	...		
KX3-59-231	Dominion_...	Dominion_KX3...	Yes	KVM Port	...	Idle	
KX3-59-231	Dominion_...	Dominion_KX3...	Yes	KVM Port	...	Idle	
KX3-59-231	Fedora_ch...	Fedora_change...	Yes	KVM Port	Up	Idle	HUX5600949
KX3-59-231	KX3-59-23...		Yes	Power Supp...	Up		
KX3-59-231	KX3device ...	KX3device target	Yes	KVM Port	Up	Idle	HUX3402376
KX3-59-231	scardwin10...	scardwin10_Se...	Yes	KVM Port	...	Idle	

61 - 80 of 127 Entries

Buttons: Save to File, Close

Node Asset Report

The Node Asset report displays node name, interface name and type, device name and type, and node group for all nodes under CC-SG management. You can filter the report to include only data about nodes that correspond to a specified node group, interface type, device type, or device.

► **To generate the Node Asset report:**

1. Choose Reports > Nodes > Node Asset Report.
2. Select the filtering criteria you want to apply to the report, All Nodes, Node Group, Device Group, or Devices.

- If you select Node Group, Interface Type, or Device Group, select a parameter from corresponding menu.
 - If you select Devices, select the devices in the Available list whose node assets you want to include in the report then click Add to move them to the Selected list.
3. Click Apply to generate the report. The Node Asset Report generates.

▶ **To get bookmark URLs for nodes:**

1. Generate the Node Asset report then double-click a node to view the details dialog.
2. Click Save to File. All report information is saved to a .csv file.
3. The URL column contains direct links to each node. URLs are constructed with the URL used by the client browser to reach the CC-SG. For example, if https://<hostname or IPv4 or [IPv6]>/admin is used by the clients browser, and the hostname is resolved by the client to <IPv4 or IPv6> then <IPv4 or IPv6> will be used to create the bookmark. This will allow the CC-SG to continue to work behind a NAT.
4. You can use this information to create a web page with links to each node, instead of bookmarking each node individually. See [Bookmarking an Interface](#).

Active Nodes Report

The Active Nodes report includes the name and type of each active interface, the connection mode, the associated device, a timestamp, the current user, and the user IP address for each node with an active connection. You can view the active nodes list and disconnect nodes from this report.

▶ **To generate the Active Nodes report:**

- Choose Reports > Nodes > Active Nodes. The Active Nodes report generates if there are currently active nodes.

▶ **To disconnect a node from an active session:**

- In the Active Nodes report, select the node you want to disconnect then click Disconnect.

Node Creation Report

The Node Creation report lists all node creation attempts, both successful and unsuccessful, within a specified time frame. You can specify whether you want to see all node creation attempts or only those that are potential duplicate nodes.

▶ **To generate the Node Creation report:**

1. Choose Reports > Nodes > Node Creation.

2. Select All Nodes or Potential Duplicates. Potential Duplicates limits the report to only those nodes that have been flagged as potential duplicates.
3. If you selected All Nodes, set the date range for the report in the Start Date and Time and End Date and Time fields. Click each component of the default date (month, day, year, hour, minute) to select it then click the up and down arrows to reach the desired number.
4. Click Apply. The Node Creation report is generated.
 - The Result field displays Success, Failed, or Potential Duplicate to describe the outcome of the node creation attempt

Node Group Data Report

The Node Group Data report displays the list of nodes that belong to each group, the user groups that have access to each node group, and, if applicable, the rules that define the node group. The list of nodes is in the report details, which you can view by double-clicking a row in the report page, or save to a CSV file. See **Save a Report to a File** (on page 234).

The Node Asset report displays the list of groups each node is a member of. See **Node Asset Report** (on page 241).

► **To generate the Node Group Data report:**

1. Choose Reports > Users >Node Group Data.
2. Double-click a row to display the list of nodes in the group.

AD User Group Report

The AD Users Group report displays all users in groups that were imported into CC-SG from AD servers that have been configured for both authentication and authorization. The report does not include users who were added to the AD user groups locally via CC-SG.

► **To generate the AD Users Group report:**

1. Choose Reports > Active Directory > AD Users Group Report.
2. The AD Server list includes all AD servers that have been configured on CC-SG for both authentication and authorization. Select the checkbox that corresponds to each AD server you want to include in the report.
3. In the AD User Groups section, the Available list includes all user groups that were imported into CC-SG from the AD servers you checked in the AD Server list. Select the user groups you want to include in the report then click Add to move the user groups to the Selected list.
4. Click Apply to generate the report.

Scheduled Reports

Scheduled Reports displays reports that were scheduled in the Task Manager. You can find the Upgrade Device Firmware reports and Restart Device reports in the Scheduled Reports screen. Scheduled reports can be viewed in HTML format only. See **Task Manager** (on page 291).

▶ **To access scheduled reports:**

1. Choose Reports > Scheduled Reports.
2. Select a Report Type.
3. Select a Report Owner.
4. Enter a Report Name to filter on the name. You can enter the full name or part of the name. Matches are not case sensitive. Wildcards are not allowed.
5. Set the date range for the report in the Start Date and Time and End Date and Time fields. Click each component of the default date (month, day, year, hour, minute) to select it then click the up and down arrows to reach the desired number.
6. Click Apply. The list of scheduled reports is generated.

▶ **To view a scheduled report:**

1. Select the report in the list.
2. Click View Report.

Note: Audit Trail, Error Log and Access Report manual report will show all the entries in the report while the report generated from a scheduled task will show a maximum of 10,000 rows.

▶ **To delete a scheduled report:**

1. Select the reports you want to delete. Use Ctrl+click and Shift+click to select multiple reports.
2. Click Delete Reports.
3. Click Yes to confirm.

Upgrade Device Firmware Report

The Upgrade Device Firmware report is located in the Scheduled Reports list. This report is generated when an Upgrade Device Firmware task is running. View the report to get real-time status information about the task. Once the task has completed, the report information is static.

See **Scheduled Reports** (on page 244) for details on viewing the report.

Advanced Administration

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Configuring a Message of the Day

The Message of the Day allows you to provide a message for all users to view upon login. You must have the CC Setup and Control privilege to configure the Message of the Day.

► **To configure the Message of the Day:**

1. Choose Administration > Message of the Day Setup.
2. Select the Display Message of the Day for All Users checkbox if you want the message to be displayed to all users after they log in. **Optional.**
3. Select the Message of the Day Content checkbox if you want to type a message in CC-SG, or select the Message of the Day File checkbox if you want to load the message from an existing file.
 - If you select Message of the Day Content:
 - a. Type a message in the dialog box provided.
 - b. Click the Font Name drop-down menu and select a font for the message text.
 - c. Click the Font Size drop-down menu and select a font size for the message text.

- If you select Message of the Day File:
 - a. Click Browse to browse for the message file.
 - b. Select the file in the dialog window that opens then click Open.
 - c. Click Preview to review the contents of the file.
- 4. Click OK to save your changes.

Configuring Applications for Accessing Nodes

CC-SG provides various applications that you can use to access nodes. You can use the Application Manager to view applications, add new applications, delete applications, and set the default application for each device type.

► **To view applications available in CC-SG:**

1. Choose Administration > Applications.
2. Click the Application name drop-down menu to view the list of applications available in CC-SG.

Checking and Upgrading Application Versions

Check and upgrade applications used for accessing nodes.

► **To check an application version:**

1. Choose Administration > Applications.
2. Select an Application name from the list. Note the number in the Version field. Some applications do not automatically show a version number.

► **To upgrade an application:**

If the application version is not current, you must upgrade the application. You can download the application upgrade file from the Raritan website. For a complete list of supported application versions, see the Compatibility Matrix on the Raritan Support website.

The best practice is to enter Maintenance Mode before upgrading applications. See **Entering Maintenance Mode** (on page 316).

1. Save the application file to your client PC.
2. Click the Application name drop-down arrow and select the application that must be upgraded from the list. If you do not see the application, you must add it first. See **Add an Application** (on page 247).
3. Click Browse, locate and select the application upgrade file from the dialog that appears then click Open.
4. The application name appears in the New Application File field in the Application Manager screen.
5. Click Upload. A progress window indicates that the new application is being uploaded. When complete, a new window will indicate that the application has been added to the CC-SG database and is available to use.

6. If the Version field does not automatically update, type the new version number in the Version field. The Version field will automatically update for some applications.
7. Click Update.

*Note: Users who were logged in during the upgrade must log out of CC-SG then log in again to ensure that the new version of the application is launched. Also, see **Older Version of Application Opens After Upgrading** (on page 247).*

Older Version of Application Opens After Upgrading

If you attempt a connection and the newest versions of applications are supposed to be working, but the incorrect, older versions are opening, clear the Java cache. This can happen if the cache hasn't been cleared since a CC-SG upgrade.

See **Clear the Java Cache** (on page 326)

Add an Application

When you add an application to CC-SG, you must specify which device types function with the application. If a device provides both KVM and serial access, the device is listed twice, once for each method.

▶ To add an application:

1. Choose Administration > Applications.
 2. Click Add. The Add Applications dialog window opens.
 3. Type a name for the application in the Application name field.
 4. Select the Raritan devices with which the application will function from the Available list then click Add to add them to the Selected list.
 - To remove devices from use with the application, select the device in the Selected list then click Remove.
 5. Click OK. An Open dialog appears.
 6. Navigate to and select the application file (usually a .jar or .cab file), and then click Open.
 7. The selected application loads onto CC-SG.
-

Delete an Application

▶ To delete an application:

1. Choose Administration > Applications.
2. Select an application from the Application Name drop-down menu.
3. Click Delete. A confirmation dialog appears.
4. Click Yes to delete the application.

Prerequisites for Using AKC

- Ensure that the IP address of the device being accessed is included in their browser's Trusted Sites Zone and that Protected Mode is not on when accessing the device.
- Administrators must upload a valid certificate to the device or generate a self-signed certificate on the device. The certificate must have a valid host designation.
- Each user must add the CA certificate (or a copy of self-signed certificate) to the Trusted Root CA store in their browser.

Note: The AKC launching will always need a trusted certificate on the CC-SG.

Configuring Default Applications

You can specify which application you want CC-SG to use by default for each device type.

View the Default Application Assignments

▶ **To view the default application assignments:**

1. Choose Administration > Applications.
2. Click the Default Applications tab to view and edit the current default applications for various Interfaces and Port Types. Applications listed here will become the default choice when configuring a node to allow access through a selected interface.

Set the Default Application for an Interface or Port Type

▶ **To set the default application for an interface or port type:**

1. Choose Administration > Applications.
2. Click the Default Applications tab.
3. Select the Interface or Port Type whose default application you want to set.
4. Double-click the Application arrow listed on that row. The value becomes a drop-down menu. Grayed-out values cannot be changed.
5. Select the default application to use when connecting to the selected Interface or Port Type.
 - Auto-Detect: CC-SG will use AKC as the default application. In Internet Explorer, this works automatically. To use AKC in Chrome make sure the ClickOnce plugin is installed. Without ClickOnce, HKC is the default auto-detect application for Chrome and Firefox from the Access Client. To enable ClickOnce in Edge: Type `edge://flags` in the browser, search for ClickOnce support, set to enabled and restart the browser.

- To download AKC manually: Go to the URL, for example `https://(KX-IP-Hostname)/akc`. You must also load a ClickOnce extension from the Chrome Web Store.
6. Click OK to save your changes. These default settings only apply to new ports. To apply these settings to ports on existing devices, click Apply Selections to Existing Devices, then select the devices you want to change and click OK.

Launching HTML KVM Client for KX3 3.4 and higher

How do you determine which client will be launched for KX3 3.4 (and higher) targets when Auto-Detect is set in Application Manager?

If the user's PC supports AKC, then AKC is launched to connect to the target.

VKC is launched if:

- User PC or browser does not support AKC
- Java is installed
- Java is enabled in the browser

If AKC or Java is not supported by the client, then HKC is launched to connect to the target for KX3 3.3 and above. HKC is available in Direct and Proxy Mode.

► **To disable Java in browsers and automatically launch HKC:**

- On Java Control Panel, in the Security Tab, deselect the Enable Java in the browser checkbox.
- Additional steps for Mac OS
For Mac/Safari, block the plugin using Preferences
- Chrome has popups blocked by default. Enable popups to launch HKC.

Managing Device Firmware

CC-SG stores firmware for Raritan devices that you can use to upgrade the devices under its control. The firmware manager is used to upload and delete device firmware files to and from CC-SG. Once a firmware file has been uploaded, you can access it to perform a device upgrade. See **Upgrading a Device** (on page 88).

Note: Uploaded firmware files are deleted when you upgrade CC-SG.

If you want to upgrade CC-SG's firmware, see **Upgrading CC-SG** (on page 323).

Upload Firmware

You can upload different versions of device firmware to CC-SG. When new firmware versions become available, they are posted on the Raritan website.

If you want to upgrade CC-SG's firmware, see **Upgrading CC-SG** (on page 323).

► **To upload firmware to CC-SG:**

1. Choose Administration > Firmware.
2. Click Add to add a new firmware file. A search window opens.
3. Navigate to and select the firmware file you want to upload to CC-SG, and then click Open. When the upload completes, the new firmware appears in the Firmware Name field.

Delete Firmware

You can delete device firmware stored on CC-SG. This firmware is for managed Raritan devices, not for CC-SG itself. If you want to upgrade CC-SG's firmware, see **Upgrading CC-SG** (on page 323).

► **To delete firmware:**

1. Choose Administration > Firmware.
2. Click the Firmware Name drop-down arrow and select the firmware you want to delete.
3. Click Delete. A confirmation message appears.
4. Click Yes to delete the firmware.

Configuring the CC-SG Network

You can configure the network settings for your CC-SG-managed network in the Configuration Manager.

Important: To change the IP address of a CC-SG unit which is already a Neighborhood member, you must remove it from the Neighborhood configuration first. Otherwise, you are unable to delete the CC-SG from the Neighborhood.

About Network Setup

CC-SG offers two modes for network setup:

- IP Failover mode: See **What is IP Failover mode?** (on page 252)
- IP Isolation mode: See **What is IP Isolation mode?** (on page 254)

Important: IP Failover mode is highly recommended for new deployments.

CC-SG also allows either Static or DHCP-assigned IP addresses. See **Recommended DHCP Configurations for CC-SG** (on page 256) for best practices on using DHCP with your CC-SG.

You can operate CC-SG with an IPV4 address, or in dual-stack mode, which accommodates both IPV4 and IPV6 addresses.

Note: CC-SG default network setting is DHCP.

About CC-SG LAN Ports

CC-SG provides two main LAN ports: Primary LAN and Secondary LAN. See the tables to check the locations of the Primary and Secondary LAN ports on your CC-SG model.

▶ **V1 LAN Ports:**

Model	Primary LAN Name	Primary LAN Location	Secondary LAN Name	Secondary LAN Location
V1-0 or V1-1	LAN1	Left LAN port	LAN2	Right LAN port

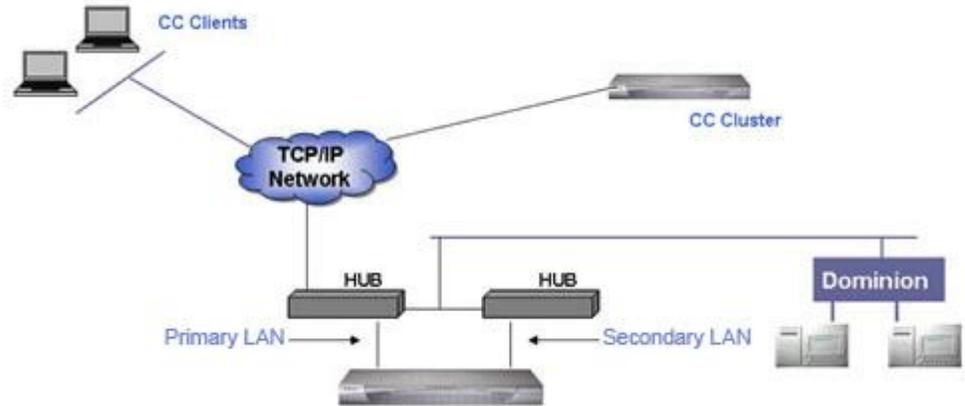
▶ **E1 LAN Ports:**

Model	Primary LAN Name	Primary LAN Location	Secondary LAN Name	Secondary LAN Location
E1-0	Not labeled	Top LAN port in set of 2 ports in center of unit back panel	Not labeled	Bottom LAN port in set of 2 ports in center of unit back panel
E1-1	LAN1	Left LAN port	LAN2	Right LAN port

What is IP Failover mode?

IP Failover mode enables you to use two CC-SG LAN ports to implement network failover and redundancy. Only one LAN port is active at a time.

See **About CC-SG LAN Ports** (on page 251) for the locations of the Primary LAN and Secondary LAN ports on each CC-SG model.



If the Primary LAN is connected and receiving a Link Integrity signal, CC-SG uses this LAN port for all communications. If the Primary LAN loses Link Integrity, and Secondary LAN is connected, CC-SG will failover its assigned IP address to the Secondary LAN. The Secondary LAN will be used until the Primary LAN returns to service. When the Primary LAN is back in service, CC-SG automatically reverts to using the Primary LAN.

As long as one LAN connection is viable, a client should not notice any disruption in service during a failure.

Setup for IP Failover Mode

► Setup for IP Failover mode:

When implementing IP Failover mode for your CC-SG network:

- Both CC-SG LAN ports must be attached to the same LAN sub-network.
- You can attach each LAN port to a different switch or hub on the same subnetwork for reliability. **Optional.**

Configure IP Failover Mode with IPV4 or Dual Stack Mode with IPV6

► To configure IP Failover mode in CC-SG:

1. Choose Administration > Configuration.
2. Click the Network Setup tab.
3. Select IP Failover mode.

4. Type the CC-SG hostname in the Host name field. See **Terminology/Acronyms** (on page 2) for hostname rules. Include a top level domain, for example ".com". The top level domain must be 2 to 6 characters.
5. To use IPV4 only, complete only the IPV4 section, and make sure the IPV6 checkbox is not selected. To use dual stack mode, select the IPV6 checkbox, and complete both IPV4 and IPV6 sections. When you change between IPV4 and dual stack mode, CC-SG must reboot. You will be prompted to reboot now or later, and must enter password, broadcast message, and timing for reboot. Verify that you do not have any services depending on the mode you disable.
6. In the IPV4 address section, select DHCP or Static in the Configuration drop-down list.

DHCP:

 - If you choose DHCP, the Primary DNS, Secondary DNS, Domain Suffix, IP address, Subnet mask, and Default gateway fields will be automatically populated (if your DHCP server is configured to provide this information), once you save this network setup and restart CC-SG.
 - With the information the DHCP server provides, CC-SG registers itself dynamically with the DNS server if it accepts dynamic updates.
 - See **Recommended DHCP Configurations for CC-SG** (on page 256).

Static:

 - If you choose Static, type Primary DNS, Secondary DNS, Domain Suffix, IP address, Subnet mask, and Default gateway in the appropriate fields.
7. To run in dual stack mode, complete the IPV6 configuration section. Skip this step to use IPV4 only.
 - a. Select the Enable IPV6 checkbox.
 - b. Select Router Discovery or Static in the Configuration drop-down list.
8. If you choose Router Discovery, some fields are automatically populated: Global/Unique Local IPV6 Address, Prefix Length, Default Gateway IPV6 Address, and Link-Local IPV6 Address and Zone ID.
 - a. If you choose Static, enter the Global/Unique Local IPV6 Address, Prefix Length, and Default Gateway IPV6 Address.
9. Click the Adapter Speed drop-down arrow and select a line speed from the list. Make sure your selection agrees with your switch's adapter port setting. If your switch uses 1 Gig line speed, select Auto.
10. If you selected Auto in the Adapter Speed field, the Adapter Mode field is disabled, with Full Duplex selected automatically. If you selected an Adapter Speed other than Auto, select a duplex mode in the Adapter Mode drop-down list.
11. Click Update Configuration to save your changes. If you enabled or disabled IPv6, CC-SG must reboot. All other changes require a restart. Your changes will not take effect until CC-SG reboots or restarts.

- Click Reboot Now/Restart Now if you want to automatically restart/reboot CC-SG now.
- Click Reboot Later/Restart Later if you would like to manually restart/reboot CC-SG later. See **Restarting CC-SG** (on page 322). CC-SG will do a reboot if needed.
 - Click Cancel to return to the Network Setup panel without saving your changes. You must click Update Configuration, then choose a restart option to save your changes.

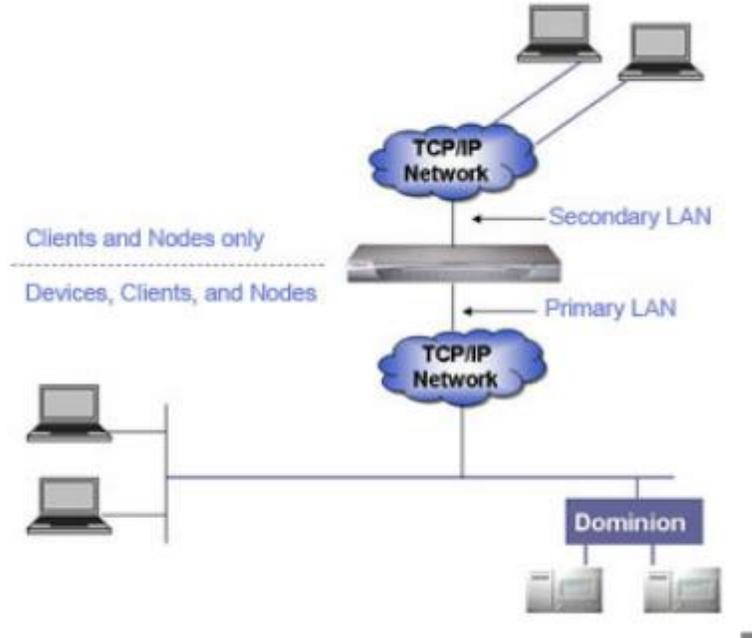
Note: If CC-SG is configured with DHCP, you can access CC-SG via the hostname after a successful registration with the DNS server.

What is IP Isolation mode?

IP Isolation mode allows you to isolate clients from devices by placing them on separate sub-networks and forcing clients to access the devices through CC-SG. In this mode, CC-SG manages traffic between the two separate IP domains. IP Isolation mode does not offer failover. If either LAN connection fails, users will not have access.

See **About CC-SG LAN Ports** (on page 251) for the locations of the Primary LAN and Secondary LAN ports on each CC-SG model.

Note: Clustering cannot be configured when using IP Isolation mode.



Setup for IP Isolation Mode

▶ Setup for IP Isolation mode:

When implementing IP Isolation mode for your CC-SG network:

- Each CC-SG LAN port must be connected to a different sub-network.
- Raritan devices must be connected to the Primary LAN only.
- Clients to be isolated are connected to the Secondary LAN. Clients that don't need to be isolated may be connected to the Primary LAN. See **Configure a Combination of Direct Mode and Proxy Mode** (on page 260).

Note: Isolated clients on the Secondary LAN will use Proxy mode. The clients on the Primary LAN may use Direct mode. Set the connection mode to "Both" to configure this combination.

- Specify at most one Default Gateway in the Network Setup panel in CC-SG. Use Diagnostic Console to add more static routes if needed. See **Edit Static Routes** (on page 342).

Configure IP Isolation Mode with IPV4 or Dual Stack Mode with IPV6

▶ To configure IP Isolation mode in CC-SG:

1. Choose Administration > Configuration.
2. Click the Network Setup tab.
3. Type the CC-SG hostname in the Host name field. See **Terminology/Acronyms** (on page 2) for hostname rules. When you click Update Configuration to save the configuration, the Host name field will be updated to reflect the Fully-Qualified Domain Name (FQDN) if a DNS and domain suffix have been configured.
4. To use IPV4 only, complete only the IPV4 section, and make sure the IPV6 checkbox is not selected. To use dual stack mode, select the IPV6 checkbox, and complete both IPV4 and IPV6 sections. When you change between IPV4 and dual stack mode, CC-SG must reboot. You will be prompted to reboot now or later, and must enter password, broadcast message, and timing for reboot. Verify that you do not have any services depending on the mode you disable.
5. Select IP Isolation mode.
6. Configure the Primary LAN in the left column, and the Secondary LAN in the right column.
7. In the IPV4 configuration section, select DHCP or Static in the Configuration drop-down list.

DHCP:

- If you choose DHCP, the Primary DNS, Secondary DNS, Domain Suffix, IP address, Subnet mask, and Default gateway fields will be automatically populated (if your DHCP server is configured to provide this information), once you save this network setup and restart CC-SG.
- With the information the DHCP server provides, CC-SG registers itself dynamically with the DNS server if it accepts dynamic updates.
- See **Recommended DHCP Configurations for CC-SG** (on page 256).

Static:

- If you choose Static, type Primary DNS, Secondary DNS, Domain Suffix, IP address, and Subnet mask in the appropriate fields.
 - Specify only one Default gateway, not both.
8. To run in dual stack mode, complete the IPV6 configuration section. Skip this step to use IPV4 only.
 - a. Select the Enable IPV6 checkbox.
 - b. Select Router Discovery or Static in the Configuration drop-down list.
 9. If you choose Router Discovery, some fields are automatically populated: Global/Unique Local IPV6 Address, Prefix Length, Default Gateway IPV6 Address, and Link-Local IPV6 Address and Zone ID.
 10. If you choose Static, enter the Global/Unique Local IPV6 Address, Prefix Length, and Default Gateway IPV6 Address.
 11. Click the Adapter Speed drop-down arrow and select a line speed from the list. Make sure your selection agrees with your switch's adapter port setting. If your switch uses 1 Gig line speed, select Auto.
 12. If you selected Auto in the Adapter Speed field, the Adapter Mode field is disabled, with Full Duplex selected automatically. If you specified an Adapter Speed other than Auto, click the Adapter Mode drop-down arrow and select a duplex mode from the list.
 13. Click Update Configuration to save your changes. CC-SG reboots.

Recommended DHCP Configurations for CC-SG

Review the following recommended DHCP configurations. Make sure that your DHCP server is set up properly before you configure CC-SG to use DHCP.

- Configure the DHCP to statically allocate CC-SG's IP address.
- Configure the DHCP and DNS servers to automatically register the CC-SG with the DNS when the DHCP allocates an IP address to CC-SG.
- Configure the DNS to accept un-authenticated Dynamic Domain Name System (DDNS) registration requests from CC-SG.

Support for IPv6

When entering IPv6 addresses in CC-SG, you can use compressed format and zero suppression representation. CC-SG will expand the IPv6 addresses for storage and display.

The following communications are not supported over IPV6.

- DHCPv6
- Clusters
- Network Neighborhoods
- Mobile clients
- SSH access to CC-SG CLI
- System-level access control lists

Register CC-SG Hostname to IP Address in DNS

CC-SG automatically adds an entry into DNS to resolve a CC-SG's hostname to a static IP as configured, if you configure the CC-SG while in the network, and DNS is available.

If you configure CC-SG while out of the network, or if your DNS server is not allowed to update, you should manually add an entry in the DNS with this information.

Configuring Logging Activity

You can configure CC-SG to report to external logging servers and specify what level of message is reported in each of the logs.

► **To configure CC-SG logging activity:**

1. Choose Administration > Configuration.
2. Click the Logs tab.
3. To assign an external log server for CC-SG to use, type the IP address in the Server Address field under Primary Server.
4. Click the Level to Forward drop-down arrow and select an event severity level. All events of this level or higher will be sent to the logging server. See **Log Severity Level Examples** (on page 258).
5. To configure a second external log server, repeat steps 3 and 4 for the fields under Secondary Server.
6. Under CommandCenter Log, click the "Level to Forward" drop-down menu and select a severity level option. A severe level, such as "ERROR", will contain less log levels and a lower severity level, such as "INFO", will contain more log levels. All events will be sent to the logging server. See **Log Severity Level Examples** (on page 258).
7. Click Update Configuration to save your changes.

Purge CC-SG's Internal Log

You can purge the CC-SG's internal log. This operation does not delete any events recorded on your external log servers.

*Note: The Audit Trail and Error Log reports are based on CC-SG's internal log. If you purge CC-SG's internal log, these two reports will also be purged. You can also purge these reports individually. See **Purge a Report's Data From CC-SG** (on page 235).*

► **To purge CC-SG's internal log:**

1. Choose Administration > Configuration.
2. Click the Logs tab.
3. Click Purge.
4. Click Yes.

Log Severity Level Examples

The severity level you select affects what types of events are forwarded to your syslog.

- OFF

When set to off, no events are forwarded to syslog.

- ERROR

Login attempt with incorrect username and password.

- INFO

Adding or deleting users, devices, and so on.

Configuring the CC-SG Server Time and Date

CC-SG's time and date must be accurately maintained to provide credibility for its device-management capabilities.

Important: The Time/Date configuration is used when scheduling tasks in Task Manager. See *Task Manager* (on page 291). The time set on your client PC may be different than the time set on CC-SG.

Only the CC Super-User and users with similar privileges can configure Time and Date.

Changing the time zone is disabled in a cluster configuration.

► **To configure the CC-SG server time and date:**

1. Choose Administration > Configuration.
2. Click the Time/Date tab.
 - a. To set the date and time manually:

- Date - click the drop-down arrow to select the Month, use the up and down arrows to select the Year, and then click the Day in the calendar area.
- Time - use the up and down arrows to set the Hour, Minutes, and Seconds, and then click the Time zone drop-down arrow to select the time zone in which you are operating CC-SG.
- a. To set the date and time via NTP: Select the Enable Network Time Protocol checkbox at the bottom of the window, and then type the IP addresses for the Primary NTP server and the Secondary NTP server in the corresponding fields.

Note: Network Time Protocol (NTP) is the protocol used to synchronize the attached computer's date and time data with a referenced NTP server. When CC-SG is configured with NTP, it can synchronize its clock time with the publicly available NTP reference server to maintain correct and consistent time.

3. Click Update Configuration to apply the time and date changes to CC-SG.
4. Click Refresh to reload the new server time in the Current Time field.
5. Choose System Maintenance > Restart to restart CC-SG.

Connection Modes: Direct and Proxy

About Connection Modes

CC-SG offers three connection modes for in-band and out-of-band connections: Direct, Proxy, and Both.

- Direct mode allows you to connect to a node or port directly, without passing data through CC-SG. Direct mode generally provides faster connections.
- Proxy mode allows you to connect to a node or port by passing all data through CC-SG. Proxy mode increases the load on your CC-SG server, which may cause slower connections. However, Proxy mode is recommended if you are more concerned about the security of the connection. You need to keep the CC-SG TCP ports 80, 443, 2400 and 2401, and ports assigned for Microsoft RDP, open in your firewall.
- Both mode allows you to configure CC-SG to use a combination of Direct mode and Proxy mode. In Both mode, Proxy mode is the default, but you can configure CC-SG to use Direct mode when connections are made using client IP addresses in specified ranges.

Note: Some interfaces only work in Direct mode even though you configure CC-SG to use Proxy mode. These interfaces include ILO, RSA, DRAC, Web Browser and VMware Viewer. Java RDP interfaces can be used in proxy mode. See *About Interfaces* (on page 105).

Configure Direct Mode for All Client Connections

► **To configure direct mode for all client connections:**

1. Choose Administration > Configuration.
2. Click the Connection Mode tab.
3. Select Direct mode.
4. Click Update Configuration.

Configure Proxy Mode for All Client Connections

► **To configure proxy mode for all client connections:**

1. Choose Administration > Configuration.
2. Click the Connection Mode tab.
3. Select Proxy mode.
4. If you use Microsoft RDP connections, enter a Starting Port number and Ending Port number to define the range that Microsoft RDP clients can use. See ***Proxy Mode for Microsoft RDP Clients*** (on page 260).
5. Click Update Configuration.

Proxy Mode for Microsoft RDP Clients

When in proxy mode, you must set a range of allowable ports that the Microsoft RDP client can use. CommandCenter Secure Gateway allows up to 100 simultaneous proxied Microsoft RDP connections. The allowable range may be greater than 100.

Your client computer must be using IPv4 to communicate with CommandCenter Secure Gateway. If the client computer and CommandCenter Secure Gateway are dual-stack, the DNS must resolve to an IPv4 address.

RDP target addresses must be IPv4. If the RDP target is specified by hostname, the hostname must be able to resolve to an IPv4 address.

Configure a Combination of Direct Mode and Proxy Mode

When you configure CC-SG to use a combination of Direct mode and Proxy mode, Proxy mode will be the default connection mode, and Direct mode will be used for the client IP addresses you specify.

► **To configure a combination of direct mode and proxy mode:**

1. Choose Administration > Configuration.
2. Click the Connection Mode tab.
3. Select Both.

4. In the Address field enter the IPv4 or IPv6 address, and specify the Prefix Length to create the range that should connect to nodes and ports via Direct mode. Prefix Length may be 1 to 32 for IPv4 address, and 1 to 128 for IPv6 address.
5. Click Add.
6. Click Update Configuration.

Device Settings

You can configure some settings that apply to all devices, and configure each device type's default port number.

Configuration Manager Please provide devices default port and heartbeat information.

Network Setup | Logs | Date/Time | Connection Mode | **Device Settings** | Custom JRE | SNMP

Heartbeat (seconds):

Display Warning Message For All Power Operations

Update CC-SG Node name with its Out-of-band Interface (Port) name

Enable Node Lockout on Disconnect

Time to Lock Interface (minutes)

Device Type	Default Port
Dominion KX3	5000
Dominion LX2	5000
Dominion KX2	5000
Dominion KX2-101	5000
Dominion LX	5000
IPMI Server	623
Dominion KSX2	5000
Dominion PX	623
Dominion SX2	5000
Dominion KX4-101	5000
Dominion SX	5000

► **To configure default port number for devices:**

1. Choose Administration > Configuration.
2. Click the Device Settings tab.
3. Select a Device Type in the table and double-click the Default Port value.
4. Type the new Default Port value.
5. Click Update Configuration to save your changes.
6. To configure timeout duration for devices:
7. Choose Administration > Configuration.
8. Click the Device Settings tab.
9. Type a new timeout duration in the Heartbeat (sec) field. The valid range is 30 seconds to 50,000 seconds.
10. Click Update Configuration to save your changes.

► **To enable or disable a warning message for all power operations:**

Select the Display Warning Message For All Power Operations checkbox to enable a warning message that alerts a user before a requested power operation occurs. Only the user who initiated the power operation sees the message. The user can cancel the power operation or confirm it by clicking Yes or No in the message.

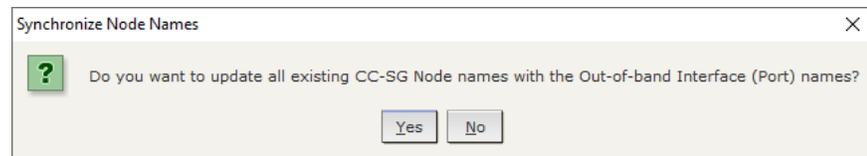
1. Choose Administration > Configuration.
2. Click the Device Settings tab.
3. Select the Display Warning Message For All Power Operations checkbox to enable the warning message. Deselect the checkbox to disable the warning message.
4. Click Update Configuration to save your changes.

► **To update CC-SG node name with its out-of-band interface (port) name:**

This option synchronizes node names with their out-of-band interface names. Note that you can apply this setting to update all existing node names, or to apply only going forward when new nodes are created. If an update results in a new node name that is the same as any other existing name, the name will be appended with a number 1, 2, and so on, to make it unique.

Default setting is disabled.

1. Choose Administration > Configuration.
2. Click the Device Settings tab.
3. Select the Update CC-SG node name with its out-of-band interface (port) name checkbox to enable the naming updates. The following message appears: Do you want to update all existing CC-SG Node names with the Out-of-band Interface (Port) names?



- To rename the existing nodes with their corresponding port name: Click Yes.
- To keep all existing node names, and only match new node names to port names from now on: Click No

▶ Node Lockout on Disconnect:

The Node Lockout on Disconnect setting prohibits access to a node for a set amount of time after a disconnected session. This temporary lockout can prevent a security issue that may occur if a user disconnects from the node without first logging out from the target, which may allow another user to connect to the target and have access that they should not have. The delay before allowing new connections allows the target's timeout to end any sessions before a new user connects. Default setting is disabled.

The setting applies to all KX/SX/LX/KSX node connections. Other interface and node types are not supported.

When enabled, the Admin Client shows a Lock icon on the node in the Nodes list when a user disconnects. When locked, the same user can re-connect to the node, and the lockout time resets on disconnection.

The lockout applies to the following tasks and an error message that the node is locked will be presented to the user :

- any other user attempting to access the node interfaces
- attempts to perform a power operation
- attempts to access on any client, including Admin, Access, or using a Bookmark
- attempts to access using the SSH 'connect' command to connect to serial ports
- User Station connections
- WS-API connections as well.

When a node is locked, a user with the CC Setup and Control permission can unlock the node by:

- Right clicking the node , or an interface in the node, and choosing Unlock Disconnect Lock.
- Selecting the node, or an interface in the node, and choosing Nodes > Unlock Disconnect Lock.

▶ To enable/disable Node Lockout on Disconnect:

1. Choose Administration > Configuration.
2. Click the Device Settings tab.
3. Select the Enable Node Lockout on Disconnect checkbox.
4. Enter the Time to Lock Interface in minutes: 5 minutes is default.
5. Click Update Configuration to save your changes.

Device certificate requirement for AKC

To validate the AKC server certificate following steps must be performed

- Administrators must upload a valid certificate to the device or generate a self-signed certificate on the device. The certificate must have a valid host designation.
- Each user must add the CA certificate (or a copy of self-signed certificate) to the Trusted Root CA store in their browser.

Configuring Custom JRE Settings

CC-SG will display a warning message to users who attempt to access CC-SG without the minimum JRE version that you specify. Check the Compatibility Matrix for the minimum supported JRE version. Choose Administration > Compatibility Matrix.

If a user attempting to log into CC-SG does not have the specified JRE version installed, the JRE Incompatibility Warning window opens. The window includes several options for downloading the default minimum JRE versions. You can change the message to include any text and links to download options. Users can download a new JRE version or continue to access CC-SG with the current installed JRE version.

▶ **To enable or disable custom JRE for login:**

1. Back up CC-SG and save the backup file to a remote location before you enable or disable this feature. See **Backing Up CC-SG** (on page 316).
2. Choose Administration > Configuration.
3. Click the Custom JRE tab.
4. Select the Enable Custom JRE for Login checkbox to enable the option. Deselect the checkbox to disable the option.
5. Enter the minimum JRE version required in the Require Minimum JRE field. You must enter the full version number, including at least three parts. For example, 1.8.0 is a correct version number. For JRE "Update" versions, use an underscore character. For example, 1.8.0_251 is a correct version number for JRE version 1.8.0 Update 251.
6. Click Update.

▶ **To customize the message in the JRE Incompatibility Warning window:**

1. Choose Administration > Configuration.
2. Click the Custom JRE tab.
3. Using HTML code, enter the message that appears in the JRE Incompatibility Warning window.
4. Click Update.

▶ **To restore the default message and minimum JRE version:**

1. Choose Administration > Configuration.
2. Click the Custom JRE tab.
3. Click Restore Default.
4. Click Update.

▶ **To clear the default message and minimum JRE version:**

1. Choose Administration > Configuration. Click the Custom JRE tab.
2. Click Clear.

Configuring SNMP

Simple Network Management Protocol allows CC-SG to push SNMP traps, which are event notifications, to an existing SNMP manager on the network. You should be trained in handling SNMP infrastructure to configure CC-SG to work with SNMP.

CC-SG also supports SNMP GET/SET operations with third-party solutions, such as HP OpenView. To support the operations, you must provide SNMP agent identifier information such as these MIB-II System Group objects: sysContact, sysName, and sysLocation. These identifiers provide contact, administrative, and location information regarding the managed node. See RFC 1213 for details.

SNMP v3 can be enabled to allow encryption by the User-based Security Model, and View-based Access Control Model. CC-SG supports SNMP v3 traps.

Configure SNMP Agents

There is no limit to the number of agents you can set.

▶ **To configure SNMP agents in CC-SG:**

1. Choose Administration > Configuration.
2. Click the SNMP tab.
3. Enter the port number for the SNMP agent in the Listening Port field. Default is 161.
4. To enable an SNMP v1/v2 agent, select the Enable SNMP v1/v2c checkbox.
 - a. Enter the Read-Only Community string. Default is public.
 - b. Enter the Read-Write Community string. Default is private.
 - c. To add multiple community strings, separate them with a comma.
5. To enable an SNMP v3 agent, select the SNMP v3 checkbox.
 - a. In the table below the checkbox, click the Add a row icon . A row of five fields to complete appears.

- b. Enter the SNMP Manager "User" name in the Security Name field. Security name may be 1-32 characters.
 - c. Select MD5 or SHA from the Authentication Protocol drop-down list.
 - d. Enter the Authentication Passphrase in the field. Passphrase may have 8-64 characters. Authentication Passphrase should be different from Privacy Passphrase for best security practices. Some MIB browsers will not work well if the passphrases are the same.
 - e. Select None, DES, or AES in the Privacy Protocol drop-down list.
 - f. Enter the Privacy Passphrase. Passphrase may have 8-64 characters. Authentication Passphrase should be different from Privacy Passphrase for best security practices. Some MIB browsers will not work well if the passphrases are the same.
6. Type a System Contact, System Name, and System Location to provide information regarding the managed node.
 7. Click Update Agent Configuration to save your changes.

Update SNMP Agents with Raritan MIB File

Because CC-SG pushes its own set of Raritan traps, you must update all SNMP managers with a custom MIB file that contains Raritan SNMP trap definitions. See **SNMP Traps** (on page 408). The custom MIB file can be found on the Raritan Support web site.

Configure SNMP Traps and Notifications

► **To configure SNMP traps and notifications:**

1. Choose Administration > Configuration.
2. Click the SNMP tab.
3. In the SNMP tab, confirm that agents are configured in the Agents tab. Click the Traps tab.
4. Select the Enable SNMP Traps checkbox to enable sending SNMP v1/v2c traps from CC-SG to an SNMP host. If you want to set SNMP v3 traps only, skip this step, and go to step 6.
5. In the table below the checkbox, click the Add a row icon . A row of four fields to complete appears.
 - a. Enter the trap destination host IP address in the Host field.
 - b. Enter the trap destination host's port number used by SNMP hosts in the Port field. Default port is 162.
 - c. Select v2 or v1 in the Version drop-down list.
 - d. Enter the community string used by SNMP hosts in the Community field.

6. Select the Enable SNMP v3 Notifications checkbox to enable sending SNMP v3 notifications from CC-SG to an SNMP host. If you want to set SNMP v1/v2c traps only, skip this step, make sure to complete steps 4-5, and continue with step 7.
 - a. In the table below the checkbox, click the Add a row icon . A row with 6 fields to complete appears.
 - b. Enter the trap destination host IP address in the Host field.
 - c. Enter the trap destination host's port number used by SNMP hosts in the Port field. Default port is 162.
 - d. Enter the SNMP Manager "User" name in the Security Name field. Security name may be 1-32 characters.
 - e. Select MD5 or SHA from the Authentication Protocol drop-down list.
 - f. Enter the Authentication Passphrase in the field. Passphrase may have 8-64 characters. Authentication Passphrase should be different from Privacy Passphrase for best security practices. Some MIB browsers will not work well if the passphrases are the same.
 - g. Select None, DES, or AES in the Privacy Protocol drop-down list.
 - h. Enter the Privacy Passphrase. Passphrase may have 8-64 characters. Authentication Passphrase should be different from Privacy Passphrase for best security practices. Some MIB browsers will not work well if the passphrases are the same.
7. In the Trap Sources list at the bottom of the page, select the checkboxes for the traps you want CC-SG to push to your SNMP hosts. Traps are grouped into 2 categories: System Log traps include notifications for the status of the CC-SG unit itself, such as hard disk failure; Application Log traps include notifications generated by events in the CC-SG application, such as changes to a user account.
 - a. To enable traps by type, select the System Log and Application Log checkboxes.
 - b. Enable individual traps by selecting their checkboxes.
 - c. Refer to the MIB files for the list of SNMP traps that are provided. See **SNMP Traps** (on page 408) for details.
8. Click Update Trap Configuration to save your changes.

Configuring CC-SG Clusters

A CC-SG cluster uses two CC-SG nodes, one Primary node and one Secondary node, for backup security in case of Primary node failure. Both nodes share common data for active users and active connections, and all status data is replicated between the two nodes.

Devices in a CC-SG cluster must be aware of the IP of the Primary CC-SG node in order to be able to notify the Primary node of status change events. If the Primary node fails, the Secondary node immediately assumes all Primary node functionality. This requires initialization of the CC-SG application and user sessions and all existing sessions originating on the Primary CC-SG node will terminate. The devices connected to the Primary node will recognize that the Primary node is not responding and will respond to requests initiated by the Secondary node.

Note: When accessing CC-SG using the thick client, you will not be redirected to the backup node automatically if the primary node fails. You must enter the IP address of the backup node manually for thick client access.

Requirements for CC-SG Clusters

- Both nodes in a cluster must be either physical hardware or virtual appliances. You cannot mix physical and virtual.
- Clusters of physical hardware: The Primary and Secondary nodes in a cluster must be running the same firmware version on the same hardware version (V1 or E1).
- Clusters of virtual appliances: The Primary and Secondary nodes in a virtual cluster must be running the same firmware version in the same type of virtual environment. For example, both nodes are VMware, or both nodes are Hyper-V.
- Your CC-SG network must be in IP Failover mode to be used for clustering. Clustering will not work with an IP Isolation mode configuration. See **About Network Setup (on page 250)**.
- Clusters are not supported on IPv6.
- Date, time, and time zone settings are not replicated from the Primary node to the Secondary node. You must configure these settings in each CC-SG before you create the cluster.
- The SSL cert must be installed on both the CCSGs, before configuring them in a cluster.

Access a CC-SG Cluster

Once a Cluster is created, users can access the Primary node directly, or if they point their browser to the Secondary node, they will be redirected.

Redirection does not work for an already downloaded Admin Client applet, as the web browser needs to be closed and a new session opened and pointed to the new Primary system.

SSH access to a CC-SG must be to the specific Primary node.

Cluster Status

Primary Status	Secondary Status	Meaning
PrimaryWithBackup	Backup	The cluster is active and functional.
PrimaryWithFailedBackup	Waiting	Secondary is up but is not in synch with Primary, such as when Primary has lost communication with Secondary at some point.
PrimaryWithFailedBackup	Failed	Primary can't reach Secondary, either Secondary is down or network in between is broken.

Create a Cluster

You should backup your configuration on both CC-SG units before creating a cluster.

► **To create a cluster:**

1. Choose Administration > Cluster Configuration.
2. The CC-SG you are currently accessing displays in the Primary Secure Gateway IP Address/Hostname field, indicating that it will become a Primary Node.
3. Specify a Secondary, or Backup, Node in the Backup Secure Gateway IP Address/Hostname field. Make sure the specified CC-SG is compatible with the Primary Node. Use one of these methods to specify it:
 - Click Discover Secure Gateways to scan and display all CC-SG units on the same subnet as the one you are currently accessing. Then click a CC-SG unit in the Standalone state from the table of discovered CC-SG units to select it.
 - You can specify a CC-SG, perhaps from a different subnet, by typing an IP address or hostname in the Backup Secure Gateway IP Address/Hostname field. Then click Check Backup to verify whether it has the same firmware version and hardware/virtual appliance type as the Primary Node.

4. Type a name for this cluster in the Cluster name field.
5. Type a valid user name and password for the Backup node in the Username for Backup Secure Gateway and Password for Backup Secure Gateway fields.
6. Select the Redirect by Hostname checkbox to specify that secondary to primary redirection access should be via DNS. **Optional.** See **Access a CC-SG Cluster** (on page 269). If you're using hostnames instead of IP addresses, the DNS server should contain reverse lookup records for the IP addresses of the CC-SGs to ensure the hostnames can be resolved.
7. Click Create Cluster. A message appears.
8. Click Yes.

Important: Once you begin the cluster creation process, do not perform any other functions in CC-SG until the process has completed.

9. Continue clicking OK for any onscreen messages. The Backup node will restart and the process takes several minutes.
10. When the cluster creation is complete, a message appears, indicating the Backup node is successfully joined.

Remove Secondary CC-SG Node

Removing a Secondary, or Backup, Node removes the designation of Secondary Node. It does not delete the Secondary CC-SG unit from your configuration.

► **To remove Secondary Node status from a CC-SG unit:**

1. Select the Secondary CC-SG Node in the Cluster Configuration table.
2. Click Remove “Backup” Node.
3. Click Yes to remove Secondary Node status.

Configure Cluster Settings

You cannot change the time zone in a cluster configuration.

► **To configure cluster settings:**

1. Choose Administration > Cluster Configuration.
2. In the Configuration tab, modify or configure the settings.
 - If necessary, modify the cluster name.
 - For Time Interval, enter how often CC-SG should check its connection with the other nodes. Valid range is 5-20 seconds.

Note: Setting a low Time Interval will increase the network traffic generated by heartbeat checks. You may want to set higher intervals for clusters with nodes located far apart from each other.

- For Failure Threshold, enter the number of consecutive heartbeats that must pass without a response before a CC-SG node is considered failed. Valid range is 2-10 heartbeats.
3. Click Update to save your changes.

Switch the Primary and Secondary Node Status

You can exchange the roles of Primary and Secondary nodes when the Secondary, or Backup, node is in the "Joined" state. When the Secondary node is in the "Waiting" state, switching is disabled.

After the roles are switched, the former Primary node is in the "Waiting" state. To recover the cluster configuration, join the "Waiting" node as the Backup.

See **Recover a Cluster** (on page 271).

▶ To switch the Primary and Secondary nodes

1. Choose Administration > Cluster Configuration.
2. In the Configuration tab, click Switch Primary And Backup.
3. Join the new Secondary node as the Backup node. See **Recover a Cluster** (on page 271).

Recover a Cluster

When a cluster is broken because of a node failure, or the failed Secondary node is in Waiting status, you can rebuild the cluster to recover the Primary and Secondary node status.

If the Primary and Secondary nodes lose communication with one another, the Secondary node will assume the role of the Primary node. When connectivity resumes, you may have two Primary nodes. It is impossible to recover the cluster with two Primary nodes. Recover works only when there is one Primary and one Waiting.

To recover a cluster with two Primary nodes, you have two options. Log into each Primary node, delete the cluster in each, and then create the cluster again. Or, log into one of the Primary nodes and restart it so that it changes to the Waiting status, then follow the instructions to recover a cluster.

▶ To recover a cluster:

1. Choose Administration > Cluster Configuration.
2. Click the Recovery tab, and you can either have the cluster automatically rebuilt at the specified time or rebuild the cluster immediately.
 - Click Rebuild Now to immediately recover the cluster.
 - Select the Enable Automatic Rebuild checkbox, and specify the time to rebuild the cluster in the From Time and To Time fields. Click Update to save the changes.

Note: If the clustered CC-SG units do not share the same time zone, when the Primary node failure occurs, and the Secondary node becomes the new Primary node, the time specified for Automatic Rebuild still follows the time zone of the old Primary node.

Delete a Cluster

Deleting a cluster completely deletes the information entered for the cluster, and restores both of Primary and Secondary CC-SG nodes to the Standalone state. In addition, all configuration data, except for the networking settings (personality package), on the Secondary node is reset to default, including the CC Super-User password.

► **To delete a cluster:**

1. Choose Administration > Cluster Configuration.
2. Click Delete Cluster.
3. Click Yes to remove the Primary Node and Secondary Node status.
4. A message appears when the cluster is deleted.

Upgrading a Cluster

To upgrade a CC-SG cluster, follow this recommended upgrade procedure.

If the upgrade of your primary node fails while following this procedure, see **Primary Node Upgrade Failure** (on page 273).

► **To upgrade a cluster:**

1. Force a failover from your primary node to the backup node by choosing Administration > Cluster Configuration. In the Configuration tab, click Switch Primary and Backup. See **Switch the Primary and Secondary Node Status** (on page 271) for details.
 - Your backup node becomes Primary. Your former primary node goes into Waiting status.
2. In your new primary node, shutdown the CC-SG application by choosing System Maintenance > Shutdown.
 - When you shutdown the CC-SG application, the unit is still powered on, and accessible through the Diagnostic Console. See **CC-SG Shutdown** (on page 327) for details.
3. Restart the former primary node, that has been in Waiting status. See **Restart CC-SG with Diagnostic Console** (on page 349) for details on restarting.
 - The restarted CC-SG unit goes into Primary status again. The backup node that you shutdown is recognized as Failed status.
4. Delete the cluster by choosing Administration > Cluster Configuration. Click Delete Cluster.

5. Enter Maintenance Mode, and then upgrade the primary node. See **Entering Maintenance Mode** (on page 316) and **Upgrading CC-SG** (on page 323).
6. If the primary node upgrade succeeds, perform a factory reset of the backup node by accessing the Diagnostic Console and choosing Operation > Admin > Factory Reset > Full CC-SG Database Reset option. See **Reset CC-SG Factory Configuration** (on page 354).
 - If the primary node upgrade fails, see **Primary Node Upgrade Failure** (on page 273).
7. Upgrade the backup node that you reset. See **Upgrading CC-SG** (on page 323).
8. Recreate the cluster. See **Create a Cluster** (on page 269). The data from the primary node synchronizes with the backup node.

Primary Node Upgrade Failure

If the upgrade of your primary node fails while following the **Upgrading a Cluster** (on page 272) procedure, follow these steps to complete the cluster upgrade.

1. If the primary node upgrade fails, shutdown the CC-SG application by choosing System Maintenance > Shutdown. When you shutdown the CC-SG application, the unit is still powered on, and accessible through the Diagnostic Console. See **CC-SG Shutdown** (on page 327) for details.
2. Restart your backup node. See **Restart CC-SG with Diagnostic Console** (on page 349) for details on restarting.
3. The backup node goes into Primary status.
4. Contact Raritan Technical Support to determine why the upgrade failed.

Configuring a Neighborhood

A Neighborhood is a collection of up to 10 CC-SG units. After setting up the Neighborhood in the Admin Client, users can access multiple CC-SG units in the same Neighborhood with single sign-on using the Access Client.

Before setting up or managing the Neighborhood configuration, keep the Neighborhood criteria in mind:

- A CC-SG unit belongs to one Neighborhood only.
- All CC-SG units in the same Neighborhood must be of the same firmware version.
- CC-SG units in the Neighborhood must be either standalone CC-SG units or Primary Nodes of clustered CC-SG units.
- A Neighborhood can consist of both physical and virtual CC-SG units.
- Neighborhood members must be on the IPv4 network. IPv6 communication is not supported in a neighborhood.

Create a Neighborhood

You can log into a CC-SG unit where you want to create a Neighborhood that is not a member of any Neighborhood yet. After a Neighborhood is created, all members in the Neighborhood share the same Neighborhood information. If any member is the Primary Node of clustered CC-SG units, the IP address or hostname of the Secondary, or Backup, Node also displays in the Neighborhood configuration.

► To create a Neighborhood

1. Choose Administration > Neighborhood.
2. Type a name in the Neighborhood Name field.
3. Click Create Neighborhood.
4. The IP address or hostname of the current CC-SG is displayed in the Secure Gateway IP Address/Hostname table.
5. Add one or more CC-SG units to the table.
 - a. Click the next empty row, or press the Tab or the up/down arrow keys.
 - b. Type the IP address or hostname of the new CC-SG unit that you want to add and press Enter. See **Terminology/Acronyms** (on page 2) for hostname rules. Make sure to use the IP address or hostname exactly as it appears in both the certificate and in the CC-SG's URL that you use to access.
 - c. Repeat the previous steps until you finish adding all CC-SG units.
6. Click Next.
 - If one or more CC-SG units cannot be found, a message appears and these CC-SG units will be highlighted in yellow in the table. Remove these units or modify their IP addresses or hostnames, and click Next again.
7. CC-SG displays a list of CC-SG units along with their firmware version and state in the Neighborhood Configuration table.

*Note: The CC-SG units which do not meet the Neighborhood criteria are automatically deactivated. See **Configuring a Neighborhood** (on page 273).*

8. Adjust the Neighborhood configurations if necessary. **Optional.**
 - To change any CC-SG's Secure Gateway Name, click the name, type a new one and press Enter. The default is a short CC-SG hostname.
 - To deactivate any CC-SG unit, deselect the Activate checkbox next to that unit. Deactivated CC-SG units operate as standalone units and do not show up as one of the Neighborhood members to Access Client users.
 - Click the column header to sort the table by that attribute in ascending order. Click the header again to sort the table in descending order.
9. To return to the previous screen, click Back and repeat the prior steps. **Optional.**

10. Click Finish.

Note: Raritan recommends that you should:

*(1) Configure the same Restricted Service Agreement setting and text for all Neighborhood members. See **Portal** (on page 285).*

(2) Use the trusted/official certificate for every Neighborhood member if SSL is enabled.

Edit a Neighborhood

After setting up a Neighborhood configuration on one CC-SG unit, all CC-SG units in the same Neighborhood share the same Neighborhood information. Therefore, you can log into any CC-SG unit in the Neighborhood to change the Neighborhood configuration.

Note: All changes to the members of a Neighborhood are sent out when you click Send Update in the Neighborhood Configuration panel. However, users who are currently logged into the Neighborhood will not be aware of these changes until they log out and log back in again.

Add a Neighborhood Member

► To add a new CC-SG unit into the Neighborhood

1. Choose Administration > Neighborhood.
2. Click Add Member. The Add Member dialog appears.
3. Add CC-SG units. The number of CC-SG units that can be added varies depending on the number of existing Neighborhood members. A Neighborhood contains a maximum of 10 members.
 - a. Click the next empty row, or press Tab or up/down arrow keys.
 - b. Type the IP address or host name of the CC-SG unit that you want to add. See **Terminology/Acronyms** (on page 2) for hostname rules.
 - c. Repeat previous steps until you add all CC-SG units.
 - d. Click OK.
4. If new CC-SG units meet the Neighborhood criteria and are found, they display in the Neighborhood Configuration table. Otherwise, a message appears and return you to the Add Member dialog. Then make changes in the dialog as needed.
5. Select the Active checkbox next to each new CC-SG unit.
6. To change any CC-SG's Secure Gateway Name, click the name, type a new one and press Enter. The default is a short CC-SG hostname. **Optional.**
7. Click Send Update to save the changes and distribute the latest Neighborhood information to the other members.

Manage the Neighborhood Configuration

You can deactivate or rename any CC-SG unit in the Neighborhood configuration. Deactivating a CC-SG unit causes it to become unavailable in the Neighborhood members list in the Access Client. Or you can refresh all members' data, such as the firmware version or unit status, in the Neighborhood configuration.

► **To deactivate or rename the CC-SG units in the Neighborhood, or retrieve the latest data**

1. Choose Administration > Neighborhood.
2. Manage the members now.
 - To deactivate a CC-SG unit, deselect the Active checkbox next to the unit.
 - To change a Secure Gateway Name, click the name, type a new one and press Enter. The name must be unique.
 - To retrieve all CC-SG units' latest data, click Refresh Member Data.
 - To allow users accessing a neighborhood member to execute searches across all members of a neighborhood, and to launch target connections from the search results, select the Enable Extended Network Neighborhood Search checkbox. Deselect the checkbox to disable extended network neighborhood searches. See **Extended Network Neighborhood Search** (on page 276).
3. Click Send Update to save the changes and distribute the latest Neighborhood information to the other members.

Extended Network Neighborhood Search

When enabled, extended network neighborhood search gives users the option to search for and access nodes on any member of the neighborhood, using the Access Client only, across all supported browsers.

When performing the search, you can specify whether the search is extended to all members "In Neighborhood" or "Local Only".

Status and availability and node data for neighbor nodes is displayed when neighborhood search results are retrieved as the result of performing an extended network neighborhood search. This data is not updated in real-time for neighbor nodes while search results are displayed.

Note: The node's Virtual Machine Data will only be displayed for VM nodes on the home CC-SG, not for the VM nodes from a neighbor CC-SG.

When performing power control operations on the All Nodes group, while extended neighborhood search is in effect, nodes from neighbor CC-SG units will not be included. The All Nodes group is created on the "home" CC-SG only, and cannot contain neighbor nodes.

Delete a Neighborhood Member

When a CC-SG unit in a Neighborhood is no longer needed, you may either remove or deactivate it in the Neighborhood configuration. Otherwise, Access Client users may find these units inaccessible when trying to switch to them. For example, a Neighborhood member becomes inappropriate when you:

- Set the CC-SG unit as a Backup CC-SG node in a cluster configuration, which is not a state meeting the Neighborhood criteria.
- Reset the CC-SG unit, causing the unit to remove its Neighborhood configuration and return to factory defaults.

When deleting members, ensure that a minimum of 2 CC-SG units remain in the Neighborhood. Otherwise, CC-SG will delete this Neighborhood.

► To delete a CC-SG unit from the Neighborhood

1. Choose Administration > Neighborhood.
2. Click the CC-SG unit that you want to delete, and click Remove Member. Repeat this step until you remove all CC-SG units you want.
3. Click Send Update to save the changes and distribute the latest Neighborhood information to the other members.

Important: To change the IP address of a CC-SG unit which is already a Neighborhood member, you must remove it from the Neighborhood configuration first. Otherwise, you are unable to delete the CC-SG from the Neighborhood.

Refresh a Neighborhood

You can retrieve the latest status of all Neighborhood members immediately in the Neighborhood Configuration panel.

1. Choose Administration > Neighborhood.
2. Click Refresh Member Data.
3. Click Send Update to save the changes and distribute the latest Neighborhood information to the other members.

Delete a Neighborhood

► To delete a Neighborhood

1. Log into any CC-SG unit whose Neighborhood configuration you want to remove.
2. Choose Administration > Neighborhood.
3. Click Delete Neighborhood.
4. Click Yes to confirm the deletion.

Upgrade a Neighborhood

All CC-SG units in a neighborhood must use the same firmware version. The CC-SG units cannot be upgraded while they are active neighborhood members. Deactivate each member to upgrade it, then activate it again, and refresh the neighborhood configuration.

▶ **To upgrade a neighborhood:**

1. Deactivate each CC-SG unit when you are ready to upgrade it. See **Manage the Neighborhood Configuration** (on page 276).
2. Upgrade each CC-SG unit individually, following best practices for upgrades. See **Upgrading CC-SG** (on page 323).
3. Activate the members of the neighborhood once they have been upgraded. See **Manage the Neighborhood Configuration** (on page 276).
4. Refresh the neighborhood. See **Refresh a Neighborhood** (on page 277).

Security Manager

The Security Manager is used to manage how CC-SG provides access to users. Within Security Manager you can configure authentication methods, SSL access, AES or Custom Encryption, SSH settings, strong password rules, lockout rules, the login portal, certificates, and access control lists.



Security Defaults

By default, strong password are enforced for all new users, which includes the password change frequency. See **Require strong passwords for all users** (on page 282).

All TLS protocols are enabled by default in new installations.

Note: This is not applied to remote users and diagnostic console port 23 users - admin or non-admin. These users follow the rules of their authentication server.

Remote Authentication

See **Remote Authentication and Authorization** (on page 213) for detailed instructions on configuring remote authentication servers.

Check Your Browser for AES Encryption

CC-SG supports AES-128 and AES-256. If you do not know if your browser uses AES, check with the browser manufacturer or navigate to the <https://www.fortify.net/sslcheck.html> website using the browser with the encryption method you want to check. This website detects your browser's encryption method and displays a report.

AES-256 Prerequisites and Supported Configurations

- A browser that supports AES
- Installation of Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files. Use the version that corresponds to your JRE version.

▶ To enable the AES-256 encryption with your browser

1. Download JCE Unlimited Strength Jurisdiction Policy Files from Oracle.
2. Extract the files into your Java directory under `\lib\security\`. For example, `C:\Program Files\Java 1.8.0\lib\security\`.

Configure TLS Browser Connection Protocol

Choose Administration > Security Manager, then click the Encryption tab for TLS settings. Changes to this setting are logged in the Audit Log. At least one option must be selected.

Security Manager

Please provide encryption security information.

Login Settings
 Authentication
 Encryption
 SSH Settings
 Portal
 Certificate
 Access

Secure Gateway Client Connections

Encryption Mode:

AES Key Length:

Cipher Config

Browser Connection Protocol: (Strongest->Weakest. Requires restart)

- Use TLS 1.3
- Use TLS 1.2
- Use TLS 1.1
- Use TLS 1.0

► **To configure TLS version:**

- TLS v1.3 is the best security protocol to use for this device.
- TLS is enabled by default in new installations of CC-SG. TLS v1.3 is the most secure protocol option. Select the most secure version that your environment supports. All versions are enabled by default. Unchecked protocols are not used. You should uncheck the lesser options to ensure they are not used. At least one protocol must be enabled. Click Update to save.
- You must restart CC-SG for the change to take effect.

Note: Only TLS 1.0 is supported with the following devices: KX2 v2.7, KSX2 v2.7, KX2-101v2 v3.7. To ensure successful port connections to these devices, enable TLS 1.0 in Security Manager and in the Java Control Panel.

TLS 1.3 requires java 1.8.0_341 or higher.

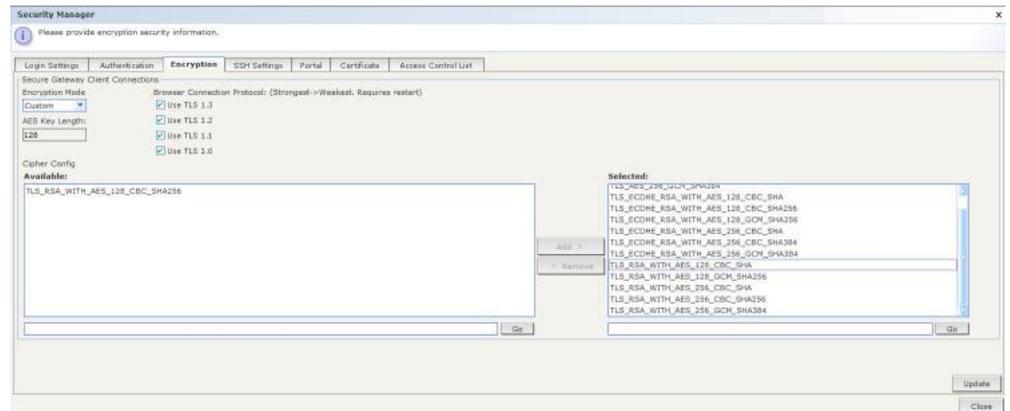
Standalone Admin client of the CommandCenter Secure Gateway does not support TLS 1.3.

Configure Encryption Mode

AES Key Length selector is activated when AES Encryption Mode is selected and cannot be modified when Custom Encryption Mode is selected.

► **To set the encryption mode and ciphers**

1. Choose Administration >Security
2. Click the Encryption tab.
3. Select Encryption mode (AES/Custom) from the drop down list.
4. Custom Encryption mode provides a list of ciphers which can be selected and move to selected pane.
5. Click Update to save.



► **List of Available ciphers**

Encryption Mode	Available ciphers
AES with 128 key length	TLS_AES_128_GCM_SHA256
<i>Note: Set ciphers</i>	TLS_AES_256_GCM_SHA384
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
	TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384
	TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384
AES with 256 key length	TLS_AES_256_GCM_SHA384
<i>Note: Set ciphers</i>	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384
	TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384
Custom	TLS_AES_128_GCM_SHA256
<i>Note: Ciphers can be set by the user</i>	TLS_AES_256_GCM_SHA384
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA
	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
	TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA
	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384
	TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384
	TLS_RSA_WITH_AES_128_CBC_SHA
	TLS_RSA_WITH_AES_128_CBC_SHA256
	TLS_RSA_WITH_AES_128_GCM_SHA256
	TLS_RSA_WITH_AES_256_CBC_SHA
	TLS_RSA_WITH_AES_256_CBC_SHA256
	TLS_RSA_WITH_AES_256_GCM_SHA384

Note: If a valid cipher is not found for a TLS selected method, an error message will appear.

Login Settings

The Login Settings tab allows you to configure Strong Password Settings and Lockout Settings.

View login settings

1. Choose Administration > Security.
2. Click the Login Settings tab.

Require strong passwords for all users

1. Choose Administration > Security.
2. Click the Login Settings tab.
3. Passwords must contain minimum of 8 and maximum of 64 characters.
4. Select a Password History Depth. The number specifies how many previous passwords are kept in the history and cannot be reused. For example, if Password History Depth is set to 5, users cannot reuse any of their previous five passwords.
5. Select a Password Expiration Frequency. All passwords expire after a set number of days. After a password expires, users will be asked to choose a new password the next time they log in.
6. Select Strong Password Requirements:
 - Passwords must contain at least one lowercase letter.
 - Passwords must contain at least one uppercase letter.
 - Passwords must contain at least one number.
 - Passwords must contain at least one special character (for example, an exclamation point or ampersand).
7. Click Update to save your changes.

Configure requirements for non-strong passwords

When strong passwords are not enabled, set the requirements for non-strong passwords. Non-strong passwords must comply with length requirements. There are no requirements for type of characters.

► To configure requirements for non-strong passwords:

1. Choose Administration > Security.
2. Click the Login Settings tab.
3. Make sure the Strong Passwords Required for All Users checkbox is deselected.
4. In the Non-Strong Password Settings section, select a Minimum Password Length and Maximum Password Length.
5. Click Update.

About CC-SG passwords

All passwords must meet all criteria that the administrator configures. After configuring password rules, all future passwords must meet these criteria. All existing users must change their passwords at their next logins if the new criteria are stronger than the previous criteria. Password rules apply only to user profiles stored locally. Password rules on an authentication server must be managed by the authentication server.

In addition, any four contiguous characters in the user name and the password cannot match.

Strong password rules require users to observe strict guidelines when creating passwords, which makes the passwords more difficult to guess and, in theory, more secure. Strong passwords are enabled in CC-SG by default. A strong password that includes all strong password parameters is always required for the CC Super-User.

You can use the Message of the Day feature to provide advanced notice to users when the strong password rules will be changing and what the new criteria are.

Lockout settings

Administrators can lock out CC-SG users and SSH users after a specified number of failed login attempts. You can enable this feature for locally authenticated users, for remotely authenticated users, or for all users.

Note: By default, the admin account is locked out for five minutes after five consecutive failed login attempts. For admin, the number of failed login attempts before lockout and after lockout is not configurable.

► To enable lockout:

1. Choose Administration > Security.
2. Click the Login Settings tab.
3. Select the Lockout Enabled for Local Users checkbox to enable lockout for users who are locally authenticated. Select the Lockout Enabled for Remote Users checkbox to enable lockout for users who are remotely authenticated.
4. The default number of Failed Login Attempts before a user is locked out is five. You can change this value by entering a number from 1 to 10.
5. Choose a Lockout Strategy:
 - Lockout for Period: specify the period of time, in minutes, the user will be locked out before they can login again. The default number is five minutes. You can specify a period from 1 minute up to 1440 minutes (24 hours). After the time expires, the user can log in again. At any time during the lockout period, an administrator can override this value and allow the user to log back into CC-SG.

- Lockout Until Admin Allows Access: users are locked out until an administrator unlocks the user account.
6. Type an email address in the Lockout Notification Email field. Notification is sent to this email address when lockout has occurred. If the field is blank, notification is not sent. **Optional.**
 7. Type a phone number in the Administrator's Telephone field. The phone number will appear in the notification email that is sent when lockout occurs. **Optional.**
 8. Click Update to save your changes.

► **To disable lockout:**

When you disable lockout, all users currently locked out of CC-SG will be allowed to log in.

1. Choose Administration > Security.
2. Open the Login Settings tab.
3. Deselect the Lockout Enabled for Local Users checkbox to disable lockout for locally authenticated users. Deselect the Lockout Enabled for Remote Users checkbox to disable lockout for remotely authenticated users.
4. Click Update to save your changes.

Allow concurrent logins per username

You can permit more than one concurrent CC-SG session with the same username.

1. Choose Administration > Security.
2. Click the Login Settings tab.
 - Select the Super User checkbox to allow more than one simultaneous login with the CC Super User account.
 - Select the System Administrators checkbox to allow concurrent logins by users in the System Administrators user group.
 - Select the Other Users checkbox to allow concurrent logins by all other users.
3. Click Update to save your changes.

Configure the Inactivity Timer

You can configure the inactivity timer to specify how long a CC-SG session can remain inactive before the user is logged out of CC-SG.

If a user has any connections to nodes open, the session is considered active, and the user will not be logged out when the inactivity timer expires.

► **To configure the inactivity timer:**

1. Choose Administration > Security
2. Click the Login Settings tab.

3. Type the desired time limit in the Inactivity Time field.
4. Click Update to save your changes.

Portal

Portal settings allow administrators to configure a logo and an access agreement to greet users when they access CC-SG.

► To configure the portal settings:

1. Choose Administration > Security.
2. Open the Portal tab.

Logo

A small graphic file can be uploaded to CC-SG to act as a banner on the login page. The maximum size of the logo is 998 by 170 pixels.

► To upload a logo:

1. Click Browse in the Logo area of the Portal tab. An Open dialog appears.
2. Select the graphic file you want to use as your logo in the dialog, and then click Open.
3. Click Preview to preview the logo. The selected graphic file appears to the right.
4. Click Update to save your changes.

Restricted Service Agreement

A message can be configured to appear at the left of the login fields on the login screen. This is intended for use as a Restricted Service Agreement, or a statement users agree to upon accessing the CC-SG. A user's acceptance of the Restricted Service Agreement is noted in the log files and the audit trail report.

► To add a restricted service agreement to the CC-SG login screen:

1. Select the Require Acceptance of Restricted Service Agreement checkbox to require users to check an agreement box on the login screen before they are allowed to enter their login information.
2. Enter your message:
 - a. Select Restricted Service Agreement Message if you want to enter the banner text directly.
 - Type an agreement message in the text field provided. The maximum length of the text message is 10,000 characters.
 - Click the Font drop-down menu and select a font for the message.
 - Click the Size drop-down menu and select a font size for the message.
 - b. Select Restricted Service Agreement Message File if you want to load a message from a text (.txt) file.

- Click Browse. A dialog window opens.
 - In the dialog window, select the text file with the message you want to use, and then click Open. The maximum length of the text message is 10,000 characters.
 - Click Preview to preview the text contained in the file. The preview appears in the banner message field above.
3. Click Update to save your changes. The updates will appear on the login screen the next time a user accesses CC-SG.

Certificates

In the Certificate tab, you can generate a certificate signing request (CSR) to be sent to a certificate authority to apply for a digital identity certificate, generate a self signed certificate, or import and export certificates and their private keys.

► Certificate Requirements for Apple/Mac:

Due to newer security restrictions from Apple, Mac OS may not allow self-signed certificates. As of release 11.4, a valid certificate with the hostname/IPs in the SAN signed by a trusted CA is required.

Check Apple support for guidance on certificates required for Apple devices:
<https://support.apple.com/en-us/HT210176>

Certificate Tasks

Imported certificates should be in the PEM format.

When creating certificates, include all Subject Alternative Names to ensure there is no name mismatch. Java client's downloading jar activity checks for the exact hostname match as provided in the download url.

CC-SG generates SHA2 CSR and self-signed certificates.

Note: The button at the bottom of the screen will change from Export to Import to Generate, depending on which certificate option is selected.

► To export current certificate and private key:

1. Choose Administration > Security.
2. Click the Certificate tab.
3. Select Export current certificate and private key.
4. Click Export. The certificate appears in the Certificate panel and the private key appears in Private Key panel.
5. In each panel, select the text, and then press Ctrl+C to copy it. You can then paste the text wherever needed.

► **To generate Certificate Signing Request, and import pasted certificate and private key:**

The CSR will be submitted to the Certificate Server who will issue a signed certificate. A root certificate will also be exported from the Certificate Server and saved in a file. Once you receive the signed certificate from the certificate signing authority, you can import the signed certificate, root certificate, and private key.

1. Choose Administration > Security.
2. Click the Certificate tab.
3. Click Generate Certificate Signing Request, and then click Generate. The Generate Certificate Signing Request window opens.
4. Type the requested data into the fields.
 - a. Encryption Mode: If Require AES Encryption between Client and Server is selected in the Administration > Security > Encryption screen, AES-128 is the default. If AES is not required, DES 3 is the default.
 - b. Private Key Length: 2048 is the default. Choose 1024 through 4096.
 - c. Validity Period (days): Maximum 4 numeric characters.
 - d. Country Code: CSR tag is Country Name.
 - e. State or Province: Maximum 128 characters. Type in the whole state or province name. Do not abbreviate.
 - f. City/Locality: CSR tag is Locality Name. Maximum 128 characters.
 - g. Registered Company Name: CSR tag is Organization Name. Maximum 64 characters.
 - h. Division/Department Name: CSR tag is Organization Unit Name. Maximum 64 characters.
 - i. Fully Qualified Domain Name: CSR tag is Common Name.
 - j. Administrator Email Address: Type in the email address of the administrator who is responsible for the certificate request. Maximum 256 characters.
 - k. Challenge Password: Maximum 64 characters.
5. Click OK to generate the CSR. The CSR and Private Key appear in the corresponding fields of the Certificate screen.
6. Select the text in the Certificate Request box, and then press Ctrl+C to copy it. Using an ASCII editor such as Notepad, paste the CSR into a file and save it with a .cer extension.
7. Select the text in the Private Key box, and then press Ctrl+C to copy it. Using an ASCII editor such as Notepad, paste the Private Key into a file and save it with a .txt extension.
8. Submit the .cer file to the Certificate Server to obtain a signed certificate.

9. Download or export the root certificate from the Certificate Server and save it to a file with a .cer extension. This is a different certificate from the signed certificate that will be issued by the Certificate Server in the next step.
10. Click Browse next to CA file and select the root certificate file.
11. Once you receive the signed certificate from the Certificate Server, select Import pasted certificate and private key.
12. Copy the text of the signed certificate, and then press Ctrl+V to paste it into the Certificate box.
13. Copy the text of the Private Key previously saved as a .txt file, and then press Ctrl+V to paste it into the Private Key box.
14. Type raritan in the Password field if the CSR was generated by CC-SG. If a different application generated the CSR, use the password for that application.

Note: If the imported certificate is signed by a root and subroot CA (certificate authority), using only a root or subroot certificate will fail. To resolve this, copy and paste both root and subroot certificate into one file, and then import it.

► **To generate self signed certificate request:**

1. Choose Administration > Security.
2. Click the Certificate tab.
3. Select Generate Self Signed Certificate, and then click Generate. The Generate Self Signed Certificate window opens.
4. Type the requested data into the fields.
 - a. Encryption Mode: If Require AES Encryption between Client and Server is selected in the Administration > Security > Encryption screen, AES-128 is the default. If AES is not required, DES 3 is the default.
 - b. Private Key Length: 2048 is the default. Choose 1024 through 4096.
 - c. Validity Period (days): Maximum 4 numeric characters.
 - d. Country Code: CSR tag is Country Name.
 - e. State or Province: Maximum 128 characters. Type in the whole state or province name. Do not abbreviate.
 - f. City/Locality: CSR tag is Locality Name. Maximum 128 characters.
 - g. Registered Company Name: CSR tag is Organization Name. Maximum 64 characters.
 - h. Division/Department Name: CSR tag is Organization Unit Name. Maximum 64 characters.
 - i. Fully Qualified Domain Name: CSR tag is Common Name.
 - j. Administrator Email Address: Type in the email address of the administrator who is responsible for the certificate request. Maximum 256 characters.
 - k. Challenge Password: Maximum 64 characters.

- Click OK to generate the certificate. The Certificate and Private Key appear encrypted in the corresponding fields of the Certificate screen.

Access Control List

An IP Access Control List specifies ranges of client IP addresses for which you want to deny or allow access to CC-SG. Each entry in the Access Control List becomes a rule that determines whether a user in a certain group, with a certain IP address, can access CC-SG. You can also set rules that apply to the whole CC-SG system (select System instead of a user group) at an operating system level. Once you create rules, you can arrange them in the list to specify the order in which they are applied. Rules at the top of the list take precedence over rules in lower positions in the list.

IPv6 addresses cannot be used for System-level rules. For all other rules, both IP entries for the rule must be of the same type, that is, both IPv4 or both IPv6.

▶ To view the Access Control List:

- Choose Administration > Security.
- Click the Access Control List tab.

▶ To add a rule to the Access Control List:

- Choose Administration > Security.
- Click the Access Control List tab.

- Click the Add Row icon  to add a row to the table.
- Specify a range of IP addresses to which you want to apply the rule by typing the starting IP value in the Starting IP field and the ending IP value in the Ending IP field.
- Click the Group drop-down arrow to select a user group to apply the rule to. Selecting System will apply the rule to the whole CC-SG system.
- Click the Action drop-down arrow and select Allow or Deny to specify whether the specified users in the IP range can access CC-SG.
- Click Update to save your changes.

▶ To add a rule to the Access Control List that allows or denies access at an operating system level:

- Choose Administration > Security.
- Click the Access Control List tab.

- Click the Add Row icon  to add a row to the table.
- Specify a range of IP addresses to which you want to apply the rule by typing the starting IP value in the Starting IP field and the ending IP value in the Ending IP field.
- Choose Group > System.

6. Click the Action drop-down arrow and select Allow or Deny to specify whether the specified users in the IP range can access CC-SG.
7. Click Update to save your changes.

▶ **To change the order in which CC-SG applies rules:**

1. Choose Administration > Security.
2. Click the Access Control List tab.
3. Select a rule you want to move up or down in the list.
4. Click the up or down arrow until the rule is in position.
5. Click Update to save your changes.

▶ **To remove a rule from the Access Control List:**

1. Choose Administration > Security.
2. Click the Access Control List tab.
3. Select the rule you want to remove, and then click the Remove Row icon.



4. Click Update to save your changes.

Notification Manager

Use Notification Manager to configure an external SMTP server so that notifications can be sent from CC-SG. Notifications are used to email reports that have been scheduled, email reports if users are locked out, and to email status of failed or successful scheduled tasks. See **Task Manager** (on page 291). After configuring the SMTP server, you send a test email to the designated recipient and notify the recipient of the result of the test.

Configure an External SMTP Server

1. Choose Administration > Notifications.
2. Select the Enable SMTP Notification checkbox.
3. Type the SMTP host in the SMTP host field. See **Terminology/Acronyms** (on page 2) for hostname rules. IPV6 is supported.
4. Type a valid SMTP port number in the SMTP port field.
5. Type a valid account name that can be used to log in to the SMTP server in the Account name field. **Optional.** Check with your email server administrator if this account information is required.
6. Type the account name's password in the Password and Re-enter Password fields. **Optional.** Check with your email server administrator if this account information is required.
7. Type a valid email address that will identify messages from CC-SG in the From field.

8. Type the number of times emails should be re-sent should the send process fail in the Sending retries field.
9. Type the number of minutes (from 1-60) that should elapse between sending retries in the Sending retry interval (minutes) field.
10. Check Use SSL if you want emails to be sent securely using Secure Sockets Layer (SSL).
11. Click Test Configuration to send a test email to the SMTP account specified. You should check to make sure that the email arrives.
12. Click Update Configuration to save your changes.

Task Manager

Use Task Manager to schedule CC-SG tasks on a daily, weekly, monthly, or yearly basis. A task can be scheduled to run only once or periodically on a specified day of the week and at a specified interval. For example, you could schedule device backups to occur every three weeks on Fridays, or schedule a particular report to be emailed to one or more recipients every Monday.

Note: Task Manager uses the server time that is set on CC-SG for scheduling, not the time on your client PC. The server time is displayed in the upper right corner of each CC-SG page.

Task Types

These tasks can be scheduled:

- Active Directory Synchronization
- Backup CC-SG
- Backup Device Configuration (individual device or device group)
- Backup Dominion User Station Configuration
- Pause and Resume Device Management
- Copy Device Configuration (individual device or device group)
- Group Power Control
- Outlet Power Control
- Power IQ Synchronization
- Purge Logs: Purge the Audit Trail and Error Log, with additional option to purge the Access Log.
- Restart Device
- Restore Device Configuration (does not apply to device groups)
- Restore Dominion User Station Configuration
- Upgrade Device Firmware (individual device or device group)
- Upgrade Dominion User Station Firmware
- Generate all reports

Schedule Sequential Tasks

You may want to schedule tasks sequentially to confirm that expected behavior occurred. For example, you may want to schedule an Upgrade Device Firmware task for a given device group, and then schedule an Asset Management Report task immediately after it to confirm that the correct versions of firmware were upgraded.

Email Notifications for Tasks

Upon completion of a task, an email message can be sent to a specified recipient. You can specify where the email is sent and choose to send email securely via SSL in the Notification Manager. See **Notification Manager** (on page 290).

Scheduled Reports

Scheduled reports are sent via email to the recipients that you specify. You can specify either CSV or HTML for the version of the emailed report.

All reports that have a Finished status are stored in HTML format on CC-SG for 30 days. You can view the finished reports in HTML format only by selecting Scheduled Reports on the Reports menu. See **Scheduled Reports** (on page 244).

Find and View Tasks

You can view tasks in a list filtered by the criteria you choose. For each task, you can view details and history.

Note: If a task is changed or updated, its prior history no longer applies and the Last Execution Date will be blank.

▶ **To view a task:**

1. Choose Administration > Tasks.
2. To search for tasks, use the up and down buttons to select the date range of the task you want to view.
3. Filter the list further by selecting one or more (Ctrl+click) tasks, status, or owner from each list.
4. Click View Tasks to view the list of tasks.

▶ **To view a task's history:**

- Select the task, and click Task History.

▶ **To view a task's details:**

- Double-click a task to open a dialog containing the task details.

Schedule a Task

This section covers most tasks that can be scheduled. See ***Schedule a Device Firmware Upgrade*** (on page 295) for details on scheduling device firmware upgrades.

► To schedule a task:

1. Choose Administration > Tasks.
2. Click New.
3. In the Main tab, type a name and description for the task. Names can have 1-32 alphanumeric characters or underscores, no spaces.
4. Click the Task Data tab.
5. Click the Task Operation drop-down menu and select the task you want to schedule. Note that the fields requiring data will vary according to the task selected. See the following sections for details on each task.
 - **Active Directory Synchronization:** See ***Synchronize All AD Modules*** (on page 223)
 - **Backup CommandCenter:** See ***Backing Up CC-SG*** (on page 316) for details on backups and configuring automatic delete of old backup files.
 - **Backup Device Configuration:** See ***Backing Up a Device Configuration*** (on page 89)
 - **Backup Dominion User Station Configuration:** See ***Backup User Station*** (on page 377).
 - **Pause/Resume Device Management:** See ***Pausing CC-SG's Management of a Device*** (on page 94) and ***Resuming Management of a Device*** (on page 95) for pausing and resuming individual devices. See ***Pause and Resume Management of Devices Using a Scheduled Task*** (on page 95) for details on scheduling a task to pause and resume multiple devices or device groups.
 - **Copy Device Configuration:** See ***Copying Device Configuration*** (on page 93)
 - **Group Power Control:** See Node Group Power Control
 - **Outlet Power Control:** See the ***CC-SG User Guide***.
 - **Power IQ Synchronization:** See ***Synchronize Power IQ and CC-SG*** (on page 383).
 - **Purge Logs:** See ***Configuring Logging Activity*** (on page 257).
 - **Restart Devices:** See ***Restarting a Device*** (on page 94)
 - **Restore Device Configuration:** See ***Restoring Device Configurations*** (on page 90) (does not apply to device groups)
 - **Restore Dominion User Station Configuration:** See ***Restore User Station*** (on page 378)

- **Upgrade Device Firmware (individual device or device group):** See *Schedule a Device Firmware Upgrade* (on page 295).
 - **Upgrade Dominion User Station Firmware:** See *Upgrade User Station* (on page 376)
 - **Generate all reports:** See *Reports* (on page 233).
6. Click the Recurrence tab. The Recurrence tab is disabled for Upgrade Device Firmware tasks.
 7. In the Period field, click the radio button that corresponds to the period of time when the scheduled task will recur.
 - a. **Once:** Use the up and down arrows to select the Start time at which the task should begin.
 - b. **Periodic:** Use the up and down arrows to select the Start time at which the task should begin. Type the number of times the task should be executed in the Repeat Count field. Type the time that should elapse between repetitions in the Repeat Interval field. Click the drop-down menu and select the unit of time from the list. To set the task to run at a selected interval forever or until you change or delete the task, select the "Ongoing - until the task is changed or canceled" checkbox. The Repeat Count is disabled. Set the Repeat Interval.
 - c. **Daily:** Click the Every day radio button if you want the task to repeat every day of the week. Click the Every weekday radio button if you want the task to repeat each day from Monday through Friday.
 - d. **Weekly:** Use the up and down arrows to select how many weeks should elapse between task executions, then select the checkbox next to each day on which the task should recur each week that it runs.
 - e. **Monthly:** Type the date on which the task should execute in the Days field, and then select the checkbox next to each month in which the task should recur on the specified date.
 - f. **Yearly:** Click the drop-down menu and select the month in which the task should execute from the list. Use the up and down arrows to select the day in that month on which the task should execute.
 8. For Daily, Weekly, Monthly, and Yearly tasks, you must add a start and end time for the task in the Range of recurrence section. Use the up and down arrows to select the Start at time and Start date. Click the radio button next to No end date if the task should recur as specified indefinitely, or click the radio button next to End date, and then use the up and down arrows to select the date at which the task should stop recurring.
 9. Click the Retry tab.
 10. If a task fails, CC-SG can retry the task at a later time as specified in the Retry tab. Type the number of times CC-SG should retry to execute the task in the Retry count field. Type the time that should elapse between retries in the Retry Interval field. Click the drop-down menu and select the unit of time from the list.

Important: If you are scheduling a task to upgrade SX or KX devices, set the Retry Interval for more than 20 minutes, because it takes approximately 20 minutes to successfully upgrade these devices.

11. Click the Notification tab.
12. Specify email addresses to which a notification should be sent upon task success or failure. By default, the email address of the user currently logged in is available. User email addresses configured in the User Profile. To add another email address, click Add, type the email address in the window that opens, and then click OK. By default, email is sent if the task fails. To notify recipients of successful tasks, select On Success.
13. Click OK to save your changes.

Schedule a Device Firmware Upgrade

You can schedule a task to upgrade multiple devices of the same type, such as KX or SX, within a device group. Once the task begins, an Upgrade Device Firmware report is available in the Reports > Scheduled Reports menu to view the upgrade status in real time. This report is also emailed if you specify the option in the Notification tab.

See the Raritan User Guide for each device for estimated upgrade times.

► To schedule a Device Firmware Upgrade:

1. Choose Administration > Tasks.
2. Click New.
3. In the Main tab, type a name and description for the task. The Name you choose will be used to identify the task and the report associated with the task.
4. Click the Task Data tab.
5. Specify the device upgrade details:
 - a. Task Operation: Select Upgrade Device Firmware.
 - b. Device Group: Select the device group that contains the devices you want to upgrade.
 - c. Device Type: Select the type of device you want to upgrade. If you need to upgrade more than one device type, you must schedule a task for each type.
 - d. Concurrent Upgrades: Specify the number of devices that should begin the file transfer portion of the upgrade simultaneously. Maximum is 10. As each file transfer completes, a new file transfer will begin, ensuring that only the maximum number of concurrent transfers occurs at once.
 - e. Upgrade File: Select the firmware version to which you want to upgrade. Only available upgrade files that are appropriate for the device type selected will appear as options.
6. Specify the time period for the upgrade:

- a. Start Date/Time: Select the date and time at which the task begins. The start date/time must be later than the current date/time.
 - b. Restrict Upgrade Window and Latest Upgrade Start Date/Time: If you must finish all upgrades within a specific window of time, use these fields to specify the date and time after which no new upgrades can begin. Select Restrict Upgrade Window to enable the Latest Upgrade Start Date/Time field.
7. Specify which devices will be upgraded, and in what order. Place higher priority devices at the top of the list.
- a. In the Available list, select each device you want to upgrade, and click Add to move it to the Selected list.
 - b. In the Selected list, select a device and use the arrow buttons to move the devices into the order in which you want upgrades to proceed.
8. Specify whether failed upgrades should be retried.
- a. Click the Retry tab.
 - b. Retry Count: Type the number of times CC-SG should retry a failed upgrade.
 - c. Retry Interval: Enter the time that should elapse between retries. Default times are 30, 60, and 90 minutes. These are the optimal retry intervals.
9. Specify email addresses that should receive notifications of success and failure. By default, the email address of the user currently logged in is available. User email addresses are configured in the User Profile.
- a. Click the Notification tab.
 - b. Click Add, type the email address in the window that opens, and then click OK.
 - c. Select On Failure if you want an email sent if an upgrade fails.
 - d. Select On Success if you want an email sent when all upgrades complete successfully
10. Click OK to save your changes.

When the task starts running, you can open the Upgrade Device Firmware report any time during the scheduled time period to view the status of the upgrades. See **Upgrade Device Firmware Report** (on page 244).

Change a Scheduled Task

You can change a scheduled task before it runs.

► **To change a scheduled task:**

1. Select the task you want to change.
2. Click Edit.
3. Change the task specifications as needed. See **Schedule a Task** (on page 293) and **Schedule a Device Firmware Upgrade** (on page 295) for tab descriptions.

4. Click Update to save your changes.

Reschedule a Task

The Save As function in Task Manager enables you to reschedule a completed task that you want to run again. This is also a convenient way to create a new task that is similar to a completed task.

▶ **To reschedule a task:**

1. Choose Administration > Tasks.
2. In the Task Manager page, select the task you want to reschedule. Use the filtering criteria to search for the task.
3. Click Save As.
4. In the Save As Task window that opens, the tabs are populated with the information from the previously configured task.
5. Change the task specifications as needed. See **Schedule a Task** (on page 293) and **Schedule a Device Firmware Upgrade** (on page 295) for tab descriptions.
6. Click OK to save your changes.

Schedule a Task that is Similar to Another Task

You can use a previously configured task as a "template" to schedule a new task with similar specifications.

▶ **To schedule a task that is similar to another task:**

- See **Reschedule a Task** (on page 297).

Delete a Task

You can delete a task to remove it from the Task Manager. You cannot delete a task that is currently running.

▶ **To delete a task:**

- Select the task, then click Delete.

Schedule Dominion User Station Firmware Upgrade

You can schedule a task to upgrade one or more Dominion User Stations. Once the task begins, an Upgrade Dominion User Station Firmware report is available in the Reports > Scheduled Reports menu to view the upgrade status in real time. This report is also emailed if you specify the option in the Notification tab.

*Note: You must upload Dominion User Station firmware to CC-SG before scheduling this task . See **Upload Firmware** (on page 250).*

► To Schedule User Station Firmware Upgrade

1. Choose Administration > Tasks and then click New.
2. In Main tab: Type a name and description for the task. The Name you choose will be used to identify the task and the report associated with the task.
3. Tab Task Data: Select Upgrade Dominion User Station Firmware as Task Operation. Task Details:
 - Concurrent Upgrades: Increment the number based on concurrent upgrades.
 - Start Date/Time: Select start date and time.
 - Upgrade File: Uploaded file is populated and list is available if multiple firmware files are uploaded.
 - Restrict Upgrade Window and Latest Upgrade Start Date and Time: If you must finish all upgrades within a specific time, enable the check box and provide the date and start time.
 - Devices For Firmware Upgrade: Select available devices and add to the selected pane.
4. Tab Retry: Retry Count allows CC-SG to retry the task in case of failure. Retry Interval defines the time interval between each try.
5. Tab Notification: Add Notification email address and condition upon which email should be sent upon task success or failure.
6. Click OK.

Schedule Dominion User Station Backup

You can schedule a task to backup Dominion User Station Configuration. Once the task finishes you can view the task history or audit trail to get more information.

► To schedule backup task of Dominion User Station:

1. Choose Administration > Tasks and then click New
2. In the Main tab: Type a name and description for the task. The Name you choose will be used to identify the task and the report associated with the task.

3. Tab Task Data: Select Backup Dominion User Station Configuration as Task Operation. In Task Details: Select available device and click Add to be selected for backup.
4. Tab Recurrence:
 - Choose Recurrence pattern period and start time. This allows backups to run a set number of times in a certain time frame without reconfiguring.
 - For Daily, Weekly, Monthly and Yearly Recurrence Range, provide start and end time.
5. Tab Retry: Retry Count allows CC-SG to retry the task in case of failure. Retry Interval defines the time interval between each try.
6. Tab Notification: Upon completion of a task, an email message can be sent to a specified recipient. You can specify where the email is sent and choose to send.
7. Click OK

Schedule Dominion User Station Restore

You can restore Dominion User Station configuration from a list of available backups.

► To schedule Dominion User Station Restore

1. Choose Administration > Tasks
2. Click New
3. In the Main tab, type a name and description for the task. The Name you choose will be used to identify the task and the report associated with the task.
4. Tab Task Data:
 - Task Operation: Select Restore Dominion User Station Configuration.
 - Device to restore: Select the device from the drop down.
 - Once the device is selected the Available Backups list populates. Backup files are listed with name, date and time it was created and the data version.
 - Select the backup file you want to use.
5. Tab Recurrence:
 - Choose Recurrence pattern period and start time. This allows backups to run a set number of times in certain time frame without reconfiguring.
 - For Daily, Weekly, Monthly and Yearly Recurrence Range provide start and end time.
6. Tab Retry: Retry Count allows CC-SG to retry the task in case of failure. Retry Interval defines the time interval between each try.

7. Tab Notification: Upon completion of a task, an email message can be sent to a specified recipient. You can specify where the email is sent and choose to send.
8. Click OK.

SSH Access to CC-SG

Use Secure Shell (SSH) clients, such as Putty or OpenSSH Client, to access a command line interface to SSH (v2) server on CC-SG. Only a subset of CC-SG commands is provided via SSH to administer devices and CC-SG itself.

The SSH client user is authenticated by the CC-SG in which existing authentication and authorization policies are applied to the SSH client. The commands available to the SSH client are determined by the permissions for the user groups to which the SSH client user belongs.

Administrators who use SSH to access CC-SG cannot log a CC Super-User SSH user out, but are able to log all other SSH client users out, including System Administrators.

► **To access CC-SG via SSH:**

1. Launch an SSH client, such as PuTTY.
2. Specify the IP address of the CC-SG.
3. Specify the SSH port number. Default is 22. You can enable or disable SSH and configure the port for SSH access in Security Manager. See **Enable SSH Access** (on page 301).
4. Open the connection.
5. Log in with your CC-SG username and password.
6. A shell prompt appears.

► **To display all SSH commands:**

- At the shell prompt, type `ls` to display all commands available.

```

192.168.59.124 - PuTTY
login as: admin
admin@192.168.59.124's password:
CommandCenter Secure Gateway

Centralized access and control for your global IT infrastructure

[CommandCenter admin]$ ls
?                activeports      activeusers
backupdevice     clear            connect
console_cmd     copydevice       disconnect
entermaint      exit             exitmaint
grep            help             list_interfaces
list_nodes      list_ports       listbackups
listdevices     listfirmwares   listinterfaces
listnodes       listports        logoff
ls              more             pingdevice
restartcc       restartdevice    restoredevice
shutdowncc      ssh              su
ul              upgradedevice    user_list
[CommandCenter admin]$
  
```

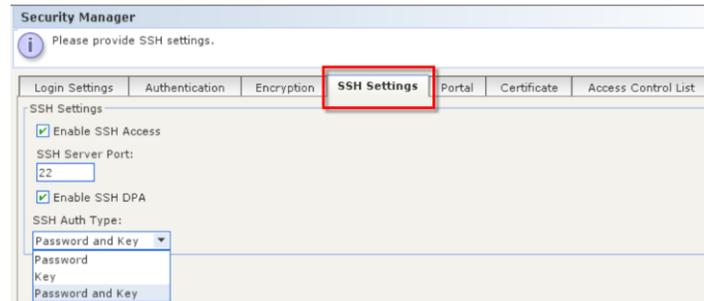
Enable SSH Access

Enable SSH access in the Admin Client to allow users to access the CC-SG using SSH.

► **To enable SSH access:**

1. Choose Administration > Security.
2. SSH Settings tab, select the Enable SSH Access checkbox.
3. Set other options for SSH access:
 - a. Enter the port number for SSH access in the SSH Server Port field. Default is 22.
 - b. Select the Enable SSH DPA checkbox to allow direct connections with SX serial port targets using SSH. When the checkbox is not selected, attempts to connect to a serial port target using Direct Port Access are refused.
 - c. SSH Auth Type: Select the SSH authentication method

- Password
- Key
- Password and Key



4. Click Update.

Get Help for SSH Commands

You can get limited help for all commands at once. You can also get in-depth help on a single command at a time.

▶ **To get help for a single SSH command:**

1. At the shell prompt, type the command you want help for, followed by a space and `-h`. For example:

```
connect -h
```
2. Information on the command, parameters, and usage appear in the screen.

▶ **To get help for all SSH commands:**

1. At the shell prompt, type the following command:

```
help
```
2. A short description and example for each SSH command appears in the screen.

SSH Commands and Parameters

The following table lists all commands available in SSH. You must be assigned the appropriate privileges in CC-SG to access each command.

Some commands have additional parameters that you must type to execute the command. For more information about how to type commands, see **Command Tips** (on page 305).

▶ **To list active ports:**

```
activeports
```

▶ **To list active users:**

```
activeusers
```

▶ **To backup a device configuration:**

```
backupdevice <[-host <host>] | [-id <device_id>]>  
backup_name [description]
```

▶ **To clear the screen:**

```
clear
```

▶ **To establish a connection to a serial port:**

If <port_name> or <device_name> contains spaces, surround the name by quotes.

```
connect [-d <device_name>] [-e <escape_char>] [-c  
<escape_mode>] <[-n <port_name>] | [-i <interface_id>] |  
[port_id]>
```

▶ **To copy a device configuration from one device to another. SX devices with same number of ports only:**

```
copydevice <[-b <backup_id>] | [source_device_host]>  
target_device_host
```

▶ **To close port connection:**

```
disconnect <[-u <username>] [-p <port_id>] [-id  
<connection_id>]>
```

▶ **To enter maintenance mode:**

```
entermaint minutes [message]
```

▶ **To exit maintenance mode:**

```
exitmaint
```

▶ **To search for text from piped output stream:**

```
grep search_term
```

▶ **To view the help screen for all commands:**

```
help
```

▶ **To list available device configuration backups:**

```
listbackups <[-id <device_id>] | [host]>
```

▶ **To list available devices:**

```
listdevices
```

▶ **To list firmware versions available for upgrade:**

```
listfirmwares [[-id <device_id>] | [host]]
```

▶ **To list all interfaces:**

```
listinterfaces [-id <node_id>]
```

▶ **To list all nodes:**

```
listnodes
```

▶ **To list all ports:**

```
listports [[-id <device_id>] | [host]]
```

▶ **To logoff a user:**

```
logoff [-u <username>] message
```

▶ **To list all commands:**

```
ls
```

▶ **To specify paging:**

```
more [-p <page_size>]
```

▶ **To ping a device:**

```
pingdevice <[-id <device_id>] | [host]>
```

▶ **To restart CC-SG:**

```
restartcc minutes [message]
```

▶ **To restart a device:**

```
restartdevice <[-id <device_id>] | [host]>
```

▶ **To restore a device configuration:**

```
restoredevice <[-host <host>] | [-id <device_id>]>  
[backup_id]
```

▶ **To shutdown CC-SG:**

```
shutdowncc minutes [message]
```

▶ **To open an SSH connection to an SX device:**

```
ssh [-e <escape_char>] <[-id <device_id>] | [host]>
```

▶ **To change a user:**

```
su [-u <user_name>]
```

▶ **To upgrade a device's firmware:**

```
upgradedevice <[-id <device_id>] | [host]>
```

▶ **To list all current users:**

```
user_list
```

▶ **To exit the SSH session:**

```
exit
```

Command Tips

- For commands that pass an IP address, such as `upgradedevice`, you can substitute the hostname for an IP address. See **Terminology/Acronyms** (on page 2) for hostname rules.
- Parts of a command in square brackets are optional. You do not have to use that part of the command.
- Some commands contains two segments separated by the "Or" sign: | You must enter one of the listed parts of the command, but not both.
- Parts of a command in angle brackets show the text that you must type. Do not type the angle brackets. For example:

Command syntax	Device ID value	You should type
<code>ssh -id <device_id></code>	100	<code>ssh -id 100</code>

- The default escape character is a tilde followed by a period. For example:
~.
See **End SSH Connections** (on page 308) for details on using the escape character and the exit command.

You may have problems using the escape character in the Linux terminal or client. Raritan recommends that you define a new escape character when establishing a port connection. The command is `connect [-e <escape_char>] [port_id]`. For example, to define "b" as the escape character when connecting to the port with id 2360, type `connect -e b 2360`.

Create an SSH Connection to a Serial-Enabled Device

You can create an SSH connection to a serial-enabled device to perform administrative operations on the device. Once connected, the administrative commands supported by the serial-enabled device are available.

Note: Before you connect, ensure that the serial-enabled device has been added to the CC-SG.

1. Type `listdevices` to ensure the serial-enabled device has been added to CC-SG.
2. Connect to the device by typing `ssh -id <device_id>`.
Using the figure above as an example, you can connect to SX-229 by typing `ssh -id 1370`.

```

192.168.51.124 - PuTTY
[CommandCenter ccRoot]$ ssh -id 1370
Authenticating [vG550]...Authenticated.
User Type [Administrator]
User Name [vG550]
Type [help] for all commands
vG550:Command>
    
```

Use SSH to Connect to a Node via a Serial Out-of-Band Interface

You can use SSH to connect to a node through its associated serial out-of-band interface. The communication to the target node will take place through the SSH connection to the CC-SG.

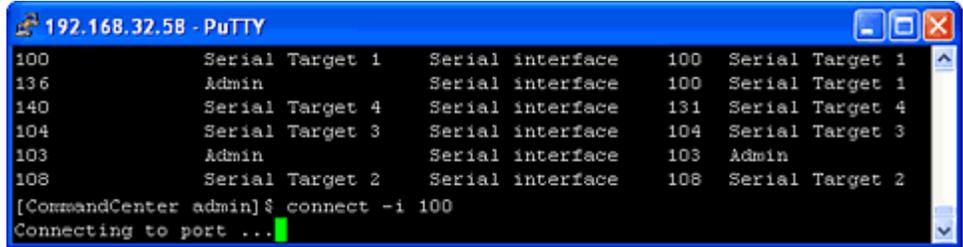
SX2 and DSAM nodes are accessible via CommandCenter Secure Gateway

1. Type `listinterfaces` to view the node ids and associated interfaces.

```

192.168.32.58 - PuTTY
[CommandCenter admin]$
[CommandCenter admin]$ listinterfaces
Interface ID  Interface name      Interface type      Node ID  Node name
-----
100           Serial Target 1     Serial interface    100      Serial Target 1
136           Admin               Serial interface    100      Serial Target 1
140           Serial Target 4     Serial interface    131      Serial Target 4
104           Serial Target 3     Serial interface    104      Serial Target 3
103           Admin               Serial interface    103      Admin
108           Serial Target 2     Serial interface    108      Serial Target 2
[CommandCenter admin]$
    
```

2. Type `connect -i <interface_id|node_name>` to connect to the node associated with the interface. If there are multiple serial interfaces in one node, the first available one will be connected.



3. At the prompt that appears, you can enter specific commands or aliases.

Command	Alias	Description
quit	q	Terminates connection and returns to SSH prompt.
get_write	gw	Gets Write Access. Allows SSH user to execute commands at target server while browser user can only observe proceedings.
get_history	gh	Gets History. Displays the last few commands and results at target server.
send_break	sb	Sends Break. Breaks the loop in target server initiated by browser user.
help	?, h	Prints help screen.

End SSH Connections

You can make SSH connections to CC-SG only, or you can make a connection to CC-SG and then make a connection to a port, device, or node managed by CC-SG. There are different ways to end these connections, depending on which part you want to end.

► **To exit the entire SSH connection to CC-SG:**

This command ends the entire SSH connection, including any port, device, or node connections made through CC-SG.

- At the prompt, type the following command and press the Enter key:

```
exit
```

► **To end a connection to a port, device, or node while remaining connected to CC-SG:**

You can use the escape character to end a connection to a port, device, or node while keeping your SSH connection to CC-SG open.

The default escape character is: Control key, hyphen, period

- At the prompt, type the following command and press Enter:

```
Control - ]
```

You may have problems using the escape character in the Linux terminal or client. Raritan recommends that you define a new escape character when establishing a port connection. The command is `connect [-e <escape_char>] [port_id]`. For example, to define "b" as the escape character when connecting to the port with id 2360, type `connect -e b 2360`.

Direct Port Access to Dominion SX Serial Targets

CC-SG allows SSH direct port access for serial targets of Dominion SX and SX2 devices managed by CC-SG. You must enable this option first. See **Enable SSH Access** (on page 301).

All SSH pass-through sessions are proxied by CC-SG.

A configurable escape character allows users to escape to the port menu as needed during SSH sessions on the target, to access the commands available on the port, such as write lock and history.

Up to 30 concurrent sessions are allowed.

Naming Ports and Nodes for Serial Targets with Direct Port Access

When using direct port access to serial targets of Dominion SX, combined with accessing ports on the SX without using CC-SG, it is recommended that the port name and the node name for the target are identical.

If the port name and the node name are not the same, you will need to know both names, and use the correct name depending on your point of access. For example, depending on whether you access via CC-SG, or directly via SX.

CC-SG enforces unique node names. Make all changes in CC-SG using these procedures to ensure a unique name is propagated to the port, to keep names in synch, and to prevent connections from going to the wrong target.

▶ To name ports and nodes for serial targets with direct port access:

1. When configuring SX ports on CC-SG, set the node name and the port name to be the same. The port name propagates to the SX.
2. Configure only 1 serial interface per CC-SG node. This results in unique names for nodes that are identical to the port name.
3. When changing a CC-SG node name, change the port name to be the same to keep the SX port name and its associated node in synch. The new port name propagates to the SX.

Direct Port Access SSH Command

Use the following command to make a direct port connection to a target of a Dominion SX device. The Dominion SX device must be managed by CC-SG. To achieve direct port access, the CC-SG username, node name, escape character for the session, and CC-SG hostname or IP address are included in one command.

▶ Sample Command:

```
ssh -l
username[:ccsg_node_name[:[escape_mode][:escape_char]
]]{hostname | IP_address}
```

Direct Port Access Command Parameters

Parameter	Details
username	<p>CC-SG username for the user making the connection.</p> <p>User must have access permission for the target.</p>
ccsg_node_name	<p>The node name for the serial target. This name must be the same as the port name. See Naming Ports and Nodes for Serial Targets with Direct Port Access (on page 309)</p> <ul style="list-style-type: none"> ▪ The colon character ":" is not allowed within names. ▪ ":" can only be used as a separator between username, ccsg_node_name, escape_mode, and escape_character. ▪ If the name contains space characters, you must enclose the name in double quotes. ▪ You must escape left and right parentheses within names, "(" and ")" using a backslash character \ <p>Example: to escape the parentheses in "Port32(2)"</p> <pre>ssh -l admin:Port32\(2\) 10.0.20.11</pre>
escape_mode	<p>Optional. The escape_mode parameter modifies the escape mode from the default.</p> <p>control or none</p> <p>Control is the default mode, and can be left blank. Use the : even if left blank.</p> <p>Changes to the escape_mode are made per port and are valid only for the duration of the session. Changes are not persistent.</p>

Parameter	Details
escape_char	Optional. The escape_character parameter is used to modify the escape character from the default. Default escape is]. Changes to the escape_char are made per port and are valid only for the duration of the session. Changes are not persistent.
hostname IP_address	The hostname or the IP address of the CC-SG that manages the Dominion SX.

Example: Modify Escape Character to Left Bracket in DPA

► **To modify the escape character to left bracket in a direct port access session:**

```
ssh -l username:ccsg_node_name::[ {hostname|IP_address}
```

When connected to the target, user presses Control+[to escape to the port menu.

Example: Modify Escape Mode to None in DPA

► **To modify the escape mode to none in direct port access session:**

```
ssh -l username:ccsg_node_name:none  
{hostname|IP_address}
```

When connected to the target, user presses], the default escape character, to escape to the port menu.

Serial Admin Port

The serial admin port on CC-SG can be connected directly to a Raritan serial device, such as Dominion SX2 or KX3/KX4101 with DSAM.

You can connect to the SX2 via the IP address using a terminal emulation program, such as HyperTerminal or PuTTY. Set the baud rate in the terminal emulation program to match the SX2 baud rate.

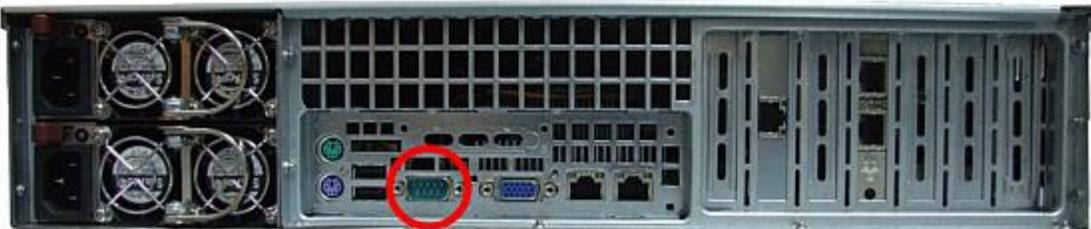
▶ **SX2 requirements:**

Use an ASCSDB9F adapter to connect the CC-SG unit to the SX2. Use the default SX2 port settings: 9600 bps, Parity = None/8, Flow Control = None, Emulation = VT100.

▶ **E1 Serial Admin Port:**



- OR -



About Terminal Emulation Programs

PuTTY is a free program you can download from the internet.

Administrators are advised to keep a record of their CC-SG serial number, particularly for virtual appliances. You will need the serial number if technical support must assist you using the FS2 password.

Finding Your CC-SG Serial Number

▶ **To find your CC-SG serial number:**

1. Log into the Admin Client.
2. Choose Help > About Raritan Secure Gateway.
3. A new window opens with your CC-SG serial number.

Web Services API

You must accept the End User Agreement before adding a Web Services API client to CC-SG. See the CC-SG Web Services API Guide for details on using the API.

▶ **To add a Web Services API:**

1. Select Access > Add Web Services API. This option is available only for users with the CC Setup and Control Privilege.
2. Read the End User Agreement.
 - You can copy and paste the text to save it, or choose Secure Gateway > Print.
 - After you complete configuration, this agreement will also be available in the Access menu.
3. Click Accept. The New Web Services API Configuration window opens.
4. Type in the data requested about your web services client.
 - Web Services Client Name: Maximum 64 characters.
 - License Key: Your license key from Raritan. Each CC-SG unit must have a unique license key.
 - IP Address/Hostname: Maximum 64 characters.
 - HTTPS Web Services Port: Read-only field. CC-SG uses port 9443 when trust establishment is generated.
 - Licensed Vendor Name: Maximum 64 characters.
5. Generate a self-signed certificate.
 - a. Encryption Mode: If Require AES Encryption between Client and Server is selected in the Administration > Security > Encryption screen, AES-128 is the default. If AES is not required, DES 3 is the default.
 - b. Private Key Length: 2048 is the default. Choose 1024 through 4096.
 - c. Validity Period (days): Maximum 4 numeric characters.
 - d. Country Code: CSR tag is Country Name.
 - e. State or Province: Maximum 128 characters. Type in the whole state or province name. Do not abbreviate.
 - f. City/Locality: CSR tag is Locality Name. Maximum 128 characters.
 - g. Registered Company Name: CSR tag is Organization Name. Maximum 64 characters.
 - h. Division/Department Name: CSR tag is Organization Unit Name. Maximum 64 characters.
 - i. Fully Qualified Domain Name: CSR tag is Common Name.
 - j. Administrator Email Address: Type in the email address of the administrator who is responsible for the certificate request. Maximum 256 characters.

- k. Challenge Password: Maximum 64 characters.

Note: The Challenge Password is used internally by CC-SG to generate the certificate. You do not need to remember it.

- l. Password: Enter a keystore password. Use this password to open the .P12 file that you will save in step 7. If you copy the generated certificate and import into your own keystore instead, you do not need to remember this keystore password.
6. Click Generate Certificate. The text appears in the Certificate box.
 7. Click Save to File to save the certificate to a .P12 file. Or, copy the generated certificate and import it into your own keystore.
 8. Click Add to save your changes.

CC-NOC

As of CC-SG release 4.2, CC-NOC is not accessible from CC-SG.

System Maintenance

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Maintenance Mode

Maintenance mode restricts access to CC-SG so that an administrator can perform operations without disruption. Some examples of operations that are best performed in maintenance mode include changing the inactivity timer or backing up CC-SG. This ensures that system wide settings, such as the inactivity timer, will be changed for all users.

Current users, except the administrator who is initiating Maintenance Mode, are alerted and logged out after the configurable time period expires. While in Maintenance Mode, other administrators are allowed to log into CC-SG, but non-administrators are prevented from logging in. An SNMP trap is generated each time CC-SG enters or exits Maintenance Mode.

Note 1: Maintenance Mode is available only on standalone CC-SG units that are not in cluster configurations.

Note 2: Upgrade CC-SG is disabled until you enter Maintenance Mode.

Scheduled Tasks and Maintenance Mode

Scheduled tasks cannot execute while CC-SG is in Maintenance Mode. See **Task Manager** (on page 291). When CC-SG exits Maintenance Mode, scheduled tasks will be executed as soon as possible.

Entering Maintenance Mode

1. Choose System Maintenance > Maintenance Mode > Enter Maintenance Mode.
2. Password: Type your password. Only users with the CC Setup and Control privilege can enter maintenance mode.
3. Broadcast message: Type the message that will display to users who will be logged out of CC-SG.
4. Enter maintenance mode after (min): Enter the number of minutes (from 0-720) that should elapse before CC-SG enters maintenance mode. Entering zero minutes causes Maintenance Mode to begin immediately. If specifying over 10 minutes, the broadcast message displays to users immediately, and then repeats at 10 and 5 minutes before the event occurs.
5. Click OK.
6. Click OK in the confirmation dialog box.

Exiting Maintenance Mode

1. Choose System Maintenance > Maintenance Mode > Exit Maintenance Mode.
2. Click OK to exit Maintenance Mode.
3. A message appears when CC-SG has exited Maintenance Mode. All users will now be able to access CC-SG normally.

Backing Up CC-SG

The best practice is to enter Maintenance Mode before backing up CC-SG. Entering Maintenance Mode ensures that no changes are made to the database while it is being backed up.

You can store up to 50 backup files on CC-SG. Once you have reached 50 backup files, you cannot create any new backups until you delete some old backup files from CC-SG.

When you run the CC-SG backup as a task, select Automatic Delete when Maximum Reached to automatically delete the oldest backup file when the maximum number of backup files is reached. This setting is only available when creating a Backup CC-SG task. When a backup file is deleted as part of the backup CC-SG task, the audit log will contain an entry for each file deleted. .

► **To backup CC-SG:**

1. Choose System Maintenance > Backup.
2. Type a name for this backup in the Backup Name field.
3. Type a description for the backup in the Description field. **Optional.**

4. Select a Backup Type: Full or Standard. See ***What is the difference between Full backup and Standard backup?*** (on page 318)
5. If you are setting this backup as a task from the Administration > Tasks page, select the Automatic Delete When Maximum Reached checkbox to allow CC-SG to delete the oldest backup file in storage locally when the maximum number of files is reached. Set the maximum number in the Maximum Backup Files field. The default number is 50 backup files.
Optional.
6. To save a copy of this backup file to an external server, select the Backup to Remote Location checkbox. **Optional.**
 - a. Select a Protocol used to connect to the remote server, either FTP or SFTP
 - b. Type the IP address or hostname of the server in the IP Address/Hostname field. IPV6 is supported.
 - c. If you are not using the default port for the selected protocol (FTP: 21, SFTP: 22), type the communications port used in the Port Number field.
 - d. Type a username for the remote server in the Username field.
 - e. Type a password for the remote server in the Password field.
 - f. In the Directory (Relative Path) field, specify the location to save the backup file on the FTP server.
 - Leave this field blank to save the backup file to the default home directory on the FTP server.
 - Enter a path relative to the default home directory to save the backup file in a level below the default home directory on the FTP server. For example, to save the backup file in a folder called "Backups" under the default home directory, enter Backups in the Directory (Relative Path) field.
 - g. In the "Filename (leave blank to use the default filename convention)" field, type a filename for naming the backup on the remote server, or leave blank to accept the default name. The default name includes "backup" with a date and time.
 - h. Click Save As Default if you want to save current remote server settings as default values. A confirmation message appears. Click OK.
Optional.
7. Click OK.
A message appears when the backup completes. The backup file is saved in the CC-SG file system, and if specified in the Backup to Remote Location field, to a remote server as well. This backup can be restored at a later time.

Important: The Neighborhood configuration is included in the CC-SG backup file so make sure you remember or note down its setting at the backup time. This is helpful for determining whether the backup file is appropriate for the CC-SG unit you restore.

What is the difference between Full backup and Standard backup?

▶ **Standard backup:**

A standard backup includes all data in all fields of all CCSG pages, except for data in the following pages:

- Administration > Configuration Manager > Network tab
- Administration > Cluster Configuration

CCSG backup files stored on CCSG are also not backed up. You can view the list of backup files stored on CCSG in the System Maintenance > Restore page.

Standard backup also excludes other temporary data in fields, such as date ranges in Report pages.

▶ **Full backup:**

A Full backup includes everything in the Standard backup, and also backs up the CC-SG firmware files, device firmware files, application files, and logs.

Application files include AKC, VKC, RSC, and VNC.

Saving and Deleting Backup Files

Use the Restore CommandCenter screen to save and delete backups stored on CC-SG. Saving backups allows you to maintain a copy of the backup file on another PC. You can create an archive of backup files. Backup files saved to another location can be uploaded to other CC-SG units and then restored to copy a configuration from one CC-SG to another.

Deleting backups you do not need saves space on the CC-SG.

Save a Backup File

1. Choose System Maintenance > Restore Command Center.
2. In the Available Backups table, select the backup you want to save to your PC.
3. Click Save to File. A Save dialog appears.
4. Type a name for the file and choose the location where you want to save it.
5. Click Save to copy the backup file to the specified location.

Delete a Backup File

1. In the Available Backups table, select the backup you want to delete.
2. Click Delete. A confirmation dialog appears.
3. Click OK to delete the backup from the CC-SG system.

Restoring CC-SG

You can restore CC-SG using a backup file that you created.

A backup file created from a Release 9.5 or later Evaluation version CC-SG can be used to restore CC-SG.

Important: The Neighborhood configuration is included in the CC-SG backup file so make sure you remember or note down its setting at the backup time. This is helpful for determining whether the backup file is appropriate for the CC-SG unit you restore.

You must break a cluster configuration before restoring. See *Delete a Cluster* (on page 272).

► **To restore CC-SG:**

1. Choose System Maintenance > Restore. The Restore CommandCenter page opens, displaying a list of backup files available to CC-SG. You can see the type of backup, the date of the backup, the description, what CC-SG version it was made from, and the size of the backup file.
2. If you want to restore from a backup stored off of the CC-SG system, you must first upload the backup file to CC-SG. **Optional.**
 - a. Click Upload.
 - b. Browse for the backup file, and select it in the dialog window. You can retrieve the file from anywhere on your client's network.
 - c. Click Open to upload this file to CC-SG. When complete, the backup file appears in the Available Backups table. Backup files created in evaluation versions of CC-SG are marked as "-eval" as part of the version number.
3. Select the backup file you want to restore in the Available Backups table.
4. If applicable, select what kind of restore you want to perform from this backup:
 - Standard - Restores only critical Data to CC-SG. This includes CC-SG configuration information, Device and Node configurations, and User configurations. See ***What is the difference between Full backup and Standard backup?*** (on page 318)
 - Full - Restores all Data, Logs, firmware, Application Files, and license files stored in the backup file. See ***What is the difference between Full backup and Standard backup?*** (on page 318) This requires that a full backup was made for the file. Look at the Type column in the Available Backups table to see what full backups are available.
 - Custom - Allows you to specify which components of the backup to restore to CC-SG by checking them in the Restore Options area. Select each of the following to include them in the restore:

- Restore Data - CC-SG configuration, Device and Node configuration, and User Data. Selecting Data restores the Standard backup portion of a Full backup file. See **What is the difference between Full backup and Standard backup?** (on page 318)
 - Restore Logs - Error logs and event reports stored on CC-SG
 - Restore CC Files - Stored files used for updating the CC-SG server itself.
 - Restore Firmware binaries - Stored firmware files used for updating Raritan devices managed by CC-SG.
 - Restore Applications - Stored applications used by CC-SG to connect users to nodes.
 - Restore Licenses - Stored license files that allow access to CC-SG functions and nodes. See **Available Licenses** (on page 20).
5. Type the number of minutes (from 0-60) that CC-SG will wait before performing the restore operation in the "Restore after (min.)" field. This gives users time to complete their work and log out.
If specifying over 10 minutes, the broadcast message displays to users immediately, and then repeats at 10 and 5 minutes before the event occurs.
 6. In the Broadcast Message field, type a message to notify other CC-SG users that a restore will occur.
 7. Click Restore. CC-SG waits for the time specified before restoring its configuration from the selected backup. When the restore occurs, all other users are logged out.
If the backup file is corrupt, a message appears and a message is written to the Audit Trail. Corrupt backup files cannot be used to restore CC-SG.

Resetting CC-SG

You can reset CC-SG to purge the database or to reset other components to their factory default settings. You should perform a backup and save the backup file to another location before using any reset options.

It is recommended to use the default options selected.

*Note: CC-SG Backup files that are saved on the CC-SG unit are not deleted by resetting CC-SG. You must manually delete each file to remove it from CC-SG. See **Saving and Deleting Backup Files** (on page 318).*

Option	Description
Full Database	This option removes the existing CC-SG database and builds a new version with the factory default values. Network settings, SNMP agents, firmware, and Diagnostic Console settings are not part of the CC-SG database. The SNMP configuration and traps are reset. The SNMP agent is not

Option	Description
	<p>reset.</p> <p>IP-ACL settings are reset with a Full Database reset whether you select the IP ACL Tables option or not.</p> <p>The Neighborhood configuration is removed with the reset so CC-SG no longer "remembers" being a Neighborhood member if it was.</p> <p>When the database is removed, all devices, nodes, and users are removed. All remote authentication and authorization servers are removed.</p> <p>Your CC Super User account will be reset to default. After the reset operation is complete, you must login with the default username and password admin/raritan, then immediately change the default password.</p>
Save Personality Settings	<p>This option can be selected only when you select Full CC-SG Database Reset.</p> <p>This option saves some previously configured options as the CC-SG database is rebuilt.</p> <ul style="list-style-type: none"> ▪ Enforce Strong Passwords. ▪ Direct vs. Proxy Connections to Out-of-Band nodes. ▪ Inactivity Timer setting. <hr/> <p><i>Note: The Certificate will reset when resetting full DB with personality.</i></p>
Network Settings	<p>This option changes the network settings back to factory defaults.</p> <ul style="list-style-type: none"> ▪ Host name: CommandCenter ▪ Domain name: localdomain ▪ Mode: IP Failover ▪ Configuration: DHCP ▪ IP Address: DHCP ▪ Netmask: 255.255.255.0 ▪ Gateway: none ▪ Primary DNS: none ▪ Secondary DNS: none ▪ Adapter Speed: Auto
SNMP Configuration	<p>This option resets the SNMP settings back to factory defaults.</p> <ul style="list-style-type: none"> ▪ Port: 161 ▪ Read-only Community: public ▪ Read-write Community: private ▪ System Contact, Name, Location: none ▪ SNMP Trap Configuration ▪ SNMP Trap Destinations

Option	Description
Default Firmware	This option resets all device firmware files to factory defaults. This option does not change the CC-SG database.
Upload Firmware to Database After Reset	This option loads the firmware files for the current CC-SG version into the CC-SG database.
Diagnostic Console	This option restores Diagnostic Console settings back to factory defaults.
IP-ACL Tables	This option removes all entries from the IP-ACL table. IP-ACL settings are reset with a Full Database reset whether you select the IP ACL Tables option or not.
Licenses	This option removes all license files from CC-SG.

► **To reset CC-SG:**

1. Before you reset, back up CC-SG and save the backup file to a remote location. See **Backing Up CC-SG** (on page 316).
2. Choose System Maintenance > Reset.
3. Select the reset options.
4. Type your CC-SG password.
5. Broadcast message: Type the message that will display to users who will be logged off CC-SG.
6. Enter the number of minutes (from 0-720) that should elapse before CC-SG performs the reset operation.
If specifying over 10 minutes, the broadcast message displays to users immediately, and then repeats at 10 and 5 minutes before the event occurs.
7. Click OK. A message appears to confirm the reset.

Do NOT power off, power cycle, or interrupt CC-SG when reset is in progress. Doing this may result in the loss of CC-SG data.

Restarting CC-SG

The restart command is used to restart the CC-SG software. Restarting CC-SG will log all active users out of CC-SG.

Restarting will not cycle power to the CC-SG. To perform a full reboot, you must access Diagnostic Console or the power switch on the CC-SG unit.

1. Choose System Maintenance > Restart.
2. Type your password in the Password field.
3. Broadcast message: Use the default message or edit it. The message will display to users who will be logged off CC-SG.

4. Restart after (min): Enter the number of minutes (from 0-720) that should elapse before CC-SG restarts.
If specifying over 10 minutes, the broadcast message displays to users immediately, and then repeats at 10 and 5 minutes before the event occurs.
5. Click OK to restart CC-SG.

Upgrading CC-SG

You can find firmware files in the Support section of the Raritan website.

Warning:

Before upgrading, check the firmware Release Notes for the latest information on your specific upgrade path.

See **Fence Releases and Upgrade Paths** (on page 325) for general information.

Only users with the CC Setup and Control privilege can upgrade CC-SG.

You should back up CC-SG before upgrading, and send the backup files to a PC for safe keeping. See **Backing Up CC-SG** (on page 316) and **Save a Backup File** (on page 318).

You should check CC-SG's disk status before upgrading. See **Check Disk Status** (on page 367). **If there is an indication that a drive needs to be replaced or is questionable, or the RAID Array needs to be rebuilt or the status is questionable, contact Raritan Technical Support before proceeding with the firmware upgrade.**

If you are operating a CC-SG cluster, you must remove the cluster before upgrading. Upgrade each CC-SG node separately, then re-create the cluster. See **Upgrading a Cluster** (on page 272) in the Online Help.

Important: If you need to upgrade both CC-SG and a device or group of devices, perform the CC-SG upgrade first then perform the device upgrade.

CC-SG will reboot as part of the upgrade process. DO NOT stop the process, reboot the unit manually, power off, or power cycle the unit during the upgrade.

► **To upgrade CC-SG:**

1. Download the firmware file to your client PC.
2. Log into the CC-SG Admin Client using an account that has the CC Setup and Control privilege.
3. Choose System Maintenance > Maintenance Mode > Enter Maintenance Mode. Enter password, delay time, and message for users. All users will be logged out when time delay ends.
4. Once CC-SG is in maintenance mode, choose System Maintenance > Upgrade.

5. Click Browse. Navigate to and select the CC-SG firmware file (.zip) then click Open.
6. Click OK to upload the firmware file to CC-SG.
After the firmware file is uploaded to CC-SG, a success message appears, indicating that CC-SG has begun the upgrade process. All users will be disconnected from CC-SG at this time.
7. You must wait for the upgrade to complete before logging into CC-SG again. You can monitor the upgrade in the Diagnostic Console.
 - a. Access Diagnostic Console using the admin account. See **Access Administrator Console** (on page 335) in the Online Help.
 - b. Choose Admin > System Logfile Viewer. Select sg/upgrade.log then choose View to view the upgrade log.
 - c. Wait for the upgrade process to run. The upgrade process is complete when you see the "Upgrade completed" message in the upgrade log. Alternatively, you may wait for the SNMP trap cclImageUpgradeResults with a "success" message.

The server must reboot. The reboot process begins when you see the "Linux reboot" message in the upgrade.log. The server will shut down and reboot.

- d. As the system boots, a progress bar displays at the bottom of the screen. Once this is filled the CC-SG will restart one more time.
 - e. In approximately 2 minutes after the reboot, you may re-access the Diagnostic Console using the admin account, and monitor the progress of the upgrade process. **Optional.**
8. Click OK to exit CC-SG.
9. Clear the browser cache, then close the browser window. See **Clear the Browser's Cache** (on page 325).
10. Clear the Java cache. See **Clear the Java Cache** (on page 326).
11. Launch a new web browser window. Log into the CC-SG Admin Client using an account that has the CC Setup and Control privilege.
12. Choose Help > About Raritan Secure Gateway. Check the version number to verify that the upgrade was successful.
13. Choose System Maintenance > Maintenance Mode > Exit Maintenance Mode. Click OK. All users will be able to login now.
14. Back up the CC-SG. See **Backing Up CC-SG** (on page 316).

Fence Releases and Upgrade Paths

CC-SG must be upgraded to Release 11.0 from Release 9.0, which is a fence release.

Release 10.0 can upgrade to 11.0.

Release 9.5 can upgrade to 11.0.

Release 7.0 or 8.0 can upgrade to 9.0 and then to 11.0

Customers using 6.0, 6.1, and 6.2 can upgrade directly to 7.0, then to 9.0, and then to 11.0.

Please check the Upgrade Guides for details.

IMPORTANT: Customers with CC-SG virtual appliances upgraded from previous releases (5.x or 6.x) may have two hard drives as a result of these prior upgrades. Before upgrading to v9.0, the original (older) hard drive (disk 1) must be removed. Please consult the information on the CommandCenter Support page or call Raritan Technical Support if you need assistance with upgrading.

Tech Bulletin:

<https://www.raritan.com/assets/ram/downloads/documents/URGENT-CC-SG-Tech-Bulletin-VM-Upgrade-to-9.0.pdf>

Upgrade Failure Messages

- CC-SG upgrade will fail if the new requirements are not met.
- If SSL3.0 is enabled, upgrade will be failed with error report asking user to disable SSLv3 and enable a TLS selection first.
- If the upgrade fails, Diagnostic Console shows a Warning message: "Upgrade aborted. Please go to CommandCenter web page for details." Go to the CC-SG IP address to view a page with the reason for failure and instructions to resolve the problem.

Each upgrade failure requires CC-SG to reboot. You can then correct the problem, and try the upgrade again.

Clear the Browser's Cache

These instructions may vary slightly for different browser versions.

▶ **Internet Explorer:**

1. Choose Tools > Internet Options.
2. On the General tab, click Delete Files then click OK to confirm.

▶ **In FireFox:**

https://support.mozilla.org/en-US/kb/how-clear-firefox-cache#w_clear-the-cache

Clear the Java Cache

These instructions may vary slightly for different Java versions and different operating systems.

▶ **In Windows:**

1. Choose Control Panel > Java.
2. On the General tab, click Settings.
3. In the dialog box that opens, click Delete Files.
4. Make sure the Applications and Applets checkbox is selected then click OK.

Migrating a CC-SG Database

To replace a physical CC-SG unit with a new one, or migrate from a physical CC-SG unit to a virtual CC-SG, follow this recommended migration procedure.

Requirements for Migration

- Both CC-SG units must be at the same version of firmware and version 5.1 or higher.
- You must have valid licenses for the CC-SG you are migrating your database to before your migrated CC-SG can be fully functional.

Migrate a CC-SG Database

▶ **To migrate a CC-SG database:**

1. Pause management of all devices. Optional. You can schedule a task to pause all devices, if you are using CC-SG firmware version 5.1 or higher. See **Schedule a Task** (on page 293).
2. Perform a Full Backup of the CC-SG that you are migrating from. Make sure you select Full as the Backup Type, and save the backup file to a remote location. See **Backing Up CC-SG** (on page 316).
3. On the CC-SG that you are migrating from, choose System Maintenance > Shutdown to shutdown the CC-SG application.
4. On the CC-SG that you are migrating to, upload the Full Backup file, then perform a Full Restore. Make sure you select Full as the Restore Type. See **Restoring CC-SG** (on page 319).

Note: The CC-SG that you are migrating to must have its own valid licenses to be fully operational. A valid license is not required to complete the Full Restore.

5. Resume management of all devices. You can schedule a task to resume all devices, if you are using CC-SG firmware version 5.1 or higher. See **Schedule a Task** (on page 293).

6. Run a Device Availability report to review the managed device status. See **Availability Report** (on page 238).
7. When the new CC-SG is running successfully, reset the database on the CC-SG that you migrated from to prevent conflicts if both are inadvertently brought online. To reset the database, access the Diagnostic Console and choose Operation > Admin > Factory Reset > Full CC-SG Database Reset option. See **Reset CC-SG Factory Configuration** (on page 354).

CC-SG Shutdown

Shutting down CC-SG shuts down the CC-SG software, but it does not power off the CC-SG unit.

After CC-SG shuts down, all users are logged out. Users cannot log back in until you restart CC-SG, either via the Diagnostic Console or by recycling the CC-SG power.

▶ **To shutdown CC-SG:**

1. Choose System Maintenance > Shutdown.
2. Type your password in the Password field.
3. Accept the default message or type a message to display to any users currently online in the Broadcast message field (for example, you might give users a brief time period to finish their tasks in CC-SG and tell them when they can expect the system to be functional again). All users will be disconnected when you shut down CC-SG.
4. Type the number of minutes (from 0-720) that should pass before CC-SG shuts down in the Shutdown after (min) field.
If specifying over 10 minutes, the broadcast message displays to users immediately, and then repeats at 10 and 5 minutes before the event occurs.
5. Click OK to shut down CC-SG.

Restarting CC-SG after Shutdown

After shutting down CC-SG, use one of these two methods to restart the unit:

- Use the Diagnostic Console. See **Restart CC-SG with Diagnostic Console** (on page 349).
- Recycle the power to your CC-SG unit.

Powering Down CC-SG

If CC-SG loses AC power while it is up and running, it will remember the last power state. Once AC power is restored, CC-SG automatically reboots. However, if CC-SG loses AC power when it is powered off, it will remain powered off when AC power is restored.

Important: Do not hold the POWER button to forcibly power down CC-SG. The recommended way to power down CC-SG is to use the Diagnostic Console's "CC-SG System Power OFF" command. See *Power Off CC-SG System from Diagnostic Console* (on page 351).

▶ **To power down the CC-SG:**

1. Remove the bezel and firmly tap the POWER button.
2. Wait approximately one minute while CC-SG gracefully powers down.

Note: Users logged into CC-SG via Diagnostic Console will receive a short broadcast message when the CC-SG unit is powered down. Users logged into CC-SG via a web browser or SSH will not receive a message when the CC-SG unit is powered down.

3. If you must remove the AC power cord, let the power down process finish completely before removing the power cord. This is required for CC-SG to complete all transactions, close the databases, and place the disk drives into a safe state for power removal.

Ending CC-SG Session

There are two ways to end a CC-SG Session.

- Log out to end your session while keeping the client window open. See **Log Out of CC-SG** (on page 328).
- Exit to end your session and close the client window. See **Exit CC-SG** (on page 328).

Log Out of CC-SG

1. Choose Secure Gateway > Logout. The Logout window opens.
2. Click Yes to log out of CC-SG. Once you log out, the CC-SG login window opens.

Exit CC-SG

1. Choose Secure Gateway > Exit.
2. Click Yes to exit CC-SG.

Diagnostic Console

The Diagnostic Console is a non-graphical, menu-based interface that provides local access to CC-SG. You can access Diagnostic Console from a serial or KVM port. See **Access Diagnostic Console via VGA/Keyboard/Mouse Port** (on page 329). Or, you can access Diagnostic Console from a Secure Shell (SSH) client, such as PuTTY or OpenSSH Client. See **Access Diagnostic Console via SSH** (on page 329).

Diagnostic Console includes two interfaces:

1. Status Console: See **About Status Console** (on page 330).
2. Administrator Console. See About Administrator Console.

Note: When you access Diagnostic Console via SSH, the Status Console and the Administrator Console inherit the appearance settings of your SSH client and keyboard bindings. These appearance settings may differ from those in this documentation.

If you use PuTTY 0.63, change the default client encoding to ISO-8859-1. CC-SG shell cannot display correctly in UTF-8 encoding. To change encoding, choose Window > Translation > Remote character set.

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Accessing Diagnostic Console

Access Diagnostic Console via VGA/Keyboard/Mouse Port

1. Attach a VGA monitor plus PS2 keyboard and mouse to the rear of the CC-SG unit.
2. Press Enter to display a login prompt on the screen.

Access Diagnostic Console via SSH

1. Launch an SSH client, such as PuTTY, on a client PC that has network connectivity to the CC-SG.
2. Specify the IP address, or IP hostname if CC-SG has been registered with a DNS server, of the CC-SG.
3. Specify 23 for the port. Default SSH port is 22. If you do not change the port to 23, the SSH client accesses the command line interface of CC-SG, not the Diagnostic Console.
4. Click the button that allows you to connect. A window opens, prompting you for a login.

Status Console

About Status Console

- You can use the Status Console to check the health of CC-SG, the various services CC-SG uses, and the attached network.
- By default, Status Console does not require a password.
- You can configure CC-SG to provide the Status Console information over a Web interface. You must enable the Web Status Console-related options. See **Access Status Console via Web Browser** (on page 330). The Status Console information over the Web can be protected with an account and password.

Access Status Console

There are different ways to view the Status Console information: VGA/keyboard/mouse port, SSH, or web browser.

Access Status Console via VGA/Keyboard/Mouse Port or SSH

► **To access Status Console via VGA/Keyboard/Mouse Port or SSH:**

1. Access the Diagnostic Console. See **Accessing Diagnostic Console** (on page 329).
2. At the login prompt, type status.
3. The current system information appears.

Access Status Console via Web Browser

To retrieve the Status Console information over the Web, you must enable relevant options in Diagnostic Console and the Web Server must be up and functional.

► **1: Enable the Web Status Console-related options in Diagnostic Console:**

1. Choose Operation > Diagnostic Console Config.
2. In the Ports list, select Web.
3. In the Status list, select the Status checkbox next to Web.
4. Click Save.

► **2: Access the Status Console via web browser:**

1. Using a supported Internet browser, type this URL:
`http(s)://<IP_address>/status/` where <IP_address> is the IP address of the CC-SG. Note the forward slash (/) following /status is mandatory. For example, `https://10.20.3.30/status/`.
2. A status page opens. This page contains the same information as the Status Console.

Information	Description	
Host Name	CC-SG's Fully Qualified Domain Name (FQDN). It consists of both the unit's hostname and the associated domain name.	
CC-SG Version	CC-SG's current firmware version. It consists of 5-tuple value.	
CC-SG Serial #	CC-SG's serial number.	
Model	CC-SG's model type.	
Host ID	A number for licensing the CC-SG unit.	
CC-SG Status	The status of the CC-SG server, which handles most user requests. Available statuses include:	
	<i>Up</i>	CC-SG is available and can accept user requests.
	<i>Down</i>	CC-SG may be stopped or in the process of restarting. If the Down status continual, try restarting CC-SG.
	<i>Restarting</i>	CC-SG is in the process of restarting.
DB Status	The CC-SG server uses an internal database (DB) as part of its operations. This database must be up and responding for the CC-SG to function. Available statuses include:	
	<i>Responding</i>	CC-SG database is available.
	<i>Up</i>	Some of the database routines are running but it is not answering local requests.
	<i>Restoring</i>	CC-SG is in the process of restoring itself and database queries are temporarily suspended.
	<i>Down</i>	Database server has not started yet.
Web Status	Most of the access to the CC-SG server is through the Web. This field shows the state of the Web server and available statuses include:	
	<i>Responding/Unsecured</i>	The Web server is up and answering http (unsecured) requests.
	<i>Responding/Secured</i>	The Web server is up and answering https (secured) requests.
	<i>Up</i>	Some of the Web server processes are running but local requests are not answered.
	<i>Down</i>	Web server is currently not available.

Information	Description	
RAID Status	CC-SG stores its data on two mirrored (RAID-1) disks. Available statuses for RAID disks include:	
	<i>Active</i>	RAID is fully functional.
	<i>Degraded</i>	One or more disk drives are having problems. Contact Raritan Technical Support for assistance.
Cluster Status	CC-SG can work in conjunction with another CC-SG to form a cluster. See Configuring CC-SG Clusters (on page 268). If the field displays "standalone", the CC-SG is not in a cluster configuration. Otherwise, the field displays the state of the cluster.	
Cluster Peer	If the CC-SG is in a cluster configuration, the field shows the IP address of the other CC-SG unit in the cluster.	
Network Information	For each network interface, a scrollable table is available for showing its information. For virtual CC-SG, the MAC address for each NIC displays below the columns listed here.	
	<i>MAC Address</i>	For virtual CC-SG, the MAC address for each listed NIC.
	<i>Dev</i>	The internal name of the interface.
	<i>Link</i>	The state of Link Integrity, that is, whether this port is connected to a working Ethernet switch port via an intact cable.
	<i>Auto</i>	Indicate whether auto-negotiation is being applied to this port.
	<i>Speed</i>	The speed that this interface is operating: 10, 100 or 1000 Mbits per second.
	<i>Duplex</i>	Indicate whether the interface is Full- or Half-duplex.
	<i>IPAddr</i>	The current Ipv4 Address of this interface.
	<i>RX -Pkts</i>	The number of IP packets received on this interface since CC-SG was booted.
	<i>TX -Pkts</i>	The number of IP packets transmitted on this interface since CC-SG was booted.

Navigation Keys Reminder

The bottom line on the screen displays the keyboard combination keys for invoking Help and exiting Status Console. Status Console will ignore key inputs other than these keys described below.

- Press F1 to bring up the help screen, which displays available options along with the Diagnostic Console version.
- Press Ctrl+L to clear the current screen and redraw with updated information. You can update the screen a maximum of once per second.
- Press Ctrl+Q or Ctrl+C to exit Status Console.
- Press arrow keys to scroll the Network Information screen horizontally and vertically when it contains more data than the screen can display.

Status Console via Web Browser

After connecting to the Status Console via the web browser, the read-only Status Console web page appears.

The screenshot shows the Raritan CommandCenter Secure Gateway web interface. At the top, it displays the Raritan logo and the title 'CommandCenter Secure Gateway'. Below this, there is a status bar showing the date 'Mon Feb 2022-02-21 EST', the device name 'CommandCenter Secure Gateway', and the time '12:12:39 EST -0500'. A 'Message of the Day' section contains the text: 'CommandCenter Secure Gateway Centralized access and control for your global IT infrastructure'. The main content area is divided into three sections: 'System Information', 'Server Information', and 'Network Information'. The 'System Information' section lists: Host Name: ccsg-59-94.raritan.com, CC-SG Version: 10.0.0.3.4, CC-SG Serial#: ACC1801121, Model: CCSG128-VA, and Host ID: 36BCDCD8DA02F3CFE368AD53551A06CC585D393. The 'Server Information' section lists: CC-SG Status: Up, Web Status: Responding/Secure, Cluster Status: standalone, DB Status: Responding, RAID: Active, and Cluster Peer: Not Configured. The 'Network Information' section is a table with columns: Device, Link, Auto, Speed, Duplex, IP_Addr, RX_Pkts, and TX_Pkts. It shows two network interfaces: eth0 and eth1, both with Link status 'yes', Auto status 'off', Speed '10000Mb/s', Duplex 'Full', IP address '192.168.59.94', and MAC address '00:50:56:af:46:8b'. eth0 has RX_Pkts: 377807 and TX_Pkts: 271371. eth1 has RX_Pkts: 0 and TX_Pkts: 0.

The web page displays the same information as the Status Console, and also updates the information approximately every 5 seconds. For information on the links for CC-SG Monitors at the bottom of the web page, see **Display Historical Data Trending Reports** (on page 360) and **CC-SG Disk Monitoring** (on page 418).

Administrator Console

The Administrator Console allows you to set some initial parameters, provide initial networking configuration, debug log files, and perform some limited diagnostics and restarting CC-SG.

The default login for the Administrator Console is:

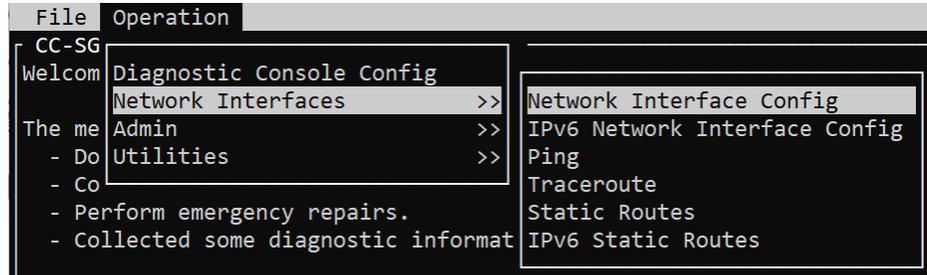
- Username: admin
- Password: raritan

Important: The Diagnostic Console admin account is separate and distinct

Administrator Console Screen

Administrator Console screen consists of 4 main areas.

- Menu bar:**
 You can perform Administrator Console functions by activating the menu bar. Press Ctrl+X to activate the menu bar or click a menu item using the mouse if you access Administrator Console via the SSH client.



The File menu provides an alternative option to exit the Diagnostic Console. The Operation menu provides four menu commands which may have one or more sub-menus. For information on each menu command and sub-menu, see the rest of sections for Administrator Console.

- Main display area:**
 Contents vary according to the operation selected.
- Status bar:**
 Status bar is just above the navigation keys bar. It displays some important system information, including CC-SG's serial number, firmware version, and the time when the information shown in the main display area was loaded or updated. Screenshots containing this information may be useful when reporting your problems to Raritan Technical Support.
- Navigation keys bar:**
 See *Navigate Administrator Console* (on page 336).

Navigate Administrator Console

Use keyboard combinations to navigate Administrator Console. For some sessions, the mouse may also be used to navigate. However, the mouse may not work in all SSH clients or on the KVM console.

Press	To
Ctrl+X	Activate the menu bar. Select menu commands from the menu to perform various Administrator Console operations.
F1	Bring up the help screen which displays available options along with the Diagnostic Console version.

Press	To
Ctrl+C or Ctrl+Q	Exit Diagnostic Console.
Ctrl+L	Clear screen and redraw the information (but the information itself is not updated nor refreshed).
Tab	Move to next available option.
Space bar	Select current option.
Enter	Select current option.
Arrow key	Move to different fields within an option.

Edit Diagnostic Console Configuration

The Diagnostic Console can be accessed via the serial port (COM1), VGA/Keyboard/Mouse (KVM) port, or from SSH clients. If you want to access Status Console, one more access mechanism, Web access, is also available.

For each port type, you can configure whether or not status or admin logins are allowed, and whether field support can access Diagnostic Console from the port. For SSH clients, you can configure which port number should be used, as long as no other CC-SG service is using the desired port. For Web access to Status Console, you may specify an account, which is distinct from any other account in the system, for restricting the access. Otherwise, any user who can access CC-SG via the Web can access the Status Console web page.

Important: Be careful not to lock out all Admin or Field Support access.

► **To edit Diagnostic Console configuration:**

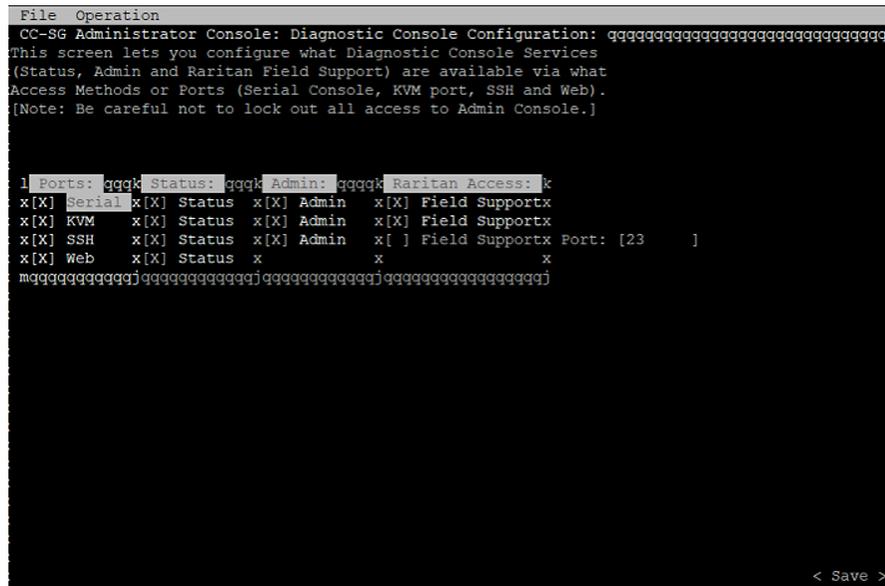
1. Choose Operation > Diagnostic Console Config.
2. Determine how you want the Diagnostic Console configured and accessible.

There are four Diagnostic Console Access mechanisms: Serial Port (COM1), KVM Console, SSH (IP network), and Web. The Diagnostic Console offers three services: Status Display, Admin Console, Raritan Field Support. This screen allows the selection of which services are available via the various access mechanisms.

If the Web option and Status option are enabled, the Status Console web page is always available as long as the Web Server is up and functional. To restrict the access to the Status Console web page, type an account and a password.

3. Type the port number you want to set for SSH access to Diagnostic Console in the Port field. The default port is 23.

4. Click Save.



Edit Network Interfaces Configuration (Network Interfaces)

In Network Interface Configuration, you can perform initial setup tasks, such as setting the hostname and IP address of the CC-SG.

1. Choose Operation > Network Interfaces > Network Interface Config.
2. If the network interfaces have already been configured, you will see a Warning message stating that you should use the CC-SG Admin Client to configure the interfaces. If you want to continue, click YES.
3. Type your hostname in the Host Name field. After you save, this field will be updated to reflect the Fully-Qualified Domain Name (FQDN), if known. See **Terminology/Acronyms** (on page 2) for hostname rules.
4. In the Mode field, select either IP Isolation or IP Failover. See **About Network Setup** (on page 250).
5. In the Configuration Field, select either DHCP or Static.
 - If you choose DHCP and your DHCP server has been configured appropriately, the DNS information, the domain suffix, IP address, default gateway, and subnet mask will be automatically populated once you save, and you exit and re-enter Admin Console.
 - If you choose Static, type an IP Address (required), Netmask (required), Default Gateway (optional), Primary DNS (optional) and Secondary DNS (optional), and Domain Name in Domain Suffix (optional).
 - Even if DHCP is being used to determine the IP configuration for an interface, you must provide a properly formatted IP address and Netmask.

6. In the Adapter Speed, select a line speed. The other values of 10, 100, and 1000 Mbps are on a scrollable list (where only one value is visible at any given time) and the arrow keys are used to navigate to them. Press the Space bar to select the option displayed. For 1 GB line speeds, select AUTO.
7. If you did not select AUTO for Adapter Speed, click Adapter Duplex and use the arrow keys to select a duplex mode (FULL or HALF) from the list, if applicable. While a duplex mode can be selected at any time, it only has meaning and takes effect when Adapter Speed is not AUTO.
8. Repeat these steps for the second network interface if you selected IP Isolation Mode.
9. Click Save. CC-SG will restart, logging out all CC-SG GUI users and terminating their sessions. A Warning screen will appear, informing you of the impending network reconfiguration and associated CC-SG GUI user impact. Select <YES> to proceed.

System progress can be monitored in a Diagnostic Console Status Screen. On the KVM port, another terminal session can be selected by pressing Alt+F2 and logging in as status. Return to the original terminal session by pressing Alt+F1. There are six available terminal sessions on F1 through F6.

Edit IPv6 Network Interfaces Configuration

Use the IPv6 Network Interface Configuration page to enable or disable dual stack. This requires a reboot of CC-SG.

If you're using IPv4 only, select IPv4 Only, then go to the Operation > Network Interface Configuration page to enter settings. See ***Edit Network Interfaces Configuration (Network Interfaces)*** (on page 338).

Before entering the IPv6 network information, you must select either IP Isolation mode or IP Failover mode in the Operation > Network Interface Configuration page. See ***Edit Network Interfaces Configuration (Network Interfaces)*** (on page 338).

1. To configure CC-SG for dual stack IPv6 network, select Enable IPv4/IPv6 Dual Stack.
2. Select Router Discovery, or Static.

In the Admin Console, the "Global/Unique Local IPv6 Address" is labeled "IPv6 Address."

3. If you choose Router Discovery, some fields are automatically populated: Global/Unique Local IPV6 Address, Prefix Length, Default Gateway IPV6 Address, and Link-Local IPV6 Address and Zone ID.

Option	Description
No DNS Resolution	Does not resolve addresses to host names.
Record Route	Records route. Turns on the IP record route option, which will store the route of the packet inside the IP header.
Use Broadcast Address	Allows pinging a broadcast message.
Adaptive Timing	Adaptive ping. Interpacket interval adapts to round-trip time, so that effectively not more than one unanswered probes present in the network. Minimal interval is 200 msec.

4. Type values for how many seconds the ping command will execute, how many ping requests are sent, and the size for the ping packets. Default is 56, which translates into 64 ICMP data bytes when combined with 8 bytes of ICMP header data. If left blank, defaults are used. **Optional.**
5. Click Ping. If the results show a series of replies, the connection is working. The time shows you how fast the connection is. If you see a "timed out" error instead of a reply, the connection between your computer and the domain is not working. See **Edit Static Routes** (on page 342).
6. Press Ctrl+C to terminate the session.

Note: Press CTRL+Q to display a statistics summary for the session so far and continue to ping the destination.

Use Traceroute

Traceroute is often used for network troubleshooting. By showing a list of routers traversed, it allows you to identify the path taken from your computer to reach a particular destination on the network. It will list all the routers it passes through until it reaches its destination, or fails to and is discarded. In addition to this, it will tell you how long each 'hop' from router to router takes. This can help identify routing problems or firewalls that may be blocking access to a site.

► **To perform a traceroute on an IP address or hostname:**

1. Choose Operation > Network Interfaces > Traceroute.
2. Enter the IP address or hostname of the target you wish to check in the Traceroute Target field.
3. Select: **Optional.**

Option	Description
No DNS Resolution	Does not resolve addresses to host names.

Option	Description
Use ICMP (vs. normal UDP)	Use ICMP ECHO instead of UDP datagrams.

4. Type values for how many hops the traceroute command will use in outgoing probe packets (default is 30), the UDP destination port to use in probes (default is 33434), and the size for the traceroute packets. If left blank, defaults will be used. **Optional.**
5. Click Traceroute in the bottom right-hand corner of the window.
6. Press Ctrl+C or Ctrl+Q to terminate the traceroute session. A Return? prompt appears; press Enter to return to the Traceroute menu. The Return? prompt also appears when Traceroute terminates due to “destination reached” or “hop count exceeded” events occur.

Edit Static Routes

In Static Routes, you can view the current IP routing table and modify, add, or delete routes. Careful use and placement of static routes may actually improve the performance of your network, allowing you to conserve bandwidth for important business applications. Click with the mouse or use the Tab and arrow keys to navigate and press the Enter key to select a value.

Note: You can also set IPv6 network static routes. Choose Operation > Network Interfaces > Static Routes. These routes are not saved after reboot or failover of the CC-SG.

► **To view or change static routes:**

1. Choose Operation > Network Interfaces > Static Routes.
2. The current IP routing table page opens. You can add associated IP route to the routing table by selecting Add Host Route or Add Network Route. The items in the routing table are selectable, and you can delete a route from the table by selecting Delete Route. The Refresh button updates the routing information in the table.
 - Add Host Route takes a Destination Host IP Address, and either a Gateway IP Address or interface name as shown in Status Console, or both.
 - Add Network Route is similar but takes a Destination Network and Netmask.
 - With every item selected or highlighted in the table, you can select Delete Route to remove the route. The only exception is the route associated with current host and interface, which CC-SG does not allow you to delete.

View Log Files in Diagnostic Console

You can view one or more log files simultaneously via LogViewer, which allows browsing through several files at once to examine system activity.

The Logfile list is updated only when the associated list becomes active, as when a user enters the logfile list area, or when a new sorting option is selected. File names are preceded by a timestamp indicating either how recently the logfile has received new data or the file size of the logfile.

▶ **Timestamp and file size abbreviations:**

Timestamps:

- s = seconds
- m = minutes
- h = hours
- d = days

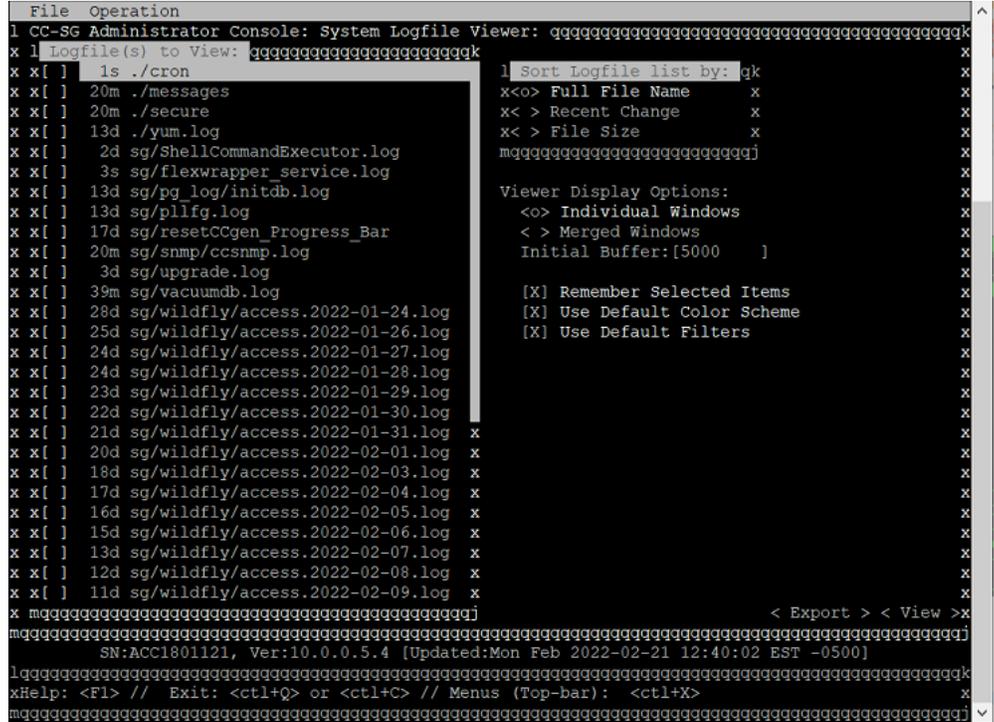
File sizes:

- B = Bytes
- K = Kilobytes (1,000 bytes)
- M = Megabytes (1,000,000 bytes)
- G = Gigabytes (1,000,000,000 bytes)

▶ **To view log files:**

1. Choose Operation > Admin > System Logfile Viewer.
2. The Logviewer screen is divided into four main areas.
 - List of Logfiles currently available on the system. If list is longer than the display window, the list can be scrolled using the arrow keys.
 - Logfile List sort criteria. Logfiles can be shown sort by their Full File Name, the most recently changed logfile or by the largest logfile size.
 - Viewer Display options.
 - Export / View selector.

- Click with the mouse or use the arrow keys to navigate and press the Space bar to select a log file, marking it with an X. You can view more than one log file at a time.



► **To sort the Logfiles to View list:**

The Sort Logfile list by options control the order in which logfiles are displayed in the Logfile to View list.

Option	Description
Individual Windows	Display the selected logs in separate sub-windows.
Merged Windows	Merge the selected logs into one display window.
Initial Buffer	Sets initial buffer or history size. 5000 is default. This system is configured to buffer all the new information that comes along.
Remember Selected Items	If this box is checked, the current logfile selections (if any) will be remembered. Otherwise, selection is reset each time a new Logfile list is generated. This is useful if you want to step through files.
Use Default Color Scheme	If this box is checked, some of the logfiles will be viewed with a standard color scheme. Note: multital commands can be used to change the color scheme once the logfile(s) are being viewed.
Use Default Filters	If this box is checked, some of the logfiles will have automatic filters applied.

Option	Description
Export	This option packages up all the selected logfiles and makes them available via Web access so that they can be retrieved and forwarded to Raritan Technical Support. Access to the contents of this package is not available to customer. Exported logfiles will be available for up to 10 days, and then the system will automatically delete them.
View	View the selected log(s).

When View is selected with Individual Windows, the LogViewer displays:

```
[04/Feb/2022:12:12:25 -0500] 192.168.58.8 "GET / HTTP/1.1" 200 "Mozilla / 5.0 (Windows NT 10.0; &
) Gecko / 20100101 Firefox / 62.0"
[04/Feb/2022:12:12:25 -0500] 192.168.58.8 "GET /favicon.ico HTTP/1.1" 200 "Mozilla / 5.0 (Windows
NT 10.0; &) Gecko / 20100101 Firefox / 62.0"
[04/Feb/2022:12:12:25 -0500] 192.168.58.8 "GET / HTTP/1.1" 200 "Mozilla / 5.0 (Windows NT 10.0; &
) Gecko / 20100101 Firefox / 62.0"
[04/Feb/2022:12:12:25 -0500] 192.168.58.8 "GET /favicon.ico HTTP/1.1" 200 "Mozilla / 5.0 (Windows
NT 10.0; &) Gecko / 20100101 Firefox / 62.0"
00] sg/wildfly/access.2022-02-04.log *Press F1/<CTRL>+<h> for help* 169KB - 2022/02/21 13:11:22
*[[0m^[[0m13:05:48,509 INFO [stdout] (CCTimer) Feb 21 13:05:48 RemoteHost:192.168.32.193:Ccuser
:admin: CCConnectionRepository: EST 2022: getConnections:BEG
*[[0m^[[0m13:05:48,509 INFO [stdout] (CCTimer) Feb 21 13:05:48 RemoteHost:192.168.32.193:Ccuser
:admin: CCConnectionRepository: EST 2022: getConnections:E
*[[0m^[[0m13:10:48,509 INFO [stdout] (CCTimer) Feb 21 13:10:48 RemoteHost:192.168.32.193:Ccuser
:admin: CCConnectionRepository: EST 2022: getConnections:BEG
*[[0m^[[0m13:10:48,510 INFO [stdout] (CCTimer) Feb 21 13:10:48 RemoteHost:192.168.32.193:Ccuser
:admin: CCConnectionRepository: EST 2022: getConnections:E
01] sg/wildfly/console.log *Press F1/<CTRL>+<h> for help* 3MB - 2022/02/21 13:11:21
Feb 21 13:01:01 ccsg-59-94 run-parts(/etc/cron.hourly)[1793]: starting logrotate
Feb 21 13:01:01 ccsg-59-94 run-parts(/etc/cron.hourly)[1811]: finished logrotate
Feb 21 13:05:01 ccsg-59-94 CROND[10792]: (munin) CMD (test -x /usr/bin/munin-cron && /usr/bin/mu
nin-cron)
Feb 21 13:08:01 ccsg-59-94 CROND[17900]: (root) CMD (/sg/bin/spaceguard)
Feb 21 13:10:01 ccsg-59-94 CROND[22373]: (munin) CMD (test -x /usr/bin/munin-cron && /usr/bin/mu
nin-cron)
Feb 21 13:10:01 ccsg-59-94 CROND[22374]: (root) CMD (/usr/lib64/sa/sa1 1)
02] ./cron *Press F1/<CTRL>+<h> for help* 90KB - 2022/02/21 13:11:21
[24/Jan/2022:11:53:36 -0500] 127.0.0.1 "GET / HTTP/1.1" 200 "-"
03] sg/wildfly/access.2022-01-24.log *Press F1/<CTRL>+<h> for help* 64 - 2022/02/21 13:11:21
```

- While viewing log files, press Q, Ctrl+Q, or Ctrl+C to return to the previous screen.

- You can change colors in a log file to highlight what is important. Type C to change colors of a log file and select a log from the list.

```
Select color to edit
foreground
black
red
green
yellow
blue
magenta
cyan
white
```

- Type I for info to display system information.

Note: System load is static as of the start of this Admin Console session - use the TOP utility to dynamically monitor system resources.

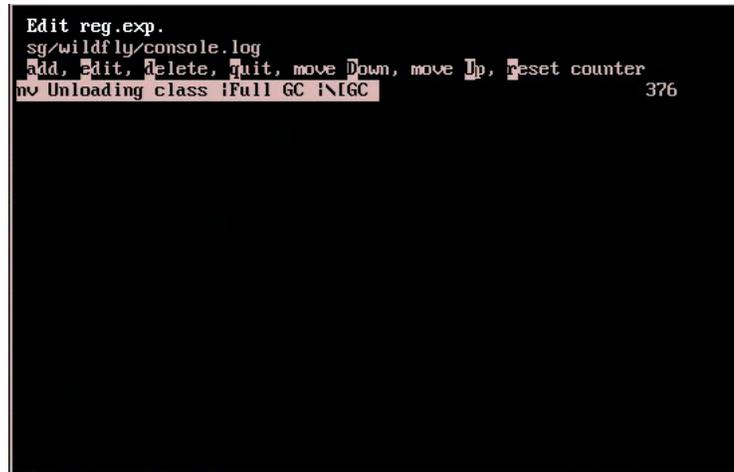
▶ **To filter a log file with a regular expression:**

1. Type e to add or edit a regular expression and select a log from the list if you have chosen to view several.

```
Edit reg.exp.
sg/wildfly/access.2022-02-08.log
add, edit, delete, quit, move Down, move Up, reset counter
```

2. Type A to add a regular expression. For example, to display information on the WARN messages in sg/jboss/console.log log file, enter WARN and select match.

Note: This screen also shows the Default Filter Scheme for console.log, which removes most of the Java heap messages.



```

Edit reg.exp.
sg/wildfly/console.log
Add, Edit, Delete, Quit, move Down, move Up, Reset counter
no Unloading class !Full GC !NIGC 376

```

Clean-up CC-SG Logs

You can clean up CC-SG logs when taking a snapshot. It will clean up all old console, server, and access logs except for the most recent two files. CC-SG server and access log will be compressed when logs are rotated. CC daily disk clean up task will also automatically remove oldest access log once more than 100M.

► **To clean up CC-SG logs:**

1. Choose Operation > Admin > Utilities > System Snapshot.
2. The system Snapshot shows two sections
 - Snapshot Configuration
 - Snapshot Operations
3. Snapshot Operations provide choices for selective or full cleanup.
4. Use tab and the arrow keys to navigate and press the Space bar to select Clean-up CC Logs, marking it with an X.

Reset CC-SG Factory Configuration

The Factory Reset option resets all or parts of the CC-SG system back to their factory default values. All active CC-SG users will be logged out without notification and SNMP processing will stop.

```

File Operation
CC-SG Administrator Console: Factory Reset:
Factory Reset will restore the system to initial Default Configuration.
This will log-off all currently active CC-SG GUI sessions to this system
and may terminate any sessions to remote targets that they might have.
This could also impact cluster operations (if so configured).
Users will get no notification that this event will happen!
Reset Options:
[X] Full CC-SG Database Reset
[X] Preserve CC-SG Personality during Reset
[ ] Network Reset
[X] SNMP Reset
[X] Firmware Reset
[X] Install Firmware into CC-SG DB
[X] Diagnostic Console Reset
[ ] IP Access Control Lists Reset
[ ] Licenses
< RESET System > < Cancel >
    
```

It is recommended to use the default options selected.

Option	Description
Full CC-SG Database Reset	<p>This option removes the existing CC-SG database and builds a new version with the factory default values. Network settings, SNMP settings, firmware, and diagnostic console settings are not part of the CC-SG database.</p> <p>IP-ACL settings are reset with a Full Database reset whether you select the IP ACL Tables option or not.</p> <p>The Neighborhood configuration is removed with the reset so CC-SG no longer "remembers" being a Neighborhood member if it was.</p>
Preserve CC-SG Personality during Reset	<p>This option is enabled when you select Full CC-SG Database Reset.</p> <p>As the CC-SG database is rebuilt, some previously configured options are saved.</p> <ul style="list-style-type: none"> ▪ Secure Communication between PC Clients and CC-SG ▪ Enforce Strong Passwords ▪ Direct vs. Proxy Connections to Out-of-Band nodes ▪ Inactivity Timer setting <p><i>Note: The Certificate will reset when resetting full DB with personality.</i></p>
Network Reset	<p>This option changes the network settings back to factory defaults.</p> <ul style="list-style-type: none"> ▪ Host name: CommandCenter ▪ Domain name: localdomain

Option	Description
	<ul style="list-style-type: none"> ▪ Mode: IP Failover ▪ Configuration: DHCP ▪ IP Address: DHCP ▪ Netmask: 255.255.255.0 ▪ Gateway: none ▪ Primary DNS: none ▪ Secondary DNS: none ▪ Adapter Speed: Auto
SNMP Reset	<p>This option resets the SNMP settings back to factory defaults.</p> <ul style="list-style-type: none"> ▪ Port: 161 ▪ Read-only Community: public ▪ Read-write Community: private ▪ System Contact, Name, Location: none ▪ SNMP Trap Configuration ▪ SNMP Trap Destinations
Firmware Reset	<p>This option resets all device firmware files to factory defaults. This option does not change the CC-SG database.</p>
Install Firmware into CC-SG DB	<p>This option loads the firmware files for the current CC-SG version into the CC-SG database.</p>
Diagnostic Console Reset	<p>This option restores Diagnostic Console settings back to factory defaults.</p>
IP Access Control Lists Reset	<p>This option removes all entries from the IP-ACL table.</p> <p>IP-ACL settings are reset with a Full Database reset whether you select the IP Access Control Lists reset option or not.</p> <p>See Access Control List (on page 289).</p>
Licenses	<p>Removes all installed licenses.</p>

► **To reset CC-SG to the factory configuration:**

1. Choose Operation > Admin > Factory Reset.
2. Select the reset options.
3. Click Reset System.
4. You see a warning message and a progress bar on the screen. The progress bar indicates the current reset status, and you cannot control CC-SG before reset is complete.

Do NOT power off, power cycle, or interrupt CC-SG when reset is in progress. Doing this may result in the loss of CC-SG data.

Password setting	Description
Strong	<p>Enforce strong passwords.</p> <p>Retries is the number of times you are prompted before an error message is issued.</p> <p>DiffOK is how many characters can be the same in the new password relative to the old.</p> <p>MinLEN is the minimum length of characters required in the password. Specify how many Digits, Upper-case letters, Lower-case letters, and Other (special) characters are required in the password.</p> <p>Positive numbers indicate the maximum amount of “credit” of this character class can be accrued towards the “simplicity” count.</p> <p>Negative numbers implies that the password MUST have at least that many characters from this given class. Thus, numbers of -1 means that every password must have at least one digit in it.</p>

Diagnostic Console Account Configuration

By default, the "status" account does not require a password, but you can configure it to require one. Other aspects of the admin password can be configured.

The FS1/FS2 (Field Support level 1 and Field Support level 2) accounts are for use by the technical support teams when assisting you with issues. By default, FS2 is disabled, and FS1 can only be accessed at the local console. You can enable these accounts for SSH access. The FS1 account may be used to assist if you are locked out from an admin account. FS1 also provides technical support with additional engineering menus that allow setting system parameters, application server options, and collecting and defining additional log levels so that they can assist you with other issues. The FS2 account allows for access to a system prompt for technical support and engineering use. These accounts are not for customer use.

► **To configure accounts:**

1. Choose Operation > Admin > DiagCon Passwords > Account Configuration.

2. Select Enabled in the Remote Monitoring Service field.
3. Enter the IP address of the client PC you want to allow to monitor the CC-SG unit in the Allowed Remote Monitoring IP Addresses field. You can enter up to three IP addresses.
4. The default port for the GKrellM tool is 19150. You can change the port.
5. Select Submit.

▶ **2: Download the remote system monitoring client software:**

1. Navigate to www.gkrellm.net.
2. Download and install the package that is appropriate for your client PC.

▶ **3: Configure the remote system monitoring client to work with CC-SG:**

Follow the instructions in the Read Me file to set the CC-SG unit as the target to monitor.

Windows users must use the command line to locate the Gkrellm installation directory and then run the commands specified in the Read.

Display Historical Data Trending Reports

Historical data trending gathers information about CPU utilization, memory utilization, Java Heap space, and network traffic. This information is compiled into a report that you view as a web page from CC-SG. The report contains the status of the CC-SG and links to historical data.

Historical data trending reports stop collecting data if the CC-SG system time and date change to an earlier time and date. Data collection starts again when the time and date reaches the original time and date. When the time and date is changed to a later time and date, the reports show a gap in the data.

▶ **1: Enable historical data trending display:**

1. Choose Operation > Diagnostic Console Config.
2. In the Ports list, select Web.
3. In the Status list, select the Status checkbox next to Web.
4. Click Save.

▶ **2: View the historical data trending reports:**

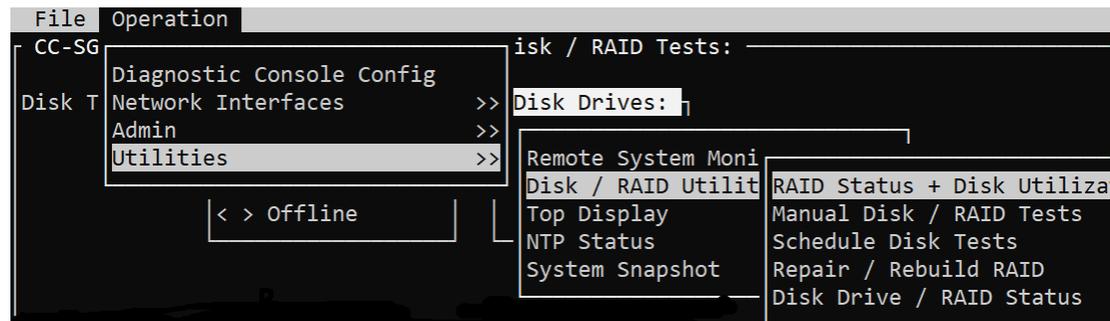
1. Using a supported Internet browser, type this URL:
`http(s)://<IP_address>/status/` where <IP_address> is the IP address of the CC-SG. Note the forward slash (/) following /status is mandatory. For example, `https://10.20.3.30/status/`.
2. A status page opens. This page contains the same information as the Status Console. See **Status Console** (on page 330).
 - Click the Historical CC-SG Monitors link to view information about CPU utilization, memory utilization, Java Heap space, and network traffic. Click each graph to view details in a new page.

Display RAID Status and Disk Utilization

RAID status and disk utilization is available for E1/V1 hardware appliances only. This option displays the status of CC-SG disks, including disk size, active and up status, state of the RAID-1, and amount of space currently used by various file systems.

► **To display disk status of the CC-SG:**

1. Choose Operation > Utilities > Disk / RAID Utilities > RAID Status + Disk Utilization.



2. Either click Refresh or press Enter to refresh the display. Refreshing the display is especially useful when upgrading or installing, and you want to see the progress of the RAID disks as they are being rebuilt and synchronized.

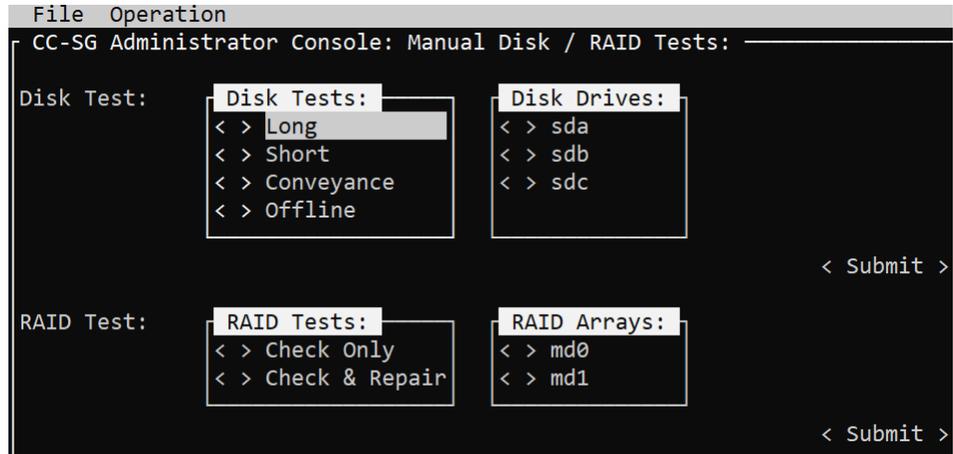
Note: The disk drives are fully synchronized, and full RAID-1 protection is available when you see a screen as shown above. The status of both md0 and md1 arrays are [UU].

Perform Disk or RAID Tests

You can manually perform SMART disk drive tests or RAID check and repair operations.

► **To perform a disk drive test or a RAID check and repair operation:**

1. Choose Operation > Utilities > Disk/RAID Utilities > Manual Disk/RAID Tests.



2. To perform a SMART disk drive test:
 - a. In the Disk Test section, select the type of test, and the disk drive that you want to test.
 - b. Select Submit.
 - c. The test is scheduled and a SMART information screen displays.
 - d. When the required time has passed as indicated by the screen, you can view the results in the Repair/Rebuild RAID screen. See **Repair or Rebuild RAID Disks** (on page 365).
3. To perform a RAID test and repair operation:
 - a. In the RAID Test section, select the type of test and the RAID Array that you want to test. The md0 Array is a small boot partition while md1 Array covers the rest of the system.
 - b. Select Submit.
 - c. You can track the test progress in the RAID Status+Disk Utilization screen. See **Display RAID Status and Disk Utilization** (on page 361). **Optional.**
 - d. After the test is complete, you can view the results in the Repair/Rebuild RAID screen. See **Repair or Rebuild RAID Disks** (on page 365). If a non-zero value displays in the Mis-Match column for the given Array, indicating that there may be a problem, you should contact Raritan Technical Support for assistance.

Schedule Disk Tests

You can schedule SMART-based tests of the disk drives to be periodically performed. Firmware on the disk drive will perform these tests, and you can view the test results in the Repair/Rebuild screen. See ***Repair or Rebuild RAID Disks*** (on page 365).

SMART tests can be performed while CC-SG is operational and in use. They have a marginal impact on the CC-SG performance, but CC-SG activities may significantly delay the completion of the SMART tests. Therefore, it is recommended that you do not schedule frequent tests.

When scheduling SMART tests, be aware of these guidelines:

- Only one test can be performed on a given drive at a time.
- Another test will not be scheduled if a drive is currently under test.
- If two tests are scheduled for the same time slot, the longer test takes priority.
- The test is performed "within" the hour specified, not necessarily at the beginning of the hour.
- Do not schedule SMART tests for periods of higher disk activity, such as heavy CC-SG loads or vacuum operation that occurs every day at midnight and noon.

Note: By default, CC-SG has a scheduled Short test that is performed at 2 AM every day and a scheduled Long test that is performed at 3 AM every Sunday. These scheduled tests apply to both disk drives.

► **To change the Scheduling of Disk Tests:**

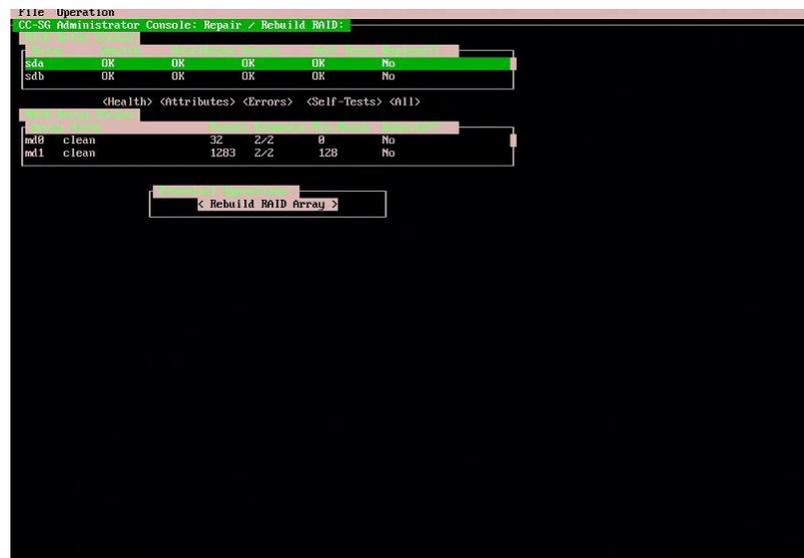
1. Choose Operation > Utilities > Disk/RAID Utilities > Schedule Disk Tests.

Repair or Rebuild RAID Disks

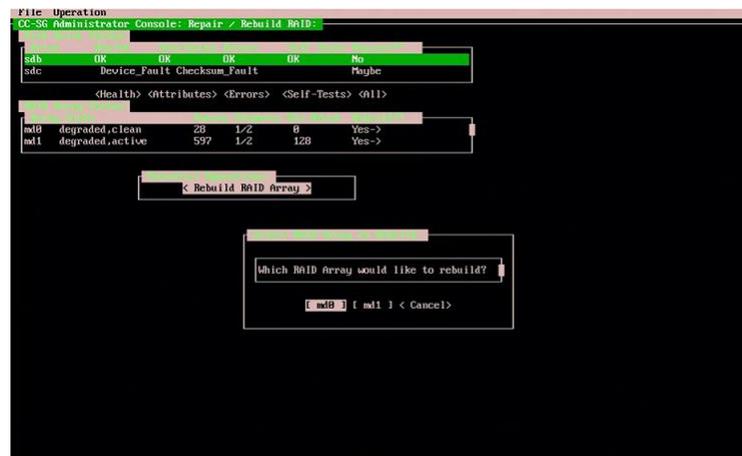
This option displays some detailed status information for disk drives and RAID Arrays, and indicates whether you should replace a disk drive or rebuild a RAID-1 mirror Array. Before replacing or hot swapping a disk drive, obtain a replacement unit from Raritan.

► **To repair or rebuild the RAID:**

1. Choose Operation > Utilities > Disk/RAID Utilities > Repair/Rebuild RAID.
2. If any item does not show "No" under the "Replace??" or "Rebuild??" column, contact Raritan Technical Support for assistance.
 - A good system:



- A contrived system showing multiple problems:



The system will update displayed information when you move between Disk Drive Status, RAID Array Status, and Potential Operations box using the Tab key or mouse clicks.

3. You can select any buttons below the table in the Disk Drive Status section for displaying detailed SMART information. **Optional.**
4. Selecting either Replace Disk Drive or Rebuild RAID Array, and follow onscreen instructions until you finish the operation.

View Top Display with Diagnostic Console

Top Display allows you to view the list of currently-running processes and their attributes, as well as overall system health.

► **To display the processes running on CC-SG:**

1. Choose Operation > Utilities > Top Display.
2. View the total running, sleeping, total number, and processes that have stopped.

```
top - 14:58:57 up 3 days, 2:21, 1 user, load average: 0.26, 0.20, 0.16
Tasks: 142 total, 1 running, 141 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.7 us, 1.0 sy, 0.0 ni, 98.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 3880500 total, 201936 free, 2861404 used, 817160 buff/cache
KiB Swap: 4095996 total, 4029180 free, 66816 used, 746240 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
18144	sg	20	0	7315376	2.2g	16980	S	1.0	59.4	43:04.69	java
756	root	20	0	115804	1900	1424	S	0.3	0.0	3:42.09	monitorcc
761	root	20	0	115936	1992	1364	S	0.3	0.1	1:14.60	monitorflex
1	root	20	0	54668	5968	3764	S	0.0	0.2	1:04.05	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.20	kthreadd
4	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/0:+
6	root	20	0	0	0	0	S	0.0	0.0	0:11.41	ksoftirqd/0
7	root	rt	0	0	0	0	S	0.0	0.0	0:12.69	migration/0
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_bh
9	root	20	0	0	0	0	S	0.0	0.0	1:38.22	rcu_sched
10	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	lru-add-dr+
11	root	rt	0	0	0	0	S	0.0	0.0	0:01.52	watchdog/0
12	root	rt	0	0	0	0	S	0.0	0.0	0:01.32	watchdog/1
13	root	rt	0	0	0	0	S	0.0	0.0	0:12.71	migration/1
14	root	20	0	0	0	0	S	0.0	0.0	0:15.83	ksoftirqd/1
16	root	0	-20	0	0	0	S	0.0	0.0	0:00.00	kworker/1:+
18	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kdevtmpfs

3. Type h to view a help screen for the top command. F1 for help is not operational here.

Check Disk Status

Before starting a CC-SG firmware upgrade, verify the CC-SG disk status.

▶ To check disk status:

1. Choose Operation > Utilities > Disk Drive / RAID Status. This option allows you to view the status without the ability to initiate the Replace Disk Drive and Rebuild RAID Array operations.
2. Verify that disk drives do not need to be replaced, and do not indicate any questionable status.

```
File Operation
CC-SG Administrator Console: Disk Drive / RAID Status:
Disk Drive Status
Device Health RAID Controller RAID Status Self-Test Any Pending
sdb OK OK OK OK No
<Health> <Attributes> <Errors> <Self-Tests> <All>
RAID Array Status
Array Name Health Capacity RAID Status Self-Test
md0 clean 32 2/2 0 No
md1 active 1284 2/2 128 No
```

Display NTP Status

You can display the status of the NTP time daemon if it is configured and running on CC-SG. The NTP Daemon can only be configured in the CC-SG administrator's GUI, the Admin Client.

▶ To display status of the NTP daemon on the CC-SG:

1. Choose Operation > Utilities > NTP Status Display.

Usually it is not necessary to change default snapshot selections unless Raritan Technical Support requests otherwise. When requested, click with the mouse, or use the arrow keys to navigate and press the Space bar to select the snapshot options that you want, marking them with X. By default, the Clean-up JBoss heap dump option is selected. This will automatically erase the JBoss heap file after a snapshot is performed. Other Clean-up options can be useful for clearing space. The "/sg/DB" option will erase old upgrade files.

5. Click or select Submit to proceed with the snapshot operation.
6. You will see a list of items scroll by quickly on the screen during the snapshot process. It is typical if sometimes CC-SG pauses for a while.
7. When the snapshot operation finishes, CC-SG displays the information for the snapshot, including:
 - The location and filename of the CC-SG snapshot file
 - Size
 - MD5 checksum

The snapshot information is for reference only so there is no need to note it down.

8. Press Enter to return to the System Snapshot menu.

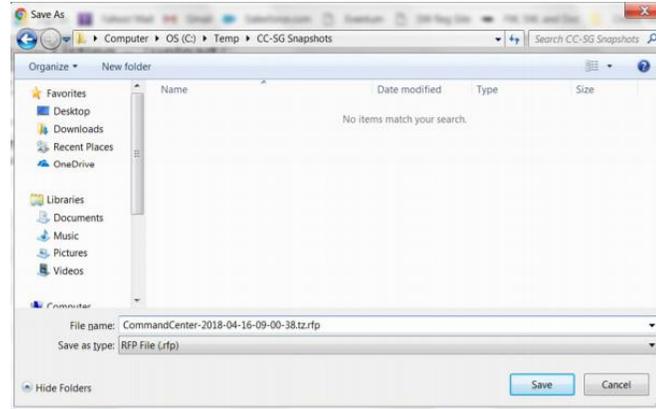
► **2: Retrieve the CC-SG snapshot file:**

1. Using a supported Internet browser, type this URL:
`http(s)://<IP_address>/upload/` where <IP_address> is the IP address of the CC-SG. Note the forward slash (/) following /upload is mandatory. For example, `https://10.20.3.30/upload/`.
2. All available snapshot files that CC-SG has ever taken are listed.

Directory Listing – /upload/	
Name	
 [..]	
<input type="checkbox"/> CommandCenter-2018-04-16-09-00-38.tz.md5	
<input type="checkbox"/> CommandCenter-2018-04-16-09-00-38.tz.rfp	
<input type="checkbox"/> snapshot	

Note: CC-SG keeps snapshot files for 10 days only so you should retrieve the files in a timely manner.

3. Do not click on the file as your web browser may try to open it. Right click on the file with .rfp extension, and save it as an RFP file. Rename the file by appending .rfp to the .tz filename.



4. Upload the RFP file to the FTP location specified by Raritan Support.

Change the Video Resolution for Diagnostic Console

Raritan recommends that you adjust the video resolution of the Diagnostic Console for the monitor to display the menu properly.

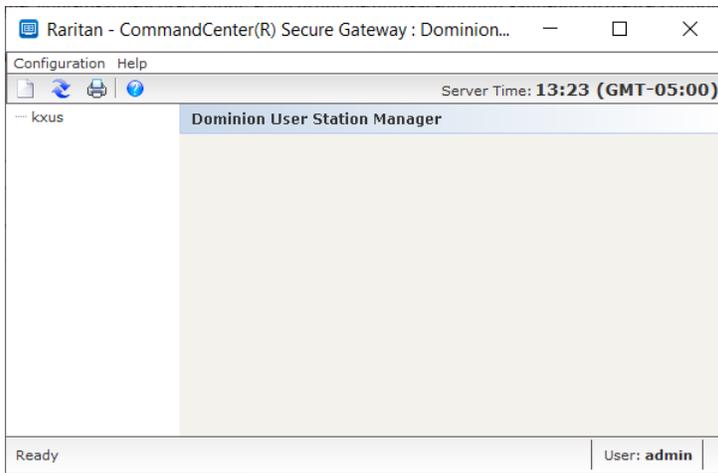
▶ To adjust the video resolution

1. Reboot CC-SG. See **Reboot CC-SG with Diagnostic Console** (on page 350).
2. When it shows the messages below, press any character within 5 seconds to enter the GRUB menu, such as the Esc or arrow key.
Press any key to enter the menu
Booting CentOS (x.x.x) in x seconds....
3. Highlight the option "1024x768 / 24-bit" using the up or down arrow keys, and press Enter.

Dominion User Station Integration

CC-SG can integrate with Dominion User Stations to upgrade, backup, and restore these devices. CC-SG does not manage Dominion User Stations directly as it does with KX III devices, for example. Instead, you can open a separate User Station manager from the Access menu in the Admin Client to add user stations and synchronize them as needed. Use Task Manager to schedule Backup, Restore and Firmware upgrades.

You must have administrator privilege or "CC Setup and Control" combined with either "Device Configuration And Upgrade Management" or "Device, Port and Node Management" to access the User Station manager and perform operations on User Stations.



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Add or Remove User Stations.....	374
Synchronize User Stations	376
Upgrade User Station	376
Backup User Station	377
Restore User Station.....	378
Schedule Tasks for User Stations.....	378

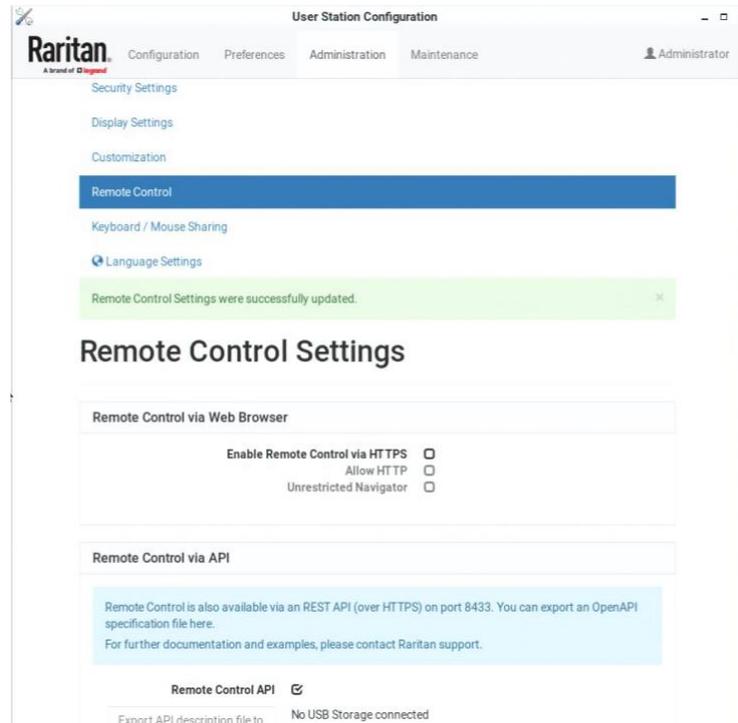
Enable Remote Control API in User Station

You must enable remote control API in each User Station before integrating.

► **To enable remote control API:**

1. Login to User Station with Administrator permission.
2. In User Station Configuration window, choose Administration > Remote control.

3. Click Edit, then select Remote control API checkbox, and then click Save.



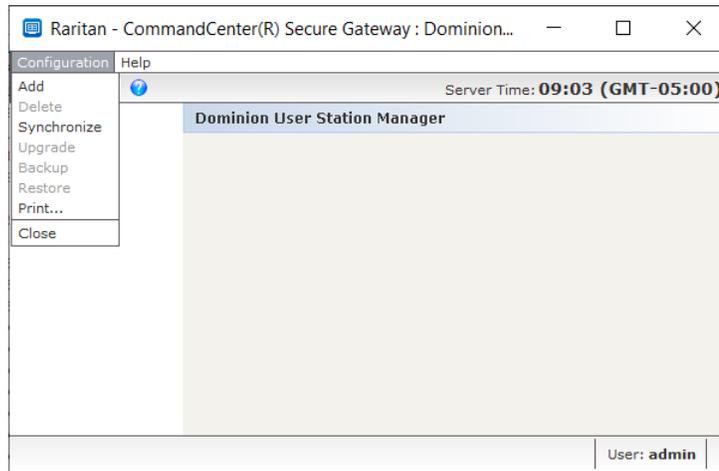
Add or Remove User Stations

You can add or remove Dominion User Station to and from CC-SG.

► **To add Dominion User Station:**

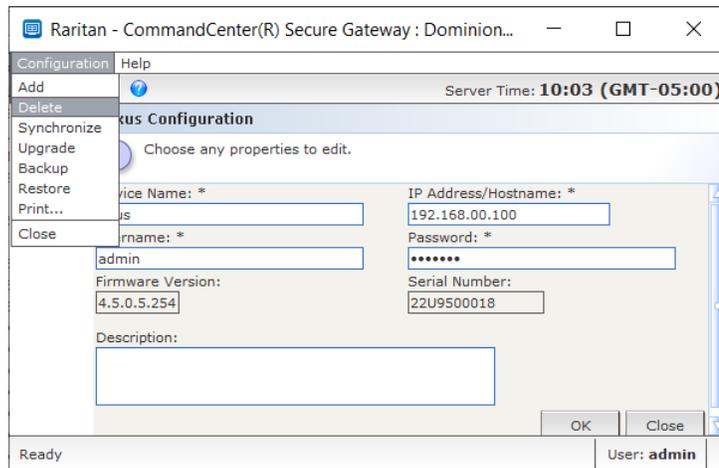
1. Choose Access > Dominion User Station. The User Station dialog appears.
2. Click Configuration > Add.
3. In the New Dominion User Station Configuration form: Type Device Name, IP Address/ Hostname, enter user credentials and description.

4. Click OK.



► **To delete Dominion User Station:**

1. Choose Access > Dominion User Station.
2. Select the Dominion User Station you want to delete.
3. Click Configuration > Delete.
4. Click Yes to confirm.

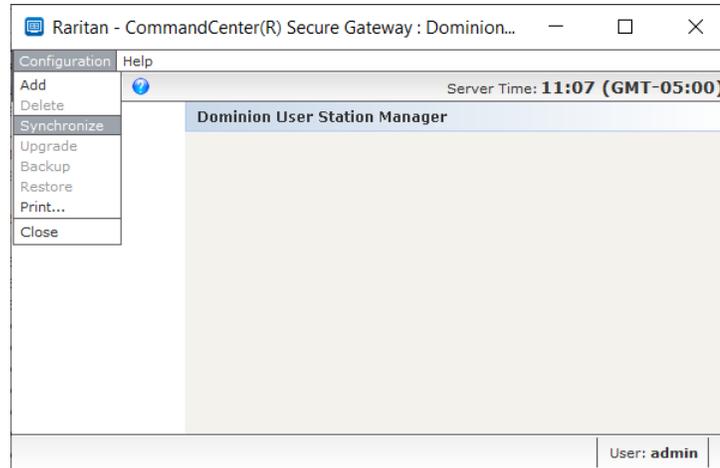


Synchronize User Stations

You can get the latest updates of Dominion User Station by synchronizing. Synchronize is a process that gathers information, such as firmware version, from all added Dominion User Stations. Synchronize status success messages show all the Dominion User Stations statuses. If a User Station cannot be reached, a failure message appears.

► **To synchronize Dominion User Stations:**

1. Choose Access > Dominion User Station.
2. Choose Configuration > Synchronize.
3. Click to confirm.



Upgrade User Station

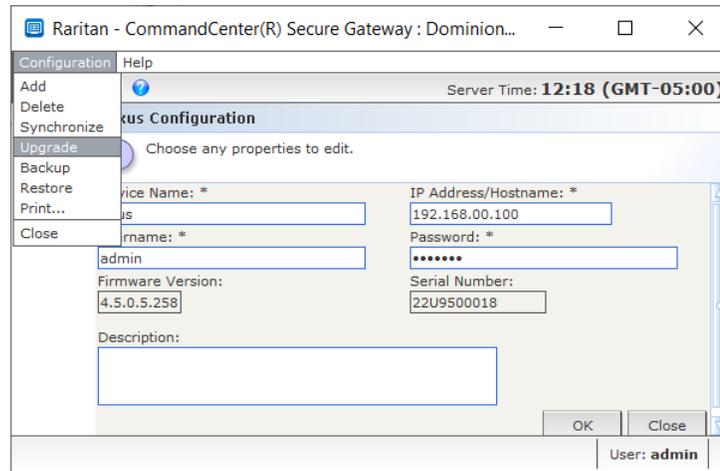
You can upgrade Dominion User Station from CC-SG. You must upload the firmware upgrade file in CC-SG first. See **Upload Firmware** (on page 250)

Note: Unlike Device Firmware for other Raritan KVM devices, CC-SG does not automatically provide Dominion User Station Firmware. You can download the latest User Station firmware from the Raritan Support site.

► **To upgrade Dominion User Station:**

1. Choose Access > Dominion User Station.
2. Select the Dominion User Station which you want to upgrade.
3. Click Configuration > Upgrade.
4. Select available firmware for Firmware Name field.
5. Click OK.

6. Click Yes to continue.

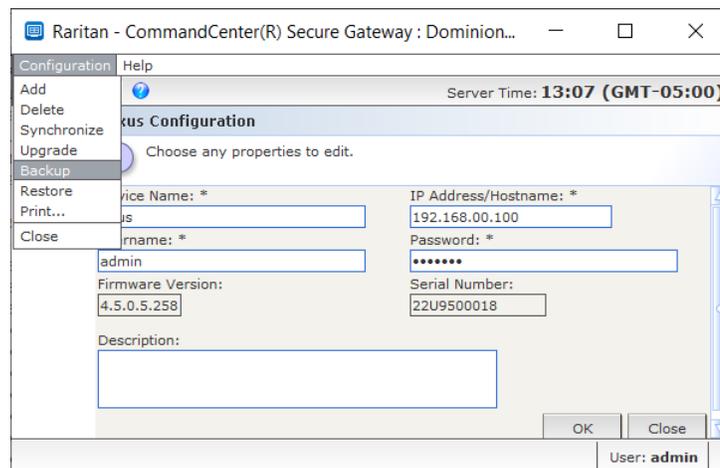


Backup User Station

You can backup Dominion User Station from CC-SG. The backup files are created on the Dominion User Station.

► To backup Dominion User Station:

1. Choose Access > Dominion User Station.
2. Select the Dominion User Station you want to backup.
3. Click Configuration > Backup.
4. Click Yes to continue.

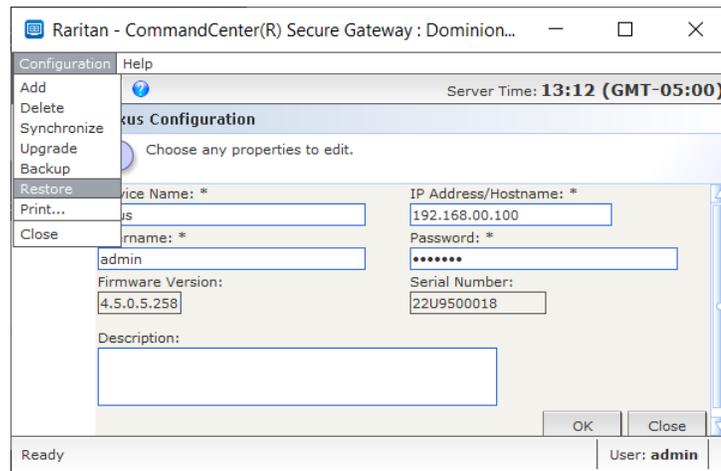


Restore User Station

You can restore a User Station from CC-SG. CC-SG will pull a list of available backup files from the Dominion User Station. You can then select a file from the list to restore on the Dominion User Station.

► **To restore Dominion User Station:**

1. Choose Access > Dominion User Station.
2. Select the Dominion User Station you want to restore.
3. Click Configuration > Restore.
4. Wait for a few seconds while the backup files list is downloaded.
5. Select the backup file to be restored and click OK.
6. Click Yes to confirm.



Schedule Tasks for User Stations

You can schedule firmware upgrades, backups and restores of User Stations. Audit trail and Task History provides the details after completion.

1. ***Schedule Dominion User Station Firmware Upgrade*** (on page 298)
2. ***Schedule Dominion User Station Backup*** (on page 298)
3. ***Schedule Dominion User Station Restore*** (on page 299)

Power IQ Integration

If you have a CC-SG and Power IQ, there are several ways to use them together.

IPv6 is not supported for communication with Power IQ.

1. Control power to Power IQ IT devices via CC-SG.
For example, if you want to control power to a Power IQ IT device which is also a CC-SG node, you can use a Power IQ Proxy interface to give power control commands in CC-SG.
2. Use CSV file imports and exports to share data between these two systems.
For example, if you have a CC-SG with a large number of Dominion PX devices deployed on the IP network, you can export a CSV file from CC-SG that contains all the node names, edit the file to specifications, then import it into Power IQ. See **Export Dominion PX Data to Use in Power IQ** (on page 386).
Or, if you have Power IQ with a large number of Dominion PX devices deployed, and you want to get the current IT Device Names into CC-SG as nodes, you can export a file from Power IQ, edit the file to specifications, then import it into CC-SG. See **Import Power Strips from Power IQ** (on page 384).
3. Synchronize Power IQ with CC-SG to automatically import IT Devices configured in Power IQ into CC-SG. See **Configuring Synchronization of Power IQ and CC-SG** (on page 382).

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Power Control of Power IQ IT Devices

You can use CC-SG to control power to a Power IQ IT device that you've added to CC-SG as a node.

This enables you to control power to nodes connected to PDUs not managed by CC-SG.

Configuring Power IQ Services

You must configure the Power IQ Service before you can add Power IQ proxy interfaces to nodes, or synchronize Power IQ with CC-SG to add IT Devices to CC-SG as nodes. This is done via the CC-SG Access menu.

You must have the CC Setup and Control permission to configure Power IQ services.

► **To configure Power IQ services:**

1. Make sure power control is enabled In Power IQ. In the Settings tab, click Power Control Options in the Appliance Administration section. Select the Enable Power Control checkbox then click Save.
2. In the CC-SG Admin Client, choose Access > Power IQ Services > Add Power IQ Services. The New Power IQ Services Configuration dialog appears.
3. Type a name for the device in the Power IQ Device Name field. The name must be unique for the Power IQ Device providing the service. CC-SG does not accept duplicate names. See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
4. Type the IP Address or Hostname of the device in the IP Address/Hostname field. See **Terminology/Acronyms** (on page 2) for hostname rules.
5. Type the time (in seconds, from 30 to 50,000) that should elapse before timeout between the new device and CC-SG in the Heartbeat timeout (sec) field.
6. Enter authentication information:
 - To use a service account for authentication, select the Use Service Account Credentials checkbox. Select the service account to use in the Service Account Name menu.

or

 - Enter a Username and Password for authentication.
7. Type a short description of this device in the Description field. **Optional.**
8. Click Test Connection. See **Troubleshoot Connections to Power IQ** (on page 380) for error message information. If you'll be using synchronization, see **Configuring Synchronization of Power IQ and CC-SG** (on page 382).

Troubleshoot Connections to Power IQ

Check these possible error messages and solutions to troubleshoot your connection to a Power IQ.

Determine the cause, then edit the configuration to correct it. See **Configuring Power IQ Services** (on page 380).

Message	Resolution
Unable to communicate with	This error could indicate several

Message	Resolution
managing device <Name> at IP address.	<p>conditions.</p> <ul style="list-style-type: none"> ▪ The connection was refused remotely. No process is listening on the remote address or port. ▪ Check firewalls. The remote host cannot be reached because of an intervening firewall, or if an intermediate router is down. ▪ Unknown host. The IP address could not be resolved from the hostname entered.
Authentication failed.	Incorrect username and password.
Unable to communicate with managing device <Name> at IP address, make sure its Web API is enabled.	Web API is not enabled in Power IQ. Log into Power IQ, go to Settings > Web API, then select Enable Web API, and click Save.

Configuring Power Control of Power IQ IT Devices

Once you configure the Power IQ service, you can configure CC-SG to add the nodes and interfaces you need.

1. Add the IT device you want to control power to. See **Add a Node** (on page 111).
2. Add a Power IQ Proxy power control interface to the node. See **Add an Interface** (on page 134) and **Interfaces for Power IQ Proxy Power Control Connections** (on page 145).

Configuring Synchronization of Power IQ and CC-SG

CC-SG will synchronize with Power IQ to add the IT Devices configured in Power IQ to CC-SG as nodes. When synchronizing, CC-SG will create a node with a PowerIQ Proxy interface for each new IT Device identified. When CC-SG detects a duplicated node, the synchronization policy you choose determines whether the nodes are consolidated, renamed, or rejected.

You can synchronize manually at any time, or set up a task to run on a recurring basis. See **Task Manager** (on page 291).

You can also choose to get all IT Devices from Power IQ, or set up a filter so that CC-SG only synchronizes the IT Devices allowed by the filter.

▶ **Step 1 - Add a connection to the Power IQ to be synchronized with CC-SG:**

- See **Configuring Power IQ Services** (on page 380).

▶ **Step 2 - Create a filter (optional) :**

Filters are optional. If you do not create a filter, all IT Devices configured in this Power IQ will be added to CC-SG according to the synchronization policy. Filters apply only to the Power IQ instance selected.

1. Choose Access > Power IQ Services, then select the name of the Power IQ you want to synchronize.
2. In the Synchronization section, select a field name from the Field list. The field names listed refer to fields in Power IQ
3. Select a search operator from the Operator list.
 - LIKE will return IT Devices where the value in the specified field contains the text specified. For example, the value "win" is contained in "windows", "windows2k", and "win7".
 - EQUAL will return only IT Devices that contain exactly the value in the specified field.
4. Enter the value to search for in the specified field, using the specified operator.
5. Click OK to save, or keep this dialog open and continue to Step 3.

▶ **Step 3 - Create a synchronization policy:**

*Note: The synchronization policy applies to ALL Power IQ instances configured in CC-SG. See **Power IQ Synchronization Policies** (on page 383) for details of each policy and other synchronization results.*

1. In the Synchronization section, select the radio button for the synchronization policy:
 - Consolidate Nodes
 - Rename Duplicate Nodes
 - Reject Duplicate Nodes

- Click OK to save. See **Synchronize Power IQ and CC-SG** (on page 383) for details on synchronizing manually and by task.

Synchronize Power IQ and CC-SG

Once you have configured your synchronization settings, you can synchronize at any time manually. Or, you can create a task to synchronize on a recurring basis.

You must have the Device, Port, and Node Management permission to synchronize.

See **Configuring Synchronization of Power IQ and CC-SG** (on page 382) and **Power IQ Synchronization Policies** (on page 383) for details on configuring synchronization settings.

▶ To synchronize Power IQ and CC-SG now:

When you click Synchronize Now, only the selected Power IQ instance is synchronized. If you want to synchronize all Power IQ instances on a schedule, you can create a task. See the next procedure.

- Choose Access > Power IQ Services, then select the Power IQ instance you want to synchronize.
- Verify the filter and policy are correct, then click Synchronize Now.
- The Synchronization Status Message dialog opens. Check the messages for the results of your synchronization.

▶ To synchronize Power IQ and CC-SG as a task:

- Create a "PowerIQ Synchronization" task. See **Schedule a Task** (on page 293).

Power IQ Synchronization Policies

When CC-SG detects a duplicated node, the synchronization policy you choose determines whether the nodes are consolidated, renamed, or rejected.

See **Configuring Synchronization of Power IQ and CC-SG** (on page 382) to set the synchronization policy.

▶ Synchronization policies:

- Consolidate Nodes:
If an IT Device (as determined by the External Key) is retrieved from more than one Power IQ, the node will have a Power IQ Proxy interface for each PowerIQ. CC-SG allows duplicate interface names for a single node.

- **Rename Duplicate Nodes:**
If an IT Device (as determined by the External Key) is retrieved from more than one Power IQ, a node will be created for each with a single Power IQ Proxy interface. CC-SG will rename the nodes to make them unique by adding a number in parentheses. For example, `node`, `node (2)`, `node (3)`
- **Reject Duplicate Nodes:**
If an IT Device (as determined by the External Key) is retrieved from more than one Power IQ, the first instance will have a node and Power IQ Proxy interface created, subsequent instances will be rejected and logged as errors. This is the default.

► **Other synchronization results:**

When synchronizing, if an IT Device no longer exists, as determined by the External Key, and the node only has a single interface of the type Power IQ Proxy Interface associated with it, the node is deleted from CC-SG.

If the node has other interfaces in addition to the single Power IQ Proxy Interface associated with it, only that Power IQ Proxy interface is deleted from CC-SG.

If a Power IQ instance is deleted from CC-SG, these results will be the same.

Importing and Exporting Dominion PX Data from Power IQ

You must have the CC Setup and Control and Device, Port, and Node Management privileges to import and export Dominion PX data from Power IQ.

Import Power Strips from Power IQ

You can import Dominion PX devices and their outlet names from Power IQ. If the Dominion PX devices are already managed by CC-SG, you must delete them first. The import adds the Dominion PX devices, and configures and names the outlets specified in the CSV file.

Non-Dominion PX devices and outlets in the CSV file are ignored during import.

You can use the Power IQ Service to create nodes for Power IQ IT devices attached to Dominion PX devices and other vendors' power strips that cannot be imported from Power IQ. See **Power Control of Power IQ IT Devices** (on page 379).

► **Step 1: Export a CSV file from Power IQ**

1. Login to Power IQ and go to the Dashboard.
2. Click Outlet Naming.
3. Next to the Import, click the link to export a CSV file of the current outlet names.
4. Open or save the file. The file contains all the outlets in Power IQ.

▶ **Step 2: Edit the CSV file**

1. Edit the exported CSV file.
2. Delete the column with the "PX Name." You'll add a row with a command to add each PX device later.
3. Insert 2 columns in the beginning of all rows.
 - a. In column 1, enter the command `ADD`.
 - b. In column 2, enter the tag `OUTLETS`.
4. Insert a row for each PX device to add.

Column number	Tag or value	Details
1	ADD	The first column for all tags is the command.
2	PX-DEVICE	Enter the tag as shown. Tags are not case sensitive.
3	PX device's IP address or hostname	Required field.
4	Username	Required field.
5	Password	Required field.
6	Configure All Outlets	TRUE or FALSE Default is FALSE.
7	Description	Optional.

▶ **Step 3: Import the edited CSV file into CC-SG**

1. In the CC-SG Admin Client, choose Administration > Import > Import Powerstrips.
2. Click Browse and select the CSV file to import. Click Open.
3. Click Validate. The Analysis Report area shows the file contents.
 - If the file is not valid, an error message appears. Click OK and look at the Problems area of the page for a description of the problems with the file. Click Save to File to save the problems list. Correct your CSV file and then try to validate it again. See **Troubleshoot CSV File Problems** (on page 412).
4. Click Import.
5. Check the Actions area to see the import results. Items that imported successfully show in green text. Items that failed import show in red text. Items that failed import because a duplicate item already exists or was already imported also show in red text.
6. To view more import results details, check the Audit Trail report. See **Audit Trail Entries for Importing** (on page 411).

Export Dominion PX Data to Use in Power IQ

You can export data about Dominion PX devices that are configured in CC-SG to a CSV file. The data exported to the file can be used as part of a CSV file to import data into Power IQ. The information includes Dominion PX devices, Outlet Names, and IT Device Names.

Only Dominion PX devices that are connected to the IP network can be exported. This excludes Dominion PX power strips that are deployed only as managed power strips, but are not accessible on the IP network as devices.

Note: Exported Power IQ data is only for import into Power IQ, after editing the file as specified. You cannot import the file into CC-SG.

▶ **Step 1: Export a CSV file from CC-SG:**

1. Click Administration > Export > Export Power IQ Data.
2. Click Export to File.
3. Type a name for the file and choose the location where you want to save it
4. Click Save.

▶ **Step 2: Edit the CSV file and import into Power IQ:**

The export file contains three sections. Read the comments in the CSV file for instructions on how to use each section as part of a Power IQ multi-tabbed CSV import file.

See the *Power IQ User Guide* and *CSV Import Template* in the Support section of Raritan.com, on the Firmware and Documentation page.

Appendix A Specifications for V1 and E1

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V1 Model

V1 General Specifications

Form Factor	1U
Dimensions (DxWxH)	24.21" x 19.09" x 1.75" 615 mm x 485 mm x 44 mm
Weight	23.80lb (10.80kg)
Power	Single Supply (1 x 300 watt)
Operating Temperature	10° - 35° (50° - 95°)
Mean Time Between Failure (MTBF)	36,354 hours
KVM Admin Port	(DB15 + PS2 or USB Keyboard/Mouse)
Serial Admin Port	DB9
Console Port	(2) USB 2.0 Ports

V1 Environmental Requirements

Operating	
Humidity	8% - 90% RH
Altitude	Operate properly at any altitude between 0 to 10,000 feet, storage 40,000 feet (Estimated)
Vibration	5-55-5 HZ, 0.38 mm, 1 minutes per cycle; 30 minutes for each axis(X,Y,Z)
Shock	N/A
Non-Operating	
Temperature	-40° - +60° (-40° -140°)
Humidity	5% - 95% RH

Operating	
Altitude	Operate properly at any altitude between 0 to 10,000 feet, storage 40,000 feet (Estimated)
Vibration	5-55-5 HZ, 0.38mm,1 minutes per cycle; 30 minutes for each axis (X,Y,Z)
Shock	N/A

E1 Model

E1 General Specifications

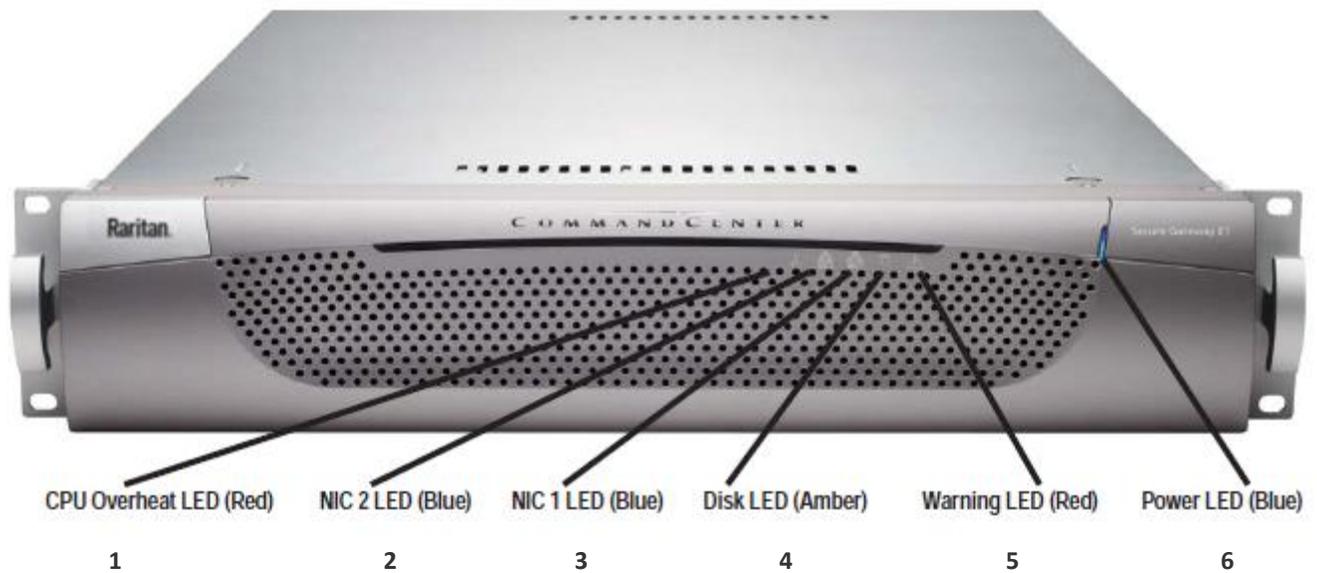
Form Factor	2U
Dimensions (DxWxH)	27.05" x 18.7" x 3.46"-687 mm x 475 mm x 88 mm
Weight	44.09 lbs-20 kg
Power	SP502-2S Hot-Swappable 500W 2U power supply
Operating Temperature	10-40° C
Mean Time Between Failure (MTBF)	53,564 hours
KVM Admin Port	PS/2 keyboard and mouse ports, 1 VGA port
Serial Admin Port	Fast UART 16550 serial port
Console Port	(2) USB 2.0 Ports

E1 Environmental Requirements

Operating	
Humidity	5-90%, non-condensing
Altitude	Sea level to 7,000 feet
Vibration	10 Hz to 500 Hz sweep at 0.5 g constant acceleration for one hour on each of the perpendicular axes X, Y, and Z
Shock	5 g for 11 ms with a ½ sine wave for each of the perpendicular axes X, Y, and Z
Non-Operating	
Temperature	-40°-70° C
Humidity	5-90%, non-condensing

Operating	
Altitude	Sea level to 40,000 feet
Vibration	10 Hz to 300 Hz sweep at 2 g constant acceleration for one hour on each of the perpendicular axes X, Y, and Z
Shock	30 g for 11 ms with a ½ sine wave for each of the perpendicular axes X, Y, and Z

LEDs on E1 Model Units

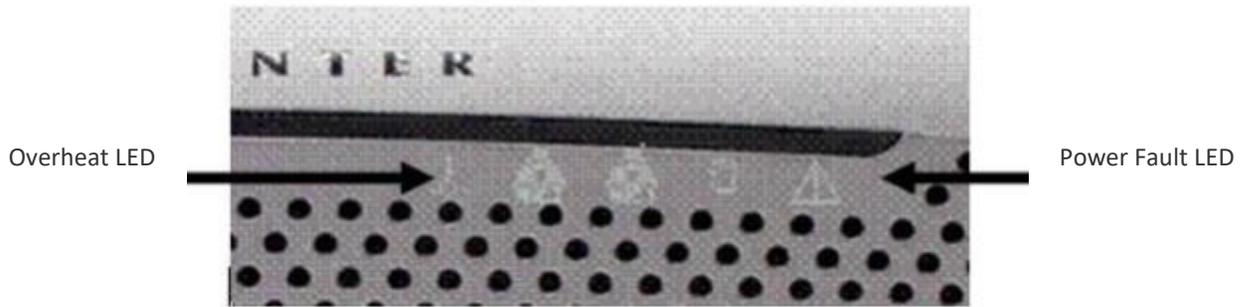


1	CPU Overheat LED - Red	See Sonic Alarm and Red LEDs on E1 Model Units (on page 389)
2	NIC 2/LAN 2 LED - Blue	Indicates activity on LAN 2 when lit.
3	NIC 1/LAN 1 LED - Blue	Indicates activity on LAN 1 when lit.
4	Disk LED - Amber	Indicates hard disk activity when lit.
5	Warning LED - Red	See Sonic Alarm and Red LEDs on E1 Model Units (on page 389)
6	Power LED - Blue	Indicates power is on to CC-SG unit when lit.

Sonic Alarm and Red LEDs on E1 Model Units

There are two RED indicators on the E1 appliance.

Power Fault and Overheat. Both generate the sonic alarm.



Power Fault LED is typically caused by not having both power cords attached to the unit. There could be cases where an actual Power Supply fails.

The Overheat LED means that the system is too hot and is typically caused by the heat sink being loose or not properly mounted, or a fan is not spinning, and so on. See ***E1 General Specifications*** (on page 388) for operating temperatures.

Appendix B CC-SG and Network Configuration

This appendix contains network requirements, including addresses, protocols, and ports, of a typical CC-SG deployment. It includes information about how to configure your network for both external access and internal security and routing policy enforcement. Details are provided for the benefit of a TCP/IP network administrator. The TCP/IP administrator's role and responsibilities may extend beyond that of a CC-SG administrator. This appendix will assist the administrator in incorporating CC-SG and its components into a site's security access and routing policies.

The tables contain the protocols and ports that are needed by CC-SG and its associated components.

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Required Open Ports for CC-SG Networks: Executive Summary

The following ports should be opened:

Port Number	Protocol	Purpose	Details
80	TCP	HTTP Access to CC-SG	Not encrypted.
443	TCP	HTTPS (SSL) Access to CC-SG and Node Access to Dominion KXII-connected nodes in Direct Mode	SSL/AES-128/AES-256 encrypted.
2400	TCP	Node Access (Proxy Mode) for connections using VKC and AKC	This port must be opened per Raritan device that will be externally accessed. The other ports in the table must be opened only for accessing CC-SG. Encrypted only for Dominion KX II devices, release 2.1.10 or higher, if encryption is set in the device
2401	TCP	Node Access (Proxy Mode) for connections using HKC and HSC	This port must be opened per Raritan device that will be externally accessed. The other ports in the table must be opened only for

Port Number	Protocol	Purpose	Details
			accessing CC-SG.
5000	TCP	Node Access (Direct Mode)	This port must be opened when using RSC to connect to SX/SX2 ports, otherwise only needs to be open for CC-SG management. AES-128/AES-256 encrypted if configured.
80 and 443 for Control System nodes 80, 443, 902, and 903 for Virtual Host and Virtual Machine Nodes	TCP	Virtual Node Access	N/A

► **Possible exceptions to the required open ports:**

Port 80 can be closed if all access to the CC-SG is via HTTPS addresses.

Port 5000 can be closed if CC-SG Proxy mode is used for connections from the firewall.

CC-SG Communication Channels

Each communication channel is documented. For each communication channel, the table includes:

- The symbolic IP Addresses used by the communicating parties. These addresses must be allowed over any communication path between the entities.
- The Direction in which the communication is initiated. This may be important for your particular site policies. For a given CC-SG role, the path between the corresponding communicating parties must be available and for any alternate re-route paths that might be used in the case of a network outage.
- The Port Number and Protocol used by CC-SG.
- Whether the port is Configurable, which means the Admin Client or Diagnostic Console provides a field where you can change the port number to a different value from the default listed if there are conflicts with other applications on the network or for security reasons.
- Details about the method of communication, the message that is passed via the communication channel, or its encryption.

CC-SG and Raritan Devices

A main role of CC-SG is to manage and control Raritan devices, such as Dominion KX II. Typically, CC-SG communicates with these devices over a TCP/IP network (local, WAN, or VPN) and both TCP and UDP protocols are used as follows:

Communication Direction	Port Number	Protocol	Configurable?	Details
CC-SG to Local Broadcast	5000	UDP	yes	heartbeat
CC-SG to Remote LAN IP	5000	UDP	yes	heartbeat
CC-SG to Raritan Device	5000	TCP	yes	RDM protocol RC4/AES-128/AES-256 encrypted
Raritan Device to CC-SG	5001	UDP	no	heartbeat
CC-SG to Dominion PX	623 443	UDP	no no	
CC-SG to Dominion KXII in Direct Mode	443	TCP	no	

CC-SG Clustering

When the optional CC-SG clustering feature is used, the following ports must be available for the inter-connecting sub-networks. If the optional clustering feature is not used, none of these ports has to be open.

Each CC-SG in the cluster may be on a separate LAN. However, the inter-connection between the units should be very reliable and not prone to periods of congestion.

Several TCP/IP connections are maintained and initiated by the Primary to the Backup in a CC-SG cluster. These connections may be idle for extended periods of time, but they are necessary for the cluster to operate.

Ensure that all CC-SG to CC-SG cluster connections over VPN or firewalls do not time out or become blocked. Timing out these connections will cause the cluster to fail.

Communication Direction	Port Number	Protocol	Configurable?	Details
CC-SG to Local Broadcast	10000	UDP	no	heartbeat
CC-SG to Remote LAN IP	10000	UDP	no	heartbeat
CC-SG to CC-SG	5432	TCP	no	From HA-JDBC on

Communication Direction	Port Number	Protocol	Configurable?	Details
				Primary to Backup PostgreSQL DB server. Not encrypted.
CC-SG to CC-SG	8732	TCP	no	Primary-Backup server sync clustering control data exchange. MD5 encrypted.
CC-SG to CC-SG	3232	TCP	no	Primary-Backup SNMP sync configuration changes forwarding. Not encrypted.

Access to Infrastructure Services

The CC-SG can be configured to use several industry-standard services like DHCP, DNS, and NTP. These ports and protocols are used to allow CC-SG to communicate with these optional servers.

Communication Direction	Port Number	Protocol	Configurable?	Details
DHCP server to CC-SG	68	UDP	no	IPv4 DHCP standard
CC-SG to DHCP server	67	UDP	no	IPv4 DHCP standard
NTP server to CC-SG	123	UDP	no	NTP standard
CC-SG to DNS	53	UDP	no	DNS standard

PC Clients to CC-SG

PC Clients connect to the CC-SG in one of three modes:

- Admin or Access Client via a web browser. CC-SG supports TLS v1, v1.1, and v1.2 for browser connections. You can configure these encryption methods in your browser.
- Command Line Interface (CLI) via SSH
- Diagnostic Console

Communication Direction	Port Number	Protocol	Configurable?	Details
PC Client to CC-SG	443	TCP	no	Client-server communication. SSL/AES-128/AES-256 encrypted if configured.

Communication Direction	Port Number	Protocol	Configurable?	Details
PC Client to CC-SG	80	TCP	no	Client-server communication. Not encrypted. If SSL is enabled, Port 80 is redirected to 443.
PC Client to CLI SSH	22	TCP	yes	Client-server communication. SSL/AES-128/AES-256 encrypted if configured.
PC Client to Diagnostic Console	23	TCP	yes	Client-server communication. SSL/AES-128/AES-256 encrypted if configured.

PC Clients to Nodes

Another significant role of CC-SG is to connect PC clients to various nodes. These nodes can be serial or KVM console connections to Raritan devices (called Out-of-Band connections). Another mode is to use In-Band access methods such as VNC, RDP, or SSH.

Another facet of PC client to node communication is whether:

- The PC client connects directly to the node either via a Raritan device or In-Band access. This is called Direct Mode.
- The PC client connects to the node through CC-SG, which acts as an application firewall. This is called Proxy Mode.

Communication Direction	Port Number	Protocol	Configurable?	Details
Client to CC-SG via Proxy to Node	2400 (on CC-SG)	TCP	no	Client-server communication. Not encrypted.
Client to CC-SG via Proxy to Node	2401 (on CC-SG)	TCP	no	Client-server communication. Not encrypted.
Client to Raritan Device to Out-of-Band KVM Node (Direct Mode)	5000 (on Raritan Device)	TCP	yes	Client-server communication. SSL/AES-128/AES-256 encrypted if configured.

CC-SG and Client for IPMI, iLO/RILOE, DRAC, RSA

You may need to open additional ports for CC-SG to manage third-party devices, such as iLO/RILOE and iLO2/RILOE2 servers. Targets of an iLO/RILOE device are powered on/off and recycled directly. Intelligent Platform Management Interface (IPMI) servers can also be controlled by CC-SG. Dell DRAC and RSA targets can also be managed by CC-SG.

Note: Some in-band interfaces require additional ports to be open. See their respective guides for more information.

Communication Direction	Port Number	Protocol	Configurable?	Details
CC-SG to IPMI	623	TCP	no	IPMI standard
CC-SG to iLO/RILOE (uses HTTP ports)	80 or 443	TCP	no	Vendor standard
CC-SG to DRAC	80 or 443	TCP	no	Vendor standard
CC-SG to RSA	80 or 443	TCP	no	Vendor standard

CC-SG and SNMP

Simple Network Management Protocol (SNMP) allows CC-SG to push SNMP traps (event notifications) to an existing SNMP manager on the network. CC-SG also supports SNMP GET/SET operations with third-party Enterprise Management Solutions such as HP OpenView.

Communication Direction	Port Number	Protocol	Configurable?	Details
SNMP Manager to CC-SG	161	UDP	yes	SNMP standard
CC-SG to SNMP Manager	162	UDP	yes	SNMP standard

CC-SG Internal Ports

CC-SG uses several ports for internal functions, and its local firewall function blocks access to these ports. However, some external scanners may detect these as “blocked” or “filtered.” External access to these ports is not required and can be further blocked. The ports currently in use are:

- 1088
- 1098
- 2222
- 4444
- 4445
- 8009
- 8083
- 8093

In addition to these ports, CC-SG may use TCP and UDP ports in the 32xxx (or higher) range. External access to these ports is not required and can be blocked.

CC-SG Access via NAT-enabled Firewall

If the firewall is using NAT (Network Address Translation) along with PAT (Port Address Translation), then Proxy mode should be used for all connections that use this firewall. The firewall must be configured for external connections to ports 80 (non-SSL) or 443 (SSL), 2400 and 2401 to be forwarded to CC-SG since the PC Client will initiate sessions on these ports.

Note: It is not recommended to run non-SSL traffic through a firewall.

Connections using the firewall must be configured to use Proxy mode. See **Connection Modes: Direct and Proxy** (on page 259). CC-SG will connect to the various targets on behalf of the PC Client requests. However, the CC-SG will terminate the PC Client to Target TCP/IP connection that comes through the firewall.

RDP Access to Nodes

Port 3389 must be open for RDP access to nodes.

VNC Access to Nodes

Port 5800 or 5900 must be open for VNC access to nodes.

SSH Access to Nodes

Port 22 must be open for SSH access to nodes.

Remote System Monitoring Port

When the Remote System Monitoring feature is enabled, port 19150 is opened by default. See ***Configure Remote System Monitoring*** (on page 359).

Appendix C User Group Privileges

This table shows which privilege must be assigned for a user to have access to a CC-SG menu item.

*None means that no particular privilege is required. Any user who has access to CC-SG will be able to view and access these menus and commands.

Menu > Sub-menu	Menu Item	Required Privilege	Description
Secure Gateway	This menu is available for all users.		
	My Profile	None*	
	Message of The Day	None*	
	Print	None*	
	Print Screen	None*	
	Logout	None*	
	Exit	None*	
Users	This menu and the User tree are available only for users with the User Management privilege.		
> User Manager	> Add User	User Management	
	(Editing users)	User Management	Via User Profile
	> Delete User	User Management	
	> Delete User from Group	User Management	
	> Logout User(s)	User Management	
	> Bulk Copy	User Management	
> User Group Manager	> Add User Group	User Management	
	(Editing user groups)	User Management	Via User Group Profile
	> Delete User Group	User Management	
	> Assign Users to Group	User Management	
	> Logout Users	User Management	

Menu > Sub-menu	Menu Item	Required Privilege	Description
	Node Auditing	User Management	
Devices	This menu and the Devices tree is available only for users with any one of the following privileges: Device, Port, and Node Management Device Configuration and Upgrade Management		
	Discover Devices	Device, Port, and Node Management	
> Device Manager	> Add Device	Device, Port, and Node Management	
	(Editing devices)	Device, Port, and Node Management	Via Device Profile
	> Delete Device	Device, Port, and Node Management	
	> Bulk Copy	Device, Port, and Node Management	
	> Upgrade Device	Device Configuration and Upgrade Management	
>> Configuration	>> Backup	Device Configuration and Upgrade Management	
	>> Restore	Device Configuration and Upgrade Management	
	>> Copy Configuration	Device Configuration and Upgrade Management	
	> Restart Device	Device, Port, and Node Management or Device Configuration and Upgrade Management	
	> Ping Device	Device, Port, and Node Management or Device Configuration and Upgrade Management	
	> Pause Management	Device, Port, and Node Management or Device Configuration and Upgrade Management	
	> Device Power	Device, Port, and Node	

Menu > Sub-menu	Menu Item	Required Privilege	Description
	Manager	Management and Node Power Control	
	> Launch Admin	Device, Port, and Node Management or Device Configuration and Upgrade Management	
	> Launch User Station Admin	Device, Port, and Node Management	
	> Disconnect Users	Device, Port, and Node Management or Device Configuration and Upgrade Management	
	> Topology View	Device, Port, and Node Management	
> Change View	> Create Custom View	Device, Port, and Node Management or Device Configuration and Upgrade Management	
	> Tree View	Device, Port, and Node Management or Device Configuration and Upgrade Management	
> Port Manager	> Connect	Device, Port, and Node Management and Node Out-of-band Access	
	> Configure Ports	Device, Port, and Node Management	
	> Disconnect Port	Device, Port, and Node Management	
	> Delete Ports	Device, Port, and Node Management	
	> Port Power Manager	Device, Port, and Node Management and Node Power Control	
	> Add Powerstrip	Device, Port, and Node Management	
> Port Sorting	> By Port Name	Device, Port, and Node Management or Device	

Menu > Sub-menu	Menu Item	Required Privilege	Description
Options		Configuration and Upgrade Management	
	> By Port Status	Device, Port, and Node Management or Device Configuration and Upgrade Management	
	> By Port Number	Device, Port, and Node Management or Device Configuration and Upgrade Management	
Nodes	This menu and the Nodes tree is available only for users with any one of the following privileges: Device, Port, and Node Management Node In-Band Access Node Out-of-Band Access Node Power Control		
	Add Node	Device, Port, and Node Management	
	(Editing Nodes)	Device, Port, and Node Management	Via the Node Profile
	Delete Node	Device, Port, and Node Management	
	<interfaceName>	Node In-band Access or Node Out-of-band Access	
	Disconnect	Device, Port, and Node Management or	
	Virtualization	Device, Port and Node Management	
	Bulk Copy	Device, Port and Node Management	
	Power Control	Power Control	
	Service Accounts	Device, Port, and Node Management	
	Assign Service Accounts	Device, Port, and Node Management	
	Group Power	Power Control	

Menu > Sub-menu	Menu Item	Required Privilege	Description
	Control		
	Configure Blades	Device, Port, and Node Management	
	Ping Node	Device, Port, and Node Management	
	Bookmark Node Interface	Node In-band Access or Node Out-of-band Access	
> Node Sorting Options	> By Node Name	Any of the following: Device, Port, and Node Management or Node In-band Access or Node Out-of-band Access or Power Control	
	> By Node Status	Any of the following: Device, Port, and Node Management or Node In-band Access or Node Out-of-band Access or Node Power Control	
> Chat	> Start Chat Session	Node In-Band Access or Node Out-of-Band Access or Node Power Control	
	> Show Chat Session	Node In-Band Access or Node Out-of-Band Access or Node Power Control	
	> End Chat Session	Node In-Band Access or Node Out-of-Band Access or Node Power Control	
> Change View	> Create Custom View	Any of the following: Device, Port and Node Management or Node In-Band Access or Node Out-of-Band Access or Node Power Control	

Menu > Sub-menu	Menu Item	Required Privilege	Description
	> Tree View	Any of the following: Device, Port, and Node Management or Node In-band Access or Node Out-of-band Access or Node Power Control	
Associations	This menu is available only for users with the User Security Management privilege		
	> Association	User Security Management	Includes ability to add, modify, and delete.
	> Device Groups	User Security Management	Includes ability to add, modify, and delete.
	> Node Groups	User Security Management	Includes ability to add, modify, and delete.
	> Policies	User Security Management	Includes ability to add, modify, and delete.
Reports	This menu is available for users with any administrative privilege except for users with the User Security Management privilege alone		
	Audit Trail	CC Setup and Control	
	Error Log	CC Setup and Control	
	Access Report	Device, Port, and Node Management	
	Availability Report	Device, Port, and Node Management or Device Configuration and Upgrade Management	
> Users	> Active Users	User Management	
	> Locked out Users	CC Setup and Control	
	> All Users Data	To view all user data: User Management To view your own user data: None	
	> User Group Data	User Management	
> Devices	> Device Asset Report	Device, Port, and Node Management or Device	

Menu > Sub-menu	Menu Item	Required Privilege	Description
		Configuration and Upgrade Management	
	> Device Group Data	Device, Port, and Node Management	
	> Query Port	Device, Port, and Node Management	
> Nodes	> Node Asset Report	Device, Port, and Node Management	
	> Active Nodes	Device, Port, and Node Management	
	> Node Creation	Device, Port, and Node Management	
	> Node Group Data	Device, Port, and Node Management	
> Active Directory	AD Users Group Report	CC Setup and Control or User Management	
	Scheduled Reports	CC Setup and Control or Device Configuration and Upgrade Management	
Access			
	Add Web Services API	CC Setup and Control	
Administration	This menu is available only for users with one of the following privilege(s): CC Setup and Control Combination of Device, Port, and Node Management, User Management, and User Security Management		
	Guided Setup	All of the following: Device, Port, and Node Management, User Management, and User Security Management	
	Message of the Day Setup	CC Setup and Control	
	Applications	CC Setup and Control	
	Firmware	CC Setup and Control or Device Configuration and	

Appendix C: User Group Privileges

Menu > Sub-menu	Menu Item	Required Privilege	Description
		Upgrade Management	
	Configuration	CC Setup and Control	
	Cluster Configuration	CC Setup and Control	
	Neighborhood	CC Setup and Control	
	Security	CC Setup and Control	
	Notifications	CC Setup and Control	
	Tasks	CC Setup and Control	
	Compatibility Matrix	Device, Port, and Node Management or Device Configuration and Upgrade Management	
> Import	Import Categories	CC Setup and Control and User Security Management	
	Import Users	CC Setup and Control and User Management	
	Import Nodes	CC Setup and Control and Device, Port, and Node Management	
	Import Devices	CC Setup and Control and Device, Port, and Node Management	
	Import Powerstrips	CC Setup and Control and Device, Port, and Node Management	
> Export	Export Categories	CC Setup and Control and User Security Management	
	Export Users	CC Setup and Control and User Management	
	Export Nodes	CC Setup and Control and Device, Port, and Node	

Menu > Sub-menu	Menu Item	Required Privilege	Description
		Management	
	Export Devices	CC Setup and Control and Device, Port, and Node Management	
	Export Power IQ Data	CC Setup and Control and Device, Port, and Node Management	
System Maintenance			
	Backup	CC Setup and Control	
	Restore	CC Setup and Control	
	Reset	CC Setup and Control	
	Restart	CC Setup and Control	
	Upgrade	CC Setup and Control	
	Shutdown	CC Setup and Control	
> Maintenance Mode	> Enter Maintenance Mode	CC Setup and Control	
	> Exit Maintenance Mode	CC Setup and Control	
View		None*	
Window		None*	
Help		None*	

Appendix D SNMP Traps

CC-SG provides the following SNMP traps:

SNMP Trap	Description
ccUnavailable	CC-SG application is unavailable.
ccAvailable	CC-SG application is available.
ccUserLogin	CC-SG user logged in.
ccUserLogout	CC-SG user logged out.
ccPortConnectionStarted	CC-SG session started.
ccPortConnectionStopped	CC-SG session stopped.
ccPortConnectionTerminated	CC-SG session terminated.
ccImageUpgradeStarted	CC-SG image upgrade started.
ccImageUpgradeResults	CC-SG image upgrade results.
ccUserAdded	New user added to CC-SG.
ccUserDeleted	User deleted from CC-SG.
ccUserModified	CC-SG user has been modified.
ccUserAuthenticationFailure	CC-SG user authentication failure.
ccLanCardFailure	CC-SG detected a LAN Card Failure.
ccHardDiskFailure	CC-SG detected a hard disk failure.
ccLeafNodeUnavailable	CC-SG detected a connection failure to a leaf node.
ccLeafNodeAvailable	CC-SG detected a leaf node that is reachable.
ccIncompatibleDeviceFirmware	CC-SG detected a device with incompatible firmware.
ccDeviceUpgrade	CC-SG has upgraded the firmware on a device.
ccEnterMaintenanceMode	CC-SG entered Maintenance Mode.
ccExitMaintenanceMode	CC-SG exited Maintenance Mode.
ccUserLockedOut	CC-SG user has been locked out.
ccScheduledTaskExecutionFailure	The reason why the execution of a scheduled task failed.
ccDiagnosticConsoleLogin	User has logged into the CC-SG Diagnostic Console.
ccDiagnosticConsoleLogout	User has logged out of the CC-SG Diagnostic Console.

SNMP Trap	Description
ccUserGroupAdded	A new user group has been added to CC-SG.
ccUserGroupDeleted	CC-SG user group has been deleted.
ccUserGroupModified	CC-SG user group has been modified.
ccSuperuserNameChanged	CC-SG Superuser username has changed.
ccSuperuserPasswordChanged	CC-SG Superuser password has changed.
ccAddFeatureFailure	CC-SG License feature checkout failed.
ccAddLicenseFailure	Add CC-SG License failed.
ccUserPasswordChanged	CC-SG user password changed.
ccLoginBannerChanged	CC-SG login banner has changed.
ccMOTDChanged	CC-SG Message of the Day (MOTD) has changed.
ccDominionPXReplaced	A Dominion PX device has been replaced with another Dominion PX device.
ccSystemMonitorNotification	CC-SG is out of memory.
ccNeighborhoodActivated	CC-SG neighborhood has been activated.
ccNeighborhoodUpdated	CC-SG neighborhood has been updated.
ccDominionPXFirmwareChanged	A Dominion PX firmware version has been changed.
ccClusterFailover	The Primary CC-SG node has failed and the Backup CC-SG node is now operational as the new Primary CC-SG node.
ccClusterBackupFailed	The Backup CC-SG node has failed.
ccClusterWaitingPeerDetected	The Primary CC-SG node detected a peer in the Waiting mode.
ccClusterOperation	A cluster operation has been executed.
ccCSVFileTransferred	A CSV file has been imported.
ccPIQAvailable	CC-SG has detected that Power IQ is available
ccPIQUnavailable	CC-SG has detected that Power IQ is unavailable

Appendix E CSV File Imports

This section contains more information about CSV file imports.

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Common CSV File Requirements

The best way to create the CSV file is to export a file from CC-SG, and then use the exported CSV file as an example for creating your own. The export file contains comments at the top that describe each item in the file. The comments can be used as instructions for creating a file for importing.

It is recommended to create the import file in a spreadsheet program like Microsoft Excel. Enter each item in its own cell. When you save the file, choose CSV as the file type. This adds comma separators automatically at the end of each cell, organizing the data into columns separated by commas. You can create the CSV file in a text editor, but then you have to add commas manually after each item.

The first time you save the file in Excel, you must choose Save As and MAKE SURE to select CSV as the file type. After that, Excel will continue to save the file as CSV.

If you don't set the file type correctly, the file will be corrupted and cannot be used to import.

- All import files must be in ASCII text only.
- The first column of each row must include the command `ADD`. The basic structure is Command, Tag, Attribute where `ADD` is the command.
- Column names are not supported. You can add comment lines above the rows of data as long as each line begins with the `#` symbol.
- To use the default value for a field, type in the value or leave the field blank.
- See **Naming Conventions** (on page 442) for details on CC-SG's rules for name lengths.
- If you create the CSV file in a text editor, rather than a spreadsheet program, you must use commas and double quotes differently. A value that contains a comma or double quote must be completely wrapped with double quotes. Each double quote character within the value must also be preceded by another double quote character.

For example:

Value with Special Character	Formatted for CSV File
DeviceA,B	"DeviceA,B"
Device"A"	"Device""A"""

Audit Trail Entries for Importing

Each item imported into CC-SG is logged in the Audit Trail. Skipped duplicates are not logged in the Audit Trail.

The Audit Trail includes an entry for the following actions, under the Message Type "Configuration."

- Import of CSV file started
- Import of CSV file completed, including number of records successfully added, number of records failed, and number of duplicate records ignored.

The Audit Trail includes an entry for each change that occurs when a record is imported. These entries are logged between the entries for "Import started" and "Import completed." They are logged under a different Message Type, depending on the type of import you performed.

- User imports are logged under "User maintenance"
- Device imports are logged under "Device/node/port"
- Node imports are logged under "Device/node/port"
- Category imports are logged under "Configuration"
- Power Strip imports are logged under Device/Node/Port

Use the filter by date and time fields in the Audit Report page to find all entries that pertain to the import.

Several entries may be logged in the Audit Trail for each record imported.

Troubleshoot CSV File Problems

▶ **To troubleshoot CSV file validation:**

Error messages appear in the Problems area of the Import page. The error messages identify problems that are found in the CSV file during validation.

You can save the list of errors to a CSV file.

Each error includes the line number where the error occurs in the CSV file.

See the comments at the top of an export file to help you correct errors. When the file has been corrected, validate the file again.

▶ **To troubleshoot CSV file import:**

Warning and error messages appear in the Problems areas of the Import page to alert you issues found during import.

If you see an error, the information in that line of your file was not imported.

Duplicate entries are not imported and do not appear in the Audit Trail.

Appendix F Troubleshooting

- Launching CC-SG from your web browser requires a Java plug-in. If your machine has an incorrect version, CC-SG will guide you through the installation steps. If your machine does not have a Java plug-in, CC-SG cannot automatically launch. In this case, you must uninstall or disable your old Java version and provide serial port connectivity to CC-SG to ensure proper operation.
- If CC-SG does not load, check your web browser settings.
 - In Internet Explorer, ensure Java (Oracle) is enabled.
 - Open Java plug-in in the Control Panel and adjust the settings for your browser.
- If you have problems adding devices, ensure the devices have the correct firmware versions.
- If the network interface cable is disconnected between the device and CC-SG, wait for the configured heartbeat minutes, and then plug the network interface cable back in. During the configured heartbeat period, the device operates in standalone mode and can be accessed through VKC.
- If you receive an error message that states your client version is different from the server version and that behavior may be unpredictable, you should clear the browser's cache and the Java cache and restart the browser. See **Clear the Browser's Cache** (on page 325) and **Clear the Java Cache** (on page 326).
- If the memory usage is rising dramatically or the browser session stops responding to your actions, you may need to increase your Java Heap size for your client.
 - a. Open Java plug-in in the Control Panel.
 - b. Click the Java tab.
 - c. Click View inside the Java Applet Runtime Settings group box.
 - d. Select the row of the current Java version you are running and type `-Xmx<size>m` in the Java Runtime Parameters column. For example, type `-Xmx300m` if you want to increase the Java Heap size to a maximum of 300MB.

It's not recommended to set the Java Heap size higher than half of the client computer's memory. For example, if the client computer has 4.0 GB of RAM, set the parameter to `-Xmx2048m` maximum.

- If you access more than one CC-SG unit using the same client and Firefox, you may see a "Secure Connection Failed" message that says you have an invalid certificate. You can resume access by clearing the invalid certificate from your browser.
 - a. In Firefox, choose Tools > Options.
 - b. Click Advanced.
 - c. Click the Encryption tab.

- d. Click View Certificates and find "Raritan" in the list.
- e. Select the CommandCenter item and click Delete. Click OK to confirm.

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Security Options for KVM Target Connections on Mac/Safari

For latest Mac OS, the option to Allow applications downloaded from anywhere has been removed. Turn this option on by entering the following in the console:

```
sudo spctl --master-disable
```

See for more information on this command:

<http://osxdaily.com/2016/09/27/allow-apps-from-anywhere-macos-gatekeeper/>

Troubleshooting or Known Issues in AKC, VKC and HKC

- HKC Bookmarked connections open in a very small window on Windows 10/Edge browser. This is an issue with Edge due to it not always honoring width height for window.open().
- On Thick Client target launches from Chrome, Safari and Firefox, there is a blank browser page left after the target window is closed.
- On Thick Client target launches from IE, an Active X security check message is displayed, user needs to select "allow blocked content" button. This check can be disabled by ticking "Allow active content to run in files on My Computer" from IE Options -> Advance tab -> Security
- With bookmark launches from IE and Edge, a message prompt ("Do you want to close this tab") is displayed with the blank window that is displayed with all bookmark connections. The blank window can be closed by Clicking yes on the prompt
- On CC-SG, where the Access Application for a target is set to "Auto detect" the following precedence is observed
 - If Client supports AKC, then AKC is launched to connect to the target
 - If Client does not support AKC, however is logged in to the Admin client, then VKC is launched to connect to the target
 - If AKC is not supported by the client, and user is logged into the Access client, then HKC is launched to connect to the target
 - Applicable to all client environment except for the mobile client
- Popups should be enabled on the browser for HKC

Appendix G Two-Factor Authentication

CC-SG can be configured to point to an RSA RADIUS Server that supports two-factor authentication via an associated RSA Authentication Manager. CC-SG acts as a RADIUS client and sends user authentication requests to RSA RADIUS Server. The authentication request includes user id, a fixed password, and a dynamic token code.

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Supported Environments for Two-Factor Authentication

The following two-factor authentication components are known to work with CC-SG.

- RSA Authentication Manager 8.1

Two-Factor Authentication Setup Requirements

The following tasks must be completed for two-factor authentication setup. Consult the RSA documentation.

1. Import tokens.
2. Create a CC-SG user and assign a token to the user.
3. Generate a user password.
4. Create an agent host for the RADIUS server.
5. Create an agent host (type: Communication Server) for CC-SG.
6. Create a RADIUS CC-SG client.

Appendix H Diagnostic Utilities

CC-SG comes with a few diagnostic utilities which may be extremely helpful for you or Raritan Technical Support to analyse and debug the cause of CC-SG problems.

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Memory Diagnostic

CC-SG is implemented with the Memtest86+ diagnostic program, which can be invoked from the GRUB menu . When any memory problems occur, you can perform the Memtest86+ diagnostic test for troubleshooting.

► **1: Perform the Memtest86+ diagnostic program:**

1. Reboot CC-SG. See **Reboot CC-SG with Diagnostic Console** (on page 350).
 2. When it shows the messages below, press any character within 5 seconds to enter the GRUB menu, such as the Esc or arrow key.

```
Press any key to enter the menu
Booting CentOS (x.x.x) in x seconds....
```
 3. Highlight the "Memtest86+ vX.X" option (where vX.X is the current version) using the up or down arrow keys, and press Enter.
 4. CC-SG loads and performs the Memtest86+ diagnostic program. Let the program run at least one complete pass, that is, when the Pass column shows "1". For extensive test, leave the program running for multiple hours or even overnight.
 5. Verify these items to determine whether there are memory errors.
 - Memory: The amount of total memory should match your CC-SG type: 512M for G1, 2048M for V1, and 4096M for E1.
 - Errors: The column should show "0"
 - Error display area: The area is the bottom area right below the WallTime row. The program should display nothing in this area to indicate there are no errors.
- If any of the above items indicates that there are memory errors, you can:
- Capture the Memtest86+ screen containing the memory errors and contact Raritan Technical Support for assistance.
 - Shut down CC-SG and re-install the memory DIMM modules to ensure the contact is good. Then perform the Memtest86+ diagnostic to verify if the memory issue is resolved.

▶ **2: Terminate the Memtest86+ diagnostic program:**

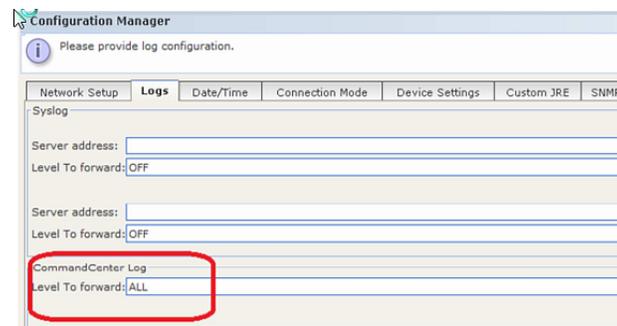
1. Press Esc.
2. CC-SG will reset and reboot.

Debug Mode

Although enabling the debug mode is extremely helpful for troubleshooting, it may impact CC-SG operation and performance. Therefore, you should **enable the debug mode only when Raritan Technical Support instructs you to do so**. You must turn off the debug mode after finishing the troubleshooting.

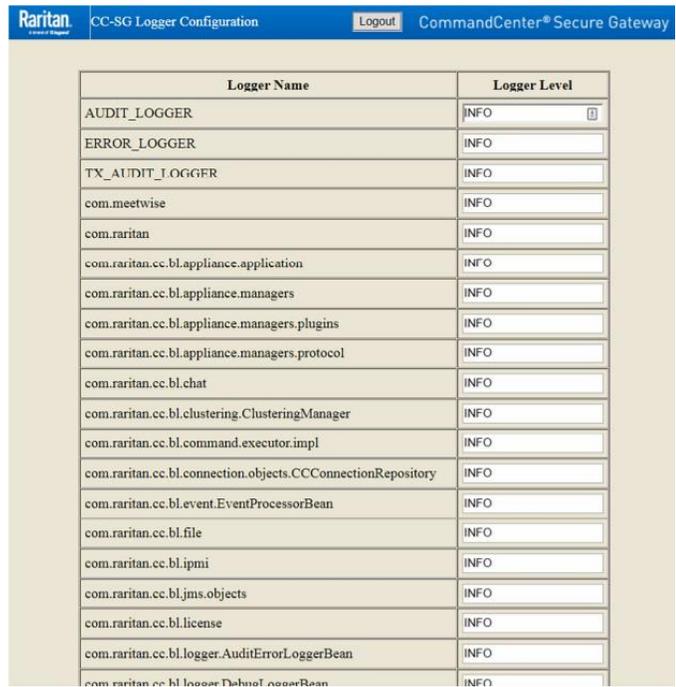
▶ **1: Turn on the debug mode:**

1. Login to the Admin Client, then choose Administration > Configuration > Logs.
2. Set the “Level To forward” for “CommandCenter Log” to ALL (default) or DEBUG.
3. Click Update Configuration.



4. Next, access the Debug JMX console using URL <https://<CC-IP>/jmx-console/>
5. Use the CC-SG Superuser account to login to this interface.

6. After login, CC-SG Logger Configuration page is displayed.



7. Change the value to DEBUG for any package that you would like to turn on DEBUG mode, then click Update.
8. Reproduce the problem and take a snapshot. See **Take a System Snapshot** (on page 370).
9. To disable debug, change value to INFO after issue has been reproduced, and a system snapshot has been generated/downloaded.

RPLoggerConfiguration module is the only item that is set to value 0 instead of INFO to disable debug.

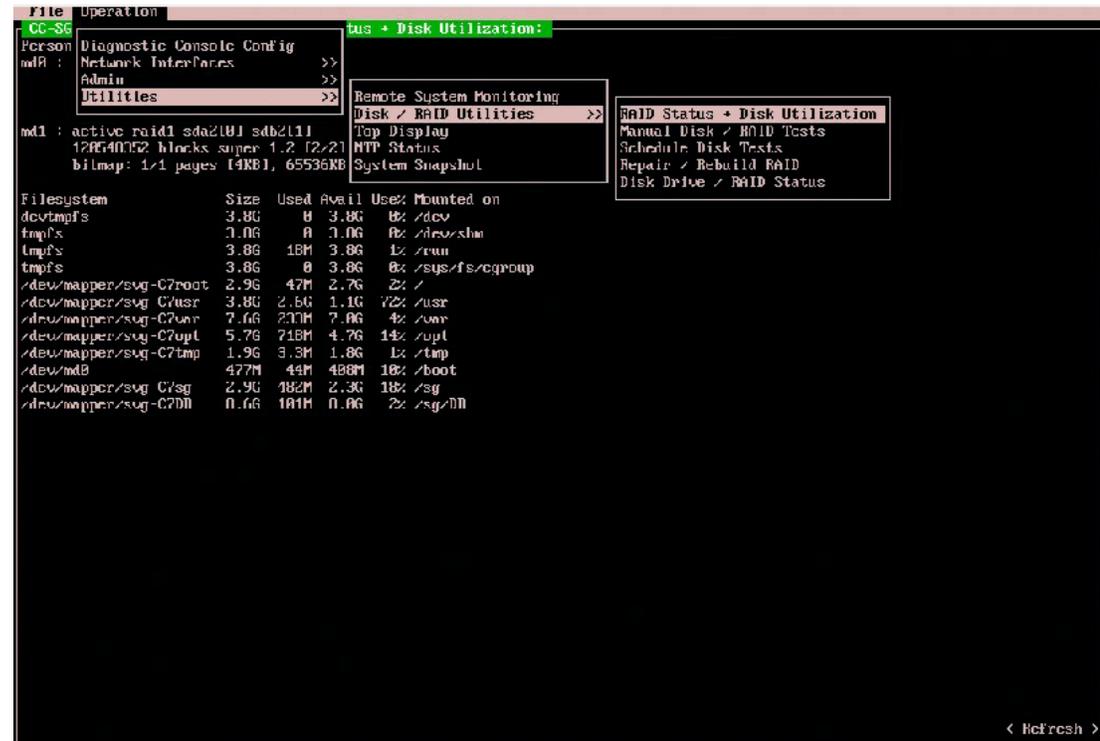
CC-SG Disk Monitoring

If CC-SG disk space exhaustion in one or more file systems occurs, it may negatively impact your operation and even results in the loss of some engineering data. Therefore, you should monitor the CC-SG disk usage and take corrective actions to prevent or resolve potential issues. You may perform the disk monitoring either via the Diagnostic Console or via the Web browser. If you are a sophisticated user, you may use the gkrellm remote monitoring. See **Configure Remote System Monitoring** (on page 359).

Important: For CC-SG units in a cluster configuration, you must monitor both CC-SG units.

► **To monitor the disk space via the Diagnostic Console**

1. Log into the Diagnostic Console and invoke the Disk Status page. See **Display RAID Status and Disk Utilization** (on page 361).
2. Check the disk-related information and take actions when necessary.
 - Both RAID partitions should display as [UU] instead of [U_] or [_U]. Otherwise, a disk failure is indicated and you must contact Raritan Technical Support.
 - None of the file systems' Use% values (the fifth column on the screen) should be greater than 50%. Different file systems contain different data and corrective actions are also different.



File system	Data	Corrective action
/sg/DB	CC-SG database	Contact Raritan Technical Support
/opt	CC-SG backups and snapshots	<ol style="list-style-type: none"> 1. Save any new snapshot files on a remote client PC. See Take a System Snapshot (on page 370) for the retrieval procedure. 2. Enter the System Snapshot menu. See Take a System Snapshot (on page 370). 3. Select Pre-Clean-up SNAP area. 4. Select Pre-Clean-up UPLOAD area.

File system	Data	Corrective action
		<ol style="list-style-type: none"> 5. Deselect SNAP. 6. Deselect Package & Export. 7. Click or select Submit. 8. If the space problem remains, use the Admin Client to connect to CC-SG, upload CC-SG backups to a client PC and then remove them from the CC-SG.
/var	Log files and system upgrades	Contact Raritan Technical Support
/tmp	Scratch area (used by snapshots)	<ol style="list-style-type: none"> 1. Enter the System Snapshot menu. See Take a System Snapshot (on page 370). 2. Deselect SNAP. 3. Deselect Package & Export. 4. Select Clean-up /tmp. 5. Click or select Submit.
/sg	CC-SG managed device firmware files.	In the Admin Client choose Administration > Firmware. Verify that the firmware file that you are trying to add does not already exist. If directory utilization exceeds 85%, remove unnecessary device firmware files. In the Admin Client, choose Administration > Firmware, then select firmware files to Delete.

► **To monitor the disk space via web browser**

This method applies only to CC-SG release 4.0 or later. You must enable Web Status Console-related options in Diagnostic Console before you can monitor the disk space using the web browser. See **Access Status Console via Web Browser** (on page 330).

1. Using a supported Internet browser, type this URL:
`http(s)://<IP_address>/status/` where <IP_address> is the IP address of the CC-SG. Note the forward slash (/) following /status is mandatory. For example, `https://10.20.3.30/status/`.
2. A status page opens. This page contains the same information as the Status Console.
3. Click CC-SG Monitors under Evaluation at the bottom of the page.
4. Check the disk-related information and take actions when necessary. See the previous section for details.

Note: For file system problems that are not mentioned in this section, or when the corrective actions you take cannot resolve the problems, contact Raritan Technical Support for assistance.

Appendix I Dominion KX2/KX3 Dual Video Port Setup and Recommendations

The dual video port group feature is available on KX2 and KX3 devices.
See the online help for more information.
<http://help.raritan.com/kx-iii/v3.0.0/en/index.htm#33255>

In This Chapter

Configuring and Using Dual Port Video in CC-SG422

Configuring and Using Dual Port Video in CC-SG

The dual video port is represented to CC-SG as an out-of-band KVM port. While the ports are in a group, the following configuration notes will apply.

▶ **To configure dual video ports in the Admin Client:**

Configuring the primary port will also configure the secondary port. Control is disabled for the secondary port. You can connect or disconnect only from the primary port. Select the connection application only from the primary port. Your application selection will be applied to the secondary port.

▶ **To configure dual video ports via CSV file import:**

You must configure both ports when importing a dual video port group, or the operation will fail. The error message will indicate that both primary and secondary ports for a dual display port group must be configured.

▶ **To delete dual video ports:**

When deleting a port that is part of a dual video port group, delete the primary port. Deleting the primary port will also delete the secondary port.

When deleting the ports using a CSV file import, you must specify both ports or the operation will fail.

▶ **To connect to nodes associated with a dual video port:**

You can connect or disconnect only from the node associated with the primary port (primary node). You can add interfaces to the primary node only. Control is disabled for the node associated with the secondary port.

▶ **To configure node groups containing dual video ports:**

When selecting nodes for a group, selecting one of the dual video ports will automatically select the other. The ports can only be added or removed from groups as a pair.

▶ **To use bookmarks and direct connection URLs with dual video ports:**

Bookmarks and direct connection URLs are available for both primary node and secondary node of a dual video port group, but connections to secondary nodes are not successful. Connection requests to secondary nodes are rejected.

The notification to a user trying to connect via bookmark or URL to a secondary port is: "Connection to port denied. Contact your system administrator."

▶ **To configure access to dual video ports:**

You must have permission to access both ports/nodes in the dual video port group. Best practice is to make sure both the primary and secondary node are added to the same node group in CC-SG.

If you do not have permission to access both ports, the Admin Client will show the primary node, but disable all controls, and display a message in the Info section of the node profile indicating user needs access to secondary port node also. The Access Client will show the primary node, but disable all hyperlinks and controls, and display a message indicating that user needs access to the secondary port node also.

▶ **Connecting to dual video ports with KX2/KX3 device-level Private Mode:**

When KX2 or KX3 is operating in device-level Private Mode, the KX2 rejects both connection requests if either port is busy. This behavior also occurs when VM-Share mode requires exclusive access.

▶ **Using dual video ports with KVM session limits:**

When KVM session limits are enabled, two sessions must be available for the user, or both connections are denied.

Appendix J Using VMware High Availability or Fault Tolerance with a CC-SG Virtual Appliance

The VM administrator interested in high-availability (HA) or fault tolerance (FT) must familiarize themselves with the vSphere Availability Guide ESX for the version in use.

▶ High Availability:

- HA Provides Rapid Recovery from Outages – with HA a new instance of vCCSG can be ready to provide service in as little as 3-5 minutes after a failure occurs.
- A new vCCSG VM will be started on another available host after the host that it was originally running on has been detected to have failed
- If the VM fails but the host does not, the VM will be restarted. Note, this is based on monitoring heartbeats and I/O. Keep that in mind when trying to test and verify.

Per the VM and Application Monitoring section of the vSphere Availability Guide ESX 4.1, “Occasionally, virtual machines that are still functioning properly stop sending heartbeats. To avoid unnecessarily resetting such virtual machines, the VM Monitoring service also monitors a virtual machine’s I/O activity. If no heartbeats are received within the failure interval, the I/O stats interval (a cluster-level attribute) is checked. The I/O stats interval determines if any disk or network activity has occurred for the virtual machine during the previous two minutes (120 seconds). If not, the virtual machine is reset.”

▶ Fault Tolerance:

- Fault Tolerance provides continuous availability. A secondary instance of virtual CCSG is activated within seconds allowing connections to remain in place and data streams to recover and resume with very minimal loss of data.
- Two VMs run in together, a primary and a secondary, but only the primary provides responses
- On a failure the secondary takes over for the primary without loss of connections or data. A new secondary will be started for continued protection

▶ Comparisons:

The trade-off in using HA versus FT is increased recovery time and potential data loss versus increased resource utilization and potentially reduced performance.

FT requires the availability of an HA cluster. HA is built on the following:

- Shared storage to allow VM datastore access from multiple hosts
- Assumes high-availability storage (the datastores are the VMs)
- Redundant network interfaces

- Redundant paths to storage

The other key requirement is to have the available resources to ensure that HA will function properly when a failure does occur. This can be enforced via admission control, or if failover capacity is allowed to be over-subscribed by disabling admission control, contention for over-subscribed resources is managed by assigning priorities to VMs and defining policies for VM restart. Resource availability is also monitored to ensure the continued viability of the HA cluster.

▶ **Cluster Settings for HA:**

- Access the Edit Settings dialog for the HA cluster to configure the VMware HA settings
- Cluster Features – Turn On VMware HA
- VMware HA – enable Host monitoring while operating in HA mode, enable Admission Control to ensure failover capacity will be available, set the Admission Control Policy to accommodate the number of host failures tolerated for your cluster
- Virtual Machine Options – the default behavior is for Medium restart priority and Shut down VMs on a host that determines it is ‘isolated’
- VM Monitoring – VM monitoring is Disabled, can be set to VM monitoring only
- Monitoring Sensitivity – High

Once the cluster configuration is completed and cluster has hosts and VMs assigned, the HA failover can be tested.

▶ **VM Settings for FT:**

FT operates on a per VM basis – given that an HA cluster has already been configured and is available. There are also additional host, processor and networking requirements for FT.

The vSphere Availability Guide ESX 4.1 has two sections detailing cluster, host and VM requirements for FT compatibility. This includes a key notice regarding mixing ESX and ESXi hosts in an FT pair – even if you get away with it initially, DON'T DO IT.

At least two FT-certified hosts running the same Fault Tolerance version or host build number. The Fault Tolerance version number appears on a host's Summary tab in the vSphere Client.

Note: For hosts prior to ESX/ESXi 4.1, this tab lists the host build number instead. Patches can cause host build numbers to vary between ESX and ESXi installations. To ensure that your hosts are FT compatible, do not mix ESX and ESXi hosts in an FT pair.

▶ **Host Requirements for Fault Tolerance**

A key requirement is that the hosts must have FT-compatible processors, and be licensed and certified for Fault Tolerance. Make sure that the host has hardware virtualization support enabled in BIOS. The vSphere Client host summary tab provides access to the version and FT configuration information.

If the host is not configured for FT, but is known to be compatible, check the BIOS settings. For example on the Dell R610 ensure that BIOS > Processor Settings > Virtualization Technology is set to Enabled.

► **Virtual Machine Requirements for Fault Tolerance**

- Only virtual machines with a single vCPU are compatible with Fault Tolerance.
- No unsupported devices attached to the virtual machine.

FT can be enabled by right-clicking on the VM node and selecting Fault Tolerance > Turn On Fault Tolerance. If the items noted above are not configured correctly you will receive errors and need to fix some settings.

Refer to Table 3-1, Features and Devices Incompatible with Fault Tolerance and Corrective Actions, in the vSphere Availability Guide ESX 4.1 for details.

► **Possible Errors and Fixes:**

Symmetric multiprocessor (SMP) virtual machines. Only virtual machines with a single vCPU are compatible with Fault Tolerance.

Reconfigure the virtual machine as a single vCPU. Many workloads have good performance configured as a single vCPU.

When enabling Fault Tolerance for the VM an error is received “The virtual machine has more than one virtual CPU.”

Reduce the number of vCPUs to 1 by accessing Edit Settings.

CD-ROM or floppy virtual devices backed by a physical or remote device.

Remove the CD-ROM or floppy virtual device or reconfigure the backing with an ISO installed on shared storage. When enabling Fault Tolerance for the VM an error is received “Device ‘CD-ROM1’ has a backing type that is not supported.”

Remove the device by from the list of hardware devices by accessing Edit Settings. If it is ever needed this device can be re-added to perform maintenance functions after disabling FT.

The virtual machine is running in a monitor mode that is incompatible for Fault Tolerance. Power down the VM before enabling Fault Tolerance. This is a limitation based on the CPU version and the type of guest you are running. You must first power off the VM, then enable FT.

Once these settings have been corrected, go back to the VM and enable FT.

Appendix K FAQs

Question	Answer
<p>What is CommandCenter Secure Gateway (CC-SG)?</p>	<p>CommandCenter Secure Gateway is an easy to deploy, plug-and-play appliance that provides unified, secure browser or CLI-based access to KVM, serial and power control devices in the data center, lab and remote offices.</p> <p>CC-SG is available as a rack-mountable hardware solution or as a virtual appliance (runs on VMware®).</p> <p>CC-SG consolidates multiple access technologies, providing a single point of remote access and control for devices, software applications and other solutions. These include Raritan's Dominion® series, Paragon® II, Dominion PXTM intelligent power distribution units, embedded service processors like HP® iLO, Dell® DRAC, IBM® RSA, IPMI, and in-band software solutions such as RDP, VNC, SSH, and Telnet. Access to many other systems and devices is available with a Web browser Interface.</p>
<p>What are the different CC-SG hardware options?</p>	<p>Raritan offers multiple hardware versions to address both small and medium size businesses as well as large enterprises with thousands of servers and other IT devices. CC-SG E1 is targeted at large deployments as well as environments where dual power supply is required for redundancy. The economical CC-SG V1 is a powerful KVM and in-band access and power management appliance for small and medium environments.</p>
<p>On which Virtualization Platform can I install CC-SG?</p>	<p>The CC-SG virtual appliance can be installed on a VMware virtual machine. Please see the CC-SG compatibility matrix for the supported versions.</p>
<p>Which Raritan products does CC-SG support?</p>	<p>CC-SG can manage the following Raritan Dominion Products: KXII, KXIII, KXII-101, KX IV-101, SX, SX2, KSXII, User Station remote office appliances PX, PX2, PX3 intelligent Power Distribution Units (PDUs) Note: Refer to the CC-SG Compatibility Matrix on the Raritan Support site</p>
<p>Which ServerTech products does CC-SG support?</p>	<p>CC-SG can manage the following ServerTech Products: ServerTech PDU, and ServerTech PRO3X intelligent Power Distribution Units (PDUs) Note: Refer to the CC-SG Compatibility Matrix on the Raritan Support site</p>
<p>Which Sunbird products does CC-SG support?</p>	<p>CC-SG can manage Sunbird's Power-IQ product for intelligent rack power</p>
<p>I purchased a Dominion KX III, which CC-SG version should I use?</p>	<p>CC-SG version 6.0 and above supports the Dominion KX III.</p>
<p>I purchased a Dominion KX4-101, which CC-SG version should I use?</p>	<p>CC-SG version 8.0 and above supports the Dominion KX4-101.</p>

<p>Does CC-SG support the first generation Dominion products?</p>	<p>CC-SG Releases 6.0 and later do not support the first generation Dominion devices: Dominion KX (DKX-xxx), KSX (DKSXxxx), KX-101 (DKX-101) as well as the Paragon IP-Reach (IPR-xx).</p> <p>These devices are end-of-life and end-of-support. We recommend upgrading to the latest models.</p> <p>Customers continuing to use these devices should stay with the CC-SG 5.x versions.</p>
<p>How does CC-SG integrate with other Raritan products?</p>	<p>CC-SG uses a powerful proprietary search-and-discovery technology that identifies and connects to Raritan devices. Once CC-SG is connected and set up, device connection is transparent and administration is simple.</p>
<p>How does CC-SG connect to servers and other devices connected to Raritan devices?</p>	<p>CC-SG offers three connection modes: Direct, Proxy, and Both. Direct Mode allows you to connect to a node or port directly, without passing data through CC-SG. Proxy Mode allows you to connect to a node or port by passing all data through CC-SG. Both Mode allows you to configure CC-SG to use a combination of Direct and Proxy modes.</p>
<p>Why would I use proxy mode?</p>	<p>Proxy Mode allows users to connect to a node or port by passing all data through CC-SG. Proxy Mode increases the load on your CC-SG server, which may cause slower connections. However, Proxy Mode is recommended if you would like to centralize user access to devices and systems through the CC-SG. You need to keep the CC-SG TCP ports 80, 443, 2400, and 2401 open in your firewall.</p> <p>Note: Some interfaces only work in "direct mode" even though you configure CC-SG to use Proxy mode. These interfaces include ILO, RSA, DRAC, Web Browser and VMware Viewer. Microsoft and Java RDP interfaces can be used in proxy mode.</p>
<p>Does CC-SG have a software maintenance program?</p>	<p>Yes. Software maintenance, which includes software updates and access to Raritan Software Support, is included for the first year of your CC-SG purchase. After the first year, additional software maintenance can be purchased. It's important to obtain the extended coverage before the end of the first year to ensure continuous coverage and access to software updates.</p>
<p>How do I get access to new CC-SG updates and releases?</p>	<p>Customers with up-to-date CC-SG software maintenance can get access to new CC-SG releases and updates on the raritan.com Support page by logging in.</p>
<p>If I buy the CC-SG virtual appliance, can I run it on multiple virtual servers?</p>	<p>The software can be installed multiple times, but a different license is needed for multiple virtual CC-SG's to run.</p>
<p>Can two Virtual CC-SG appliances be set up as a cluster?</p>	<p>No, but seamless and power high availability operation is available using VMware.</p> <p>The CC-SG virtual appliance can utilize the VMware "high availability" and "fault tolerance" availability features for seamless and powerful redundancy.</p>

Can I access CC-SG from a smart phone?	<p>Yes, the Mobile KVM Client (MKC) enables out-of-band KVM access and power control from Apple mobile devices.</p> <p>The MKC supports out-of-band KVM access through Dominion KX II and KX III, and power control through CC-SG power interfaces for DRAC, iLO, IPMI, RSA and VMware virtual machines. Also supported is power control of Power IQ®-managed PDUs and Raritan's PX platform.</p>
Is CC-SG a licensed product?	<p>Yes. CC-SG, like many software products, is a licensed product. CC-SG is licensed via nodes (see below). Licenses are administered using the "Software License Key Management" page available on the Support section available on raritan.com. CC-SG administrators can manage licenses using the License manager in CC-SG.</p>
What are node licenses?	<p>CC-SG is licensed based on the number of nodes under management. A node is a system or device managed by the CC-SG. For example, servers, PC's and networking devices connected to Raritan Dominion devices count as nodes.</p> <p>The CC-SG base product (for both the hardware and virtual appliances) is provided with a certain number of nodes. Additional node licenses can be purchased as your infrastructure grows.</p>
Does CC-SG support access and management of virtual servers?	<p>Yes. You can add a VMware virtualization environment to CC-SG to enable a connection from CC-SG to virtual machines, virtual hosts and control systems. This virtualization feature includes: (1) streamlined setup of single sign-on access to your virtualization environment, (2) the ability to issue virtual power commands to virtual machines and virtual hosts, and (3) a topology view with one-click connections. CC-SG integrates with VMware environments and can support features like connectivity to the Virtual Center software, ESX servers and VMotion™ functionality.</p>
Does CC-SG support direct KVM access to blade servers?	<p>Yes. CC-SG supports access to and management of blade servers that are connected to the Dominion KX II or KX III. CC-SG allows for convenient and easy access to blade servers and their chassis.</p>
How does CC-SG integrate with blade chassis products?	<p>As there are multiple types of blade servers and multiple blade server manufacturers, Select Cisco, Dell, HP and IBM blade models are supported. CC-SG integrates with blade servers in different ways. CC-SG supports blade servers with and without integrated KVM switches, in conjunction with Raritan's Dominion KX II or KX III.</p> <p>In addition, other types of access can be configured, i.e. RDP, SSH and VNC. CC-SG can also utilize a blade servers embedded management cards, such as HP iLO and RiLOE II, Dell DRAC and IBM RSA II. Consult the CC-SG and Dominion KX II or III documentation for more information.</p>
What is a CC-SG "Cluster"?	<p>A CC-SG Cluster consists of two CC-SG hardware appliances: one primary and one secondary, for backup security in case of primary unit failure. Both units share common data for active users and active connections, and all status data is replicated between the two.</p>
Do I need to buy additional	<p>No. Because only one CC-SG is active at a time, node licenses are not needed</p>

licenses for the backup cluster unit?	for the second CC-SG. A single license file is created by utilizing the ID's of each CC-SG in the cluster.
What is a CC-SG "Neighborhood"?	A CC-SG neighborhood is a collection of up to 10 CC-SG units, deployed and working together to serve the IT infrastructure access and control needs of the enterprise. A Neighborhood implementation allows for significant scalability and distribution of CC-SGs for improved performance in large or geographically dispersed configurations.
How do I find servers and devices that are managed by another CC-SG in a Neighborhood ?	Users can search from the CC-SG Access Client for nodes that are managed directly by another CC-SG in a neighborhood and then launch the interfaces for the discovered nodes. Users can then create a consolidated node list spanning multiple neighborhood units – providing easy, convenient access when needed.
Can Clusters and Neighborhoods be implemented together?	Absolutely. By deploying CC-SG in a combination Cluster/Neighborhood configuration, not only is performance improved, but automatic failover ensures the elimination of or decrease in downtime.
Can a Neighborhood be built with virtual appliances?	Yes. It is operated the same way as a Neighborhood with hardware appliances. Virtual and hardware CC-SG appliances can be connected in a neighborhood.
If I buy a CC-SG virtual appliance, can I easily migrate to it from a CC-SG hardware appliance?	Yes. As of release 5.1, the system configuration and database can be easily transferred. Both appliances must be running the same firmware release for easy migration.
Can I upgrade to newer versions of CC-SG as they become available?	Customers with up-to-date CC-SG software maintenance have access to CC-SG upgrades (new firmware releases). Information about firmware or firmware availability may be downloaded from the Raritan website at http://www.raritan.com/support/CommandCenter- (see http://www.raritan.com/support/commandcenter- \h - http://www.raritan.com/support/commandcenter- \h) Secure-Gateway/ Upgrades are done through CommandCenter Secure Gateway's Graphical User Interface. Additionally, the CC-SG appliance has a CD/DVD-ROM drive to facilitate install/upgrades. To ensure secure operations and compatibility with the latest browser, operating systems and device versions, Raritan recommends upgrading to new releases when they are available.
How many log-in accounts can be created for CC-SG?	There is no specified limit to the number of log-in accounts that can be created.
Can I assign specific node access to a specific user?	Yes. Administrators have the ability to assign access to specific nodes per user or per group.
How are passwords secured in CC-SG?	Passwords are encrypted using MD5 encryption, a one-way hash. This provides additional security to prevent unauthorized users from accessing the password list. Additionally, users can be authenticated remotely using Active Directory®, RADIUS, LDAP or TACACS+ servers. The password is not stored or cached on

	CC-SG when using remote authentication.
An administrator added a new node to the CC-SG database and assigned it to me, but I cannot see it in my Device Selection table. Why?	Newly added nodes should automatically appear in the user's node table. To update the table and view the newly assigned node, click the [Refresh] button.
Do I have to manually add all information to CC-SG, such as device and user information?	No. CC-SG includes a very comprehensive import/export capability. CSV files can be imported to help expedite the process of configuring devices, nodes, users, associations and PDUs. Import/export files include: <ul style="list-style-type: none"> ▪ Import and export of categories and elements ▪ Import and export of user groups and users ▪ Import and export of nodes and interfaces ▪ Import and export of devices and ports ▪ Power IQ import and export file
Which version(s) of Java™ does CC-SG support?	Please check the CC-SG Compatibility Matrix to identify which JRE versions are supported for a given CC-SG firmware release. The CC-SG administrator can set his or her own required JRE version for CC-SG users and also provide Hyperlink to this JRE version. Note: JRE is required to use the CC-SG Java-based Admin Client and for Raritan client applications such as VKC and RSC.
Given the recent security issues with Java, I'm concerned about Java use. What can I do?	Java is not required for use with the CC-SG HTML-based Access Client used by most users. Non-administrative users can use this client to access remote systems and devices. Users can also make use of the CC-SG "Thick Client," which is Java based, but is not launched from a browser, thus avoiding browser based vulnerabilities. The Microsoft .NET-based Active KVM Client (AKC), a KVM Client used by the Dominion KX II, KX III, and KSX II, does not use Java. We recommend the use of this client when running on Windows operating systems. Users accessing serial devices connected to the Dominion SX can utilize a SSH client of their choice to access serial devices.
Specifically what type of changes can CC-SG monitor and alert on?	CC-SG will log user activity (log-in/log-out, connect/disconnect) and configuration changes for both CC-SG and managed Raritan appliances, along with status changes of the connected appliances. All of the above can be forwarded to a network management system via SNMP or syslog.
Is CC-SG integrated with Power IQ?	Yes. CC-SG does have several points of integration with Raritan's Power IQ power management solution. First, Power IQ data, such as node, interface, outlet and device information, can be pulled into CC-SG to eliminate time-consuming data entry into both databases. Alternatively, data that's exported from either product can be imported into the other for fast, easy sharing and synchronization. Also, CC-SG users can control the power of nodes that are connected to Raritan PX and multivendor PDUs managed by Power IQ – without leaving

	their CC-SG client.
Will the current Paragon solution work with CC-SG?	Yes. Simply connect Paragon II to the Dominion KX II/III and set up the KX II/III as a connected device. Please refer to the Paragon II User Guide for details.
How will I know if someone else is logged into a Raritan device managed by CC-SG?	CC-SG presents the list of users logged into a device and can show which users are currently accessing a node through the active users report. Currently accessed devices will be in bold when looking at the device tree view from the CC-SG GUI. In addition, a bold node and a bold interface name of a node would indicate that it is currently being accessed by a user.
Does CC-SG have the ability to look at multiple device screens? How is this presented?	Users can simultaneously view and control multiple devices, provided they have the appropriate access privileges.
Is SSL encryption internal (LAN) or external (WAN)?	Both. The session is encrypted regardless of source, i.e., LAN/WAN.
Can audit/logging abilities track down who switched a power plug on/off?	Yes. Direct power switch off is not logged, but the power on/off through the CC-SG GUI is recorded in the audit trail and can be viewed in an audit trail report.
Does CC-SG support Certificate Signing Requests?	Yes. Under CC-SG, navigate to Security Manager and on the Certificates tab, you can generate a certificate signing request (CSR) to be sent to a certificate authority to apply for a digital identity certificate, generate a self-signed certificate, or import and export certificates and their private keys.
Does CC-SG support virtual media?	Yes. CC-SG supports Virtual Media in conjunction with Dominion KVM-over-IP devices. The use of virtual media on the Dominion KX II, KX III and KSX II devices also requires a virtual media Computer Interface Module.
Does CC-SG support the Firefox® and Chrome browsers?	Yes. Please see the CC-SG Compatibility Matrix for a full list of supported Web clients.
If I have an existing IT management application, can I integrate it with CC-SG?	Yes. Raritan offers an optional Web Service API (WS-API) for this purpose. It allows access of CC-SG, connected nodes and other CC-SG functions from your own customized client application.
If the CC-SG's RAID drive(s) fail(s), can I get a new drive?	Yes, for CC-SG's under warranty. Please see the Administrator's Guide for further information and troubleshooting if you suspect issues with the RAID drive(s). There is an onscreen diagnostics menu to help identify any issues. Please contact Raritan Tech Support for assistance.
Does CC-SG support AES-256?	Yes. AES-256 can be selected in the Admin GUI. AES-128 is the default setting.
Is there an evaluation version of CC-SG?	Yes. There is an evaluation version of CC-SG that can be installed on VMware Player, ESX or ESXi. You may either order the software from Raritan (part no. CCSG16-VA) or download it from our website. The "Eval" is fully functional with a few exceptions: <ul style="list-style-type: none"> ▪ Supports a maximum of 16 "interfaces"
Is there a Windows version of the	Yes. CC-SG includes an "Active KVM Client" (AKC), which utilizes Microsoft's

KVM Client?	.NET technology instead of Java. Both the CC-SG Admin and Access Clients support AKC. Client PCs may run on Windows 10 operating system.
What are all the applications needed on the client machines in order to use CC-SG?	CC-SG has been designed to avoid adding any extra burden to client administrators. CC-SG stores and provides all the client applications, which means next to nothing needs to be specially maintained on your client devices. The only small exception is that a compatible version of Java (JRE) is installed if you are going to use the CC-SG Java-based Admin Client or a Raritan console application such as VKC. JRE is not required for use with the CC-SG web-based Access Client or the .NET based Active KVM Client (AKC), used by the Dominion KX II, KSX II and KX III.
Does CC-SG support Windows 10, Windows 2012 R2 Server and Windows 20016 Server?	Yes. CC-SG supports target devices running Windows 10, Windows 2012 R2 Server and Windows 2016 Server. The use of either OS on Client PCs is also supported. Each version of Windows 7 is supported (Home Premium, Professional and Ultimate).
Does CC-SG support IPv6?	Yes, in IPv4/IPv6 dual stack mode. As of 5.4.0, CC-SG does not support IPv6 only mode. Administrators can enable dual stack mode. The default setting is IPv4 only. Note that IPv6 support is being phased in over a few releases. Please refer to the release notes and Administrator's Guide for information about features and functions that are not supported when using IPv6.
Which version of SNMP does CC-SG support?	Support for SNMP is version 3.
How do I identify if I have the first generation CC-SG G1 hardware appliance?	If you purchased and received your CC-SG before May 2006, you have CC-SG G1 hardware. If you received your CC-SG after May 2006, and are not sure about your hardware mode, use one of the following three methods to identify if you have a CC-SG G1 hardware model: Using the Appliance Serial Number <ul style="list-style-type: none"> ▪ Locate your serial number underneath the appliance ▪ If your serial number starts with the letters XG, your appliance is a G1 Using the Admin Client GUI <ul style="list-style-type: none"> ▪ Log in to the CC-SG administrative interface ▪ In the Administration dropdown menu, select the Configuration option ▪ Select the SNMP tab ▪ In the System Description area, you can identify your hardware model Using the Diagnostic Console CLI <ol style="list-style-type: none"> 1. With SSH client (e.g., PuTTY), make a connection using port number 23 to the CC-SG IP address 2. Log in using "status" account 3. In the System Information area at the Model field, CC-SG G1 will be indicated
Where can I get more detailed information about CC-SG	The online help is a good way to quickly search for information on any given topic.

features?	Look in the Support section of raritan.com for the CC-SG Admin Guide, Online Help and other docs. http://www.raritan.com/support/product/commandcenter-secure-gateway
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General FAQs

Question	Answer
General	
Why would I need CC-SG?	As you deploy more and more data center servers and devices, their management becomes exponentially complex. CC-SG allows a systems administrator or manager to access and manage all servers, equipment, and users from a single device.
Is the status of CC-SG limited by the status of the devices which it proxies?	No. Because CC-SG software resides on a dedicated server, even if a device being proxied by the CC-SG is turned off, you will still be able to access CC-SG.
What do I do if I am unable to add a console/serial port to CC-SG?	Assuming the console/serial device is a Dominion, ensure that the following conditions are met: - The Dominion device is active. - The Dominion device has not reached the maximum number of configured user accounts.
How do I access CC-SG from outside a firewall?	Accessing CC-SG from outside the firewall can be achieved by configuring the right ports on the firewall. The following ports are standard ports: 80: for HTTP access via web browser 443: for HTTPS access via web browser

Question	Answer
	<p>2400 and 2401: for Proxy mode connections</p> <p>5001: for Raritan KVM/Serial devices event notification</p> <p>If there is firewall between two cluster nodes, the following ports should be opened for cluster to be worked properly:</p> <p>8732: for cluster nodes heartbeat</p> <p>5432: for cluster nodes DB replication</p>
Will CC-SG auto-detect and update the blade chassis configuration when I move the blade chassis from one KX2 port to another KX2 port?	CC-SG does not auto-detect and update the blade chassis configuration when you move it to another KX2 port or device. The configuration is lost so you must configure the blade chassis in CC-SG once again.
How do I merge the blade server node and the virtual host node if they refer to the same server?	You should configure the Virtualization feature prior to configuring the blade slots. When configuring the blade slot, enter the same name as the virtual host node, and choose to add this interface to the existing node when a message appears.

Authentication FAQs

Question	Answer
Authentication	
If we had more than 1,000 users, how would this be managed? Do you support Active Directory?	CC-SG works with Microsoft Active Directory, Sun iPlanet, or Novell eDirectory. If a user account already exists in an authentication server, then CC-SG supports remote authentication using AD/TACACS+ /RADIUS/LDAP authentication.
What options are available for authentication with directory services and security tools such as LDAP, AD, RADIUS, and so on?	<p>CC-SG permits local authentication as well remote authentication.</p> <p>Remote authentication servers supported include: AD, TACACS+, RADIUS, and LDAP.</p>
Why does the error message "Incorrect username and/or password" appear after I correctly enter a valid username and password to log into CC-SG?	Check the user account in AD. If AD is set to "Logon To" specific computers on the domain, it disallows you to log into CC-SG. In this case, remove the "Logon To" restriction in AD.

Security FAQs

Question	Answer
Security	
Sometimes when I try to log in, I receive a message that states my "login is incorrect" even though I am sure I am entering the correct username and password. Why is this?	There is a session-specific ID that is sent out each time you begin to log into CC-SG. This ID has a time-out feature, so if you do not log into the unit before the time-out occurs, the session ID becomes invalid. Performing a Shift-Reload refreshes the page from CC-SG, or you may close the current browser, open a new browser, and log in again. This provides an additional security feature so that no one can recall information stored in the web cache to access the unit.
Sometimes I receive a "No longer logged in" message when I click any menu in CC-SG, after leaving my workstation idle for a period of time. Why?	CC-SG times each user session. If no activity happens for a pre-defined period of time, CC-SG logs the user out. The default is 30 minutes, but it can be reconfigured. It is recommended that users exit CC-SG when they finish a session.
As Raritan has root access to server, this may potentially cause issue with government bodies. Can customers also have root access or can Raritan provide a method of auditability/accountability?	No party will have root access to server once the unit is shipped out of Raritan, Inc.
Does CC-SG support CRL List, that is, LDAP list of invalid certificates?	No. Server revocation is dependent on your browser support. If you must use a CRL, get a certificate from a CA, such as Symantec, and then enable "check for CRL" in your browser settings.
Does CC-SG support Client Certificate Request?	Yes.

Accounting FAQs

Question	Answer
Accounting	
The event times in the Audit	Log event times are logged according to the time settings

Question	Answer
Trail report seem incorrect. Why?	of the client computer. You can adjust the computer's time and date settings.
Can audit/logging abilities track down who switched on or off a power plug?	Direct power switch-off is not logged, but power control through CC-SG can be logged to audit logs.

Performance FAQs

Question	Answer
Performance	
As a CC-SG administrator, I added over 500 nodes and assigned all of them to me. Now it takes a long time to log into CC-SG.	When you, as administrator, have many nodes assigned to you, CC-SG downloads all information for all nodes during the logging process, which slows the process considerably. It is recommended that administrator accounts be used primarily to manage CC-SG configuration do not have access to many nodes.
What is the bandwidth usage per client?	Remote access to a serial console over TCP/IP is about the same level of network activity as a telnet session. However, it is limited to the RS232 bandwidth of the console port itself, plus SSL/TCP/IP overhead.

Grouping FAQs

Question	Answer
Grouping	
Is it possible to put a given server in more than one group?	Yes. Just as one user can belong to multiple groups, one device can belong to multiple groups. For example, a Sun in NYC could be part of Group Sun: "Ostype = Solaris" and Group New York: "location = NYC."
What impact to other usage would be blocked through the active usage of the console port, for example, some UNIX variants not allowing admin over network interfaces?	A console is generally considered a secure and reliable access path of last resort. Some UNIX systems allow root login only on the console. For security reasons, other systems might prevent multiple logins, so that if the administrator is logged in on the console, other access is denied. Finally, from the console, the administrator can also disable the network interfaces when/if necessary to

Question	Answer
	<p>block all other access.</p> <p>Normal command activity on the console has no greater impact than the equivalent command run from any other interface. However, since it is not dependent upon the network, a system that is too overloaded to be able to respond to a network login may still support console login. So, another benefit of console access is the ability to troubleshoot and diagnose system and network problems.</p>
<p>How do you recommend handling the issue of CIMs being moved/swapped at the physical level with changes to the logical database? For example, what happens if I physically move a CIM with target server from one port to another (either on the same device or a different device)? What happens to the port names? What happens to the node? What happens to the interfaces?</p>	<p>Each CIM includes a serial number and target system name. Our systems assume that a CIM remains connected to its named target when its connection is moved between switches. This movement is automatically reflected in the ports and interfaces in CC-SG; the port name and interface name are updated to reflect the change. The interface appears beneath the node that is associated with the port. However, the node name does not change. You must rename the node manually by editing the node. This scenario assumes all ports involved were already configured. If you physically move the target server and CIM to a different and unconfigured port, you can then configure the port in CC-SG, and the node will be created automatically.</p>

Interoperability FAQs

Question	Answer
Interoperability	
<p>To what level is CC-SG able to integrate with third party KVM tools, down to third party KVM port level or simply box level?</p>	<p>Third party KVM switch integration is typically done through keyboard macros when the third party KVM vendors do not publicize the communications protocols for the third party KVM switches. Depending on the capability of the third party KVM switches, the tightness of integration will vary.</p>
<p>How would I mitigate the restriction of four simultaneous paths through any IP-Reach box, including the roadmap for the potential 8-path box?</p>	<p>Currently, the best possible implementation is to aggregate IP-Reach boxes with CC-SG. In the future, Raritan plans to increase simultaneous access paths per box. These plans have yet to complete development as other projects have taken priority, but we welcome comments about the market demand and use cases of an 8-path solution.</p>

Authorization FAQs

Question	Answer
Authorization	
Can authorization be achieved via RADIUS/TACACS/LDAP?	LDAP is used for remote authentication only, not authorization. Both RADIUS and TACACS can be used for authorization.

User Experience FAQs

Question	Answer
User Experience	
Regarding console management via network port or local serial port, such as COM2: What happens to the logging? Does CC-SG capture local management?	Logging into CC-SG through the CC-SG console itself is the same as gaining the root privilege of the operating system (Linux) upon with CC-SG is running. Syslog will record this event, but what the user types at the CC-SG console itself will be lost.

Licensing FAQs

If you must replace your installed licenses, follow these rules.

Base licenses must be replaced first.	For example, if replacing stand-alone licenses CC-E1-512 and CCL-512 with cluster licenses CC-2XE1-512 and CCL-512, the base license CC-E1-512 must be replaced before replacing the CCL-512 add-on license. Note that while the add-on feature CCL-512 is the same for both stand-alone and cluster, the license file would have one host ID for the stand-alone and two host IDs for the cluster license. The add-on licenses must also be replaced in this situation.
Replacing a base clears all add-ons if they are of a different type.	If you replace a standalone base license with a cluster base license, or vice versa, the add-ons will be cleared automatically, and new ones with the correct host IDs would be required.
Replacing a base does not clear all add-ons if they are of the	For example, a CC-E1-512 could be used to replace a CC-E1-256. If the host IDs were the same on both licenses,

<p>same type and the host IDs match.</p>	<p>the add-on licenses are still valid.</p>
<p>When operating in a cluster with standalone licenses, the cluster must be deleted to replace standalone licenses, then re-joined.</p>	<p>Since standalone licenses are not shared by cluster members, each CC-SG operating in a cluster with standalone licenses must have equivalent licensed node capacity.</p> <p>Instead of adding licensed node capacity to each of the CC-SG units, customers may prefer to transition to cluster licenses in order to be able to share the licenses between the two CC-SG units.</p> <p>Delete the cluster temporarily, replace the licenses, and then re-build the cluster.</p>
<p>Replacement of a base license will require the user to check out features.</p>	<p>After licenses are replaced, go to the License Manager page, review the available features and check them out as needed. They will not be checked out automatically. See Install and Check Out Your License.</p>
<p>Replacement of licenses to eliminate a license server, to switch to not-served mode, will clear all uploaded licenses.</p>	<p>After you upload the rehosted, not-served base license, CC-SG must restart. When you login again, CC-SG is in limited mode, and you can finish uploading other feature licenses, and check out all licenses, to exit limited operation mode.</p>

Appendix L Keyboard Shortcuts

The following keyboard shortcuts can be used in the Java-based Admin Client.

Operation	Keyboard Shortcut
Refresh	F5
Print panel	Ctrl + P
Help	F1
Insert row in Associations table	Ctrl + I

Appendix M Naming Conventions

This appendix includes information about the naming conventions used in CC-SG. Comply with the maximum character lengths when naming all the parts of your CC-SG configuration.

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User Information

Field in CC-SG	Number of characters CC-SG allows
Username	64
Full Name	64
User Password (not strong password)	6-16
User Password (strong password)	Configurable Minimum: 8 Maximum: 16-64
User Email Address	60
User Phone Number	32
User Group Name	64
User Group Description	160

Node Information

Field in CC-SG	Number of characters CC-SG allows
Node Name	64
Node Description	160

Field in CC-SG	Number of characters CC-SG allows
Notes	256
Audit Information	256

Location Information

Field in CC-SG	Number of characters CC-SG allows
Department	64
Site	64
Location	128

Contact Information

Field in CC-SG	Number of characters CC-SG allows
Primary Contact Name	64
Telephone Number	32
Cell Phone	32
Secondary Contact Name	64
Telephone Number	32
Cell Phone	32

Service Accounts

Field in CC-SG	Number of characters CC-SG allows
Service Account Name	64
User Name	64
Password	64
Description	128

Device Information

Field in CC-SG	Number of characters CC-SG allows
Device Name	32 for all devices except iPDU. iPDU max is

Field in CC-SG	Number of characters CC-SG allows
	64.
PX Device Names cannot include a period character. If you import a PX Device Name with periods, the periods are converted to hyphens.	
Device Description	160
Device IP/Hostname	64
Username	64
Password	64
Notes	256

The space () and period (.) characters are not permitted in device names.

Any other special character can be included in a device name, except that the device name cannot start with a special character, and must start with an alphanumeric character.

When either the less than (<) or greater than (>) character is included in a device name, on the "Device Updated Successfully" message in the main screen, the device name may not include the less than or greater than character in the display, depending on where the characters are located.

For example, all characters within the quotes:

- "KX2-<232>" will display the greater than sign, but not the less than character.
- "KX2-232,/<>?" will display neither the greater than nor the less than character.

Port Information

Field in CC-SG	Number of characters CC-SG allows
Port Name	32

Associations

Field in CC-SG	Number of characters CC-SG allows
Category Name	32
Element Name	32
Device Group Name	40

Field in CC-SG	Number of characters CC-SG allows
Node Group Name	40

Administration

Field in CC-SG	Number of characters CC-SG allows
Cluster Name	64
Neighborhood Name	64
Authentication Module Name	31
Backup Name	64
Backup File Description	255
Broadcast Message	255

Appendix N Diagnostic Console Bootup Messages

Prior to version 4.0, CC-SG Diagnostic Console displays a number of messages on the screen each time when it boots up. These messages are standard Linux diagnostic and warning messages and usually do not imply any system problems. The table offers a short introduction to a few frequent messages.

Message	Description
hda:	<p>The message indicates that something on the system is trying to communicate with the DVD-ROM drive. Different scenarios can invoke the message. For example:</p> <ul style="list-style-type: none">• A user opens or closes the DVD-ROM drive door, or• The operating system is checking the DVD-ROM drive and finds no media when it boots up. <p>There are other scenarios that invoke the message as well but will not be described in the section.</p>
avc:	<p>The message comes from an internal security audit and control system -- SELinux sub-system. The system issues warnings without enforcing any security policy so they do not indicate any problem with the system.</p>
ipcontracks:	<p>The message always appears each time CC-SG boots up so it is normal.</p>

Note that CC-SG turns off these messages since version 4.0, but they are still available in internal logs. Therefore, when you upgrade CC-SG from 3.x to 4.x, these Diagnostic Console messages disappear.

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