



Dominion KX III

User Guide
Release 3.2.0

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DKX3-v3.2.0-0H-E

December 2015

255-62-0001-00

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Chapter 1 Introduction

The Dominion KX III is an enterprise-class, secure, KVM-over-IP switch that provides 1, 2, 4 or 8 users with remote BIOS-level control of 8 to 64 servers.

KX III comes with standard features such as DVI/HDMI/DisplayPort digital and analog video, audio, virtual media, smart card/CAC, blade server support, and mobile access.

Deploy KX III individually, or with Raritan's CommandCenter Secure Gateway (CC-SG).

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Overview

The Dominion KX III is an enterprise-class, secure, KVM-over-IP switch that provides 1, 2, 4 or 8 users with remote BIOS-level control of 8 to 64 servers.

KX III comes with standard features such as DVI/HDMI/DisplayPort digital and analog video, audio, virtual media, smart card/CAC, blade server support, and mobile access.

Deploy KX III individually, or with Raritan's CommandCenter Secure Gateway (CC-SG).

What's New in Help

- Faster switching between always-connected DKX3-808 targets: **DKX3-808 Fast Switching** (on page 27)
- Color calibration caching: **Calibrating Color** (on page 55)
- New default client and Java-free access points: **KX III KVM Client Applications** (on page 8)
- Dual LAN support: Choose Failover or Isolation Mode
- New modem support: Connect and Enable Global Access to an External Broadband Modem
- SMTP support: Enable SMTP Notifications from the Remote Console
- SHA-2 certificate support: SSL Certificates
- Support of the new Dominion KX III User Station: **Dominion KX III User Station** (on page 89).

Package Contents

Each KX III ships as a fully-configured stand-alone product in a standard 1U (2U for KX3-864) 19" rackmount chassis. Each KX III device ships with the following contents:

- 1 - KX III device
- 1 - KX III Quick Setup Guide
- 1 - Rackmount kit
- 2 - AC power cords
- 1 - Set of 4 rubber feet (for desktop use)
- 1 - Application note
- 1 - Warranty card

KX III Device Photos and Features

Hardware

- Integrated KVM-over-IP remote access
- 1U or 2U rack-mountable (brackets included)
- Dual power supplies with failover; autoswitching power supply with power failure warning
- Support for the following CIMs:
 - For virtual media and Absolute Mouse Synchronization, use one of the following CIMs:

- D2CIM-VUSB
- D2CIM-DVUSB
- D2CIM-DVUSB-DVI
- D2CIM-DVUSB-HDMI
- D2CIM-DVUSB-DP
- Required for PS2 connection:
 - DCIM-PS2
- DVI monitor support from the DVI local port
 - VGA support via a DVI to VGA converter
 - DVI support via a standard DVI cable
- Remote access and power management from an iPhone® or iPad®
- Support for tiering in which a base KX III device is used to access multiple other tiered devices
- Multiple user capacity (1/2/4/8 remote users; 1 local user)
- UTP (Cat5/5e/6) server cabling
- Dual Ethernet ports (10/100/1000 LAN) with failover or isolation mode support
- Field upgradable
- Local USB User port for in-rack access
 - USB Keyboard/mouse ports, or connect to a cellular modem
 - One front and three back panel USB ports for supported USB devices
 - Fully concurrent local and remote user access
 - Local graphical user interface (GUI) for administration
- Serial port to connect to an external telephone modem
- Centralized access security
- Integrated power control
- LED indicators for dual power status, network activity, and remote user status
- Hardware Reset button

Software

- Virtual media support in Windows®, Mac® and Linux® environments*
- Absolute Mouse Synchronization*

**Note: Virtual media and Absolute Mouse Synchronization require use of a D2CIM-VUSB, D2CIM-DVUSB, D2CIM-DVUSB-DVI, D2CIM-DVUSB-HDMI or D2CIM-DVUSB-DP CIM.*

- Support for digital audio over USB
- Port scanning and thumbnail view of up to 32 targets within a configurable scan set
- Web-based access and management
- Intuitive graphical user interface (GUI)
- Support for dual port video output
- 256-bit encryption of complete KVM signal, including video and virtual media
- LDAP, Active Directory®, RADIUS, or internal authentication and authorization
- DHCP or fixed IP addressing
- Smart card/CAC authentication
- SNMP, SNMP3, SMTP, and Syslog management
- IPv4 and IPv6 support
- Power control associated directly with servers to prevent mistakes
- Integration with Raritan's CommandCenter Secure Gateway (CC-SG) management unit
- CC Unmanage feature to remove device from CC-SG control
- Support of Raritan PX1 and PX2 appliances
- Support for remote IP access from the new Dominion KX III User Station

Dominion KX3-832

KX3-832 Photos



KX3-832 Features

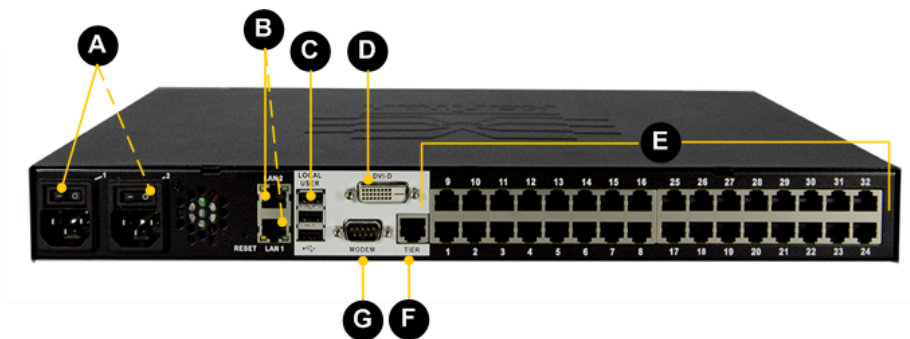


Diagram key

A	Dual Power AC 100V/240V
B	Dual 10/100/1000 Ethernet access
C	Local USB ports
D	DVI-D port
E	32 KVM ports for UTP Cabling (Cat5/5e/6)
F	Tier port for tiering devices
G	Modem port for external modems

Dominion KX3-864

KX3-864 Photos



KX3-864 Features

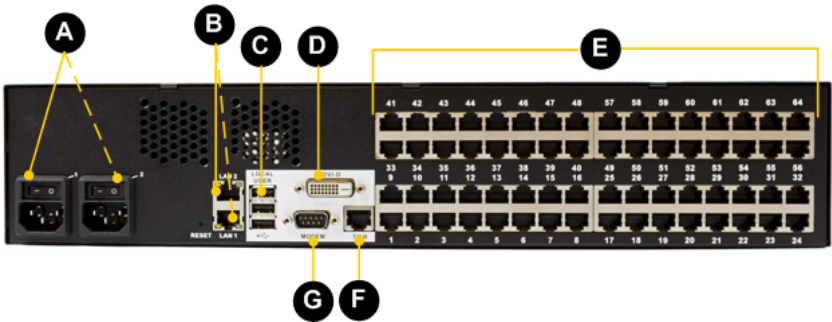


Diagram key	
A	Dual Power AC 100V/240V
B	Dual 10/100/1000 Ethernet access
C	Local USB ports
D	DVI-D port
E	64 KVM ports for UTP Cabling (Cat5/5e/6)
F	Tier port for optional tiering devices

Diagram key

Modem port for optional external modems

Supported Number of Ports and Remote Users per Model

Model	Ports	Remote users
KX3-864	64	8
KX3-832	32	8
KX3-808	8	8
KX3-464	64	4
KX3-432	32	4
KX3-416	16	4
KX3-232	32	2
KX3-216	16	2
KX3-132	32	1
KX3-116	16	1
KX3-108	8	1

KX III Remote/Local Console Interfaces and User Station

Use the Remote Console interface to configure and manage the KX III over a network connection.

Use the Local Console interface to access the KX III while at the rack.

See **KX III Remote Console Interface** (on page 21), KX III Local Console - KX III Administration Functions and **KX III Local Console Interface** (on page 29), respectively.

The Dominion User Station provides an alternative interface for IP access to the KX III's target servers. See **Dominion KX III User Station** (on page 89).

KX III KVM Client Applications

KX III works with -

- Active KVM Client (AKC) - Default client. Windows only. Microsoft .NET® 4.0 (or later) is required to use KX III with the Microsoft Windows®-based Active KVM Client (AKC). See **Active KVM Client (AKC) Help** (on page 85)
- Virtual KVM Client (VKC) -Java™ 1.7 is required to use the Java-based Virtual KVM Client (VKC). Java 1.8.0_40 is required to use the VKCS. See **Virtual KVM Client (VKC) Help** (see "**Virtual KVM Client (VKC and VKCs) Help**" on page 40)
- Standalone Virtual KVM Client - A standalone version of the Java-based Virtual KVM Client (VKC) for the Chrome browser. Java 1.8.40 or later is required. See **Virtual KVM Client (VKC) Help** (see "**Virtual KVM Client (VKC and VKCs) Help**" on page 40)
- Mobile KVM Client (MKC) - Mobile access is provided through Mobile Access Client, which requires the use of CommandCenter Secure Gateway (CC-SG). See **Mobile KVM Client (MKC) Help** (on page 93)
- Dominion User Station - A standalone Raritan appliance dedicated to remotely access KX III targets. All KX III models support the use of the User Station. See **Dominion KX III User Station** (on page 89).

KX III Online Help

KX III online help is considered your primary help resource. PDF versions of help are a secondary resource.

See the KX III Release Notes for important information on the current release before you begin using the KX III.

KVM Client help is provided as part of KX III online help.

Online help is accompanied by the KX III Quick Setup Guide, which can be found on the Raritan Firmware, Upgrades and Documentation page of **Raritan's website** (<http://www.raritan.com/support/firmware-and-documentation>).

The Firmware, Upgrades and Documentation page also contains a PDF version of the administrator help.

Note: To use online help, Active Content must be enabled in your browser.

Chapter 2 Get Started Using KX III

This section walks you through high-level tasks to start using KX III.

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Install and Configure KX III

If you have not already done so, install and configure KX III.

See the KX III Quick Setup Guide that came with the KX III device or download it from the **Raritan Support website**
<http://www.raritan.com/support>.

Factory Default Login Information

The KX III device is shipped from the factory with the following default settings built in:

- Username = admin
All lowercase.
This user has administrative privileges.
- Password = raritan
All lowercase.
- IP address = 192.168.0.192

Important: For backup and business continuity purposes, it is strongly recommended you create a backup administrator username and password, and keep that information in a secure location.

Allow Pop-Ups

Regardless of the browser you are using, you must allow pop-ups in order to launch the KX III Remote Console.

Security Warnings and Validation Messages

When logging in to KX III, security warnings and application validation message may appear.

These include -

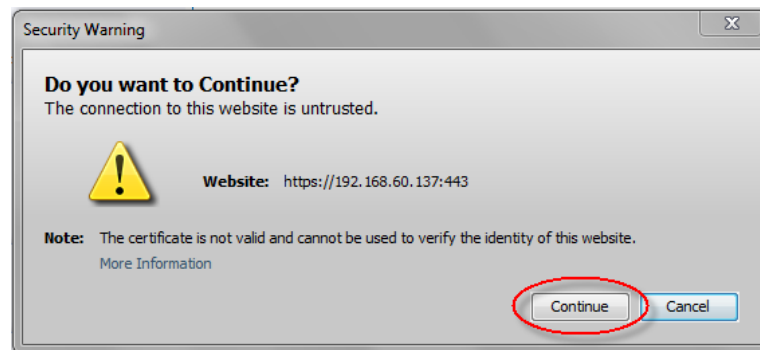
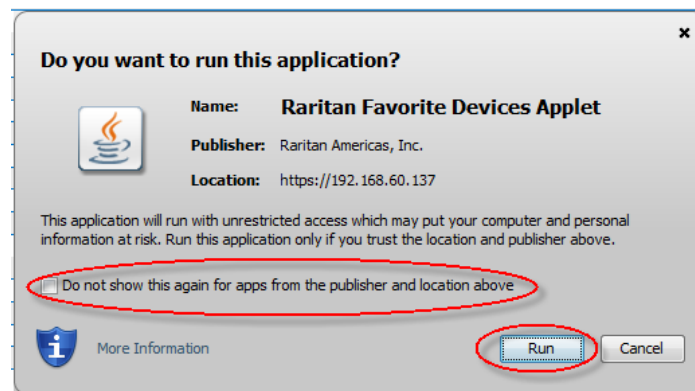
- Java™ security warnings and requests to validate KX III
See **Java Validation and Access Warning** (on page 10) and **Installing a Certificate** (on page 11)
- Additional security warnings based on your browser and security settings
See **Additional Security Warnings** (on page 11)

Java Validation and Access Warning

When logging in to KX III, Java™ 1.7 prompts you to validate KX III, and to allow access to the application.

Raritan recommends installing an SSL certificate in each KX III device in order to reduce Java warnings, and enhance security.

See SSL Certificates



Additional Security Warnings

Even after an SSL certificate is installed in the KX III, depending on your browser and security settings, additional security warnings may be displayed when you log in to KX III.

It is necessary to accept these warnings to launch the KX III Remote Console.

Reduce the number of warning messages during subsequent log ins by checking the following options on the security and certificate warning messages:

- In the future, do not show this warning
- Always trust content from this publisher

Installing a Certificate

You may be prompted by the browser to accept and validate the KX III's SSL certificate.

Depending on your browser and security settings, additional security warnings may be displayed when you log in to KX III.

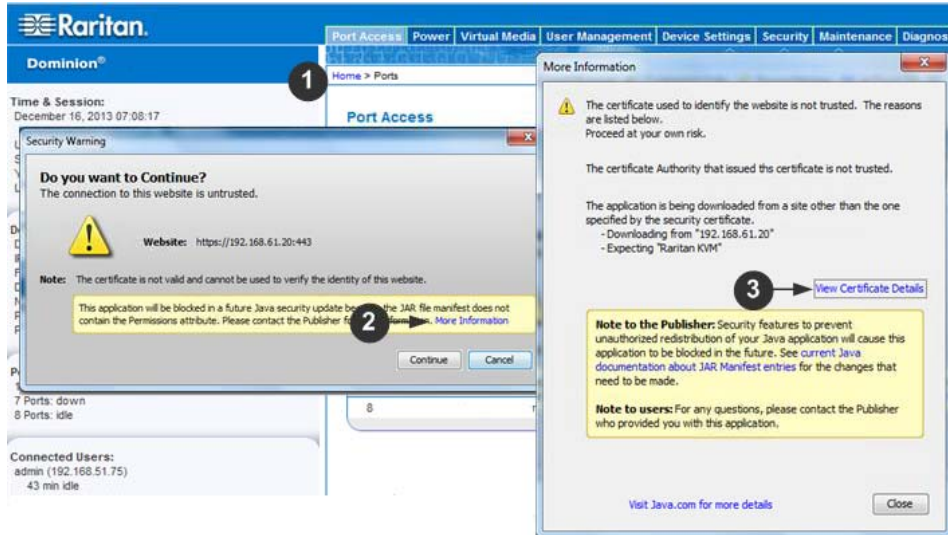
It is necessary to accept these warnings to launch the KX III Remote Console. For more information, see **Security Warnings and Validation Messages** (on page 10).

Two sample methods on how to install an SSL Certificate in the browser are provided here, both using Microsoft Internet Explorer 8® and Windows 7®.

Specific methods and steps depend on your browser and operating system. See your browser and operating system help for details.

Example 1: Import the Certificate into the Browser

In this example, you import the Certificate into the browser.



1. Open an IE browser, then log in to KX III.
2. Click More Information on the first Java™ security warning.
3. Click View Certificate Details on the More Information dialog. You are prompted to install the certificate. Follow the wizard steps.

Note: If you are not prompted by the browser, manually select Tools > Internet Options to open the Internet Options dialog.



1. Click the Content tab.
2. Click Certificates.

The Certificate Import Wizard opens and walks you through each step.

- File to Import - Browse to locate the Certificate
- Certificate Store - Select the location to store the Certificate

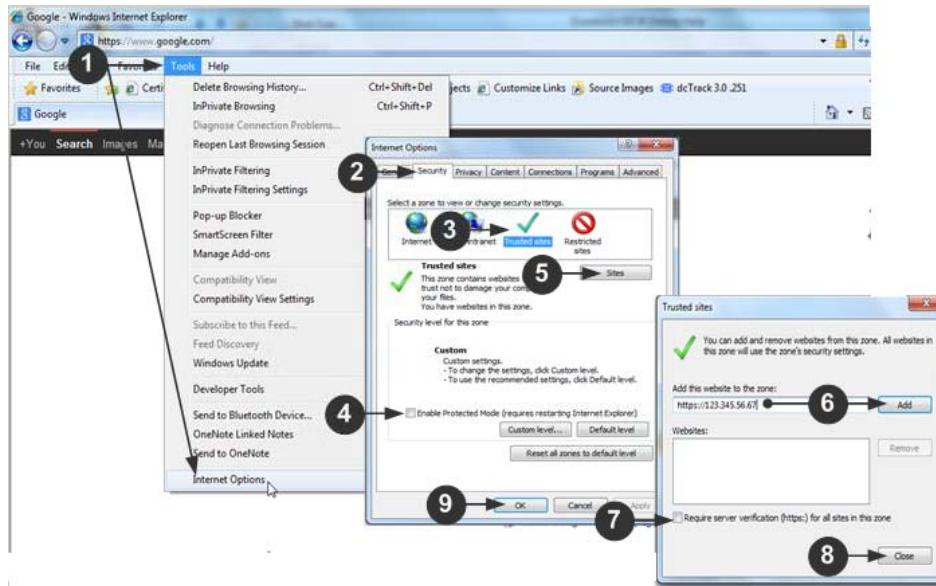
3. Click Finish on the last step of the Wizard.

The Certificate is imported. Close the success message.

4. Click OK on the Internet Options dialog to apply the changes, then close and reopen the browser.

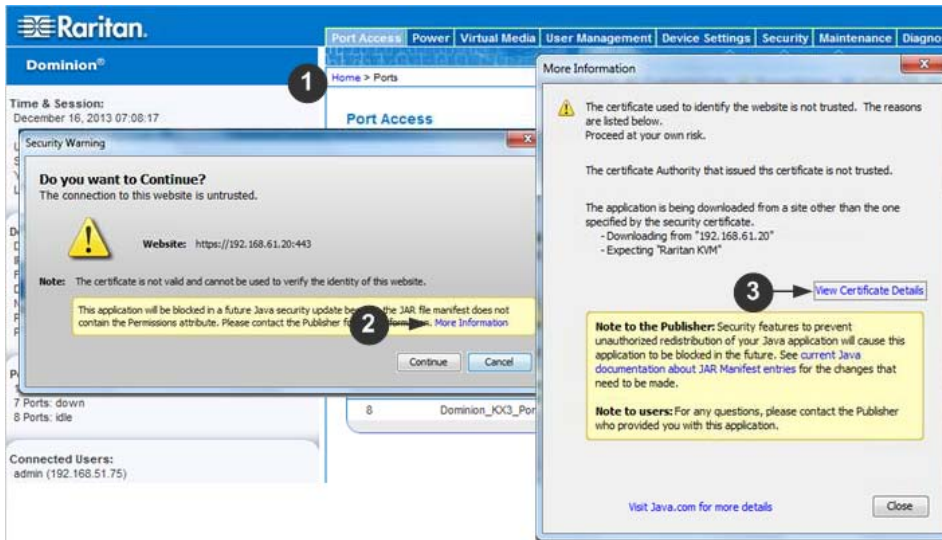
Example 2: Add the KX III to Trusted Sites and Import the Certificate

In this example, the KX III's URL is added as a Trusted Site, and the Self Signed Certificate is added as part of the process.



1. Open an IE browser, then select Tools > Internet Options to open the Internet Options dialog
2. Click the Security tab.
3. Click on Trusted Sites.
4. Disable Protected Mode, and accept any warnings.
5. Click Sites to open the Trusted Sites dialog.
6. Enter the KX III URL, then click Add.
7. Deselect server verification for the zone (if applicable).
8. Click Close.
9. Click OK on the Internet Options dialog to apply the changes, then close and reopen the browser.

Next, import the Certificate.



1. Open an IE browser, then log in to KX III.
2. Click More Information on the first Java™ security warning.
3. Click View Certificate Details on the More Information dialog. You are prompted to install the certificate. Follow the wizard steps.

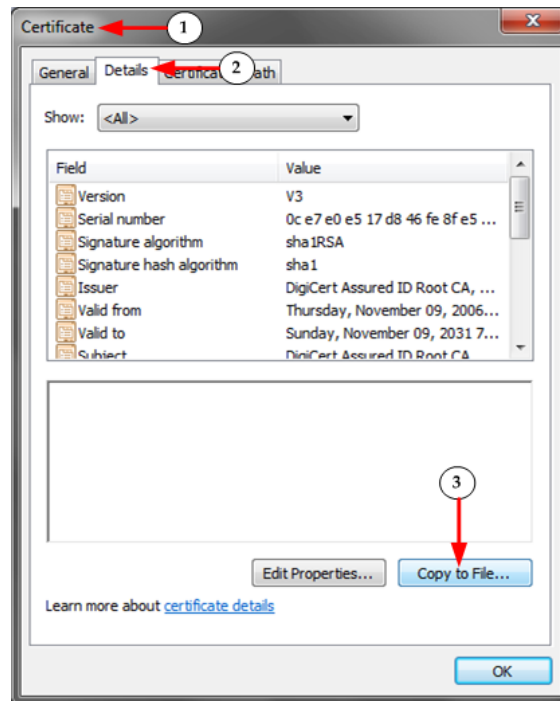
For details see, **Example 1: Import the Certificate into the Browser** (on page 12).

Converting a Binary Certificate to a Base64-Encoded DER Certificate (Optional)

KX III requires an SSL certificate in either Base64-Encoded DER format or PEM format.

If you are using an SSL certificate in binary format, you cannot install it.

However, you can convert your binary SSL certificate.



1. Locate the DEGHKVM0001.cer binary file on your Windows machine.

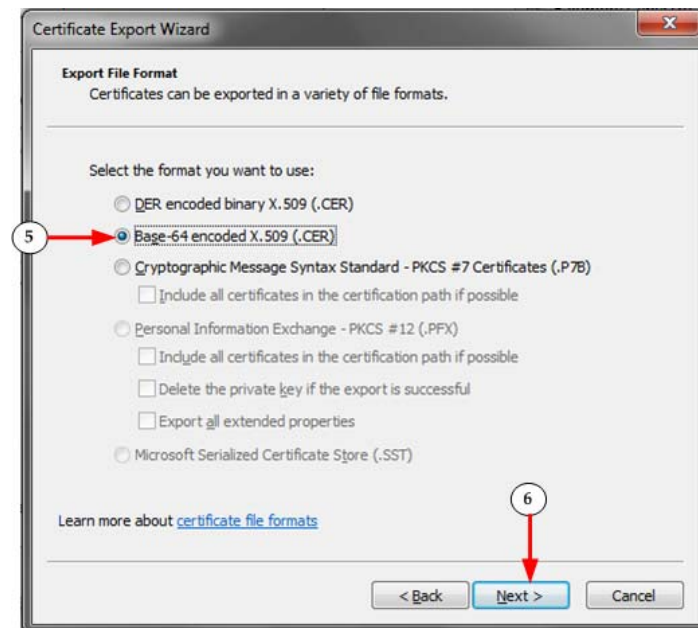
Double-click on the DEGHKVM0001.cer file to open its Certificate dialog.

2. Click the Detail tab.

- Click "Copy to File...".



- The Certificate Export Wizard opens. Click Next to start the Wizard.



- Select "Base-64 encoded X.509" in the second Wizard dialog.
- Click Next to save the file as a Base-64 encoded X.509.

You can now install the certificate on your KX III.

Logging In to KX III

Log in to your KX III Remote Console from any workstation with network connectivity. Java™ 1.7 is required to use the Java-based Virtual KVM Client (VKC). Java 1.8.0_40 is required to use the VKCS. VKCs requires Java 1.8.0_40 or later. Alternatively, Microsoft .NET® 4.0 (or later) is required to use KX III with the Microsoft Windows®-based Active KVM Client (AKC).

Logging in and using KX III requires you to allow pop-ups.

For information on security warnings and validation messages, and steps to reduce or eliminate them, see **Security Warnings and Validation Messages** (on page 10).

If using a Dominion User Station, you must add the KX III switches you intend to access, including user credentials (login/password), on the User Station for KX III authentication.

► To log in to the KX III via Remote Console:

1. Launch a supported web browser.
2. Enter the URL that corresponds to the client you want to use:
 - *http://IP-ADDRESS* launches the Active KVM Client from supported Microsoft .Net based environments or launches the Virtual KVM Client
 - Or
 - *http://IP-ADDRESS/vkc* for the Java-based Virtual KVM Client
 - Or
 - *http://IP-ADDRESS/vkcs* for the standalone Java-based Virtual KVM Client for Chrome browsers
 - Or
 - *http://IP-ADDRESS/admin* for an administration-only client without target access capability. This client does not require .NET or Java.

IP-ADDRESS is the IP address assigned to your KX III

You can also use HTTPS, or the DNS name of the KX III assigned by your administrator (if applicable).

You are always redirected to the IP address from HTTP to HTTPS.

3. Enter your username and password, then click Login.
4. Accept the user agreement (if applicable).
5. If security warnings appear, click to accept.

► **To add the KX III switches and user credentials to the User Station:**

1. Power on and log in to the User Station.
2. Click Main Menu > User Station Configuration >

A blue rectangular button with rounded corners and a white border. The text "Add KX Device" is written in white, sans-serif font, centered within the button.

3. Enter and save the following information.
 - KX III's IP address or host name
 - User credentials for logging in to the KX III

Important: If you are not the user who added KX III's to the User Station, you **MUST** click the  button for the added KX III's to save your user credentials for KX III authentication.

Chapter 3 KX III Interface and Navigation

The KX III Remote Console and the KX III Local Console are web-based graphical user interfaces.

Use the Remote Console interface to configure and manage the KX III over a network connection.

Use the Local Console interface to access the KX III while at the rack.

Access targets from either the Remote or Local console from one of the supported KVM clients.

If you have the Dominion User Station, you can also use it to access targets. See ***Dominion KX III User Station*** (on page 89).

Alternatively, access targets from your mobile device. See ***Mobile KVM Client (MKC) Help*** (on page 93).

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Overview

The KX III Remote Console and the KX III Local Console interfaces provide a web-based interface for device configuration and administration, as well as target server list and selection.

KX III Remote Console Interface

The KX III Remote Console is a browser-based graphical user interface that allows you to log in to KVM target servers and serial targets connected to the KX III and to remotely administer the KX III.

The KX III Remote Console provides a digital connection to your connected KVM target servers. When you log into a KVM target server using the KX III Remote Console, a Virtual KVM Client window opens.

There are many similarities among the KX III Local Console and the KX III Remote Console graphical user interfaces, and where there are differences, they are noted in the user manual. The following options are available in the KX III Remote Console but not the KX III Local Console:

- Virtual Media
- Favorites
- Backup/Restore
- Firmware Upgrade
- SSL Certificates
- Audio

Port Access Page (Remote Console Display)

After a successful login, the Port Access page opens listing all ports along with their status and availability.

Ports connected to KVM target servers (blades and standard servers) are displayed in blue. Right-click on any of these ports to open the Port Action menu. For more information, see **Port Action Menu** (on page 25).

If a KX III port has no CIM connected or is connected to a CIM with no name, a default port name of **Dominion_Dominion-KX3_Port#** is assigned to the port. Dominion_KX3 is the device model and Port# is the number of the KX III physical port.

Raritan

Dominion® KX III

Time & Session:
December 05, 2013 14:21:27

User: admin
State: 3 min idle
Your IP: 192.168.32.165
Last Login: Dec 05, 2013 11:40:42

Device Information:
Device Name: DominionKX-sample
IP Address: 192.168.81.20
Firmware: 3.0.0.1.369
Device Model: DKX3-432
Network: LAN1
Powerin1: on
Powerin2: off
Configured As Base

Port States:
359 Ports: up
54 Ports: down
413 Ports: idle

Connected Users:
admin (Local Console)
38 min idle
admin (192.168.32.165)
3 min idle

Online Help

Favorite Devices:
[Enable](#)

Port Access

Click on the individual port name to see allowable operations.
0 / 4 Remote KVM channels currently in use.

View By Port	View By Group	View By Search	Set Scan	
▲ No.	Name	Type	Status	Availability
1	HDMI Target	DVM-HDMI	up	idle
2	Dominion-KX2_Port2	DVM-DVI	up	idle
3	Low Cost DVM (PQ20540016)	Dual-VM	up	idle
4	Windows XP SP3	DCIM	up	idle
5	DP-Dominion-KX2_Port13	DVM-DP	up	idle
6	Dominion	DCIM	up	idle
7	Dominion-KX2_Port7	Dual-VM	up	idle
8	pc-ix8-update	Not Available	down	idle
9	▶ KX084-86-234-Tier5	TierDevice	up	idle
10	▶ ix832-86-241-Tier3	TierDevice	up	idle
11	▼ KX832-61-14-Tier1	TierDevice	up	idle
11-1	DCIMSimulatorPort029	DCIM	up	idle
11-2	DCIMSimulatorPort028	DCIM	up	idle
11-3	DCIMSimulatorPort027	DCIM	up	idle
11-4	DCIMSimulatorPort039	DCIM	up	idle

15 Rows per Page [Set](#)

Four tabs are provided on the page allowing you to view by port, view by group, view by search and scan ports.

You can sort by Port Number, Port Name, Status (Up and Down), and Availability (Idle, Connected, Busy, Unavailable, and Connecting) by clicking on the column heading.

Use the Set Scan tab to scan for up to 32 targets that are connected to the KX III. See **Scanning Ports - Remote Console** (on page 104)

Tiered Devices - Port Access Page

If you are using a tiered configuration in which a base KX III device is used to access multiple other tiered devices, the tiered devices are viewed on the Port Access page by clicking on the Expand Arrow icon ▶ to the left of the tier device name.

Blade Chassis - Port Access Page

The blade chassis is displayed in an expandable, hierarchical list on the Port Access page, with the blade chassis at the root of the hierarchy and the individual blades labeled and displayed below the root. Use the Expand Arrow icon ► next to the root chassis to display the individual blades.

Note: To view the blade chassis in a hierarchal order, blade-chassis subtypes must be configured for the blade server chassis.

Dual Port Video Groups - Port Access Page

Dual video port groups appear on the Port Access page as Dual Port types.

The primary and secondary ports that are a part of the port group appear on the Port Access page as Dual Port(P) and Dual Port(S), respectively. For example, if the CIM type is DCIM, "DCIM Dual Port (P)" is displayed.

When you access a dual port video group from the remote client, you connect to the primary port, which opens a KVM connection window to both the primary and secondary ports of the dual port group.

Note: The dual video primary port is defined when the port group is created.

Note: You cannot remotely connect to the dual video port group by clicking on a primary port unless two KVM channels are available. If two channels are not available, the Connect link is not displayed.

Note: The Action menu is not displayed when you click on a secondary port in a dual video port group.

Note: You cannot connect to the primary port and secondary port at the same time from the Local Port.

View by Group Tab

The View by Group tab displays blade chassis, 'standard' port groups, and dual video port groups. Click the Expand Arrow icon ► next to a group to view the ports assigned to the port group.



View by Search Tab

The View by Search tab allows you to search by port name. The search feature supports the use of an asterisk (*) as a wildcard, and full and partial names.

Set Scan Tab

The port scanning feature is accessed from the Set Scan tab on the Port Access page. The feature allows you to define a set of targets to be scanned. Thumbnail views of the scanned targets are also available. Select a thumbnail to open that target in its Virtual KVM Client window.

See **Scanning Ports - Remote Console** (on page 104) for more information.

Port Action Menu

When you click a Port Name in the Port Access list, the Port Action menu appears.

Choose the desired menu option for that port to execute it. Note that only currently available options, depending on the port's status and availability, are listed in the Port Action menu.

[Home](#) > [Ports](#)

Port Access

Click on the individual port name to see allowable operations.
0 / 4 Remote KVM channels currently in use.

View By Port	View By Group	View By Search	Set Scan
▲ No.	Name		
1	HDMI Target		
2	Port 1 [KVM] Port2		
3	Low Cost DV [PQ20540016]		
4	Windows XP SP3		

Connect

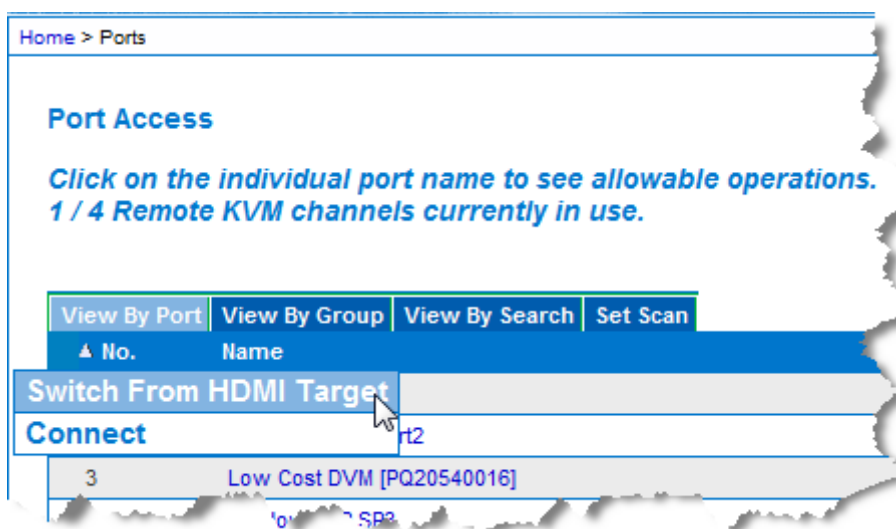
- Connect - Creates a new connection to the target server
 For the KX III Remote Console, a new Virtual KVM Client page appears.
 For the KX III Local Console, the display switches to the target server, and switches away from the local user interface.
 On the local port, the KX III Local Console interface must be visible in order to perform the switch.
 Hot key switching is also available from the local port.

Note: This option is not available from the KX III Remote Console for an available port if all connections are busy.

Switch From

- Switch From - Switches from an existing connection to the selected port (KVM target server)
 This menu item is available only for KVM targets, and only when a Virtual KVM Client is opened.

Note: This menu item is not available on the KX III Local Console.

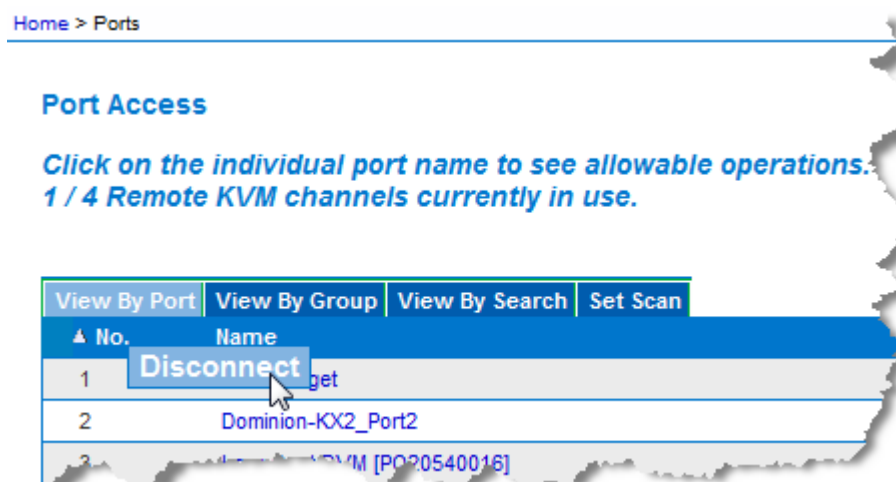


Disconnect

- Disconnect - Disconnects this port and closes the Virtual KVM Client page for this target server

This menu item is available only when the port status is up and connected, or up and busy.

Note: This menu item is not available on the KX III Local Console. The only way to disconnect from the switched target in the Local Console is to use the hot key.



Power On

- Power On - Powers on the target server through the associated outlet

This option is visible only when there are one or more power associations to the target, and when the user has permission to operate this service.

Provided you have privileges to do so, you can manage power from the Virtual KVM Client (VVC) and Active KVM Client (AKC) as well. See **Remote Power Management via Virtual KVM Client (VVC) or Active KVM Client (AKC)** (see "Power Control Using VVC, VKCS, and AKC" on page 84)

Power Off

- Power Off - Powers off the target server through the associated outlets

This option is visible only when there are one or more power associations to the target, when the target power is on (port status is up), and when user has permission to operate this service.

Provided you have privileges to do so, you can manage power from the Virtual KVM Client (VVC) and Active KVM Client (AKC) as well. See **Remote Power Management via Virtual KVM Client (VVC) or Active KVM Client (AKC)** (see "Power Control Using VVC, VKCS, and AKC" on page 84)

Power Cycle

- Power Cycle - Power cycles the target server through the associated outlets

This option is visible only when there are one or more power associations to the target, and when the user has permission to operate this service.

Provided you have privileges to do so, you can manage power from the Virtual KVM Client (VVC) and Active KVM Client (AKC) as well. See **Remote Power Management via Virtual KVM Client (VVC) or Active KVM Client (AKC)** (see "Power Control Using VVC, VKCS, and AKC" on page 84)

DKX3-808 Fast Switching

DKX3-808 maintains the video connections to the servers, enabling faster connections to servers and faster switching between channels.

Some Video Settings do not apply to DKX3-808 targets:

- Automatic Color Calibration
- Video Sensing: Best possible video mode/Quick sense video mode

Left Panel

The left panel of the KX III interface contains the following information.

Note that some information is conditional - meaning it is displayed based on your role, features being used and so on. Conditional information is noted here.

Information	Description	When displayed?
Time & Session	The date and time the current session started	Always
User	Username	Always
State	The current state of the application, either idle or active. If idle, the application tracks and displays the time the session has been idle.	Always
Your IP	The IP address used to access the KX III	Always
Last Login	The last login date and time	Always
Under CC-SG Management	The IP address of the CC-SG device managing the KX III	When the KX III is being managed by CC-SG
Device Information	Information specific to the KX III you are using	Always
Device Name	Name assigned to the device	Always
IP Address	The IP address of the KX III	Always
Firmware	Current version of firmware	Always
Device Model	Model of the KX III	Always
Serial number	Serial number of the KX III	Always
Network	The name assigned to the current network	Always

Information	Description	When displayed?
PowerIn1	Status of the power 1 outlet connection. Either on or off, or Auto-detect off	Always
PowerIn2	Status of the power 2 outlet connection. Either on or off, or Auto-detect off	Always
Configured As Base or Configured As Tiered	If you are using a tiering configuration, this indicates if the KX III you are accessing is the base device or a tiered device.	When the KX III is part of a tiered configuration
Port States	The statuses of the ports being used by the KX III	Always
Connect Users	The users, identified by their username and IP address, who are currently connected to the KX III	Always
Online Help	Links to online help	Always
Favorite Devices	See Managing Favorites (on page 110)	When enabled
FIPS Mode	FIPS Mode: Enabled SSL Certificate: FIPS Mode Compliant	When FIPS is enabled

KX III Local Console Interface

There are many similarities among the KX III Local Console and the KX III Remote Console graphical user interfaces. Where there are differences, they are noted in the help.

For details on using the Local Console see **KX III Local Console** (on page 115).

Chapter 4 Virtual Media

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Overview

All KX III models support virtual media. Virtual media extends KVM capabilities by enabling target servers to remotely access media from a client PC and network file servers.

With this feature, media mounted on client PCs and network file servers are essentially "mounted virtually" by the target server. The target server can then read from and write to that media as if it were physically connected to the target server itself.

Each KX III comes equipped with virtual media to enable remote management tasks using the widest variety of CD, DVD, USB, audio playback and record devices, internal and remote drives, and images.

Virtual media sessions are secured using 128 or 256 bit AES encryption.

Prerequisites for Using Virtual Media

KX III Virtual Media Prerequisites

- For users requiring access to virtual media, the KX III permissions must be set to allow access to the relevant ports, as well as virtual media access (VM Access port permission) for those ports. Port permissions are set at the group-level.
- A USB connection must exist between the device and the target server.
- If you want to use PC-Share, Security Settings must also be enabled in the Security Settings page. **Optional**
- You must choose the correct USB profile for the KVM target server you are connecting to.

Remote PC VM Prerequisites

- Certain virtual media options require administrative privileges on the remote PC (for example, drive redirection of complete drives).

Note: If you are using Microsoft Vista or Windows 7, disable User Account Control or select Run as Administrator when starting Internet Explorer. To do this, click the Start Menu, locate IE, right-click and select Run as Administrator.

Target Server VM Prerequisites

- KVM target servers must support USB connected drives.
- USB 2.0 ports are faster and preferred.

CIMs Required for Virtual Media

You must use one of the following CIMs to use virtual media:

- D2CIM-VUSB
- D2CIM-DVUSB
- D2CIM-DVUSB-DVI
- D2CIM-DVUSB-HDMI
- D2CIM-DVUSB-DP

The black USB connector on the DVUSB CIMs are used for the keyboard and mouse. The gray connector is used for virtual media.

Keep both USB plugs of the CIM connected to the device.

The device may not operate properly if both plugs are not connected to the target server.

Mounting Local Drives

This option mounts an entire drive, which means the entire disk drive is mounted virtually onto the target server.

Use this option for hard drives and external drives only. It does not include network drives, CD-ROM, or DVD-ROM drives.

Notes on Mounting Local Drives

KVM target servers running the Windows XP® operating system may not accept new mass storage connections after an NTFS-formatted partition (for example, the local C drive) has been redirected to them.

If this occurs, close the Remote Console and reconnect before redirecting another virtual media device. If other users are connected to the same target server, they must also close their connections to the target server.

Supported Tasks Via Virtual Media

Virtual media provides the ability to perform tasks remotely, such as:

- Transferring files
- Running diagnostics
- Installing or patching applications
- Complete installation of the operating system
- Record and playback of digital audio

Important: Once you are connected to a virtual media drive, do not change mouse modes in the KVM client if you are performing file transfers, upgrades, installations or other similar actions. Doing so may cause errors on the virtual media drive or cause the virtual media drive to fail.

Supported Virtual Media Types

The following virtual media types are supported for Windows®, Mac® and Linux™ clients:

- Internal and external hard drives
- Internal and USB-mounted CD and DVD drives
- USB mass storage devices
- PC hard drives
- ISO images (disk images)

ISO9660 is the standard supported by Raritan. However, other ISO standards can be used.

- Digital audio devices*

Conditions when Read/Write is Not Available

Virtual media Read/Write is not available in the following situations:

- For Linux® and Mac® clients
- When the drive is write-protected
- When the user does not have Read/Write permission:
 - Port Permission Access is set to None or View
 - Port Permission VM Access is set to Read-Only or Deny

Supported Virtual Media Operating Systems

The following client operating systems are supported:

- Windows® 7 operating system
- Windows 8 operating system
- Windows XP® operating system
- openSUSE® 11.4 Celadon (x86_64)
- Fedora® 18
- RHEL® 6.4
- OSX Mountain Lion® 10.7 (and later)
- Solaris® 10

The Active KVM Client (AKC) can be used to mount virtual media types but only for Windows operating systems.

Number of Supported Virtual Media Drives

With the virtual media feature, you can mount up to two drives (of different types) that are supported by the USB profile currently applied to the target. These drives are accessible for the duration of the KVM session.

For example, you can mount a specific CD-ROM, use it, and then disconnect it when you are done. The CD-ROM virtual media “channel” will remain open, however, so that you can virtually mount another CD-ROM. These virtual media “channels” remain open until the KVM session is closed as long as the USB profile supports it.

To use virtual media, connect/attach the media to the client or network file server that you want to access from the target server.

This need not be the first step, but it must be done prior to attempting to access this media.

Connecting and Disconnecting from Virtual Media

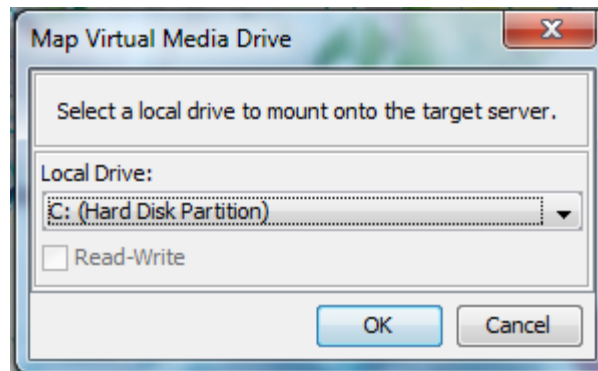
Access a Virtual Media Drive on a Client Computer

Important: Once you are connected to a virtual media drive, do not change mouse modes in the KVM client if you are performing file transfers, upgrades, installations or other similar actions. Doing so may cause errors on the virtual media drive or cause the virtual media drive to fail.

► **To access a virtual media drive on the client computer:**

1. From the KVM client, choose Virtual Media > Connect Drive, or click

the Connect Drive... button . The Map Virtual Media Drive dialog appears.



2. Choose the drive from the Local Drive drop-down list.

If you want Read and Write capabilities, select the Read-Write checkbox.

This option is disabled for nonremovable drives. See the **Conditions when Read/Write is Not Available** (on page 33) for more information.

When checked, you will be able to read or write to the connected USB disk.

WARNING: Enabling Read/Write access can be dangerous! Simultaneous access to the same drive from more than one entity can result in data corruption. If you do not require Write access, leave this option unselected.

3. Click OK. The media will be mounted on the target server virtually. You can access the media just like any other drive.

Mounting CD-ROM/DVD-ROM/ISO Images

This option mounts CD-ROM, DVD-ROM, and ISO images.

Note: ISO9660 format is the standard supported by Raritan. However, other CD-ROM extensions may also work.

► **To access a CD-ROM, DVD-ROM, or ISO image:**

1. From the KVM client, choose Virtual Media > Connect CD-ROM/ISO

Image, or click the Connect CD ROM/ISO button . The Map Virtual Media CD/ISO Image dialog appears.

2. For internal and external CD-ROM or DVD-ROM drives:
 - a. Choose the Local CD/DVD Drive option.
 - b. Choose the drive from the Local CD/DVD Drive drop-down list. All available internal and external CD and DVD drive names will be populated in the drop-down list.
 - c. Click Connect.
3. For ISO images:
 - a. Choose the ISO Image option. Use this option when you want to access a disk image of a CD, DVD, or hard drive. ISO format is the only format supported.
 - b. Click Browse.
 - c. Navigate to the path containing the disk image you want to use and click Open. The path is populated in the Image Path field.
 - d. Click Connect.
4. For remote ISO images on a file server:
 - a. Choose the Remote Server ISO Image option.
 - b. Choose Hostname and Image from the drop-down list. The file servers and image paths available are those that you configured using the File Server Setup page. Only items you configured using the File Server Setup page will be in the drop-down list.
 - c. File Server Username - User name required for access to the file server. The name can include the domain name such as mydomain/username.
 - d. File Server Password - Password required for access to the file server (field is masked as you type).
 - e. Click Connect.

The media will be mounted on the target server virtually. You can access the media just like any other drive.

Note: If you are working with files on a Linux® target, use the Linux Sync command after the files are copied using virtual media in order to view the copied files. Files may not appear until a sync is performed.

Note: If you are using the Windows 7® operating system®, Removable Disk is not displayed by default in the Window's My Computer folder when you mount a Local CD/DVD Drive or Local or Remote ISO Image. To view the Local CD/DVD Drive or Local or Remote ISO Image in this folder, select Tools > Folder Options > View and deselect "Hide empty drives in the Computer folder".

Note: You cannot access a remote ISO image via virtual media using an IPv6 address due to third-party software technical limitations.

Disconnect from Virtual Media Drives

► **To disconnect the virtual media drives:**

- For local drives, choose Virtual Media > Disconnect Drive.
- For CD-ROM, DVD-ROM, and ISO images, choose Virtual Media > Disconnect CD-ROM/ISO Image.

Note: In addition to disconnecting the virtual media using the Disconnect command, simply closing the KVM connection closes the virtual media as well.

Virtual Media in a Windows XP Environment

If you are running the Virtual KVM Client or Active KVM Client in a Windows® XP environment, users must have Administrator privileges to access any virtual media type other than CD-ROM connections, ISOs and ISO images.

Virtual Media in a Linux Environment

Active System Partitions

You cannot mount active system partitions from a Linux client.

Linux Ext3/4 drive partitions need to be unmounted via `umount /dev/<device label>` prior to making a virtual media connection.

Drive Partitions

The following drive partition limitations exist across operating systems:

- Windows® and Mac targets are not able to read Linux formatted partitions
- Windows and Linux cannot read Mac formatted partitions
- Only Windows Fat partitions are supported by Linux

Root User Permission Requirement

Your virtual media connection can be closed if you mount a CD ROM from a Linux client to a target and then unmount the CD ROM.

To avoid these issues, you must be a root user.

Virtual Media in a Mac Environment

Active System Partition

You cannot use virtual media to mount active system partitions for a Mac client.

Drive Partitions

The following drive partition limitations exist across operating systems:

- Windows® and Mac targets are not able to read Linux formatted partitions
- Windows cannot read Mac formatted partitions
- Windows FAT and NTFS are supported by Mac
- Mac users must unmount any devices that are already mounted in order to connect to a target server. Use `>diskutil unmount /dev/disk1s1` to unmount the device and `diskutil mount /dev/disk1s1` to remount it.

Virtual Media File Server Setup (File Server ISO Images Only)

This feature is only required when using virtual media to access file server ISO images. ISO9660 format is the standard supported by Raritan. However, other CD-ROM extensions may also work.

Note: SMB/CIFS support is required on the file server.

Use the Remote Console File Server Setup page to designate the files server(s) and image paths that you want to access using virtual media. File server ISO images specified here are available for selection in the Remote Server ISO Image Hostname and Image drop-down lists in the Map Virtual Media CD/ISO Image dialog. See **Mounting CD-ROM/DVD-ROM/ISO Images** (on page 35).

► **To designate file server ISO images for virtual media access:**

1. Choose Virtual Media from the Remote Console. The File Server Setup page opens.
2. Check the Selected checkbox for all media that you want accessible as virtual media.
3. Enter information about the file server ISO images that you want to access:
 - IP Address/Host Name - Host name or IP address of the file server.

- Image Path - Full path name of the location of the ISO image. For example, /sharename0/path0/image0.iso, \sharename1\path1\image1.iso, and so on.

Note: The host name cannot exceed 232 characters in length.

4. Click Save. All media specified here are now available for selection in the Map Virtual Media CD/ISO Image dialog.

Note: If you are connecting to a Windows 2003® server and attempt to load an ISO image from the server, you may receive an error stating "Virtual Media mounting on port failed. Unable to connect to the file server or incorrect File Server username and password".

If this occurs, disable "Microsoft Network Server: Digitally Sign Communications" option on the server under the Domain Controllers policies.

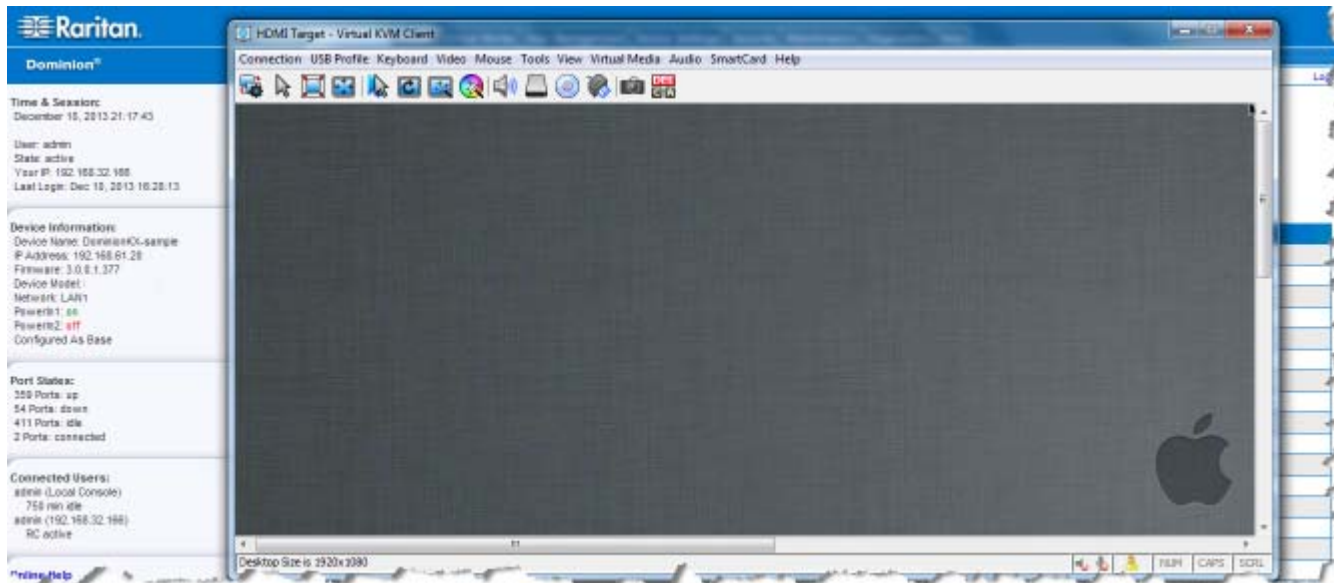
Chapter 5 Virtual KVM Client (VKC and VKCs) Help

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Overview

Whenever you access a target server from the Port Access page of KX III the Remote Console, a Virtual KVM Client (VKC) window opens.



There is one Virtual KVM Client for each target server connected.

Virtual KVM Client windows can be minimized, maximized, and moved around your computer desktop.

IMPORTANT: Refreshing your browser closes the Virtual KVM Client connection.

Recommended Minimum Virtual KVM Client (VKC) Requirements

Raritan recommends the Virtual KVM Client (VKC) machines meet the following minimum requirements for use with KX III.

- Client machine with either a -
 - 'modern' dual-core CPU for a single connections, or
 - 'modern' quad core CPU for two or more simultaneous connections
- 4GB of RAM
 - VKC requires 50MB of RAM per connection

Virtual KVM Client Java Requirements - KX III

Java™ 1.7 is required to use the Java-based Virtual KVM Client (VKC).
Java 1.8.0_40 is required to use the VKCS.

Proxy Server Configuration for Use with VKC, VKCS, and AKC

When the use of a Proxy Server is required, a SOCKS proxy must also be provided and configured on the remote client PC.

Note: If the installed proxy server is only capable of the HTTP proxy protocol, you cannot connect.

► **To configure the SOCKS proxy:**

1. On the remote client PC, select Control Panel > Internet Options.
 - a. On the Connections tab, click 'LAN settings'. The Local Area Network (LAN) Settings dialog opens.
 - b. Select 'Use a proxy server for your LAN'.
 - c. Click Advanced. The Proxy Settings dialog opens.
 - d. Configure the proxy servers for all protocols.

IMPORTANT: Do not select 'Use the same proxy server for all protocols'.

Note: The default port for a SOCKS proxy (1080) is different from HTTP proxy (3128).

- e. Click OK at each dialog to apply the settings.
2. Next, configure the proxy settings for the Java™ applets:
 - a. Select Control Panel > Java.
 - b. On the General tab, click Network Settings. The Network Settings dialog opens.
 - c. Select "Use Proxy Server".
 - d. Click Advanced. The Advanced Network Settings dialog opens.
 - e. Configure the proxy servers for all protocols.

IMPORTANT: Do not select 'Use the same proxy server for all protocols'.

Note: The default port for a SOCKS proxy (1080) is different from HTTP proxy (3128).

Connect to a Target from Virtual KVM Client (VKC), Standalone VKC (VKCs), or Active KVM Client (AKC)

Once you have logged on to the KX III Remote Console, access target servers via the Virtual KVM Client (VKC), Standalone VKC (VKCs), or Active KVM Client (AKC).

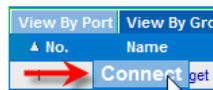
► To connect to an available server:

1. On the Port Access page, click on the port name of the target server you want to connect to. The Port Action menu opens.
2. Click Connect.

[Home](#) > [Ports](#)

Port Access

Click on the individual
0 / 4 Remote KVM char



See **Port Action Menu** (on page 25) for details on additional available menu options.

Configuring Connection Properties

VKC, VKCS, and AKC support connection property management.

Connection properties manage streaming video performance over remote connections to target servers.

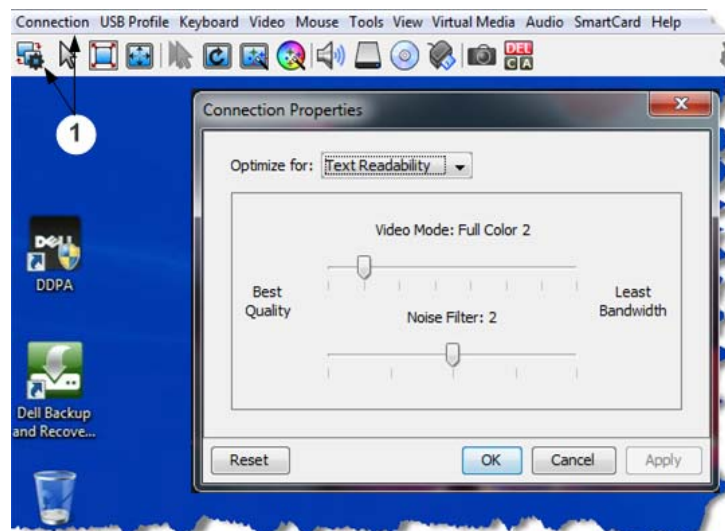
The properties are applied only to your connection - they do not impact the connection of other users accessing the same target servers via VKC or AKC.

If you make changes to connection properties, they are retained by VKC and AKC.

Access Connection Properties

► To access connection properties:

- 1 Click Connection > Properties, or click the Connection... icon to open the Connection Properties dialog.



About Connection Properties

The Virtual KVM Client (VKC) and Active KVM Client (AKC) support connection property management.

Connection properties manage streaming video performance over remote connections to target servers.

The properties are applied only to your connection - they do not impact the connection of other users accessing the same target servers via VKC or AKC.

If you make changes to connection properties, they are retained by VKC and AKC.

Default Connection Property Settings - Optimized for Best Performance

The KX III comes configured to provide optimal performance for the majority of video streaming conditions.

Default connection settings are:

- Optimized for: Text Readability - video modes are designed to maximize text readability.

This setting is ideal for general IT and computer applications, such as performing server administration.

- Video Mode - defaults to Full Color 2.

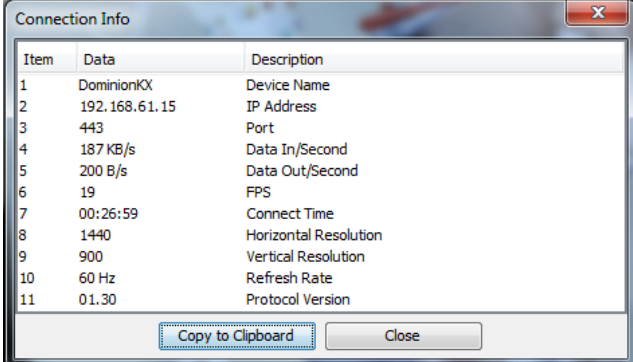
Video frames transmit in high-quality, 24-bit color. This setting is suitable where a high-speed LAN is used.

- Noise Filter - defaults to 2.

The noise filter setting does not often need to be changed.

Click Reset on the Connection Properties dialog at any time to return to the default settings.

*Tip: Use the Connection Information dialog to monitor the connection in real-time. See **Access and Copy Connection Information** (on page 48)*



The screenshot shows a window titled "Connection Info" with a table of connection statistics. The table has three columns: Item, Data, and Description. It lists 11 items including device name, IP address, port, data rates, FPS, connect time, resolution, refresh rate, and protocol version. At the bottom of the window are two buttons: "Copy to Clipboard" and "Close".

Item	Data	Description
1	DominionKX	Device Name
2	192.168.61.15	IP Address
3	443	Port
4	187 KB/s	Data In/Second
5	200 B/s	Data Out/Second
6	19	FPS
7	00:26:59	Connect Time
8	1440	Horizontal Resolution
9	900	Vertical Resolution
10	60 Hz	Refresh Rate
11	01.30	Protocol Version

Optimize for: Selections

Text Readability

Text Readability is designed to provide video modes with lower color depth but text remains readable. Greyscale modes are even available when applying lower bandwidth settings.

This setting is ideal when working with computer GUIs, such as server administration.

When working in full color video modes, a slight contrast boost is provided, and text is sharper.

In lower quality video modes, bandwidth is decreased at the expense of accuracy.

Color Accuracy

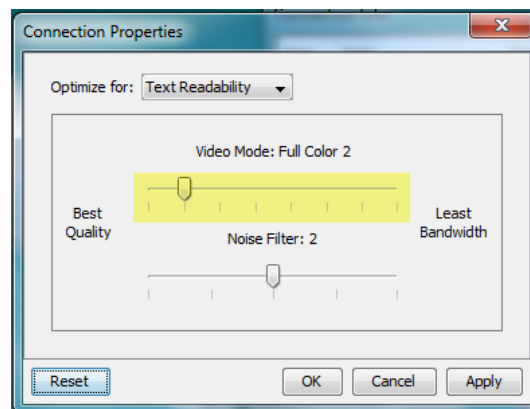
When Color Accuracy is selected, all video modes are rendered in full 24-bit color with more compression artifacts.

This setting applies to viewing video streams such as movies or other broadcast streams.

In lower quality video modes, sharpness of fine detail, such as text, is sacrificed.

Video Mode

The Video Mode slider controls each video frame's encoding, affecting video quality, frame rate and bandwidth.



In general, moving the slider to the left results in higher quality at the cost of higher bandwidth and, in some cases, lower frame rate.

Moving the slider to the right enables stronger compression, reducing the bandwidth per frame, but video quality is reduced.

In situations where system bandwidth is a limiting factor, moving the video mode slider to the right can result in higher frame rates.

When Text Readability is selected as the Optimized setting, the four rightmost modes provide reduced color resolution or no color at all.

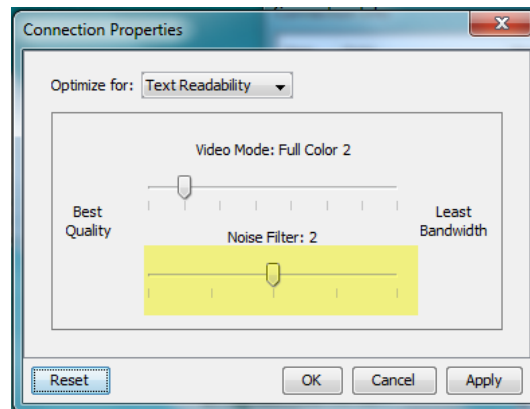
These modes are appropriate for administration work where text and GUI elements take priority, and bandwidth is at a premium.

Click Reset on the Connection Properties dialog at any time to return to the default settings.

Noise Filter

Unless there is a specific need to do so, do not change the noise filter setting. The default setting is designed to work well in most situations.

The Noise Filter controls how much interframe noise is absorbed by the KX III.



Moving the Noise Filter slider to the left lowers the filter threshold, resulting in higher dynamic video quality. However, more noise is likely to come through, resulting in higher bandwidth and lower frame rates.

Moving the slider to the right raises the threshold, allows less noise and less bandwidth is used. Video artifacts may be increased.

Moving the noise filter to the right may be useful when accessing a computer GUI over severely bandwidth-limited connections.

Click Reset on the Connection Properties dialog at any time to return to the default settings.

Connection Information

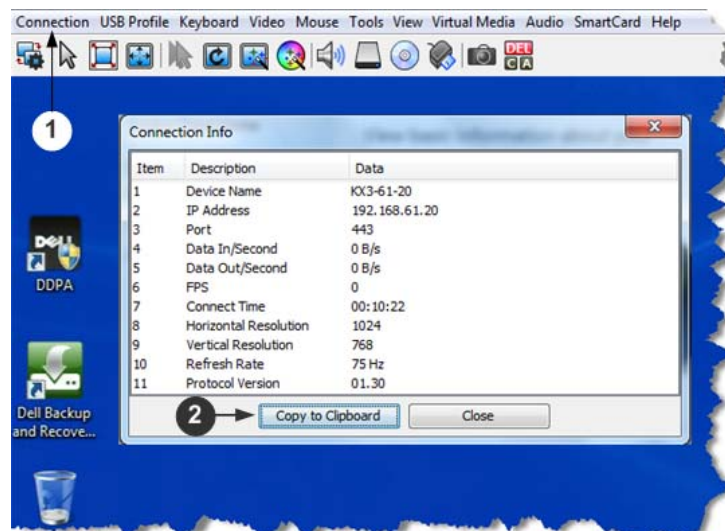
Open the Connection Information dialog for real-time connection information on your current connection, and copy the information from the dialog as needed.

See **Configuring Connection Properties** (on page 43)

► **Current connection information:**

- KX III Name
- IP address of the KX III.
- Port - The KVM communication TCP/IP port used to access the KX III.
- Data In/Second - Data rate received from the KX III.
- Data Out/Second - Data rate sent to the KX III.
- Connect Time - The duration of the current connection.
- FPS - Video frames per second transmitted received from the KX III.
- Horizontal Resolution - The target server horizontal resolution.
- Vertical Resolution - The target server vertical resolution.
- Refresh Rate - Refresh rate of the target server.
- Protocol Version - Raritan communications protocol version.

Access and Copy Connection Information

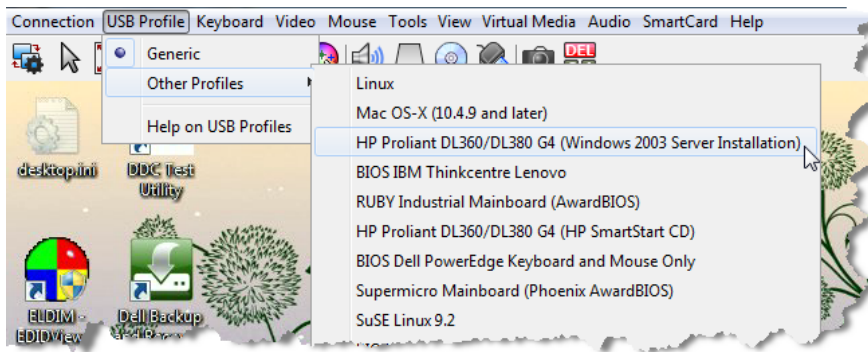


Steps

- | | |
|----------|--|
| 1 | Click Connection > Info... to open the Connection Info dialog. |
| 2 | Click Copy to Clipboard. Paste the information as needed. |

USB Profiles

Set a USB profile for a target server from the Virtual KVM Client (VKC) by clicking USB Profile in the menu, then selecting from the menu choices.



Select a USB profile that best applies to the KVM target server.

For example, if the server is running Windows® operating system, it would be best to use the Generic profile.

Or, to change settings in the BIOS menu or boot from a virtual media drive, depending on the target server model, a BIOS profile may be more appropriate.

For details on USB profiles, see **USB Profiles - Overview**.

Keyboard

Send Ctrl+Alt+Del Macro

Due to its frequent use, a Ctrl+Alt+Delete macro is preprogrammed.

Selecting Keyboard > Send Ctrl+Alt+Del, or clicking on the

Ctrl+Alt+Delete button  in the toolbar sends this key sequence to the server or to the KVM switch to which you are currently connected.

In contrast, if you were to physically press the Ctrl+Alt+Del keys, the command would first be intercepted by your own PC due to the structure of the Windows operating system, instead of sending the key sequence to the target server as intended.

Send LeftAlt+Tab (Switch Between Open Windows on a Target Server)

Select Keyboard > Send LeftAlt + Tab to switch between open windows on the target server or KVM switch you are connected to.

Setting CIM Keyboard/Mouse Options

► **To access the DCIM-USBG2 setup menu:**

1. Put the mouse focus on a window such as Note Pad (Windows® operating system) or an equivalent.
2. Select Set CIM Keyboard/Mouse options. This is the equivalent of sending the Left-Control and Num Lock to the target. The CIM setup menu options are then displayed.
3. Set the language and mouse settings.
4. Exit the menu to return to normal CIM functionality.

Send Text to Target

► **To use the Send Text to Target function for the macro:**

1. Click the Keyboard > Send Text to Target. The Send Text to Target dialog appears.
2. Enter the text you want sent to the target.

Note: Non-English characters are not supported by the Send Text to Target function.

3. If the target uses a US/International keyboard layout, select the "Target system is set to the US/International keyboard layout" checkbox.

4. Click OK.

Keyboard Macros

Keyboard macros ensure that keystroke combinations intended for the target server are sent to and interpreted only by the target server. Otherwise, they might be interpreted by the computer on which the Virtual KVM Client (VVC) is running (your client PC).

Macros are stored on the client PC and are PC-specific. Therefore, if you use another PC, you cannot see your macros.

In addition, if another person uses your PC and logs in under a different name, that user will see your macros since they are computer-wide.

Keyboard macros created in Virtual KVM Client (VVC) cannot be used in Active KVM Client (AKC) or vice versa.

Build a New Macro

► To build a macro:

1. Click Keyboard > Keyboard Macros. The Keyboard Macros dialog appears.
2. Click Add. The Add Keyboard Macro dialog appears.
3. Type a name for the macro in the Keyboard Macro Name field. This name appears in the Keyboard menu after it is created.
4. From the Hot-Key Combination field, select a keyboard combination from the drop-down list. This allows you to execute the macro with a predefined keystroke. **Optional**
5. In the Keys to Press drop-down list, select each key you would like to use to emulate the keystrokes that is used to perform the command. Select the keys in the order by which they are to be pressed. After each selection, select Add Key. As each key is selected, it appears in the Macro Sequence field and a Release Key command is automatically added after each selection.

For example, create a macro to close a window by selecting Left Ctrl + Esc. This appears in the Macro Sequence box as follows:

Press Left Alt

Press F4

Esc

Release F4

Esc

Release Left Alt

6. Review the Macro Sequence field to be sure the macro sequence is defined correctly.

- a. To remove a step in the sequence, select it and click Remove.
 - b. To change the order of steps in the sequence, click the step and then click the up or down arrow buttons to reorder them as needed.
7. Click OK to save the macro. Click Clear to clear all field and start over. When you click OK, the Keyboard Macros dialog appears and lists the new keyboard macro.
8. Click Close to close the Keyboard Macros dialog. The macro now appears on the Keyboard menu in the application.
9. Select the new macro on the menu to run it or use the keystrokes you assigned to the macro.

Import Macros

► **To import macros:**

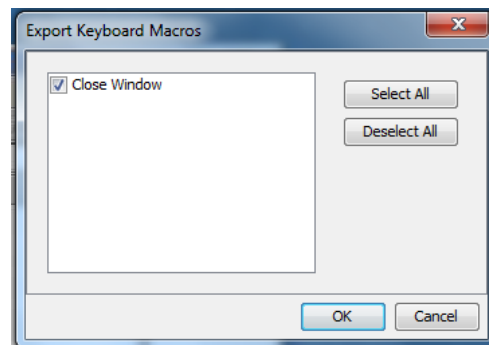
1. Choose Keyboard > Import Keyboard Macros to open the Import Macros dialog. Browse to the folder location of the macro file.
2. Click on the macro file and click Open to import the macro.
 - a. If too many macros are found in the file, an error message is displayed and the import terminates once OK is selected.
 - b. If the import fails, an error dialog appears and a message regarding why the import failed is displayed. Select OK to continue the import without importing the macros that cannot be imported.
3. Select the macros to be imported by checking their corresponding checkbox or using the Select All or Deselect All options.
4. Click OK to begin the import.
 - a. If a duplicate macro is found, the Import Macros dialog appears. Do one of the following:

- Click Yes to replace the existing macro with the imported version.
 - Click Yes to All to replace the currently selected and any other duplicate macros that are found.
 - Click No to keep the original macro and proceed to the next macro
 - Click No to All keep the original macro and proceed to the next macro. Any other duplicates that are found are skipped as well.
 - Click Cancel to stop the import.
 - Alternatively, click Rename to rename the macro and import it. If Rename is selected, the Rename Macro dialog appears. Enter a new name for the macro in the field and click OK. The dialog closes and the process proceeds. If the name that is entered is a duplicate of a macro, an alert appears and you are required to enter another name for the macro.
- b. If during the import process the number of allowed, imported macros is exceeded, a dialog appears. Click OK to attempt to continue importing macros or click Cancel to stop the import process.

The macros are then imported. If a macro is imported that contains a hot key that already exists, the hot key for the imported macro is discarded.

Export Macros

1. Choose Tools > Export Macros to open the Select Keyboard Macros to Export dialog.



2. Select the macros to be exported by checking their corresponding checkbox or using the Select All or Deselect All options.
3. Click Ok. An "Export Keyboard Macros to" dialog is displayed. Locate and select the macro file. By default, the macro exists on your desktop.

4. Select the folder to save the macro file to, enter a name for the file and click Save. If the macro already exists, you receive an alert message.
5. Select Yes to overwrite the existing macro or No to close the alert without overwriting the macro.

Video Properties

Refreshing the Screen

The Refresh Screen command forces a refresh of the video screen. Video settings can be refreshed automatically in several ways:

- The Refresh Screen command forces a refresh of the video screen.
- The Auto-sense Video Settings command automatically detects the target server's video settings.
- The Calibrate Color command calibrates the video to enhance the colors being displayed.

In addition, you can manually adjust the settings using the Video Settings command.

► **To refresh the video settings, do one of the following:**

- Choose Video > Refresh Screen, or click the Refresh Screen button  in the toolbar.

Auto-Sense Video Settings

The Auto-sense Video Settings command forces a re-sensing of the video settings (resolution, refresh rate) and redraws the video screen.

► **To automatically detect the video settings:**

- Choose Video > Auto-sense Video Settings, or click the Auto-Sense Video Settings button  in the toolbar.

A message stating that the auto adjustment is in progress appears.

Calibrating Color

Use the Calibrate Color command to optimize the color levels (hue, brightness, saturation) of the transmitted video images.

The color settings are on a target server-basis.

Note: When color is successfully calibrated, the values are cached and reused each time you switch to the target. Changes to the brightness and contrast in Video Settings are not cached. Changing resolution resets the video to the cached values again. You can clear the cached values in Video > Clear Video Settings Cache. See Clear Video Settings Cache.

► To calibrate the color:

- Choose Video > Calibrate Color, or click the Calibrate Color button



in the toolbar.

The target device screen updates its color calibration.

Adjusting Video Settings

Use the Video Settings command to manually adjust the video settings.

► To change the video settings:

- Choose Video > Video Settings to open the Video Settings dialog.
- Adjust the following settings as required. As you adjust the settings the effects are immediately visible:
 - PLL Settings

Clock - Controls how quickly video pixels are displayed across the video screen. Changes made to clock settings cause the video image to stretch or shrink horizontally. Odd number settings are recommended. Under most circumstances, this setting should not be changed because the autodetect is usually quite accurate.

Phase - Phase values range from 0 to 31 and will wrap around. Stop at the phase value that produces the best video image for the active target server.
 - Brightness: Use this setting to adjust the brightness of the target server display.
 - Brightness Red - Controls the brightness of the target server display for the red signal.
 - Brightness Green - Controls the brightness of the green signal.
 - Brightness Blue - Controls the brightness of the blue signal.

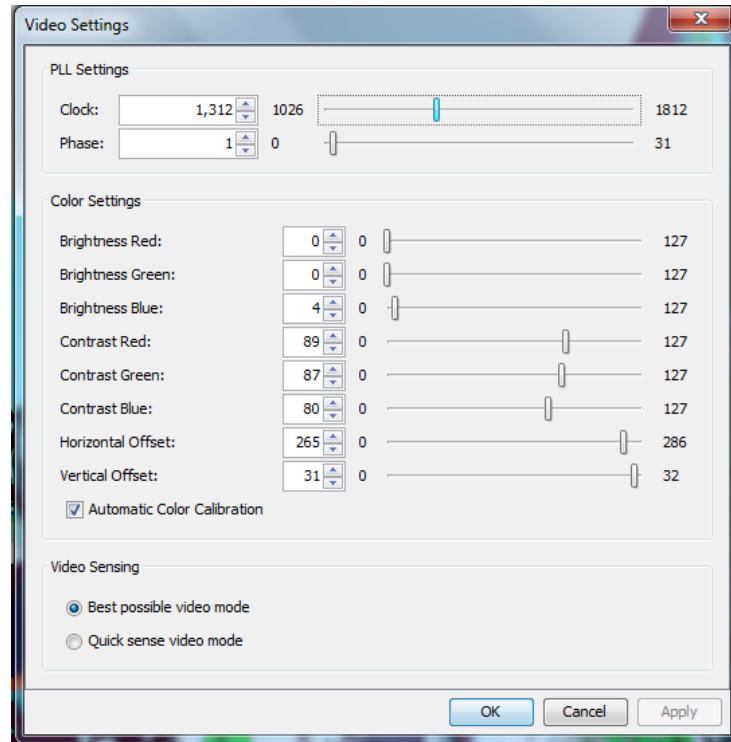
- f. Contrast Red - Controls the red signal contrast.
- g. Contrast Green - Controls the green signal.
- h. Contrast Blue - Controls the blue signal.

If the video image looks extremely blurry or unfocused, the settings for clock and phase can be adjusted until a better image appears on the active target server.

Warning: Exercise caution when changing the Clock and Phase settings. Doing so may result in lost or distorted video and you may not be able to return to the previous state. Contact Raritan Technical Support before making any changes.

- i. Horizontal Offset - Controls the horizontal positioning of the target server display on your monitor.
 - j. Vertical Offset - Controls the vertical positioning of the target server display on your monitor.
3. Select Automatic Color Calibration to enable this feature. This setting does not apply to KX3-808 target servers.
 4. Select the video sensing mode. This setting does not apply to KX3-808 target servers when connecting to the target, but will apply if you change resolution.
 - Best possible video mode
The device will perform the full Auto Sense process when switching targets or target resolutions. Selecting this option calibrates the video for the best image quality.
 - Quick sense video mode
With this option, the device will use a quick video Auto Sense in order to show the target's video sooner. This option is especially useful for entering a target server's BIOS configuration right after a reboot.
 5. Click OK to apply the settings and close the dialog. Click Apply to apply the settings without closing the dialog.

Note: Some Sun background screens, such as screens with very dark borders, may not center precisely on certain Sun servers. Use a different background or place a lighter colored icon in the upper left corner of the screen.



Screenshot from Target Command (Target Screenshot)

You are able to take a screenshot of a target server using the Screenshot from Target server command. If needed, save this screenshot to a file location of your choosing as a bitmap, JPEG or PNG file.

► To take a screenshot of the target server:

1. Select Video > Screenshot from Target, or click the Target Screenshot button  on the toolbar.
2. In the Save dialog, choose the location to save the file, name the file, and select a file format from the 'Files of type' drop-down.
3. Click Save to save the screenshot.

Mouse Options

You can operate in either single mouse mode or dual mouse mode.

When in a dual mouse mode, and provided the option is properly configured, the mouse cursors align.

When controlling a target server, the Remote Console displays two mouse cursors - one belonging to your KX III client workstation, and the other belonging to the target server.

When there are two mouse cursors, the device offers several mouse modes:

- Absolute (Mouse Synchronization)
- Intelligent (Mouse Mode)
- Standard (Mouse Mode)

When the mouse pointer lies within the KVM Client target server window, mouse movements and clicks are directly transmitted to the connected target server.

While in motion, the client mouse pointer slightly leads the target mouse pointer due to mouse acceleration settings.

On fast LAN connections, you can use single mouse mode, and view only the target server's pointer.

You can toggle between these two modes (single mouse and dual mouse).

Dual Mouse Modes

Absolute Mouse Synchronization

In this mode, absolute coordinates are used to keep the client and target cursors in synch, even when the target mouse is set to a different acceleration or speed.

This mode is supported on servers with USB ports and is the default mode for virtual media CIMs.

Absolute Mouse Synchronization requires the use of a virtual media CIM -

- D2CIM-VUSB
- D2CIM-DVUSB
- D2CIM-DVUSB-DVI
- D2CIM-DVUSB-HDMI
- D2CIM-DVUSB-DP

► To enter Absolute Mouse Synchronization:

- Choose Mouse > Absolute from the KVM client.

The black USB connector on the DVUSB CIMs are used for the keyboard and mouse. The gray connector is used for virtual media.

Keep both USB plugs of the CIM connected to the device.

The device may not operate properly if both plugs are not connected to the target server.

Intelligent Mouse Mode

In Intelligent Mouse mode, the device can detect the target mouse settings and synchronize the mouse cursors accordingly, allowing mouse acceleration on the target. Intelligent mouse mode is the default for non-VM targets.

Enter Intelligent Mouse Mode

► To enter intelligent mouse mode:

- Choose Mouse > Intelligent.

Intelligent Mouse Synchronization Conditions

The Intelligent Mouse Synchronization command, available on the Mouse menu, automatically synchronizes mouse cursors during moments of inactivity. For this to work properly, however, the following conditions must be met:

- The active desktop should be disabled on the target.
- No windows should appear in the top left corner of the target page.
- There should not be an animated background in the top left corner of the target page.
- The target mouse cursor shape should be normal and not animated.
- The target mouse speeds should not be set to very slow or very high values.
- Advanced mouse properties such as “Enhanced pointer precision” or “Snap mouse to default button in dialogs” should be disabled.
- Choose “Best Possible Video Mode” in the Video Settings window.
- The edges of the target video should be clearly visible (that is, a black border should be visible between the target desktop and the remote KVM console window when you scroll to an edge of the target video image).
- When using the intelligent mouse synchronization function, having a file icon or folder icon located in the upper left corner of your desktop may cause the function not to work properly. To be sure to avoid any problems with this function, Raritan recommends you do not have file icons or folder icons in the upper left corner of your desktop.

After autosensing the target video, manually initiate mouse synchronization by clicking the Synchronize Mouse button on the toolbar. This also applies when the resolution of the target changes if the mouse cursors start to desync from each other.

If intelligent mouse synchronization fails, this mode will revert to standard mouse synchronization behavior.

Please note that mouse configurations will vary on different target operating systems. Consult your OS guidelines for further details. Also note that intelligent mouse synchronization does not work with UNIX targets.

Standard Mouse Mode

Standard Mouse mode uses a standard mouse synchronization algorithm. The algorithm determines relative mouse positions on the client and target server.

In order for the client and target mouse cursors to stay in synch, mouse acceleration must be disabled. Additionally, specific mouse parameters must be set correctly.

► To enter Standard Mouse mode:

- Choose Mouse > Standard.

Mouse Synchronization Tips

If you have an issue with mouse synchronization:

1. Verify that the selected video resolution and refresh rate are among those supported by the device. The KVM Client Connection Info dialog displays the actual values that the device is seeing.
2. Force an auto-sense by clicking the KVM Client auto-sense button.
3. If that does not improve the mouse synchronization (for Linux, UNIX, and Solaris KVM target servers):
 - a. Open a terminal window.
 - b. Enter the following command: `xset mouse 1 1`
 - c. Close the terminal window.
4. Click the "KVM Client mouse synchronization" button .

Synchronize Your Mouse

In dual mouse mode, the Synchronize Mouse command forces realignment of the target server mouse cursor with the client mouse cursor.

► To synchronize the mouse cursors, do one of the following:

- Click the Synchronize Mouse button  in the KVM client toolbar, or select Mouse > Synchronize Mouse from the menu bar.

Note: This option is available only in Standard and Intelligent mouse modes.

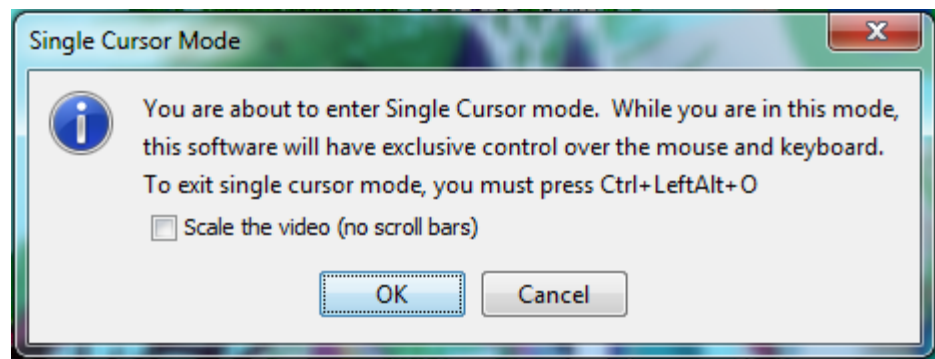
Single Mouse Mode

Single Mouse mode uses only the target server mouse cursor; the client mouse cursor no longer appears onscreen.

Note: Single mouse mode does not work on Windows or Linux targets when the client is running on a Virtual Machine.

► **To enter single mouse mode, do one the following:**

- Choose Mouse > Single Mouse Cursor.
- Click the Single/Double Mouse Cursor button  in the toolbar.



► **To exit single mouse mode:**

1. Press Ctrl+Alt+O on your keyboard to exit single mouse mode.

Tool Options

General Settings

► **To set the tools options:**

1. Click Tools > Options. The Options dialog appears.
2. Select the Enable Logging checkbox only if directed to by Technical Support.

This option creates a log file in your home directory.

3. Choose the Keyboard Type from the drop-down list (if necessary).

The options include:

- US/International
- French (France)
- German (Germany)

- Japanese
- United Kingdom
- Korean (Korea)
- French (Belgium)
- Norwegian (Norway)
- Portuguese (Portugal)
- Danish (Denmark)
- Swedish (Sweden)
- German (Switzerland)
- Hungarian (Hungary)
- Spanish (Spain)
- Italian (Italy)
- Slovenian
- Translation: French - US
- Translation: French - US International

In AKC, the keyboard type defaults to the local client, so this option does not apply.

4. Configure hotkeys:

- Exit Full Screen Mode - Hotkey.

When you enter Full Screen mode, the display of the target server becomes full screen and acquires the same resolution as the target server.

This is the hot key used for exiting this mode.

- Exit Single Cursor Mode - Hotkey.

When you enter single cursor mode, only the target server mouse cursor is visible.

This is the hot key used to exit single cursor mode and bring back the client mouse cursor.

- Disconnect from Target - Hotkey.

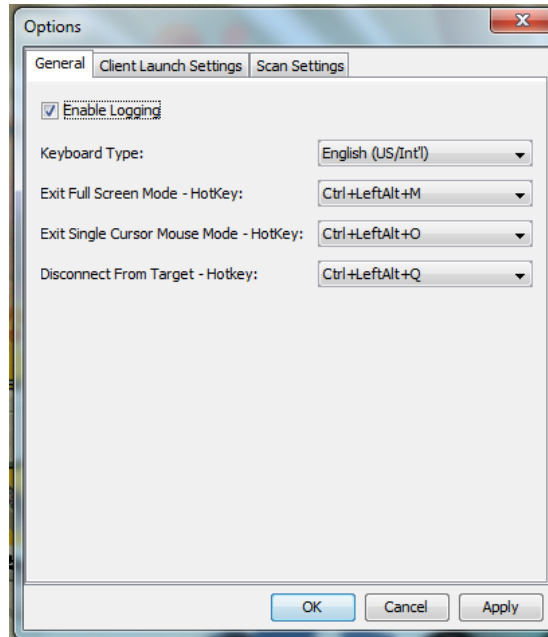
Enable this hotkey to allow users to quickly disconnect from the target.

For hotkey combinations, the application does not allow you to assign the same hotkey combination to more than one function.

For example, if Q is already applied to the Disconnect from Target function, it won't be available for the Exit Full Screen Mode function.

Further, if a hotkey is added to the application due to an upgrade and the default value for the key is already in use, the next available value is applied to the function instead.

5. Click OK.



Keyboard Limitations

Turkish Keyboards

If using a Turkish keyboard, you must connect to a target server through the Active KVM Client (AKC). It is not supported by other Raritan clients.

Slovenian Keyboards

The < key does not work on Slovenian keyboards due to a JRE limitation.

Language Configuration on Linux

Because the Sun JRE on Linux has problems generating the correct Key Events for foreign-language keyboards configured using System Preferences, Raritan recommends that you configure foreign keyboards using the methods described in the following table.

Language	Configuration method
US Intl	Default
French	Keyboard Indicator
German	System Settings (Control Center)

Language	Configuration method
Japanese	System Settings (Control Center)
UK	System Settings (Control Center)
Korean	System Settings (Control Center)
Belgian	Keyboard Indicator
Norwegian	Keyboard Indicator
Danish	Keyboard Indicator
Swedish	Keyboard Indicator
Hungarian	System Settings (Control Center)
Spanish	System Settings (Control Center)
Italian	System Settings (Control Center)
Slovenian	System Settings (Control Center)
Portuguese	System Settings (Control Center)

Note: The Keyboard Indicator should be used on Linux systems using Gnome as a desktop environment.

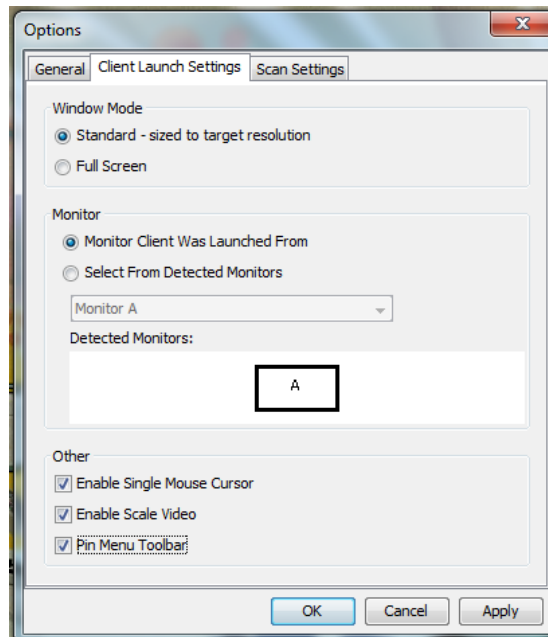
Client Launch Settings

Configuring client launch settings allows you to define the screen settings for a KVM session.

► To configure client launch settings:

1. Click Tools > Options. The Options dialog appears.
2. Click on the Client Launch Settings tab.
 - To configure the target window settings:
 - a. Select 'Standard - sized to target Resolution' to open the window using the target's current resolution. If the target resolution is greater than the client resolution, the target window covers as much screen area as possible and scroll bars are added (if needed).
 - b. Select 'Full Screen' to open the target window in full screen mode.
 - To configure the monitor on which the target viewer is launched:
 - a. Select 'Monitor Client Was Launched From' if you want the target viewer to be launched using the same display as the application that is being used on the client (for example, a web browser or applet).

- b. Use 'Select From Detected Monitors' to select from a list of monitors that are currently detected by the application. If a previously selected monitor is no longer detected, 'Currently Selected Monitor Not Detected' is displayed.
 - To configure additional launch settings:
 - a. Select 'Enable Single Cursor Mode' to enable single mouse mode as the default mouse mode when the server is accessed.
 - b. Select 'Enable Scale Video' to automatically scale the display on the target server when it is accessed.
 - c. Select 'Pin Menu Toolbar' if you want the toolbar to remain visible on the target when it is in Full Screen mode. By default, while the target is in Full Screen mode, the menu is only visible when you hover your mouse along the top of the screen.
3. Click OK.



Configuring Port Scan Settings in VKC/VKCS and AKC

Configuring port scan options in VKC/VKCS and AKC applies to scanning from the KX III Remote Console.

To configure port scan options for the Local Console, see **Configure Local Console Scan Settings** (on page 122)

Use the port scanning feature to search for selected targets, and display them in a slide show view, allowing you to monitor up to 32 targets at one time.

You can connect to targets or focus on a specific target as needed. Scans can include standard targets, blade servers, tiered Dominion devices, and KVM switch ports.

Configure scan settings from either the VKC/VKCS or AKC.

See **Scanning Ports - Remote Console** (on page 104)

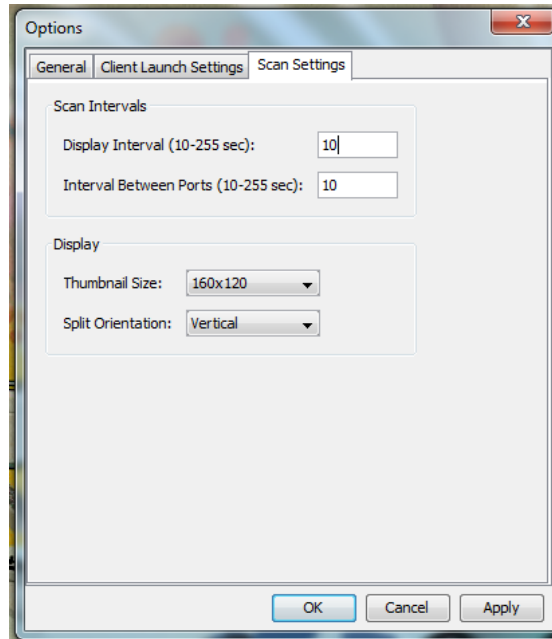
Use the Scan Settings tab to customize the scan interval and default display options.

Configure Port Scan

► **To set scan settings:**

1. Click Tools > Options. The Options dialog appears.
2. Select the Scan Settings tab.
3. In the "Display Interval (10-255 sec):" field, specify the number of seconds you want the target that is in focus to display in the center of the Port Scan window.
4. In the "Interval Between Ports (10 - 255 sec):" field, specify the interval at which the device should pause between ports.
5. In the Display section, change the default display options for the thumbnail size and split orientation of the Port Scan window.

6. Click OK.



Collecting a Diagnostic Snapshot of the Target

Administrators are able to collect a "snapshot" of a target from either the VKC/VKCS or Active KVM Client (AKC).

The "snapshot" function generate log files and image files from the target.

It then bundles these files in a zip file that can be sent to Raritan Technical Support in order to help diagnose technical problems you may be encountering.

The following files are included in the zip file:

- screenshot_image.png
This is a screenshot of the target that captures a picture of the issue you are experiencing. This feature is operates in the same as the "Screenshot from Target" feature.
- raw_video_image.png:
A snapshot image created from raw video data. Please note that client's postprocessing is applied, just as if it were a "regular" screen update.
- raw_video_ycbcr420.bin:
Binary file of the raw snapshot.
- raw_video_ycbcr420.txt:
Text file containing data used by Raritan to help diagnose issues.

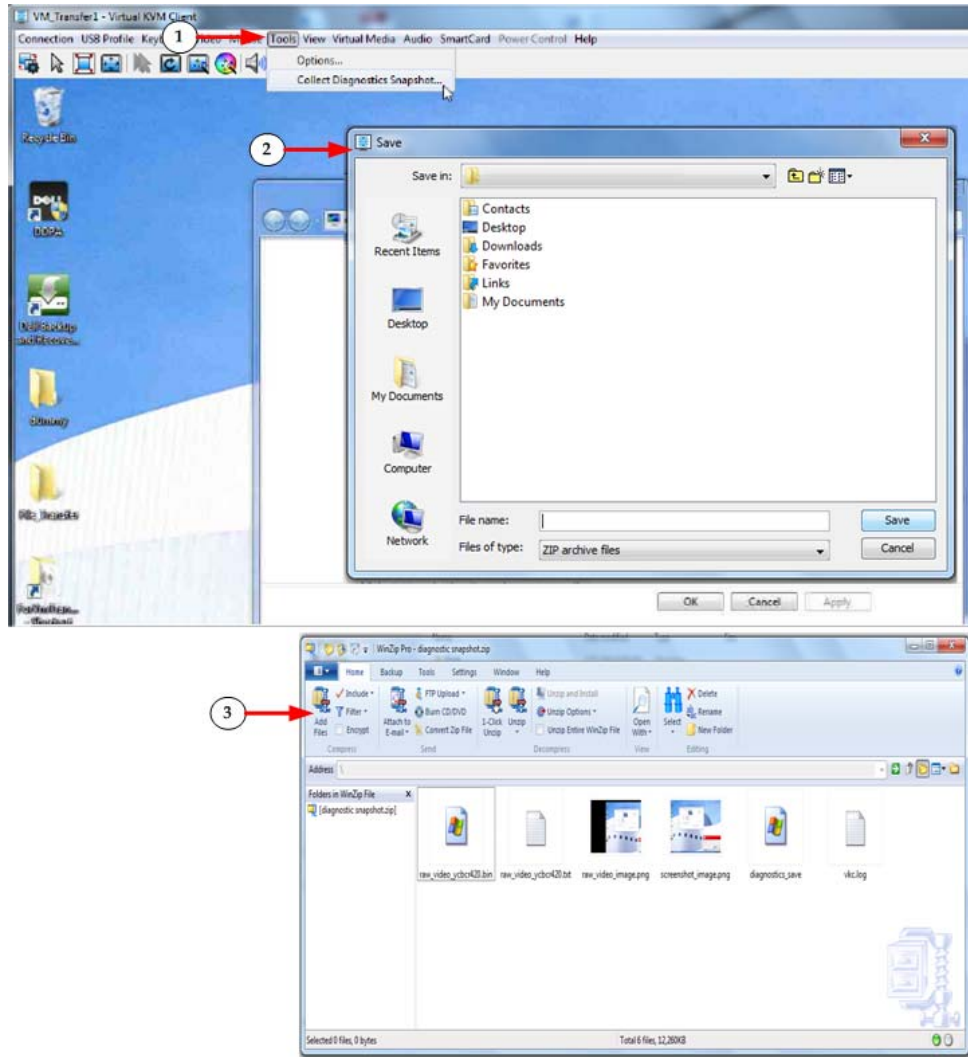
- Log.txt file:

These are the client logs.

Note that the logs are included even if you have not enabled information to be captured in them. VKC uses internal memory to capture the information in this case.

Collect a Diagnostic Snapshot from VKC, VKCS, and AKC

► To capture a diagnostic snapshot:



Steps	
①	Access a target, and then click Tools > Collect a Diagnostic Snapshot. Several messages are displayed as the information is collected.
②	You are prompted to save the zip file containing the diagnostic files.

3	The zip file containing the diagnostic files that were collecting opens.
---	--

View Options

View Toolbar

You can use the Virtual KVM client with or without the toolbar display.

► **To toggle the display of the toolbar (on and off):**

- Choose View > View Toolbar.

View Status Bar

By default, the status bar is displayed at the bottom of the target window.

► **To hide the status bar:**

- Click View > Status Bar to deselect it.

► **To restore the status bar:**

- Click View > Status Bar to select it.

Scaling

Scaling your target window allows you to view the entire contents of the target server window.

This feature increases or reduces the size of the target video to fit the Virtual KVM Client window size, and maintains the aspect ratio so that you see the entire target server desktop without using the scroll bar.

► **To toggle scaling (on and off):**

- Choose View > Scaling.

Full Screen Mode

When you enter Full Screen mode, the target's full screen is displayed and acquires the same resolution as the target server.

The hot key used for exiting this mode is specified in the Options dialog, see **Tool Options** (on page 62).

While in Full Screen mode, moving your mouse to the top of the screen displays the Full Screen mode menu bar.

If you want the menu bar to remain visible while in Full Screen mode, enable the Pin Menu Toolbar option from the Tool Options dialog. See **Tool Options** (on page 62).

► To enter full screen mode:

- Choose View > Full Screen, or click the Full Screen button .

► To exit full screen mode:

- Press the hot key configured in the Tool's Options dialog. The default is Ctrl+Alt+M.

If you want to access the target in full screen mode at all times, you can make Full Screen mode the default.

► To set Full Screen mode as the default mode:

1. Click Tools > Options to open the Options dialog.
2. Select Enable Launch in Full Screen Mode and click OK.

Connect to Virtual Media

See **Virtual Media** (on page 30)

Smart Cards

Using the KX III, you are able to mount a smart card reader onto a target server to support smart card authentication and related applications.

For a list of supported smart cards, smart card readers, and additional system requirements, see **Smart Card Minimum System Requirements, CIMs and Supported/Unsupported Smart Card Readers** (on page 73).

Note: The USB Smart Card token (eToken NG-OTP) is only supported from the remote client.

Smart card reader mounting is also supported from the Local Console.

See **Local Console Smart Card Access** (on page 123) in your Dominion device help.

Smart Card Minimum System Requirements, CIMs and Supported/Unsupported Smart Card Readers

Before you begin using a smart card reader, review the following:

- **Smart Card Minimum System Requirements** (on page 151)
- **Supported Computer Interface Module (CIMs) Specifications** (on page 145)
- Supported and Unsupported Smart Card Readers

Authentication When Accessing a Smart Card Reader

When accessing a server remotely, you can select an attached smart card reader and mount it onto the server.

Smart card authentication is used with the target server, it is not used to log into the device. Therefore, changes to smart card PIN and credentials do not require updates to device accounts.

PC Share Mode and Privacy Settings when Using Smart Cards

When PC-Share mode is enabled on the device, multiple users can share access to a target server.

However, when a smart card reader is connected to a target, the device will enforce privacy regardless of the PC-Share mode setting.

In addition, if you join a shared session on a target server, the smart card reader mounting will be disabled until exclusive access to the target server becomes available.

Smart Card Reader Detected

After a KVM session is established with a target server, a Smart Card menu and button are available in VKC and AKC.

Once the Smart Card button is selected or Smart Card is selected from the menu, the smart card readers that are detected as attached to the remote client are displayed in a dialog.

From this dialog, you can attach additional smart card readers, refresh the list of smart card readers attached to the target, and detach smart card readers.

You are also able to remove or reinsert a smart card. This function can be used to provide notification to a target server OS that requires a removal/reinsertion in order to display the appropriate login dialog. Using this function allows the notification to be sent to a single target without affecting other active KVM sessions.

Mount a Smart Card Reader

When mounted onto the target server, the card reader and smart card will cause the server to behave as if they had been directly attached.

Removal of the smart card or smart card reader will cause the user session to be locked or you will be logged out depending on how the card removal policy has been setup on the target server OS.

When the KVM session is terminated, either because it has been closed or because you switch to a new target, the smart card reader will be automatically unmounted from the target server.

► To mount a smart card reader from VKC or AKC:

1. Click the Smart Card menu and then select Smart Card Reader.

Alternatively, click the Smart Card button  in the toolbar.

2. Select the smart card reader from the Select Smart Card Reader dialog.
3. Click Mount.
4. A progress dialog will open. Check the 'Mount selected card reader automatically on connection to targets' checkbox to mount the smart card reader automatically the next time you connect to a target. Click OK to begin the mounting process.

Update a Smart Card Reader

- ▶ **To update the smart card in the Select Smart Card Reader dialog:**
 - Click Refresh List if a new smart card reader has been attached to the client PC.

Send Smart Card Remove and Reinsert Notifications

- ▶ **To send smart card remove and reinsert notifications to the target:**
 - Select the smart card reader that is currently mounted and click the Remove/Reinsert button.

Unmount (Remove) a Smart Card Reader

- ▶ **To unmount a smart card reader:**
 - Select the smart card reader to be unmounted and click the Unmount button.

Digital Audio

The KX III supports end-to-end, bidirectional, digital audio connections for digital audio playback and capture devices from a remote client to a target server.

The audio devices are accessed over a USB connection.

Current device firmware is required.

One of the following CIMs must be used:

- D2CIM-DVUSB
- D2CIM-DVUSB-DVI
- D2CIM-DVUSB-HDMI
- D2CIM-DVUSB-DP

Windows®, Linux® and Mac® operating systems are supported. VKC, VKCS, and AKC support connections to audio devices.

Note: Audio CDs are not supported by virtual media so they do not work with the audio feature.

Before you begin using the audio feature, Raritan recommends you review the audio related information documented in the following sections of Help:

- **Supported Audio Device Formats** (on page 76)
- Recommendations for Dual Port Video
- Dual Video Port Group Supported Mouse Modes
- CIMs Required for Dual Video Support
- Informational Notes, **Audio** (on page 181)

Supported Audio Device Formats

The KX III supports one playback and capture device and one record device on a target at a time. The following audio device formats are supported:

- Stereo, 16 bit, 44.1K
- Mono, 16 bit, 44.1K
- Stereo, 16 bit, 22.05K
- Mono, 16 bit, 22.05K
- Stereo, 16 bit, 11.025K
- Mono, 16 bit, 11.025K

Digital Audio VKC and AKC Icons

Audio icons	Icon name	Description
  	Speaker	These icons are located in status bar at the bottom of the client window. Green, blinking waves indicate an audio playback session is currently streaming. A black speaker icon is displayed when the session is muted. The icon is grayed out when no audio is connected.
  	Microphone	These icons are located in the status bar at the bottom of the client window. Red, blinking waves indicate an audio capture session is currently underway. The Speaker icon, indicating a playback session is streaming, is also displayed when a session is underway. A black Microphone icon is displayed when the session is muted. When the Microphone icon is grayed out, no audio is connected.

Audio Playback and Capture Recommendations and Requirements**Audio Level**

- Set the target audio level to a mid-range setting.

For example, on a Windows® client, set the audio to 50 or lower.

This setting must be configured through the playback or capture audio device, not from the client audio device control.

Recommendations for Audio Connections when PC Share Mode is Enabled

If you are using the audio feature while running PC Share mode, audio playback and capture are interrupted if an additional audio device is connected to the target.

For example, User A connects a playback device to Target1 and runs an audio playback application then User B connects a capture device to the same target. User A's playback session is interrupted and the audio application may need to be restarted.

The interruption occurs because the USB device needs to be re-enumerated with the new device configuration.

It may take some time for the target to install a driver for the new device.

Audio applications may stop playback completely, go to the next track, or just continue playing.

The exact behavior is dependent on how the audio application is designed to handle a disconnect/reconnect event.

Bandwidth Requirements

The table below details the audio playback and capture bandwidth requirements to transport audio under each of the selected formats.

Audio format	Network bandwidth requirement
44.1 KHz, 16bit stereo	176 KB/s
44.1 KHz, 16bit mono	88.2 KB/s
2.05 KHz, 16bit stereo	88.2 KB/s
22.05 KHz, 16bit mono	44.1 KB/s
11.025 KHz, 16bit stereo	44.1 KB/s
11.025 KHz, 16bit mono	Audio 22.05 KB/s

In practice, the bandwidth used when an audio device connects to a target is higher due to the keyboard and video data consumed when opening and using an audio application on the target.

A general recommendation is to have at least a 1.5MB connection before running playback and capture.

However, high video-content, full-color connections using high-target screen resolutions consume much more bandwidth and impact the quality of the audio considerably.

To help mitigate quality degeneration, there are a number of recommended client settings that reduce the impact of video on audio quality at lower bandwidths:

- Connect audio playback at the lower quality formats. The impact of video consuming bandwidth is much less notable at 11k connections than at 44k
- Set the connection speed under Connection Properties to a value that best matches the client to server connection
- Under Connection Properties, set the color depth to as low a value as possible. Reducing the color depth to 8 bit color considerably reduces the bandwidth consumed
- Set Smoothing, to High. This will improve the appearance of the target video by reducing displayed video noise
- Under Video settings, set the Noise Filter to its highest setting of 7 (highest value) so less bandwidth is used for target screen changes

Saving Audio Settings

Audio device settings are applied on a per KX III device basis.

Once the audio devices settings are configured and saved on the KX III, the same settings are applied to it.

For example, you can configure a Windows® audio device to use a stereo, 16 bit, 44.1K format.

When you connect to different targets and use that Windows audio device, the stereo, 16 bit, 44.1K format is applied to each target server.

For both playback and recording devices, the device type, device format, and the buffer settings applied to the device are saved.

See **Connecting and Disconnecting from a Digital Audio Device** (on page 81) for information on connecting to and configuring an audio device, and **Adjusting Capture and Playback Buffer Size (Audio Settings)** for information on audio device buffer settings.

If you are using the audio feature while running PC Share mode and VM Share mode so multiple users can access the same audio device on a target at once, the audio device settings of the user who initiates the session are applied to all users who join the session.

So, when a user joins an audio session, the target machine settings are used. See **Connecting to Multiple Targets from a Single Remote Client** (on page 80).

Connecting to Multiple Targets from a Single Remote Client

Connect to audio on up to four (4) target servers at the same time from a single, remote client.

See **Connecting and Disconnecting from a Digital Audio Device** (on page 81) for information on connecting to audio devices.

A Speaker icon  is displayed in the status bar at the bottom of the client window. It is grayed out when no audio is being used. When the Speaker icon and Microphone icon  are displayed in the status bar, the session is being captured as it is streamed.

Note: When an audio session is underway, be sure to keep the session active or change the KX III's idle timeout time so the audio session does not time out.

Operating System Audio Playback Support

Review the table shown here to see which Raritan client works with audio playback/capture for each operating system:

Operating system	Audio playback and capture supported by:
Windows®	- Active KVM Client (AKC) - Virtual KVM Client (VKC)
Linux®	Virtual KVM Client (VKC)
Mac®	Virtual KVM Client (VKC)

Connecting and Disconnecting from a Digital Audio Device

Audio device settings are applied on a per KX III device basis.

Once the audio devices settings are configured and saved on the KX III, the same settings are applied to it.

See **Saving Audio Settings** (on page 80) for more information.

*Note: If you are using the audio feature while running PC Share mode and VM Share mode, see **Audio Playback and Capture Recommendations and Requirements** (on page 77) for important information. See also **Connecting to Multiple Targets from a Single Remote Client** (on page 80).*

Connect to a Digital Audio Device

► To connect to an audio device:

1. Connect the audio device to the remote client PC prior to launching the browser connection to the KX III.
2. Connect to the target from the Port Access page.

3. Once connected, click the Audio button  in the toolbar.

The Connect Audio Device dialog appears. A list of available audio devices connected to the remote client PC is displayed.

Note: If there are no available audio devices connected to the remote client PC, the Audio icon is grayed out. .

4. Check Connect Playback Device if you are connecting to a playback device.
5. Select the device that you wish to connect from the drop-down list.

6. Select the audio format for the playback device from the Format: drop-down.

Note: Select the format that you wish to use based on the available network bandwidth. Formats with lower sampling rates consume less bandwidth and may tolerate more network congestion.

7. Select the "Mount selected playback device automatically on connection to target" checkbox to automatically connect an audio playback device when you connect to an audio supporting target.
8. Check Connect Recording Device if you are connecting a recording device.

Note: The device names listed in the Connect Recording Device drop-down are truncated to a maximum of 30 characters for Java clients.

9. Select the device that you wish to connect from the drop-down list.
10. Select the audio format for the recording device from the Format: drop-down.
11. Click OK. If the audio connection is established, a confirmation message appears. Click OK.

If the connection was not established, an error message appears.

Once an audio connection is established, the Audio menu changes to Disconnect Audio. The settings for the audio device are saved and applied to subsequent connections to the audio device.

A Speaker icon  is displayed in the status bar at the bottom of the client window. It is grayed out when no audio is being used.

When the Speaker icon and Microphone icon  are displayed in the status bar, the session is being captured as it is streamed.

Disconnect from an Audio Device

► To disconnect from the audio device:

- Click the Audio icon  in the toolbar and select OK when you are prompted to confirm the disconnect. A confirmation message appears. Click OK.

Adjusting Capture and Playback Buffer Size (Audio Settings)

Once an audio device is connected, the capture and playback buffer size can be adjusted as needed.

This feature is useful for controlling the quality of the audio, which may be impacted by bandwidth limitations or network spikes.

Increasing the buffer size improves the audio quality but may impact the delivery speed.

The maximum available buffer size is 400 milliseconds since anything higher than that greatly impacts audio quality.

The buffer size can be adjusted whenever needed, including during an audio session.

Audio settings are configured in VKC or AKC.

Adjust Audio Settings**► To adjust audio settings:**

1. Select Audio Settings from the Audio menu. The Audio Settings dialog opens.
2. Adjust the capture and/or playback buffer size as needed. Click OK.



Power Control Using VKC, VKCS, and AKC

You can power on, power off, and power cycle a target through the outlet it is connected to.

Access the target, and then select a power control option from the Power Control menu.



The menu option is disabled if you do not have permission for power control, and when outlets are not associated with the port.

Version Information - Virtual KVM Client

This menu command provides version information about the Virtual KVM Client, in case you require assistance from Raritan Technical Support.

► **To obtain version information:**

1. Choose Help > About Raritan Virtual KVM Client.
2. Use the Copy to Clipboard button to copy the information contained in the dialog to a clipboard file so it can be accessed later when dealing with support (if needed).

Chapter 6 Active KVM Client (AKC) Help

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Overview

The Active KVM Client (AKC) is based on Microsoft Windows .NET® technology.

This allows you to run the client in a Windows environments without using the Java® Runtime Environment (JRE), which is required to run Raritan's Virtual KVM Client (VKC).

AKC is the default KX III client on Windows platforms, and it also works with CC-SG.

AKC provides the same features as VKC with the exception of the following:

- Keyboard macros created in AKC cannot be used in VKC
- Direct port access configuration (see [Enabling Direct Port Access via URL](#))
- AKC server certification validation configuration (see ***Prerequisites for Using AKC*** (on page 87))
- AKC automatically loads favorites, VKC does not. See ***Managing Favorites*** (on page 110)

For details on using the features, see ***Virtual KVM Client (VKC) Help*** (see "***Virtual KVM Client (VKC and VKCs) Help***" on page 40).

Recommended Minimum Active KVM Client (AKC) Requirements

Raritan recommends the Active KVM Client (AKC) machines meet the following minimum requirements for use with KX III.

- Client machine with either a -
 - 'modern' dual-core CPU for a single connections, or

- 'modern' quad core CPU for two or more simultaneous connections
- 4GB of RAM

AKC Supported Microsoft .NET Framework

The Active KVM Client (AKC) requires Windows .NET® version 4.0 or 4.5.

AKC Supported Operating Systems

When launched from Internet Explorer®, the Active KVM Client (AKC) allows you to reach target servers via the KX III.

AKC is compatible with the following platforms:

- Windows XP® operating system
- Windows Vista® operating system (up to 64 bit)
- Windows 7® operating system (up to 64 bit)
- Windows 8® operating system (up to 64 bit)
- Windows 10® operating system (up to 64 bit)

Note: You must be using Windows 7 if WINDOWS PC FIPs is turned on and you are accessing a target using AKC and a smartcard.

Since .NET is required to run AKC, if you do not have .NET installed or you have an unsupported version of .NET installed, you will receive a message instructing you to check the .NET version.

Note: Raritan recommends Windows XP® operating system users verify you have a working version of .NET 4.0 or 4.5 already installed before you launch AKC. If you do not verify your .NET version is working, you may be prompted to download a file versus receiving the default message to check your .NET version.

AKC Supported Browsers

- Internet Explorer® 10 (and later)
- Chrome on Windows platforms. You must have the Chrome ClickOnce plugin installed.

Prerequisites for Using AKC

Allow Cookies

Ensure the cookies from the IP address of the device that is being accessed are not currently being blocked.

Include KX III IP Address in 'Trusted Sites Zone'

Windows Vista®, Windows® 7 and Windows 2008 server users should ensure that the IP address of the device being accessed is included in their browser's Trusted Sites Zone.

Disable 'Protected Mode'

Windows Vista®, Windows® 7 and Windows 2008 server users should ensure that Protected Mode is not on when accessing the Raritan device.

Enable AKC Download Server Certificate Validation

If the Raritan device (or CC-SG) administrator has enabled the Enable AKC Download Server Certificate Validation option:

- 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.

Proxy Server Configuration for Use with VKC, VKCS, and AKC

When the use of a Proxy Server is required, a SOCKS proxy must also be provided and configured on the remote client PC.

Note: If the installed proxy server is only capable of the HTTP proxy protocol, you cannot connect.

► To configure the SOCKS proxy:

1. On the remote client PC, select Control Panel > Internet Options.
 - a. On the Connections tab, click 'LAN settings'. The Local Area Network (LAN) Settings dialog opens.
 - b. Select 'Use a proxy server for your LAN'.
 - c. Click Advanced. The Proxy Settings dialog opens.
 - d. Configure the proxy servers for all protocols.

IMPORTANT: Do not select 'Use the same proxy server for all protocols'.

Note: The default port for a SOCKS proxy (1080) is different from HTTP proxy (3128).

- e. Click OK at each dialog to apply the settings.
2. Next, configure the proxy settings for the Java™ applets:
 - a. Select Control Panel > Java.
 - b. On the General tab, click Network Settings. The Network Settings dialog opens.
 - c. Select "Use Proxy Server".
 - d. Click Advanced. The Advanced Network Settings dialog opens.
 - e. Configure the proxy servers for all protocols.

IMPORTANT: Do not select 'Use the same proxy server for all protocols'.

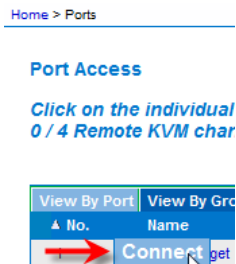
Note: The default port for a SOCKS proxy (1080) is different from HTTP proxy (3128).

Connect to a Target from Virtual KVM Client (VKC), Standalone VKC (VKCs), or Active KVM Client (AKC)

Once you have logged on to the KX III Remote Console, access target servers via the Virtual KVM Client (VKC), Standalone VKC (VKCs), or Active KVM Client (AKC).

► To connect to an available server:

1. On the Port Access page, click on the port name of the target server you want to connect to. The Port Action menu opens.
2. Click Connect.



See **Port Action Menu** (on page 25) for details on additional available menu options.

Chapter 7 Dominion KX III User Station

To use a standalone appliance for remote access to KX III target servers instead of using the VKC or AKC clients on a PC or laptop, purchase Dominion User Stations from Raritan. The User Station is perfect for environments like labs, studios and control rooms where a PC or laptop is not wanted.

This chapter provides a brief introduction to the User Station. For detailed information, refer to the user documentation from the User Station's section on the Raritan website's **Support page** (<http://www.raritan.com/support/>).

In This Chapter

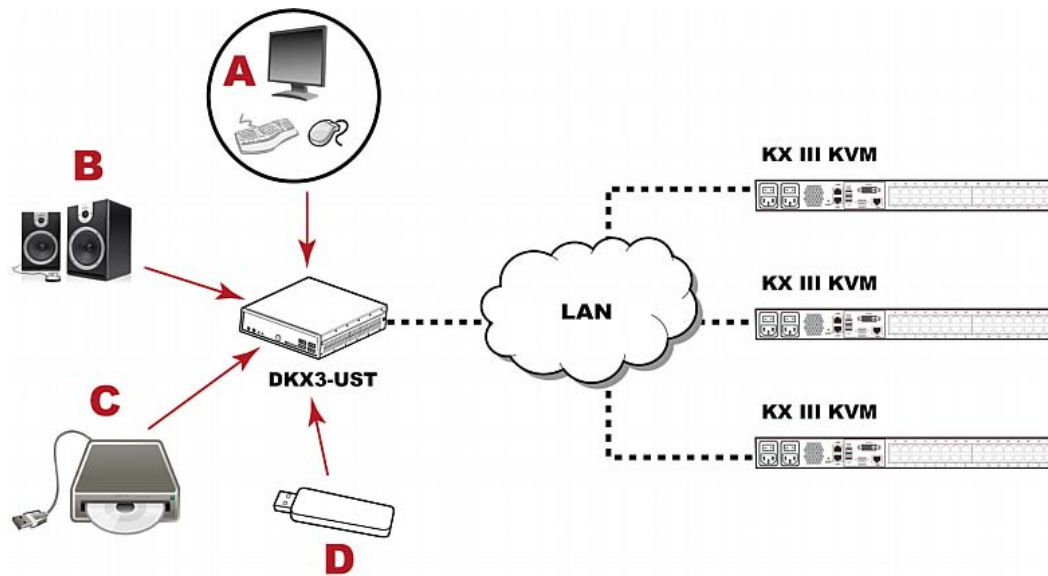
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Overview

The Dominion User Station (DKX3-UST) is designed to access servers and computer devices connected to KX III's from your LAN/WAN networks. ALL KX III models are supported. KX III Release 3.2 and above is required.

One User Station can access the servers connected to multiple KX III's so that you can easily access a large number of servers with a single click.

Note that the User Station does NOT support the access to a target server which is from a tiered KX III or a blade server. Use VKC or AKC clients to access such targets instead.



A	A USB Keyboard, USB mouse, and one or two HDMI- or DisplayPort-interfaced monitors
B	Analog or digital audio appliances
C	External drives as virtual media, such as CD-ROM
D	USB drives for virtual media or User Station software update

User Station Photo and Features

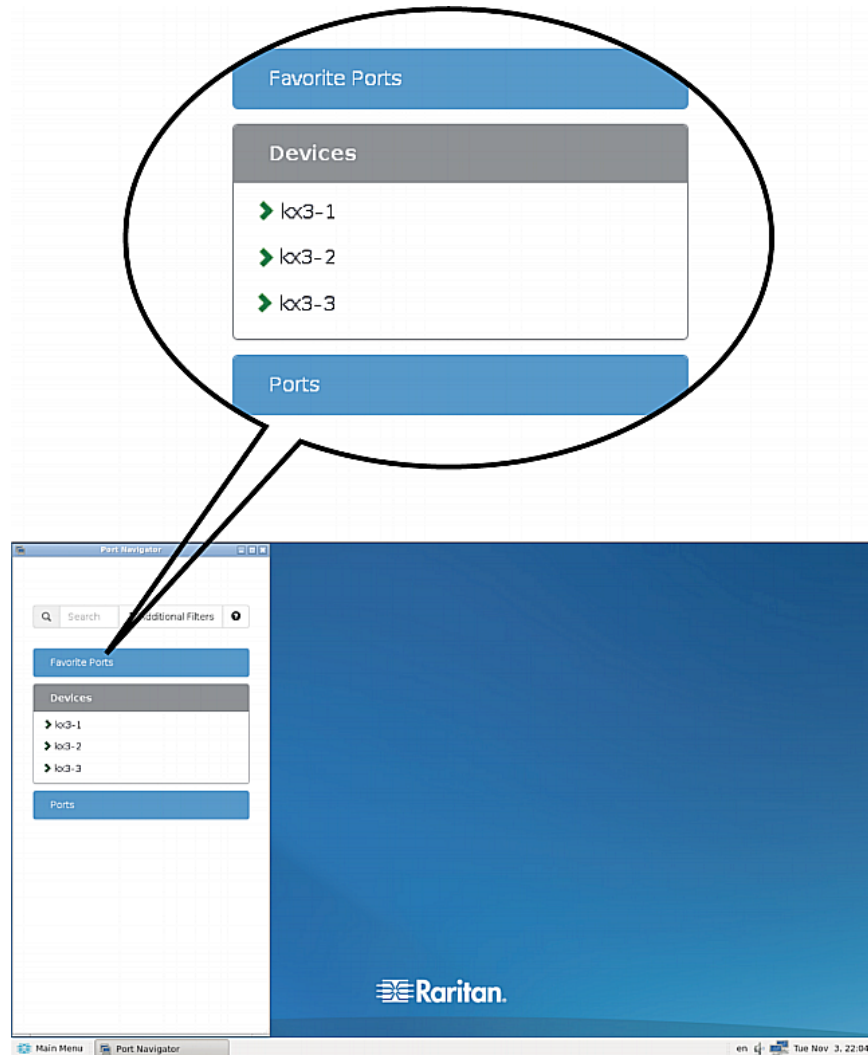


- Supports single or dual monitors
- Two 1080p streaming video sessions at 30 FPS
- Supports VGA, DVI, HDMI and DisplayPort video
- Favorites and hot-key switching
- Access hundreds of servers
- Ultra-fast connections and sub-second switching with the non-blocking DKX3-808 model
- Dual Gigabit Ethernet ports
- Self-contained, low maintenance appliance
- Desktop, rack and VESA mountable

Operating the User Station

1. Have the required equipment properly connected to the User Station.
 - a. Power OFF all devices.
 - b. Connect a USB keyboard, mouse and one or two monitors to the User Station.
 - c. Connect the User Station to the LAN/WAN network.
2. Power on and log in to the User Station.
 - For initial login, use Raritan's default username and password: admin and raritan.
3. Add KX III's data. See **Logging In to KX III** (on page 18).

4. The added KX III's are displayed in the Port Navigator window.



5. Click a KX III to show a list of its servers.
6. Click a target server, and a KVM Client opens, showing the target video. Now you can control the target with the attached keyboard and mouse.

For detailed information, refer to the user documentation from the User Station's section on the Raritan website's **Support page** (<http://www.raritan.com/support/>).

Chapter 8 Mobile KVM Client (MKC) Help

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Remotely Access Targets Using a Mobile Device

KX III supports remote access to targets from Apple® iPad® and iPhone® with IOS 4.0 (or later).

Mobile access is provided through Mobile Access Client, which requires the use of CommandCenter Secure Gateway (CC-SG).

Access and power control of your targets is supported using the Mobile KVM Client (MKC).

MKC launches automatically from mobile devices. There is no configuration or selection of MKC required. See **Connect to a Target Using the Mobile KVM Client** (on page 94)

You connect to each interface using the same links as when accessing from PC. When MKC opens, use the touch screen equivalent to each mouse click operation for navigating. See **Touch Mouse Functions** (on page 94).

The mobile device does not provide file storage for keyboard macros, so keyboard macros that you have created and would like to use in MKC can be stored on CC-SG with your profile data. You must import user-defined keyboard macros, using the desktop Access Client, before they will be available in MKC. See **Manage Mobile Client Keyboard Macros** (on page 99).

Connect to a Target Using the Mobile KVM Client

Mobile access using the Mobile Access Client requires the use of CommandCenter Secure Gateway (CC-SG).

Enable pop-ups in your mobile device browser before accessing Mobile KVM Client (MKC) or CC-SG Mobile Access Client.

MKC does not support connections over IPv6.

► **To connect to a target via KX III on a mobile device:**

1. Login to the Access Client using your mobile device browser.
2. Touch the node you want to access in the node list, then touch the blue interface link in the Node Profile to the right.
3. The Mobile KVM Client opens and connects to the target.

Touch Mouse Functions

Use the touchscreen equivalent for each mouse function to navigate the Mobile KVM Client (MKC) on your mobile device.

To view this chart in MKC, touch the Help icon (?) in the MKC toolbar.

Single Finger Touch	Mouse Equivalent
touch down - move - release	move mouse pointer
short tap	left click
double short tap	left double-click
short tap - touch down - move - release	hold down left mouse button and move, as in drag and drop or select
Two Finger Touch	Mouse Equivalent
touch down - move - release	move screen
touch down - change distance - release	resize screen (short pause at 100% zoom)
short tap	right click
double short tap	right double-click
short tap - touch down - move - release	hold down right mouse button and move, as in right drag and drop

Using the MKC Toolbar

The MKC toolbar may not be completely visible at one time, depending on the resolution of your mobile device.

► **To view the whole toolbar:**

- Touch and swipe to move the toolbar icons to the left and right, bringing different icons into view.

► **To use the keyboard button icons:**

The toolbar contains icons for each keyboard button you may need. Touch and swipe left and right to view all icons.

- Touch an icon for a button press.
- For a button hold, such as for Control and Alt used in Control+Alt+Delete, touch the icon once to activate it. The icon color will darken to indicate it is currently pressed. To release the icon, touch again.

MKC Toolbar Icons

Depending on your mobile device screen size and resolution, you may not see all toolbar icons at once. For example, on tablet device, such as an iPad you may see F4 as the final icon to the right.



Touch and swipe the toolbar to the left, to view the F5 through F12 icons. Swipe the toolbar back to the right to return to the default view.

On a mobile phone device, such as an iPhone, you will see fewer icons. Use the same touch-and-swipe motion left and right to view additional icons.

► **Keyboard Icon**

Provides access to the mobile device's native soft keyboard. See ***Display Mobile Device Keyboard*** (on page 97).

► **Shift (SHIFT) - Control (CTRL) - Alternate (ALT)**

Provide the modifier keys to be used together with other keys on the toolbar. See ***Using the MKC Toolbar*** (on page 95).

► **Windows (WIN)**

Provides access to the Windows Start menu. This is the equivalent of the Windows key on a standard Windows keyboard.

► **Application Key or "Right-Click" Key**

Provides access to a right-click menu. This is the equivalent of the Application key on a standard Windows keyboard. The Application key has an image of a mouse pointer on a menu, and it is positioned between the Alt and Ctrl keys to the right of the spacebar.

Touch the Application icon to display the selected item's right-click menu.

► **Left Arrow, Up Arrow, Down Arrow, Right Arrow**

Provide document navigation.

► **Tab (TAB) - Escape (ESC) - Delete (DEL) - Function 1 (F1) thru Function 12 (F12)**

Provide standard press and release key operation.

Display Mobile Device Keyboard

Toggle on and off the MKC keyboard to display or hide it.

The keyboard is configured on the mobile device. For example, on iPad choose Settings > General > Keyboard > International Keyboards to see the available keyboards or to add a keyboard. From the soft keyboard touch the globe icon to toggle between available keyboards.

► **To display/hide mobile device keyboard:**

- In the MKC toolbar, touch the keyboard icon, next to the Menu button to display the keyboard.
- In the keyboard, touch the icon in the bottom right corner to hide the keyboard.

Display Connection Info

Display information about your connection to see how much bandwidth is being used in transmitting and receiving data.

This information can be helpful in determining how much of the available bandwidth is being consumed, the effect of selecting a lower video quality setting, or for troubleshooting if image updates are slower than expected. See **Set Video Connection Quality** (on page 101).

Incoming	kpx/s	pixel updates per second
	kB/s	bytes per second
Outgoing	msg/s	messages per second
	kB/s	bytes per second

► **To display connection info:**

- In the MKC toolbar, touch Menu, then touch Connection Info.

The connection information appears in the viewer.

To turn off the connection information display, touch Menu, then touch Connection Info. The display toggles off.

Set Keyboard Type

The default keyboard in MKC is US/International English. Select the language keyboard to match the language keyboard setting of the target you are accessing. This is required to provide the correct keyboard mapping in the target.

You must correctly set the keyboard type in MKC based on the language mapping required by the target. This setting is in addition to the keyboard language setting on your mobile device itself.

► **To set keyboard type:**

1. In the MKC toolbar, touch Menu, then touch Keyboard Type.
2. Touch the keyboard language to set it.

Keyboard Languages

- Danish (Denmark)
- English (UK)
- English (US/Int'l)
- French (Belgium)
- French (France)
- German (Germany)
- German (Switzerland)
- Hungarian
- Italian (Italy)
- Japanese
- Korean (Korea)
- Norwegian (Norway)
- Portuguese (Portugal)
- Slovenian
- Spanish (Spain)
- Swedish (Sweden)

Manage Mobile Client Keyboard Macros

Each user must import their user-defined keyboard macros to make them available for use while connected to targets using the Mobile KVM Client (MKC).

Export the file from Virtual KVM Client (VVC), then import it using the desktop Access Client. You cannot import macros using a mobile device. Imported macros are available per user in MKC when you connect to a target using your mobile device.

Launch Keyboard Macro

Pre-defined macros are always available in MKC. You must import user-defined macros using the desktop Access Client before they are available on MKC. See **Manage Mobile Client Keyboard Macros** (on page 99).

SUN macros are available in MKC if you are connected to a target that has the SUN CIM.

► **To launch keyboard macro:**

1. In the MKC toolbar, touch Menu, then touch Keyboard Macros.
2. Touch the macro you want to launch.

The macro is launched and the results display on the target.

Set Mouse Mode

When controlling a target server, the MKC displays two mouse cursors: a red bullseye indicates where the mobile touch gestures are relative to the target, and the cursor that belongs to the target server.

Single mouse mode is not available in MKC.

Your mouse will operate in dual mouse mode only. When properly configured, the two mouse cursors align.

There are several mouse modes when in dual mouse mode. Mouse modes are available based on the attached CIM and selected USB profile.

- See **Absolute Mouse Mode** (on page 100).
- See **Intelligent Mouse Mode** (on page 100).
- See **Standard Mouse Mode** (on page 100).

► **To set mouse mode:**

1. In the MKC toolbar, touch Menu, then touch Mouse.

2. Touch Mouse Mode, then touch Absolute, Intelligent, or Standard.

Absolute Mouse Mode

In this mode, absolute coordinates are used to keep the client and target cursors in synch, even when the target mouse is set to a different acceleration or speed.

This mode is supported on servers with USB ports and is the default mode for virtual media CIMs.

Absolute Mouse Synchronization requires the use of a virtual media CIM -

- D2CIM-VUSB
- D2CIM-DVUSB
- D2CIM-DVUSB-DVI
- D2CIM-DVUSB-HDMI

D2CIM-DVUSB-DP

Note: For KX II, Absolute Mouse Synchronization is available for use with the virtual media-enabled USB CIM (D2CIM-VUSB and D2CIM-DVUSB) only.

Intelligent Mouse Mode

In Intelligent Mouse mode, the device can detect the target mouse settings and synchronize the mouse cursors accordingly, allowing mouse acceleration on the target. Intelligent mouse mode is the default for non-VM targets.

During synchronization, the mouse cursor does a “dance” in the top left corner of the screen and calculates the acceleration. For this mode to work properly, certain conditions must be met.

See the Dominion KXII User Guide for more details on Intelligent Mouse mode.

Standard Mouse Mode

Standard Mouse mode uses a standard mouse synchronization algorithm. The algorithm determines relative mouse positions on the client and target server.

In order for the client and target mouse cursors to stay in synch, mouse acceleration must be disabled. Additionally, specific mouse parameters must be set correctly.

Sync Mouse in Intelligent or Standard Mouse Mode

In Intelligent or Standard mouse mode, the Sync Mouse command forces realignment of the target server mouse pointer with the MKC mouse pointer.

► **To sync mouse:**

1. In the MKC toolbar, touch Menu, then touch Mouse.
2. Touch Sync Mouse. Wait several seconds while the synchronization occurs.

Auto-Sense Video Settings

The Auto-sense Video Settings command forces a re-sensing of the video settings (resolution, refresh rate) and redraws the video screen.

Auto-sensing video settings can eliminate target video misalignment and sometimes mouse synchronization problems.

► **To auto-sense video settings:**

1. In the MKC toolbar, touch Menu, then touch Video.
2. Touch Auto Sense Video Settings.

Set Video Connection Quality

Adjust the bandwidth consumed by the connection by setting the video connection quality. A lower quality setting will consume less bandwidth by providing lower video quality.

Use the connection information display to get bandwidth information to help adjust the video connection quality. See **Display Connection Info** (on page 97).

► **To set video connection quality:**

1. In the MKC toolbar, touch Menu, then touch Video.
2. Touch Connection Quality Settings, then touch High, Medium, or Low. The default setting is High.

View MKC Help

Descriptions of the touchscreen techniques can be accessed in MKC.

► **To view MKC help:**

- Touch the Help icon (?) icon in the toolbar. The help opens.
- See ***Touch Mouse Functions*** (on page 94) to view this information.

Scanning Ports - Remote Console

Use the port scanning feature to search for selected targets and display them in individual thumbnails as part of a slide show.

This feature allows you to monitor up to 32 targets at one time since you can view each target server individually as it is displayed during the slide show.

Connect to targets or focus on a specific target as needed.

Scans can include standard targets, blade servers, tiered Dominion devices, and KVM switch ports.

For dual video port groups, the primary port is included in a port scan, but the secondary port is not included when connecting from a remote client. Both ports can be included in the scan from the Local Port.

Note: The scan port feature is available from the Remote Console and Local Console, but the feature varies slightly.

Scanning Ports Slide Show - Remote Console

When you start a scan, the Port Scan window opens.

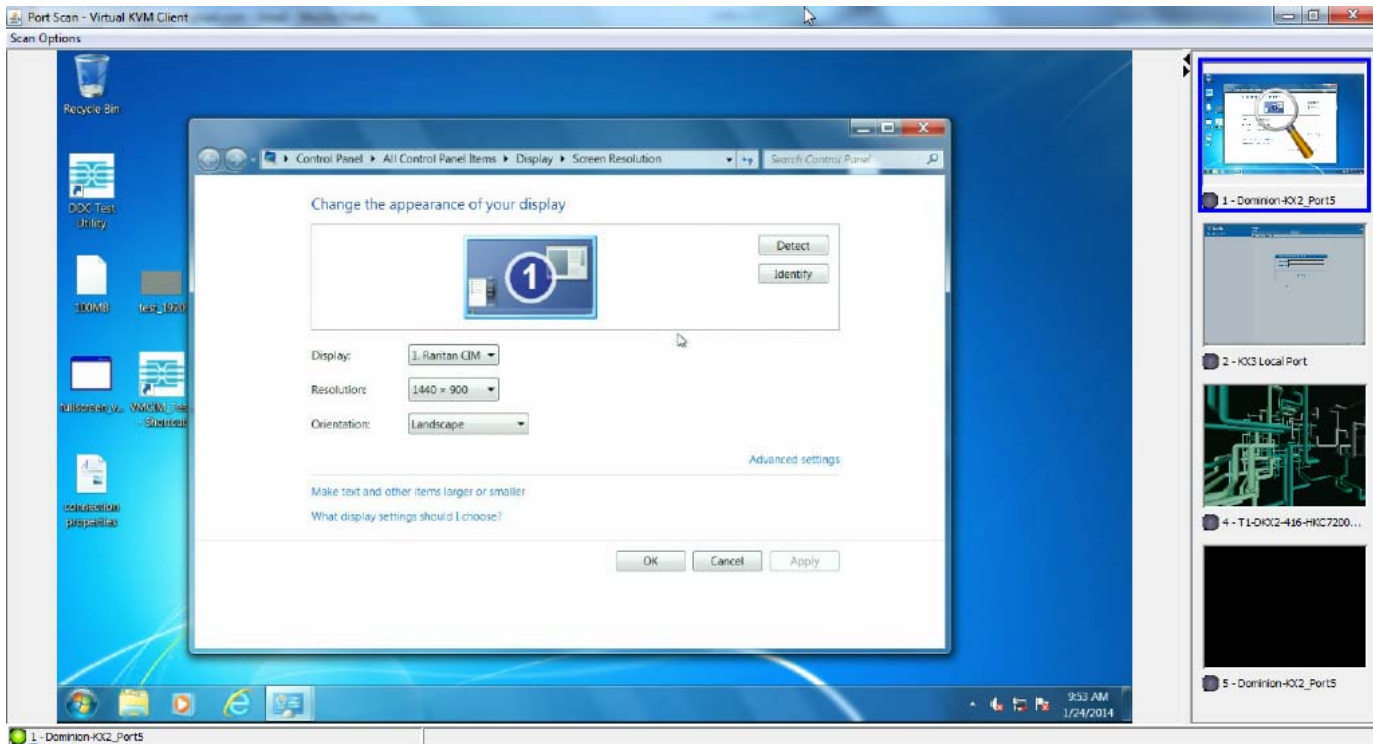
As each target is found, it is displayed as a thumbnail in a slide show.

The slide show scrolls through the target thumbnails based on the default interval of 10 seconds or according to the interval you specify.

As the scan scrolls through the targets, the target that is the focus of the slide show displays in the center of the page.

The name of the target is displayed below its thumbnail and in the task bar at the bottom of the window.

If a target is busy, a blank screen is displayed instead of the target server access page.



Configure scan settings for the Remote Console from VKC, VKCS, or AKC.

See **Configuring Port Scan Settings in VKC/VKCS and AKC** (on page 67)

*Note: Scan port settings for the Local Console are configured on the Local Port Settings page. See **Scanning Ports - Local Console** (on page 119)*

Target Status Indicators During Port Scanning - Remote Console

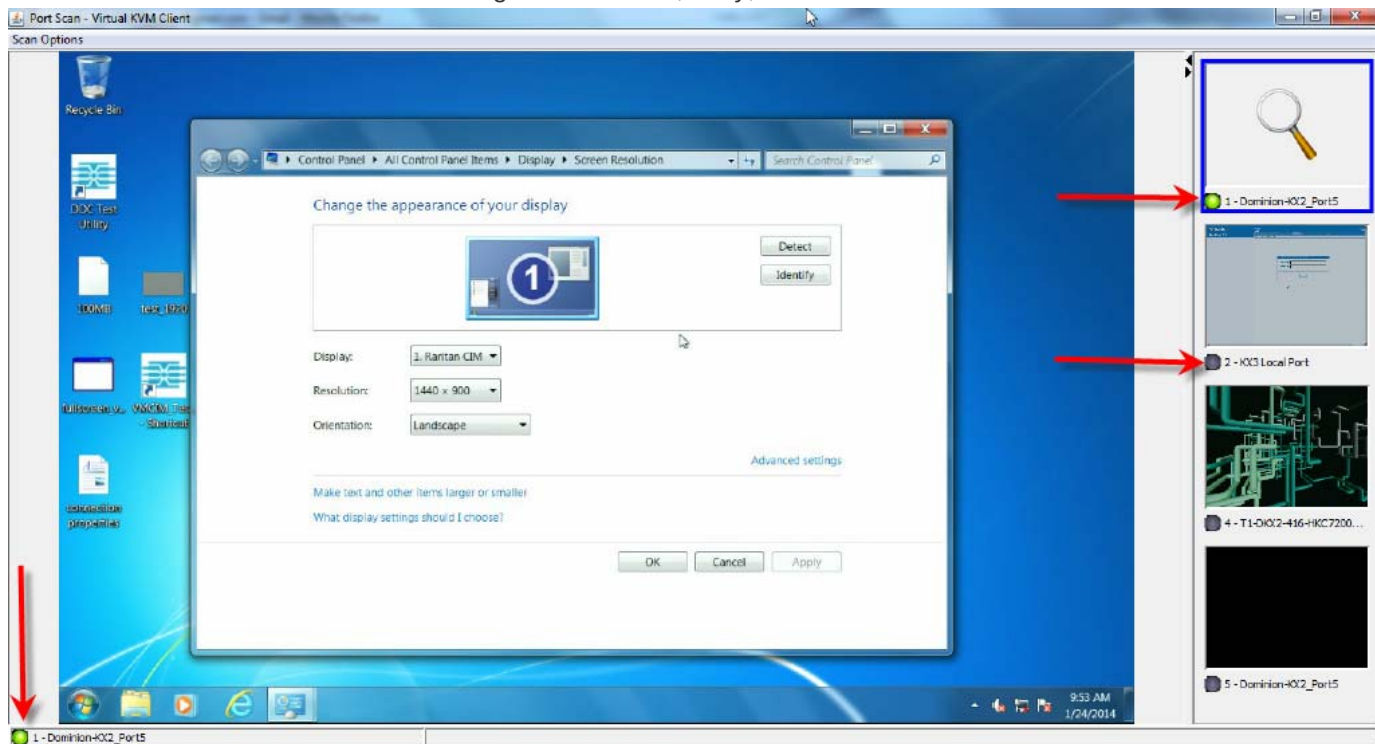
The status of each target is indicated by green, yellow and red lights that are displayed below the target thumbnail.

As the target is the focus of the rotation, the indicator is in the task bar also shows the status.

Lights for each target are gray until they are the focus of the slide show.

The status lights indicate the following:

- Green - the target is up/idle or up/connected
- Yellow - the target is down but connected
- Red - the target is down/idle, busy, or otherwise not accessible



Using Scan Port Options

Following are options available to you while scanning targets.

With the exception of the Expand/Collapse icon, all of these options are selected from the Options menu in the upper left of the Port Scan viewer.

The options will return to their defaults when you close the window.

*Note: Configure scan settings such as the display interval from either the Virtual KVM Client (VKC) or Active KVM Client (AKC). See **Configuring Port Scan Settings in VKC/VKCS and AKC** (on page 67)*

► Hide or View Thumbnails

- Use the Expand/Collapse icon  at the upper left of the window to hide or view thumbnails. Expanded is the default view.

► Pause the Thumbnail Slide Show

- Pause thumbnails from rotating between one target and the next by selecting Options > Pause. Rotating thumbnails is the default setting.

► Resume the Thumbnail Slide Show

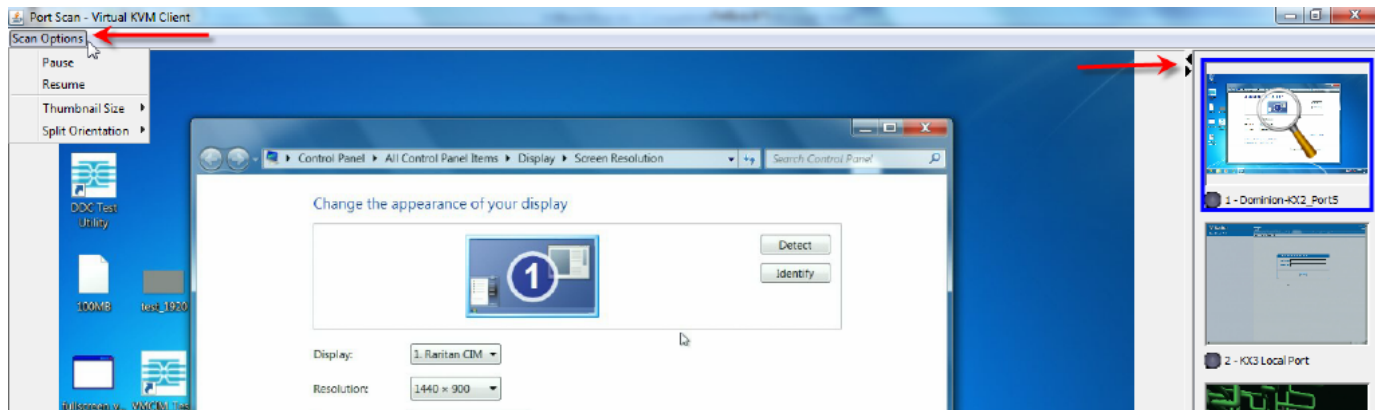
- Resume the thumbnail rotation by selecting Options > Resume.

► Size the Thumbnails in the Port Scan Viewer

- Enlarge the size of the thumbnails by selecting Options > Size > 360x240.
- Minimize the size of the thumbnails by selection Options > Size > 160x120. This is the default thumbnail size.

► Change the Orientation of the Port Scan Viewer

- View thumbnails along the bottom of the Port Scan viewer by selecting Options > Split Orientation > Horizontal.
- View thumbnails along the right of the Port Scan viewer by selecting Options > Split Orientation > Vertical. This is the default view.

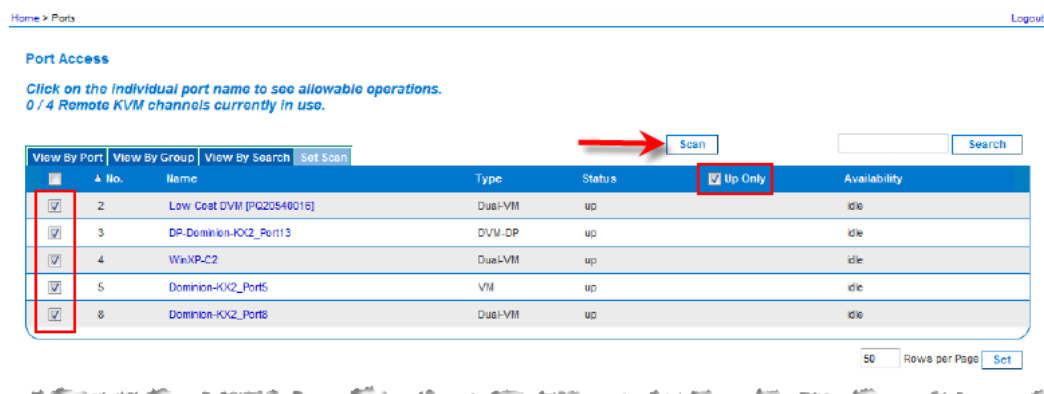


Scan for Targets

► To scan for targets:

1. Click the Set Scan tab on the Port Access page.
2. Select the targets you want to include in the scan by selecting the checkbox to the left of each target, or select the checkbox at the top of the target column to select all targets.
3. Leave the Up Only checkbox selected if you only want targets that are up to be included in the scan. Deselect this checkbox if you want to include all targets, whether up or down.
4. Click Scan to begin the scan.

As each target is scanned, it is displayed in slide show view on the page.



5. Click Options > Pause to pause the slide show and stop it from moving between targets, click Options > Resume to resume the slide show.
6. Click on a target thumbnail to scan it next.
7. Connect to a target by double clicking on its thumbnail.

Changing a Password

► **To change your KX III password:**

1. Choose User Management > Change Password. The Change Password page opens.
2. Type your current password in the Old Password field.
3. Type a new password in the New Password field. Retype the new password in the Confirm New Password field. Passwords can be up to 64 characters in length and can consist of English alphanumeric characters and special characters.
4. Click OK.
5. You will receive confirmation that the password was successfully changed. Click OK.

Note: If strong passwords are in use, this page displays information about the format required for the passwords. For more information about passwords and strong passwords, see Strong Passwords in online help.

Home > User Management > Change Password

Change Password

Old Password

New Password

Confirm New Password

OK

Cancel

Managing Favorites

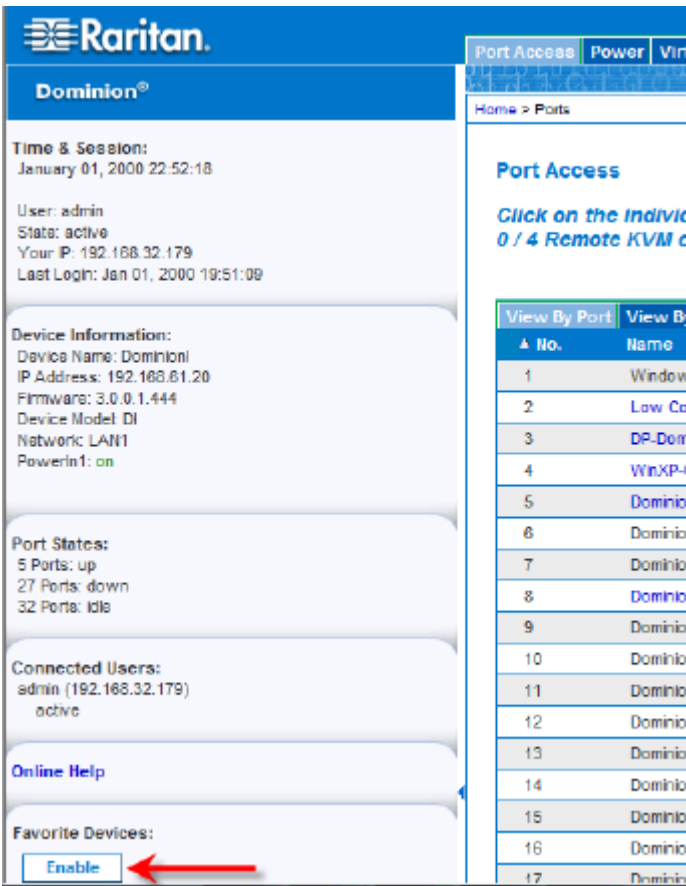
A Favorites feature is provided so you can organize and quickly access the devices you use frequently.

The Favorite Devices section is located in the lower left sidebar of the Port Access page and provides the ability to:

- Create and manage a list of favorite devices
- Quickly access frequently-used devices
- List your favorites either by Device Name, IP Address, or DNS hostname
- Discover KX III devices on its subnet
- Retrieve discovered KX III devices from the connected Dominion device

Enable Favorites

- Click Enable in the Favorite Devices section of the left panel of the KX III interface.



Access and Display Favorites

► **To access a favorite KX III devices:**

- Click on a KX III listed beneath Favorite Devices in the left of the Remote Console.

► **To display favorite KX IIIs by name:**

- Click Display by Name.

► **To display favorite KX IIIs by IP Address:**

- Click Display by IP.

► **To display favorite KX IIIs by the host name:**

- Click Display by Host Name.



Discovering Devices on the Local Subnet

This option discovers KX III devices on your local subnet. This is the subnet where the KX III Remote Console is running.

These devices can be accessed directly from this page or you can add them to your list of favorites.

► **To discover devices on the local subnet:**

1. Choose Manage > Discover Devices - Local Subnet. The Discover Devices - Local Subnet page appears.
2. Choose the appropriate discovery port:
 - To use the default discovery port, select the Use Default Port 5000 checkbox.
 - To use a different discovery port:
 - a. Deselect the Use Default Port 5000 checkbox.
 - b. Type the port number in the Discover on Port field.

- c. Click Save.
3. Click Refresh. The list of devices on the local subnet is refreshed.

► **To add devices to your Favorites List:**

1. Select the checkbox next to the device name/IP address.
2. Click Add.

► **To access a discovered device:**

- Click the device name or IP address for that device. A new browser opens to that device.

Discovering Devices on the KX III Subnet

This option discovers KX III devices on the device subnet. This is the subnet of the KX III device's IP address.

You can access these devices directly from the Subnet page or add them to your list of favorites.

This feature allows multiple KX III devices to interoperate and scale automatically.

The KX III Remote Console automatically discovers the KX III devices, and any other Raritan device, in the subnet of the KX III.

► **To discover devices on the device subnet:**

1. Choose Manage > Discover Devices - KX III Subnet.



The Discover Devices - KX III Subnet page appears.

2. Click Refresh. The list of devices on the local subnet is refreshed.

► **To add devices to your Favorites List:**

1. Select the checkbox next to the device name/IP address.
2. Click Add.

► **To access a discovered device:**

- Click the device name or IP address for that device. A new browser opens to that device.

Chapter 10 KX III Local Console

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Overview

The Local Console interface provides access to the KX III while at the rack.

This section contains help on tasks performed by end users at the Local Console.

Accessing a Target Server

► **To access a target server:**

1. Click the Port Name of the target you want to access. The Port Action Menu is displayed.
2. Choose Connect from the Port Action menu. The video display switches to the target server interface.

Local Console Video Resolution Behavior

By default, monitors are typically set to the highest resolution they support.

Once a monitor is connected to the KX III Local Console, KX III detects the monitor's native resolution. As long as the native resolution is supported by the Local Console, KX III uses that resolution.

If the native resolution is not supported by the Local Console, and no other resolution is supported by the monitor and Local Console, KX III uses the resolution of the last monitor that was connected to the Local Console.

For example, you connect a monitor set to a resolution of 1600x1200@60Hz to the KX III Local Console. KX III uses that resolution since it is supported by the Local Console.

If the next monitor you connect to the Local Console is not set to a supported resolution, KX III uses the resolution of 1024x768@60.

For a list of supported Local Console video resolutions, see **Supported KX III Local Port DVI Resolutions** (see "KX III Supported Local Port DVI Resolutions" on page 144).

Consider reviewing **Video Mode and Resolution Notes** (on page 175) for additional information.

Simultaneous Users

The KX III Local Console provides an independent access path to the connected KVM target servers.

Using the Local Console does not prevent other users from simultaneously connecting over the network. And even when remote users are connected to the KX III, you can still simultaneously access your servers from the rack via the Local Console.

Local Port Hot Keys and Connect Keys

Because the KX III Local Console interface is completely replaced by the interface for the target device you are accessing, a hot key is used to disconnect from a target and return to the local port GUI.

A connect key is used to connect to a target or switch between targets.

The Local Port hot key allows you to rapidly access the KX III Local Console user interface when a target device is currently being viewed.

See Select the Local Port Hotkey and Select the Local Port Connect Key for more information.

Return to the Local Console from a Target Device - Default Hot Key

- Press the Scroll Lock hot key twice rapidly

The video display switches from the target device interface to the KX III Local Console interface.

Local Port Auto-Sense (Video Refresh) - Default Hot Key

► **To perform an auto-sense (video refresh) on the KX III local port via hot key:**

- Press and hold the Shift key, and quickly press the Scroll Lock key twice, and then release.

Connect Key Examples**Standard servers**

Connect key action	Key sequence example
Access a port from the local port	Press Left ALT > Press and Release 5 > Release Left ALT
Switch between ports	Press Left ALT > Press and Release 1 > Press and Release 1 > Release Left ALT
Disconnect from a target and return to the local port	Double-click Scroll Lock

Blade chassis

Connect key action	Key sequence example
Access a port from the local port GUI	Access port 5, slot 2: Press Left ALT > Press and Release 5 > Press and Release - > Press and Release 2 > Release Left ALT
Switch between ports	Switch from target port 5, slot 2 to port 5, slot 11: Press Left ALT > Press and Release 5 > Press and Release - > Press and Release 1 > Press and Release 1 > Release Left ALT
Disconnect from a target and return to the local port GUI	Disconnect from target port 5, slot 11 and return to the local port GUI (the page from which you connected to target): Double Click Scroll Lock

Special Sun Key Combinations

The following key combinations for Sun™ Microsystems server's special keys operate on the Local Console port. These special keys are available from the Keyboard menu when you connect to a Sun target device:

Sun key	Local port key combination
Again	Ctrl+ Alt +F2
Props	Ctrl + Alt +F3
Undo	Ctrl + Alt +F4
Stop A	Break a
Front	Ctrl + Alt + F5
Copy	Ctrl + Alt + F6
Open	Ctrl + Alt + F7
Find	Ctrl + Alt + F9
Cut	Ctrl + Alt + F10
Paste	Ctrl + Alt + F8
Mute	Ctrl + Alt + F12
Compose	Ctrl+ Alt + KPAD *
Vol +	Ctrl + Alt + KPAD +
Vol -	Ctrl + Alt + KPAD -
Stop	No key combination
Power	No key combination

Scanning Ports - Local Console

Use the port scanning feature to search for selected targets and display them in individual thumbnails as part of a slide show.

This feature allows you to monitor up to 32 targets at one time since you can view each target server individually as it is displayed during the slide show.

Connect to targets or focus on a specific target as needed.

Scans can include standard targets, blade servers, tiered Dominion devices, and KVM switch ports.

For dual video port groups, the primary port is included in a port scan, but the secondary port is not included when connecting from a remote client. Both ports can be included in the scan from the Local Port.

Click on the thumbnail of any target server to exit scan mode and connect to the target, or use the Local Port ConnectKey sequence.

To exit scan mode, click the Stop Scan button in the thumbnail view, or use the DisconnectKey sequence hot key.

*Note: The scan port feature is available from the Remote Console and Local Console, but the feature varies slightly. See **Scanning Ports - Remote Console** (on page 104)*

Scanning Port Slide Show - Local Console

When you start a scan, the Port Scan window opens.

As each target is found, it is displayed as a thumbnail in a slide show.

The slide show scrolls through the target thumbnails based on the default interval of 10 seconds or according to the interval you specify.

As the scan scrolls through the targets, the target that is the focus of the slide show displays in the center of the page.

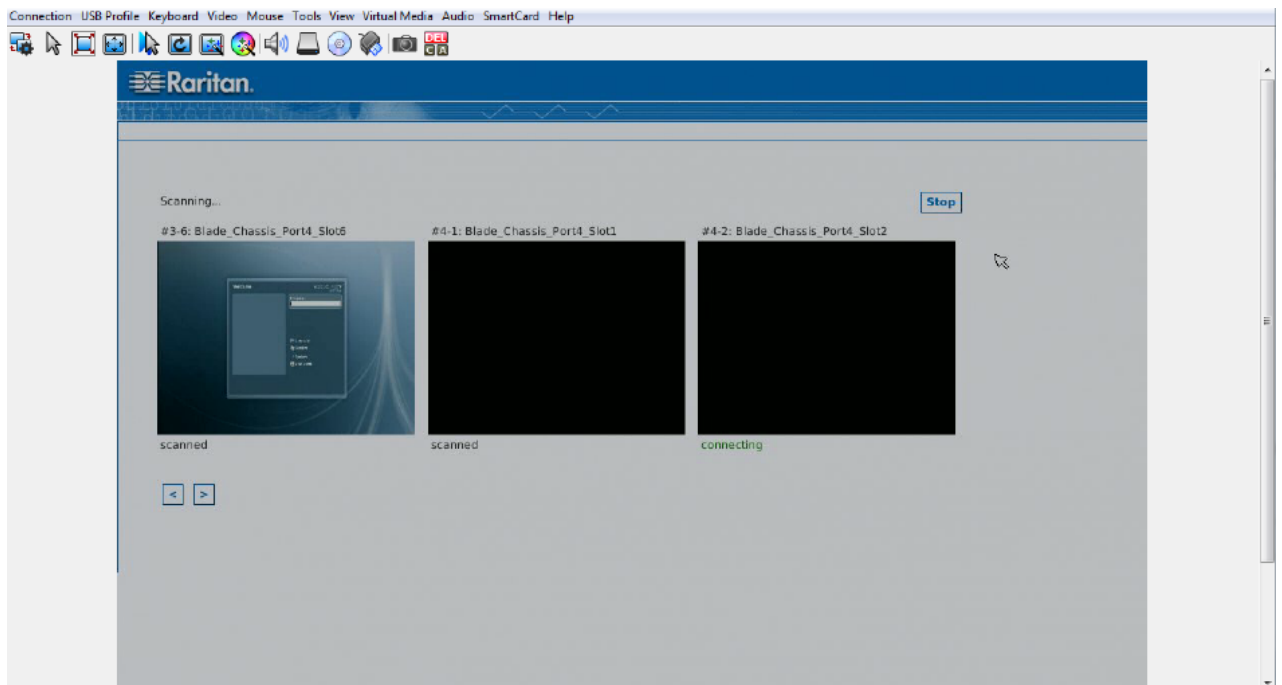
The name of the target is displayed below its thumbnail and in the task bar at the bottom of the window.

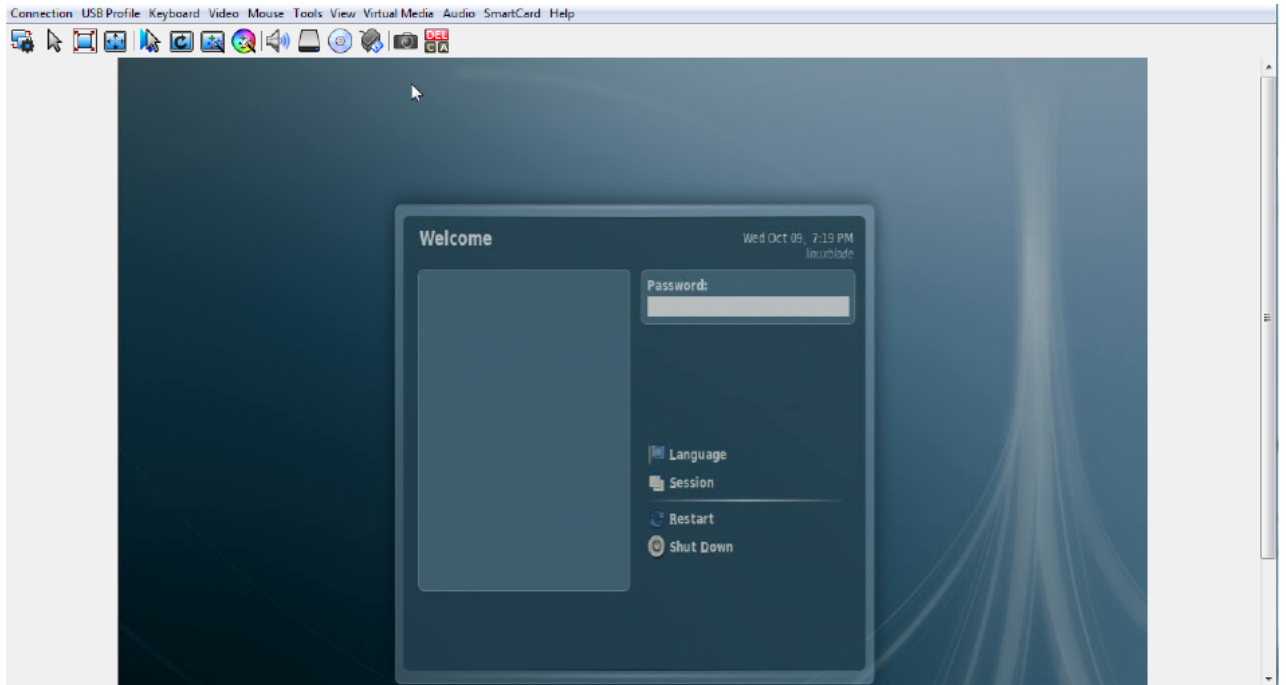
If a target is busy, a blank screen is displayed instead of the target server access page.

Configure the time between the slide show thumbnail rotation and the thumbnail focus interval on the Local Port Settings page.

See **Configure Local Console Scan Settings** (on page 122)

*Note: Configure scan settings for the Remote Console from VKC, VKCS, or AKC. See **Configuring Port Scan Settings in VKC/VKCS and AKC** (on page 67)*



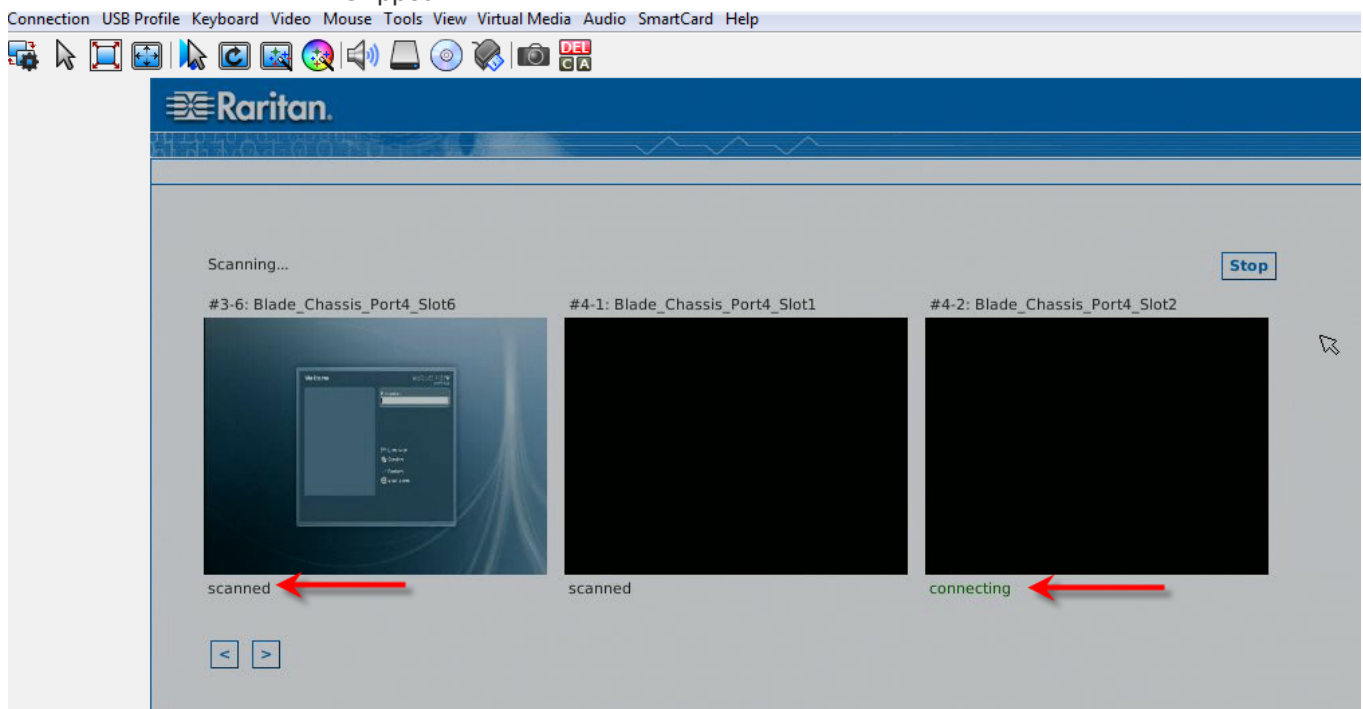


Target Status Indicators During Port Scanning - Local Console

In thumbnail view on the Local Console, the status of each target is indicated below the thumbnail on the page until it is the focus of the slide show view.

The scanning status of each target is displayed as:

- not scanned
- connecting
- scanned
- skipped



Configure Local Console Scan Settings

Do the following to configure Local Console scan port options.

*Note: Configure scan settings for the Remote Console from VKC, VKCS, or AKC. See **Configuring Port Scan Settings in VKC/VKCS and AKC** (on page 67)*

► **To configure the Local Console scan port settings:**

1. On the Local Console, select Device Settings.
2. In the Local Port Settings section, select Local Port Scan Mode.
3. Change the display interval as needed:

- Display Interval - changes the scan display interval.
- Interval Between Ports - change interval between switching different port during scan.

Scan for Targets - Local Console

► To scan for targets:

1. Click the Set Scan tab on the Port Access page.
2. Select the targets you want to include in the scan by selecting the checkbox to the left of each target, or select the checkbox at the top of the target column to select all targets.
3. Leave the Up Only checkbox selected if you only want targets that are up to be included in the scan. Deselect this checkbox if you want to include all targets, whether up or down.
4. Click Scan to begin the scan.

As each target is scanned, it is displayed in slide show view on the page.

Local Console Smart Card Access

To use a smart card to access a server at the Local Console, plug a USB smart card reader into the KX III using one of the USB ports located on the KX III.

Once a smart card reader is plugged in or unplugged from the KX III, the KX III autodetects it.

For a list of supported smart cards and additional system requirements, see **Supported Smart Card Readers** (on page 153), **Unsupported Smart Card Readers** (on page 154) and **Smart Card Minimum System Requirements** (on page 151).

When mounted onto the target server, the card reader and smart card will cause the server to behave as if they had been directly attached.

Removal of the smart card or smart card reader will cause the user session to be locked or you will be logged out depending on how the card removal policy has been setup on the target server OS.

When the KVM session is terminated, either because it has been closed or because you switch to a new target, the smart card reader will be automatically unmounted from the target server.

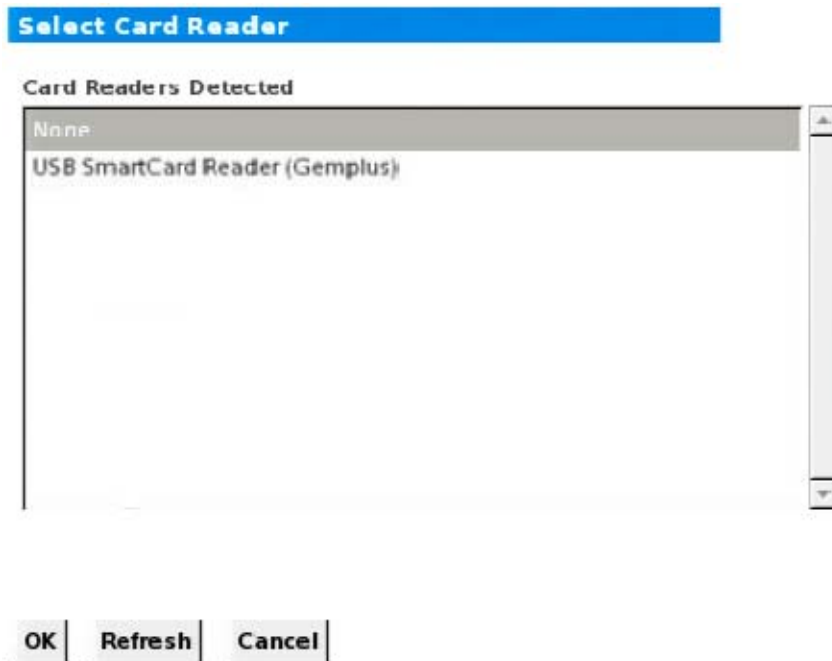
► To mount a smart card reader onto a target via the KX III Local console:

1. Plug a USB smart card reader into the KX III using one of the USB ports located on the device. Once attached, the smart card reader will be detected by the KX III.

2. From the Local Console, click Tools.
3. Select the smart card reader from the Card Readers Detected list. Select None from the list if you do not want a smart card reader mounted.
4. Click OK. Once the smart card reader is added, a message will appear on the page indicating you have completed the operation successfully. A status of either Selected or Not Selected will appear in the left panel of the page under Card Reader.

► **To update the Card Readers Detected list:**

- Click Refresh if a new smart card has been mounted. The Card Readers Detected list will be refreshed to reflect the newly added smart card reader.



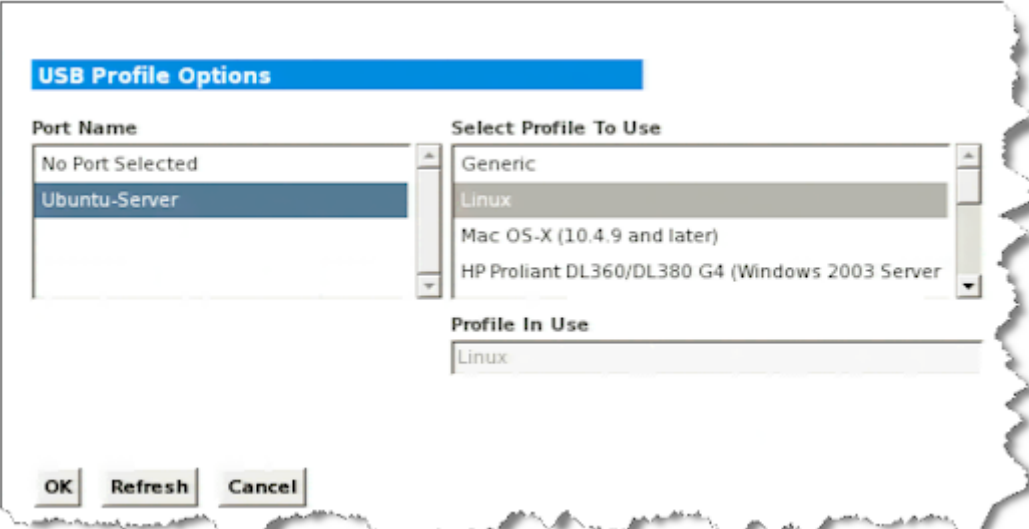
Local Console USB Profile Options

From the USB Profile Options section of the Tools page, you can choose from the available USB profiles.

The ports that can be assigned profiles are displayed in the Port Name field and the profiles that are available for a port appear in the Select Profile To Use field after the port is selected. The profiles selected for use with a port appear in the Profile In Use field.

► **To apply a USB profile to a local console port:**

1. In the Port Name field, select the port you want to apply the USB profile to.
2. In the Select Profile To Use field, select the profile to use from among those available for the port.
3. Click OK. The USB profile will be applied to the local port and will appear in the Profile In Use field.



The screenshot shows a dialog box titled "USB Profile Options". It contains three main sections: "Port Name", "Select Profile To Use", and "Profile In Use".

- Port Name:** A list box with "No Port Selected" and "Ubuntu-Server". "Ubuntu-Server" is selected.
- Select Profile To Use:** A list box with "Generic", "Linux", "Mac OS-X (10.4.9 and later)", and "HP Proliant DL360/DL380 G4 (Windows 2003 Server)". "Linux" is selected.
- Profile In Use:** A text field containing "Linux".

At the bottom of the dialog box are three buttons: "OK", "Refresh", and "Cancel".

KX III Local Console Factory Reset

Note: It is recommended that you save the audit log prior to performing a factory reset.

*The audit log is deleted when a factory reset is performed and the reset event is not logged in the audit log. For more information about saving the audit log, see **Audit Log**.*

► **To perform a factory reset:**

1. Choose Maintenance > Factory Reset. The Factory Reset page opens.
2. Choose the appropriate reset option from the following options:
 - **Full Factory Reset**
Removes the entire configuration and resets the appliance completely to the factory defaults.

Note that any management associations with CommandCenter will be broken.

Because of the complete nature of this reset, you will be prompted to confirm the factory reset.
 - **Network Parameter Reset**
Resets the network parameters of the appliance back to the default values (click Device Settings > Network Settings to access this information).
3. Click Reset to continue. You will be prompted to confirm the factory reset because all network settings will be permanently lost.
4. Click OK proceed. Upon completion, the KX III device is automatically restarted.

Resetting the KX III Using the Reset Button on the Device

On the back panel of the device, there is a Reset button. It is recessed to prevent accidental resets (you need a pointed object to press this button).

The actions that are performed when the Reset button is pressed are defined on the Encryption & Share page. See Encryption & Share.

Note: It is recommended that you save the audit log prior to performing a factory reset.

*The audit log is deleted when a factory reset is performed and the reset event is not logged in the audit log. For more information about saving the audit log, see **Audit Log**.*

► **To reset the device:**

1. Power off the KX III.
2. Use a pointed object to press and hold the Reset button.
3. While continuing to hold the Reset button, power the KX III device back on.
4. Continue holding the Reset button for 10 seconds.



Appendix A Connecting a KX III and Cat5 Reach DVI - Provide Extended Local Port Functionality

In This Chapter

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Overview

An extended local port extends the reach of the local port beyond the rack the KX II is located, for example to another KVM switch.

This can be achieved by configuring a KX III to work with a Raritan Cat5 Reach DVI transmitter and receiver, which are then connected to a remote console or other device.

Once connected to the Cat5 Reach DVI, the KX III can be accessed up 500 feet (152 m) away.

Connecting the KX III to the Cat5 Reach DVI by daisy chaining Ethernet switches extends can extend the KX III's reach up to 3000 feet (914 m).

About the Cat5 Reach DVI

For details on the Cat5 Reach DVI, see the Cat5 Reach DVI online help available on the **Raritan Support page** <http://www.raritan.com/support>.

Contact Raritan (<http://www.raritan.com/contact-us/>) for additional information on the Cat5 Reach DVI, or for information on purchasing.

Connect Cat5 Reach DVI and Cat5 Reach DVI

Note: The images used in the diagrams are not specific to Cat5 Reach DVI but the connections are accurate.

This section introduces three scenarios involving KVM switches.

- Connect the Cat5 Reach DVI between any KVM switch and its local console.
- Connect the Cat5 Reach DVI between two KVM switches.
- Connect the Cat5 Reach DVI between a computer/server and a KVM switch.

Turn off all devices before making the connections.

For detailed information on setting up the local and remote consoles, see **Connecting a Keyboard/Mouse/Video Source in Cat5 Reach DVI Help** for more information.

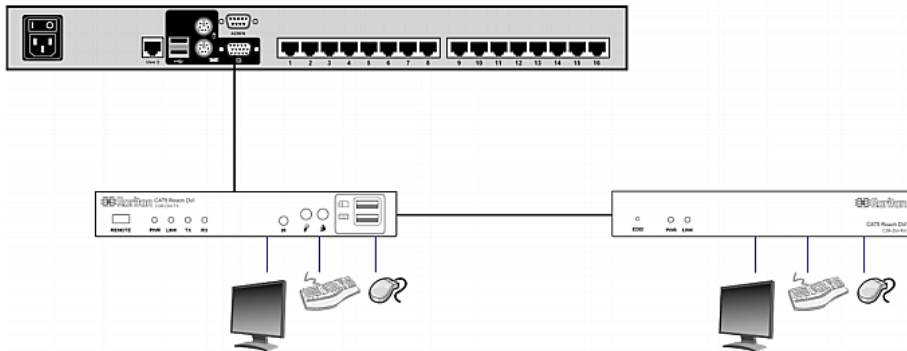
► **To connect Cat5 Reach DVI and Cat5 Reach DVI:**

1. If you have not already done so, set up the local and remote consoles with the Cat5 Reach DVI transmitter and receiver, respectively.

See **Basic Installation in Cat5 Reach DVI Help** for more information.
2. Use a Cat5e/6 cable to connect the transmitter and receiver.
3. Connect the transmitter and receiver to an appropriate power source respectively.
4. Connect the local console ports of the KVM switch to the transmitter.
 - a. Plug one end of the Raritan-provided DVI cable into the DVI-I IN port on the transmitter, and the other end into the KVM switch's video port.
 - b. Plug the USB-B connector of the Raritan-provided USB cable into the USB-B port on the transmitter, and the other end into the KVM switch's local USB-A port.

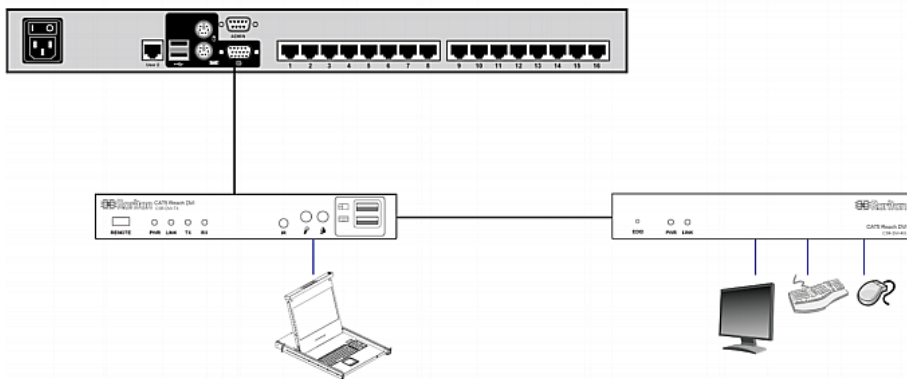
5. Turn on the KVM switch.

KVM



Tip: The local or remote console can be equipped with a KVM drawer instead of a set of keyboard, mouse and monitor. See the illustration below.

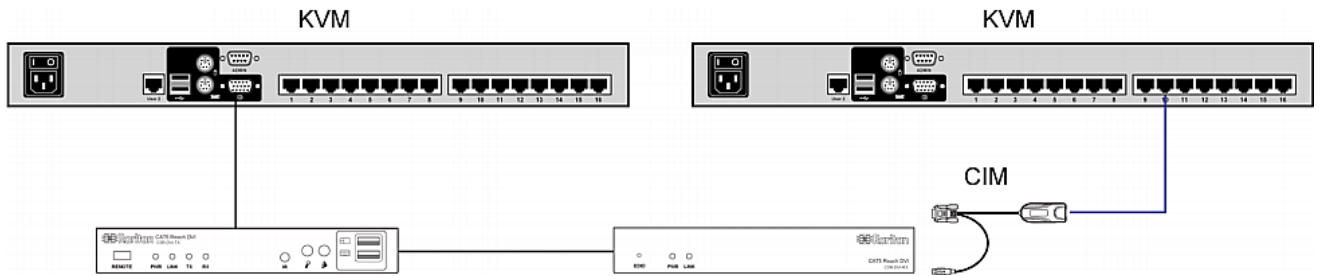
KVM



► To increase the distance between two tiered KVM switches:

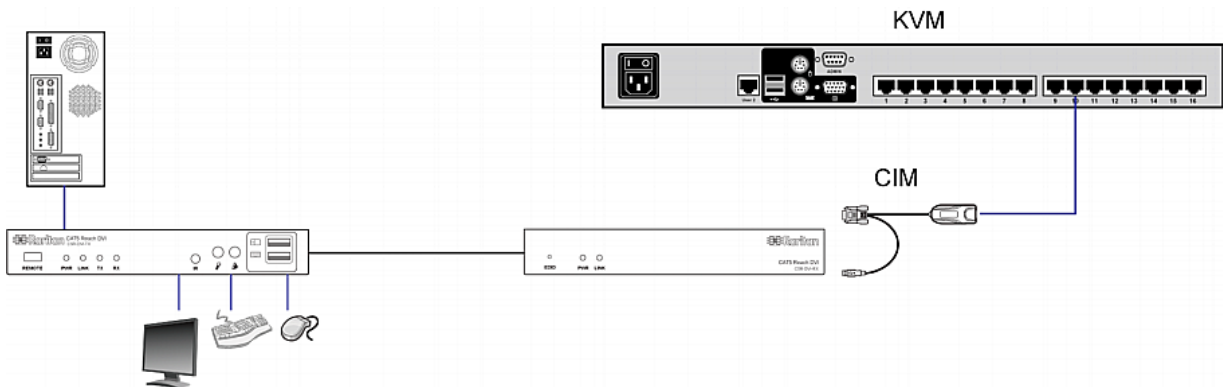
1. Set up a remote console by connecting the receiver to a KVM switch.
 - a. Connect a USB CIM to the receiver.
 - b. Connect this USB CIM to any channel port on the KVM switch via a Cat5 cable.
2. Use a Cat5e/6 cable to connect the transmitter and receiver.
3. Connect the transmitter and receiver to an appropriate power source respectively.
4. Connect the KVM switch to the transmitter.

5. Turn on both KVM switches.



► **To increase the distance between any computer and a KVM switch:**

1. Set up an optional local console with the transmitter.
2. Set up a remote console by connecting the receiver to a KVM switch.
3. Use a Cat5e/6 cable to connect the transmitter and receiver.
4. Connect the transmitter and receiver to an appropriate power source respectively.
5. Connect the computer to the transmitter.
6. Turn on the computer.



Appendix B Accessing a Paragon II from the KX III

In This Chapter

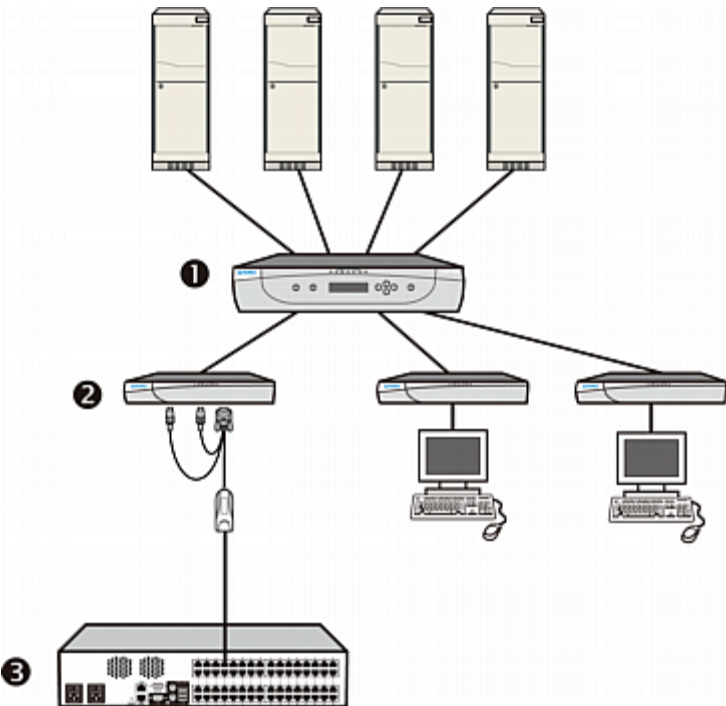
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Supported Paragon II CIMS and Configurations.....	133
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Overview

Connect the Paragon II system to a KX III device that is managed by CC-SG so that Paragon II is accessible from CC-SG.

This diagram indicates the configuration integrating KX III.

Note: The images are for example purposes only, and may not look exactly like your device.



①	The Paragon II system involving Paragon II switches, servers and user stations
②	The user station with a DCIM-USB G2 attached
③	KX III

When you access the Paragon II system from KX III or CC-SG (if the KX III is managed by CC-SG), the Paragon II OSUI login screen appears for you to log in.

In this integration, you can perform any OSUI functions implemented with current Paragon II firmware or any KX III function implemented with current KX III firmware except for the virtual media feature.

When accessing the Paragon II OSUI through KX III, DO NOT attempt to synchronize the mouse manually. A mouse is not necessary on the OSUI screen and mouse synchronization will delay the keyboard response for seconds.

See **Supported Paragon II CIMS and Configurations** (on page 133) for additional information.

Supported Paragon II CIMS and Configurations

The KX III supports the P2CIM-APS2DUAL and P2CIM-AUSB2DUAL CIMS, which provide two RJ45 connections to different KVM switches.

Support of these CIMS provides a second path to access the target in the event that one of the KVM switches is blocked or fails.

Paragon CIM	Supports	Does not support
P2CIM-APS2DUAL	- Servers with IBM® PS/2-type keyboard and mouse ports - Automatic skew compensation (when the CIMS are connected to Paragon II, not from a KX III) - Intelligent Mouse mode - Standard Mouse mode	- Virtual media - Smart cards - Absolute Mouse mode - Use with blade chassis - Cascaded KVM configurations

Paragon CIM	Supports	Does not support
P2CIM-AUSBDUAL	• Servers with USB- or Sun™ USB-type keyboard and mouse ports • Automatic skew compensation (when the CIMs are connected to Paragon II, not from a KX III) • Intelligent Mouse mode • Standard Mouse mode	• Virtual media • Smart cards • Absolute Mouse mode • Use with blade chassis • Cascaded KVM configurations

KX III-to-KX III Paragon CIM Guidelines

The following system configuration guidelines should be followed when you are using Paragon CIMs in a KX III-to-KX III configuration:

Concurrent Access

Both KX III KVM switches should be configured with the same policy for concurrent access to targets - both PC-Share or both Private.

If Private access to targets is required, both KVM switches must be configured accordingly:

- From Security > Security Settings > Encryption & Share, set PC Share Mode to 'Private'

This guarantees that concurrent access to targets is prohibited, for all targets by all user groups.

The KX III allows for more granular control of concurrent access to targets on a per user group basis. This is done by setting the user group's PC Share permissions. However, this is only enforced within the boundary of a KX III. User Group PC Share permissions must not be relied on if Privacy must be guaranteed when using the P2CIM-APS2DUAL or P2CIM-AUSBDUAL with the KX III.

CIM Name Updates

The P2CIM-APS2 and P2CIM-AUSB names are stored within the CIM's memory. There are two memory locations provided to accommodate the Paragon naming convention (12 characters) and the KX III naming convention (32 characters).

When first connected to a KX III, the Paragon name will be retrieved from memory and written into the CIM memory location used by KX III. Subsequent queries for the CIM name or updates to the CIM name from the KX III will be made to the memory location used by the KX III. Updates will not be made by the KX III to the memory location used by Paragon II.

When the CIM name is updated by one KX III, the other KX III will detect and retrieve the updated name on the next attempt to connect to that target. Until that time, the name will not be updated on the other KX III.

Port Status and Availability

The port status, displayed on the KX III Port Access page as either Up or Down, is updated to show whether the CIM is powered up and connected to the KX III port.

The port availability, as displayed on the KX III Port Access page as Idle, Busy or Connected, is only updated to reflect activity on a target that has been initiated from that same KX III.

If a connection to the target is in place from the other KX III, the availability is checked when a connection is attempted. Access is denied or allowed consistent with the PC-Share policy in place for the KX III. Until that time, the availability is not be updated on the other KX III.

If access is denied because the target is busy, a notification is displayed.

Working from CC-SG

Operations initiated from CC-SG are based on the Status, Availability and CIM name reported by the managed KX III. When the target is connected to two managed KX IIIs and the devices are added to CC-SG, two nodes will be created. Each node will have its own oob-kvm interface associated with it. Alternatively, a single node can be configured with an oob-kvm interface from each KX III.

If the KX IIIs are configured for 'Private' mode, when a second connection is attempted the user is notified that they cannot connect and access is denied.

When a port name change is initiated via the CC-SG Port Profile pane, the changed name is pushed to the managed KX III. The corresponding port name of the other KX III will not be updated in CC-SG until a connection is attempted to the target port via the other KX III's oob-kvm interface.

KX III-to-Paragon II Guidelines

The P2CIM-APS2DUAL or P2CIM-AUSBDUAL can be connected to a KX III and Paragon II.

Concurrent Access

The KX III and Paragon II must be configured with the same policy for concurrent access to targets.

Paragon II operation mode	Mode description	Supported?
Private	A server or other device on a specific channel port can be accessed exclusively by only one user at a time.	Supported. Paragon II and the KX III must be set to Private. The Private setting is applied on to KX III device, not per user group. The Paragon II uses Red to indicate 'busy' or Green to indicate 'available'.
PC Share	A server or other device on a specific channel	Supported. However, PC Share Idle

Paragon II operation mode	Mode description	Supported?
	port can be selected and controlled by more than one user, but only one user has keyboard and mouse control at any one time.	Timeout, which is configured on the Paragon II, is not supported. Both users will have concurrent keyboard and mouse control. The Paragon II uses Green to indicate 'available'. This will also be true if another user is already accessing the target.
Public View	While one user is accessing a server or other device on a specific channel port, other users can select that channel port and view the video output from that device. However, only the first user will have keyboard and mouse control until they disconnect or switch away.	Not supported. This mode cannot be used when connecting the CIM to a Paragon II and the KX III. The Paragon II uses Yellow to indicate it is in P-View mode.

CIM Name Updates

- CIM names updated from Paragon II are stored and retrieved from the CIM memory location corresponding to the Paragon naming convention.
- CIM names updated from the KX III are stored and retrieved from the CIM memory location corresponding to the KX III naming convention.
- CIM name updates do not propagate between the Paragon II and the KX III.

Supported Connection Distances Between Paragon II and KX III

When using KX III as the front end of a Paragon II system, you should restrict the cable length (distance) for good video quality.

Supported distance from the Paragon II user station to the target server is 500 cable feet (152 m). Greater distances may result in video performance that may or may not be acceptable to you.

Supported distance from KX III to the Paragon II user station is up to 150 cable feet (45 m).

Connecting the Paragon II to the KX III

► **To connect the Paragon II system to a KX III:**

1. Check whether the Paragon II user station that you want to connect to the KX III is implemented with version 4.6 firmware (or later). If not, upgrade it.

The Paragon II user station can be one of these:

- P2-UST
- P2-EUST
- P2-EUST/C

See **Paragon II Help** for information on upgrading.

2. Plug a compatible DCIM-USB into the USB and video ports on the Paragon II user station.

If the system is a two- or three-tier system, ensure the Paragon II user station is connected to the base KX III device (first tier).

3. Connect the Paragon II user station to a KX III device via a Cat5 UTP cable up to 150 feet (45 m).
 - Plug one end of the cable to the DCIM's RJ-45 port and the other end to one of the channel ports on the KX III device.
4. If you want to have more paths to access the same Paragon II system in KX III or CC-SG, repeat Steps 1 to 3 to connect additional user stations to the KX III.

Appendix C Specifications

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Hardware

KX III Dimensions and Physical Specifications

Dominion KX III model	Description	Power & heat dissipation	Dimensions (WxDxH)	Weight	Operating temp	Humidity
DKX3-108	8 server ports 1 remote user 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	8.60lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	3.9kg	32° - 113° F	
DKX3-116	16 server ports 1 remote user 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	8.60lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	3.9kg	32° - 113° F	
DKX3-132	32 server ports 1 remote user 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	8.60lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	3.9kg	32° - 113° F	
DKX3-216	16 server ports 2 remote users 1 local	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	9.08lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	4.12kg	32° - 113° F	

Appendix C: Specifications

Dominion KX III model	Description	Power & heat dissipation	Dimensions (WxDxH)	Weight	Operating temp	Humidity
	port for use at the rack					
DKX3-232	32 server ports 2 remote users 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	9.08lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	4.12kg	32° - 113° F	
DKX3-416	16 server ports 4 remote users 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	9.08lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	4.12kg	32° - 113° F	
DKX3-432	32 server ports 4 remote users 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	9.08lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	4.12kg	32° - 113° F	
DKX3-464	64 server ports 4 remote users 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.3" x 3.5"	12.39lbs	0° - 45° C	0-85 % RH
			439x338x89 mm	5.62kg	32° - 113° F	
DKX3-808	8 server ports 8 remote users 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	9.96lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	4.52kg	32° - 113° F	

Dominion KX III model	Description	Power & heat dissipation	Dimensions (WxDxH)	Weight	Operating temp	Humidity
	use at the rack					
DKX3-832	32 server ports 8 remote users 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.15" x 1.73"	9.96lbs	0° - 45° C	0-85 % RH
			439x334x44 mm	4.52kg	32° - 113° F	
DKX3-864	64 server ports 8 remote users 1 local port for use at the rack	Dual Power 110V/240V, 50-60Hz 1.8A 60W 52 KCAL	17.3" x 13.3" x 3.5"	12.39lbs	0° - 45° C	0-85 % RH
			439x338x89 mm	5.62kg	32° - 113° F	

KX III Supported Target Server Video Resolutions

When using digital CIMs, you set the target's video resolution to match your monitor's native display resolution. The native display resolution is set when configuring ports for digital CIMs (see Configure the CIM Target Settings).

Following is a complete list of KX III supported video resolutions when accessing a target from the Remote Console.

- 640x350@70Hz
- 640x350@85Hz
- 640x400@56Hz
- 640x400@84Hz
- 640x400@85Hz
- 640x480@60Hz
- 640x480@66.6Hz
- 640x480@72Hz
- 640x480@75Hz
- 640x480@85Hz
- 720x400@70Hz
- 720x400@84Hz
- 720x400@85Hz
- 800x600@56Hz
- 800x600@60Hz
- 800x600@70Hz
- 800x600@72Hz
- 800x600@75Hz
- 800x600@85Hz
- 800x600@90Hz
- 800x600@100Hz
- 832x624@75.1Hz
- 1024x768@60Hz
- 1024x768@70Hz
- 1024x768@72Hz
- 1024x768@85Hz
- 1024x768@75Hz
- 1024x768@90Hz
- 1024x768@100Hz

- 1152x864@60Hz
- 1152x864@70Hz
- 1152x864@75Hz
- 1152x864@85Hz
- 1152x870@75.1Hz
- 1280x720@60Hz
- 1280x960@60Hz
- 1280x960@85Hz
- 1280x1024@60Hz
- 1280x1024@75Hz
- 1280x1024@85Hz
- 1360x768@60Hz
- 1366x768@60Hz
- 1368x768@60Hz
- 1400x1050@60Hz
- 1440x900@60Hz
- 1600x1200@60Hz
- 1680x1050@60Hz
- 1920x1080@60Hz
- 1920x1200@60Hz (Requires Reduced Blanking Time)

For 1920x1200@60Hz, you must use a digital CIM and set the CIM's preferred resolution to 1920x1200@60Hz.

KX III Supported Local Port DVI Resolutions

Following are the resolutions supported when connecting to a DVI monitor from the Local port.

- 1920x1080@60Hz
- 1280x720@60Hz
- 1024x768@60Hz (default)
- 1024x768@75Hz
- 1280x1024@60Hz
- 1280x1024@75Hz
- 1600x1200@60Hz
- 800x480@60Hz
- 1280x768@60Hz
- 1366x768@60Hz
- 1360x768@60Hz
- 1680x1050@60Hz
- 1440x900@60Hz

Target Server Video Resolution Supported Connection Distances and Refresh Rates

The maximum supported distance is a function of many factors including the type/quality of the Cat5 cable, server type and manufacturer, video driver and monitor, environmental conditions, and user expectations.

The following table summarizes the maximum target server distance for various video resolutions and refresh rates:

Target server video resolution	Maximum distance
1024x768@60Hz (and below)	150' (45 m)
1280x1024@60Hz	100' (30 m)
1280x720@60Hz	75' (22 m)
1600x1200@60Hz	50' (15 m)
1920x1080@60Hz	50' (15 m)

See **KX III Supported Target Server Video Resolutions** (on page 142) for the video resolutions supported by the KX III.

Note: Due to the multiplicity of server manufacturers and types, OS versions, video drivers, and so on, as well as the subjective nature of video quality, Raritan cannot guarantee performance across all distances in all environments.

Supported Computer Interface Module (CIMs) Specifications

Digital CIMs support Display Data Channels (DDC) and Enhanced Extended Display Identification Data (E-EDID).

Note: Both plugs must be plugged in for the HDMI and DVI CIMs.

CIM model	Description	Dimensions (WxDxH)	Weight
D2CIM-DVUSB	Dual USB CIM for: ▪ BIOS virtual media ▪ Smartcard/CAC ▪ Audio ▪ Absolute Mouse Synchronization 	▪ 1.7" x 3.5" x 0.8" ▪ 43 x 90 x 19mm	▪ 0.25lb ▪ 0.11kg
D2CIM-VUSB	USB CIM for: ▪ BIOS virtual media ▪ Absolute Mouse Synchronization 	▪ 1.3" x 3.0" x 0.6" ▪ 33 x 76 x 15mm	▪ 0.20lb ▪ 0.09kg

CIM model	Description	Dimensions (WxDxH)	Weight
D2CIM-DVUSB-DP	Digital CIM that provides digital-to-analog conversion and support for: ▪ BIOS virtual media ▪ Smartcard/CAC ▪ Audio ▪ Absolute and Relative Mouse Synchronization 	▪ 1.7" x 3.5" x 0.8" ▪ 43 x 90 x 19mm	▪ 0.25lb ▪ 0.11kg
D2CIM-DVUSB-HDMI	Digital CIM that provides digital-to-analog conversion and support for: ▪ BIOS virtual media ▪ Smartcard/CAC ▪ Audio ▪ Absolute and Relative Mouse Synchronization 	▪ 1.7" x 3.5" x 0.8" ▪ 43 x 90 x 19mm	▪ 0.25lb ▪ 0.11kg
D2CIM-DVUSB-DVI	Digital CIM that provides digital-to-analog conversion and support for: ▪ BIOS virtual media ▪ Smartcard/CAC ▪ Audio ▪ Absolute and Relative Mouse Synchronization	▪ 1.7" x 3.5" x 0.8" ▪ 43 x 90 x 19mm	▪ 0.25lb ▪ 0.11kg

CIM model	Description	Dimensions (WxDxH)	Weight
			
DCIM-PS2	CIM for PS2 	1.3" x 3.0" x 0.6" 33 x 76 x 15mm	0.20lb 0.09kg
DCIM-USBG2	CIM for USB and Sun USB 	1.3" x 3.0" x 0.6" 33 x 76 x 15mm	0.20lb 0.09kg

Supported Digital Video CIMs for Mac

Use a digital video CIM to connect to the following Mac® ports:

Mac port	CIM
DVI	D2CIM-DVUSB-DVI
HDMI	D2CIM-DVUSB-HDMI
DisplayPort or Thunderbolt	D2CIM-DVUSB-DP

If the Mac's HDMI or DisplayPort video has a mini connector, a passive adapter cable may be required to connect to the full sized HDMI and DisplayPort plugs on the digital CIMS.

Alternatively, use the Mac VGA adapter with the D2CIM-VUSB or D2CIM-DVUSB. Note that this may be less reliable and the video quality may suffer.

For information on established modes supported by the KX III 2.5.0 (and later) for Mac, see **Digital CIM Established and Standard Modes** (on page 148).

Digital CIM Timing Modes

Following are the default timing modes that are used when the KX III communicates with a video source via a digital CIM.

The timing mode that is used is dependent on the native resolution of the video source.

- 1024x768@60Hz
- 1152x864@60Hz
- 1280x720@60Hz
- 1280x960@60Hz
- 1280x1024@60Hz (default resolution applied to digital CIMS)
- 1360x768@60Hz
- 1400x1050@60Hz
- 1440x900@60Hz
- 1600x1200@60Hz
- 1680x1050@60Hz
- 1920x1080@60Hz
- 1920x1200@60Hz

See Configuring CIM Ports in online help for more information.

Digital CIM Established and Standard Modes

The following additional established and standard resolutions and timing modes are supported by the KX III 3.0.0 (and later).

Digital CIM Established Modes

- 720x400@70Hz IBM, VGA
- 640x480@60Hz IBM, VGA
- 640x480@67Hz Apple Mac® II
- 640x480@72Hz VESA
- 640x480@75Hz VESA
- 800x600@56Hz VESA
- 800x600@60Hz VESA
- 800x600@72Hz VESA
- 800x600@75Hz VESA
- 832x624@75Hz Apple Mac II
- 1024x768@60Hz VESA
- 1024x768@70Hz VESA
- 1024x768@75Hz VESA
- 1280x1024@75Hz VESA
- 1152x870@75Hz Apple Mac II

Digital CIM Standard Modes

- 1152x864@75Hz VESA
- 1280x960@60Hz VESA
- 1280x1024@60Hz VESA
- 1360x768@60Hz VESA
- 1400x1050@60Hz VESA
- 1440x900@60Hz VESA
- 1600x1200 @60Hz VESA
- 1680x1050@60Hz VESA
- 1920x1080@60Hz VESA

DVI Compatibility Mode

DVI Compatibility Mode may be required if you are using an HDMI CIM to connect to a Dell Optiplex target with an Intel video card, or a Mac® Mini with an HDMI video port.

Selecting this mode ensures a good video quality from the targets.

See Configuring CIM Ports in online help.

Supported Remote Connections

Remote connection	Details
Network	10BASE-T, 100BASE-T, and 1000BASE-T (Gigabit) Ethernet
Protocols	TCP/IP, UDP, SNTP, HTTP, HTTPS, RADIUS, LDAP/LDAPS

Network Speed Settings

KX III network speed setting						
Network switch port setting	Auto	1000/Full	100/Full	100/Half	10/Full	10/Half
Auto	Highest Available Speed	1000/Full	KX III: 100/Full Switch: 100/Half	100/Half	KX III: 10/Full Switch: 10/Half	10/Half
1000/Full	1000/Full	1000/Full	No Communication	No Communication	No Communication	No Communication
100/Full	KX III: 100/Half Switch: 100/Full	KX III: 100/Half Switch: 100/Full	100/Full	KX III: 100/Half Switch: 100/Full	No Communication	No Communication
100/Half	100/Half	100/Half	KX III: 100/Full Switch: 100/Half	100/Half	No Communication	No Communication
10/Full	KX III: 10/Half Switch: 10/Full	No Communication	No Communication	No Communication	10/Full	KX III: 10/Half Switch: 10/Full
10/Half	10/Half	No Communication	No Communication	No Communication	KX III: 10/Full Switch: 10/Half	10/Half

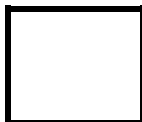
Legend:

 Does not function as expected

 Supported

 Functions; not recommended

 NOT supported by Ethernet specification; product will communicate, but collisions will occur

 Per Ethernet specification, these should be “no communication,” however, note that the KX III behavior deviates from expected behavior

Note: For reliable network communication, configure the KX III and the LAN switch to the same LAN Interface Speed and Duplex. For example, configure the KX III and LAN Switch to Autodetect (recommended), or set both to a fixed speed/duplex such as 100MB/s/Full.

Dell Chassis Cable Lengths and Video Resolutions

In order to maintain video quality, Raritan recommends using the following cable lengths and video resolutions when you are connecting to Dell® blade chassis from the KX III:

Video resolution	Cable length
1024x768@60Hz	50' (15.24 m)
1280x1024@60Hz	50' (15.24 m)
1600x1200@60Hz	30' (9.14 m)

Smart Card Minimum System Requirements

Local Port Requirements

The basic interoperability requirement for local port attachment to the KX III is:

- All devices (smart card reader or token) that are locally attached must be USB CCID-compliant.

Target Server Requirements

When using smart card readers, the basic requirements for interoperability at the target server are:

- The IFD (smart card reader) Handler must be a standard USB CCID device driver (comparable to the generic Microsoft® USB CCID driver).
- A digital CIM or D2CIM-DVUSB (Dual-VM CIM) is required and must be using firmware version 3A6E or later.
- Blade chassis server connections, where a CIM per blade is used, are supported.
- Blade chassis server connections, where a CIM per chassis is used, is only supported for IBM® BladeCenter® models H and E with auto-discovery enabled.

Windows XP Targets

Windows XP® operating system targets must be running Windows XP SP3 in order to use smart cards with the KX III.

Linux Targets

If you are using a Linux® target, the following requirements must be met to use smart card readers with the Raritan device.

- CCID Requirements

If the Raritan D2CIM-DVUSB VM/CCID is not recognized as a smart card reader by your Linux target, you may need to update the CCID driver version to 1.3.8 or above and update the driver configuration file (Info.plist).

Operating system	CCID requirements
RHEL 5	ccid-1.3.8-1.el5
SuSE 11	pcsc-ccid-1.3.8-3.12
Fedora® Core 10	ccid-1.3.8-1.fc10.i386

Remote Client Requirements

The basic requirements for interoperability at the remote client are:

- The IFD (smart card reader) Handler must be a PC/SC compliant device driver.
- The ICC (smart card) Resource Manager must be available and be PC/SC compliant.
- The JRE® Java™ 1.7 with smart card API must be available for use by the Raritan client application.

Remote Linux Client Requirements

If you are using a Linux® client, the following requirements must be met to use smart card readers with the Raritan device.

Note: User login to client, on smart card insertion, may take longer when 1 or more KVM sessions are actively in place to targets. As the login process to these targets is also under way.

- PC/SC Requirements

Operating system	Required PC/SC
RHEL 5	pcsc-lite-1.4.4-0.1.el5
SuSE 11	pcsc-lite-1.4.102-1.24
Fedora® Core 10	pcsc-lite-1.4.102.3.fc10.i386

- Create a Java® Library Link

A soft link must be created to the libpcsc-lite.so after upgrading RHEL 4, RHEL 5 and FC 10. For example, `ln -s /usr/lib/libpcsc-lite.so.1 /usr/lib/libpcsc-lite.so`, assuming installing the package places the libraries in /usr/lib or /user/local/lib

- PC/SC Daemon

When the pcsc daemon (resource manager in framework) is restarted, restart the browser

Supported Smart Card Readers

Type	Vendor	Model	Verified
USB	SCM Microsystems	SCR331	Verified on local and remote
USB	ActivIdentity®	ActivIdentity USB Reader v2.0	Verified on local and remote

Type	Vendor	Model	Verified
USB	SCM Microsystems	SCR331	Verified on local and remote
USB	ActivIdentity	ActivIdentity USB Reader v3.0	Verified on local and remote
USB	Gemalto®	GemPC USB-SW	Verified on local and remote
USB Keyboard/Card reader combo	Dell®	USB Smart Card Reader Keyboard	Verified on local and remote
USB Keyboard/Card reader combo	Cherry GmbH	G83-6744 SmartBoard	Verified on local and remote
USB reader for SIM-sized cards	Omnikey	6121	Verified on local and remote
Integrated (Dell Latitude D620)	O2Micro	OZ776	Remote only
PCMCIA	ActivIdentity	ActivIdentity PCMCIA Reader	Remote only
PCMCIA	SCM Microsystems	SCR243	Remote only

Note: SCM Microsystems SCR331 smart card readers must be using SCM Microsystems firmware v5.25.

Unsupported Smart Card Readers

This table contains a list of readers that Raritan has tested and found not to work with the Raritan device, therefore they are unsupported.

If a smart card reader does not appear in the supported smart card readers table or in the unsupported smart card readers table, Raritan cannot guarantee it will function with the device.

Type	Vendor	Model	Notes
USB Keyboard/Card reader Combo	HP®	ED707A	No interrupt endpoint => not compatible with Microsoft® driver
USB Keyboard/Card reader Combo	SCM Microsystems	SCR338	Proprietary card reader implementation (not CCID-compliant)
USB Token	Aladdin®	eToken PRO™	Proprietary implementation

Audio Playback and Capture Recommendations and Requirements

Audio Level

- Set the target audio level to a mid-range setting.
For example, on a Windows® client, set the audio to 50 or lower.

This setting must be configured through the playback or capture audio device, not from the client audio device control.

Recommendations for Audio Connections when PC Share Mode is Enabled

If you are using the audio feature while running PC Share mode, audio playback and capture are interrupted if an additional audio device is connected to the target.

For example, User A connects a playback device to Target1 and runs an audio playback application then User B connects a capture device to the same target. User A's playback session is interrupted and the audio application may need to be restarted.

The interruption occurs because the USB device needs to be re-enumerated with the new device configuration.

It may take some time for the target to install a driver for the new device.

Audio applications may stop playback completely, go to the next track, or just continue playing.

The exact behavior is dependent on how the audio application is designed to handle a disconnect/reconnect event.

Bandwidth Requirements

The table below details the audio playback and capture bandwidth requirements to transport audio under each of the selected formats.

Audio format	Network bandwidth requirement
44.1 KHz, 16bit stereo	176 KB/s
44.1 KHz, 16bit mono	88.2 KB/s
2.05 KHz, 16bit stereo	88.2 KB/s
22.05 KHz, 16bit mono	44.1 KB/s
11.025 KHz, 16bit stereo	44.1 KB/s
11.025 KHz, 16bit mono	Audio 22.05 KB/s

In practice, the bandwidth used when an audio device connects to a target is higher due to the keyboard and video data consumed when opening and using an audio application on the target.

A general recommendation is to have at least a 1.5MB connection before running playback and capture.

However, high video-content, full-color connections using high-target screen resolutions consume much more bandwidth and impact the quality of the audio considerably.

To help mitigate quality degeneration, there are a number of recommended client settings that reduce the impact of video on audio quality at lower bandwidths:

- Connect audio playback at the lower quality formats. The impact of video consuming bandwidth is much less notable at 11k connections than at 44k
- Set the connection speed under Connection Properties to a value that best matches the client to server connection
- Under Connection Properties, set the color depth to as low a value as possible. Reducing the color depth to 8 bit color considerably reduces the bandwidth consumed
- Set Smoothing, to High. This will improve the appearance of the target video by reducing displayed video noise
- Under Video settings, set the Noise Filter to its highest setting of 7 (highest value) so less bandwidth is used for target screen changes

Audio in a Mac Environment

Following are known issues in a Mac® environment.

- On Mac clients, only one playback device is listed on the Connect Audio panel when accessing the device through the Virtual KVM Client (VKC). The device listed is the default and is displayed on the Connect Audio panel as Java Sound Audio Engine.
- Using audio on a Mac target through Skype® may cause the audio to be corrupted.

Number of Supported Audio/Virtual Media and Smartcard Connections

Following are the number of simultaneous Audio/Virtual Media and Smartcard connections that can be made from a client to a target:

- 1 smartcard
- 1 virtual media
- 1 Smartcard and 1 virtual media
- 2 virtual media

Certified Modems

- USRobotics® 56K 5686E
 - ZOOM® v90
 - ZOOM v92
 - USRobotics Sportster® 56K
 - USRobotics Courier™ 56K
-

KX III Supported Keyboard Languages

The KX III provides keyboard support for the languages listed in the following table.

*Note: You can use the keyboard for Chinese, Japanese, and Korean for display only; local language input is not supported at this time for the KX III Local Console functions. For more information about non-US keyboards, see **Informational Notes** (on page 165).*

Note: Raritan strongly recommends that you use system-config-keyboard to change languages if you are working in a Linux environment.

Language	Regions	Keyboard layout
US English	United States of America and most of English-speaking countries: for example, Canada, Australia, and New Zealand.	US Keyboard layout
US English International	United States of America and most of English-speaking countries: for example, Netherlands	US Keyboard layout
UK English	United Kingdom	UK layout keyboard
Chinese Traditional	Hong Kong S. A. R., Republic of China (Taiwan)	Chinese Traditional
Chinese Simplified	Mainland of the People's Republic of China	Chinese Simplified
Korean	South Korea	Dubeolsik Hangul
Japanese	Japan	JIS Keyboard
French	France	French (AZERTY) layout keyboard.
German	Germany and Austria	German keyboard (QWERTZ layout)
French	Belgium	Belgian
Norwegian	Norway	Norwegian

Language	Regions	Keyboard layout
Danish	Denmark	Danish
Swedish	Sweden	Swedish
Hungarian	Hungary	Hungarian
Slovenian	Slovenia	Slovenian
Italian	Italy	Italian
Spanish	Spain and most Spanish speaking countries	Spanish
Portuguese	Portugal	Portuguese

Mac Mini BIOS Keystroke Commands

The following BIOS commands have been tested on Intel-based Mac® Mini target servers and Mac Lion® servers running Mac Snow Leopard®. The servers were attached to a KX III with D2CIM-DVUSB and D2CIM-VUSB CIMS. See below for the supported keys and any notes.

Keystroke	Description	Virtual Media CIM	Dual Virtual Media CIM	Mac Lion Server HDMI CIM
Press C during startup	Start up from a bootable CD or DVD, such as the Mac OS X Install disc	Yes	Yes	Yes
Press D during startup	Start up in Apple Hardware Test (AHT)	Yes May need BIOS Mac profile for the mouse to work	Yes May need BIOS Mac profile for mouse to work	Yes May need BIOS Mac profile for the mouse to work
Press Option-Command-P-R until you hear startup sound a second time.	Reset NVRAM		Yes	Yes
Press Option during startup	Start up in Startup Manager, where you can select a Mac OS X volume to start from	Yes	Yes	Yes
Press Eject, F12, or hold the mouse	Ejects any removable media, such as an	Yes	Yes	

Keystroke	Description	Virtual Media CIM	Dual Virtual Media CIM	Mac Lion Server HDMI CIM
button	optical disc			
Press N during startup	Start up from a compatible network server (NetBoot)	Yes	Yes	Yes
Press T during startup	Start up in Target Disk mode			Yes
Press Shift during startup	Start up in Safe Boot mode and temporarily disable login items	Yes	Yes	Known issue with LION to boot to safe mode. "Safe Mode" in red does not appear for Lion
Press Command-V during startup	Start up in Verbose mode.admin	Yes	Yes	Yes
Press Command-S during startup	Start up in Single-User mode	Yes	Yes	Yes
Press Option-N during startup	Start from a NetBoot server using the default boot image	Yes	Yes	Yes
Press Command-R during startup	Start from Lion Recovery1	N/A	N/A	Yes

Using a Windows Keyboard to Access Mac Targets

A Windows® keyboard can be used to access a Mac® connected to a KX III. Windows keys are then used to emulate the special Mac keys. This is the same as connecting a Windows keyboard directly to the Mac.

TCP and UDP Ports Used

Port	Description
HTTP, Port 80	This port can be configured as needed. See HTTP and HTTPS Port Settings. By default, all requests received by the KX III via HTTP (port 80) are automatically forwarded to HTTPS for complete security. The KX III responds to Port 80 for user convenience, relieving users from having to explicitly type in the URL field to access the KX III, while still preserving complete security.

Port	Description
HTTPS, Port 443	This port can be configured as needed. See HTTP and HTTPS Port Settings. By default, this port is used for multiple purposes, including the web server for the HTML client, the download of client software (Virtual KVM Client (VKC)) onto the client's host, and the transfer of KVM and virtual media data streams to the client.
KX III (Raritan KVM-over-IP) Protocol, Configurable Port 5000	This port is used to discover other Dominion devices and for communication between Raritan devices and systems, including CC-SG for devices that CC-SG management is available. By default, this is set to Port 5000, but you may configure it to use any TCP port not currently in use. For details on how to configure this setting, see Network Settings.
SNTP (Time Server) on Configurable UDP Port 123	The KX III offers the optional capability to synchronize its internal clock to a central time server. This function requires the use of UDP Port 123 (the standard for SNTP), but can also be configured to use any port of your designation. Optional
LDAP/LDAPS on Configurable Ports 389 or 636	If the KX III is configured to remotely authenticate user logins via the LDAP/LDAPS protocol, ports 389 or 636 will be used, but the system can also be configured to use any port of your designation. Optional
RADIUS on Configurable Port 1812	If the KX III is configured to remotely authenticate user logins via the RADIUS protocol, either port 1812 will be used, but the system can also be configured to use any port of your designation. Optional
RADIUS Accounting on Configurable Port 1813	If the KX III is configured to remotely authenticate user logins via the RADIUS protocol, and also employs RADIUS accounting for event logging, port 1813 or an additional port of your designation will be used to transfer log notifications.
SYSLOG on Configurable UDP Port 514	If the KX III is configured to send messages to a Syslog server, then the indicated port(s) will be used for communication - uses UDP Port 514.
SNMP Default UDP Ports	Port 161 is used for inbound/outbound read/write SNMP access and port 162 is used for outbound traffic for SNMP traps. Optional
TCP Port 22	Port 22 is used for the KX III command line interface (when you are working with Raritan Technical Support).
SSH	(Secure Shell) SSH port can be configured. The default is port 22.

Software

Supported Operating Systems, Browsers and Java Versions

Operating Systems	Browsers	Java
Windows 10	Windows Edge Internet Explorer® 11 Chrome 46 Firefox® 41	Java 1.7 or later for VKC Java 1.8.0_40 or later for VKCs
Windows 7® Home Premium SP1 64-bit	Internet Explorer® 10, 11 Firefox® 29.0.1, 30, 40 Chrome® 35, 45 Safari® 7.0.3, 7.0.5 Edge	Java 1.7 or later for VKC Java 1.8.0_40 or later for VKCs
Windows 7 Ultimate SP1 64-bit		
Windows 7 Ultimate 32-bit		
Windows 8® 64-bit		
Windows XP® Home Edition with SP 3		
Windows Server 2012® Standard 64-bit		
Windows Server 2008®		
Windows Server 2003®		
openSUSE® 11.4 Celadon (x86_64)	Firefox 16.0.2	
openSUSE® 13.2	Firefox 33	
Fedora® 18 (Spherical Cow)	Firefox 24	
Fedora® 22	Firefox 38	
RHEL® 6.4	Firefox 21	
Mac® OS X Mountain Lion® 10.7.5	Firefox 25 Safari 6.0.5	
Mac OS X Mountain Lion 10.8.5 *	Firefox 25 Safari 6.1.1	
Mac 10.10.4	Safari 9.0.1 Chrome 45	
Mac 10.10.5	Safari 9.0.1 Chrome 46	
Solaris® 10 64-bit	Firefox 3.6.23	

**Note: Upon upgrading from OS X 10.8.2 to OS X 10.8.3, Safari® may block Java™.*

JRE Requirements and Browser Considerations for Mac

Java Runtime Environment Requirements for Mac

Install Java Runtime Environment 8 (JRE)® on PCs and Macs® when using the Virtual KVM Client (VKC) to access target devices via KX III.

This ensures in order to provide high performance, KVM-over-IP video processing when remotely accessing target devices/PCs/Macs.

The latest version of JRE for Mac can be downloaded from the Oracle Support website.

Browser Considerations for Mac

Java may be disabled by default in certain browsers. Enable Java and accept all security warnings in order to use KX III.

Certain versions of Safari® block Java for security reasons. Since Java is required to use KX III, Raritan recommends you use Firefox® instead.

Additionally, you may be required to navigate through a number of messages. Select 'Do Not Block' if these messages are displayed.

Virtual KVM Client (VKC), VKCS, and Active KVM Client (AKC) Requirements

Microsoft .NET® 4.0 (or later) is required to use KX III with the Microsoft Windows®-based Active KVM Client (AKC).

Java™ 1.7 is required to use the Java-based . Java 1.8.0_40 is required to use the VKCS.

Java 1.8.0_40 or later is required for VKCS, the standalone VKC client used on Chrome.

KX III checks your current Java version and prompts you to update it if it is not compatible.

VKC can only be launched from a 32-bit browser, or 64-bit browser.

Following are the Java 32-bit and 64-bit Windows operating system requirements.

Mode	Operating system	Browser
Windows x64 32-bit mode	Windows XP®	- Internet Explorer® 7.0, 9.0, 10.0 or 11.0 - Firefox® 1.06 - 4 or later
	Windows Server 2003®	- Internet Explorer 6.0 SP1++, 9.0, 10.0 or 11.0 - Firefox 1.06 - 3
	Windows Vista®	Internet Explorer 9.0, 10.0 or 11.0
	Windows 7®	- Internet Explorer 9.0, 10.0 or 11.0 - Firefox 1.06 - 4 or later
Windows x64 64-bit mode	Windows XP	64bit OS, 32bit browsers: - Internet Explorer 6.0 SP1+, 7.0 or 8.0 - Firefox 1.06 - 4 or later
	Windows XP Professional®	
	Windows XP Tablet®	64bit mode, 64bit browsers: Internet Explorer 7.0, 8.0, 9.0, 10.0 or 11.0
	Windows Vista	
	Windows Server 2003	
	Windows Server 2008	
	Windows 7	

Note that a JRE™ plug-in is available for the Windows® 32-bit and 64-bit operating systems.

See **Java Runtime Environment (JRE) Notes** (on page 165) for additional information.

Multi-Language Keyboard JRE Requirement

In order for multi-language keyboards to work in the KX III and Virtual KVM Client (VKC), install the multi-language version of JRE™.

Events Captured in the Audit Log and Syslog

Following is a list and description of the events that are captured by the KX III audit log and syslog:

- Access Login - A user has logged in to the KX III
- Access Logout - A user has logged out of the KX III
- Active USB Profile - The USB profile is active
- CIM Connected - A CIM was connected
- CIM Disconnected - A CIM was disconnected
- Connection Lost - The connection to the target was lost
- Disconnected User - A user was disconnected from a port
- End CC Control - CC-SG management ended
- Login Failed - User login failed
- Password Changed - Password change occurred
- Port Connect - Port was connected
- Port Disconnect - Port was disconnected
- Port Status Change - Change in the port status
- Scan Started - A target scan was started
- Scan Stopped - A target scan was stopped
- Session Timeout - A session timeout occurred
- VM Image Connected - A VM image was connected
- VM Image Disconnected - A VM image was disconnected

Appendix D Informational Notes

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Overview

This section includes important notes on KX III usage. Future updates will be documented and available online through the Help link in the KX III Remote Console interface.

Note: Some topics in this section reference other multiple Raritan appliances because various appliances are impacted by the information.

Java Runtime Environment (JRE) Notes

Disable Java Caching and Clear the Java Cache

It is highly recommended that you disable Java caching in Microsoft Windows®, and clear the Java™ cache.

► **To disable Java caching and clear the cache:**

1. From the Windows Start menu, click Control Panel.
2. Double-click on the Java icon to launch it. The Java Control Panel dialog appears.
3. To disable Java caching:
 - a. From the General tab, click the Settings button. The Temporary Files Settings dialog appears.
 - b. Click the View Applets button. The Java Applet Cache Viewer opens.

- c. Deselect the Enable Caching checkbox if it is already checked.
 - d. Click OK.
4. To clear the Java cache:
- a. From the Temporary Files Settings dialog, click the Delete Files button. The Delete Temporary Files dialog appears.
 - b. Select the temporary files that you want to delete.
 - c. Click OK.

Java Not Loading Properly on Mac

If you are using a Mac® and see the following message when connecting to a device from the KX III Port Access Table, Java™ is not loaded properly:

"Error while getting the list of open targets, please try again in a few seconds".

If this occurs, check your Java installation from this website:

<http://www.java.com/en/download/testjava.jsp>

<http://www.java.com/en/download/testjava.jsp>

If your Java applet is inactive, it can be enabled from this page. If it is not installed correctly, a message lets you know and you can then reinstall Java.

IPv6 Support Notes

Operating System IPv6 Support Notes

Java

Java™ 1.7 supports IPv6 for the following:

- Solaris™ 10 (and later)
- Linux® kernel 2.1.2 (and later)/RedHat 6.1 (and later)
- Solaris 10 (and later)
- Windows XP® SP1 and Windows 2003®, Windows Vista®, Windows 7®, Windows 8®, and Windows 10®, operating systems

Linux

- It is recommended that Linux kernel 2.4.0 or higher is used when using IPv6.
- An IPv6-enabled kernel will need to be installed or the kernel will need to be rebuilt with IPv6 options enabled.
- Several network utilities will also need to be installed for Linux when using IPv6. For detailed information, refer to <http://www.bieringer.de/linux/IPv6/IPv6-HOWTO/IPv6-HOWTO.html>

Windows

- Windows XP and Windows 2003 users will need to install the Microsoft IPv6 service pack to enable IPv6.
- For AKC with IPv6 on Windows XP, add the executable kxgui.exe to your firewall exception list. View your log file on the client to identify the full path for the location of the file kxgui.exe.

Samba

- IPv6 is not supported for use with virtual media when using Samba.

AKC Download Server Certification Validation IPv6 Support Notes

If you are connecting to a KX III standalone device and support for AKC download server certificate validation is enabled, the valid IPv6 format to generate the certificate is either:

- CN =[fd07:02fa:6cff:2500:020d:5dff:fe00:01c0] when there is a leading 0
- or
- CN =[fd07:02fa:6cff:2500:020d:5dff:0000:01c0] when there is no zero compression

Dual Stack Login Performance Issues

If you are using the KX III in a dual stack configuration, it is important you configured the domain system (DNS) correctly in the KX III in order to avoid delays when logging in.

See Tips for Adding a Web Browser Interface for information on configuring your DNS in KX III.

CIM Notes

Windows 3-Button Mouse on Linux Targets

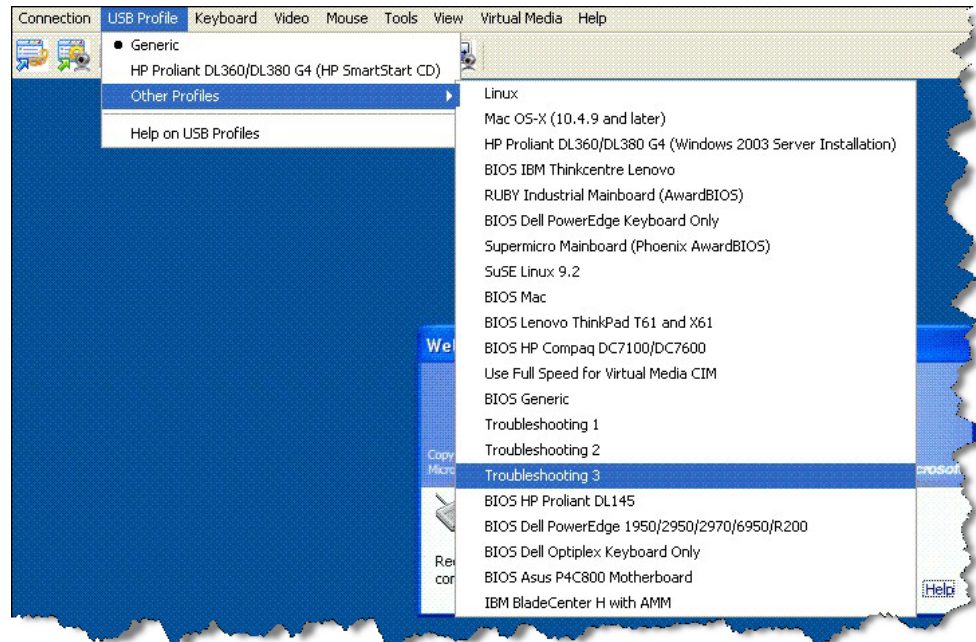
When using a 3-button mouse on a Windows® client connecting to a Linux® target, the left mouse button may get mapped to the center button of the Windows client 3-button mouse.

Windows 2000 Composite USB Device Behavior for Virtual Media

The Windows 2000® operating system does not support USB composite devices, like Raritan's D2CIM-VUSB, in the same manner as non-composite USB devices.

As a result, the "Safely Remove Hardware" system tray icon does not appear for drives mapped by the D2CIM-VUSB and a warning message may appear when disconnecting the device. Raritan has not observed any problems or issues from this message, however.

Raritan's US engineering department has developed a configuration which supports the "Safely Remove Hardware" icon and avoids this Windows message. This configuration requires the use of the D2CIM-DVUSB virtual media adapter and the Troubleshooting 3 USB Profile that configures the D2CIM-DVUSB as a non-composite USB device supporting a single virtual media connection. Raritan has successfully tested this configuration in the US and Japan.



Target Video Picture Not Centered (Mouse Out of Synch)

At certain resolutions when using an HDMI or DVI CIM with the KX III:

- The video display may not be centered properly - black rectangles can be seen at the edges of the screen
- The mouse on the target may appear to be slightly out of synch

If either or both of these occur, you may be able to correct this by adjusting the display scaling options from the target computer's video controller software.

For example, if your target computer uses the Catalyst Control Center video controller, adjust the Underscan/Overscan setting as needed.

Virtual Media Notes

Cannot Connect to Drives from Linux Clients

If you cannot connect to a virtual media drive on a target server when you connect from a client running Linux® Fedora™ 18 with Java™ 1.7 (update 45 and later), disable SELinux in Fedora 18 on the client to resolve the problem.

Cannot Write To/From a File from a Mac Client

If you are connecting to the KX III from a Mac® 10.8.5 client running Safari® 6.1 with Java™ 1.7 and cannot write to/from a file on a target server or access virtual media, do the following to correct this:

1. In Safari, select Preferences.
2. Under the Security tab, select Manage Website Settings.
3. Click on "Website for KX3".
4. Select "Run in unsafe mode" from the drop-down.
5. Restart Safari.

Virtual Media via VKC and AKC in a Windows Environment

Windows XP® operating system administrator and standard user privileges vary from those of the Windows Vista® operating system and the Windows 7® operating system.

When enabled in Vista or Windows 7, User Access Control (UAC) provides the lowest level of rights and privileges a user needs for an application. For example, a Run as Administrator option is provided for Internet Explorer® for Administrator level tasks; otherwise these are not accessible even though the user has an Administrator login.

Both features affect the types of virtual media that can be accessed in VKC, VKCS, and AKC. See your Microsoft® help for additional information on these features and how to use them.

Following is a list virtual media types users can access via VKC and AKC when running in a Windows environment. The features are broken down by client and the virtual media features that are accessible to each Windows user role.

Windows XP

If you are running VKC and AKC in a Windows XP environment, users must have Administrator privileges to access any virtual media type other than CD-ROM connections, ISOs and ISO images.

Windows Vista and Windows 7

If you are running VKC and AKC in a Windows Vista or Windows 7 environment and UAC is enabled, the following virtual media types can be accessed depending on the user's Windows role:

Client	Administrator	Standard User
AKC and VKC	Access to: - Fixed drives and fixed drive partitions - Removable drives - CD/DVD drives - ISO images - Remote ISO images	Access to: - Removable drives - CD/DVD drives - ISO images - Remote ISO images

Virtual Media Support on Windows 7, Windows 2008 and Windows XP Targets

Virtual media is not supported on a Windows 7, Windows 2008 or Windows XP target server when connecting via VKC and AKC from Windows 2008 or Windows 2012.

Virtual Media Not Refreshed After Files Added

After a virtual media drive has been mounted, if you add a file(s) to that drive, those files may not be immediately visible on the target server. Disconnect and then reconnect the virtual media connection.

Virtual Media Linux Drive Listed Twice

For KX III, users who are logged in to Linux™ clients as root users, the drives are listed twice in the Local Drive drop-down.

For example, you will see eg /dev/sdc and eg /dev/sdc1 where the first drive is the boot sector and the second drive is the first partition on the disk.

Accessing Virtual Media on a Windows 2000

A virtual media local drive cannot be accessed on a Windows 2000® server using a D2CIM-VUSB.

Disconnecting Mac and Linux Virtual Media USB Drives

In a Linux® or Mac® environment:

- For Linux users, if there is /dev/sdb and /dev/sdb1, the client only uses /dev/sdb1 and advertise it as removable disk
- /dev/sdb is not available for the user.
- For Linux users, if there is /dev/sdb but no /dev/sdb1, /dev/sdb is used as a removable device
- For Mac users, /dev/disk1 and /dev/disk1s1 is used

Target BIOS Boot Time with Virtual Media

The BIOS for certain targets may take longer to boot if media is mounted virtually at the target.

► **To shorten the boot time:**

1. Close the Virtual KVM Client to completely release the virtual media drives.

- Restart the target.

Virtual Media Connection Failures Using High Speed for Virtual Media Connections

Under certain circumstances it may be necessary to select the "Use Full Speed for Virtual Media CIM" when a target has problems with "High Speed USB" connections or when the target is experiencing USB protocol errors caused by signal degradation due to additional connectors and cables (for example, a connection to a blade server via a dongle).

USB Port and Profile Notes

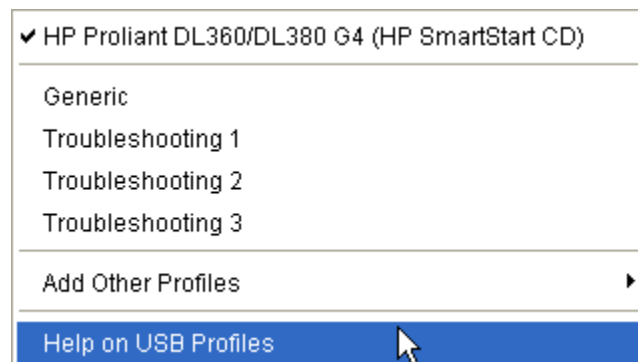
VM-CIMs and DL360 USB Ports

HP® DL360 servers have one USB port on the back of the device and another on the front of the device. With the DL360, both ports cannot be used at the same time. Therefore, a dual VM-CIM cannot be used on DL360 servers.

However, as a workaround, a USB2 hub can be attached to the USB port on the back of the device and a dual VM-CIM can be attached to the hub.

Help Choosing USB Profiles

When you are connected to a KVM target server via the Virtual KVM Client (VKC), you can view information about USB profiles via the Help on USB Profiles command on the USB Profile menu.



USB profile help appears in the USB Profile Help window. For detailed information about specific USB profiles, see Available USB Profiles.

Raritan provides a standard selection of USB configuration profiles for a wide range of operating system and BIOS level server implementations. These are intended to provide an optimal match between remote USB device and target server configurations.

The 'Generic' profile meets the needs of most commonly deployed target server configurations.

Additional profiles are made available to meet the specific needs of other commonly deployed server configurations (for example, Linux®, Mac OS X®).

There are also a number of profiles (designated by platform name and BIOS revision) that have been tailored to enhance the virtual media function compatibility with the target server, for example, when operating at the BIOS level.

'Add Other Profiles' provides access to other profiles available on the system. Profiles selected from this list will be added to the USB Profile Menu. This includes a set of 'trouble-shooting' profiles intended to help identify configuration limitations.

The USB Profile Menu selections are configurable via the Console Device Settings > Port Configuration page.

Should none of the standard USB profiles provided by Raritan meet your target server requirements, Raritan Technical Support can work with you to arrive at a solution tailored for that target. Raritan recommends that you do the following:

1. Check the most recent release notes on the Raritan website (www.raritan.com) on the Firmware Upgrade page to see if a solution is already available for your configuration.
2. If not, please provide the following information when contacting Raritan Technical Support:
 - a. Target server information, manufacturer, model, BIOS, manufacturer, and version.
 - b. The intended use (e.g. redirecting an image to reload a server's operating system from CD).

Changing a USB Profile when Using a Smart Card Reader

There may be certain circumstances under which you will need to change the USB profile for a target server. For example, you may need to change the connection speed to "Use Full Speed for Virtual Media CIM" when the target has problems with the "High Speed USB" connection speed.

When a profile is changed, you may receive a New Hardware Detected message and be required to log in to the target with administrative privileges to reinstall the USB driver. This is only likely to occur the first few times the target sees the new settings for the USB device. Afterward, the target will select the driver correctly.

Video Mode and Resolution Notes

Video Image Appears Dark when Using a Mac

If you are using a Mac® with an HDMI video port and the video seems too dark, enable DVI Compatibility Mode on the CIM to help resolve the issue.

See Configuring CIM Ports

Video Shrinks after Adjusting Target Clock

On HP® ProLiant® DL380p G8 target servers, certain resolutions cause the target video to shrink. This is caused when the server's clock attempts to auto-adjust and detects the wrong active line length.

Depending on the resolution the target is set to, this occurs when connecting to the HP target from the KX III Remote Console or Local Port, or both the Remote Console and Local Port. This issue was detected at the following resolutions:

Target resolution	Issue seen on Local Port	Issue seen from Remote Console
1440x900@60Hz	Yes	Yes
1400x1050@60Hz	No	Yes
1152x864@60Hz	No	Yes

Black Stripe/Bar(s) Displayed on the Local Port

Certain servers and video resolutions may display on the local port with small black bars at the edge of the screen.

If this occurs:

1. Try a different resolution, or
2. If using a digital CIM, then change the Display Native Resolution on the Port Configuration page to another resolution, or
3. If using the HDMI CIM, use the DVI Compatibility Mode.

Contact Raritan Technical Support for additional assistance.

Sun Composite Synch Video

Sun™ composite synch video is not supported.

SUSE/VESA Video Modes

The SuSE X.org configuration tool SaX2 generates video modes using modeline entries in the X.org configuration file. These video modes do not correspond exactly with VESA video mode timing (even when a VESA monitor is selected). The KX III, on the other hand, relies on exact VESA mode timing for proper synchronization. This disparity can result in black borders, missing sections of the picture, and noise.

► **To configure the SUSE video display:**

1. The generated configuration file /etc/X11/xorg.conf includes a Monitor section with an option named UseModes. For example, UseModes "Modes[0]"
2. Either comment out this line (using #) or delete it completely.
3. Restart the X server.

With this change, the internal video mode timing from the X server is used and corresponds exactly with the VESA video mode timing, resulting in the proper video display on the KX III.

Keyboard Notes

French Keyboard

Caret Symbol (Linux Clients Only)

The Virtual KVM Client (VKC) do not process the key combination of Alt Gr + 9 as the caret symbol (^) when using French keyboards with Linux® clients.

► **To obtain the caret symbol:**

From a French keyboard, press the ^ key (to the right of the P key), then immediately press the space bar.

Alternatively, create a macro consisting of the following commands:

1. Press Right Alt
2. Press 9.
3. Release 9.
4. Release Right Alt.

Note: These procedures do not apply to the circumflex accent (above vowels). In all cases, the ^ key (to the right of the P key) works on French keyboards to create the circumflex accent when used in combination with another character.

Accent Symbol (Windows XP Operating System Clients Only)

From the Virtual KVM Client (VKC), the key combination of Alt Gr + 7 results in the accented character displaying twice when using French keyboards with Windows XP® clients.

Note: This does not occur with Linux® clients.

Numeric Keypad

From the Virtual KVM Client (VKC), the numeric keypad symbols display as follows when using a French keyboard:

Numeric keypad symbol	Displays as
/	· ;
.	· ;

Tilde Symbol

From the Virtual KVM Client (VKC), the key combination of Alt Gr + 2 does not produce the tilde (~) symbol when using a French keyboard.

► **To obtain the tilde symbol:**

Create a macro consisting of the following commands:

- Press right Alt
- Press 2
- Release 2
- Release right Alt

Keyboard Language Preference (Fedora Linux Clients)

Because the Sun™ JRE™ on Linux® has problems generating the correct KeyEvents for foreign-language keyboards configured using System Preferences, Raritan recommends that you configure foreign keyboards using the methods described in the following table.

Language	Configuration method
US Intl	Default
UK	System Settings (Control Center)
French	Keyboard Indicator
German	Keyboard Indicator
Hungarian	System Settings (Control Center)
Spanish	System Settings (Control Center)
Swiss-German	System Settings (Control Center)
Norwegian	Keyboard Indicator
Swedish	Keyboard Indicator
Danish	Keyboard Indicator
Japanese	System Settings (Control Center)
Korean	System Settings (Control Center)
Slovenian	System Settings (Control Center)
Italian	System Settings (Control Center)
Portuguese	System Settings (Control Center)

Note: The Keyboard Indicator should be used on Linux systems using Gnome as a desktop environment.

When using a Hungarian keyboard from a Linux client, the Latin letter U with Double Acute and the Latin letter O with Double Acute work only with JRE 1.6 (and later).

There are several methods that can be used to set the keyboard language preference on Fedora® Linux clients. The following method must be used in order for the keys to be mapped correctly from the Virtual KVM Client (VKC).

► **To set the keyboard language using System Settings:**

1. From the toolbar, choose System > Preferences > Keyboard.
2. Open the Layouts tab.
3. Add or select the appropriate language.
4. Click Close.

► **To set the keyboard language using the Keyboard Indicator:**

1. Right-click the Task Bar and choose Add to Panel.
2. In the Add to Panel dialog, right-click the Keyboard Indicator and from the menu choose Open Keyboard Preferences.
3. In the Keyboard Preferences dialog, click the Layouts tab.
4. Add and remove languages as necessary.

Macros Not Saving on Linux Targets

If you receive the following error message when you create and then save a macro on a target server running Linux® Fedora™ 18 with Java™ 1.7.0 (update 45 and later), disable SELinux in Fedora 18 on the target server to resolve the problem.

"An error occurred attempting to write the new keyboard macros. Macro was not added"

Mac Keyboard Keys Not Supported for Remote Access

When a Mac® is used as the client, the following keys on the Mac® keyboard are not captured by the Java™ Runtime Environment (JRE™):

- F9
- F10
- F11
- F14
- F15
- Volume Up
- Volume Down
- Mute
- Eject

As a result, the Virtual KVM Client (VKC) are unable to process these keys from a Mac client's keyboard.

Mouse Notes

Mouse Pointer Synchronization (Fedora)

When connected in dual mouse mode to a target device running Fedora® 7, if the target and local mouse pointers lose synchronization, changing the mouse mode from or to Intelligent or Standard may improve synchronization.

Single mouse mode may also provide for better control.

► **To resynchronize the mouse cursors:**

- Use the Synchronize Mouse option from the Virtual KVM Client (VKC).

Single Mouse Mode when Connecting to a Target Under CC-SG Control

When using Firefox® to connect to a KX III target under CC-SG control using DCIM-PS2 or DCIM-USBG2, if you change to Single Mouse Mode in the Virtual KVM Client (VKC), the VKC window will no longer be the focus window and the mouse will not respond.

If this occurs, left click on the mouse or press Alt+Tab to return the focus to the VKC window.

Audio

Audio Playback and Capture Issues

Features that May Interrupt an Audio Connection

If you use any of the following features while connected to an audio device, your audio connection may be interrupted. Raritan recommends you do not use these features if you are connected to an audio device:

- Video Auto-Sense
- Extensive use of the local port
- Adding users

Issues when Using a Capture Device and Playback Device Simultaneously on a Target

On some targets, the simultaneous connection of capture devices and playback devices may not work due to the USB hub controller and how it manages the USB ports. Consider selecting an audio format that requires less bandwidth.

If this does not resolve the issue, connect the D2CIM-DVUSB CIM's keyboard and mouse connector to a different port on the target. If this does not solve the problem, connect the device to a USB hub and connect the hub to the target.

Audio in a Linux Environment

The following are known issues when using the audio feature in a Linux® environment.

- Linux® users, use the default audio device for playback. Sound may not come through if a non-default sound card is selected.
- SuSE 11 clients require Javas_1_6_0-sun-alsa (ALSA support for java-1_6_0-sun) to be installed via YAST.
- For Logitech® headsets with a built in a mic, only the Mono Capture option is available.
- In order to display the device, if you are running SUSE 11 and an ALSA driver, log out of KX III, then log back in.

Additionally, if you connect and disconnect the audio device a number of times, the device may be listed several times vs. just once as it should.

- Using the audio feature with a Fedora Core® 13 target set to mono 16 bit, 44k may cause considerable interference during playback.

Audio in a Windows Environment

On Windows® 64-bit clients, only one playback device is listed on the Connect Audio panel when accessing the device through the Virtual KVM Client (VKC).

The audio device is the default device, and is listed on the Connect Audio panel as Java Sound Audio Engine.

Smart Card Notes

Virtual KVM Client (VKC) Smart Card Connections to Fedora Servers

If you are using a smart card to connect to a Linux® Fedora® server via Virtual KVM Client (VKC) upgrade the pcsc-lite library to 1.4.102-3 or above.

CC-SG Notes

Virtual KVM Client Version Not Known from CC-SG Proxy Mode

When the Virtual KVM Client (VKC) is launched from CommandCenter Secure Gateway (CC-SG) in proxy mode, the VKC version is unknown.

In the About Raritan Virtual KVM Client dialog, the version is displayed as "Version Unknown".

Moving Between Ports on a Device

If you move a between ports on the same Raritan device and resume management within one minute, CC-SG may display an error message.

If you resume management, the display will be updated.

Browser Notes

Resolving Issues with Firefox Freezing when Using Fedora

If you are accessing Firefox® and are using a Fedora® server, Firefox may freeze when it is opening.

To resolve this issue, install the libnjp2.so Java™ plug-in on the server.

Appendix E Frequently Asked Questions

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General FAQs

Question	Answer
What is Dominion KX III?	Dominion KX III is a third-generation digital KVM (keyboard, video, mouse) switch that enables one, two, four or eight IT administrators to access and control 8, 16, 32 or 64 servers over the network with BIOS-level functionality. Dominion KX III is completely hardware- and OS-independent; users can troubleshoot and reconfigure servers even when servers are down. At the rack, Dominion KX III provides the same functionality, convenience, and space and cost savings as traditional analog KVM switches. However, Dominion KX III also integrates the industry's highest performing KVM-over-IP technology, allowing multiple administrators to access server KVM consoles from any networked workstation as well as from the iPhone® and iPad®.
How is KX III different from KX II ?	The KX III is the next generation version of the KX II. Featuring a modern hardware design with increased computing power and storage, the KX III provides KVM-over-IP access for IT administration, as well as high performance IP access for broadcast applications. KX III includes virtually all KX II features with the following advancements: The KX III's new video processing engine supports a broad range of applications from traditional computer applications to the most dynamic broadcast applications requiring 30 frames-per-second 1920x1080 video, 24 bit color, digital audio, dual monitors and DVI, HDMI, DisplayPort and VGA video. With the industry's first DVI-based local port, the KX III's common user interface provides new levels of productivity and performance for at-the-rack administration and server access. All KX III models feature a tiering port to connect multiple Dominion KX III switches together and access the attached servers. Up to 1024 servers can be accessed via a consolidated port list. KX III supports all Dominion and Paragon II CIMs supported by KX II.

Question	Answer
How does Dominion KX III differ from remote control software?	When using Dominion KX III remotely, the interface, at first glance, may seem similar to remote control software such as pcAnywhere™, Windows® Terminal Services/Remote Desktop, VNC, etc. However, because Dominion KX III is not a software but a hardware solution, it's much more powerful: Hardware- and OS-independent – Dominion KX III can be used to manage servers running many popular OSs, including Intel®, Sun®, PowerPC running Windows, Linux®, Solaris™, etc. State-independent/Agentless – Dominion KX III does not require the managed server OS to be up and running, nor does it require any special software to be installed on the managed server. Out-of-band – Even if the managed server's own network connection is unavailable, it can still be managed through Dominion KX III. BIOS-level access – Even if the server is hung at boot up, requires booting to safe mode, or requires system BIOS parameters to be altered, Dominion KX III still works flawlessly to enable these configurations to be made.
Can the Dominion KX III be rack mounted?	Yes. The Dominion KX III ships standard with 19" rack mount brackets. It can also be reverse rack mounted so the server ports face forward.
How large is the Dominion KX III?	Dominion KX III is only 1U high (except the KX3-864 and KX3-464, which are 2U), fits in a standard 19" rack mount and is only 11.4" (29 cm) deep. The Dominion KX3-832 and KX3-864 are 13.8" (36 cm) deep.

Remote Access

Question	Answer
How many users can remotely access servers on each Dominion KX III?	Dominion KX III models offer remote connections for up to eight users per user channel to simultaneously access and control a unique target server. For one-channel appliances like the DKX3-116, up to eight remote users can access and control a single target server. For two-channel appliances, like the DKX3-216, up to eight users can access and control the server on channel one and up to another eight users on channel two. For four-channel appliances, up to eight users per channel, for a total of 32 (8 x 4) users, can access and control four servers. Likewise, for the eight-channel appliances, up to eight users can access a single server, up to an overall maximum of 32 users across the eight channels.
Can I remotely access servers from my iPhone or iPad?	Yes. Users can access servers connected to the KX III using their iPhone or iPad. Mobile access is provided through Mobile Access Client, which requires the use of CommandCenter Secure Gateway (CC-SG).
Can two people look at the same server at the same time?	Yes. Actually, up to eight people can access and control any single server at the same time.
Can two people access the same server, one remotely and one from the local port?	Yes. The local port is completely independent of the remote "ports." The local port can access the same server using the PC-Share feature.
In order to access Dominion KX III from a client, what hardware, software or network configuration is required?	Because Dominion KX III is completely Web-accessible, it doesn't require customers to install proprietary software on clients used for access. Dominion KX III can be accessed through major Web browsers, including: Internet Explorer® and Firefox®. Dominion KX III can be accessed on Windows®, Linux® and Mac® desktops, via Raritan's Windows Client, and the Java™-based Virtual KVM Client™. Dominion KX III administrators can also perform remote management (set passwords and security, rename servers, change IP address, etc.) using a convenient browser-based interface.

Question	Answer															
What is the file size of the applet that's used to access Dominion KX III? How long does it take to retrieve?	The Virtual KVM Client (VKC) applet used to access Dominion KX III is approximately 500KB in size. The following chart describes the time required to retrieve Dominion KX III's applet at different network speeds: <table><tr><td>100Mbps</td><td>Theoretical 100Mbit network speed</td><td>.05 seconds</td></tr><tr><td>60Mbps</td><td>Likely practical 100Mbit network speed</td><td>.08 seconds</td></tr><tr><td>10Mbps</td><td>Theoretical 10Mbit network speed</td><td>.4 seconds</td></tr><tr><td>6Mbps</td><td>Likely practical 10Mbit network speed</td><td>.8 seconds</td></tr><tr><td>512Kbps</td><td>Cable modem download speed (typical)</td><td>8 seconds</td></tr></table>	100Mbps	Theoretical 100Mbit network speed	.05 seconds	60Mbps	Likely practical 100Mbit network speed	.08 seconds	10Mbps	Theoretical 10Mbit network speed	.4 seconds	6Mbps	Likely practical 10Mbit network speed	.8 seconds	512Kbps	Cable modem download speed (typical)	8 seconds
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6Mbps	Likely practical 10Mbit network speed	.8 seconds														
512Kbps	Cable modem download speed (typical)	8 seconds														
Do you have a Windows KVM Client?	Yes. We have a native .NET Windows Client called the Raritan Active KVM Client (AKC). See Active KVM Client (AKC) Help (on page 85)															
Do you have a non-Windows KVM Client?	Yes. The Virtual KVM Client (VKC) allows non-Windows users to connect to target servers in the data center. See Virtual KVM Client (VKC) Help (see " Virtual KVM Client (VKC and VKCs) Help " on page 40)															
Do your KVM Clients have multi-language support?	Yes. The Dominion KX III's remote HTML User Interface and the KVM Clients support the Japanese, Simplified Chinese and Traditional Chinese languages. This is available stand-alone as well as through CC-SG.															
Do your KVM Clients support dual LCD monitors?	Yes. For customers wishing to enhance their productivity by using multiple LCD monitors on their desktops, the Dominion KX III can launch KVM sessions to multiple monitors, either in full screen or standard modes.															

Question	Answer
Do you support servers with dual video cards?	Yes, dual video cards are supported with an extended desktop configuration available to the remote user.
How do I access servers connected to Dominion KX III if the network ever becomes unavailable?	You can access servers at the rack or via modem. Dominion KX III offers a dedicated modem port for attaching an external modem.

Universal Virtual Media

Question	Answer
Which Dominion KX III models support virtual media?	All Dominion KX III models support virtual media. It is available stand-alone and through CommandCenter® Secure Gateway, Raritan's centralized management appliance.
Which types of virtual media does the Dominion KX III support?	Dominion KX III supports the following types of media: internal and USB-connected CD/DVD drives, USB mass storage devices, PC hard drives and ISO images.

Question	Answer
What is required for virtual media?	A Dominion KX III virtual media CIM is required. There are two VGA-based CIMs: a D2CIM-VUSB or D2CIM-DVUSB. The D2CIM-VUSB has a single USB connector and is for customers who will use virtual media at the OS level. The D2CIM-DVUSB has dual USB connectors and should be purchased by customers who wish to utilize virtual media at the BIOS level. The D2CIM-DVUSB is also required for smart card authentication, tiering/cascading and digital audio. Both support virtual media sessions to target servers supporting the USB 2.0 interface. Available in economical 32 and 64 quantity CIM packages, these CIMs support Absolute Mouse Synchronization™ as well as remote firmware updates. Our CIMs have traditionally supported analog VGA video. Three new dual virtual media CIMs support digital video formats, including DVI, HDMI and DisplayPort. These are the D2CIM-DVUSB-DVI, D2CIM-DVUSB-HDMI and D2CIM-DVUSB-DP.
Is virtual media secure?	Yes. Virtual media sessions are secured using 256-bit AES or 128-bit AES encryption.
Does virtual media really support audio?	Yes. Audio playback and recording to a server connected to the Dominion KX III is supported. You can listen to sounds and audio playing on a remote server in the data center using the speakers connected to your desktop PC or laptop. You can also record on the remote server using a microphone connected to your PC or laptop. A digital CIM or D2CIM-DVUSB dual virtual media CIM is required.
What is a USB profile?	Certain servers require a specifically configured USB interface for USB-based services such as virtual media. The USB profile tailors the KX III's USB interface to the server to accommodate these server-specific characteristics.

Question	Answer
Why would I use a USB profile?	USB profiles are most often required at the BIOS level where there may not be full support for the USB specification when accessing virtual media drives. However, profiles are sometimes used at the OS level, for example, for mouse synchronization for Mac and Linux servers.
How is a USB profile used?	Individual ports or groups of ports can be configured by the administrator to use a specific USB profile in the KX III's port configuration page. A USB profile can also be selected in the KX III Client when required. See the user guide for more information.
Do I always need to set a USB profile when I use virtual media?	No. In many cases, the default USB profile is sufficient when using virtual media at the OS level or operating at the BIOS level without accessing virtual media.
What profiles are available? Where can I find more information?	Consult the user guide for the available profiles and for more information.

Bandwidth and KVM-over-IP Performance

Question	Answer
How is bandwidth used in KVM-over-IP systems?	Dominion KX III offers totally new video processing that provides flexible, high performance video, efficient use of bandwidth and anytime/anywhere access via LAN, WAN or Internet. The Dominion KX III digitizes, compresses and encrypts the keyboard, video and mouse signals from the target server and transmits IP packets over the IP network to the remote client to create the remote session to the user. The KX III provides an at-the-rack experience based on its industry-leading video processing algorithms. Screen changes, i.e., video accounts for the majority of the bandwidth used – and keyboard and mouse activity are significantly less. It is important to note that bandwidth is only used when the user is active. The amount of bandwidth used is based on the amount of change to the server's video display screen. If there are no changes to the video – the user is not interacting with the server – there is generally little to no bandwidth used. If the user moves the mouse or types a character, then there is a small amount of bandwidth used. If the display is running a complex screen saver or playing a video, then there can be a larger amount of bandwidth used.
How does bandwidth affect KVM-over-IP performance?	In general, there is a trade-off between bandwidth and performance. The more bandwidth available, the better performance can be. In limited bandwidth environments, performance can degrade. The Dominion KX III has been optimized to provide strong performance in a wide variety of environments.

Question	Answer
What factors affect bandwidth?	There are many factors that determine how much bandwidth will be used. The primary factor, noted above, is the amount of change in the target server's video display. This is dependent on the user's task and actions. Other factors include the server's video resolution, networking speed and characteristics, the KVM Client Connection Properties, client PC resources and video card noise.
How much bandwidth does KX III use for common tasks?	Bandwidth primarily depends on the user's task and actions. The more the server's video screen changes, the more bandwidth is utilized.

Question	Answer
How do I optimize performance and bandwidth?	KX III provides a variety of settings in our remote clients for the user to optimize bandwidth and performance. The default settings will provide an at-the-rack level of performance in standard LAN/WAN environments with economical use of bandwidth. Optimize For. Use this setting to configure the video engine for standard IT/computer applications or for video/broadcast applications. Compression. Move the slider to the left for the highest possible video quality and to the right for the least amount of bandwidth. Noise Filter. In most cases, the default setting will work best, however you can move to the left for more responsive video and to the right for lower bandwidth. Other tips to decrease bandwidth include: ▪ Use a solid desktop background instead of a complex image ▪ Disable screensavers ▪ Use a lower video resolution on the target server ▪ Uncheck the "Show window contents while dragging" option in Windows ▪ Use simple images, themes and desktops (e.g., Windows Classic)
I want to connect over the Internet. What type of performance should I expect?	It depends on the bandwidth and latency of the Internet connection between your remote client and the KX III. With a cable modem or high speed DSL connection, your performance can be very similar to a LAN/WAN connection. For lower speed links, use the suggestions above to improve performance.
I have a high bandwidth environment. How can I optimize performance?	The default settings will work well. You can move the Connection Properties settings to the left for increased video performance.

Question	Answer
What is the maximum remote (over IP) video resolution supported?	The Dominion KX III is the first and only KVM-over-IP switch to support full high definition (HD) remote video resolution – 1920x1080 at frame rates up to 30 frames per second with digital audio. In addition, popular widescreen formats are supported, including 1600x1200, 1680x1050 and 1440x900, so remote users can work with today's higher resolution monitors.
How much bandwidth is used for audio?	It depends on the type of audio format used, but to listen to CD quality audio, approximately 1.5 Mbps is used.
What about servers with DVI ports?	Servers with DVI ports that support DVI-A (analog) and DVI-I (integrated analog and digital) can use Raritan's ADVI-VGA inexpensive, passive adapter to convert the server's DVI port to a VGA plug that can be connected to a KX III CIM's VGA plug. Servers with DVI ports that support DVI-I or DVI-D (digital) can use the new D2CIM-DVUSB-DVI CIM.

IPv6 Networking

Question	Answer
What is IPv6?	IPv6 is the acronym for Internet Protocol Version 6. IPv6 is the "next generation" IP protocol which will replace the current IP Version 4 (IPv4) protocol. IPv6 addresses a number of problems in IPv4, such as the limited number of IPv4 addresses. It also improves IPv4 in areas such as routing and network auto-configuration. IPv6 is expected to gradually replace IPv4, with the two coexisting for a number of years. IPv6 treats one of the largest headaches of an IP network from the administrator's point of view – configuring and maintaining an IP network.

Question	Answer
Why does KX III support IPv6 networking?	U.S. government agencies and the Department of Defense are now mandated to purchase IPv6-compatible products. In addition, many enterprises and foreign countries, such as China, will be transitioning to IPv6 over the next several years.
What is "dual stack" and why is it required?	Dual stack is the ability to simultaneously support IPv4 and IPv6 protocols. Given the gradual transition from IPv4 to IPv6, dual stack is a fundamental requirement for IPv6 support.
How do I enable IPv6 on the KX III?	Use the "Network Settings" page, available from the "Device Settings" tab. Enable IPv6 addressing and choose manual or auto-configuration. Consult the user guide for more information.
What if I have an external server with an IPv6 address that I want to use with my KX III?	The KX III can access external servers via their IPv6 addresses, for example, an SNMP manager, syslog server or LDAP server. Using the KX III's dual-stack architecture, these external servers can be accessed via: (1) an IPv4 address, (2) IPv6 address or (3) hostname. So, the KX III supports the mixed IPv4/IPv6 environment many customers will have.
What if my network doesn't support IPv6?	The KX III's default networking is set at the factory for IPv4 only. When you are ready to use IPv6, then follow the above instructions to enable IPv4/IPv6 dual-stack operation.
Where can I get more information on IPv6?	See www.ipv6.org for general information on IPv6. The KX III user guide describes the KX III's support for IPv6.

Servers

Question	Answer
Does Dominion KX III depend on a Windows server to operate?	Absolutely not. Because users depend on the KVM infrastructure to always be available in any scenario whatsoever (as they will likely need to use the KVM infrastructure to fix problems), Dominion KX III is designed to be completely independent from any external server.

Question	Answer
What should I do to prepare a server for connection to Dominion KX III?	Set the mouse parameter options to provide users with the best mouse synchronization and turn off screensavers and any power management features that affect screen display.
What about mouse synchronization?	In the past, KVM-over-IP mouse synchronization was a frustrating experience. The Dominion KX III's Absolute Mouse Synchronization provides for a tightly synchronized mouse without requiring server mouse setting changes on Windows and Apple® Mac servers. For other servers, the Intelligent Mouse mode or the speedy, single mouse mode can be used to avoid changing the server mouse settings.
What comes in the Dominion KX III box?	The following is included: (1) Dominion KX III appliance, (2) Quick Setup Guide, (3) standard 19" rack mount brackets, (4) user manual CD-ROM, (6) localized AC line cord and (7) warranty certificate and other documentation.

Blade Servers

Question	Answer
Can I connect blade servers to the Dominion KX III?	Yes. Dominion KX III supports popular blade server models from the leading blade server manufacturers: HP®, IBM®, Dell® and Cisco®.
Which blade servers are supported?	The following models are supported: Dell PowerEdge® 1855, 1955 and M1000e; HP BladeSystem c3000 and c7000; IBM BladeCenter® H, E and S; and Cisco UCS B-Series.
Which CIM should I use?	It depends on the type of KVM ports on the specific make and model of the blade server you are using. The following CIMs are supported: DCIM-PS2, DCIM-USBG2, D2CIM-VUSB and D2CIM-DVUSB.
Which types of access and control are available?	The Dominion KX III provides automated and secure KVM access: (1) at the rack, (2) remotely over IP, (3) via CommandCenter and (4) by modem.

Question	Answer
Do I have to use hotkeys to switch between blades?	Some blade servers require you to use hotkeys to switch between blades. With the Dominion KX III, you don't have to use these hotkeys. Just click on the name of the blade server, and the Dominion KX III will automatically switch to that blade without the explicit use of the hotkey.
Can I access the blade server's management module?	Yes. You can define the URL of the management module and access it from the Dominion KX III or from our CommandCenter Secure Gateway. If configured, one-click access is available.
How many blade servers can I connect to a Dominion KX III?	For performance and reliability reasons, you can connect up to eight blade chassis to a Dominion KX III, regardless of model. Raritan recommends connecting up to two times the number of remote connections supported by the device. For example, with a KX3-216 with two remote channels, we recommend connecting up to four blade server chassis. You can, of course, connect individual servers to the remaining server ports.
I'm an enterprise customer using CommandCenter Secure Gateway. Can I access blade servers via CommandCenter Secure Gateway?	Yes. Once blade servers are configured on the Dominion KX III, the CommandCenter Secure Gateway user can access them via KVM connections. In addition, the blade servers are organized by chassis as well as CommandCenter Secure Gateway custom views.
What if I also want in-band or embedded KVM access?	In-band and embedded access to blade servers can be configured within CommandCenter Secure Gateway.
I'm running VMware® on some of my blade servers. Is this supported?	Yes. With CommandCenter Secure Gateway, you can display and access virtual machines running on blade servers.
Is virtual media supported?	This depends on the blade server. HP blades can support virtual media. The IBM BladeCenter (except for BladeCenter T) supports virtual media if configured appropriately. A virtual media CIM – D2CIM-VUSB or D2CIM-DVUSB – must be used.

Question	Answer
Is Absolute Mouse Synchronization supported?	Servers with internal KVM switches inside the blade chassis typically do not support absolute mouse technology. For HP blade and some Dell blade servers, a CIM can be connected to each blade, so Absolute Mouse Synchronization is supported.
Is blade access secure?	Yes. Blade access uses all of the standard Dominion KX III security features such as 128-bit or 256-bit encryption. In addition, there are blade-specific security features such as per blade access permissions and hotkey-blocking that eliminates unauthorized access.
Does the Dominion KSX II or the KX III-101 support blade servers?	At this time, these products do not support blade servers.

Installation

Question	Answer
Besides the appliance itself, what do I need to order from Raritan to install Dominion KX III?	Each server that connects to Dominion KX III requires a Dominion or Paragon computer interface module (CIM), an adapter that connects directly to the keyboard, video and mouse ports of the server.
Which kind of Cat5 cabling should be used in my installation?	Dominion KX III can use any standard UTP (unshielded twisted pair) cabling, whether Cat5, Cat5e or Cat6. Often in our manuals and marketing literature, Raritan will simply say "Cat5" cabling for short. In actuality, any brand UTP cable will suffice for Dominion KX III.
Which types of servers and PCs can be connected to Dominion KX III?	Dominion KX III is completely vendor independent. Any server with standards-compliant keyboard, video and mouse ports can be connected. In addition, servers with serial ports can be controlled using the P2CIM-SER CIM.
How do I connect servers to Dominion KX III?	Servers that connect to the Dominion KX III require a Dominion or Paragon CIM, which connects directly to the keyboard, video and mouse ports of the server. Then, connect each CIM to Dominion KX III using standard UTP (unshielded twisted pair) cable such as Cat5, Cat5e or Cat6.

Question	Answer
How far can my servers be from Dominion KX III?	In general, servers can be up to 150 feet (45 m) away from Dominion KX III, depending on the type of server. (See Target Server Video Resolution Supported Connection Distances and Refresh Rates (on page 144)) For the D2CIM-VUSB CIMs that supports virtual media and Absolute Mouse Synchronization, a 100-foot (30 m) range is recommended.
Some operating systems lock up when I disconnect a keyboard or mouse during operation. What prevents servers connected to Dominion KX III from locking up when I switch away from them?	Each Dominion computer interface module (DCIM) dongle acts as a virtual keyboard and mouse to the server to which it is connected. This technology is called KME (keyboard/mouse emulation). Raritan's KME technology is data center grade, battle-tested and far more reliable than that found in lower-end KVM switches: it incorporates more than 15 years of experience and has been deployed to millions of servers worldwide.
Are there any agents that must be installed on servers connected to Dominion KX III?	Servers connected to Dominion KX III do not require any software agents to be installed because Dominion KX III connects directly via hardware to the servers' keyboard, video and mouse ports.
How many servers can be connected to each Dominion KX III appliance?	Dominion KX III models range from 8, 16 or 32 server ports in a 1U chassis, to 64 server ports in a 2U chassis. This is the industry's highest digital KVM switch port density.
What happens if I disconnect a server from Dominion KX III and reconnect it to another Dominion KX III appliance, or connect it to a different port on the same Dominion KX III appliance?	Dominion KX III will automatically update the server port names when servers are moved from port to port. Furthermore, this automatic update does not just affect the local access port, but propagates to all remote clients and the optional CommandCenter Secure Gateway management appliance.

Question	Answer
How do I connect a serially controlled (RS-232) device, such as a Cisco router/switch or a headless Sun server, to Dominion KX III?	If there are only a few serially controlled devices, they may be connected to a Dominion KX III using Raritan's P2CIM-SER serial converter. Customers can also consider deploying the Dominion KSX II, an integrated KVM and serial switch. The DKSX-144 features four KVM-over-IP ports and four serial ports. The DKSX-188 features eight KVM-over-IP ports and eight serial ports. However, if there are many serially controlled devices, we recommend the use of Raritan's Dominion SX line of secure console servers. Dominion SX offers more serial functionality at a better price point than Dominion KX III. This SX is easy to use, configure and manage, and can be completely integrated with a Dominion series deployment.

Local Port - KX III

Question	Answer
Can I access my servers directly from the rack?	Yes. At the rack, Dominion KX III functions just like a traditional KVM switch – allowing control of up to 64 servers using a single keyboard, monitor and mouse. You can switch between servers by the browser- based user interface or via a hotkey.
Can I consolidate the local ports of multiple KX IIIs?	Yes. You can connect the local ports of multiple KX III switches to another KX III using the "tiering" feature of the KX III. You can then access the servers connected to your KX III appliances from a single point in the data center via a consolidated port list.
When I am using the local port, do I prevent other users from accessing servers remotely?	No. The Dominion KX III local port has a completely independent access path to the servers. This means a user can access servers locally at the rack – without compromising the number of users that access the rack remotely at the same time.

Question	Answer
Can I use a USB keyboard or mouse at the local port?	Yes. The Dominion KX III has USB keyboard and mouse ports on the local port. Dominion KX III switches do not have PS/2 local ports. Customers with PS/2 keyboards and mice should utilize a PS/2 to USB adapter.
Is there an onscreen display (OSD) for local, at-the-rack access?	Yes, but Dominion KX III's at-the-rack access goes way beyond conventional OSDs. Featuring the industry's first browser-based interface for at-the-rack access, Dominion KX III's local port uses the same interface for local and remote access. Moreover, most administrative functions are available at the rack.
How do I select between servers while using the local port?	The local port displays the connected servers using the same user interface as the remote client. Users connect to a server with a simple click of the mouse or via a hotkey.
How do I ensure that only authorized users can access servers from the local port?	Users attempting to use the local port must pass the same level of authentication as those accessing remotely. This means that: If the Dominion KX III is configured to interact with an external RADIUS, LDAP or Active Directory® server, users attempting to access the local port will authenticate against the same server. If the external authentication servers are unavailable, Dominion KX III fails over to its own internal authentication database. Dominion KX III has its own stand-alone authentication, enabling instant, out-of-the-box installation.

Extended Local Port

Question	Answer
What is the extended local port?	The Dominion KX2-808, KX2-832 and KX2-864 featured an extended local port. The corresponding Dominion KX III models do not have an extended local port. Instead all KX III models have a tiering port. To extend the KX III's digital local port, you can use the Raritan Cat5 Reach DVI product for local and remote access up to 500 meters. See <i>Connecting a KX III and Cat5 Reach DVI - Provide Extended Local Port Functionality</i> (on page 128)

Dual Power Supplies

Question	Answer
Does Dominion KX III have a dual power option?	Yes. All Dominion KX III models come equipped with dual AC inputs and power supplies with automatic failover. Should one of the power inputs or power supplies fail, then the KX III will automatically switch to the other.
Does the power supply used by Dominion KX III automatically detect voltage settings?	Yes. Dominion KX III's power supply can be used in AC voltage ranges from 100–240 volts, at 50–60 Hz.
If a power supply or input fails, will I be notified?	The Dominion KX III front panel LED will notify the user of a power failure. An entry will also be sent to the audit log and displayed on the KX remote client user interface. If configured by the administrator, then SNMP or syslog events will be generated.

Intelligent Power Distribution Unit (PDU) Control

Question	Answer
What type of remote power control capabilities does Dominion KX III offer?	Raritan's intelligent PDUs can be connected to the Dominion KX III to provide power control of target servers and other equipment. For servers, after a simple one-time configuration step, just click on the server name to power on, off or to recycle a hung server.

Question	Answer
What type of power strips does Dominion KX III support?	Raritan's Dominion PX™ and Remote Power Control (RPC) power strips. These come in many outlet, connector and amp variations. Note that you should not connect the PM series of power strips to the Dominion KX III as these power strips do not provide outlet-level switching.
How many PDUs can be connected to a Dominion KX III?	Up to eight PDUs can be connected to a Dominion KX III appliance.
How do I connect the PDU to the Dominion KX III?	The D2CIM-PWR is used to connect the power strip to the Dominion KX III. The D2CIM-PWR must be purchased separately; it does not come with the PDU.
Does Dominion KX III support servers with multiple power supplies?	Yes. Dominion KX III can be easily configured to support servers with multiple power supplies connected to multiple power strips. Four power supplies can be connected per target server.
Does the Dominion KX III display statistics and measurements from the PDU?	Yes. PDU-level power statistics, including power, current and voltage, are retrieved from the PDU and displayed to the user.
Does remote power control require any special configuration of attached servers?	Some servers ship with default BIOS settings such that the server does not automatically restart after losing and regaining power. For these servers, see the server's documentation to change this setting.
What happens when I recycle power to a server?	Note that this is the physical equivalent of unplugging the server from the AC power line, and reinserting the plug.

Ethernet and IP Networking

Question	Answer
What is the speed of Dominion KX III's Ethernet interfaces?	Dominion KX III supports gigabit as well as 10/100 Ethernet. KX III supports two 10/100/1000 speed Ethernet interfaces, with configurable speed and duplex settings (either auto detected or manually set).

Question	Answer
Can I access Dominion KX III over a wireless connection?	Yes. Dominion KX III not only uses standard Ethernet, but also very conservative bandwidth with very high quality video. Thus, if a wireless client has network connectivity to a Dominion KX III, servers can be configured and managed at the BIOS level wirelessly.
Does the Dominion KX III offer dual gigabit Ethernet ports to provide redundant failover or load balancing?	Yes. Dominion KX III features dual gigabit Ethernet ports to provide redundant failover capabilities. Should the primary Ethernet port (or the switch/router to which it is connected) fail, Dominion KX III will failover to the secondary network port with the same IP address – ensuring that server operations are not disrupted. Note that automatic failover must be enabled by the administrator.
Can I use Dominion KX III with a VPN?	Yes. Dominion KX III uses standard Internet Protocol (IP) technologies from Layer 1 through Layer 4. Traffic can be easily tunneled through standard VPNs.
Can I use KX III with a proxy server?	Yes. KX III can be used with a SOCKS proxy server, assuming the remote client PC is configured appropriately. Contact the user documentation or online help for more information.
How many TCP ports must be open on my firewall in order to enable network access to Dominion KX III?	Two ports are required: TCP port 5000 to discover other Dominion appliances and for communication between Raritan appliances and CC-SG; and, of course, port 443 for HTTPS communication.
Are these ports configurable?	Yes. Dominion KX III's TCP ports are configurable by the administrator.
Can Dominion KX III be used with Citrix®?	Dominion KX III may work with remote access products like Citrix if configured appropriately, but Raritan cannot guarantee it will work with acceptable performance. Customers should realize that products like Citrix utilize video redirection technologies similar in concept to digital KVM switches so that two KVM-over-IP technologies are being used simultaneously.
Can the Dominion KX III use DHCP?	DHCP addressing can be used; however, Raritan recommends fixed addressing since the Dominion KX III is an infrastructure appliance and can be accessed and administered more effectively with a fixed IP address.

Question	Answer
I'm having problems connecting to the Dominion KX III over my IP network. What could be the problem?	The Dominion KX III relies on your LAN/WAN network. Some possible problems include: ▪ Ethernet auto-negotiation. On some networks, 10/100 auto-negotiation does not work properly, and the Dominion KX III appliance must be set to 100 Mb/full duplex or the appropriate choice for its network. ▪ Duplicate IP address. If the IP address of the Dominion KX III is the same as another appliance, network connectivity may be inconsistent. ▪ Port 5000 conflicts. If another appliance is using port 5000, the Dominion KX III default port must be changed (or the other appliance must be changed). ▪ When changing the IP address of a Dominion KX III, or swapping in a new Dominion KX III, sufficient time must be allowed for its IP and Mac® addresses to be known throughout the Layer 2 and Layer 3 networks.

Local Port Consolidation, Tiering and Cascading

Question	Answer
How do I physically connect multiple Dominion KX III appliances together into one solution?	To physically connect multiple KX III appliances together for consolidated local access, you can connect the Tiering ports of multiple "tiered" (or "cascaded") KX III switches to a "base" KX III using the Tiering port of the KX III. You can then access the servers connected to your KX III appliances from a single point in the data center via a consolidated port list. The Tiering port must be used to connect the tiered KX III switch to the base switch. Access via the consolidated port list is available in the data center or even from a remote PC. All servers connected to the tiered KX IIIs can be accessed via a hierarchical port list or via search (with wildcards). Two levels of tiering are supported; up to 1024 appliances can be accessed in a tiered configuration. Remote power control is also supported. Virtual media, smart card and blade server access via tiered access will be supported in a future release. Of course these features are available when accessed via a standard remote connection. While remote IP server access via the consolidated port list is available as a convenience, remote accessing a tiered server from CommandCenter or via the KX III the server is connected to, is recommended for optimal performance.

Question	Answer
Do I have to physically connect Dominion KX III appliances together?	Multiple Dominion KX III appliances do not need to be physically connected together. Instead, each Dominion KX III appliance connects to the network, and they automatically work together as a single solution if deployed with Raritan's CommandCenter Secure Gateway (CC-SG) management appliance. CC-SG acts as a single access point for remote access and management. CC-SG offers a significant set of convenient tools, such as consolidated configuration, consolidated firmware update and a single authentication and authorization database. Customers using CC-SG for centralized remote access can make good use of the KX III's tiering (cascading) feature to consolidate the local ports of multiple KX III switches and locally access up to 1024 servers from a single console when in the data center.
Is CC-SG required?	For customers wanting stand-alone usage (without a central management system), multiple Dominion KX III appliances still interoperate and scale together via the IP network. Multiple Dominion KX III switches can be accessed from the KX III Web-based user interface.
Can I connect an existing analog KVM switch to Dominion KX III?	Yes. Analog KVM switches can be connected to one of Dominion KX III's server ports. Simply use a USB computer interface module (CIM), and attach it to the user ports of the existing analog KVM switch. Analog KVM switches supporting hotkey-based switching on their local ports can be tiered to a Dominion KX III switch and switched via a consolidated port list, both remotely and in the data center. Please note that analog KVM switches vary in their specifications and Raritan cannot guarantee the interoperability of any particular third-party analog KVM switch. Contact Raritan technical support for further information.

Computer Interface Modules (CIMs)

Question	Answer
What type of video is supported by your CIMs?	Our CIMs have traditionally supported analog VGA video. Three new CIMs support digital video formats, including DVI, HDMI and DisplayPort. These are the D2CIM-DVUSB-DVI, D2CIM-DVUSB-HDMI and D2CIM-DVUSB-DP.
Can I use computer interface modules (CIMs) from Paragon, Raritan's analog matrix KVM switch, with Dominion KX III?	Yes. Certain Paragon computer interface modules (CIMs) may work with Dominion KX IIXX IIII. (Please check the Raritan Dominion KX III Release Notes on the website for the latest list of certified CIMs.) However, because Paragon CIMs cost more than Dominion KX III CIMs (as they incorporate technology for video transmission of up to 1,000 feet [304 m]), it is not generally advisable to purchase Paragon CIMs for use with Dominion KX III. Also note that when connected to Dominion KX III, Paragon CIMs transmit video at a distance of up to 150 feet (46 m), the same as Dominion KX III CIMs – not at 1,000 feet (304 m), as they do when connected to Paragon.
Does Dominion KX III support Paragon Dual CIMs?	Yes. The Dominion KX III supports Paragon II Dual CIMs (P2CIM-APS2DUAL and P2CIM-AUSBDUAL), which can connect servers in the data center to two different Dominion KX III switches. If one KX III switch is not available, the server can be accessed through the second KX III switch, providing redundant access and doubling the level of remote KVM access. Please note these are Paragon CIMs, so they do not support the KX III advanced features such as virtual media, absolute mouse, audio, etc.

Security

Question	Answer
Is the Dominion KX III FIPS 140-2 Certified?	The Dominion KX III uses an embedded FIPS 140-2 validated cryptographic module running on a Linux platform per FIPS 140-2 implementation guidelines. This cryptographic module is used for encryption of KVM session traffic consisting of video, keyboard, mouse, virtual media and smart card data.
What kind of encryption does Dominion KX III use?	Dominion KX III uses industry-standard (and extremely secure) 256-bit AES, 128-bit AES or 128-bit encryption, both in its SSL communications as well as its own data stream. Literally no data is transmitted between remote clients and Dominion KX III that is not completely secured by encryption.
Does Dominion KX III support AES encryption as recommended by the U.S. government's NIST and FIPS standards?	Yes. The Dominion KX III utilizes the Advanced Encryption Standard (AES) for added security. 256-bit and 128-bit AES is available. AES is a U.S. government-approved cryptographic algorithm that is recommended by the National Institute of Standards and Technology (NIST) in the FIPS Standard 197.
Does Dominion KX III allow encryption of video data? Or does it only encrypt keyboard and mouse data?	Unlike competing solutions, which only encrypt keyboard and mouse data, Dominion KX III does not compromise security – it allows encryption of keyboard, mouse, video and virtual media data.
How does Dominion KX III integrate with external authentication servers such as Active Directory, RADIUS or LDAP?	Through a very simple configuration, Dominion KX III can be set to forward all authentication requests to an external server such as LDAP, Active Directory or RADIUS. For each authenticated user, Dominion KX III receives from the authentication server the user group to which that user belongs. Dominion KX III then determines the user's access permissions depending on the user group to which he or she belongs.
How are usernames and passwords stored?	Should Dominion KX III's internal authentication capabilities be used, all sensitive information, such as usernames and passwords, is stored in an encrypted format. Literally no one, including Raritan technical support or product engineering departments, can retrieve those usernames and passwords.

Question	Answer
Does Dominion KX III support strong passwords?	Yes. The Dominion KX III has administrator-configurable, strong password checking to ensure that user-created passwords meet corporate and/or government standards and are resistant to brute force hacking.
Can I upload my own digital certificate to the Dominion KX IIXX III?	Yes. Customers can upload self-signed or certificate authority-provided digital certificates to the Dominion KX III for enhanced authentication and secure communication.
Does the KX III support a configurable security banner?	Yes. For government, military and other security-conscious customers requiring a security message before user login, the KX III can display a user-configurable banner message and optionally require acceptance.
My security policy does not allow the use of standard TCP port numbers. Can I change them?	Yes. For customers wishing to avoid the standard TCP/IP port numbers to increase security, the Dominion KX III allows the administrator to configure alternate port numbers.

Smart Cards and CAC Authentication

Question	Answer
Does Dominion KX III support smart card and CAC authentication?	Yes. Smart cards and DoD common access cards (CAC) authentication to target servers is supported.
What is CAC?	Mandated by Homeland Security Presidential Directive 12 (HSPD-12), CAC is a type of smart card created by the U.S. government and used by U.S. military and government staff. The CAC card is a multitechnology, multipurpose card; the goal is to have a single identification card. For more information, see the FIPS 201 standards.
Which KX III models support smart cards/CAC?	All Dominion KX III models are supported. The Dominion KX III-101 models do not currently support smart cards and CAC.

Question	Answer
Do enterprise and SMB customers use smart cards, too?	Yes. However, the most aggressive deployment of smart cards is in the U.S. federal government.
Which CIMs support smart card/CAC?	The D2CIM-DVUSB, D2CIM-DVUSB-DVI, D2CIM-DVUSB-HDMI and D2CIM-DVUSB-DP are the required CIMs.
Which smart card readers are supported?	The required reader standards are USB CCID and PC/SC. Consult the user documentation for a list of certified readers and more information.
Can smart card/CAC authentication work on the local port and via CommandCenter?	Yes. Smart card/CAC authentication works on both the local port and via CommandCenter. For the local port, connect a compatible smart card reader to the USB port of the Dominion KX III.

Manageability

Question	Answer
Can Dominion KX III be remotely managed and configured via Web browser?	Yes. Dominion KX III can be completely configured remotely via Web browser. Note that this does require that the workstation have an appropriate Java Runtime Environment (JRE) version installed. Besides the initial setting of Dominion KX III's IP address, everything about the solution can be completely set up over the network. (In fact, using a crossover Ethernet cable and Dominion KX III's default IP address, you can even configure the initial settings via Web browser.)
Can I back up and restore Dominion KX III's configuration?	Yes. Dominion KX III's appliance and user configurations can be completely backed up for later restoration in the event of a catastrophe. Dominion KX III's backup and restore functionality can be used remotely over the network, or through your Web browser.

Question	Answer
What auditing or logging does Dominion KX III offer?	For complete accountability, Dominion KX III logs all major user events with a date and time stamp. For instance, reported events include (but are not limited to): user login, user logout, user access of a particular server, unsuccessful login, configuration changes, etc.
Can Dominion KX III integrate with syslog?	Yes. In addition to Dominion KX III's own internal logging capabilities, Dominion KX III can send all logged events to a centralized syslog server.
Can Dominion KX III integrate with SNMP?	Yes. In addition to Dominion KX III's own internal logging capabilities, Dominion KX III can send SNMP traps to SNMP management systems. SNMP v2 and v3 are supported.
Can an administrator log-off a user?	Yes, administrators can view which users are logged into which ports and can log-off a user from a specific port or from the appliance if required.
Can Dominion KX III's internal clock be synchronized with a timeserver?	Yes. Dominion KX III supports the industry-standard NTP protocol for synchronization with either a corporate timeserver, or with any public timeserver (assuming that outbound NTP requests are allowed through the corporate firewall).

Documentation and Support

Question	Answer
Is online help available?	Yes. Online help is available from the KX III user interface, and at raritan.com with the documentation. Online help includes KX III administration and end user information on using the Remote Console, Virtual KVM Client (VKC) Active KVM Client (AKC) and Local Console, as well KX III specifications, informational notes, using KX III with Paragon II, connecting KX III to the Cat5 Reach DVI, connecting KX III to the T1700-LED, and so on.

Question	Answer
Where do I find documentation on the Dominion KX III?	The documentation is available at raritan.com. The documentation is listed by firmware release.
What documentation is available?	A Quick Setup Guide, online help, a PDF version of the help in the form of an Administrators Guide and a Users Guide, as well as Release Notes and other information are available.
What CIM should I use for a particular server?	Consult the CIM Guide available with the KX III documentation. Note that DVI, HDMI and DisplayPort video standards are supported with the digital video CIMs.
How long is the hardware warranty for the KX III?	The Dominion KX III comes with a standard two-year warranty, which can be extended to 5 years of warranty coverage.

Miscellaneous

Question	Answer
What is Dominion KX III's default IP address?	192.168.0.192
What is Dominion KX III's default username and password?	The Dominion KX III's default username and password are admin/raritan (all lower case). However, for the highest level of security, the Dominion KX III forces the administrator to change the Dominion KX III default administrative username and password when the appliance is first booted up.
I changed and subsequently forgot Dominion KX III's administrative password; can you retrieve it for me?	Dominion KX III contains a hardware reset button that can be used to factory reset the appliance, which will reset the administrative password on the appliance to the default password.

Question	Answer
How do I migrate from the Dominion KX II to Dominion KX III?	In general, KX II customers can continue to use their existing switches for many years. As their data centers expand, customers can purchase and use the new KX III models. Raritan's centralized management appliance, CommandCenter Secure Gateway (CC-SG) Release 6.0 supports KX II and KX III switches seamlessly.
Will my existing KX II CIMs work with Dominion KX III switches?	Yes. Existing KX II CIMs will work with the Dominion KX III switch. In addition, select Paragon CIMs will work with the KX III. This provides an easy migration to KX III for Paragon II customers who wish to switch to KVM over IP. However, you may want to consider the D2CIM-VUSB and D2CIM-DVUSB CIMs that support virtual media, audio and Absolute Mouse Synchronization. Additionally, digital video CIMs supporting DVI, HDMI, and Display Port are also available.

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Email: tech.europe@raritan.com

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Email: rg-support@raritan.com

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