



Paragon II

User Guide
Release 4.8.3

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If a power cable is included with this product, it must be used exclusively for this product.



Power Safety Guidelines

To avoid potentially fatal shock hazard and possible damage to Raritan equipment:

- Do not use a 2-wire power cord in any product configuration.
- Test AC outlets at your computer and monitor for proper polarity and grounding.
- Use only with grounded outlets at both the computer and monitor. When using a backup UPS, power the computer, monitor and appliance off the supply.

In Raritan products which require Rack Mounting, please follow these precautions:

- Operation temperature in a closed rack environment may be greater than room temperature. Do not exceed the rated maximum ambient temperature of the appliances. See Specifications.
- Ensure sufficient airflow through the rack environment.
- Mount equipment in the rack carefully to avoid uneven mechanical loading.
- Connect equipment to the supply circuit carefully to avoid overloading circuits.
- Ground all equipment properly, especially supply connections, such as power strips (other than direct connections), to the branch circuit.

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What's New in the Paragon II User Guide

The following sections have changed or information has been added to the Paragon II User Guide based on enhancements and changes to the equipment and/or user documentation.

- **CIMs** (on page 3)
- **Product Features** (on page 6)
- **A KVM System with a Single Paragon Switch** (on page 20)
- **User Profile Parameters and How to Change Settings** (on page 78)
- **Authentication with a Smart Card** (on page 88)
- **Requisites for Card Reader Functionality** (on page 92)
- **P2ZCIMs** (on page 128)
- **P2ZCIM Features** (on page 128)
- **Identifying the P2ZCIM-USB G3** (on page 129)
- **Connecting P2ZCIMs as Tiers** (on page 130)
- **CommandCenter Secure Gateway Integration** (on page 200)

Please see the Release Notes for a more detailed explanation of the changes applied to this version of Paragon II.

How-To: Paragon Essentials

This chapter includes 10 of the most common use cases to help familiarize users quickly with practical utilization of the Paragon system. Please note that this section provides common examples, which could vary according to your actual configuration and operations.

Case 1. Setting the Network Configuration

Purpose: To set the network configuration of the Paragon switch, such as an IP address, so it can be accessed or upgraded through the network.

1. Log in to the Paragon system as an administrator.
 - a. Type `admin` in the **User Name** field and press **Enter**.
 - b. Type `raritan` (the default password; all lowercase) in the **Password** field and press **Enter**. Note the password is case-sensitive.
2. Press **F5** --> select **Network Setting**.
3. Configure the **Current IP** field. For example, if you want to assign 90.180.52.157 as the IP address, you do this:
 - a. Highlight the first number in the **IP** field.
 - b. Press **Enter** to turn the highlight color to green.
 - c. Type `090` and press **Enter**. (Note that Paragon does not support the use of the keypad.)
 - d. Repeat similar steps to modify remaining numbers in this field.
4. Configure remaining fields respectively, including Net Mask, Gateway IP and Port No.
5. **(Optional)** By default, Encryption is set to "Off." To change this setting:
 - a. Press **Enter** to turn the highlight color to green.
 - b. Press the arrow keys (**↑**, **↓**, **←**, **→**) to switch between options and press **Enter**.
6. **(Optional)** Configure the **Keys** field if you select "On" in the **Encryption** field.
7. Press **S** to save the changes. The system restarts itself.

See **Network Settings** (on page 121) for details.

Case 2. Multiple Write Access to the Same Server

Purpose: To enable various users to view the same server simultaneously and to grant them equal opportunity to compete for the control/operation of the server when the keyboard/mouse activity in the server has become inactive for a preset period of time (1 second by default unless it is customized). Only one person is allowed to control/operate the server at one time.

1. Log in to the Paragon system as an administrator.
 - a. Type `admin` in the **User Name** field and press **Enter**.
 - b. Type `raritan` (the default password; all lowercase) in the **Password** field and press **Enter**. Note the password is case-sensitive.
2. Press **F5** --> select **System Configuration**.
3. Press the arrow keys (**↑**, **↓**, **←**, **→**) to highlight the **Operation Mode** field.
4. Press **Enter** to turn the highlight color to green.
5. Press the arrow keys (**↑**, **↓**, **←**, **→**) to select the option "PC Share" and press **Enter**.
6. Press **S** to save the changes.

See **System Configuration** (on page 101) for details.

Now every user can access the same server simultaneously.

Case 3. Controlling a Device's Power

Purpose: To control the power supply of specific servers, devices or even Paragon switches as long as they are connected to any power strip in the Paragon system. These devices can be turned on, turned off or power cycled as you wish.

1. Log in to the Paragon system as an administrator.
 - a. Type `admin` in the **User Name** field and press **Enter**.
 - b. Type `raritan` (the default password; all lowercase) in the **Password** field and press **Enter**. Note the password is case-sensitive.
2. Associate the power outlets of the power strip with the connected devices. For example, if a router receives power from outlet No. 1 of the power strip, and both of the power strip and router are connected to the same Paragon switch. The router is named "Router-Win" in the system. Do the following to associate them.
 - a. Press **F5** --> select **Channel Configuration**.

- b. Highlight the channel of the power strip. For example, highlight the channel No. 25 if the power strip is connected to that channel.
 - c. Press **G** to enter the **Outlet Configuration** screen of the power strip.
 - d. Change the type of outlet No. 1: press **Enter** --> press the arrow key to select "CPU" --> press **Enter**.
 - e. Associate the outlet No. 1 with the router: press the right arrow key to move the highlight --> press **Enter** --> highlight the router name "Router-Win" --> press **Enter**.
- See **Associating a Device with a Power Outlet** (on page 125) for details.
- f. Press **S** to save the power association.
3. Now you can control the power supply to "Router-Win" by doing this:
 - a. Press **F2** to return to the **Selection Menu** screen.
 - b. Highlight the channel associated with the power strip. For example, highlight the channel No. 33 if the router "Router-Win" is connected to that channel.
 - c. Press **F3** to view the associated power outlet screen.
 - d. Highlight one or more power outlets, and choose the action you want to carry out:

Desired result	Do this
Power off the outlet(s)	Press X --> type <i>yes</i>
Power on the outlet(s)	Press O (alphabetical character)
Power cycle the outlet(s)	Press R --> type <i>yes</i>

See **Controlling Power to an Outlet** (on page 126) for details.

Case 4. Local Video Redirection (Forced Video)

Purpose: To locally direct a server to output its video/keyboard/mouse data to a specific user station so the user of the specified user station can be assigned to view and even work on the server.

1. Log in to the Paragon system as an administrator.
 - a. Type `admin` in the **User Name** field and press **Enter**.
 - b. Type `raritan` (the default password; all lowercase) in the **Password** field and press **Enter**. Note the password is case-sensitive.
2. Press arrow keys (**↑**, **↓**) to highlight the channel of the server whose data you want to direct.

3. Press **Tab** and the message "Force switch to user port" appears on the message bar.
4. Type the port number of the desired user station. For example, if you want to direct the data to the user station connected to the user port No. 3, type **3** and press **Enter**.

See **Video Redirection (Forced Video)** (on page 105) for details.

Case 5. Using Multiple Video Ports

Purpose: To have the access to a specific video port automatically trigger the video outputs of the other video ports on the same server (Paragon is designed to output a maximum of 16 video ports of a server).

1. Connect four video ports of the server respectively to four channels of the same Paragon switch via four CIMs. Three of the CIMs must be P2CIM-AUSB and one could be either P2CIM-AUSB or P2CIM-APS2. For example, you may connect them to channel port No. 1, 2, 3 and 26.

See **Connecting CIMs to a Multi-Channel Video Server** (on page 84) for details.

2. The Paragon administrator sets up the channel association group using Paragon Manager. Do this:
 - a. Launch Paragon Manager.
 - b. Connect and log into the Paragon system by doing this: choose **Session > Connect** --> choose the Paragon switch you want to connect --> type the administrator name/password --> click **Login**.
 - c. Create the association group consisting of channel numbers 1, 2, 3 and 26: choose **Set up > Multiple Video > New** --> type necessary data --> select four channels 1, 2, 3 and 26 --> click **OK**.
 - d. Ensure the channel triggering the video outputs of the other channels is set as the "first" channel. For example, the administrator may choose 3 in the **First Channel** field so channel No. 3 will be the channel which causes the other three channels to output their video data.

See **Channel Association for Multiple Video** (on page 108) and *Paragon Manager User Guide* for details. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

3. Any user who wants to perform the Multiple Video function logs into the Paragon system. For example, one user uses the user station connected to the user port No. 2 to log into the system with the following user name which has no password required.

user name: user02
password: <no password>

4. Select the “first” channel of the association group on the On-Screen User Interface (OSUI). In this example, highlight channel number 3 and press **Enter**.
 5. The other video ports of the same server connected to channel numbers 1, 2 and 26 automatically output their video data to three user stations subsequent to the one where user02 is operating, which are connected to user port No. 3, 4 and 5 respectively.
 6. When user02 disconnects the channel number 3 or even logs out of the system, the three subsequent user stations are also logged off.
- See **Concurrent Multiple Video Outputs** (on page 83) for details.

Case 6. Restoring Settings to Factory Defaults

Purpose: To reset the Paragon switch to its factory default settings when you want to clear customized settings, such as the device name, system settings, and so on.

1. Log in to the Paragon system as an administrator.
 - a. Type `admin` in the **User Name** field and press **Enter**.
 - b. Type `raritan` (the default password; all lowercase) in the **Password** field and press **Enter**. Note the password is case-sensitive.
2. Press **F5** --> select **System Reset Settings**.
3. Highlight the field(s) that you want to reset, and change the setting to **Yes** by doing this: press **Enter** --> press any arrow key --> press **Enter**. The affected scope of different fields are described below:

Field	Settings returning to factory defaults
Device Name	The Device ID field in the System Configuration submenu
Network Settings	All settings in the Network Setting submenu
User Profiles	All settings of the following submenus or settings: <ul style="list-style-type: none"> ▪ User Configuration ▪ User Station Profile ▪ User Profile settings that are displayed when pressing F4
System Configuration	All settings in the System Configuration submenu except for the Device ID field

Field	Settings returning to factory defaults
Channel Configuration	All settings or records of the active and inactive channels in the Channel Configuration submenu are cleared, but the data of active channels is rebuilt automatically after the reset

4. Now reset the selected items. Press **O** (alphabetical character) --> type *yes* --> press **Enter**.
5. The system will log out all of logged-in users and return the selected settings to factory defaults.

See **System Reset** (on page 120) for details.

Case 7. Using the Integrated Card Reader

Purpose: To pass the login authentication configured in specific servers that require the input of the data stored in an appropriate smart card. This function requires the card reader-enabled firmware and devices, including the Paragon switch with firmware 4.3 or above, P2-EUST/C and P2CIM-AUSB-C.

1. Log in to the Paragon system utilizing a user station with an integrated card reader (P2-EUST/C).
2. Access the server where the appropriate authentication software and driver have been installed and configured properly and which is connected to the Paragon system via P2CIM-AUSB-C.
3. When you see the blank screen or a message prompting you to insert the card, insert your smart card into the card reader of the user station.
4. Depending on the configuration of the target server or authentication software, you may also need to enter a PIN.
5. After the login authentication and authorization has been completed, you can start working on the server.
6. When you complete your work, press the hot key (default: Scroll Lock) twice quickly to trigger the OSUI.

See **Using the OSUI for Initial Configuration** (on page 36) for details.

7. Press **Shift +F9** to disconnect the server, and then remove the card.

See **Using the Card Reader** (on page 96) for details.

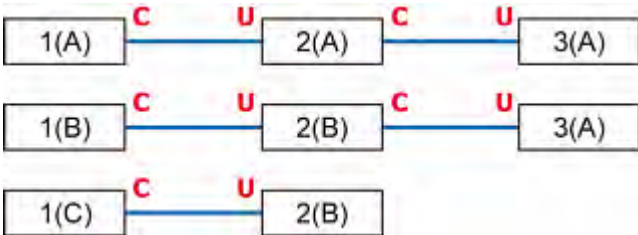
The card's authentication data is not stored in the Paragon system so you must repeat Steps 3 to 5 if you want to access the same server again.

Case 8. Creating Multiple Paths to the Same Server(s)

Purpose: To ensure that there is redundant access to specific servers. In this example, we will create three available paths for access to specific servers using the structure of multiple Base Units.

Note: A Base Unit is the “first-tier” Paragon switch.

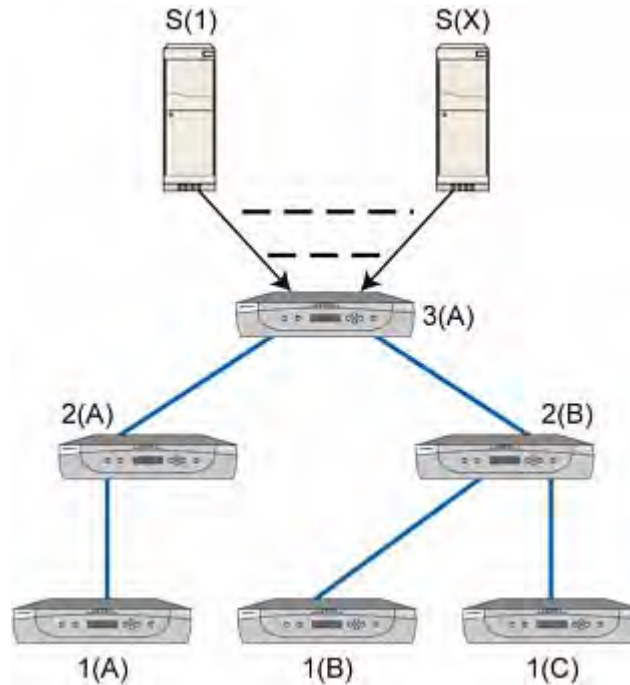
1. Prepare six Paragon switches, such as P2-UMT1664M and/or P2-UMT832M.
2. Choose three of them as Base Units, two as the 2nd tier, and one as the 3rd tier. If these switches do not share the same firmware version, make sure the versions of lower tiers are later than those of upper tiers. For example, Base Unit is with firmware version 4.2 and 2nd Tier with version 4.0.
3. Connect all of these Paragon switches with Category 5 (Cat5) UTP cables from the channel ports of lower tiers to user ports of upper tiers as illustrated below:



C	Channel ports
U	User ports
1(A) ~ 1(C)	Base Units (first-tier Paragon switches)
2(A) ~ 2(B)	Second-tier Paragon switches
3(A)	Third-tier Paragon switch

See **Tiered Configurations** (on page 142) for details.

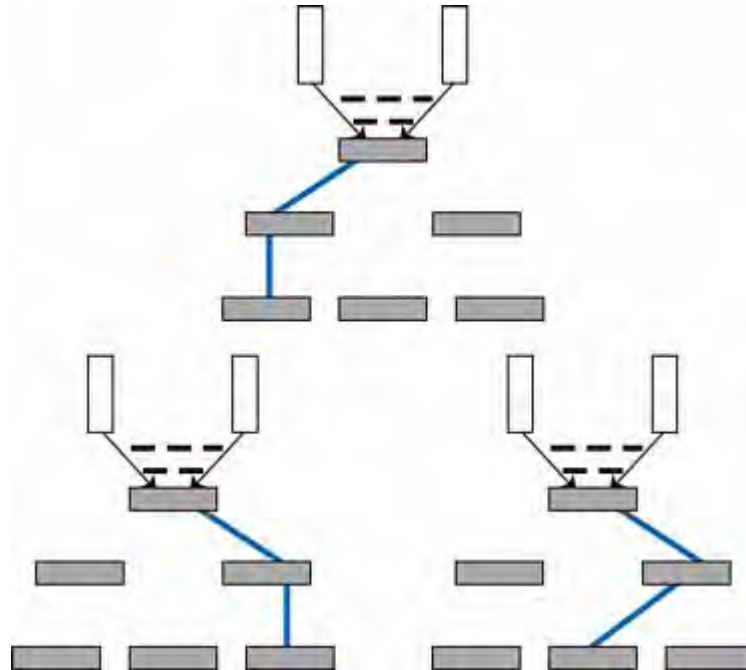
- Connect servers to the “3rd Tier” Paragon switch with the Cat5 UTP cables. The connection configuration looks like this:



S(1) ~ S(X)	Servers
1(A) ~ 1(C)	Base Units
2(A) ~ 2(B)	Second-tier Paragon switches
3(A)	Third-tier Paragon switch

- Connect user stations to Base Units 1(A), 1(B) and 1(C) with the Cat5 UTP cables.
- Connect the keyboard, mouse and monitor to each user station.
See **Basic Installation** (on page 11) section for details.

- Now three different paths (blue solid lines as illustrated below) are available for users to access any servers connected to the “3rd Tier.”



See **Configurations** (on page 141) for more details.

Case 9. Upgrading the Firmware of Paragon Switches

Purpose: To upgrade Paragon II switches and benefit from recent enhancements to the Paragon product line. (Please note the description herein refers to regular firmware upgrade and does not apply to “special” firmware upgrade which involves the boot loader or failsafe feature.)

- Verify that the Main Switching Unit (Main Unit) is connected to the network, and relevant network settings, such as the IP address, are configured properly.
See **Case 1. Setting the Network Configuration** (on page xi) for details.
- (Optional) If there has been any Stacking Unit connected to the Main Unit, keep them attached and turned on. For example, you may upgrade one P2-UMT832M (Main Unit) and three P2-UMT832S (Stacking Units) which are connected to it altogether. Also verify the following Stacking-related settings:
 - The “Stacking Support” setting in the Main Unit is appropriate.
 - The value of the “Set Stack ID” setting in every connected Stacking Unit is unique.

See **General Update Procedure** (on page 162) for details.

3. Download the firmware from the **Raritan website** (<http://www.raritan.com>): click **Support > Firmware and Documentation > Paragon II**, and click the latest version to start the download.
 4. Unzip the downloaded file. Among the unzipped files, there are a file named ParagonUpdate_xxx.exe and a firmware file named P2-xxx.hex (xxx represents the version). For example, the firmware file for version 4.2 is named P2-3E5.hex.
 5. Double click "ParagonUpdate_xxx.exe" to execute the program.
 6. Enter the information of the Main Unit in the **Paragon Update** utility. For example:
 - In the **Name** column, type Paragon832M
 - In the **IP address/Serial** column, type 90.180.52.157
 - In the **Port** column, type 3000
 - If you have assigned the Encryption keys in the Paragon system, remember to type the same encryption data in the **Encryption Key** column
- See *Paragon Manager User Guide* for details. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).
7. Ensure the checkbox before the Main Unit is selected ()
 8. Click **Load Hex File** to select the firmware file "P2-xxx.hex". For example, choose the file "P2-3E5.hex" to upgrade to firmware version 4.2.
 9. Click **Send To Paragon --> Yes**. Then the utility starts to upgrade the Main Unit and every connected Stacking Unit (if any).
 10. Once all of the upgrade is completed, a message appears.

Case 10. Upgrading the Firmware of User Stations

Purpose: To upgrade the user stations and benefit from recent enhancements to the Paragon product line.

1. Connect the user station to the serial port (e.g. COM 2) of a computer via an RS-232 male-to-female serial cable shipped with the user station.
2. Download the firmware from the **Raritan website** (<http://www.raritan.com>): click **Support > Firmware and Documentation > Paragon II**, and click the latest version to start the download.

3. Unzip the downloaded file. There are a file named ParagonUpdate_xxx.exe (xxx represents the version) and a firmware file for the user station. If using the P2-EUST, the firmware file is named EUST-xxx.hex. If using the P2-UST, the firmware file is named V5-xxx.hex (xxx represents the version).
4. Double click "ParagonUpdate_xxx.exe" to execute the program.
5. Enter the information about the user station in the **Paragon Update** utility. For example:
 - In the **Name** column, type P2-EUST-1
 - In the **IP address/Serial** column, select <Default Serial>
 - In the **Port** column, type 2. This represents the serial port—COM2
6. Ensure the checkbox before the user station is selected ()
7. Click **Load Hex File** to select the firmware file.
8. To start the upgrade, click **Send To Paragon --> Yes**.
9. Once the upgrade is completed, a message appears.

See **General Update Procedure** (on page 162) and *Paragon Manager User Guide* for details. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

Chapter 1 Introduction

Thank you for purchasing Raritan's Paragon II. The Paragon family is about breaking away from the traditional, expensive model of server management—one server, one dedicated monitor, one dedicated keyboard. Paragon enables one or more workstations to access multiple servers—even servers of different platforms.

No matter how large or small your setup, no matter how simple or how complex, Raritan is confident that there is a Paragon system just right for you.

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Paragon II Overview	1
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Paragon II Overview

The Paragon II is designed to perform heavy-duty multiple-user-to-many-server keyboard/video/mouse (KVM) matrix switching without burdening you with big, confusing hydra-headed cables. Instead, the Paragon II uses standard Category 5 (Cat5) unshielded twisted-pair (UTP) cabling, like the type that is already installed at many sites. It can connect users with servers across as much as 1000 feet (304 m) of such cabling.

A Paragon II system consists of several components:

- **Main Switching Units** serve as Base Units and matrix switches, securely connecting users to servers.

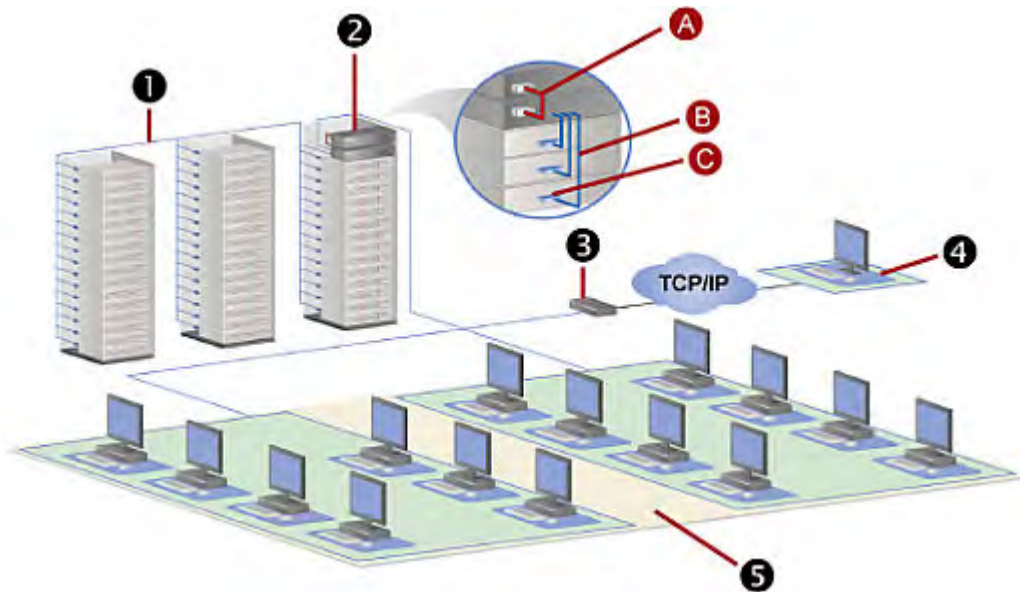
*Note: For documentation purpose, Main Switching Units are hereafter called **Main Units** in this manual.*

- **Stacking Units** connect to Main Units and enable you to expand your system in a space-saving manner without sacrificing channels.
- **Computer-Interface Modules (CIMs)** are connected to each server.
- **User Stations** connect your keyboard, monitor, and mouse to the Main Unit and provide an intuitive On-Screen User Interface (OSUI) for accessing attached servers.

Different models of user stations are explained below:

- Standard User Station (P2-UST) provides basic user station functions as described above.
- Enhanced User Station (P2-EUST) provides the P2-UST features, plus superior video quality with automatic skew compensation.

- Enhanced User Station with an integrated card reader (P2-EUST/C) functions similar to a P2-EUST, and enables card authentication.
- IP-Enabled User Stations, including P2-USTIP1 and P2-USTIP2, one- and two-worker user stations, have integrated IP access and provide KVM over IP capability for anytime, anywhere access and control of servers. Key features include a slim design and GUI for point-and-click remote access. The P2-USTIP series supports IP access, enabling one or two remote users to access Paragon II-connected servers from anywhere via a Web browser.



❶	128 servers
❷	Single base plus stacking unit A: Paragon II Stacking cable(s) B: Standard Cat5 UTP cable C: Computer Interface Module (CIM)
❸	IP-enabled user station
❹	Remote user
❺	15 user stations

Main Units

There are a number of Main Units that support a wide range of configurations:

- **P2-UMT242** supports 2 users and 42 servers
- **P2-UMT442** supports 4 users and 42 servers
- **P2-UMT832M** supports 8 users and 32 servers
- **P2-UMT1664M** supports 16 users and 64 servers

CIMs

There are also several different CIMs for different types of servers (all must output VGA video):

- **P2CIM-APS2:**
 - Supports servers with IBM PS/2-type keyboard and mouse ports
 - Provides automatic skew compensation when working with P2-EUST or P2-EUST/C
 - Works with P2-HubPac in PC, MAC, and Sun USB configurations
- **P2CIM-ASUN:**
 - Supports servers with Sun-type keyboard and mouse ports
 - Provides automatic skew compensation when working with P2-EUST or P2-EUST/C
 - Works with P2-HubPac in PC, MAC, and Sun USB configurations
- **P2CIM-AUSB:**
 - Supports servers with USB- or Sun USB-type keyboard and mouse ports
 - Provides automatic skew compensation when working with P2-EUST or P2-EUST/C
 - Works with P2-HubPac in PC, MAC, and Sun USB configurations
- **P2CIM-AUSB-C**
 - Provides all of the functions of P2CIM-AUSB
 - Enables smart card access when communicating with P2-EUST/C
- **P2ZCIM-PS2**
 - Supports servers with IBM PS/2-type keyboard and mouse ports
 - Provides an extra RJ45 port for chaining of Z-CIMs for clustered access
- **P2ZCIM-USB**
 - Supports servers with USB-type keyboard and mouse ports

- Provides an extra RJ45 port for chaining of Z-CIMs for clustered access

*Warning: The "G3" version of the P2ZCIM-USB CANNOT be daisy chained with the non-G3 version of any P2ZCIM, including non-G3 P2ZCIM-USB and P2ZCIM-PS2. Otherwise, the access to these P2ZCIM channels may not work properly. See **Identifying the P2ZCIM-USB G3** (on page 129) for information on identifying the G3 version.*

- **P2CIM-SER, P2CIM-SER-EU and AUATC**
 - Support servers or ASCII serial devices connected to the Paragon II system through their RS-232 serial ports
- **P2CIM-APS2DUAL**
 - Supports servers with IBM PS/2-type keyboard and mouse ports
 - Doubles the number of users that have access to a particular server
 - Provides automatic skew compensation when working with P2-EUST or P2-EUST/C
- **P2CIM-AUSB DUAL**
 - Supports servers with USB- or Sun USB-type keyboard and mouse ports
 - Doubles the number of users that have access to a particular server
 - Provides automatic skew compensation when working with P2-EUST or P2-EUST/C

Note: To work properly with USB 3.0 ports, the hardware revision of P2CIM-AUSB DUAL must be 'AG' or later. The revision information is indicated as 'H/W: P2CIM-AUSB DUAL.XX' in the label affixed to the CIM, where XX represents the revision. For example, if it shows P2CIM-AUSB DUAL.AG, the hardware revision is AG.

- **P2CIM-APS2-B**
 - Supports IBM BladeCenter® (blade servers) with IBM PS/2-type keyboard and mouse ports
 - Provides automatic skew compensation when working with P2-EUST or P2-EUST/C
- **P2CIM-AUSB-B**
 - Supports IBM BladeCenter® (blade servers) with USB-type keyboard and mouse ports
 - Provides automatic skew compensation when working with P2-EUST or P2-EUST/C

User Stations

There are three types of user stations: P2-UST, P2-EUST, and P2-EUST/C. You usually should connect the user stations to a Paragon switch, but if you want to connect the user station to one server across a long stretch of Cat5 or higher cable, run such a cable between a “direct mode” user station and a P2CIM-APS2. See **User Station Direct Mode** (on page 160) for more information.

- **P2-UST**

P2-UST is a universal user station that supports PS/2, Sun, or USB keyboards and mice.

- **P2-EUST**

P2-EUST is Raritan's enhanced user station, which functions like P2-UST. In addition to the functions that P2-UST has, it provides enhanced control over video quality by either automatically adjusting the skew delay of each color, or allowing the user to manually adjust the video gain and skew delay on the screen, and store these preferences in the Paragon switch's database.

- **P2-EUST/C**

P2-EUST/C is Raritan's enhanced user station with an integrated card reader. It functions like P2-EUST, but supports USB keyboards and mice only. In addition to the functions that P2-EUST has, it provides the card reader function for smart card authentication.

*Note: We recommend using a Sun keyboard if there are any Sun servers in your system. If you must use a PS/2 keyboard to control Sun servers, see **Information about Keyboard, Mouse and Video** (on page 45) for additional information.*

Product Photos

Paragon II Main Unit, User Station and CIM



① Main Unit: P2-UMT832M

②	User Station: P2-EUST
③	CIM: P2CIM-APS2

P2-EUST/C (Front and Rear Sides)



Product Features

- 2U design supports 16 users, 64 servers (model: P2-UMT1664M)
1U design supports 8 users, 32 servers (model: P2-UMT832M)
1U design supports 4 users, 42 servers (model: P2-UMT442)
1U design supports 2 users, 42 servers (model: P2-UMT242)
- Expands the number of users with Raritan's P2CIM-APS2DUAL, P2CIM-AUSBDUAL, or P2-HubPac

Note: To work properly with USB 3.0 ports, the hardware revision of P2CIM-AUSBDUAL must be 'AG' or later. The revision information is indicated as 'H/W: P2CIM-AUSBDUAL.XX' in the label affixed to the CIM, where XX represents the revision. For example, if it shows P2CIM-AUSBDUAL.AG, the hardware revision is AG.

- Locates users and servers up to 1000 feet (304 m) apart
- Supports 4:3 ratio resolutions up to 1920 x 1440
- Supports 16:10 widescreen resolutions up to 1920 x 1200
- Supports 16:9 widescreen resolutions up to 1920 x 1080
- Supports up to 512 customized user profiles (with optional Memory Card)
- Supports servers running the following operating systems:
 - Windows® operating systems, including Windows® 98, Windows® 2000, Windows® XP, Windows® XP 64-bit, Windows Server™ 2003, Windows Server™ 2003 64-bit, Windows Server™ 2008, Windows Server™ 2008 64-bit, Windows Vista®, Windows® 7, Windows® 7 64-bit

- Linux operating systems, such as RedHat Enterprise Linux 5, CentOS 5, and Ubuntu 7 to 10
- Apple® Mac operating systems
- Sun operating systems
- Adds remote access over IP or modem with Raritan's IP-Reach and UST-IP models
- Expands to 10,000 servers via multi-dimensional expansion (with optional Memory Card)
- Stacking switches provide 100% non-blocked expansion with a single cable
- 19" rackmount brackets included with Paragon II switch
- Simple plug-and-play auto-configure installation
- Hot-swappable components with no impact on server operation
- Platform-specific CIMs for PS/2, Sun, USB, Sun USB, ASCII/serial devices
- Powerful, intuitive onscreen user interface for simple operation
- Flexible, multi-level security for authorized server access
- Three system operation modes—private, public, and share
- Quick access to previous or next available channels with the Up/Down Channel hot key combination
- Flash firmware upgrades with Failsafe capability via network port
- Paragon Manager, a Windows application, provides streamlined administration of Paragon II infrastructure, including adding, deleting or modifying user profiles, event logging, and user profile backup/restore. See *Paragon Manager User Guide* for additional information. This user guide is available on Raritan website's ***Firmware and Documentation section*** (<http://www.raritan.com/support/firmware-and-documentation/>).
- Administrative control of connected users
- Turn on, off, or reboot power to any connected device
- Network admin port
- Supports the connection and control of Raritan power strips, including 8-, 12-, 16-, 20- and 24-outlet power strips.
 - Power control permissions may be set on a per-outlet basis
- Supports 10-BaseT, half duplex network speed (not configurable)
- Supports IBM BladeCenter® servers. The following BladeCenter systems are supported:
 - BladeCenter E (also referred to as model 8677)

- With MM model 48P7055
- With AMM model 25R5778
- BladeCenter H (also referred to as model 8852)
 - With AMM model 25R5778

Note: IBM has updated the BladeCenter frequently since its original release. For best results, please use P2CIM-AUSB-B firmware level 0A8 or later. or P2CIM-APS2-B firmware level 0A3 or later.

- Supports the use of a 121-key Cortron rugged keyboard at the local site when used with the following Paragon II user station:
 - P2-EUST or P2-EUST/C with firmware version 3E46 or later
 - P2-USTIP with firmware 4.5.0.5.12 or later (local PS/2 port only)Both PS/2 (part number 536-0062) and USB keyboards (part number 524-0079) are supported. Those with built-in Sun keys are also supported, and the Sun power key may be used to turn off the server, but not turn it on.
- Supports the use of a Kensington Expert Mouse® and Turbo Mouse trackball (Model #: 64210) at the local site when used with the following Paragon II components:
 - User station: P2-UST, P2-EUST or P2-EUST/C
 - CIM: P2CIM-AUSB, P2CIM-AUSBDUAL or P2CIM-AUSB-C with the latest CIM firmware
- Supports Multiple Video, also known as “Port-Following Switch.” Multiple Video enables:
 - Up to 16 user stations to simultaneously view the video output of a server that has multiple video outputs.
 - Up to 16 servers to simultaneously output their video data

Note: The 16-channel video output is available on P2-UMT1664M models only as of release 4.7, and it is required to use Paragon Manager 2.0.4 or later.

- Supports video redirection to a specific user station (known as “Forced Video”)
 - Local control by the administrator
 - Remote control by the administrator and authorized users through Paragon Manager
- Supports authentication with an appropriate smart card when using Paragon II reader-enabled components:
 - P2-EUST/C
 - P2CIM-AUSB-C

As of release 4.8.3, Paragon II supports using smart cards for accessing Secret Internet Protocol Router Network (SIPRNet). Using SIPRNet cards requires newer version of reader-enabled components as listed below:

- P2-EUST/C: card reader hardware version V2-xx (where xx comprises alphanumeric digits) and firmware version 4F8 or later
- P2CIM-AUSB-C: firmware version 1AA or later

Note: The card reader hardware version is indicated as 'Smart Card V2-xx' in the label attached to the SIPRNet-enabled P2-EUST/C, where xx is the version. For example, 'Smart Card V2-0B' means that the card reader version is 0B of the second generation (V2).

- Supports using Belkin® OmniView® Secure KVM Switch or Raritan's Dominion® KX II KVM switch as the front end of the Paragon system
- Supports multiple audio/video routing through the integration with the NVISION® NV5128 router
- Supports the use of an IHSE DDXi K443-2U digital KVM extender, which can locate the user and user station up to 4921 feet (1500 m) apart
- Supports the use of the SMK-LINK RemotePoint Emerald Navigator laser pointer and presentation tool to remotely control the Paragon II OSUI at a distance up to 100 feet with the P2-EUST user station
 - Remote control's model number: VP4450
 - Receiver's model number: VP6496R

Special Notes:

(1) P2-EUST/C supports Windows, Linux, Mac, and Sun operating systems, but its integrated card reader supports Windows (including Windows Server 2008) and Linux operating systems only.

(2) P2-EUST no longer supports the Sun dim8 keyboard as of release 4.8, but still supports the Sun USB keyboard. If a Sun dim8 keyboard must be used, downgrade your P2-EUST user stations to 3F5.

Package Contents

Paragon Main Unit (P2-UMT242, P2-UMT442, P2-UMT832M, or P2-UMT1664M):

- Main Unit x 1
- 20-ft. (6.1-m) Cat5 test cable x 2
- 6-ft. (1.8-m) AC power cord x 1
- Rackmount kit x 1 (including brackets and associated screws)
- Quick Setup Guide x 1

Paragon Stacking Unit:

- Stacking Unit x 1
- RUMT-1U-LM304 or RUMT-2U-LM304 rackmount kit x 1
- 6" stacking cable(s)--the number of cables vary depending on the model you purchased
 - P2-UMT832S: Stacking cable x 1
 - P2-UMT1664S: Stacking cable x 2
- AC power cord x 1

Paragon user station (P2-UST, P2-EUST or P2-EUST/C):

- User-station module x 1
- 6-ft. (1.8-m) AC power cord x 1
- 6-ft. (1.8-m) AC power-extension cord for the connected monitor x 1
- 16.4-ft. (5-m) DB9 male-to-female serial administration cable x 1

Paragon IP-enabled user station (P2-USTIP1/2):

- IP-enabled user-station module x 1
- 6-ft. (1.8-m) AC power cord x 1
- 16.4-ft. (5-m) DB9 male-to-female serial administration cable x 1

Chapter 2 Quick Start

The Paragon switch and all devices you want to connect to it must be unplugged and turned OFF prior to installation.

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Basic Installation

Ensure that you have turned OFF all servers and Paragon II devices prior to installation. Installing a basic Paragon II system involves these steps.

- **Step (A): Connect Stacking Units to a Main Unit (Optional)**
- **Step (B): Connect User Stations to the Main Unit**
- **Step (C): Connect Servers to Paragon II Main and Stacking Units**

Note: Users and servers can be located up to 1000 feet (304 m) apart. However, try to limit the cable length between the CIM and Paragon II switch to less than 100 feet (30.5 m) for optimal video quality, and if possible, limit the total cable length between the user and target server to less than 500 feet (152 m) for good video quality.

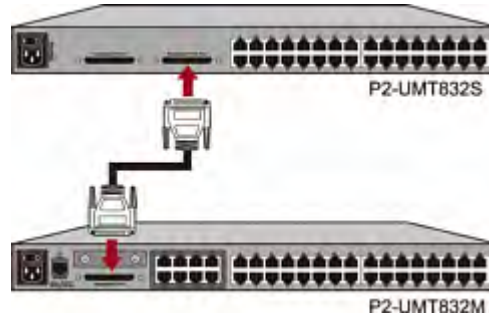
Step (A): Connect Stacking Units

If your Main Unit supports the use of Stacking Units, such as P2-UMT832M, you can connect compatible Stacking Units to expand the number of channel ports in the system.

► **To connect one or more Stacking Units**

1. Connect the power cord to the Main Unit.
2. Connect the power cord to the Stacking Unit.
3. Depending on the Stacking Unit you purchased, use one or two stacking cables to connect the Stacking Unit to the Main Unit.
 - a. For connecting P2-UMT832S to P2-UMT832M:

- Plug one end of a stacking cable into the port—Expansion Port Out—on the Stacking Unit.
- Plug the other end of the cable into the port—Expansion Port—on the Main Unit.



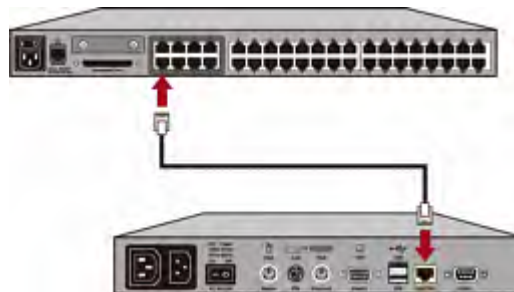
- b. For connecting P2-UMT1664S to P2-UMT1664M:
 - Plug one end of the stacking cable into "Expansion Port Out A" on the Stacking Unit and the other end of the cable into the lower "Expansion Port In" on the Main Unit.
 - Plug one end of the other stacking cable into "Expansion Port Out B" on the Stacking Unit and the other end of the cable into the upper "Expansion Port In" on the Main Unit.
4. (Optional) You can cascade up to three P2-UMT832S Stacking Units for a P2-UMT832M Main Unit. To add more Stacking Units, follow this procedure:
 - a. Plug one end of a stacking cable into the port—Expansion Port In—on the last Stacking Unit connected to the Main Unit.
 - b. Plug the other end of the cable into the port—Expansion Port Out—on the newly added Stacking Unit.
 - c. Connect a power cord to the newly added Stacking Unit.
 - d. Repeat Steps a to c if you want to add one more Stacking Unit.
5. Turn on all Paragon II devices.
6. Set the total number of connected Stacking Units on the front panel of the Main Unit.
 - a. Press the **FUNC** button to activate the Function Menu.
 - b. Press the Δ and ∇ buttons to select "Stacking Support."
 - c. Press the **ENT** button to confirm your selection.
 - d. Press the Δ and ∇ buttons to select the total number of Stacking Units—3 maximum for P2-UMT832M or 1 maximum for P2-UMT1664M.
 - e. Press the **ENT** button to save the setting.
7. Set a unique Stacking Unit ID on the front panel of each Stacking Unit.

- a. Press the **FUNC** button to activate the Function Menu.
 - b. Press the **△** and **▽** buttons to select "Set Stack ID."
 - c. Press the **ENT** button to confirm your selection.
 - d. Press the **△** and **▽** buttons to assign the numeric ID. The guideline of ID assignment is:
 - Assign 1 as the ID for the first Stacking Unit, which is directly connected the Main Unit.
 - Assign 2 as the ID for the second Stacking Unit, which is connected to the first Stacking Unit.
 - Assign 3 as the ID for the third Stacking Unit, which is connected to the second Stacking Unit.
 - e. Press the **ENT** button to save the setting.
8. Turn OFF all Paragon II devices.
 9. Turn on the Stacking Unit first. If there are multiple Stacking Units, turn on the Stacking Units from the last one to the first one in sequence.
 10. Turn on the Main Unit.

Step (B): Connect User Stations

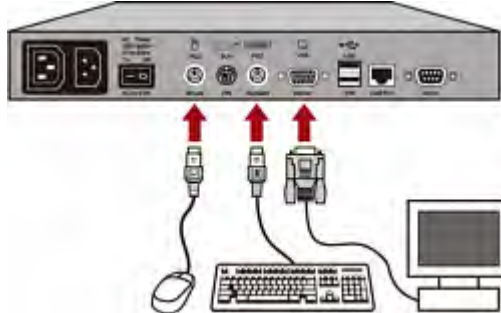
► To connect one or more user stations

1. Connect a user station to the Main Unit.
 - a. Plug one end of a Cat5 UTP cable into User Port number 1 on the back of the Main Unit.
 - b. Plug the other end of the cable into the RJ45 port on the back of the user station.



2. Connect a power cord to the user station and turn it on.

3. Connect a PS/2 or USB keyboard, mouse, and a VGA monitor to the user station. Both wired and wireless keyboards and mice are supported as of release 4.8.



Note 1: P2-EUST/C provides USB ports only for keyboard and mouse.

Note 2: P2-EUST no longer supports the Sun dim8 keyboard as of release 4.8, but still supports the Sun USB keyboard. If a Sun dim8 keyboard must be used, downgrade your P2-EUST user stations to 3F5.

4. Turn on the monitor.
5. Repeat Steps 1 to 4 for all other user stations you want to connect to remaining User Ports.

The user station does not support the use of a VGA-to-DVI converter.

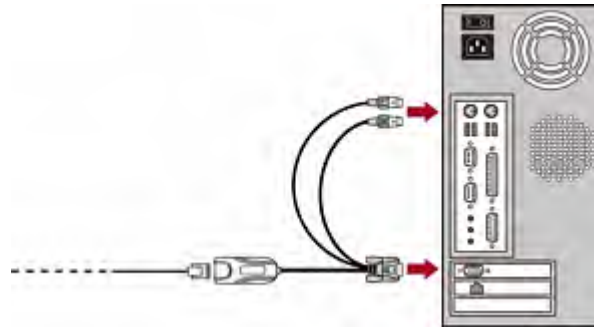
Step (C): Connect Servers

► **To connect one or more servers**

1. Connect a Paragon II CIM to the Main or Stacking Unit.
 - a. Plug one end of a Cat5 UTP cable into Channel Port number 1 on the back of the Main Unit or any connected Stacking Unit.
 - b. Plug the other end of the cable into the RJ45 port of the CIM.



- Depending on the CIM model you purchased, plug the connectors of the CIM into a server's PS/2 or USB keyboard, mouse, and VGA ports.



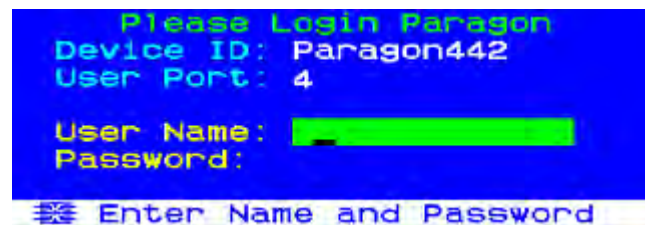
Tip: If the server provides a DVI connector instead of a VGA port, Raritan recommends using a Raritan or Smart View DVI-to-VGA converter to connect the CIM. Raritan's ADVI-VGA converter is a DVI male to VGA female converter, which supports both analog and integrated (digital and analog) signals. The Smart View DV-101 converter is a DVI female to VGA female converter, which supports digital signals only. Note that only these two converters have been tested and are officially supported by Raritan for use with Paragon II.

- Turn on the server.
- Repeat Steps 1 to 3 for all other servers you want to connect to remaining Channel Ports.

Initial Verification

► **To verify that the server connected to the Paragon system can be operated:**

- Turn on all devices in the Paragon II system.
- The Login screen of the On-Screen User Interface (OSUI) is displayed on the monitor connected to the user station.



- Type your user name and password in the appropriate fields and press **Enter**. For example, if you are the administrator:
 - Type `admin` in the **User Name** field and press **Enter**.

- b. Type `raritan` (the default password; all lowercase) in the **Password** field and press **Enter**. Note the password is case-sensitive.

*Tip: You can also type any user name for regular users. The factory-default user names for regular users are **user01** through up to **user15**, depending on the model of your Main Unit. By default, there are no passwords for these user names.*

4. The Selection Menu appears.

No	Ch	Name	Scn
1	001		03
2	002		03
3	003		03
4	004		03
5	005		03
6	006		03
7	007		03
8	008		03

Channels connecting to servers appear in green. At first there are no names for any servers so all **Name** fields are blank.

Note: The only exception is IBM BladeCenter chassis. Paragon II shows a default name "IBM-Blade" for the device.

5. Press **↓** or **↑** on the keyboard to move the highlight to one of the green channels and press **Enter**.
6. Now you can view and control the chosen server with the keyboard and mouse.
7. Press the **Scroll Lock** key twice QUICKLY to activate the OSUI, and do one of the following:
 - To choose another green channel for verification, repeat Step 5.
 - To log out of the system, press **F9**.

Chapter 3 Rackmount and Installation

This chapter includes full instructions for how to rack-mount Paragon II devices, install a single Paragon switch, cascades of multiple Paragon switches, Stacking Units and other devices.

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Rack-Mounting

Paragon II user stations and most KVM switches can be mounted in 1U (1.75", 4.4 cm) of vertical space in a standard 19" equipment rack can be mounted in 1U (1.75", 4.4 cm) of vertical space in a standard 19" equipment rack, except that P2-UMT1664M switch shall be mounted in 2U (3.5", 8.9 cm) of space.

To rack-mount a Paragon switch, use the brackets and screws that came with the device. To rack-mount a user station, use Raritan's RUST-LM304 rackmount kit. You can mount a Paragon switch or user station facing the front of the rack or facing the rear.

Note: If you lose or damage a switch's brackets, replace them with the RUMT-1U-LM304 kit for any 1U switch or RUMT-2U-LM304 for a P2-UMT1664M.

Forward Mount

The steps correspond to the numbers shown in the front rackmount diagrams.

1. Secure the cable-support bar to the back end of the side brackets using two of the included screws.
2. Slide the user station or KVM switch between the side brackets, with its rear panel facing the cable-support bar, until its front panel is flush with the "ears" of the side brackets.
3. Secure the user station or switch to the side brackets using the remaining included screws (three on each side).
4. Mount the entire assembly in your rack and secure the side brackets' ears to the rack's front rails with your own screws, bolts, cage nuts, and so on.

5. When connecting cables to the rear panel of the user station or switch, drape them over the cable-support bar.

Front rackmount



Front rackmount



Rear Mount

The steps correspond to the numbers shown in the rear rackmount diagrams.

1. Secure the cable-support bar to the front end of the side brackets, near the side brackets' "ears," using two of the included screws.
2. Slide the user station or KVM switch between the side brackets, with its rear panel facing the cable-support bar, until its front panel is flush with the back edges of the side brackets.
3. Secure the user station or switch to the side brackets using the remaining included screws (three on each side).
4. Mount the entire assembly in your rack and secure the side brackets' ears to the rack's front rails with your own screws, bolts, cage nuts, and so on.

5. When connecting cables to the rear panel of the user station or switch, drape them over the cable-support bar.

Rear rackmount



Rear rackmount



A KVM System with a Single Paragon Switch

If installing a single Paragon switch, keep in mind the maximum numbers of user stations and servers you can connect:

- 2 user stations and 42 servers to a P2-UMT242
- 4 user stations and 42 servers to a P2-UMT442
- 8 user stations and 32 servers to a P2-UMT832M
- 16 user stations and 64 servers to a P2-UMT1664M

Prior to installation, all Paragon components, servers, and monitors must be turned OFF and unplugged.

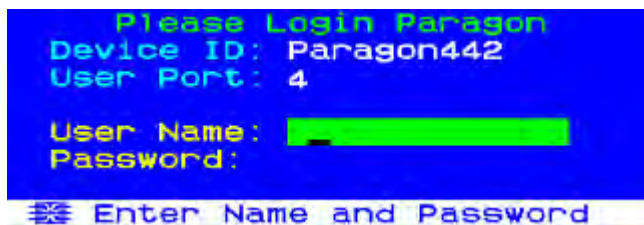
► **To install a single-Paragon-switch system and perform initial configuration**

1. Initialize the Paragon switch.
 - a. Connect the switch's included power cord from the IEC 320 inlet on its rear panel to an appropriate AC outlet.
 - b. Turn on the switch.
2. Connect a user station and its attached devices.
 - a. Connect one end of a Cat5 UTP cable to user port # 1 on the back of the switch. Connect the other end of the cable to the RJ45 Cat5 port on the back of the user station.
 - b. Connect the user station's included power cord from the IEC 320 inlet on its rear panel to an appropriate AC outlet.
 - c. Turn ON the user station. It will power up and establish communication with the Paragon switch.
 - d. Connect a keyboard, a mouse, and a monitor to the user station. Both wired and wireless keyboards and mice are supported as of release 4.8. (To control Sun servers with a PS/2 keyboard, please see **Information about Keyboard, Mouse and Video** (on page 45) for additional information.)

Note: P2-EUST no longer supports the Sun dim8 keyboard as of release 4.8, but still supports the Sun USB keyboard. If a Sun dim8 keyboard must be used, downgrade your P2-EUST user stations to 3F5.

- e. Plug in and turn on the monitor.
3. Perform initial configuration of the user station.

- a. The Login screen should appear on the user station's attached monitor. If the Scroll Lock LED on the user station's attached keyboard is blinking, the Paragon is ready to accept function key commands, which allow users to login, select servers, or administer the system.



If the monitor instead displays a “.....No connection to Paragon.....” message, the user station is not properly connected to the Paragon switch. Check for loose connections and make sure you are using good, intact Cat5 cables.

- b. Type `admin` in the User Name field and press Enter. In the Password field, type the default password `raritan` (all lowercase) and press Enter.
- c. The OSUI Selection Menu appears, indicating that the user station is correctly installed.



4. Repeat steps 2 and 3 for each user station you want to connect to the Paragon switch.
5. Connect a CIM and the desired server.
 - a. Connect the cable strands of an appropriate CIM to the appropriate ports on a server:
 - P2CIM-APS2 (PS/2 compatible servers) or P2CIM-APS2-B (IBM BladeCenter Management Module with PS/2 ports):

Plug the HD15 strand into the server's HD15 VGA video port. Plug the purple 6-pin mini-DIN keyboard strand into the server's 6-pin mini-DIN keyboard port. Plug the light green 6-pin mini-DIN strand into the server's 6-pin mini-DIN mouse port.

- P2CIM-ASUN (Sun compatible servers):

Plug the HD15 strand into the server's HD15 VGA video port. Plug the 8-pin mini-DIN strand into the server's 8-pin mini-DIN keyboard/mouse port.

- P2CIM-AUSB, P2CIM-AUSB DUAL, P2CIM-AUSB-C (USB compatible servers), or P2CIM-AUSB-B (IBM BladeCenter Management Module with USB ports):

Plug the HD15 strand into the server's HD15 VGA video port. Plug the USB *Type A* strand into one of the server's USB *Type A* ports.

Note: To work properly with USB 3.0 ports, the hardware revision of P2CIM-AUSB DUAL must be 'AG' or later. The revision information is indicated as 'H/W: P2CIM-AUSB DUAL.XX' in the label affixed to the CIM, where XX represents the revision. For example, if it shows P2CIM-AUSB DUAL.AG, the hardware revision is AG.

- P2CIM-APS2DUAL (PS/2 compatible servers):

Connect keyboard, monitor, and mouse cables attached to the CIM to the appropriate 15-pin female video port and 6-pin mini-DIN mouse and keyboard ports on the server.

- P2CIM-SER, P2CIM-SER-EU and AUATC (serial servers, routers, and so on):

Please see **Connecting Serial Devices to a Paragon II System** (on page 188) for installation instructions.

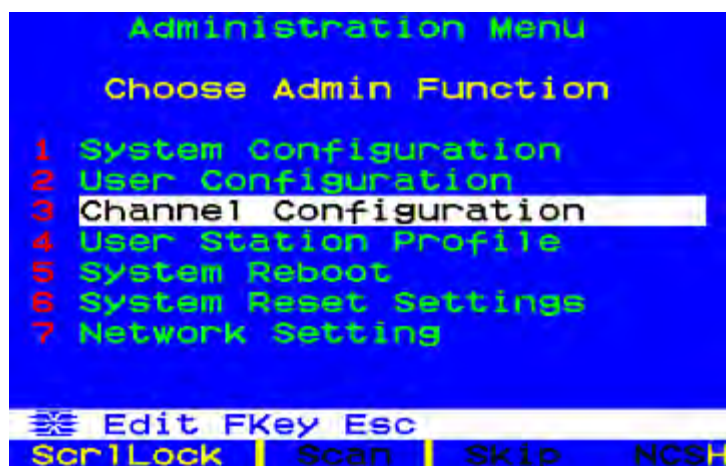
- P2ZCIM (local single-user IBM PS/2 compatible servers):

Please see **P2ZCIMs** (on page 128) for installation instructions.

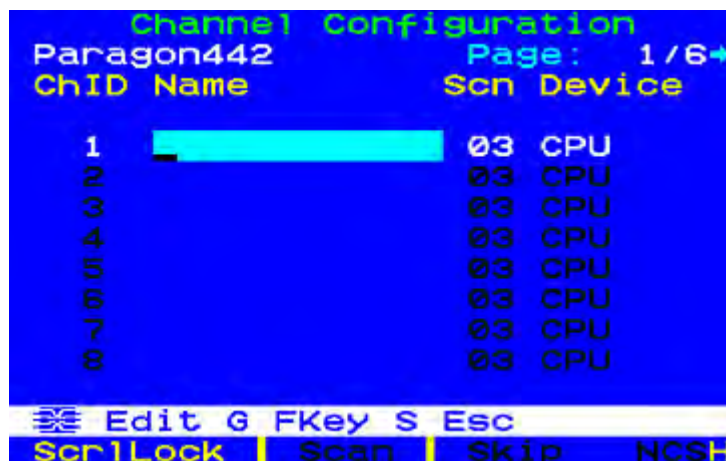
- b. Plug in and turn on the server. If the CIM is installed and operating properly, the CIM's green LED will start blinking: once per second while the CIM is idle, more quickly while data is transmitted in either direction.
 - c. Connect one end of a Cat5 UTP cable to channel port #1 on the back of the Paragon switch. Connect the other end of the cable to the RJ45 port on the CIM.
6. Configure the CIM and the attached server.
 - a. The monitor attached to the user station will display the Selection Menu; with the server you just connected displayed in green. Use the **↑** and **↓** keys to move the highlight to that entry and press Enter. If you can access and operate the server normally, the CIM is connected successfully. Raritan recommends you give the server a meaningful system name at this time, as described in the next steps.

*Note: If your video image is fuzzy, you can adjust the video gain to focus the video image. Fuzzy video images may happen if you are using an LCD flat-panel monitor. For more information, see **Video Gain Adjustment** (on page 61). The P2-EUST and P2 EUST/C provide automatic and manual skew compensation, which also help improve the video quality. For more information, see **Skew Compensation with P2-EUST or P2-EUST/C** (on page 62).*

- b. Press **F5** to activate the Administration Menu. Use the **↑** and **↓** keys to move the highlight to the Channel Configuration entry and press Enter.



- c. The Channel Configuration submenu appears. Use the **↑** and **↓** keys or **Tab** to move the yellow highlight to the Name field for the channel port number where you installed the server and press Enter. The highlight turns light blue.

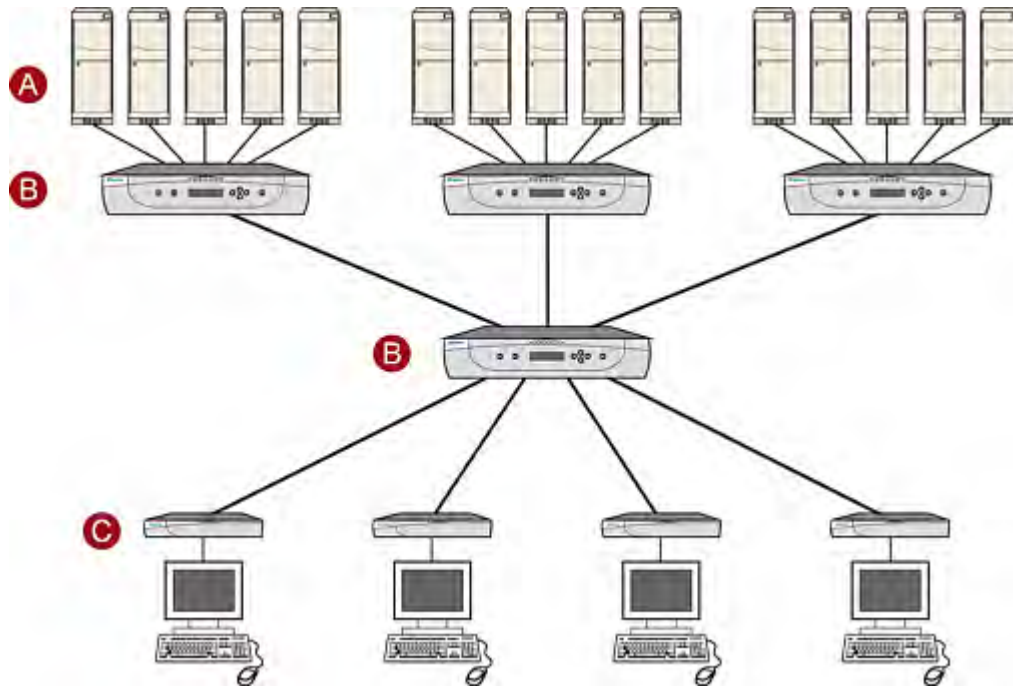


- d. Edit the name (the highlight turns green when you start typing). Press Enter when finished, and press S to save the new name.

- e. Press F2 to return to the Selection Menu. Verify that the new name appears in the Selection Menu.
7. Repeat Steps 5 and 6 for each CIM and server you want to connect to the Paragon switch's channel ports.

A KVM System with Cascaded Paragon Switches

Paragon II's channel port capacity can be expanded by installing a cascade of Paragon matrix switches (Main Units). In a "two-tiered" cascaded system, one or more subsidiary Paragon switches are connected to the channel ports of a Base Unit ("first-tier" Paragon switch). If you fully populate a second tier, you can add a third tier by connecting additional subsidiary Paragon switches to the channel ports of Paragon switches in the second tier. Three tiers is the maximum depth of a cascaded system, and only CIMs may be attached to the channel ports of Paragon switches in the third tier.



A	Servers
B	Paragon switches
C	User stations with the monitor, keyboard, and mouse attached

Prior to installation, all Paragon components, servers, and monitors must be turned OFF and unplugged.

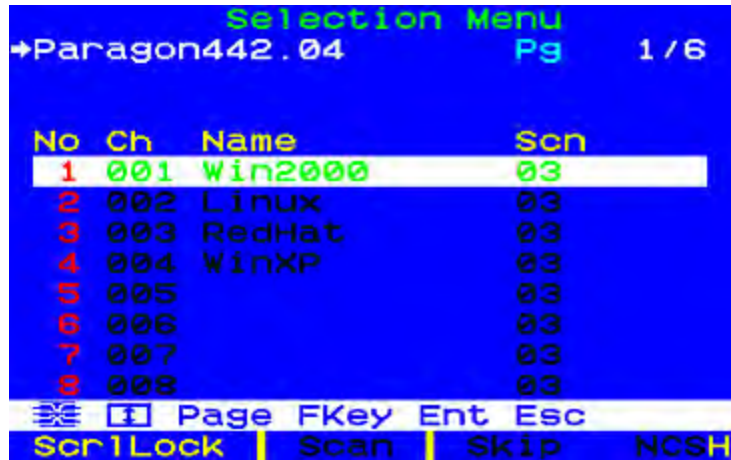
► **To install a cascaded Paragon system and perform initial configuration**

1. Connect one end of a Cat5 UTP cable to user port #1 on the back of the Base Unit. (Do not attach anything to the switch's channel ports and do not plug it in or turn it on yet.)
2. Connect the other end of the cable to the RJ45 port on the back of the user station.
3. Connect a keyboard, mouse, and monitor to the user station. (Do not plug in or turn on the user stations or monitors yet.)
4. For each subsidiary Paragon switch you want to attach directly to the Base Unit, connect Cat5 UTP cables from consecutive channel ports on the Base Unit to the subsidiary Paragon switch's user ports.
5. If you are installing a third tier, connect Cat5 UTP cables from consecutive channel ports on a second-tier Paragon switch to the user ports on a third-tier Paragon switch. Repeat for all other subsidiary switches in the third tier.
6. Attach CIMs and servers to the free channel ports on the third-tier Paragon switches, on the second-tier Paragon switches, and on your Base Unit. (Follow step 5 of **A KVM System with a Single Paragon Switch** (on page 20).)
7. Connect and turn on any THIRD-TIER Paragon switches, then the SECOND-TIER Paragon switches, and finally your Base Unit. (Follow step 1 of **A KVM System with a Single Paragon Switch** (on page 20).)
8. Connect and turn on your user stations and monitors. (Follow steps 2B, 2C, and 2E of **A KVM System with a Single Paragon Switch** (on page 20).)

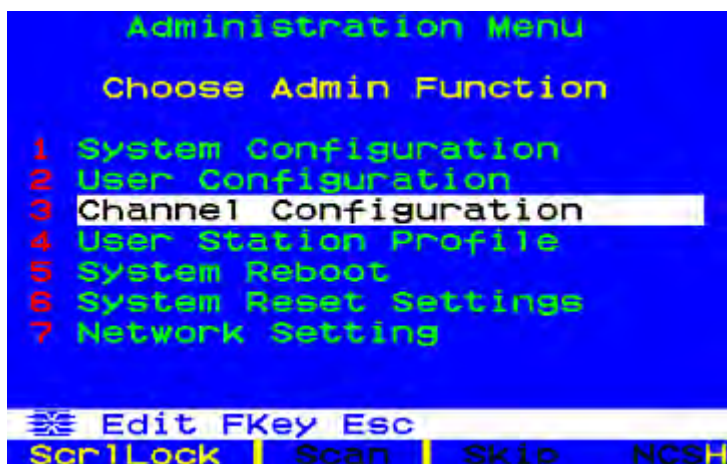
The Base Unit should automatically recognize the connected subsidiary Paragon switches and update its configuration. All monitors should display the Login screen. If any monitors instead display a "...No connection to Paragon...." message, the user station which they are attached to is not properly connected to the Base Unit. Check for loose connections and make sure you are using good, intact Cat5 cables. (See **Specifications** (on page 180) for UTP-cabling information.)

*Note: If your video image is fuzzy, you can adjust the video gain to focus the video image. Fuzzy video images may happen if you are using an LCD flat-panel monitor. For more information, see **Video Gain Adjustment** (on page 61). The P2-EUST and P2 EUST/C provide automatic and manual skew compensation, which also help improve the video quality. For more information, see **Skew Compensation with P2-EUST or P2-EUST/C** (on page 62).*

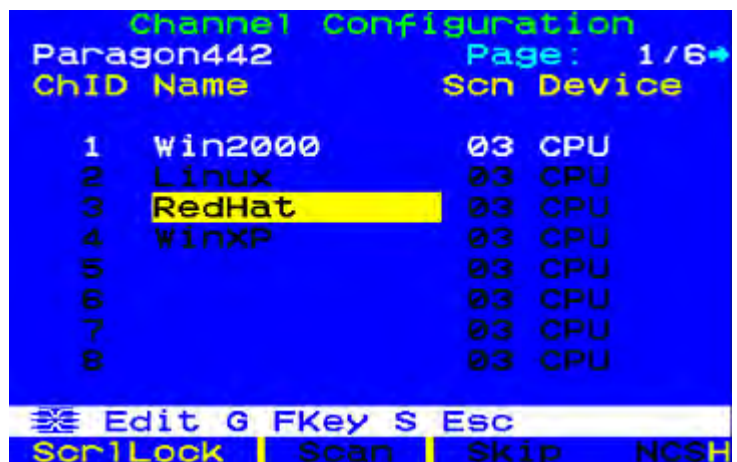
9. Configure the channel ports in your system. (Check the Scroll Lock LED on one of your user-station keyboards. If it is blinking, Paragon is ready to accept the function key commands from that user station. Function key commands allow users to login, select servers, or administer the system.)
 - a. At the Login screen, type `admin` in the User Name field and press the Enter key. In the Password field, type the default password `raritan` (all lowercase) and press the Enter key.
 - b. The monitor displays the Selection Menu, indicating that the user station is correctly installed.



- c. Press F5 to activate the Administration Menu. Use the \uparrow and \downarrow keys to move the highlight to the Channel Configuration entry and press Enter to select it.



- d. The Channel Configuration menu appears. Use the \uparrow and \downarrow keys and Page Up and Page Down keys to approach channel ports to which subsidiary Paragon switches are connected. The port default device names appear in the Name column and the device type in the Device column. ("P242" for a 2 x 42 switch [P2-UMT242], "P442" for a 4 x 42 switch [P2-UMT442], "P832" for an 8 x 32 switch [P2-UMT832M], or "P1664" for a 16 x 64 switch [P2-UMT1664M]).



- e. Continue using the \uparrow and \downarrow keys and Page Up and Page Down keys to move the yellow highlight to the Name field for the channel port number where a subsidiary Paragon switch is installed and press Enter. The highlight should turn light blue.
- f. Type the name you want to assign to the subsidiary Paragon switch on this channel port (the highlight should turn green when you start typing). Press Enter when finished and then press S to save the new name. All other paths (channel ports) by which that subsidiary Paragon switch is attached to the Paragon switch above it will be given the same name automatically.

- g. Press F2 to reopen the Selection Menu; make sure that the channel port(s) of the second-tier Paragon switch are properly established. All paths to that Paragon switch should be displayed in purple.
- h. Press F5 to return to the Administration Menu. Select Channel Configuration again. Select a channel port that has been configured for the subsidiary Paragon switch you just set up. Press G to activate a dedicated Channel Configuration menu for the subsidiary Paragon switch.
- i. Edit the names of all servers attached to this subsidiary Paragon switch. Each highlight should turn green as you start typing. Press Enter when finished with each name. Press S to save all of the new names.
- j. Press F2 to access the dedicated Selection Menu for that subsidiary Paragon switch. Verify that new names appear in green in the Selection Menu.
- k. If you are configuring a second-tier subsidiary Paragon switch, and there are any third-tier Paragon switches attached to it, repeat steps C through J for a third-tier path configuration. Press S to save the configuration. Press F2 to activate the Selection menu and verify that the third-tier Paragon switch is properly configured: select a channel port for the second-tier path and press Enter, then a channel port for the third-tier path and press Enter, and then a channel port for a server attached to the third-tier Paragon switch and press Enter. If you can properly access and operate the chosen server, the third-tier Paragon switch is properly installed.

Note: Repeat Step K for all remaining third-tier Paragon switches (if any) attached to this second-tier Paragon switch.

- l. Press S to save the configuration. Press F2 to activate the Selection menu and verify that the second-tier Paragon switch is properly configured: Select a channel port for the second-tier path and press Enter, then a channel port for a server attached to the second-tier Paragon switch and press Enter. If you can properly access and operate the chosen server, the second-tier Paragon switch is properly installed.
- m. Repeat steps C through L for all remaining (if any) second-tier Paragon switches attached to the Base Unit.
- n. Edit the names of any servers directly attached to the Base Unit. Verify the Base Unit's configuration as described in steps 6B through 6E of the section **A KVM System with a Single Paragon Switch** (on page 20).

Important: If you rearrange a cascaded system or dismantle one and rebuild it differently later, you must recycle power to each Paragon switch in the new cascade. A soft reset allows each switch to retain all user and

system profiles, and to auto-detect the current status of its channel ports and user ports. Follow the installation steps in this section to install the new cascade, but when you turn on each switch (which must be done in proper tier order, from upper tier to base tier), press FUNC on the unit's front panel until "Clear Database Hit Ent/ESC?" appears on the LCD panel. Press the ENT and the ESC buttons sequentially to execute a partial reset on the database. For information on partial reset, see *Reset Unit* (on page 43).

Guideline for Turning On a Cascaded System

- When turning ON existing stable configurations (that is, if you are NOT replacing or adding Paragon switches and NOT swapping their order), or when you are power cycling a cascaded configuration, follow this sequence:
 1. Turn ON the third tier (if a third tier exists).
 2. Turn ON the second tier.
 3. Turn ON the base tier (first tier).
- For configurations where Paragon switches are added, replaced, or swapped (in order), follow this sequence:
 1. Turn ON the third tier (if a third tier exists).
 2. Turn ON the second tier.
 3. Turn ON the base tier (first tier).
 4. Perform a partial reset of the database on impacted Paragon switches. For example, if you swap the switches connected to the base tier, perform the partial reset on the base tier. If you swap the switches connected to the second tier, perform the partial reset from the second tier to the base tier. For information on partial reset, see *Reset Unit* (on page 43).
- User stations can be turned ON and OFF at any time as needed.

Installing a P2-UMT832S Stacking Unit

1. Turn OFF all Paragon switches, including the Main Unit and Stacking Unit.
2. Connect a power cord to a Stacking Unit.
3. Connect one end of a stacking cable to "Expansion Port Out" on the back of the Stacking Unit. Connect the other end of the cable to "Expansion Port" on the Main Unit.
4. (Optional) To cascade more than one Stacking Unit, connect one end of another stacking cable to "Expansion Port In" on the back of the Stacking Unit and the other end of the cable to "Expansion Port Out" of another Stacking Unit. For P2-UMT832M, up to 3 Stacking Units can be cascaded.

5. Turn ON all Paragon switches.
6. On the front panel of the Main Unit:
 - a. Press the **FUNC** button and use the Δ and ∇ buttons to select "Stacking Support." Press the **ENT** button to confirm the selection.
 - b. Select the total number of Stacking Units (3 units maximum) and press the **ENT** button.
7. On the front panel of each connected Stacking Unit:
 - a. Press the **FUNC** button and use the Δ and ∇ buttons to select "Set Stack ID." Press the **ENT** button to confirm the selection.
 - b. Assign the Stacking Unit ID using the Δ and ∇ buttons. (Each Stacking Unit **MUST HAVE A UNIQUE ID [1-3]**, and sequential order is not necessary).
8. Press the **ENT** button to save the ID setting.
9. Turn OFF all Paragon switches.
10. Turn on the Stacking Unit.
11. Turn on the Main Unit.

Installing a P2-UMT1664S Stacking Unit

1. Turn OFF all Paragon switches, including the Main Unit and Stacking Unit.
2. Connect a power cord to a Stacking Unit.
3. Connect the Main Unit with the Stacking Unit using two stacking cables.
 - a. Connect one end of a stacking cable to "Expansion Port Out A" on the back of the Stacking Unit. Connect the other end of the cable to the lower "Expansion Port In" on the Main Unit.
 - b. Connect one end of the other stacking cable to "Expansion Port Out B" on the back of the other Stacking Unit. Connect the other end of the cable to the upper "Expansion Port In" on the Main Unit.
4. Turn ON all Paragon switches.
5. On the front panel of the Main Unit:
 - a. Press the **FUNC** button and use the Δ and ∇ buttons to select "Stacking Support." Press the **ENT** button to confirm the selection.
 - b. Set the total number of Stacking Units (1 unit maximum) and press the **ENT** button to save the setting.
6. On the front panel of the Stacking Unit:
 - a. Press the **FUNC** button and use the Δ and ∇ buttons to select "Set Stack ID." Press the **ENT** button to confirm the selection.

- b. Assign the Stacking Unit ID using the Δ and ∇ buttons.
7. Press the **ENT** button to save the setting.
8. Turn OFF all Paragon switches.
9. Turn on the Stacking Unit.
10. Turn on the Main Unit.

Note for Turning Off the Stacking Unit

After completing the hardware installation of the Paragon system, **whenever you want to turn off a Stacking Unit, you must disconnect it from the Main Unit before turning it off.** This is because turning off the Stacking Unit when it remains connected to the Main Unit results in incorrect channel color display on the OSUI Selection Menu. If this occurs, follow this procedure to restore the color display to normal.

► **To restore the color display to normal**

1. Remove the stacking cable connected between Stacking and Main Units.
2. Turn off the Main Unit.
3. Re-connect the stacking cable between Main and Stacking Units.
4. Turn on the Stacking Unit first.
5. Turn on the Main Unit.

Installation of the HubPac

P2-HubPac is available for use with Paragon II. HubPac devices allow users of different Paragon switches to access the same server(s). Each five-port cluster on a HubPac is capable of connecting a server to up to four Paragon switches.

CIM models capable of connecting to a P2-HubPac include:

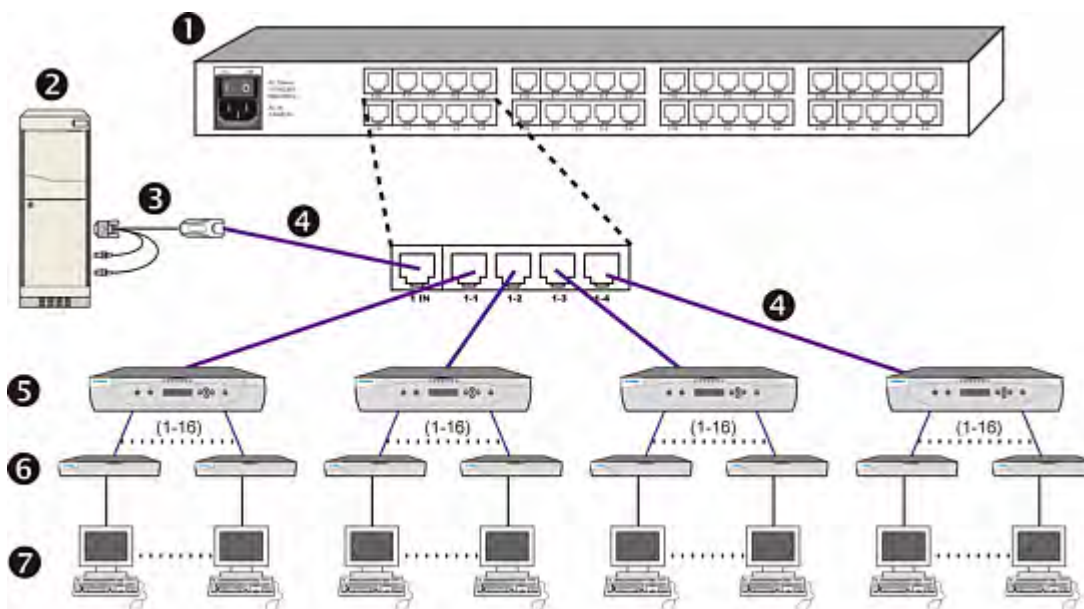
- P2CIM-APS2
- P2CIM-AUSB
- P2CIM-ASUN
- UKVMC

Installing a HubPac

Please use the basic installation instructions below to create the HubPac configuration that gives users of up to 4 Paragon switches the capability to access the same server(s).

P2-HubPac does not support the card reader functionality. Make sure the servers that require the card reader authentication are not connected to the P2-HubPac.

The firmware version for P2-HubPac is 0D1 at this time. If your user stations are NOT upgraded to the latest firmware version, a mouse or OSUI issue may appear. When this happens, see **Troubleshooting** (on page 221) for resolutions.



1	HubPac
2	Server
3	CIM
4	Cat5 cable
5	Paragon switch (the model illustrated is P2-UMT1664M)
6	User station
7	Monitor, keyboard and mouse connected to the user station

► **To install a HubPac**

1. Turn OFF each Paragon switch.

Note: Prior to installation all Paragon switches and HubPac devices must be turned OFF. Servers and user stations to be connected can be in a powered ON state.

2. Connect a server, via CIM, to the HubPac:

Note: Up to 8 servers can be connected to one HubPac. Each 5-port cluster on the HubPac represents one server connection, with four associated HubPac switch ports. Each HubPac switch port in a cluster can be attached to a separate Paragon switch, enabling users of these attached Paragon switches to access the same server.

- a. Connect a CIM to a server—see **Specifications** (on page 180) for specific instructions on connecting different CIM types to a server.

- b. Plug one end of a Cat5 UTP cable into the RJ45 port on a CIM.
 - c. Plug the other end of cable into the RJ45 1-IN port on the back of HubPac.
 - d. Turn ON the server.
 - e. Repeat the above steps to connect the remaining servers, connecting the Cat5 UTP cable to the HubPac at the RJ45 2-IN, 3-IN, 4-IN, 5-IN, 6-IN, 7-IN, and 8-IN port for each consecutive server (2 through 8) added.
3. Connect the HubPac to each Paragon switch by repeating all of the following steps for each 5-port cluster on the HubPac:

Note: There are 8 five-port clusters on the HubPac. For each cluster the number in front of the RJ45 IN port represents the cluster number. For example, cluster 1's first RJ45 port is 1 IN, cluster 2's is 2 IN, and so on. In the instructions below, "X" represents the cluster number (1 through 8).

- a. Plug one end of a Cat5 UTP cable into the RJ45 X-1 port on the back of the HubPac.
 - b. Plug the other end of the cable into channel port # N on the back of one of the desired Paragon switches.
 - c. Plug one end of a Cat5 UTP cable into the RJ45 X-2 port on the back of the HubPac.
 - d. Plug the other end of the cable into channel port # N on the back of the second desired Paragon switch.
 - e. Plug one end of a Cat5 UTP cable into the RJ45 X-3 port on the back of the HubPac.
 - f. Plug the other end of the cable into channel port # N on the back of the third desired Paragon switch.
 - g. Plug one end of a Cat5 UTP cable into the RJ45 X-4 port on the back of the HubPac.
 - h. Plug the other end of the cable into channel port # N on the back of the fourth desired Paragon switch.
4. Connect the power cord to the back of the HubPac. Turn ON the HubPac.
5. Turn ON each of the Paragon switches.

A HubPac can connect 8 servers, and allows each server to be connected to 4 different Paragon switches at once. Follow the above steps for each additional HubPac to be added.

Important: In order to perform the Multiple Video function with P2-HubPac, ensure a supported P2-HubPac configuration has been deployed. For details, see *P2-HubPac Configuration and Multiple Video* (on page 156).

Channel Configuration

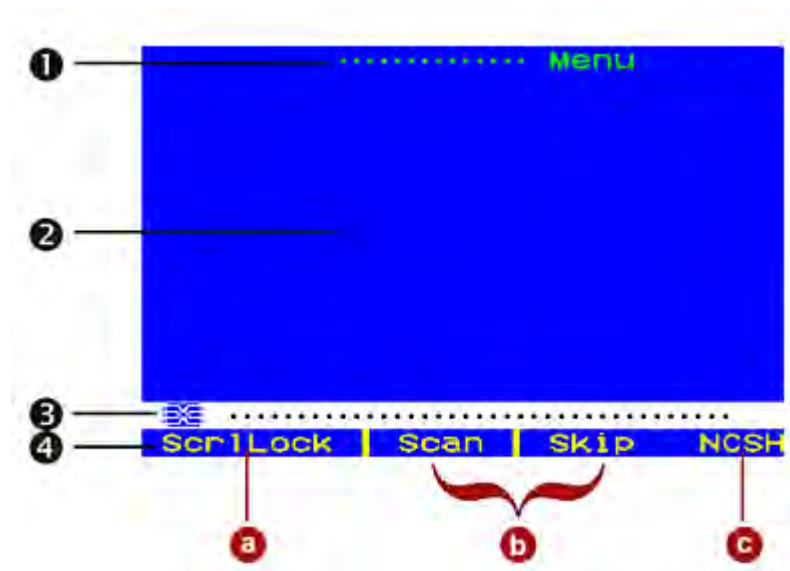
Paragon recognizes a HubPac as an extension of a CIM, rather than as a device. As a result, each server connected to the HubPac is configured as a directly connected server would be.

1. On the Selection Menu (by channel number) each green line indicates an active channel (CIM/server). Highlight the CIM/server to be selected by using the **↑**, **↓**, or **Page Up**, **Page Down** keys. Press **Enter**.
2. Normal server access indicates successful connection. If necessary, manually adjust the video skew by pressing the **+** or **-** keys on the numeric keypad.
3. Enter a meaningful name for each server (channel).
 - a. Press **F5** for Administration Menu.
 - b. Select Channel Configuration with **↑** or **↓** keys and press **Enter**.
 - c. Press **↑** or **↓** to highlight (in yellow) the **Name** field for channel ID where CIM/server was just installed. Press **Enter**. The highlight turns light blue.
 - d. Edit the name (turns green when typing begins). Press **Enter** when completed.
 - e. Press **S** to save the new name.
 - f. Press **F2** to return to Selection Menu (by channel number). Verify that new name appears on the Selection Menu in green.
4. Repeat for each CIM/server desired.

Using the OSUI for Initial Configuration

You will use the Paragon II OSUI after you install the Paragon system, so here are some OSUI basics to familiarize yourself before starting your installation. After the user station and the attached equipment are in place and turned on, activate the OSUI by QUICKLY pressing the default hot key (**Scroll Lock**) twice on an attached keyboard. Each OSUI menu contains the following sections: a menu-title line, a menu/screen body (for text and fields), a prompt/message bar, and a status line that consists of:

- The current OSUI hotkey which can invoke the OSUI
- Scan/Skip function status
- NCS (**Num Lock**, **Caps Lock**, and **Scroll Lock**) status indicator
- A communication-speed indicator (“L” for low or “H” for high, which will depend on your Paragon components) showing the communication speed between the user station and Base Station



①	Menu name
②	OSUI main screen (showing menu options and fields)
③	Message bar

- 4 Status line, displays:
- The current OSUI hot key activator (in the illustration, the **Scroll Lock** key)
 - Scan/Skip function status (if yellow, the function is ON; if white, the function is OFF)
 - (N) Num Lock, (C) Caps Lock, (S) Scroll Lock, followed by Paragon II Communication Speed Indicator: (L) Low or (H) High. The speed depends on your component versions.

Use function keys **F1**, **F2**, **F3**, **F4**, **F8**, and **F12** to toggle between first-level menus. Pressing **F1** while the OSUI is on the screen can activate the Help Menu, a list of available help options.

While the OSUI is on the screen, the user-station keyboard's **Scroll Lock** LED indicator blinks.

Below is an abbreviated table of the function keys you will use when working with the OSUI:

Key	Action
F1	View the Help Menu
F2	Go to the Selection Menu for accessing channel ports
F3	View the Power Control Menu for associated channel
F4	Go to the User Profile Menu for users to customize their settings
F5	Administrator only: Go to the Administration Menu for the administrator to manage the system settings
F6	Administrator only: Toggle the autoscan function on or off
F7	Administrator only: Toggle the autoskip function on or off
F8	View the Information Menu
F9	Log out of the system
Shift + F9	Disconnect from the currently accessed channel without logging out of the system
F10	Toggle the display of all channel ports (including inaccessible ones) on or off
F11	View the Unit Status Menu for connected Raritan Remote Power Control unit (available only from Power Control Menu)
F12	Toggle the Selection Menu's sorting way: numerically by port number or alphabetically by name
Esc	Exit the current OSUI screen

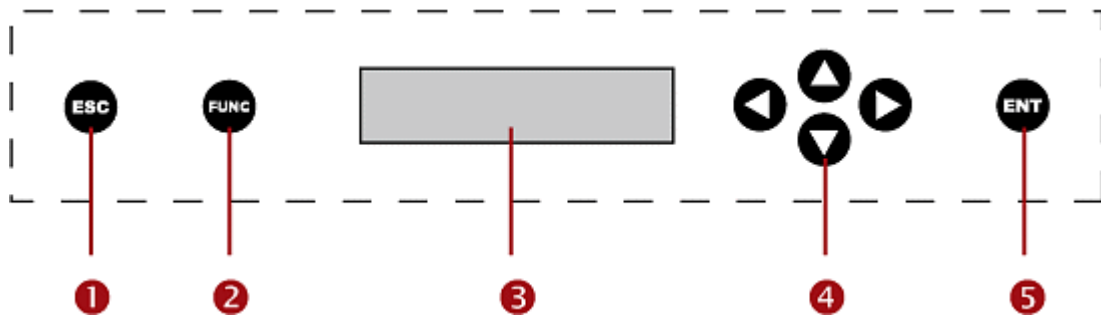
Chapter 4 Front Panel Display and Controls

The control buttons and LCD display on the Paragon switch provide system management and technical support functions. For most situations, there is no need to use the front panel beyond viewing status.

In This Chapter

Introduction to Front Panel Components.....	38
Start-Up Display	38
Normal Display	39
Power Up Option	39
Function Selection Screen.....	40
Selecting a Function	40

Introduction to Front Panel Components



Front Panel Components and Functions:

1. The **ESC** button is used for canceling displayed function and returning system to normal state.
2. The **FUNC** button is used to switch between various functions.
3. The LCD displays system status and indicates functions that can be selected by pressing front panel control buttons.
4. The **<**, **Δ**, **▷**, and **∇** buttons are used for selecting or setting various options, depending on the function being performed.
5. The **ENT** button is used for confirming and executing selected function.

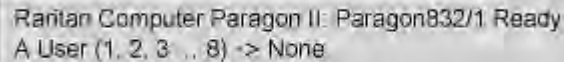
Start-Up Display

When a Paragon switch is turned ON, it performs a start-up test at the beginning. It checks each channel and user port to ensure proper operation.

Normal Display

After the start-up test, LCD panel displays two lines of messages:

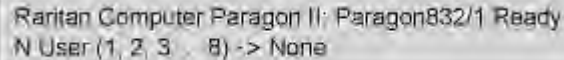
- Line 1: Running message: "Raritan Computer Paragon II: Paragon832/1 Ready"
For a Paragon II model P2-UMT832M, "Paragon832" is the default name (this name may be changed through the OSUI's System Configuration submenu).
- Line 2: User port status message: "A/N User (1, 2, 3 ...) -> None"
User port status displays a scrolling status of all user ports, one user port per second. The User's active channel, 1 through 128, is displayed after the user port number.



Raritan Computer Paragon II: Paragon832/1 Ready
A User (1, 2, 3 ... 8) -> None

A=Active User # 1-8

—OR—




Raritan Computer Paragon II: Paragon832/1 Ready
N User (1, 2, 3 ... 8) -> None

N=Non-Active User # 1-8

Power Up Option

If you hold down the **FUNC** button on the front panel of the Paragon switch during Power Up, the Paragon switch will clear its database and reset to factory defaults. Confirm functions by pressing the **ENT** button on the front panel.

When "Clear Database Hit Ent/ESC?" appears on the LCD:



Clear Database
Hit Ent/ESC?

- Press the **ESC** button if you want to exit the screen without clearing the database.
- Press the **ENT** button if you want to clear the database. "Clear All?" appears on the LCD.
 - If you press the **ESC** button once more, the channel configuration will be cleared and will be rebuilt later by the Paragon switch. This is called a Partial Reset.

- If you press the **ENT** button, both the channel configuration and the user profile and system settings will be cleared.

Function Selection Screen


Several administrative functions can be performed on the Function Menu on the Paragon switch's front panel LCD.

Display Ver./SN
Test User UST1
Test Chan. UKVM
Test Stack Unit
Stacking Support
Set LCD Contrast
Re-Configure
Set IP Address
Reset Unit

Selecting a Function

► **To select a function on the front panel**

1. Press the **FUNC** button on the front panel of the Paragon switch to enter the Function Menu mode.




Function Menu
Display Ver./SN

2. Press the **Δ** and **∇** buttons to scroll through the Function List.
3. Press the **ENT** button on the front panel to select one displayed function and use the instructions described for each specified function on the following pages.
4. Press the **ESC** button on the front panel at any time to return to Normal Display.

Display Ver./SN

This function displays current version of firmware, the firmware loader, the device's serial number, and the field programmable gate array (FPGA).

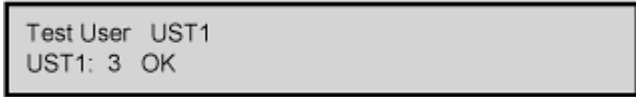


Firmware: 2C1
SN: CPB80347

Press the **ESC** button on the front panel at any time to return to Normal Display.

Test User UST1

This function checks whether user stations (USTs) are functioning properly.




Test User UST1
UST1: 3 OK

1. Press the Δ or ∇ button to change user port number. Display will read "OK", "None", or "Failed."
 - If a "Failed" condition is detected, make sure the Cat5 UTP cable is installed properly and secured, or try using another user station (UST) to see if the user station under test has become defective.
2. Press the **ESC** button on the front panel at any time to return to Normal Display.

Test Chan. UKVM


This function checks whether a CIM is functioning properly.



Test Chan. UKVM
UKVM: 80 OK

1. Press the Δ or ∇ button to change channel number. Display will read "OK", "None", or "Failed."
 - If a "Failed" condition is detected, make sure the Cat5 UTP cable is installed properly and secured, or try using another CIM to see if the CIM under test has become defective.
2. Press the **ESC** button on the front panel at any time to return to Normal Display.

Stacking Support



Stacking Support
Unit(s): 0-3

1. Press the Δ or ∇ button to set the Stacking Unit ID number (0~3 for a P2-UMT832M or 0~1 for a P2-UMT1664M).
 - The default is set to "0" (no Stacking Units connected).
 - If you wish to add Stacking Units, this number must be equal to the number of Stacking Units connected.

2. Press **ENT** to save the value or **ESC** to cancel and return to normal display.

Test Stack Unit

1. Press the Δ or ∇ button to select the corresponding Stacking Unit ID for any connected Stacking Units.
 - If there are no Stacking Units connected, the LCD will display "None."
 - If there are Stacking Units connected, the LCD should read "OK" for each unit.
2. Press the **ESC** button on the front panel at any time to return to Normal Display.

Set LCD Contrast

This function modifies contrast level of front panel LCD Display.



1. Press the Δ or ∇ button to increase or decrease the contrast.
2. Press the **ESC** button on the front panel at any time to return to Normal Display.

Note: LCD contrast can also be adjusted by holding the \triangleleft button and pressing the Δ or ∇ button at any time.

Re-Configure

Paragon II will automatically configure the system when adding or removing servers or devices. However, the system administrator can use this function to scan and re-configure the system manually. When complete, it returns to Normal Display.



Set IP Address

You may change Paragon II's IP address directly from the front panel of the device. When selecting the function, the current IP address is displayed, along with a cursor.

1. Use the \triangleleft and \triangleright buttons to move the cursor over digit-by-digit.
2. Use the Δ or ∇ buttons to change the value of the selected digit.

3. Press the **ENT** button after setting the new IP address.
4. Press the **ENT** button again to save changes and reboot the device when asked to "Save Changes?" The device will restart with the new network address.

Note: Stacking Units do not have their own databases, configuration settings, and network addresses. You cannot configure one using its front panel controls.

Reset Unit

The function enables restart of Paragon switch as if the switch's power is physically turned off and back on again.

With the Paragon switch with firmware 2B1 or later, and user station (UST1) with firmware 2K10 or later, you can perform either a power reset or a factory "function" reset from the front panel using shortcut button combinations.

Important: Performing a reset or partial reset in a cascaded Paragon system must start from the third tier (if any) to the second tier, and finally move to the base unit (first tier).

- **Power Reset:**

1. Hold the Δ and ∇ buttons on the front panel of the Paragon switch simultaneously for approximately three seconds.
2. When the front panel LCD stops scrolling, release the buttons.

- **Factory "Function" Reset:**

1. Hold the Δ and ∇ buttons on the front panel of the Paragon switch simultaneously while pressing the **FUNC** button.
2. When the front panel stops scrolling, release the Δ and ∇ buttons.
3. Wait for additional three seconds, and then release the **FUNC** button.
4. "Clear Database Hit Ent/ESC?" appears on the LCD.
5. Press the **ESC** button if you want to exit the screen without clearing the database, or press the **ENT** button if you want to clear the database.
"Clear All?" appears on the LCD if pressing the **ENT** button. Then do one of the following:
 - Press the **ESC** button once more to clear the channel configuration. Paragon switch will rebuild the channel configuration later. This is called a "Partial Reset."
 - Press the **ENT** button to clear the channel configuration, user profile and system settings.

After resetting the device, a progress indicator appears on the OSUI message bar, indicating the current update percentage. During the database updating, users are unable to operate the OSUI functions.



Chapter 5 Information about Keyboard, Mouse and Video

From the release 4.8 onward, Paragon II supports both wired and wireless mice and keyboards with the following combinations:

- Both are wired
- Both are wireless
- One is wired and the other is wireless

The only exception is that when a USB combination keyboard is connected, the mouse must be a wired one. See **How to Connect a USB Combo Keyboard** (on page 48).

For a list of compatible mouse and keyboards, visit the **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>) of Raritan's website.

Note: The HP PS/2 mouse model HP-537748-001 cannot be supported for use with Paragon II when used in conjunction with a USB keyboard. If you are using this PS/2 mouse, it is recommended to replace it with a USB mouse.

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Compatible USB Combination Keyboards	47
Changing the Keyboard Layout Settings.....	49
Kensington Mouse Type Settings.....	54
Emulating Sun Keys with a PS/2 Keyboard	56
Macintosh Key Mapping	57

Support for Widescreen LCD Monitors

You can connect a widescreen LCD monitor to the Paragon system.

The table lists the resolutions that are supported using a 16:10 or 16:9 widescreen monitor. For good video quality, you must limit the total cable length between servers and user stations within the values specified in the **Distance limit** column.

Resolutions	Ratio	Refresh rate (Hz)	Distance limit (feet)
1920 x 1200	16:10	60	500
1920 x 1080	16:9	60	500
1680 x 1050	16:10	60	750
1600 x 1200	4:3	60/75	750
1440 x 900	16:10	60/75	1000
1280 x 1024	5:4	60/75	1000
1280 x 768	15:9	60/75	1000
1024 x 768	4:3	60/75	1000
800 x 600	4:3	60/75	1000

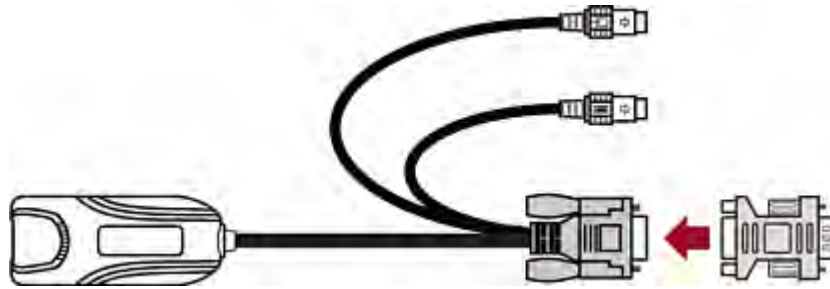
Connecting the DDC Adapter

Although Paragon II supports widescreen resolutions, it is likely that the connected widescreen monitor or server does not generate appropriate video signals, leading to unavailability of appropriate widescreen resolutions or even failure of the video output. When this occurs, use Raritan Display Data Channel (DDC) adapters to solve the problem.

► **To resolve the widescreen resolution issue**

1. Turn OFF all devices.
2. Connect the appropriate DDC adapter to the CIM by plugging the adapter into the HD15 video connector of the CIM. Several types of DDC adapters are available for use:

Supported resolutions	DDC adapter number
Up to 1024 x 768	DDC-1024
Up to 1280 x 1024	DDC-1280
Up to 1440 x 900	DDC-1440
Up to 1600 x 1200	DDC-1600
Up to 1680 x 1050	DDC-1680
Up to 1920 x 1080	DDC-1080P
Up to 1920 x 1200	DDC-1920



3. Connect the CIM to the server.
 - Plug the DDC adapter attached with the CIM into the VGA connector of the server.
 - Plug the CIM's USB or PS/2 connectors to the USB or PS/2 keyboard and mouse ports of the server.
4. Repeat Steps 2 to 3 for other servers that have the widescreen resolution issues.
5. Make a connection among these devices. For detailed information, see **Basic Installation** (on page 11).
 - Connect the CIM to a channel port on the Paragon switch.
 - Connect the user station to a user port on the Paragon switch.
 - Connect the widescreen monitor, keyboard and mouse to the user station.
6. Turn ON all devices and the servers will automatically adjust their video resolutions to the optimal widescreen resolutions which their VGA adapters support.
7. (Optional) If you prefer a different widescreen resolution, you can change the widescreen resolution after logging in to the Paragon system and accessing the server.

Compatible USB Combination Keyboards

P2-EUST and P2-EUST/C user stations may have compatibility issues with some USB combination (combo) keyboards, which provide additional USB ports. This section lists the USB combo keyboards which work properly with P2-EUST and P2-EUST/C user stations. However, USB combo keyboards that are not listed in the table may also be compatible with Paragon II user stations. For the latest compatibility list, visit the **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>) on the Raritan website.

Manufacturer	Model name or number
Dell	SK-8125
	SK-8135 (Y-UK-DEL1)

Manufacturer	Model name or number
Belkin	F8E887
Microsoft	Natural Keyboard Pro
IBM	SK-8815
Sun	Type 7
Apple	M2452*
	M7803*
	A1048*

* There is no Scroll Lock key on these keyboards so you must specify a different key as the OSUI hot key.

How to Connect a USB Combo Keyboard

To connect a combination keyboard and a USB mouse to the user station, you must follow the following procedure to make the connection. Otherwise, the keyboard and mouse work improperly.

► **To connect the USB combo keyboard and the USB mouse**

1. Turn OFF the user station.
2. Connect the USB mouse to one of the available USB ports on the USB combo keyboard. Note that this mouse must be a wired one instead of a wireless mouse.

Important: Do NOT directly connect the USB mouse to the user station where a USB combo keyboard is connected.

3. Connect the USB combo keyboard to one of the available USB ports on the user station.
4. Turn ON the user station.

If you do not follow the procedure described in this section, the keyboard and mouse may function abnormally. When the problem occurs, power cycle the user station to resolve it.

Replacing or Reconnecting the USB Mouse

It is likely that you need to replace the mouse or swap it to a different USB port after completing the initial connection of the USB Combo keyboard and USB mouse. When this occurs, follow the procedure in this section to replace or reconnect the mouse. There are two ways.

▶ **To replace or reconnect the USB mouse when the user station is turned OFF**

1. Turn OFF the user station.
2. Now swap the USB mouse to another USB port on the keyboard or make a replacement for the mouse.
3. Turn ON the user station.

▶ **To replace or reconnect the USB mouse when the user station is turned ON**

1. Disconnect the USB Combo keyboard from the user station.
2. Now swap the USB mouse to another USB port on the keyboard or make a replacement for the mouse.
3. Reconnect the USB Combo keyboard to the user station.

If you do not follow the procedure described in this section, the keyboard and mouse may function abnormally. When the problem occurs, power cycle the user station to resolve it.

Changing the Keyboard Layout Settings

Different language versions of keyboards are provided for use in different countries. For example, the layout of a French keyboard is different from that of a US English keyboard. The Paragon CIMs enable you to change the keyboard's layout setting to match your keyboard type if you are not using a US English keyboard (the factory default). Please note that different types of CIMs come with different keyboard setting methods so you should change the keyboard setting based on the CIMs.

USB Keyboard Layout Settings (P2CIM-AUSB, P2CIM-AUSB-B or P2ZCIM-USB)

When you connect a USB CIM to the server and your keyboard is not US English (code 33), you have to change the keyboard layout setting. To do so, you need to enter the setting mode by pressing appropriate hot key combinations based on your CIM type.

1. Highlight the channel of the desired server on the Selection Menu, and press **Enter**.
2. Activate a text editor, such as Notepad, on the server.

- Press Left **Ctrl + NumLock** to enter the setting mode. A message similar to the following appears in the text editor.

- For P2CIM-AUSB:

```
usb 0d0 hu2
----
keyboard layouts
33 english us
32 english uk
08 french
09 german
26 swedish
19 norwegian
15 japanese
25 spanish
14 italian
----
mouse layouts
n0 standard 3 button wheel mouse
n1 4-8 button wheel mouse
----
current options
keyboard layout is 33
mouse layout is 0
----
enter an option or escape to exit
```

- For P2CIM-AUSB-B or P2ZCIM-USB:

```
usb 0b8 hw1
--
popular keyboard layouts
33 usa
32 uk
08 french
09 german
26 swedish
19 norway
15 japan
25 spanish
14 italian
--
the current keyboard layout code is 33
enter a new country code or escape to exit
```

A	Frequently-used keyboard layout codes
B	Current keyboard layout is US English (code 33)

4. Press the appropriate keyboard layout code (see the following table for codes).
5. Either press **Esc** to exit the setting mode or close the text editor.

Generic Keyboard Layout Code

Language	Layout code	Language	Layout code
Arabic	01	Netherlands	18
Belgian	02	Norwegian	19
Canadian-Bilingual	03	Persian	20
Canadian-French	04	Poland	21
Czech Republic	05	Portuguese	22
Danish	06	Russia	23
Finnish	07	Slovakia	24
French	08	Spanish	25
German	09	Swedish	26
Greek	10	Swiss/French	27
Hebrew	11	Swiss/German	28
Hungary	12	Switzerland	29
International (ISO)	13	Taiwan	30
Italian	14	Turkish	31
Japan	15	UK	32
Korean	16	USA (Default)	33
Latin American	17	Yugoslavia	34

Sun Keyboard Layout Settings (P2CIM-SUN or P2CIM-ASUN)

When you connect a Sun keyboard to the user station and access a Sun server which has P2CIM-SUN or P2CIM-ASUN connected, you must change the Sun keyboard's layout setting.

P2-EUST no longer supports the Sun dim8 keyboard as of release 4.8, but still supports the Sun USB keyboard. If a Sun dim8 keyboard must be used, downgrade your P2-EUST user stations to 3F5.

► **To determine the Sun keyboard layout for P2CIM-SUN and P2CIM-ASUN**

1. Highlight the channel of the desired Sun server on the Selection Menu, and press **Enter**.
2. Activate a text editor on the server.

- Press **Left Ctrl + Delete** to enter the setting mode. A message similar to the following appears in the text editor. The text inside the red rectangle indicates the current keyboard layout is set to US5 Unix (code 22).

```

rاران computer, inc.
current keyboard layout code 22h us5 unix
    
```

- Press the appropriate keyboard layout code (see the table in the end of this section for codes).
- When you see a “setup end” message similar to the following, the setting is changed successfully.

```

current keyboard layout code 31h japan5
setup end
    
```

- Either press **Esc** to exit the setting mode or close the text editor.

Sun Keyboard Layout Code

Country	Layout code	Country	Layout code
Canada Fr5	32	Netherland5	27
Canada Fr5 Tbits5	3F	Norway5	28
Czech5	35	Poland5	34
Denmark5	24	Portugal5	29
Estonia5	3A	Russia5	36
France5	23	Spain5	2A
Germany5	25	Sweden5	2B
Greece5	39	Switzer Fr5	2C
Hungary5	33	Switzer Ge5	2D
Italy5	26	Taiwan5	30
Japan5	31	Turkey5	38
Korea5	2F	UK5	2E
Latvia5	37	US5	21
Lithuania5	3B	US5 Unix (Default)	22

Sun Keyboard Layout Settings (P2ZCIM-SUN)

When you connect a Sun keyboard to the user station and access a Sun server which has P2ZCIM-SUN connected, you may need to change the Sun keyboard's layout setting.

P2-EUST no longer supports the Sun dim8 keyboard as of release 4.8, but still supports the Sun USB keyboard. If a Sun dim8 keyboard must be used, downgrade your P2-EUST user stations to 3F5.

► To determine the Sun keyboard layout for P2ZCIM-SUN

1. Highlight the channel of the desired Sun server on the Selection Menu, and press **Enter**.
2. Activate a text editor on the server.
3. Press **Left Ctrl + NumLock** to enter the setting mode. A message similar to the following appears in the text editor. The text inside the red rectangle indicates the current keyboard layout is set to US5 Unix (code 22).

```

+++++
++          SUN KEYBOARD LAYOUT SETUP          ++
+++++
++          SUN CIM 889  RARITAN COMPUTER INC  ++
+++++
++TYPE IN NUMBER AND PRESS ENTER TO SELECT KB TYPE  ++
++PRESS ESC TO ESCAPE                               ++
+++++
POPULAR KEYBOARD LAYOUTS
22  US UNIX 5 DEFAULT
23  FRANCE 5
25  GERMANY 5
26  ITALY 5
2A  SPAIN 5
2E  UK 5
30  TAIWAN 5
31  JAPAN 5
32  CANADA FRENCH 5
+++++
CURRENT LAYOUT 22 US UNIX 5
+++++

```

4. Press the appropriate keyboard country code. See the “Sun Keyboard Layout Code” table in the section titled **Sun Keyboard Layout Settings (P2CIM-SUN or P2CIM-ASUN)** (on page 51).
5. Either press **Esc** to exit the setting mode or close the text editor.

Switching between 101 and 102 keys (P2CIM-APS2)

In some operating systems, the pipe key (|) on the 102-key keyboard *cannot* be recognized and is not displayed on the screen. To recognize this key, you should change the keyboard setting from 101-key to 102-key type. This function is supported by P2CIM-APS2 with firmware version 3C0 or later.

1. Highlight the channel of the server where the pipe key is unrecognized, such as a Unix server.
2. Activate a text editor on the server.
3. Press **Left Ctrl + Delete** to enter the setting mode. The following message appears in the text editor, indicating that you can change the keyboard setting now. The text “-now keyboard type-101key” means the current keyboard layout is 101-key version.

```
-now keyboard type-101key
: c : -change type
:esc: -exit
```

4. Press **c** to change the keyboard type.
5. **(Optional)** You can press **Left Ctrl + Delete** again to verify whether the current keyboard setting is 102-key. If the message shows “now keyboard type-102key” in the text editor, the current setting is 102-key keyboard.

```
-now keyboard type-102key
: c : -change type
:esc: -exit
```

6. Either press **Esc** to exit the setting mode or close the text editor.

To reverse the keyboard type from 102 keys to 101 keys, simply repeat the above steps 1 through 4.

Kensington Mouse Type Settings

With P2CIM-AUSB (with firmware version 0D0 or later) and the P2-UST/P2-EUST (or P2-EUST/C) user station, you can use two types of multi-button Kensington mouse: one is Expert Mouse, and the other is Turbo Mouse trackball. By default the CIM enables you to use a 3-button wheel mouse, and you must change the mouse setting in order to use more buttons on the Kensington mouse.

1. Highlight the channel of the desired server on the Selection Menu, and press **Enter**.
2. Activate a text editor, such as Notepad, on the server.

3. Press **Left Ctrl + NumLock** to enter the setting mode. A message similar to the following appears in the text editor.

```

usb 0d0 hu2
----
keyboard layouts
33 english us
32 english uk
08 french
09 german
26 swedish
19 norwegian
15 japanese
25 spanish
14 italian
----
mouse layouts
m0 standard 3 button wheel mouse
m1 4-8 button wheel mouse
----
current options
keyboard layout is 33
mouse layout is 0
----
enter an option or escape to exit

```

A	Available mouse setting codes
B	Current mouse setting is set to standard 3-button wheel mouse (code 0)

4. Type **m1** to have the CIM support the use of 4-8 button wheel mouse.
5. Either press **Esc** to exit the setting mode or close the text editor.
6. Press the hot key (default: **Scroll Lock**) twice quickly to trigger the OSUI Selection Menu and re-select the same channel to make the new mouse setting effective.

To reverse the mouse type from 4-8 buttons to 3 buttons, simply repeat the above steps 1 through 3, and then type **m0**.

Emulating Sun Keys with a PS/2 Keyboard

We recommend that you use a Sun keyboard and mouse at your user stations if there are any Sun servers in your Paragon system. If you must use a PS/2 keyboard to control a Sun server attached to your Paragon system, Paragon is able to perform some keyboard emulation. To emulate most of the special “extra” keys that are present on Sun keyboards but not on PS/2 keyboards, first press and hold either **Scroll Lock** or the combination of **Ctrl** and **Alt**; these function as permanent “Sun keystroke hot keys.” (If **Scroll Lock** is your OSUI hot key or previous-channel hot key, you will want to use **Ctrl + Alt**.) Then press the corresponding character on the PS/2 keyboard:

While pressing a character hotkey, press this PS/2 keyboard key...	...to generate this Sun keyboard keystroke:
F2	Again
F3	Props
F4	Undo
F5	Front
F6	Copy
F7	Open
F8	Paste
F9	Find
F10	Cut
F11	Help
F12	Mute
* on the keypad	Compose
+ on the keypad	Vol +
- on the keypad	Vol -

The one exception to this procedure is the Sun keyboard's Stop character. To generate Stop with a PS/2 keyboard, hold down the **Pause/Break** key and press the letter **A**.

Macintosh Key Mapping

If you use a Macintosh keyboard, you may want to know which keys are supported or recognized by Paragon II system. This is especially important when you want to use the Command Key combinations. Actually Paragon II system only recognizes regular PC keyboard and therefore all Macintosh keys are mapped with the PC keys based on each key's position. For unique Macintosh keys, which regular PC keyboard does not have, such as **F13** to **F15**, Paragon II system can neither recognize nor support them.

Mapped PC Keys for Macintosh Keys

Macintosh key	Mapped PC key
Command key	Windows key
Option	Alt
Shift	Shift
Control	Control
Tab	Tab
Left/Right/Up/Down Arrow	Left/Right/Up/Down Arrow
Caps Lock	Caps Lock
Escape	Escape
All alphabetical keys (A ~ Z) and numeric keys (0~9)	All alphabetical keys (A ~ Z) and numeric keys (0~9)
F1 ~ F12	F1 ~ F12
F13 ~ F15*	No mapping
Page Up/Down	Page Up/Down
Home/End	Home/End
Delete	Delete
Power*	No mapping
Help*	Insert
Volume control keys*	No mapping

* No appropriate mappings are found for these keys on PC keyboards, and these Mac keys may not function properly.

Chapter 6 Operation - User Functions

User functions for configuration and operation of your Paragon II system are processed through the OSUI. To activate the OSUI at any time, press the hot key (default: **Scroll Lock**) twice in QUICK succession.

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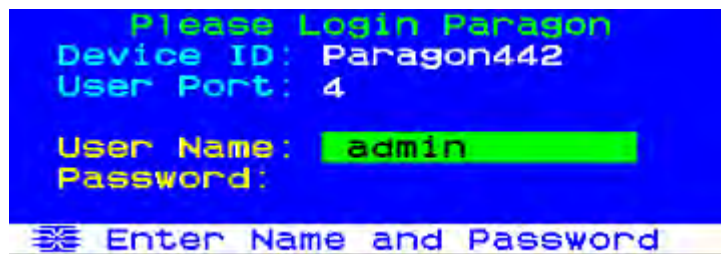
Login

Log in to Paragon II so you can access servers and other devices connected to the Paragon II system. The Login screen is automatically displayed on every user-station monitor after the single Paragon switch or Base Unit is turned on. To activate the Login screen on a user-station monitor at any other time, press the system's hot key (factory default: **Scroll Lock**) twice in QUICK succession to activate the OSUI, and then press **F9**.

*Note: If a user-station monitor displays the message "...No Connection to Paragon..." instead of the Login screen, either the user station is not connected properly to the Paragon switch, the switch is turned OFF, or the switch is malfunctioning. Make sure that the cabling between the user station and the switch is intact and is securely connected at both ends. Make sure that when you turn the Paragon switch off and back on, the LEDs run through the sequence described in step 1B of **A KVM System with a Single Paragon Switch** (on page 20).*

The Device ID field in the login screen will initially contain the single Paragon switch or Base Unit's default device name: "Paragon II" followed by "2x42" for a P2-UMT242, "4x42" for a P2-UMT442, "8x32" for a P2-UMT832M, or "16x64" for a P2-UMT1664M. (The administrator can assign a different name.) The User Port is the number of the user port on the Paragon switch—from 1 to 16 depending on the model—to which this user station is attached.

Paragon's Login screen is designed to move from corner to corner of the monitor, acting as a screen saver. "**Saver**" mode is configurable in the **System Configuration** menu, under **Login Sleep**. Please see **System Configuration** (on page 101) for additional information.

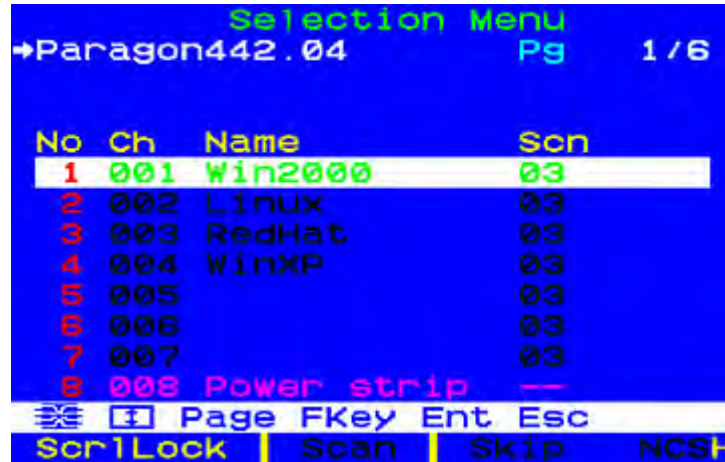


► **To log in at the Login screen and start operating the system**

1. Type the user name assigned to you by the system administrator, and press Enter.

*Note: If user names have not been assigned, use default names: **user01** through **user15** (depending on the model) for regular users and **admin** for the administrator. User names are not case-sensitive.*

2. Paragon II will prompt you if a password is necessary. If so, type your password and press **Enter**. The default password for the **admin** user is **raritan** (all lowercase; passwords are case-sensitive). We recommend changing this password right away. See **User Profile Customization (on page 77)** for additional information.
3. The Selection Menu appears. To view other menus, use the function keys as described in this section later.



*Note: To log out of the system, press **F9** while the OSUI is on the screen.*

Below are the function keys used when working with the OSUI:

Key	Action
F1	View the Help Menu
F2	Go to the Selection Menu for accessing channel ports
F3	View the Power Control Menu for associated channel
F4	Go to the User Profile Menu for users to customize their settings
F5	Administrator only: Go to the Administration Menu for the administrator to manage the system settings
F6	Administrator only: Toggle the autoscan function on or off
F7	Administrator only: Toggle the autoskip function on or off
F8	View the Information Menu
F9	Log out of the system
Shift + F9	Disconnect from the currently accessed channel without logging out of the system
F10	Toggle the display of all channel ports (including inaccessible ones) on or off

Key	Action
F11	View the Unit Status Menu for connected Raritan Remote Power Control unit (available only from Power Control Menu)
F12	Toggle the Selection Menu's sorting way: numerically by port number or alphabetically by name
Esc	Exit the current OSUI screen

Video Gain and Skew Compensation

When traveling the distance from the target server to the monitor connected to a user station over different cables, Red, Green, and Blue (RGB) color signals may arrive at different times, causing color separation on your monitor. What should appear as a solid white line may instead be separated into three different colored lines: a Red, a Green, and a Blue.

Video Gain and Skew Compensation allow you to re-synchronize the arrival of RGB signals by adding a time delay on any color signal (R, G, or B) that arrives at your user station sooner. After successful skew compensation, the RGB signals are re-synchronized and form a solid white line once more.

Skew Compensation is available with these user stations:

- P2-EUST
- P2-EUST/C

Video Gain is available with these user stations:

- P2-EUST
- P2-EUST/C
- P2-UST (no longer available for sale)

Video Gain Adjustment

A video-gain adjustment is available to focus the video image, which can be especially useful if you are using an LCD flat-panel monitor. Please note that you must access each channel individually to adjust that channel's video gain.

► To make the video-gain adjustment

1. Press the hot key (default: **Scroll Lock**) twice QUICKLY to activate the Selection Menu.
2. Press the + and - (plus- and minus-sign) keys on the keypad of your keyboard to adjust the video image until it appears to be in focus.

- For P2-UST, the video-gain range is -15 to +15.

```
Video gain changed: +03
Scr1Lock | Scan | skip | NCSH
```

- For P2-EUST or P2-EUST/C, the video-gain setting is named "AGC," and its range is 0 to +6.

```
AGC:+00 R:00 G:00 B:00
Scr1Lock | Scan | skip | NCSH
```

3. Press **Esc** or **Enter** to quit the OSUI and save the video setting.
4. To adjust another channel's video-gain setting, access it and then repeat Steps 1 to 3.

Skew Compensation with P2-EUST or P2-EUST/C

Note that "AUTOMATIC" skew compensation is only available when using P2-EUST or P2-EUST/C along with one of these CIMs: P2CIM-APS2, P2CIM-AUSB, P2CIM-ASUN, P2CIM-APS2DUAL, P2CIM-AUSBBDUAL, P2CIM-APS2-B, P2CIM-AUSB-B or P2CIM-AUSB-C. However, "MANUAL" skew compensation is always available with a P2-EUST or P2-EUST/C, regardless of the CIM type being used.

Automatic skew compensation adjusts the video quality automatically based on varying cable distances and cable types. If this video quality adjustment on an active CIM using the P2-EUST or P2-EUST/C is unsatisfactory, you can manually adjust the skew delay of each color on the OSUI. Once adjusted, the skew delay values are stored in the database of the Paragon switch that the P2-EUST or P2-EUST/C connects to.

► To adjust video quality on any channel you wish to adjust

Please note that you must access each channel individually to adjust that channel's video gain and skew delay.

1. Press the hot key (default: **Scroll Lock**) twice QUICKLY to activate the Selection Menu.
2. Press the * or / keys on your numeric keypad to select the skew delay option you want from four options: AGC, R (skew delay of Red), G (skew delay of Green), and B (skew delay of Blue).
3. Press the + or - keys on the keyboard's numeric keypad to increase or decrease the value until you are satisfied with the video quality. The skew compensation range is 0 to 31.
4. Press **Esc** or **Enter** to quit the OSUI and save the video setting.

See **Video Display Adjustment for P2-EUST** (on page 113) for additional information.



Selecting a Server

Immediately following user login, the Selection Menu appears. If you already switched to a server, you can activate the Selection Menu by pressing the hot key (default: **Scroll Lock**) twice QUICKLY.

The Selection Menu lists devices sorted either by channel number (“Ch”) or alphabetically by the name of the server or other device connected to that channel port (“Name”). You can toggle between these two ways of sorting by pressing **F12**. Default sorting is by channel number, but unless the system is re-initialized, the last selected sort order will be shown the next time that the Selection Menu is activated.

Other columns in the channel number view include “No,” row number, and “Scn,” the individual scan-delay time in seconds (unless the channel port has a subsidiary Paragon switch or tiered device connected to it, in which case the **Scn** column shows “--”).

Selection Menu Sorted by Channel Number



Selection Menu Sorted by Channel Name

Name	Page	Ch. ID
Linux	→	Paragon442.002
RedHat		Paragon442.003
Win2000		Paragon442.001
WinXP		Paragon442.004
		Paragon442.005
		Paragon442.006
		Paragon442.007
		Paragon442.010

Page PCName FKey Ent Esc
ScrLock | Scan | Skip | NCSH

Important: In the triangle configuration, you must sort the channels by name, or there are problems accessing channels. See *Triangle Configuration* (on page 146).

The Selection Menu displays up to eight channel ports per page; total number of pages appears in the upper right-hand corner, for example "Page 2/5" indicates that you are on the second of five pages. Use the **Page Up** and **Page Down** keys on your keyboard to move between the pages. Once you have selected a server as described on the following pages, Paragon II will switch to that channel port. If "ID Display" is enabled in the User Profile configuration, a display will appear at the top of your screen to identify the chosen channel port for the number of seconds set.

► **To select a server from the Selection Menu**

1. If the OSUI does not show the Selection Menu, press **F2**.
2. Press **F12** to toggle the menu to sort-order view of your choice (by channel number or alphabetically by channel name). The entry for the channel port you currently have selected (if any) will be highlighted and will have a small red arrow (→) to the left of its channel port name.

Note: In the channel number view, the Selection Menu can display either all channel ports or only those channel ports that the current user is allowed to select (the default view). If the system administrator has set the "Display All Computers" option in the **System Configuration** menu (see "**System Configuration**" on page 101) to "Yes", you can press **F10** to toggle between the restricted and unrestricted views. In the unrestricted "all channel ports" view, the Paragon displays a red "S" next to the scan rate of any channel port that the user is not permitted to access.

3. Use the **↑** and **↓** keys (and, for switching between pages, the **Page Up** and **Page Down** keys) to move the highlight bar to the channel port you want to select, and then press **Enter**. Note that although the highlight will move, the small red arrow (**➔**) to the left of the channel port name will remain stationary, indicating the user's currently-selected channel port, until a new selection is made.
 - a. In the channel number view, once all channel ports page are assigned, you can press the desired channel port's key number (**1** through **8**) to move the highlight to that channel port instantly.
 - b. In the channel name view, you can type the first few characters of the desired channel port's name to move the highlight to the first channel port whose name begins with that character sequence.
4. Press **Enter**.

Depending on the type of device connected to the selected channel port, the OSUI responds differently:

- If the device is a server and you are permitted to access it
Paragon II automatically switches you to that channel port for normal server operation, and the OSUI disappears.
- If the device is a cascaded tiered device
An OSUI Selection Menu specific to that tiered device will appear. Keep moving through the Selection Menu layers until you reach the server you want.

*Note: To return to the Base Unit's Selection Menu from any second- or third-tier-specific Selection Menu, press the **Home** key on your keyboard once, or press the **Esc** key once or twice depending on which tier you are currently on.*

After accessing a server, you can continue switching by pressing the hot key (default: **Scroll Lock**) twice QUICKLY to invoke the Selection Menu. If you want to return to your previously selected channel port without using the OSUI, press the "previous channel port" command key (default: **Num Lock**) twice QUICKLY.

In the Selection Menu, each channel port's availability is visually indicated by the following text colors.

Color	Channel port status
Black	No device is connected or the connected device is turned OFF.
Green	Server is connected and the channel port is active and available. However, if the Paragon system is in PC Share Mode, another user may currently be accessing the server.
Red	Channel port is unavailable, currently being accessed by another user. (This happens only when the Paragon II system is in Private Mode.) A blocked Paragon switch will be in red in the Selection Menu (in order of channel number).

Color	Channel port status
Yellow	Channel port is unavailable for control (being controlled by another user), but video can be viewed. (This happens only when the Paragon system is in Public View Mode. See the paragraphs below for information about other OSUI displays that appear when the system is in Public View Mode.)
Purple	A second- or third-tier cascaded switch is connected to this channel port. See A KVM System with Cascaded Paragon Switches (on page 24).
White	Channel port's current status is unknown. This should not happen if the Paragon II is operating normally.
Light Blue	Channel port is connected to a device and active, but is unavailable to access due to lack of tier path. It operates in Private mode only as 'Blocked Channels Identification'. Another possibility is the path you manually choose overlaps with another user's path partially or completely and thus limit your accessibility to any servers other than the server being accessed by another user.

For additional information about Private Mode, Public View Mode, and PC Share Mode, see the bulleted item **Operation Mode** under **System Configuration** (on page 101).

Messages Shown in Public View (P-View) Mode

When the system is set to Public View mode, one user can select the server which another user has already selected. However, the second user can only view video output without the capability to control the server or input any data using the keyboard and mouse. In this mode, other OSUI graphic elements appear on the screen when:

- You select a server that someone else is already controlling. A message showing the name of the server being viewed appears on your monitor. It cannot be removed, but will disappear after three seconds.

*Note: To return to the Selection Menu, press **Esc**.*

- Another user selects the server you have been accessing. You will see a message bearing that user's name for three seconds, twice—first when the second user begins viewing the server and then when the second user stops viewing.

Blocked Channels Identification in Private Mode

When the system is set to Private mode, “Blocked Channels Identification” is activated automatically.

- When a blocked channel is detected, it will be displayed in light blue on the Selection Menu (whether in order of channel number or name) to distinguish from a channel that is active and available to access (in green).
- When a blocked switch is detected, it will be displayed in red on the Selection Menu (in order of channel number only) to distinguish from a switch that has available path reach (in purple).
- The 'Blocked Channels Identification' is user station dependent. User login at different user stations may see different blocked channels.

Definition of a blocked channel:

- Channel that is active and unoccupied by a user.
- User is unable to switch to that channel because there is no available path in the upper tier.

Definition of a blocked switch:

- All tier paths from lower tier switches to that switch are occupied.
- User is unable to switch to servers that are connected to channel ports of the switch.

The identification of blocked channels is fully supported whether in a single-base or multiple-base regular Paragon configuration with some limitations as below.

- Blocked Channels Identification only functions within a regular Paragon configuration (no diamond connection and triangle connection inside). There is no guarantee that it will function correctly in the diamond or triangle configuration (For additional information about this configuration, see **Non-Standard Tiered Configurations** (on page 145)). However, from user's perspective, the user behavior on the light blue channel (the blocked one) is the same as that on the green channel (the active and unoccupied one).
- Blocked channel/switch identification are only activated in the Private mode. This feature will be disabled when in PC Share or P-View modes.

Manually Selecting the Access Path

When all tiered devices in the Paragon II system are implemented with firmware version later than 3E3, you can manually choose a path to access a target server in the **channel number view**. For older Paragon I or Paragon II products to support this feature, see the note in the end of this section for more information.

1. Make sure you are in the channel number view in the Selection Menu. If not, press **F12** to toggle the view.

- Press the **↑** and **↓** keys to highlight one of the channels in purple (available paths) or yellow (in PC share mode) which are connected to a tiered device (a tiered device is indicated with the symbol “- -” displayed in the **Scn** field).

No	Ch	Name	Scn
1	001	Paragon1664	--
2	002	Paragon1664	--
3	003	Win2000	03
4	004	WinXP	03
5	005	ParagonB32	--
6	006	RedHat	03
7	007	Linux	03
8	008		03

- Press **Enter**. Both of the chosen path information and the channel list of the selected tiered device are displayed on the screen.

```

Selection Menu
Paragon442.04.001 Pg 1/6
→Paragon1664.--

No Ch Name Scn
1 Linux-01 03
2 Linux-02 03
3 Win2K-doc 03
4 Win2K-ID 03
5 WinXP-global 03
6 WinXP-test 03
7 Radius 03
8 Sun 03
    
```

Page FKey Ent Esc
Scr1Lock | Scan | Skip | NCSH

The path information includes “name of the base/tiered device,” “number of the selected user port” and “number of the selected channel port.” If this symbol “- -” is displayed, it indicates the port number is currently unknown, and this port number will be displayed only when you access to the next channel.



①	Device name of the base unit
②	Selected user port's number

③	Selected channel port's number
④	The arrow indicates the current tier which you are on
⑤	Device name of the currently selected tiered device
⑥	The user port's number is currently unknown

4. Repeat steps 2 to 3 if you want to access the third-tier device.
5. Choose the channel port of the desired server in the specific tiered device's Selection Menu.

Note: Manual Path Selection is automatically disabled and replaced by Automatic Path Selection when one of the following scenarios occurs:

(1) *The desired server is accessed while the Selection Menu is sorted by channel name instead of the channel number.*

(2) *The path passes through Paragon II products with the firmware version older than 3E3. You must upgrade their firmware to support this function. See **Firmware Upgrade** (on page 162) for more information.*

(3) *The path passes through Paragon I products. If the Paragon I hardware version is older than HW3, it is impossible to support the Manual Path Selection function. But if the hardware version is HW3 (the HW3 unit has only one stacking port), you can upgrade its firmware to support this function. See **Firmware Upgrade** (on page 162) for more information.*

Path Overlapping Constraint

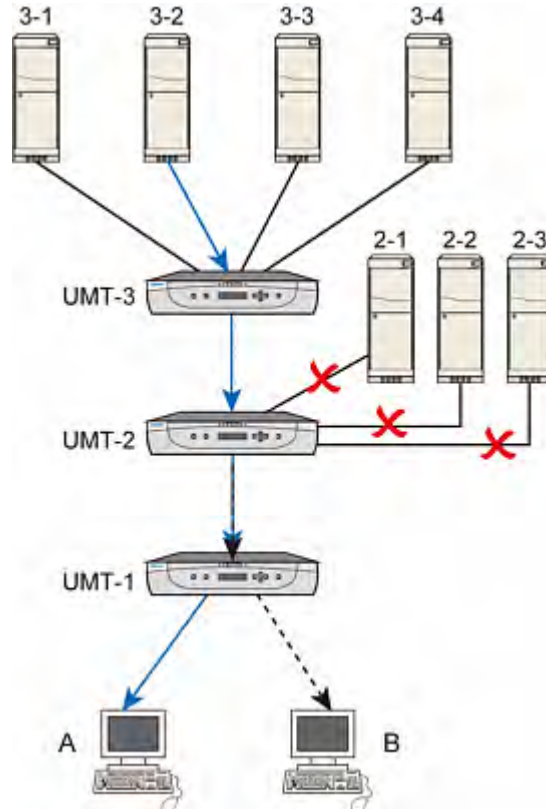
The path you manually choose may completely or partially overlap a path having been selected by another user in the PC Share or Public View mode. In this case, Paragon either limits your server accessibility to the one accessed by the user with whom you share the path or disallows any server accessibility. To access a different server, you must choose a path not overlapping with anyone's path.

Detailed path overlapping instances are illustrated below:

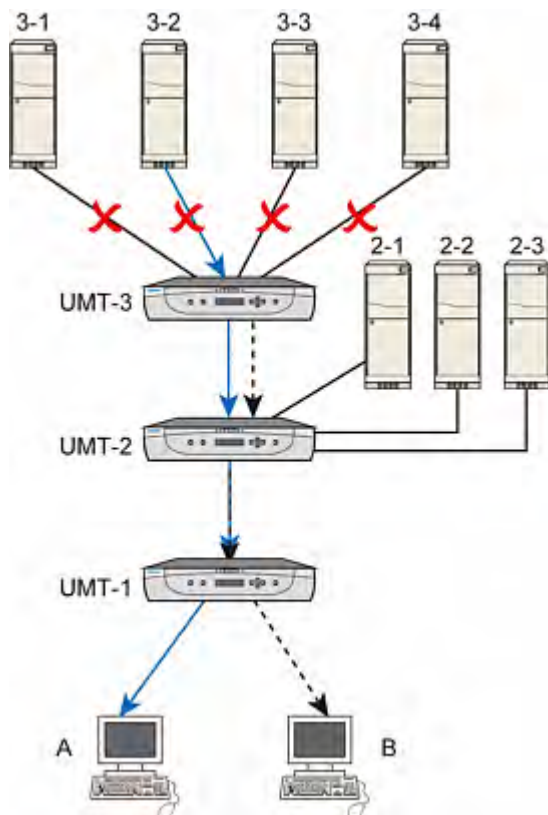
Background: The "A" user manually chooses a path for accessing Server 3-2. Later on the "B" user attempts to access a server and overlaps his path partially or completely with the "A" user's path.

Blue solid line:	indicates the "A" user's path
Black dotted line:	indicates the "B" user's path

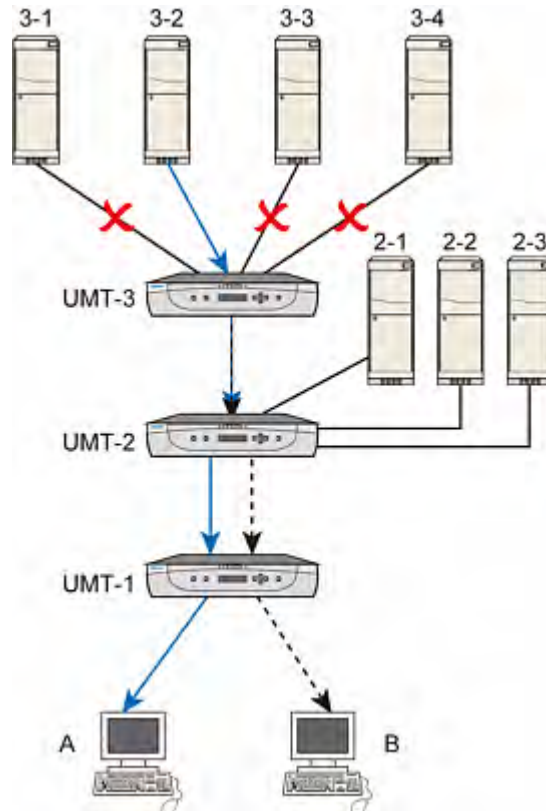
Instance 1: "B" user overlaps the path with "A" user's in the segment between UMT-1 and UMT-2; therefore, all servers connected to UMT-2 become inaccessible to the "B" user.



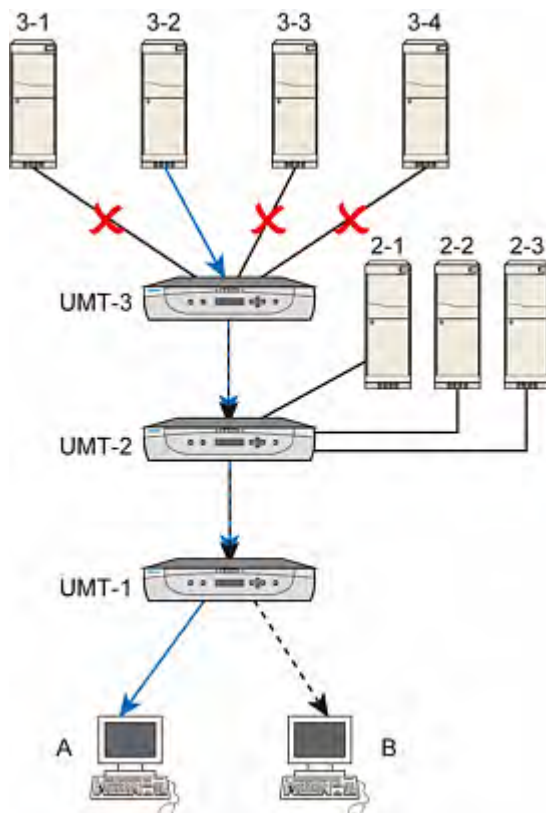
Instance 2: "B" user overlaps the path with "A" user's in the segment between UMT-1 and UMT-2; therefore, all servers connected to UMT-3 become inaccessible to the "B" user.



Instance 3: "B" user overlaps the path with "A" user's in the segment between UMT-2 and UMT-3; therefore, only the server 3-2 connected to UMT-3 is accessible to the "B" user.



Instance 4: “B” user completely overlaps the path with “A” user's; therefore, only the server 3-2 connected to UMT-3 is accessible to the “B” user.



Switching between Previous and Next Channels

There are two ways for you to switch between active channels: one is through the OSUI operation, and the other is through the “Up/Down Channel” hot key combination, which enables quick access by bypassing the OSUI. The availability of the “Up/Down Channel” function depends on two requirements as described below.

- The user station you operate must be “P2-EUST” or “P2-EUST/C” with the following firmware version.
 - P2-EUST: firmware version 3EB or later
 - P2-EUST/C: firmware version 4EB or later

A P2-UST does not support this feature.

- The Paragon switch to which your user station connects must be with the firmware version 3EB or later.

*Note: If your Paragon switch or P2-EUST (or P2-EUST/C) is implemented with old firmware, you can upgrade the firmware to benefit from the feature. See **Firmware Upgrade** (on page 162) for more information.*

Definition of the Previous and Next Channels

Please note that the Up/Down Channel function is performed based on the alphanumerical sequence, that is, the sequence of channel names instead of channel numbers. After pressing the Up/Down Channel key combination, the channel you will be switched to is the one with all of the following characteristics:

- It is the next or previous channel in the alphanumerical order
- It is an active channel
- It is available — for example, it is not being accessed by any user in the Private mode
- It is one of the channels that you have permission to access

Performing the Up/Down Channel Function

In order to use the hot key combination, follow two major steps below:

STEP (A): Set up the Up/Down Channel key

STEP (B): Change channels with the key combination

▶ **STEP (A): Set up the Up/Down Channel Key**

Prior to the use of the Up/Down Channel hot key combination, you must activate and assign the Up/Down Channel key in the User Profile menu first.

1. If the OSUI is not on the screen, activate it by pressing the hot key (default: **Scroll Lock**) twice in quick succession.

- Press **F4** to access the User Profile menu.

```

User Profile
Connected: Paragon1664.5
User: ADMIN      User Port: 2
Admin: Yes
Group: 00
Scan Mode: Global
Global Scan Rate: 03 Seconds
ID Display: On   03 Seconds
Sleep Mode: Off  05 Minutes
Hotkey: Scroll Lock
Display Position: Menu ID
Previous Channel Key: NumLck
UpDnChnl: None  LocalPC:Off
Edit P S FKey Esc
Scr1Lock | Scan | Skip | NCSH

```

- Press **Tab** until the **UpDnChnl** field is highlighted.

```
UpDnChnl : None
```

- Press **Enter** and the highlight turns green.
- Press the arrow keys (**↑**, **↓**, **←**, **→**) to switch between available options, which include **LftAlt** (Left ALT), **LShift** (Left SHIFT), **CapLck** (Caps Lock), **NumLck** (Num Lock), **ScrLck** (Scroll Lock), and **None** (function disabled). Note that those options that have been selected by the **HotKey** and **Previous Channel Key** fields are not available.
- Press **Enter** to select the desired option and the highlight turns back to yellow.
- Press **S** to save the changes.

► STEP (B): Change Channels with the Key Combination

When you want to view the previous channel, use the following key combination:

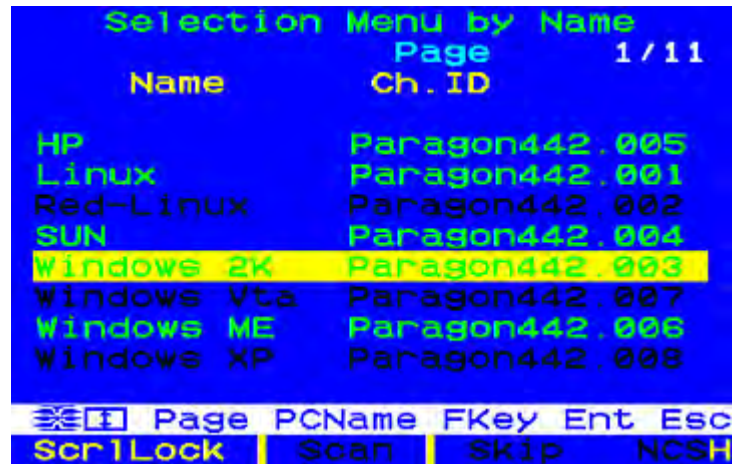
Press the <Up/Down Channel key> twice quickly, and then press
↑ within 1 second

When you want to view the next channel, use this key combination:

Press the <Up/Down Channel key> twice quickly, and then press
↓ within 1 second

For example, if you have assigned the *LEFT Shift* key as the Up/Down Channel key in the User Profile menu, press the *LEFT Shift* key twice and then press \uparrow or \downarrow . The video of the previous or next channel is immediately displayed on the screen.

Each time the use of the Up/Down Channel key changes the Selection Menu from sorting by channel number to sorting by name on the background. Therefore, when activating the OSUI after performing the Up/Down Channel function, you see the “Selection Menu by Name” screen (see below). To return to the sorting by channel number, press **F12**.



Constraint:

*If you access a channel in the Public View mode, and do not gain the keyboard and mouse control, your Up/Down Channel hot key will NOT function. When this occurs, the only way to access the previous or next channel is to activate the OSUI by pressing the **Enter** key and then select the desired channel.*

User Profile Customization

Users can change their own profiles and administrators can set blank user profiles or change an individual user profile on the **User Profile** screen. To access this menu, press **F4** when the OSUI is on the screen. This menu displays Paragon II's configuration and allows you to set preferred operating parameters for individual user accounts or for a group of accounts, as the administrator, or change your profile as a logged-in user.

```

User Profile
Connected: Paragon1664.5
User: ADMIN      User Port: 2
Admin: Yes
Group: 00
Scan Mode: Global
Global Scan Rate: 03 Seconds
ID Display: On   03 Seconds
Sleep Mode: Off  05 Minutes
Hotkey: Scroll Lock
Display Position: Menu ID
Previous Channel Key: NumLck
UpDnChnl: None  LocalPC:Off
Edit P S FKey Esc
Scr1Lock | Scan | Skip | NCSH

```

► To view or change your user profile

1. If the OSUI is not on the screen, activate it by pressing the hot key (default: **Scroll Lock**) twice in quick succession.
2. Press **F4** to access the User Profile menu. The topmost fields are identifiers that cannot be changed by the user:
 - a. The **Connected** field displays the name and channel port ID of the currently selected device, if you are currently connected to a channel port.
 - b. The **User** field displays the user name you entered at login.
 - c. The **User Port** field shows which user port on the Paragon switch your user station is attached to.
 - d. The **Admin** field shows whether or not you have administrator privileges.
 - e. The **Group** field displays the user's group ID(s) (see **Group Settings (Access Rights)** (on page 116)).
3. To change any of the other fields, use your keyboard keys to select the field you want to edit: Press **Tab** to move forward through the editable fields, **Shift+Tab** to move backward, the **↑** and **↓** keys to move up and down, and the **←** and **→** keys to move left and right.

Press **Enter** to begin editing; the highlighted area will turn green, and the message text changes to the following:



The screenshot shows a menu bar with several options. The option 'Change' is highlighted in green, and a cursor is positioned at the end of the word. The other options are 'Ent-Done' and 'ESC-Cancel'.

See the next section for interpreting specific User Profile entries.

When finished, press **Enter** to retain the changes (the highlighted area will turn yellow) or press the **Esc** key to cancel the changes. When you are going to leave the menu, (for example, if you press a function key) the prompt in the message bar will change to “**Save the changes (Y/N/ESC)**” Press **S** to save the changes to long-term memory, **Esc** to discard your changes, or **N** to discard your changes and exit the menu.

Note: When you type new numeric values, always use the number keys at the top of your keyboard, not the number keys on your keypad. Paragon does not support the keypad number keys.

User Profile Parameters and How to Change Settings

- **Scan Mode:** Indicates how Paragon II determines the length of time to pause at each channel port during autoscanning. Default setting is “**Global**.” Use any of the arrow keys to toggle between these values.
 - **Global:** the system pauses at each channel port for the same length of time set in the **Global Scan Rate** field.
 - **Individual:** this indicates that the administrator has set a specific length of time for each individual channel ports (as displayed in the Selection Menu).
- **Global Scan Rate:** If **Scan Mode** is set to “**Global**,” this parameter determines the length of time that the system pauses at each channel port while scanning. Using leading zeroes if necessary, type in a two-digit number of seconds from 01 to 24, or use the **↑** and **↓** keys to increase and decrease the current value by 1 respectively. The default setting is **03**.
- **ID Display:** The ID Display is a small window that can appear on the screen to display the name and ID of each channel port as you switch between them or scan them. Edit the two fields to determine how the system will show you this window:
 - Possible values in the first field are “**On**” (ID Display is shown, the default value) and “**Off**” (ID Display isn’t shown). Use any of the arrow keys to toggle between these values.

- If the ID Display is set to “**On**,” the number in the second field, **Seconds**, indicates how many seconds it will remain onscreen. Using leading zeroes if necessary, type a two-digit number of seconds from 01 to 24, or use the **↑** and **↓** keys to increase and decrease the current value by 1 respectively. If you type a number greater than 24, the second field will be filled with a “- -”, indicating that the ID Display will be shown at all times. The default setting is **03**. If the ID Display is set to “**Off**,” the number in this field will have no effect.
- **Sleep Mode:** A power-saving mode that is activated once a user logs in. Sleep mode acts as a screensaver if the user station is idle (no keyboard or mouse activity) for a specified amount of time. Sleep mode is user-specific; whatever mode a user sets applies to only that user once logged in. Edit this field and the **Minutes** field that follows to determine how the system handles sleep mode. Possible values are **Saver**, **Green**, and **Off**. Use the **↑** and **↓** keys to toggle between these values.
 - **Saver:** The OSUI, with or without background, is a “floater” and appears regularly in random locations on the screen.
 - **Green:** The monitor goes blank.
 - **Off:** Sleep Mode is disabled and the screen displays normal video indefinitely.
 - If Sleep Mode is set to **Saver** or **Green**, in the **Minutes** field, type the number of minutes of inactivity before **Sleep Mode** is triggered. Using leading zeroes if necessary, type a two-digit number of minutes from 01 to 99, or use the **↑** and **↓** keys to increase and decrease the current value by 1 respectively. The default setting is **05**. If Sleep Mode is set to “**Off**,” the number in this field will have no effect.

- **Hotkey:** The keyboard key that, when pressed twice quickly, activates the OSUI. The alternatives are **Scroll Lock** (the default), **Caps Lock**, **Num Lock**, the **LEFT ALT** key, and the **LEFT SHIFT** key. Use any of the arrow keys to switch between the choices. You cannot select the key currently being used as the Previous Channel Key (see below).
- **Display Position:** This position indicates where the OSUI menus and ID Display appear on your monitor. Move the highlight to “Menu” (for the OSUI) or “ID” (for the ID Display) and press **Enter** to highlight it, then use the **↑**, **↓**, **←**, and **→** keys to move the chosen window as desired. When finished, press **Enter** to save the change.
- **Previous Channel Key:** The keyboard key that, when pressed twice quickly, causes Paragon II to return to the previously selected channel port (provided that that channel port is still available) without going through the OSUI. The alternatives are the **LEFT ALT** key, the **LEFT SHIFT** key, **Caps Lock**, **Num Lock** (the default), **Scroll Lock**, and **None** (no Previous Channel Key; function disabled). Use any of the arrow keys to switch between the choices, but you cannot select the key currently being used as the Hotkey (see above).
- **UpDnChnl:** The keyboard key that, when pressed twice quickly and followed by the **↑** or **↓** key within one second, causes Paragon II to switch to the previous or next channel port (provided that that channel port is still available) *without* going through the OSUI. The alternatives are the **LEFT ALT** key, the **LEFT SHIFT** key, **Caps Lock**, **Num Lock**, **Scroll Lock**, and **None** (function disabled; the default). Use any of the arrow keys to switch between the choices, but you cannot select the key currently being used as the Hotkey or Previous Channel Key (see above). For more information, see **Switching between Previous and Next Channels** (on page 73) earlier in this chapter.
- **Local PC:** This feature is no longer supported by the Paragon II so simply leave it at **Off** (the default) for the attached user station.

Password Change or Deletion

► To change or delete your password

You can delete a password (if "Require Password" is set to "No"), or change it after entering the User Profile Menu.

1. When the User Profile Menu is on the screen, press **P**.
2. Type your old password at the first prompt.
3. Type a new password up to eight characters at the next prompt, and press **Enter**. (To delete your password, press **Enter** without typing anything in the field.)
4. Confirm the new password by typing it again at the third prompt.
5. Either press **Enter** to save the new password, or **Esc** to abort the change and continue using the old password.

Note: Be careful when you change your password. If you forget or lose it, the administrator has no way of recovering or erasing it; your account will have to be deleted and recreated.

Help Menu

When the OSUI is open, activate the Help Menu by pressing **F1**. This menu displays a list of function keys and their functions.

```

Help
F1 Help / ESC Exit
F2 Channel Selection
-F12 Sort by Channel/Name
F3 Power Control Commands
F4 User Profile
F5 Administrative Functions
F6 Toggle Scan On/Off
F7 Toggle Skip On/Off
F8 Information Screen
F9 Logout
-Shift+F9 Release Channel
F10 Toggle Disp All Ch. On/Off
FKey Esc
ScrLock | Scan | Skip | NCSH

```

Keyboard-Controlled OSUI Functions

Use the following function keys to access Paragon's OSUI functions:

Key	Action
F1	View the Help Menu
F2	Go to the Selection Menu for accessing channel ports
F3	View the Power Control Menu for associated channel
F4	Go to the User Profile Menu for users to customize their settings
F5	Administrator only: Go to the Administration Menu for the administrator to manage the system settings
F6	Administrator only: Toggle the autoscan function on or off
F7	Administrator only: Toggle the autoskip function on or off
F8	View the Information Menu
F9	Log out of the system
Shift + F9	Disconnect from the currently accessed channel without logging out of the system

Key	Action
F10	Toggle the display of all channel ports (including inaccessible ones) on or off
F11	View the Unit Status Menu for connected Raritan Remote Power Control unit (available only from Power Control Menu)
F12	Toggle the Selection Menu's sorting way: numerically by port number or alphabetically by name
Esc	Exit the current OSUI screen

*Note 1: If a user owns administrator privileges but is not the administrator (the **Admin** account), functions **F6** and **F7** are shown in red in the Help Menu, indicating that these functions are not available.*

*Note 2: If a system administrator has set Display All Computers to "No," then **F10** is shown in red in the Help Menu for all users, indicating that this function is not available (even for administrators).*

*Note 3: Raritan recommends using a Sun keyboard when there are any Sun servers in your system. If you want to control Sun servers with a PS/2 keyboard instead, see **Information about Keyboard, Mouse and Video** (on page 45).*

Information Menu

When the OSUI (On Screen User Interface) is visible, activate the Information Menu by pressing **F8**. This menu displays the “vital statistics” of the user station that you are using, including its firmware, hardware, and FPGA revisions, serial number, which console port (user port) and port number on the Paragon switch attached to it, and the number of KVM switches and PCs (servers) that can be accessed through it.



Concurrent Multiple Video Outputs

You can access one single channel and thus activate the video outputs of another or several other channels at the same time. That is, when a channel is selected in the Selection Menu, the other pre-configured channel(s) automatically output video data to subsequent user stations. This function is called “Multiple Video” or “Port-Following Switch.” It is especially useful if you have a multi-channel video server, or intend to set up a TV wall in the Paragon II system.

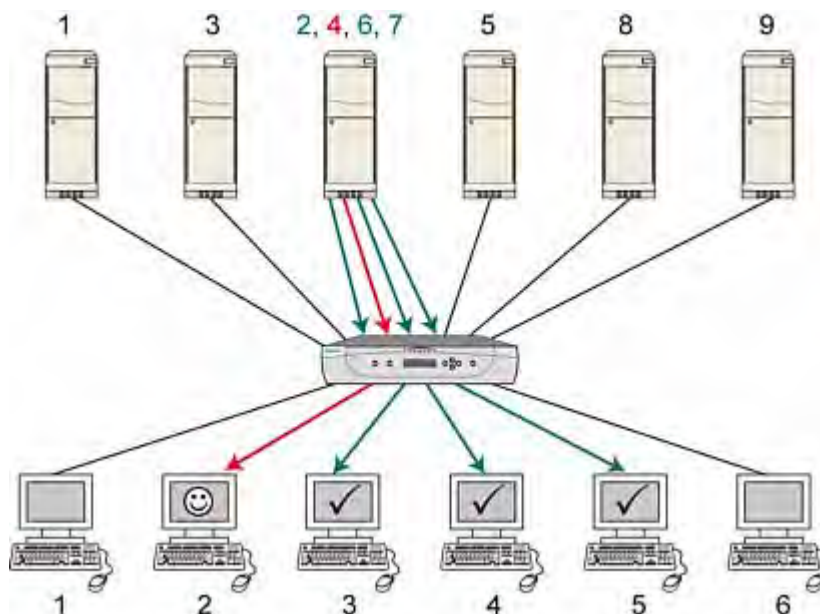
Performing this function requires the channel association to be pre-configured in Paragon Manager. Only the administrator is allowed to set up the channel association. If the desired association has not been configured, contact your Paragon II system administrator.

*Note: To download Paragon Manager, see **Installing Paragon Manager** (on page 199).*

Four-Channel Example

Four channels (numbers 2, 4, 6 and 7) of Paragon II system are connected to the same server which has four video ports. The Paragon administrator has configured these four channels as an association group in Paragon Manager, and **Channel 4 is set as the “first” channel in the association setting.**

In this example, you use the user station attached to the user port #2 to access the “first” channel—**Channel 4**. When you do this, channels 2, 6 and 7 will automatically output their video data to user stations subsequent to your user station, which are 3, 4 and 5.



☺	The user station you operate to activate the Multiple Video function
✓	The user stations that receive the Multiple Video outputs

Note: Depending on your purpose, the associated channels can also be connected to different servers and output the video data accordingly.

Naming Convention for Multiple Video

For documentation purpose, the following name conventions will be used to describe the Multiple Video function:

Name	Meaning
ACTIVATOR channel	<p>The “first” channel specified in the Paragon Manager's channel association setting.</p> <p>Access to this channel causes the other channels of this association group to output their data.</p>
FOLLOWER channel	<p>The channel(s) other than the ACTIVATOR channel in the association setting.</p> <p>These channels automatically output their data when the ACTIVATOR channel is accessed.</p>
ACTIVATOR user station (or user port)	<p>The user station (or user port) that you use to access an ACTIVATOR channel of an association group.</p> <ul style="list-style-type: none"> For two- or four-channel association groups, any user station can be the ACTIVATOR. For 16-channel association groups, only the user station connected to user port number 1 can be the ACTIVATOR.
FOLLOWER user station (or user port)	<p>The user stations (or user ports) that receive the data outputs from the FOLLOWER channels after the Multiple Video function is activated.</p> <p>FOLLOWER user stations (or user ports) are subsequent to the ACTIVATOR user station (or user port).</p>

Connecting CIMs to a Multi-Channel Video Server

A multi-channel video server is a server with multiple video ports. When you connect CIMs to this kind of server for multiple video outputs, make sure that each CIM gets its power from the server's PS/2 keyboard or USB port. Usually a server provides one PS/2 keyboard port only. Therefore, you must use P2CIM-AUSB for additional CIMs to gain power from available USB ports on the same server.

1. Fully connect one CIM to the server's ports, be it P2CIM-APS2 or P2CIM-AUSB.

- P2CIM-APS2: Connected to the server's video, keyboard and mouse ports.
- P2CIM-AUSB: Connected to the server's video and USB ports.

Note: This CIM must be set as the ACTIVATOR channel so note down its channel number for later use.

2. Connect other P2CIM-AUSB to the remaining video and USB ports of the server. Make sure each CIM is connected to one USB port. If there are not enough USB ports on the server, connect their USB connectors to a USB hub's USB ports for power supply.
3. Connect these CIMs to the channel ports of the desired Paragon switch using the Cat5 cables.

Operation Rules

This section describes the general concept for operating the Multiple Video function, including the activation and termination of the Multiple Video mode.

Activation

- Only access to the ACTIVATOR channel can trigger the function.
 - For a **16-channel association**, the additional requisite is the ACTIVATOR user port is user port No. 1, or the 16-channel Multiple Video function is NOT triggered even though the ACTIVATOR channel is accessed.

- The sequence of the ACTIVATOR and FOLLOWER user ports is consecutive. For example, with the precondition of four associated channels, if the ACTIVATOR user port is No. 3, the FOLLOWER user ports start from the next number, which are 4, 5, and 6.
- The function is forced regardless of the login status or the permissions of the logged-in users on the FOLLOWER user stations.
- This function can be remotely triggered through Raritan's IP-Reach (if any).

Note: Accessing the ACTIVATOR channel with the Forced Video command CANNOT trigger the Multiple Video function. The associated channels will not output their data automatically.

Termination

The hot key for triggering the OSUI is disabled on the FOLLOWER user stations. Therefore, choose one method below to make the user station(s) exit the Multiple Video mode.

- On the ACTIVATOR user station, press the hot key (default: **Scroll Lock**) twice quickly to trigger the OSUI, and do one of the following. Both of the ACTIVATOR and FOLLOWER user stations will then exit the mode.
 - Press **Shift+F9** to disconnect the ACTIVATOR channel. The FOLLOWER user stations' monitors remain showing the FOLLOWER channel videos, while the keyboard and mouse control is back on these user stations.
 - Press **F9** to log out of the system. ACTIVATOR and FOLLOWER user stations are all logged out of the system.
 - Choose a non-ACTIVATOR channel in the Selection Menu. The FOLLOWER user stations' monitors remain showing the FOLLOWER channel videos, while the keyboard and mouse control is back on these user stations.
- Power cycle the desired user station(s), be it an ACTIVATOR or FOLLOWER user station.

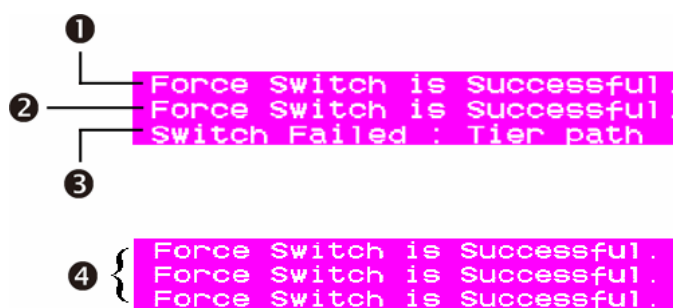
*Note: If the user station is P2-USTIP, it automatically enters the remote mode when quitting the Multiple Video mode. Press **Ctrl+Alt+Delete** on the P2-USTIP if you want to return to the local mode.*

Limitation

- The function is not applicable to those channels which share only one path via the tiered device, such as P2ZCIM, P2CIM-APS2-B or P2CIM-AUSB-B (for IBM BladeCenter servers).
- For 16-channel associations, the associated channel ports must be on the **Base Unit** if your Paragon system is a multi-tier configuration.

Messages on the ACTIVATOR User Station

The success or failure of data outputs from the FOLLOWER channel(s) will be reported on the screen of the ACTIVATOR user station (see the example images below).



①	The 1st FOLLOWER channel successfully outputs its data
②	The 2nd FOLLOWER channel successfully outputs its data
③	The 3rd FOLLOWER channel fails to output its data
④	Every FOLLOWER channel successfully outputs its data

The failure of data output can be caused by one of the following reasons:

- Blockage to the FOLLOWER channel port(s). For example, other user(s) may be accessing one or more of the FOLLOWER channels in Private mode and thus block the access.
- Mouse/keyboard activity is detected on the FOLLOWER user station(s) when the Multiple Video command is issued. Paragon will NOT execute Multiple Video in order to protect that server's operation.
- The FOLLOWER user station is P2-USTIP which enters the remote mode (no OSUI displayed). This message will be displayed on the screen.

```
User port is in Remote Mode.
```

- The FOLLOWER user station is set to Local PC mode.
- The FOLLOWER user station is P2-EUST/C which detects the insertion of the smart card. This message will be displayed on the screen.

```
User is in Card Reader Mode.
```

- There are not enough FOLLOWER user stations subsequent to the ACTIVATOR user station. This message will be displayed on the screen.

```
User Station is not available
```

Messages on the FOLLOWER User Stations

When the Multiple Video command is issued, a message similar to the following will be displayed on the FOLLOWER user stations. Any keyboard and mouse outputs on these user stations are invalid while in the Multiple Video mode.

```
Forced switch to 10  
User Enter Multiple Mode  
KB/MS Function Disabled
```

Using P2-USTIP for Multiple Video Outputs

P2-USTIP has two operation modes: remote and local modes. Only local mode supports the Multiple Video function.

In the remote mode (no OSUI displayed):

P2-USTIP CANNOT function as either the ACTIVATOR or FOLLOWER user station in this mode. If a remote user accesses an ACTIVATOR channel via P2-USTIP, the Multiple Video function is NOT triggered at all.

In the local mode (OSUI displayed):

This is the only mode in which Multiple Video functions. Enter the local mode by pressing **Ctrl+Alt+Delete**. Then P2-USTIP can act as either the ACTIVATOR or FOLLOWER user station.

Authentication with a Smart Card

With the use of the P2-EUST/C user station and the P2CIM-AUSB-C CIM, Paragon II enables you to control access to servers that require user authentication with an appropriate smart card. Therefore, data security is further enhanced by only permitting users who pass appropriate login credentials to a target server to view and manage the server's data. Note that the integrated card reader of the P2-EUST/C is used when accessing target servers, but not when accessing Paragon II. The method of accessing Paragon II is unchanged.

As of release 4.8.3, Paragon II supports using smart cards to access SIPRNet systems with new hardware and firmware version of P2-EUST/C and new firmware version of P2CIM-AUSB-C. See **Requisites for Card Reader Functionality** (on page 92) for details.

Installing the P2CIM-AUSB-C Driver in Windows

The target server must be running the proper driver in order to communicate with the card reader. If the operating system of your server is Windows 2000, 2003, XP, Vista, Server 2003 or Server 2008 (including 32-bit and 64-bit versions), it has the capability to auto-detect and install the proper driver. Depending on the operating system, the driver installation procedure may vary slightly.

► **To install the P2CIM-AUSB-C driver:**

1. Connect the target server to the network.
2. Plug the P2CIM-AUSB-C into the server's USB port. The *Found New Hardware Wizard* dialog appears.

If the wizard does not appear automatically, do this:

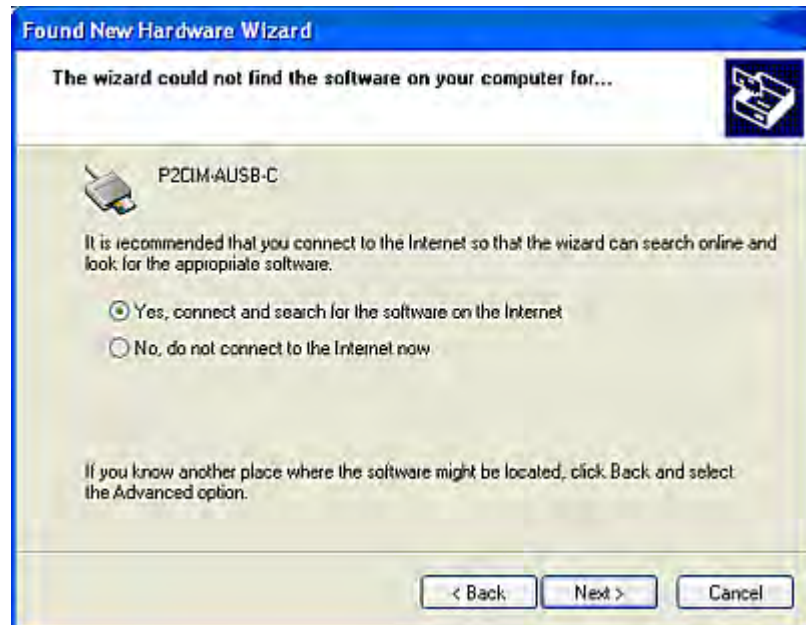
- a. Choose **Start**.
 - b. Right-click **My Computer**, and then choose **Manage** from the shortcut menu. The *Computer Management* window opens.
 - c. Click **Device Manager** on the left pane.
 - d. Right-click **Smart card readers** on the right pane, and then choose **Scan for hardware changes** from the shortcut menu.
3. Select "Yes, this time only" and click **Next**.



4. Select "Install the software automatically (Recommended)" and click **Next**.



5. (Optional) If this dialog appears, select "Yes, connect and search for the software on the Internet" and click **Next**.



6. Click **Finish** when the installation is complete.



*Note: If one of the following scenarios occurs, you can obtain the Windows driver by downloading the P2-EUST/C update from Raritan's **Firmware and Documentation** section (<http://www.raritan.com/support/firmware-and-documentation/>):*

(1) If your target server cannot be connected to the Internet, connect a PC to the Internet to download the driver, and then install the driver on the target server.

(2) If the driver cannot be found or does not install properly with the Found New Hardware Wizard, download the driver and assign the driver's location during the installation.

Contact Raritan Technical Support for assistance when necessary.

Requisites for Card Reader Functionality

In order to enable the card reader functionality, the following Paragon II components must be included in the path you choose to access a specific server.

- **Reader-enabled user station:** P2-EUST/C
- **Reader-enabled CIM:** P2CIM-AUSB-C
- **Reader-enabled firmware:** Paragon II switch (including the Main Unit and the Stacking Unit, if any) with firmware version 4.3 or later

To utilize the integrated card reader, client authentication software must have been installed and configured properly in the target servers. The Paragon II card reader supports the PC/SC specification, enabling communication between cards and authentication middleware. It also conforms to the ISO7816 standard for the card-to-reader interface. Specifically, the reader supports ISO7816 Class A and AB smart cards.

Note: Raritan does not provide the client authentication software. If you encounter any problems regarding the authentication messages, please consult the user documentation shipped with the authentication software or contact your system administrator.

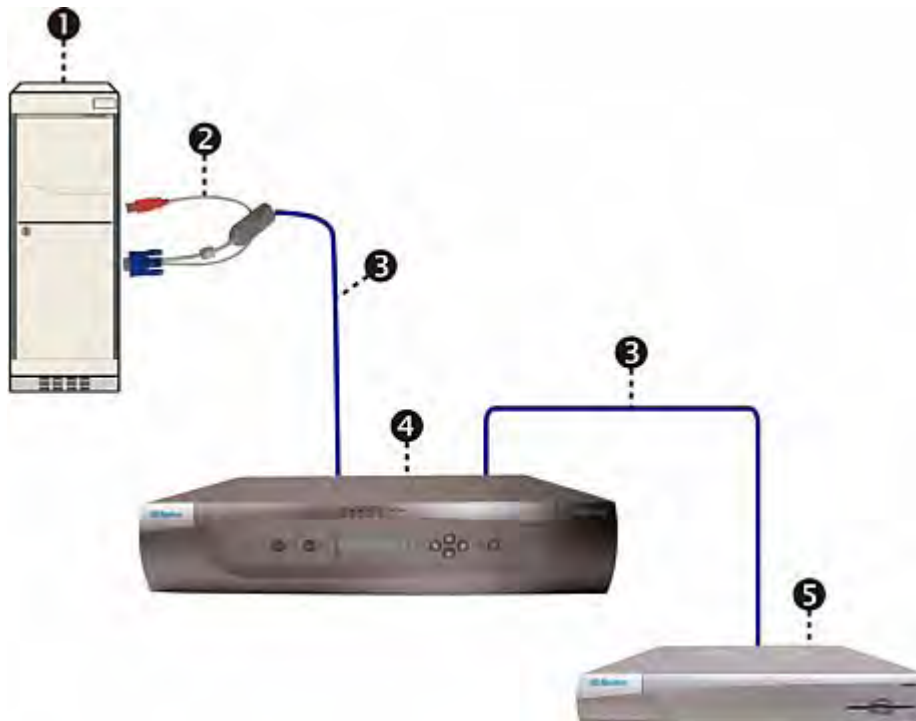
Paragon II is further enhanced to support the use of SIPRNet cards as of release 4.8.3. If you are using SIPRNet cards, make sure:

- The hardware version of the integrated card reader on your P2-EUST/C is V2-xx (where xx comprises alphanumeric digits).

Note: The card reader hardware version is indicated as 'Smart Card V2-xx' in the label attached to the SIPRNet-enabled P2-EUST/C, where xx is the version. For example, 'Smart Card V2-0B' means that the card reader version is 0B of the second generation (V2).

- The firmware version of your P2-EUST/C is 4F8 or later.
- The firmware version of your P2CIM-AUSB-C is 1AA or later.

The connection pattern in the chosen path will look like the figure below.



❶	Server
❷	P2CIM-AUSB-C
❸	Cat5 cable
❹	Paragon II switch (firmware version 4.3 or later)
❺	P2-EUST/C

The maximum cable length between the reader-enabled CIM and the Paragon switch to which it is directly connected CANNOT exceed 500 feet (152 m). A cable longer than 500 feet may result in the card's data loss during the transmission.

If the path runs through the second- or even third-tier Paragon switches, the firmware version of these upper tiers must also be 4.3 or later. Otherwise, the card reader function in the path will not be enabled. For information on connecting user stations, CIMs, servers and Paragon switches, see **Basic Installation** (on page 11).

Notes:

(1) A Paragon Main Unit is not used when in Direct Mode. In Direct Mode, only P2-EUST/C and P2CIM-AUSB-C are required to activate the card reader functionality. See **User Station Direct Mode** (on page 160) for more details.

(2) P2-HubPac does not support the card reader functionality at this time. Therefore, make sure the servers that require the card reader authentication are not connected to the Paragon switch via P2-HubPac.

Introduction to P2-EUST/C

This device is an enhanced user station with a built-in card reader.

Its functions are similar to those of P2-EUST and can work with Paragon II that has been upgraded to version 4.3 or later. The internal card reader allows users to insert their smart cards when prompted by the authentication software installed in the servers, and deliver the necessary authentication data to the server. The P2-EUST/C is compatible with all CIMs that are compatible with the standard P2-EUST. This allows for use of the P2-EUST/C in environments that also include servers that do not require the card authentication.

Comparison between P2-EUST/C and P2-EUST

Components / Functions	P2-EUST/C	P2-EUST
USB Keyboard/Mouse Support	✓	✓
PS/2 Keyboard/Mouse Support		✓
Sun Keyboard/Mouse Support		✓
Automatic Skew Compensation	✓	✓
Internal Card Reader	✓	



①	LED
②	Card reader slot

LED Status

LED Color	Status
Blue (Solid)	The user station is turned on without any card inserted
Blue (Blink)	Only keyboard/mouse signals are being transmitted to the Paragon switch or when the keyboard/mouse activity is detected
Green (Solid)	A card is inserted into the card reader slot when the user station is turned on
Green (Blink)	Only the card's data is being transmitted to the Paragon switch
Alternate between Green and Blue	Both of the card's data and keyboard/mouse signals are being transmitted to the Paragon switch

Note: An external USB card reader is not supported at this time.

Introduction to P2CIM-AUSB-C

This device is a USB CIM and is required when using a smart card.

Its functions are similar to those of P2CIM-AUSB and can work with Paragon II that has been upgraded to version 4.3 or later.

Paragon II 4.3 or Later Firmware Version

As long as the card reader function is intended in the Paragon II system, you must ensure the firmware version of the Paragon switch (or switches) in the chosen path is 4.3 or later. Otherwise, the card reader function is not available even though both of the reader-enabled user station and CIM are present in the path.

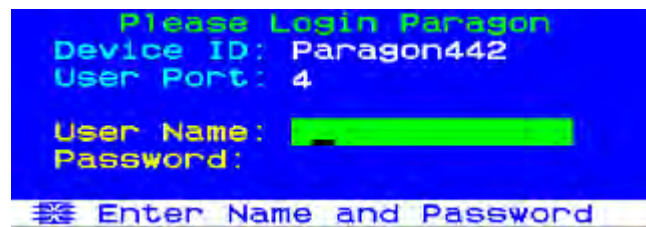
To upgrade the firmware version of existing Paragon switches to 4.3 or later, including Paragon I HW3 and Paragon II, see **Firmware Upgrade** (on page 162) for additional information.

Using the Card Reader

Once all required reader-enabled components are installed in the Paragon system, and the proper driver and authentication software have been configured in the servers, the card reader authentication is ready for use.

Note that when you connect the P2-EUST/C user station to the Paragon Base Unit with 4.3 or later firmware version, the whole system comprising the Base Unit and its tiers enters the Private Mode regardless of the original **Operation Mode** setting. This is to ensure that only the user that has validated his or her credentials may view the server's video output.

1. Using the P2-EUST/C, verify that the user station is connected to a keyboard/mouse/VGA monitor, and is turned on. See **Basic Installation** (on page 11) for more details.
2. Log in to the Paragon system by typing a valid user name and password and then pressing **Enter**. See **Login** (on page 59) for more details.



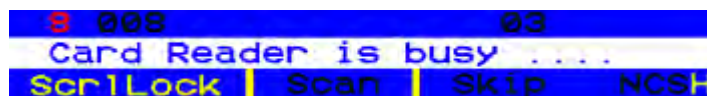
3. After logging into the system, the Selection Menu appears on the screen.
4. Press **↑**, **↓**, **←** or **→** to move the highlight to the desired server which is connected to the reader-enabled CIM (P2CIM-AUSB-C).
5. Press **Enter** to access the server. See **Selecting a Server** (on page 63) for more details.
6. If the client authentication software has been configured properly, either a blank screen or a message prompting you to insert the card appears. The message varies depending on the configuration of your authentication software.
7. Insert your card into the card reader slot on the user station. The LED of the user station turns green.

Note: The Paragon II integrated smart card reader may not recognize the insertion of a smart card when there is conflict with an external card reader, including keyboards that consist of a built-in smart card reader. When there is conflict with an external reader, the LED on the user station (which normally turns from blue to green when a card is inserted) will not react to the insertion of the card.

8. The card reader reads the data of the card and transmits the data to the server. Follow the server's onscreen instructions, if any, to complete the login authentication process. For more information on completing the authentication process, see the user documentation provided with your system's authentication software or contact your system administrator.

IMPORTANT: Whenever the card reader is reading and transmitting the data (indicated by the green blinking LED), do NOT do anything that interrupts the transmission, such as the removal of the card or CIM, turning off the Paragon switch or server, and so on. Doing this may cause abnormal function and require you to restart all of the devices in order to return to normal operation.

The Paragon system does not allow you to switch to any server during the transmission of the card's data. When attempting to do so, the system displays the message below on the OSUI.



9. Once you pass the authentication process, you are allowed to view and manage the server.
10. When finishing your server task, press the hot key (default: **Scroll Lock**) twice quickly to trigger the OSUI.
11. Depending on what you want to do next, either keep the card inserted or remove it.

Desired action	Do this
To access another server which is attached with the reader-enabled CIM and requires the use of the smart card as well	Keep the card inserted and press F2 to choose another server
To log out of the system	Remove the card and press F9
To access another server which is attached with a NON-reader-enabled CIM	Remove the card and press F2 to choose another server

Note: Paragon does not automatically disconnect you from the server upon the removal of the card, but the server may respond to this based on the configuration of the authentication software and thus deny your access and management of the server.

You can insert the card into the reader-enabled user station before accessing the server or turning on the user station. The user station is capable of informing the accessed server of the card's existence as long as it is physically inserted in the card reader.

If Using the OmniView Secure KVM Switch

If you use the OmniView Secure KVM Switch as the front end of the Paragon system and connect it to any P2-EUST/C device, you must obey these rules when using the P2-EUST/C card reader.

- Reinsert the smart card into the built-in card reader of P2-EUST/C each time when switching to a different server that requires the smart card authentication.
- When the built-in card reader is reading and transmitting the card data (indicated by the green blinking LED), do *not* press the buttons (Switch Selectors) on the OmniView Secure KVM Switch to switch channels. Doing this leads to the interruption of the card data transmission as well as the authentication failure.

Chapter 7 Operation - Administrator Functions

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The Administration Menu

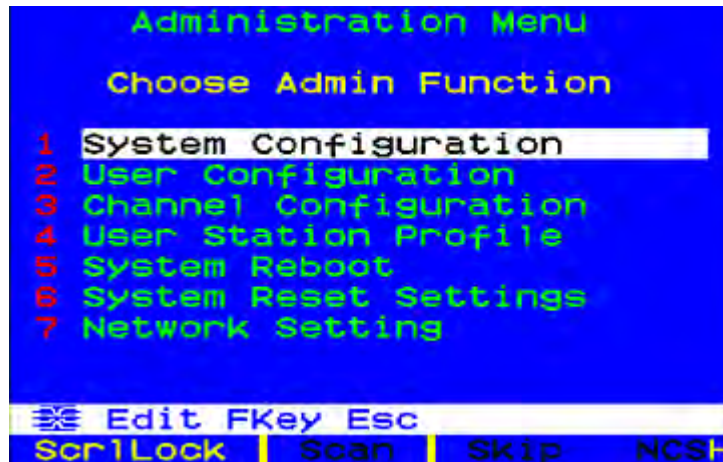
Administrators can use the Administration Menu to set security classes, maintain user names and privileges, and manage the system configuration, including controlling user access to Paragon II and all connected devices.

Note: Administrative user IDs assigned to group 00 have complete access to all of the Administration Menu's submenus. Other administrative users have limited access and cannot select the System Configuration, User Configuration and Network Setting submenus.

► **To reach any of the Administration Menu's submenus:**

1. Log in using the **admin** user name (or your own user name if you have administrator privileges). The default password for the admin account is **raritan**, all lowercase, but we recommend this password be changed as soon as Paragon II is initially installed (see **User Profile Parameters and How to Change Settings** (on page 78) for additional information). After login, the Selection Menu appears.

2. Press **F5**. The Administration Menu appears.



3. Press any keyboard number from 1 through 7, or use the **↑** and **↓** keys to move the highlight to your desired option (submenu), and press **Enter**.

Guidelines for System Configuration

- Only one user should attempt to modify/update the system's Administration Menu at one time (especially the User Configuration and Channel Configuration submenus).
- Z-CIMs should be added one at a time to a Z-CIM chain. The administrator should read from message bar that the database has been completely updated before adding a new Z-CIM.
- If updating the system is necessary at installation, make certain all users have logged out.
- When naming or renaming a CIM, switch to that CIM to activate it and to ensure the new name is stored or updated in the Paragon switch's database.
- When turning ON existing stable configurations (that is, if you are NOT replacing or adding Paragon switches and NOT swapping their order), or when you are power cycling a cascaded configuration, follow this sequence:
 1. Turn ON the third tier (if a third tier exists).
 2. Turn ON the second tier.
 3. Turn ON the base tier (first tier).
- For configurations where Paragon switches are added, replaced, or swapped (in order), follow this sequence:
 1. Turn ON the third tier (if a third tier exists).
 2. Turn ON the second tier.

3. Turn ON the base tier (first tier).
 4. Perform a partial reset of the database on impacted Paragon switches. For example, if you swap the switches connected to the base tier, perform the partial reset on the base tier. If you swap the switches connected to the second tier, perform the partial reset from the second tier to the base tier. For information on partial reset, see **Reset Unit** (on page 43).
- User stations can be turned ON and OFF at any time as needed.

System Configuration

To set certain global parameters, select option 1, **System Configuration**, from the Administration Menu and press **Enter**.

1. Press the **↓** or **Tab** key to move the highlight forward, or the **↑** or **Shift + Tab** to move the highlight backward to a desired field. Press **Enter** to edit the field. The highlighted area will turn green. Some fields have character or numeric values you can type; others have values you can toggle between with the arrow keys. When editing is complete, either press **Enter** followed by **S** to save your changes, or press **Esc** to abort the changes and continue using the previous settings.

```

System Configuration
Device ID: Paragon442
Display All Computers: No
Logoff Timeout: Off 05 Min

Operation Mode: Private
Hide Admin From Users: No
PC Share Timeout: 01 Sec
Ghosting Mode: Enable
Login Sleep: Off 05 Min
Require Password: Yes
Default Login Name Blank: Yes
F1 Edit Fkey S Esc
ScrLock | Scan | Skip | NCSH

```

- **Device ID:** Type the desired name for the single Paragon switch or Base Unit. It is important for Paragon switches in a “cascaded system with multiple matrix switches” to have distinctive names, so that users can tell them apart. (The system will assign each switch the default name “Paragon <user ports><channel ports>”: each P2-UMT242 will be named “Paragon 242, each P2-UMT442 “Paragon 442,” and so on.)

- **Display All Computers:** This option can be “Yes” or “No” to respectively allow or disallow users from viewing channel port listings for all connected devices through the OSUI, even if the user doesn’t have the security privileges to access them. The factory-default setting is **No**.
- **Logoff Timeout:** If enabled, after the amount of time in minutes that a user station can remain inactive (no keyboard or mouse activity), the logged-in user at that station is logged out of the Paragon II system.

Possible values in the first field are “On” (Logoff Timeout is enabled) and “Off” (Logoff Timeout is disabled – the default value). Use the ↑ and ↓ keys to toggle between these values.

If **Logoff Timeout** is set to “On,” the number in the second field is the number of minutes of inactivity that must elapse before the timeout is triggered and the user is logged out. Using leading zeroes if necessary, type a two-digit number of minutes from 01 to 99, or use the ↑ and ↓ keys to increase and decrease the current value by 1 respectively. The default setting is **05**. If **Logoff Timeout** is set to “Off,” the number in this field will have no effect.

- **Operation Mode:** Any of the three ways in which the Paragon system handles requests from multiple users for access to the same channel port. Use the ↑ and ↓ keys to switch between the choices:

Private: A server or other device on a specific channel port can be accessed exclusively by only one user at a time. No other users can see or control that device until its controlling user selects a different channel port.

Public View (P-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, but only the first user will have keyboard and mouse control. When the first user disconnects or selects a different channel port, the waiting user who is first to type or move his/her mouse is given keyboard and mouse control. Status messages showing users’ identities appear on video-sharing users’ monitors when Public View mode is in effect.

PC Share: A server or other device on a specific channel port can be selected and controlled by more than one user, but only one user has keyboard and mouse control at any one time. If the PC share timeout is enabled and the user in control is idle (no keyboard or mouse activity) for the duration of the timeout, the waiting user who is first to type or move his/her mouse is given keyboard and mouse control of the PC.

- **Hide Admin From Users:** When Operation Mode is set to “**Public View**,” the user in control of a server is normally notified when other users start and stop viewing the channel port’s video. However, when Hide Admin From Users is set to “**Yes**,” administrators can view other users’ video without activating this viewing-notification message. Use **↑** and **↓** to toggle between “**Yes**” and “**No**.” The default setting is **No**.
- **PC Share Timeout:** If Operation Mode is set to “**PC Share**” and more than one user has selected a server, the first user to type or use his/her mouse will have control of the server. However, another user can gain control of the server if the first user’s keyboard and mouse remain idle for the length of this timeout. Using leading zeroes if necessary, type a two-digit number of seconds from 01 to 99, or use the **↑** and **↓** keys to increase and decrease the current value by 1 respectively. The default setting is **01**.
- **Ghosting Mode:** In a Paragon system, when a CIM (attached to a server) or tiered device is removed from the system or turned off (manually or accidentally), a record of the CIM or CIMs connected to that device is reserved in the Paragon system. The target (or port) name continues to appear in black text on the OSUI of local user ports, and also appears with inactive status in other Raritan clients that operate with Paragon II, such as Paragon Manager, RRC/MPC, and CC. If Ghosting is set to **Enable**, when an active CIM is removed from one channel port and connected to another channel port (‘hot-swapped’), you will see two identical CIM entries on the OSUI of Paragon Clients: one in green text (active) and another in black text (inactive). The inactive CIM is known as a ‘ghost’ CIM. To remove records of the inactive CIMs after they are hot-plugged into a different port, select **Disable**. The default Ghosting Mode setting is **Enable**.
- **Login Sleep:** This is a power-saving mode that is activated when the Login screen is on the screen. **Login Sleep** acts as a screen saver if the user station is idle (no keyboard or mouse activity) for a specified amount of time. When an administrator sets this mode, it applies to a Paragon switch and its attached configuration; individual users can change this mode in the **Login Sleep** field of their **User Profile** screens. Edit this field and the **Minutes** field that follows to determine how the system handles sleep mode. Possible values are **Saver**, **Green**, and **Off**. Use the **↑** and **↓** keys to toggle between these values.

Saver: The login screen or the OSUI are “floaters” and appear regularly in random locations on the screen.

Green: The monitor goes blank.

Off: **Login Sleep** is disabled and the screen displays normal video indefinitely.

If **Login Sleep** is set to **Saver** or **Green**, in the **Minutes** field, type the number of minutes of inactivity before **Login Sleep** is triggered. Using leading zeroes if necessary, type a two-digit number of minutes from 01 to 99, or use the **↑** and **↓** keys to increase and decrease the current value by 1 respectively. The default setting is **05**. If **Login Sleep** is set to **Off**, the number in this field has no effect.

- **Require Password:** Determines whether a user can specify a blank password, that is, delete any existing password and have no password at all. Use the **↑** and **↓** keys to toggle between **“No”** (users may delete their existing passwords) and **“Yes”** (the default setting; starting with the first time they change their password, users must always specify a password). Newly created users always start with no password, and must assign one to themselves during initial setup.
 - **Default Login Name Blank:** Determines whether the User Name field in the Login screen will be blank, or if the field will contain the default user name (the first available **“userxy”** name, where **“xy”** is a two-digit number with leading zeroes—**“user01,” “user02,”** and so on). Use the **↑** and **↓** keys to toggle between **“Yes”** (the field is blank – the default value) and **“No”** (field contains the user name).
2. When you are finished, either press **Enter** followed by the letter **S** to save your changes, or press **Esc** to abort the changes and continue using the previous settings.

Video Redirection (Forced Video)

You can have any server send its video/keyboard/mouse data to any user station other than yours. This function is called “Forced Video” and it can be performed using either OSUI or Paragon Manager.

As an administrator, you can authorize specific normal users to perform this function. Both of the authorization and operation of these users can only be done through Paragon Manager. In addition, with Paragon Manager, you can remotely perform the Forced Video function. See *Paragon Manager User Guide* for additional information. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

Those who have the permission to perform Forced Video include:

- Administrator—the **Admin** account (by default)
- Users with administrator privileges (by default)
- Users who are authorized to perform the Forced Video function; however, these users must operate the function through Paragon Manager only instead of OSUI

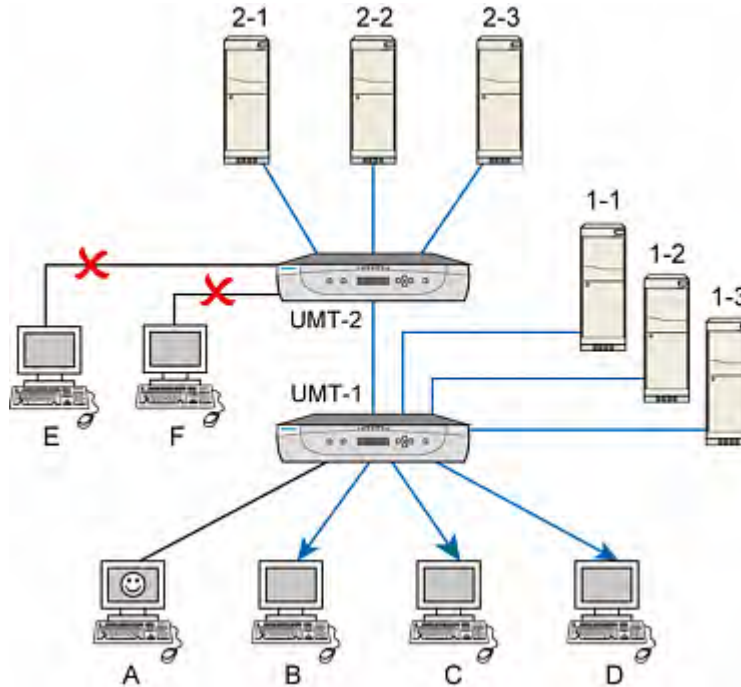
Illustration Example

You are operating on the user station “A” as shown in the diagram below. Now you can issue the Forced Video command to direct one server to output its data to one of the user stations connected to the same Paragon II switch as your user station. It is impossible to direct the server to output its data to user stations connected to a Paragon switch other than the Base Unit—UMT-1, such as user station “E” or “F.”

The permitted data direction is shown below:

- Data transmitted from one of the base-tier servers (**from 1-1 to 1-3**)
TO one of the user stations connected to UMT-1 (**B to D**)
—OR—

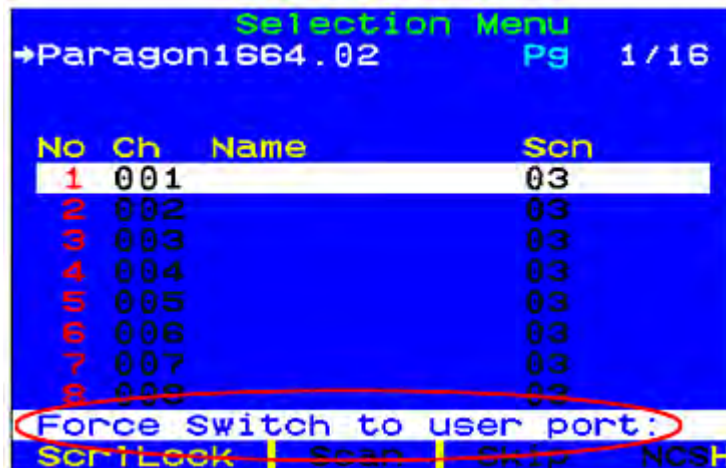
- Data transmitted from one of the upper-tier servers (from 2-1 to 2-3) TO one of the user stations connected to UMT-1 (B to D)



☺ The user station you operate to issue the Forced Video command

Operating Forced Video Using OSUI

- At the Selection Menu, press the **↑** and **↓** keys to highlight the channel number of the server whose video/keyboard/mouse data output you want to redirect.
- Press **Tab**, and the OSUI message bar displays a switch message.



3. Type the two-digit number of the user port to which the data output is redirected.
4. Press **Enter** to have the data output to the assigned user port or press **Esc** to cancel.

The Forced Video function is always performed regardless of the login status or the permissions of that logged-in user on the assigned user station. If it is performed successfully, the following message appears on the screen of the administrator.



```

  008 03
  Force Switch is Successful.
  Scr1Lock | Scan | Skip | NCSH

```

Possible Failure Causes

Several scenarios will lead to the failure of the function:

- There is blockage to the selected channel because it has been accessed by another user.
- Mouse/keyboard activity is detected on the assigned user station when the Forced Video command is issued. Paragon will NOT execute Forced Video in order to protect the server operation.
- Multiple Video (Port-Following Switch) function is being applied to the assigned user station.
- The user station is set to Local PC mode.
- No available path between the server and the user station.
- The assigned user port is not attached to any user station.

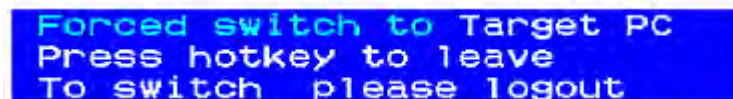
When the failure occurs, a failure message appears on the screen of the administrator.

Operating Forced Video Using Paragon Manager

You can also use Paragon Manager in a remote PC to redirect the video/keyboard/mouse output. For more information, see *Paragon Manager User Guide*. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

User Station Receiving Forced Video

When the Forced Video command is issued, a message similar to the following appears on the user station which receives the forced video output.



```

  Forced switch to Target PC
  Press hotkey to leave
  To switch please logout

```


► **To exit the Forced Video mode:**

1. Press the hot key (default: **Scroll Lock**) twice quickly, this message appears.

```
Press F9 to logout
Press Esc to return
```

2. Press **F9** to log out of the system.

*Note: Pressing **Esc** will return you to the current forced video mode.*

Channel Association for Multiple Video

“Multiple Video” (or called Port-Following Switch) enables up to four user stations to simultaneously receive the video output of a server that has multiple video ports.

Besides, you may also use this function to make a maximum of 16 separate servers simultaneously output their video data by accessing only one of the channels.

In order to perform this function, the administrator must configure channel port association in Paragon Manager. See *Paragon Manager User Guide* for more information. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

The association setup can only be done by those listed below, but any normal user can perform the Multiple Video function once the association setup is finished.

- Administrator (the **Admin** account)
- Users with administrative privileges

For more information on this operation, see **Concurrent Multiple Video Outputs** (on page 83).

Channel Association Guidelines

This section describes the general concept for associating channels.

- This function applies to both **Paragon II** Main and Stacking Units.
- Channel ports of the same association group are all on the same Paragon II Main Unit (either with or without any Stacking Units connected).
- Set the channel intended to activate other channels as the “first” channel in the Paragon Manager's association setting.
- Available channel association options vary from model to model.
 - Two-channel association is permitted for all Paragon II models.

- Four-channel association is permitted for P2-UMT442, P2-UMT832M, and P2-UMT1664M.
- 16-channel association is permitted for P2-UMT1664M alone.

Note: To obtain the 16-channel association capability, you must upgrade the Paragon switch to version 4.7 or later, and use Paragon Manager 2.0.4 or later.

- The sequence of associated channels can be random.
- Each channel port belongs to one association group only.
- Only channel ports connected to servers are available for association.
- Up to 126 association groups are allowed per Paragon II system.

Limitations:

- The Multiple Video function is not applicable to those channels which share only one path via the tiered device, such as P2ZCIM, P2CIM-APS2-B or P2CIM-AUSB-B (for IBM BladeCenter servers).
- For 16-channel associations, the associated channel ports must be on the **Base Unit** if your Paragon system is a multi-tier configuration.

User Configuration

To view the current connection status for each user and to add, delete, and edit user names and security rights, select option 2, **User Configuration**, from the Administration menu.

```

User Configuration
User: ADMIN      Page: 1/3+
Name      Adm  Group
ADMIN     Yes  00  --  --  --  --
User01    No   00  --  --  --  --
User02    No   00  --  --  --  --
User03    No   00  --  --  --  --
User04    No   00  --  --  --  --
User05    No   00  --  --  --  --
User06    No   00  --  --  --  --
User07    No   00  --  --  --  --
Edit  Ins  Del  FKey  S  L  Esc
Scr1Lock | Scan | Skip | NCSH

```

This menu displays one user's information in each row. There are two panels of this menu—left and right panels, as indicated by the right-pointing arrow (→) at the top of the menu. The fields and columns in the left panel of this menu include:

- **User:** Your user name. This field cannot be edited.
- **Name:** The user names assigned to all user accounts. Except for the special user name “**admin**,” these user names can be edited: You can type new names up to eight alphanumeric characters long (not case-sensitive).
- **Group:** The ID numbers of the security groups to which users are assigned.
- **Adm:** Indicates whether any given user has administrator privileges. You can use the ↑ and ↓ keys to toggle between “**Yes**” and “**No**” (the default setting).

Use the arrow keys, **Tab**, **Shift + Tab**, **Page Up**, and **Page Down** to move within this menu and its submenus. Press **Enter** to edit a highlighted field; it will turn green. When you finish editing a field, press **Enter** to save the changes or press **Esc** to abort changes.

Press **Tab** or the → key to move through the fields to the right panel of the menu and display users' connection information. The **Connection** column displays which channel port (if any) each active user is currently connected to.



You can also perform three other functions at this menu:

- Add a new user by pressing the **Insert** key. A new default user name will be added in the end of the existing list (for example, if users “user01” through “user25” already exist and a new one is added, its default name will be “user26”); you can edit the name as desired. The maximum number of users is 127 (512 with an added memory card).
- Delete a user by moving the highlight to a user name and pressing **Delete**. Paragon II will ask for confirmation; if you respond by pressing **Y**, that user account will be deleted from the system.
- A user with administrator privileges can log out another connected user by highlighting a user name and pressing **L**. That user name will then be disconnected from the Paragon system.

Channel Configuration

To edit or initialize a P2CIM, change the device name, individual scan rate, device type, and group IDs associated with each server or device, select option 3, **Channel Configuration**, from the Administration Menu. When you save Channel Configuration changes, Paragon II will update each affected P2CIM as necessary.

ChID	Name	Scn	Device
1	Win2k	03	CPU
2	Redhat9	03	CPU
3	Win2000	03	CPU
4	BlueDog	05	CPU
5		03	CPU
6		03	CPU
7		03	CPU
8		03	CPU

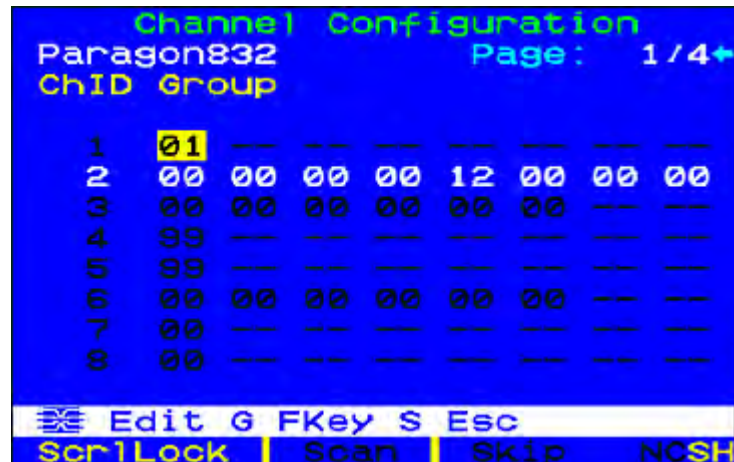
Edit (F6) G (F7) FKey (F8) S (F9) Esc
 Scr1Lock | Scan | Skip | NCSH

This menu displays one channel port's information in each row. If the Paragon system detects a powered device on that channel port, it will display the text in that row in green; otherwise, it will display it in black. Again, there are two panels in this menu—left and right panels, indicated by the right-pointing arrow (→) at the top of the menu. The fields and columns on the left panel of this menu:

- **ChID:** The channel port's number.
- **Name:** The name of the device attached to that channel port. Device names are case-sensitive and may be up to twelve alphanumeric characters long. As shown with channel port #1 in and elsewhere, you may leave a device name blank if you wish, but we do not recommend this.
- **Scn:** Displays the device's individual scan rate (the length of time that the system pauses while scanning that channel port for those users who set their Scan Mode to "Individual" rather than "Global"). Using leading zeroes if necessary, type a two-digit number of seconds from 01 to 24, or use the ↑ and ↓ keys to increase and decrease the current value by 1 respectively. The default setting is 03.

Use the arrow keys, **Tab**, **Shift + Tab**, **Page Up**, and **Page Down** to move within this menu and its submenus. Press **Enter** to edit a highlighted field; it will turn green. When you finish editing a field, press **Enter** followed by **S** to save the changes, or press **Esc** to abort them.

While the cursor is in the **Device** column, press **Tab** or → key to move to the right panel of this menu and display device group information: The **Group** columns display which groups (if any) the device has been assigned to.



Video Display Adjustment for P2-EUST

The P2-EUST and P2-EUST/C have additional capabilities for allowing adjustment of your video display. Specify skew levels for Automatic Gain Control (AGC), Red (R), Green (G), and Blue (B) to improve video quality.

After selecting any channel from P2-EUST or P2-EUST/C, press the hot key twice quickly to activate the OSUI. The Selection Menu will be displayed with a RED arrow (➔) on the left side of the channel name you are accessing. Press the * (asterisk) key to view the skew delay settings, which appear in the message bar. See **Skew Compensation with P2-EUST or P2-EUST/C** (on page 62) for additional information.

The screenshot shows a blue background with white and red text. At the top, it says 'Selection Menu' in green. Below that, it shows '+Base P2-3E0.02' and 'Pg 1/8'. A table lists channels with columns 'No', 'Ch', 'Name', and 'Scn'. Channel 2 is selected, indicated by a red arrow next to '002'. At the bottom, there are settings for AGC, R, G, and B, and a message bar with 'ScrLock', 'Scan', 'Skip', and 'NCSH'.

No	Ch	Name	Scn
1	001	Target PC	03
2	002➔		03
3	003	23Charles PC	03
4	004		03
5	005		03
6	006	BraveHeart23	03
7	007		03
8	008		03

AGC: +00 R: 00 G: 00 B: 00
ScrLock | Scan | Skip | NCSH

Use the numeric keypad for the following operations:

► **To select the value to change (when selected, the value appears in red):**

- Press / (forward slash) to move cursor to the left.
- Press * (asterisk) to move cursor to the right.

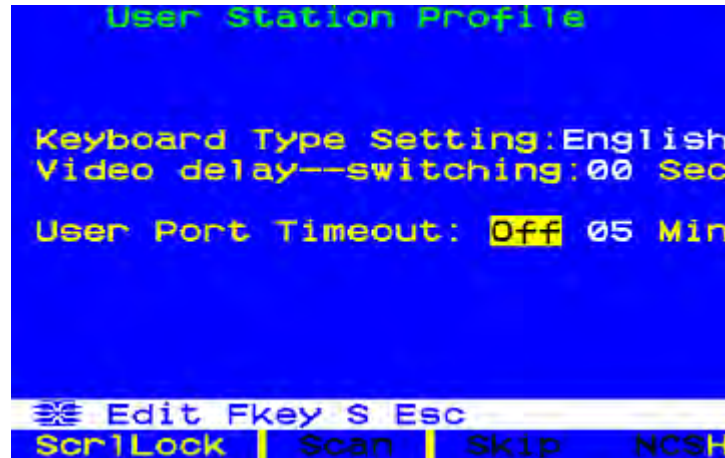
► **To change values:**

- Press + (plus sign) to increase the value.
- Press - (hyphen or minus sign) to decrease the value.

Once you have specified video values and the video quality is acceptable, the values will be stored on your system until you change them again.

User Station Profile

To activate the User Station Profile and set the global keyboard type and video delay, select option 4, **User Station Profile**, from the Administration Menu.



Keyboard Type

The OSUI supports three types of keyboard mappings: Select either “English”—the default is **U.S. English**—“French,” or “German.” If you are using a non-English keyboard, you must temporarily attach an English-language keyboard to change the keyboard type.

To set the keyboard type, use arrow keys to move the highlight to the **Keyboard Type Setting** field, press **Enter** to turn the highlight green, use any of the arrow keys to toggle the field to the correct keyboard type, and press **Enter** again to select it.

Press **S** to save your changes, or press **Esc** and then **N** to exit without saving changes. You can now attach the keyboard type you selected.

Video Delay

If channel switching or autoscanning takes too long to sync up on Paragon II, especially when your servers are set with different resolutions, it may create a displaying issue with your monitor. At this time, set a video delay for channel port switching at your user station.

If you set the video delay to any number of seconds greater than zero, Paragon II will wait until a video signal is constant for that number of seconds before passing it through to the monitor.

To set video delay, use any of the arrow keys to move the highlight to the **Video delay--switching** field, press **Enter** to turn the highlight green, type the desired two-digit delay from 00 to 30 seconds (or use the **↑** and **↓** keys to increase or decrease the value by 1), and press **Enter** again to select it.

Press **S** to save the changes, or press **Esc** and then **N** to exit without saving changes. The changes are applied only to your user station (the station at which the change was made).

User Port Timeout

Similar to the **Logoff Timeout** field in the System Configuration submenu (see **System Configuration** (on page 101) for more details), this field also sets up the amount of time in minutes the user station can remain inactive (no keyboard and mouse activity) before the logged-in user at this user station is logged out of the Paragon II system. The difference between these two is the **Logoff Timeout** field controls all user stations of the system, and the **User Port Timeout** field controls only the one you are operating.

To turn on the function, use any arrow key to move the highlight to the **User Port Timeout** field, press **Enter** to turn the highlight green, use any arrow key to toggle the field to "On," and press **Enter** again to select it.

To specify the amount of inactive time preferred, press **→** to highlight the next field, press **Enter** to turn the highlight green, type the desired two-digit number from 01 to 99 minutes (or use the **↑** and **↓** keys to increase or decrease the value by 1), and press **Enter** again to select it.

Press **S** to save the changes, or press **Esc** and then **N** to exit without saving changes. The changes are applied only to the user port at which the changes were made. Note that the timeout setting is not assigned to the user station. The setting is assigned to the user port. Any user station can be connected to the port and will be "timed out" based on the setting.

*Note: If you turn on both of the **Logoff Timeout** and **User Port Timeout** functions at the same time, only the **User Port Timeout** function is applied to the user station(s) where the **User Port Timeout** is enabled. However, the **Logoff Timeout** setting is applied back once you turn off the **User Port Timeout** function at the user station(s).*

Group Settings (Access Rights)

To assign access rights to users and security levels to servers in a Paragon system, assign users to user groups with defined rights and servers to channel port groups with defined accessibility. Each group can contain multiple users or servers. By default, all users start out assigned to user group 00 and all servers start out assigned to channel port group 00. You can create groups numbered from 00 to 99 for both users and servers. Each user can belong to a maximum of five user groups. Each server can belong to a maximum of eight channel port groups.

Note: Cascade channel ports cannot be assigned to groups.

	User groups:	Computer groups:
Available Group IDs for Assignment	00 -- 99	00 -- 99
Maximum Number of Group IDs available	5	8

Users and computers communicate according to the following Group ID access rules.

Group ID for users:	Can access computers with group IDs:
00	00 through 99 (all computers)
For IDs 01 through 09:	
0x through 0x	00, 0x; and x0, x1, x2, x3, x4, x5, x6, x7, x8, and x9
<i>For example:</i>	
05	00, 05; and 50, 51, 52, 53, 54, 55, 56, 57, 58, and 59
For IDs 10 through 99:	
x0 through x9	00, 0x, and exact same computer ID# as the user's ID#
<i>For example:</i>	
98	00, 09 and 98

Group ID for computers:	Can be accessed by users with group IDs:
00	00 through 99 (all users)

Group ID for computers:	Can be accessed by users with group IDs:
For IDs 01 through 09:	
0x through 0x	00, 0x; and x0, x1, x2, x3, x4, x5, x6, x7, x8, and x9
<i>For example:</i>	
08	00, 08; and 80, 81, 82, 83, 84, 85, 86, 87, 88, and 89
For IDs 10 through 99:	
x0 through x9	00, 0x, and exact same computer ID# as the user's ID#
<i>For example:</i>	
12	00, 01, and 12

These user groups...	...can access these channel port groups:
00	00 through 99 (all servers)
0x (01 through 09)	00, 0x, and x0 through x9
<i>For example:</i>	
<i>01 can access 00, 01, and 10 through 19</i>	
<i>02 can access 00, 02, and 20 through 29</i>	
xy (10 through 99)	00, 0x, and xy
<i>For example:</i>	
<i>10 can access 00, 01, and 10</i>	
<i>23 can access 00, 02, and 23</i>	
<i>97 can access 00, 09, and 97</i>	
These channel port groups...	...can be accessed by these user groups:
00	00 through 99 (all users)
0x (01 through 09)	00, 0x, and x0 through x9
<i>For example:</i>	
<i>01 can be accessed by 00, 01, and 10 through 19</i>	
<i>02 can be accessed by 00, 02, and 20 through 29</i>	
xy (10 through 99)	00, 0x, and xy
<i>For example:</i>	

These user groups...	...can access these channel port groups:
<i>10 can be accessed by 00, 01, and 10</i>	
<i>45 can be accessed by 00, 04, and 45</i>	
<i>86 can be accessed by 00, 08, and 86</i>	

Recommendations

Systems Requiring High Security:

We recommend assigning IDs of **10 through 99** to computers requiring high protection. This will make them less accessible than computers with IDs of **00 or 01 through 09**.

Main System Administrator and Assistant Administrators:

Although any user may be assigned administrator privileges, we recommend the user ID “**00**” for the Main System Administrator, and user IDs **01 through 09** for Assistant Administrators. These IDs provide a broader scope of access.

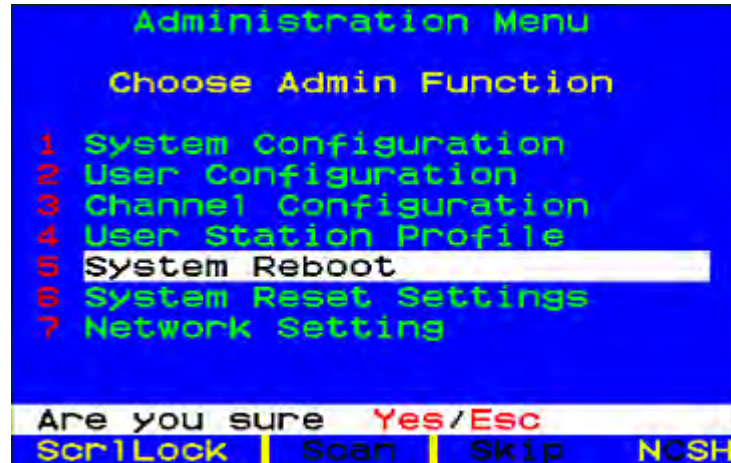
Correspondingly, we recommend that those servers that all users will need to access, such as application or document servers, be assigned to channel port group **00**, and that servers needing the most security protection be assigned to channel port groups from **10 to 99**.

System Reboot and System Reset

System Reboot and System Reset commands affect your entire Paragon configuration, that is, if you perform a System Reset on your Base Unit, the 3rd-tier switch (or switches) will reset, then the 2nd-tier switch (or switches) will reset, and finally the Base Unit will reset. Each switch sends a Ready-to-Reset report to Paragon clients (Paragon Manager, UST-IP, and so on) as an event log.

System Reboot

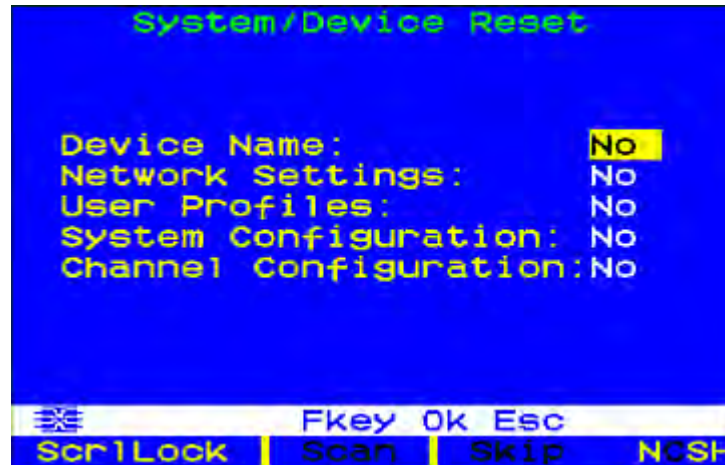
To reboot your Paragon II from the OSUI, select option 5, **System Reboot**, from the Administration Menu, and press **Enter**.



A message in the message bar asks you to confirm the System Reboot command. You must type `Y-E-S`, the complete word 'Yes,' and press **Enter** to confirm, or press **Esc** to cancel. A "Reset" message screen appears and remains onscreen while your system reboots. If you have multiple tiers, the reboot will take slightly longer than if you are rebooting only a single Paragon switch.

System Reset

To reset the Device Name, Network Settings, User Profiles, System Configuration, and Channel Configuration, returning them to the original factory default values, without having to physically go to each switch to reset it, select option 6, **System Reset Settings**, from the Administration Menu. You can reset one, several, or all system settings in any combination.



1. On the System/Device Reset menu, press **↑**, **↓**, or **Tab** to move to the field you want to reset.
2. Press **Enter**, and then press the arrow keys to toggle between **Yes** and **No**. When finished, press **Enter**.
3. When finished, press the letter **O** on your keyboard.
4. A message in the message bar asks you to confirm the System Reset command. You must type **Y-E-S**, the complete word 'Yes,' and press **Enter** to confirm, or press **Esc** to cancel.
5. The Paragon switch logs out all local users, disconnects all connections, and then sends a Ready-to-Reset report to all Paragon clients. A progress indicator appears on the message bar to indicate the current update percentage. During the database update, users are unable to operate the OSUI functions.



After the reset is complete, the Paragon clients can log in again.

Network Settings

To configure Paragon II's network settings from the OSUI, select option 7, **Network Settings**, from the Administration Menu.

```

Network Setting

Current IP : 192.168.000.192
Net Mask  : 255.255.255.000
Gateway IP: 192.168.000.001
Port No   : 03000
Encryption: Off
Keys      : 00.00.00.00
           : 00.00.00.00
           : 00.00.00.00
           : 00.00.00.00

Edit Fkey S Esc
Scr1Lock | Scan | Skip | NCSH

```

- **Current IP:** This field allows administrators to configure the Paragon II's address on the network. Use the arrow keys to scroll over to each byte and change the IP as needed. The default IP address is **192.168.0.192**.
- **Net Mask:** The net mask for the Paragon switch is set at a default value of **255.255.255.0**. Reset this as necessary.
- **Gateway IP:** This default is set to **192.168.0.1**. Reconfigure as needed.
- **Port No:** Default is 3000.
- **Encryption:** If you enable Encryption for the network port, communications between the Paragon switch and Paragon Manager clients run from a PC are encrypted with a 128-bit key. Default setting is **Off**.

Note: The Ethernet port on the Paragon switch is hard coded (not configurable) and supports only 10-BaseT/half duplex.

- **Keys** (16-field encryption key): These fields are designed to contain the hexadecimal encryption key used in encrypting network traffic. Only a valid hexadecimal number will be accepted in these fields. Default value of each field is set to **00**.

After saving the changes, the Paragon II will automatically reboot with the new network settings.

When building a tiered system of Paragon switches, each Paragon II switch should be connected to the network with a unique IP address. In such a system, changing the network settings through a user station will change the network settings of the Paragon II switch that user station is physically connected to. For example, a P2-UST connected to the base tier of a system will change the IP address only of that Base Unit, while a P2-UST connected to a third tier Paragon II will change the IP address of that particular third-tier unit.

It is essential to put all matrix switches in a Paragon II system on the network, as firmware upgrades are pushed across the system through TCP/IP.

Autoscan and Autoskip

As an administrator, you can press **F6** to turn autoscanning on and off. When autoscanning is turned on and you press **Esc** to leave the OSUI screen, Paragon sequentially and automatically switches from one channel port to the next, displaying each channel port's video for the duration of the user's global scan rate or the channel port's individual scan rate (see **User Profile Customization** (on page 77)), starting over at port 1 when it reaches the last channel port.

In a cascaded system, when the scan reaches a channel port to which a subsidiary Paragon switch is attached, it “drops down” to the subsidiary's channel ports and scans them before resuming with the higher-level channel ports.

To stay on a given channel port while Paragon is switching between channels one by one due to autoscanning, you must turn off autoscanning. Press the hot key (default: **Scroll Lock**) twice quickly to trigger the OSUI when the desired channel is displayed and press **F6** to turn off the function. The word “Scan” at the bottom of the OSUI will appear in black when autoscan is off or yellow when autoscan is on.

In Paragon II's default setting, autoscanning will display all channel ports (including vacant ones, which are not connected to any devices), except those occupied by servers that the user has no rights to access, that is, the servers that are not in one of the user's permitted groups—see the section **Group Settings (Access Rights)** (on page 116). To allow a user to see servers that he or she cannot otherwise access, an administrator must set “Display All Computers” to “Yes” (see the section **System Configuration** (on page 101)). To force the system to skip over vacant channel ports, an administrator must turn on autoskipping.

After logging into Paragon II, administrators can press **F7** to turn autoskipping on and off. When autoskipping is on, Paragon will automatically skip vacant channel ports during autoscanning or when a user tries to switch to such a port manually. The word “Skip” at the bottom of the OSUI will appear in black when autoskip is off or yellow when autoskip is on.

Power Management

An administrator can control power to connected devices directly via the Paragon II OSUI. To use the power management features of Paragon II, you need Raritan's power strips in one of these models, depending on your needs:

Product family	Number of outlets	Rack space	Corresponding device option in the OSUI
DPCR8 series	8	1U rack mount	PCR8

Product family	Number of outlets	Rack space	Corresponding device option in the OSUI
DPXR8 series	8	1U rack mount	PCR8
DPCS12 series	12	0U vertical mount	PCS12
DPXS12 series	12	0U vertical mount	PCS12
DPCS16 series	16	0U vertical mount	DPX16
DPCR2X8 series	16	2U rack mount	DPX16
DPXS16 series	16	0U vertical mount	DPX16
DPCS20 series	20	0U vertical mount	PCS20
DPXS20 series	20	0U vertical mount	PCS20
DPCR20 series	20	2U rack mount	PCS20
DPXR20 series	20	2U rack mount	PCS20
PX-5520, PX-5522, PX-5532/E, PX-5534/E, PX5314, PX5318, PX-5528, PX-4532, PX-4534, PX-5501, PX-5635	24	0U vertical mount	DPX24

A special Raritan Power CIM (P2CIM-PWR) is available for use with this kind of power strip.

► **To connect the power strip to the Paragon switch**

1. Plug the Power CIM to the RJ45 port on the power strip.
2. Connect the power strip to an AC source.
3. Connect the Power CIM to one of the channel ports on a Paragon switch via a Cat5 UTP cable.

Configuring and Naming the Power Strip

Activate the Paragon II OSUI by logging into the system or pressing the hot key (default: **Scroll Lock**) twice quickly. The new Power Strip should appear in the appropriate channel port with the name PCR8, PCS12, or PCS20, depending on the model type. The Power Strip will be treated exactly like a tiered device.

1. Press **F5** to activate the Administration Menu.
2. Select option 3, "Channel Configuration," and press **Enter**.
3. Select the Power Strip's channel port, and edit the name of the Power Strip. The appropriate model type should already be selected in the **Device** column.

4. Press **S** to save the changes.
5. If you want to configure the individual power outlets on the Power Strip, press **G** to enter the “Outlet Configuration” Menu.
6. When finishing the configuration, press **S** to save the changes.

Associating a Device with a Power Outlet

Since Paragon II cannot detect which type of device is connected to which power outlet, associations of devices with individual power outlets must be done manually.

1. Press **F5** to activate the “Administration Menu.”
2. Select option 3, “**Channel Configuration**,” and press **Enter**.
3. Highlight the connected Power Strip and press **G** to enter the “Outlet Configuration” Menu. The physical outlet number corresponds to the number in the “Ch. ID” column.
4. In the “Type” column, highlight an outlet and press **Enter** to configure the device type:
 - **PWR**: This is the default association type and refers to devices not connected to the Paragon II system (a router or a monitor).
 - **CPU**: Select this type for all devices connected to the Paragon II system (including “non-server” devices such as Paragon switches).
5. Press **→** to highlight the name field. Then press **Enter** to configure the name of a device associated with that outlet.
 - If the type is set to **PWR**, users will be able to change the name of the device as desired.
 - If the type is set to **CPU**, the OSUI will request you to save changes (“Y/N/ESC”), and then displays a “Select Powered Device” menu. This is an alphabetized list of all devices connected to the Paragon II system, allowing the user to indicate which device is powered by the newly configured outlet. Highlight the desired device and press **Enter**.
6. The selected device (if any) will be automatically associated with that power outlet. The outlet name will be the name of the selected server. Press **S** to save the configuration.
7. Press **→** to scroll to the next page of the configuration menu for setting security groups for a power outlet. See **Group Settings (Access Rights)** (on page 116) for more information on setting access rights. This allows administrators to limit who is authorized to control power to various devices. The default setting for each group on that outlet is “-”, which means no accessibility to any user other than the **Admin** user. Note, once a group ID setting is changed, it can never return to the original “-” state.

Controlling Power to an Outlet

The addition of a Power Strip to the Paragon II system allows administrators to control the power to devices in two ways:

► To control power from the Channel/Server Selection Menu

Normal Paragon II operation involves browsing the list of servers on the OSUI and pressing **Enter** to switch to that server. By pressing **F3** instead of **Enter** when a server is highlighted, Paragon II will check that server for Power Strip outlet associations:

- If Paragon II does not detect any associations with that server, a message indicating "No Outlets / Access Denied" appears, and the action is cancelled.
- If the server has associated power outlets, but the user is not authorized to control those outlets, a "No Outlets / Access Denied" message appears and the action is cancelled.
- If Paragon II detects that this server is associated with at least one power outlet, it will switch to that server. The OSUI will remain onscreen, displaying a list of power outlets associated with the specific server. This allows users to see the server before power is cycled to it.

Four choices are offered in this menu: Power Off (X), Power On (O), Recycle Power (R), and Select All (A).

- If the server is powered OFF, pressing **O** will power ON the outlet instantly.
- If the server is powered ON, pressing **X** or **R** will activate a confirmation dialog "Are you sure (yes/no)?" As a safeguard, type the whole word `yes`, to confirm cutting power to the server. Typing in `y` only, or any word other than `yes` will be taken as a "no" response.
- In the case of a server associated with multiple outlets, such as a server with dual power supplies, pressing **A** will highlight all of the associated outlets, allowing them to be turned on, off, or recycled simultaneously.

► To control power from the Outlet Selection Menu

A connected Power Strip is treated as a tiered device. The Power Strip, therefore, has its own device menu consisting of “ports” for each power outlet with which power can be controlled on a per-outlet basis.

- Navigate the Paragon II OSUI Selection Menu, select the Raritan Power Strip and press **Enter**. You will now be at the “Outlet Selection” menu.
- A list of outlets (up to 8 per page) will appear. Outlets in green are switched ON; outlets in black are switched OFF.
- Press **X**, **O**, or **R** to turn off, turn on, or recycle power to the outlet respectively. Type `yes` to confirm turning off the power if you select **X** or **R**.

Getting Power Strip Unit Status from the Outlet Selection Menu

At any time while navigating the “Outlet Selection” Menu, pressing **F11** will provide a status screen showing certain parameters of the connected power strip. These parameters vary depending on the model of the power strip, and they may include:

- Average power
- True RMS Current
- True RMS Voltage
- Internal Temperature
- Apparent Power
- Maximum Detected
- Outlet Circuit Breaker

Note: Unlike second-tier channel ports, the power outlet “channel ports” will not appear in the list of channels when the OSUI is sorted by the channel name.

Paragon II Network Port

Paragon II has a network port and is designed as a network-aware device. This network port is used to communicate with Paragon Manager administrative software, which can be downloaded from **Raritan website** (<http://www.raritan.com>). See *Paragon Manager User Guide* for additional information. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

Note: The Ethernet port on the Paragon switch is hard coded (not configurable) and supports only 10-BaseT/half duplex.

Chapter 8 P2ZCIMs

The Paragon II Z-CIMs (P2ZCIMs) enable access and control of multiple servers from a Paragon user station, occupying only one channel port on your Paragon switch. P2ZCIMs are set up in a chain-like server-to-server arrangement, with each P2ZCIM connected to the keyboard, video, and mouse ports of each server and linked with standard Cat5 UTP cables. Through this chained cabling, they transmit keyboard, video, and mouse signals to the system. You can access and control any server connected in the chain via the OSUI and new servers can be added at any time without interrupting server operation.

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P2ZCIM Features

- For use with the Paragon II switch
- Can be used on the Paragon I switch whose hardware version is HW3 (running Paragon II code)

Tip: The easiest way to determine whether the hardware version of your Paragon I unit is HW3 is to check the number of its stacking ports on the rear side. If there is only one stacking port, the hardware version is HW3.

- Support PS2 (P2ZCIM-PS2), USB (P2ZCIM-USB) and Sun (P2ZCIM-SUN) interfaces
- Support up to 42 P2ZCIMs in any mixed arrangement on a Cat5 chain

*Warning: The "G3" version of the P2ZCIM-USB CANNOT be daisy chained with the non-G3 version of any P2ZCIM, including non-G3 P2ZCIM-USB and P2ZCIM-PS2. Otherwise, the access to these P2ZCIM channels may not work properly. See **Identifying the P2ZCIM-USB G3** (on page 129) for information on identifying the G3 version.*

- Span up to 1,000 feet (304 m.) from the user station to the last P2ZCIM on a Cat5 chain
- P2ZCIM-USB can be used for either Sun USB or PC USB (controlled by a toggle switch on the back of the P2ZCIM)
- "L" models (e.g., P2ZCIM-PS2L) are available, which feature longer cables 36" (91 cm) for use with cable management arms

Paragon II and P2ZCIMS

P2ZCIM installation requires that each server be assigned a channel name as it is added to the P2ZCIM chain. Server channels are organized alphanumerically by the assigned names or the default names of P2ZCIMS—their serial numbers, rather than in the order of their placement within the P2ZCIM chain. We recommend that users assign channel names before connecting all servers to eliminate any difficulty in locating the respective channel for each server. When naming or renaming a P2ZCIM, switch to that P2ZCIM to activate it, thereby ensuring that its new name is updated in the Paragon switch's database.

Identifying the P2ZCIM-USB G3

Raritan's newest P2ZCIM-USB is P2ZCIM-USB G3. The "G3" version is not compatible with the P2ZCIM-PS2 and old P2ZCIM-USB, which are non-G3 versions. Therefore, a P2ZCIM chain comprises either only the G3 version or only non-G3 version though both are supported by the Paragon II.

Below are the guidelines of using the P2ZCIM-USB G3:

- When a P2ZCIM-USB G3 is connected to a channel port, make sure all of the P2ZCIMS involved in that channel chain are P2ZCIM-USB G3.
- When a non-G3 P2ZCIM is connected to a channel port, make sure all of the P2ZCIMS involved in that channel chain are non-G3 P2ZCIMS, including P2ZCIM-PS2 and old, non-G3 P2ZCIM-USB.

► **To identify the P2ZCIM-USB G3:**

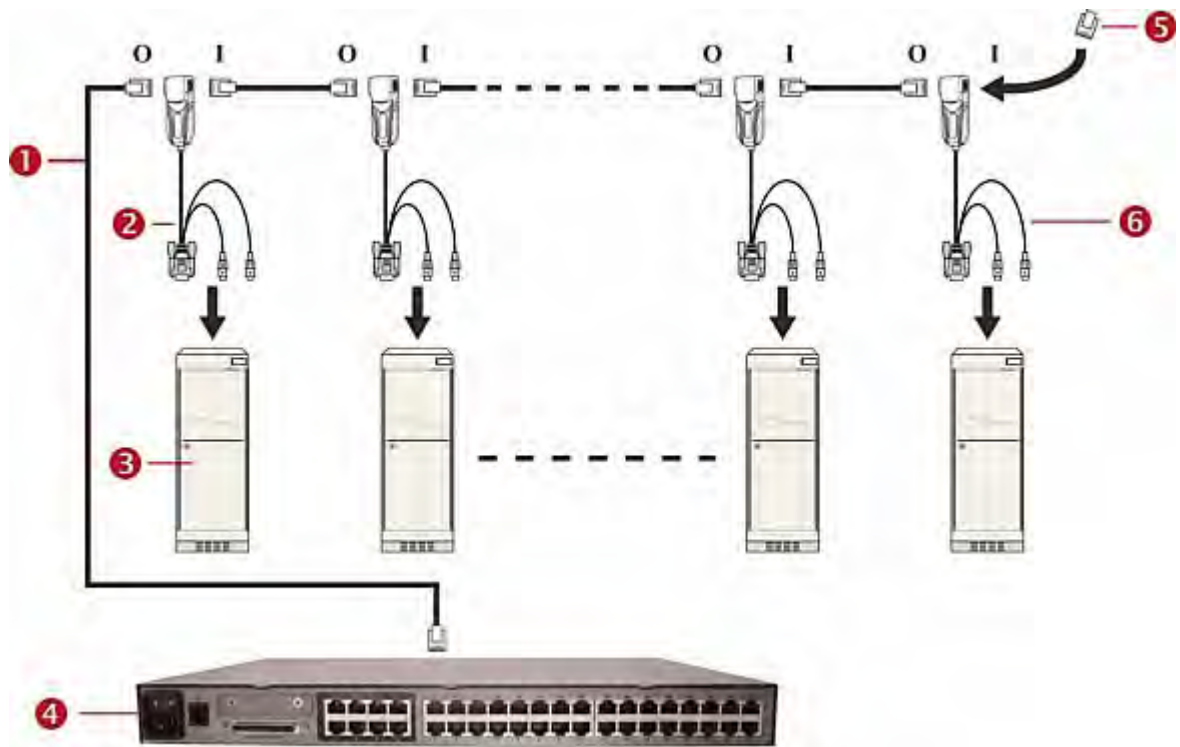
1. Locate the label affixed to your P2ZCIM-USB.
2. Check whether two pieces of the information indicated below are available on your label. If yes, your P2ZCIM-USB is the G3 version (that is, P2ZCIM-USB G3).
 - H/W: MZCIM-USB-G3-XX (where XX are two characters that may change)

- F/W: P2ZUSBG3_nnn (where nnn is 813 or higher)



Connecting P2ZCIMS as Tiers

The following diagram shows the final setup when connecting P2ZCIMS as a tier. Up to 42 P2ZCIMS can be connected in one single chain.



I	Input
O	Output

1	Cat5 cable
2	P2ZCIM
3	Server
4	Paragon switch (the model shown in the illustration is P2-UMT832M)
5	P2ZCIM terminator (required for the last P2ZCIM in the chain)
6	“The last” P2ZCIM in the chain

Prior to P2ZCIM tier installation, you must:

- Turn ON all Paragon II components.
- Turn OFF all servers in the P2ZCIM chain.

When following the installation and configuration instructions, sort the Selection Menu by channel number, not by name. Display the Selection Menu by pressing the **F2** key on your keyboard and change the sorting method by pressing the **F12** key.

► **To connect a P2ZCIM as a tier**

1. Connect a Cat5 UTP cable to the channel port on the Paragon II switch reserved for the P2ZCIM chain.
2. If you are going to use a P2ZCIM-USB, check whether that P2ZCIM-USB is P2ZCIM-USB G3. See **Identifying the P2ZCIM-USB G3** (on page 129).
3. Connect the other end of the Cat5 UTP cable to the UTP OUT (O) port on a P2ZCIM, which will be the first P2ZCIM in the chain.
4. Connect a server to the first P2ZCIM.
 - a. Connect the 6-pin mini-DIN keyboard and mouse and HD15 video connectors on the P2ZCIM to the server’s keyboard, mouse, and video ports.
 - b. Place the P2ZCIM Terminator in the P2ZCIM’s UTP IN (I) port.
 - c. Turn ON the server.
5. When daisy chaining additional P2ZCIMS, do NOT mix P2ZCIM-USB G3 with the non-G3 P2ZCIM-USB or P2ZCIM-PS2 in the same chain.
 - If using P2ZCIM-USB G3 is intended, all of the P2ZCIMS in the same chain must be P2ZCIM-USB G3. Do NOT use any non-G3 P2ZCIM-USB or P2ZCIM-PS2 in that chain.
 - If using non-G3 P2ZCIM is intended, all of the P2ZCIMS in the same chain must be non-G3 P2ZCIM-USB or P2ZCIM-PS2. Do NOT use any P2ZCIM-USB G3 in that chain.

► **To perform P2ZCIM channel configuration**

1. At a user-station Login screen, type `admin` in the **User Name** field and press **Enter**.
2. Type the default password `raritan` or your new password, if already changed, in the **Password** field and press **Enter**.
3. Press **F5** to go to the Administration Menu and select the Channel Configuration submenu.
4. Use the **↑** and **↓** or the **Page Up** and **Page Down** keys to highlight the Paragon II channel where the P2ZCIM was just added.
5. Ensure that the **Device** field reads **P2-ZCIM** for a P2ZCIM.
6. If **P2-ZCIM** does not appear in the **Device** field:
 - a. Press **Tab** until the **Device** field is highlighted and then press **Enter**—the highlight will turn light blue.
 - b. Use the **↑** and **↓** keys to change device type to **P2-ZCIM** and press **Enter**—the light blue highlight will return to yellow.
 - c. Press **S** to save the change, or press **Esc** to exit without saving.
7. If a more descriptive name is desired:
 - a. Hold the **Shift** key and press **Tab** to go back to the **Name** field, and then press **Enter**—the highlight will turn light blue.
 - b. Edit the default name and press **Enter**—the highlight will turn green as you begin to type.
 - c. Press **S** to save the change, or press **Esc** to exit without saving.
8. Press **F2** to go to the Selection Menu, select the tiered P2ZCIM device, and press **Enter** to validate that the second-tier P2ZCIM is properly configured.

► **To name the server channel on the Tiered Selection menu of P2ZCIM**

1. When the OSUI is on the screen, press **F5** to go to the Administration Menu.
2. Select the Channel Configuration submenu, and press **Enter**.
3. Select the P2ZCIM device channel.
4. Press **G** to bring up a Channel Configuration submenu for the CIM chain.
5. Use the **↑** and **↓** keys to highlight the **Name** field of the server just connected via P2ZCIM. The channel will display in black and the highlight will turn yellow when it is selected.
6. Press **Enter**—the highlight will turn light blue.

7. Type the desired computer name—the highlight will turn green as you begin to type.
8. Press **Enter**—the highlight will turn yellow.
9. Press **S** to save the new name.
10. Press **F2** to return to the Selection Menu. Go to the Z-CIM channel to verify both of the name change and the server operation are OK.

► **To resize the P2ZCIM Chain**

The size limit for a P2ZCIM chain is 42 units. If you never resize the chain, it displays 42 channels (that is, 6 pages) no matter how many P2ZCIMs are actually added in the chain. After resizing, only the number of channels you specify will be shown on the OSUI screen. Resizing the P2ZCIM chain does not change the name of the chain. It changes only the size. Next time when you add new P2ZCIMs to the chain, remember to resize it again so the new P2ZCIMs can be displayed on the OSUI.

1. At a user-station Login screen, type `admin` in the **User Name** field and press **Enter**.
2. Type `raritan` or your new password in the **Password** field and press **Enter**.
3. If the Selection Menu is not sorted by the channel number, press **F12** to toggle the sorting.
4. Press the **F5** key.
5. Select the Channel Configuration submenu and press **Enter**.
6. Use the **↑** and **↓** or the **Page Up** and **Page Down** keys to select the P2ZCIM chain you wish to resize.
7. Press **Enter** and type `SetPZSize-NN` (NN represents the two-digit number for the size of your chain, from 01-42).

```

Channel Configuration
Paragon832 Page: 1/4
ChID Name Scn Device
1 SetPZSize-08 03 CPU
2 Redhat9 03 CPU
3 win2000 03 CPU
4 BlueDog 05 CPU
5 03 CPU
6 03 CPU
7 03 CPU
8 03 CPU
Edit G FKey S Esc
ScrLock | Scan | Skip NCSH

```

8. Press **Enter**.

9. Press **S** to save the new chain size.
10. Press **F2** to go to the Selection Menu and verify that the chain size has changed.

► **To refresh a P2ZCIM chain**

The Refresh command resets the Communication Addresses of each P2ZCIM by reassigning all Communication Addresses sequentially. All active P2ZCIM channels will be rearranged so they are placed together in the former part of the channel list.

1. At a user-station Login screen, type `admin` in the **User Name** field and press **Enter**.
2. Type `raritan` or your new password in the **Password** field and press **Enter**.
3. If the Selection Menu is not sorted by the channel number, press **F12** to toggle the sorting.
4. Press the **F5** key.
5. Select the Channel Configuration submenu and press **Enter**.
6. Use the **↑** and **↓** or the **Page Up** and **Page Down** keys to select the P2ZCIM chain you wish to refresh.
7. Press **Enter** and type `RefreshPZ`.

```

Channel Configuration
Paragon832 Page: 1/4➔
ChID Name Scn Device
1 RefreshPZ 03 CPU
2 Redhat9 03 CPU
3 Win2000 03 CPU
4 BlueDog 05 CPU
5 03 CPU
6 03 CPU
7 03 CPU
8 03 CPU
Edit G FKey S Esc
ScrLock | Scan | Skip | NCSH

```

8. Press **Enter** again.
9. Press **S** to refresh the chain.
10. Press **F2** to go to the Selection Menu and verify that channel order of the chain has been refreshed.

Important: Please follow the guideline here to ensure that there is enough power to support all P2ZCIMs in a chain.

For Paragon I UMT242, 442, 832 and 1664 with hardware III and Paragon II firmware, and Paragon II switches, in chains up to 20 individual P2ZCIM units at least one P2ZCIM must be powered ON; in P2ZCIM chains from 21 to 42 P2ZCIM units, at least 15 P2ZCIMs must be powered ON.

P2ZCIM LED Status

The LED on each P2ZCIM indicates its operational state:

- If the LED blinks rapidly: P2ZCIM does not have a confirmed Communication Address.
- If the LED is primarily off and blinks on every two (2) seconds: P2ZCIM has a confirmed Communication Address but is not switched to that Address.
- If the LED is on and blinks on/off rapidly when there is keyboard/mouse traffic: CIM has a confirmed Communication Address and is switched to that Address.

Note: The P2ZCIM blinks from time to time even if there is no keyboard/mouse traffic, which demonstrates that the P2ZCIM is operating normally and not locked.

- If the LED is blinking on and off but at a regulated, moderate speed, that is, every half second: that P2ZCIM is acting as Manager of the chain.

Chapter 9 Managing IBM BladeCenter Servers

Paragon II provides access to the blade servers installed in one IBM BladeCenter® chassis via a single CIM plugged into the chassis' Management Module (MM) or Advanced Management Module (AMM). The CIM specific to IBM BladeCenter is either P2CIM-APS2-B for PS/2 keyboard and mouse, or P2CIM-AUSB-B for USB keyboard and mouse.

The following BladeCenter systems are supported:

- BladeCenter E (also referred to as model 8677)
 - With MM model 48P7055
 - With AMM model 25R5778
- BladeCenter H (also referred to as model 8852)
 - With AMM model 25R5778

IBM has updated the BladeCenter frequently since its original release. For best results, please use P2CIM-AUSB-B firmware level 0A8 or later. or P2CIM-APS2-B firmware level 0A3 or later.

Paragon treats one IBM BladeCenter chassis as one tiered device similar to the Z-CIM chain. However, Paragon II does not detect and display the real-time blade server status on the OSUI as it does to the Z-CIM chain.

You must issue a refresh command for the following scenarios:

- When connecting the IBM BladeCenter to the Paragon system for the first time
- When there are changes made to BladeCenter's hardware configuration, such as unplugging, plugging or swapping any blade server(s), or powering off any blade server(s)

The refresh command updates the OSUI channel information of blade servers to reflect current blade server status.

Paragon sees the IBM BladeCenter chassis as a tiered device so you must connect it only to the Base Unit or a second-tier Paragon switch. **Do NOT connect a tiered device to the third-tier Paragon switch or it will be regarded as the fourth tier, which Paragon does not support.**

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Refreshing Channel Status

1. Log in to the Paragon system as an administrator.
 - a. Type `admin` in the **User Name** field and press **Enter**.
 - b. Type `raritan` (the default password; all lowercase) in the **Password** field and press **Enter**. Note the password is case-sensitive.
2. Make sure the Selection Menu is sorted by the channel number. If not, press **F12** to toggle the sorting.
3. Press **F5** to enter the Administration Menu.
4. Select the Channel Configuration submenu, and press **Enter**.
5. Use the **↑** and **↓** or the **Page Up** and **Page Down** keys to select the channel port to which the IBM BladeCenter is connected, and press **Enter**.
6. Type `RefreshBLD-I`. Please note this is a *case-sensitive* command.

```

Channel Configuration
IBM-BLD-832          Page: 1/4
ChID Name          Scn Device
-----
 1 RefreshBLD-I    -- Blade
 2                  03 CPU
 3                  03 CPU
 4                  03 CPU
 5                  03 CPU
 6                  03 CPU
 7                  03 CPU
 8                  03 CPU
  
```

 Edit G FKey S Esc
 Scr1Lock | Scan | Skip | NCSH

7. Press **Enter**.
8. Press **S** to refresh the BladeCenter channel status. It takes 5 to 7 minutes to complete refreshing, depending on your blade servers' installation status.
9. Press **F2** to go to the Selection Menu and verify that blade server status has been updated.
 - Green channels indicate that there is a blade server installed and it is turned on.

- Black channels indicate that either there is no blade server installed or the installed blade server is turned off.

```

Selection Menu
IBM-BLD-832.01.001 Pg 1/2
→ IBM-Blade.--

No Ch Name Scn
1 001 IBM-Blade01 03
2 002 IBM-Blade02 03
3 003 IBM-Blade03 03
4 004 IBM-Blade04 03
5 005 IBM-Blade05 03
6 006 IBM-Blade06 03
7 007 IBM-Blade07 03
8 008 IBM-Blade08 03

Page FKey Ent Esc
ScrLock | Scan | Skip | NCSH
    
```

If any user is accessing a blade server while the refresh command is issued by the administrator, two results are possible:

- If the keyboard/mouse activity has been idle for more than 200ms, the user(s) will be disconnected and the refresh command is executed.
- Otherwise, the refresh command is NOT executed and the message “BladeServer is occupied” will be displayed in the message bar.

Tip: You can remotely update the IBM BladeCenter channel status through IP-Reach or Paragon Manager:

** Log in to the IP-Reach device that is connected to the Paragon system, and follow the same OSUI procedure to refresh the IBM BladeCenter channel. For more information on the IP-Reach device, see the IP-Reach User Guide. This user guide is available on Raritan website's **Firmware and Documentation** section (<http://www.raritan.com/support/firmware-and-documentation/>).*

** Make a connection to the Paragon system from Paragon Manager, and then perform the `RefreshBLD-I` command in the Channel Information Editor dialog. See **Remotely Refreshing IBM BladeCenter Channel Status** (on page 200) for detailed information.*

Renaming a BladeCenter Chassis

By default, IBM BladeCenter is named “IBM-Blade” in the Selection Menu of Paragon system.

1. When the OSUI is on the screen, press **F5** to go to the Administration Menu.
2. Select the Channel Configuration submenu, and press **Enter**.

3. Select the IBM BladeCenter's channel and press **Enter**. The highlight turns light blue.

```

Channel Configuration
IBM-BLD-832          Page: 1/4➔
ChID Name           Scn Device
 1  IBM-Blade_      -- Blade
 2                   03 CPU
 3                   03 CPU
 4                   03 CPU
 5                   03 CPU
 6                   03 CPU
 7                   03 CPU
 8                   03 CPU
Edit G FKey S Esc
Scr1Lock | Scan | Skip NCSH

```

4. Type the desired server name—the highlight will turn green as you begin to type.
5. Press **Enter**—the highlight will turn yellow.
6. Press **S** to save the new name.
7. Press **F2** to verify the new name in the Selection Menu.

Renaming a Blade Server

By default, each of IBM BladeCenter server is named “IBM-Blade01,” “IBM-Blade02,” and so on.

1. When the OSUI is on the screen, press **F5** to go to the Administration Menu.
2. Select the Channel Configuration submenu, and press **Enter**.
3. Select the IBM BladeCenter's channel.
4. Press **G** to bring up a Channel Configuration menu for the IBM BladeCenter servers.

- Use the **↑** and **↓** keys to highlight the **Name** field of any server whose name you want to edit.

Channel Configuration			
IBM-Blade		Page: 1/2➔	
ChID	Name	Scn	Device
1	IBM-Blade01	03	CPU
2	IBM-Blade02	03	CPU
3	IBM-Blade03	03	CPU
4	IBM-Blade04	03	CPU
5	IBM-Blade05	03	CPU
6	IBM-Blade06	03	CPU
7	IBM-Blade07	03	CPU
8	IBM-Blade08	03	CPU

Edit G FKey S Esc
 ScrLock | Scan | Skip NCSH

- Press **Enter**—the highlight will turn light blue.
- Type the desired server name—the highlight will turn green as you begin to type.
- Press **Enter**—the highlight will turn yellow.
- Repeat steps 5 through 8 if you want to edit other servers' names.
- Press **S** to save the new name(s).
- Press **F2** to go to the Selection Menu and verify whether the server names are changed.

Chapter 10 Configurations

The aim of the Main Units (such as P2-UMT1664“M”) and Stacking Units (such as P2-UMT1664“S”) is to allow users to build the Paragon system to include additional channel ports and the tiers up to three levels, so that more users and channels can be configured to control more servers. The system does not need to be over-redundant in accessibility, but administrators should consider the configurations illustrated in this chapter. In more complex stacked Paragon setups, there are important guidelines about legal and illegal device configurations that must be followed to ensure functionality.

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Principles of Re-Connection	141
Tiered Configurations	142
Stacked Configurations	150
Loop-Back Configuration	154
Different Cable Length Configuration	155
P2-HubPac Configuration and Multiple Video	156

Principles of Re-Connection

When a change is made to a connected tiered device, we recommended that power to all devices is recycled, if possible. This includes the device where the connection is changed directly, as well as all devices below it in the system architecture.

The sequence of power recycling should start from the HIGHEST tiered device and end with the Base Unit (first-tier Paragon switch). For example, in a “Single Base” configuration (only one Paragon switch as the Base Unit), if a connection change is made at a device on the third tier, the sequence of power recycling should be as follows:

- The third-tier device with the changed connection
- The second-tier device connected to the third-tier device
- The Base Unit

Tiered Configurations

Standard Tiered Configurations

Common Guidelines for Tiering Configuration

- Only Paragon I with hardware version HW3 (running Paragon II code) or Paragon II Main Unit can serve as Base Units (first tier).
- The version of Base Unit(s), both hardware and firmware, must always be later than or at least equal to the version of other tiered devices.
- A maximum of three tiers, including the Base Unit, is permitted.
- Devices that are not Paragon switches but come with two or more channel ports, such as Raritan MasterConsole, CompuSwitch, P2ZCIM, and IBM BladeCenter chassis are treated as *tiered devices*. These devices cannot act as Base Units in a Paragon II system and can be connected only to a Base Unit or to a second-tier Paragon switch. **Do NOT connect a tiered device to the third-tier Paragon switch or it will be regarded as the fourth tier, which Paragon does not support.**

Tip: The easiest way to determine whether the hardware version of your Paragon I unit is HW3 is to check the number of its stacking ports on the rear side. If there is only one stacking port, the hardware version is HW3.

Guidelines for Single Base Configuration

A single base configuration could be two-tier or three-tier configuration. It is composed of one Paragon Main Unit, serving as the Base Unit, and second-tier or even third-tier device(s).

Initialization

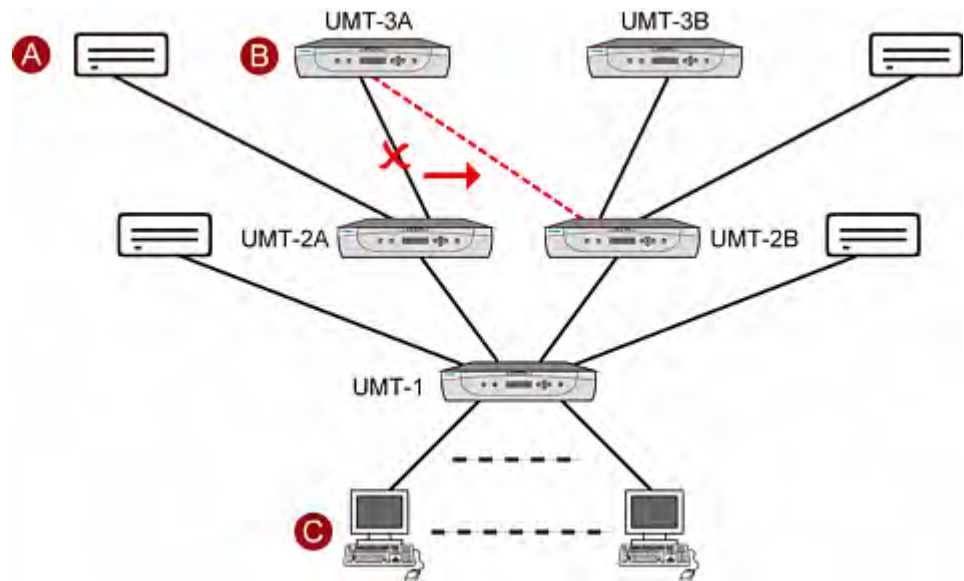
- After all devices have been connected, turn on the devices from UPPER tier to lower tier. For example, turn on the second-tier device(s) first and then the Base Unit in a two-tier configuration.
- After initialization, each tiered device has an updated database.

Guidelines for changing connections of tiered devices:

Example A: Relocating a higher-tier device (refer to dotted line)

1. Disconnect some or all of the user ports on the third-tier unit (UMT-3A) that connect to the channel ports of the second-tier unit (UMT-2A) and re-connect the user ports to the channel ports of another second-tier unit (UMT-2B).
2. Recycle the power of all impacted devices. This is recommended to build a clean database for Paragon switches. Sequence of recycling power is from the HIGHEST tier (third tier) to the Base Unit. In our example: UMT-3A --> UMT-2A --> UMT-2B --> UMT-1.

The operation is the same for tiered devices that are not Paragon switches.



A	Tiered devices that are not Paragon switches
B	Paragon switches (UMT-x)
C	User stations

Guidelines for Multiple Base Configuration

A multiple base configuration could be two-tier or three-tier configuration. It is composed of more than one Paragon Main Unit, serving as Base Units, and second-tier or even third-tier devices.

Initialization

- After all devices have been connected, turn on the devices from UPPER tier to lower tier. For example, turn on the second-tier device(s) first and then the Base Units in a two-tier configuration.
- After initialization, each tiered device has an updated database.

Guidelines for changing connections of tiered devices:

Example A: Relocating a third-tier device with multiple second-tier connections (refer to red line in the diagram):

1. Disconnect some or all of the user ports on an third-tier unit (UMT-3A) that connect to the channel ports of second-tier units (UMT-2A and UMT-2C) and re-connect the user ports to the channel ports of another second-tier unit (UMT-2B).

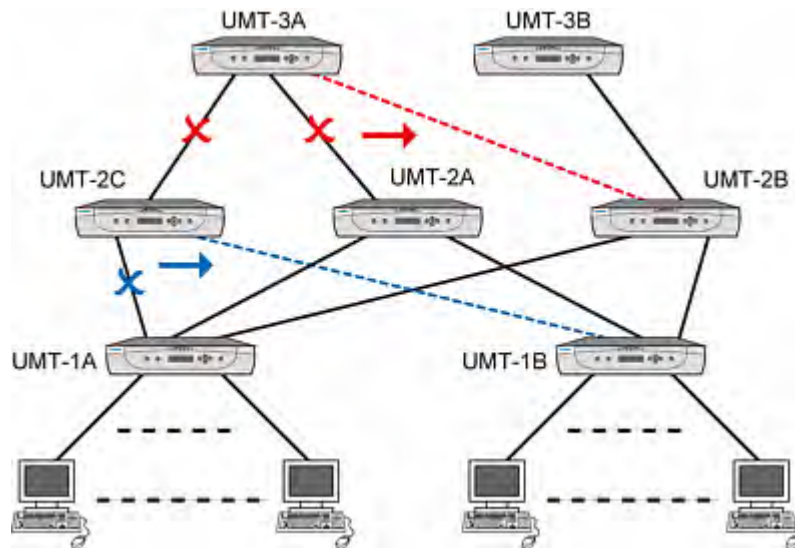
- Recycle the power of all impacted devices. This is recommended to build a clean database for Paragon switches. Sequence of recycling power is from the HIGHEST tier (third tier) to the Base Unit. In our example: UMT-3A --> UMT-2A --> UMT-2B --> UMT-2C --> UMT-1A --> UMT-1B.

Example B: Relocating a second-tier device with multiple base connections (refer to blue line in the diagram):

- Disconnect some or all of the user ports on a tiered device (UMT-2C) that connect to the channel ports of a Base Unit (UMT-1A) and re-connect those user ports to another Base Unit (UMT-1B).
- Recycle the power of impacted devices. This is recommended to build a clean database for Paragon switches. Sequence of recycling power is from the HIGHEST tier (second tier) to the Base Unit. In our example: UMT-2C --> UMT-1A --> UMT-1B.

The operation is the same for tiered devices that are not Paragon switches.

Red color	Example A
Blue color	Example B



Non-Standard Tiered Configurations

Non-Standard tiered configurations are those configurations supported by Paragon II, but require special procedure in order to function properly. These include:

- Triangle Configuration
- Single Diamond Configuration
- Redundant Configuration

FUNC Reset Guidelines for Reconnection

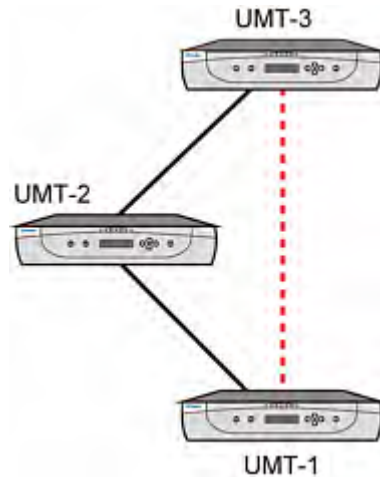
- After any re-connection subsequent to the Non-Standard tiered configuration, all Paragon switches should undergo a **FUNC** reset to clear the database. See **Reset Unit** (on page 43) for more information on clearing the database. This procedure should be performed starting from the third-tier device down to the Base Unit.
- Whenever a third-tier Paragon switch is replaced, all of the second-tier Paragon switches and Base Units should undergo a **FUNC** reset.
- Whenever a second-tier Paragon switch is replaced, all of the Base Units should undergo a **FUNC** reset.
- Whenever a base-tier Paragon switch (Base Unit) is replaced, only the new Paragon switch should undergo a **FUNC** reset.

Triangle Configuration

The following procedure must be followed to ensure this configuration functions properly.

After re-connection, all Paragon switches must undergo a **FUNC** reset to clear the switches' database. See **Reset Unit** (on page 43) for more information on clearing the database. This procedure should be performed starting from the third-tier device down to the Base Unit.

- Execute the **FUNC** reset in the following order: UMT-3 --> UMT-2 --> UMT-1.



Important: In the triangle configuration, you must sort the channels by name, or there are problems accessing channels. See *Selecting a Server* (on page 63).

Diamond Configurations

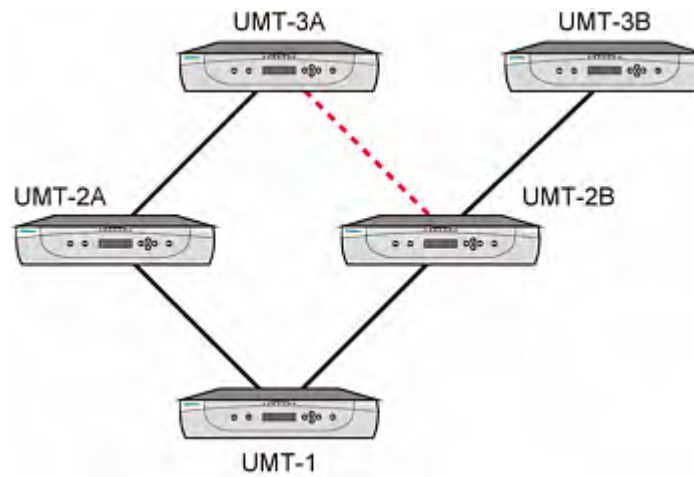
Single diamond configuration:

A user configured on the second tier and connected to UMT-2A has access only to UMT-3A, while a user connected to UMT-2B can access both UMT-3A and UMT-3B. The Base Unit (UMT-1) administrator has access to all Paragon switches in the single diamond configuration.

The following procedure must be followed to ensure this configuration functions properly.

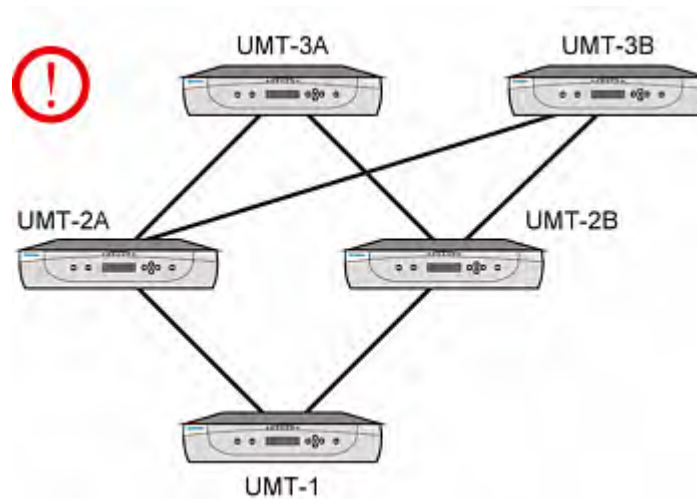
- After re-connection, all Paragon switches must undergo a **FUNC** reset to clear the switches' database. See **Reset Unit** (on page 43) for more information on clearing the database. This procedure should be performed starting from the third-tier device down to the Base Unit.

- Execute the **FUNC** reset in the following order: UMT-3A --> UMT-2A --> UMT-2B --> UMT-1.



Double diamond configuration

Officially, the Double Diamond configuration is NOT a Raritan-approved solution if Stacking Units or P2-HubPac is included in the configuration. Therefore, it is highly recommended to avoid this configuration especially when using Paragon II Stacking Units or P2-HubPac.

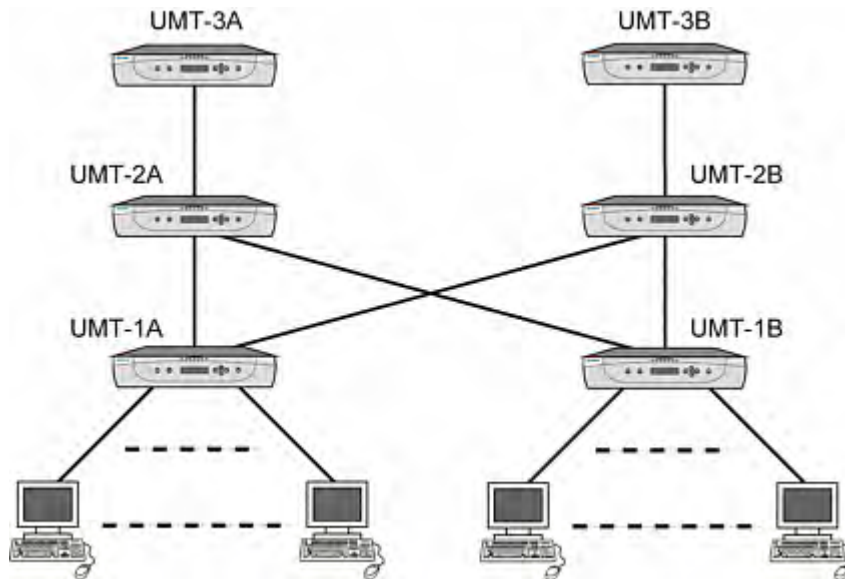


Redundant Configuration

These configurations are simply more complex configurations, and might be used to ensure redundancy; every Base Unit is configured to another, in case of individual system failure.

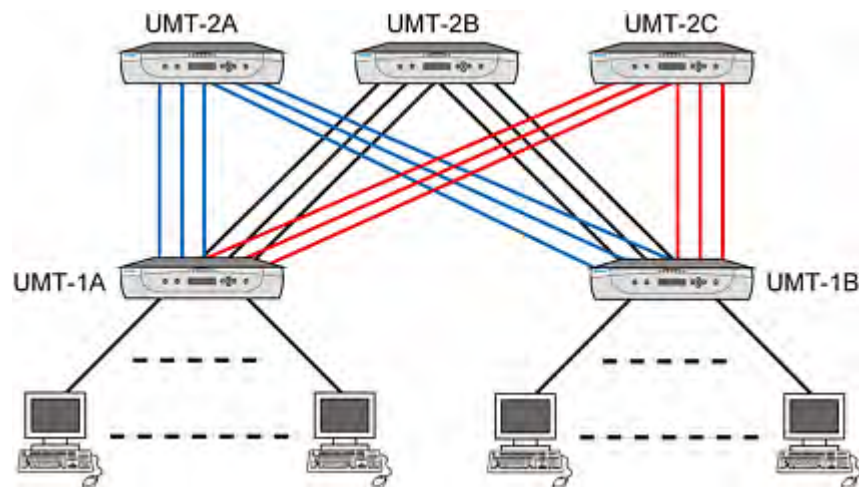
The following procedure must be followed to ensure this configuration functions properly.

- After re-connection, all Paragon switches must undergo a **FUNC** reset to clear the switches' database. See **Reset Unit** (on page 43) for more information on clearing the database. This procedure should be performed starting from the third-tier device down to the Base Unit.
- Execute the **FUNC** reset in the following order: UMT-3A --> UMT-3B --> UMT-2A --> UMT-2B --> UMT-1A --> UMT-1B.
- Whenever a third-tier Paragon switch is replaced, all of the second-tier Paragon switches and Base Units should undergo a **FUNC** reset.
- Whenever a second-tier Paragon switch is replaced, all of the Base Units should undergo a **FUNC** reset.
- Whenever a base-tier Paragon switch (Base Unit) is replaced, only the new Paragon switch should undergo a **FUNC** reset.



In order to make a redundant configuration system operate more efficiently, the following connection scheme between tiers is recommended:

- Assume there are two Paragon Base Units: UMT-1A and UMT-1B
- Assume there are three second-tier Paragon switches: UMT-2A, UMT-2B, and UMT-2C
- Channel connection of UMT-1A
 - Channel ports $3*N+1$ (1, 4, 7....) connect to UMT-2A user ports sequentially, starting from user port 1
 - Channel ports $3*N+2$ (2, 5, 8....) connect to UMT-2B user ports sequentially, starting from user port 1
 - Channel ports $3*N$ (3, 6, 9....) connect to UMT-2C user ports sequentially, starting from user port 1
- Channel connection of UMT-1B
 - Channel ports $3*N+1$ (1, 4, 7....) connect to UMT-2A user ports sequentially, starting from the available user port.
 - Channel ports $3*N+2$ (2, 5, 8....) connect to UMT-2B user ports sequentially, starting from the available user port.
 - Channel ports $3*N$ (3, 6, 9....) connect to UMT-2C user port sequentially, starting from the available user port.



Stacked Configurations

Definition of Stacked Configuration

- The Paragon II Stacking Unit expands the number of available channel ports in a single switching unit. It does not add user ports.
 - P2-UMT1664S has four 68-pin expansion ports. Two are input ports and two are output ports. P2-UMT832S has only one 68-pin expansion input port and one output port.
- The Paragon II Main Unit comes with both of user ports and channel ports. It has a database to store information such as system configuration, user profiles, channel configuration, and so on.
 - P2-UMT1664M has two 68-pin expansion ports, and P2-UMT832M has one 68-pin expansion port. These represent input ports.
- One or more Paragon II Stacking Units connect to a Paragon II Main Unit through stacking cables in a daisy chain connection—that is, the expansion port of a P2-UMT832M connects to the expansion output port of a P2-UMT832S, and the expansion input port of this P2-UMT832S connects to the expansion output port of another P2-UMT832S to form a daisy chain.
- The Main Unit can be a Base Unit or a second-tier or third-tier device.
 - The Stacking Unit that connects to a Main Unit becomes an automatic extension of the Main Unit.

System Constraints

- The Base Unit should be a P2-UMT1664M / P2-UMT832M Main Unit.
- The Base Unit's hardware and firmware versions must always be the latest released version of Paragon II product in a closed configuration system.
- A Paragon I product with hardware version HW3 (running Paragon II firmware) can accommodate only one Stacking Unit.

Note: The easiest way to determine if the hardware version of your Paragon I unit is HW3 is to check the number of its stacking ports on the rear side. If it has only one stacking port, the hardware version is HW3.

- Up to three P2-UMT832S units (Stacking Units) can be connected to one P2-UMT832M unit (Main Unit).
- Only one P2-UMT1664S unit (Stacking Unit) can be connected to one P2-1664M unit (Main Unit).
- A maximum of 128 channel ports (Main Unit + Stacking Units) is permitted. When a P2-UMT1664M unit acts as the Main Unit, only one P2-UMT1664S Stacking Unit can be in daisy chain with it. When a P2-UMT832M unit acts as the Main Unit, up to three P2-UMT832S Stacking Units can be in the daisy chain.
- You cannot mix unlike configurations of Main Units and Stacking Units. For example, you cannot use a P2-UMT832S Stacking Unit with a UMT1664 Main Unit and vice versa.
- These cannot be used as Stacking Units: P2-UMT1664M, P2-UMT832M, UMT1664, UMT832 (Paragon I with hardware version HW3).

Important: If you power off a Stacking Unit when it remains **CONNECTED** to a Main Unit, the channel colors on the OSUI Selection Menu becomes abnormal . To avoid this problem, you must disconnect the Stacking Unit from the Main Unit before powering it off. See *Note for Turning Off the Stacking Unit* (on page 31) for additional information.

Standard Stacked Configurations

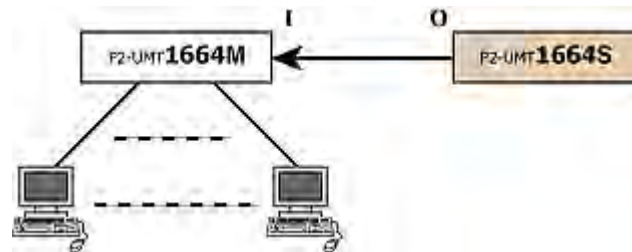
This section shows both of supported and unsupported connection configurations. In the diagrams of this section, two letters “I” and “O” represent the following meanings:

I	Input
O	Output

Single Base with Stacking

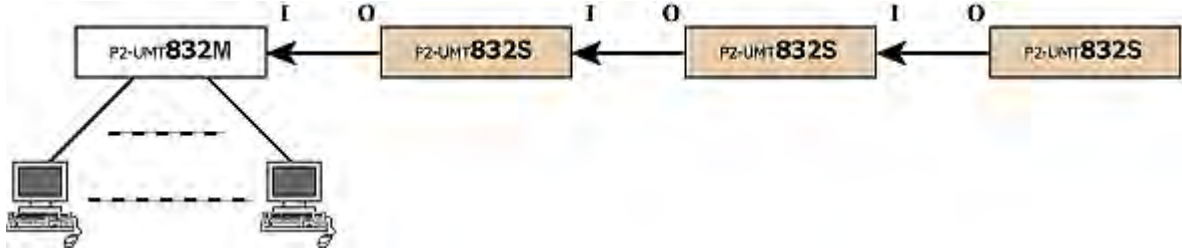
Example A: Non-blocked System—P2-UMT1664M

Standard configuration—any user can access any channel port in the system.



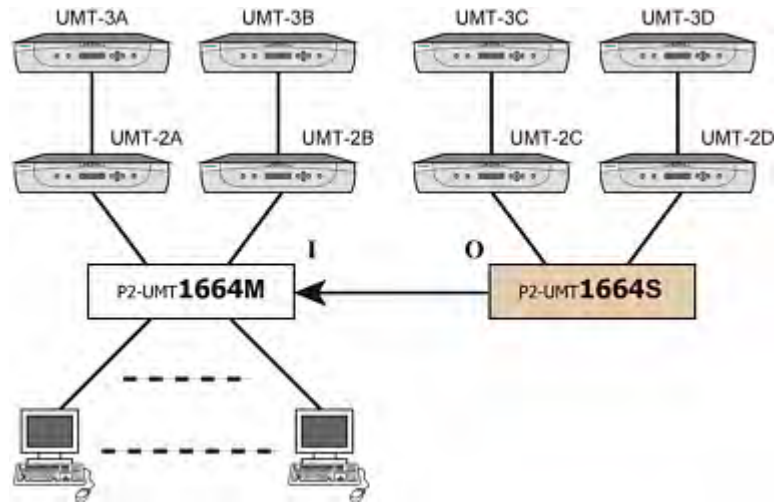
Example B: Non-blocked System—P2-UMT832M

Standard configuration—any user can access any channel port in the system.

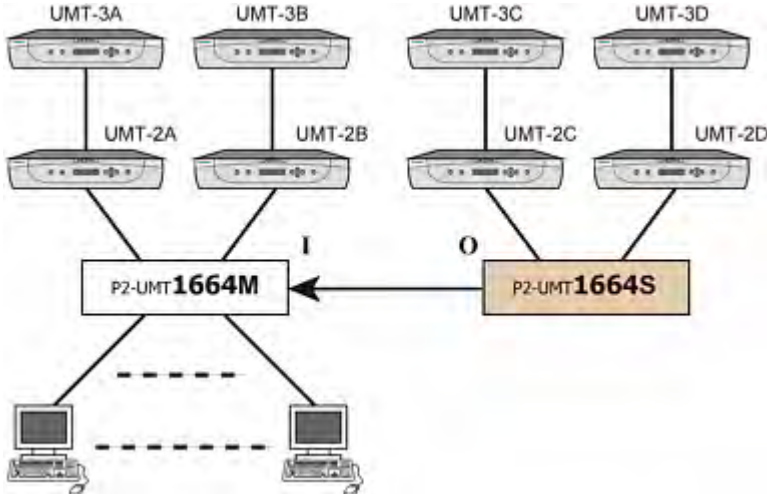


Example C: P2-UMT1664M—Stacked and Tiered

Standard configuration—any user can access any channel port in the system.

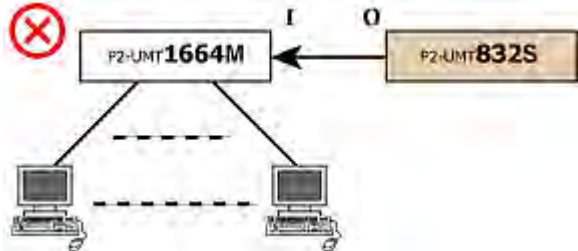


Example D: P2-UMT832M—Stacked and Tiered
Standard configuration—any user can access any channel port in the system.

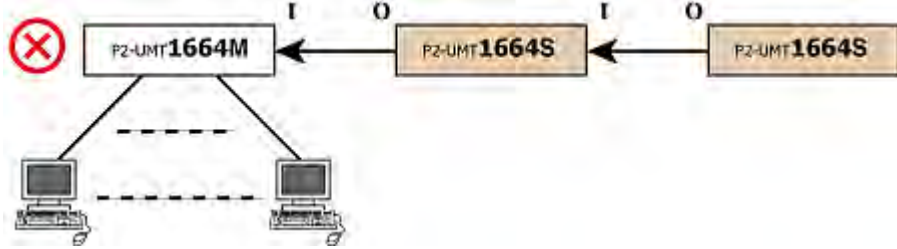


Example E: Illegal Configuration

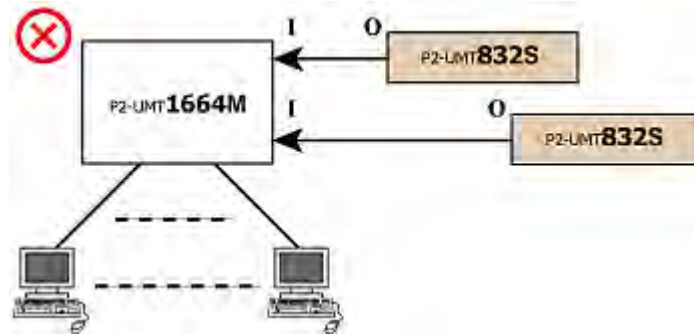
Illegal configurations are those that are not currently supported by Paragon II.



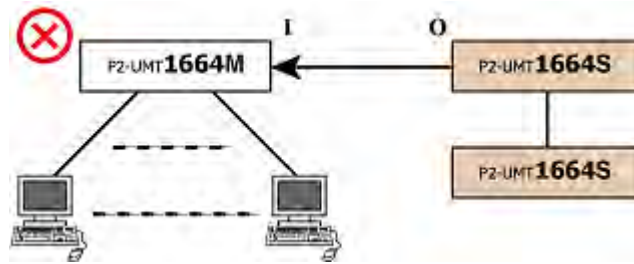
Example F: Illegal Configuration



Example G: Illegal Configuration

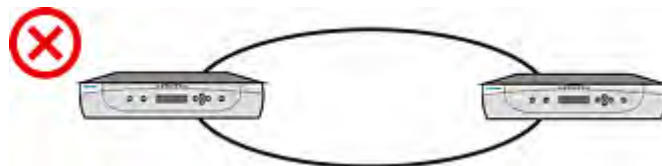


Example H: Illegal Configuration



Loop-Back Configuration

This dead-loop setup will cause server database conflict and should therefore never be used.

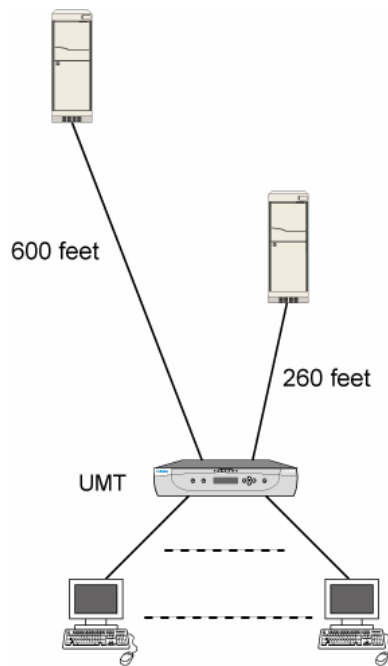


Different Cable Length Configuration

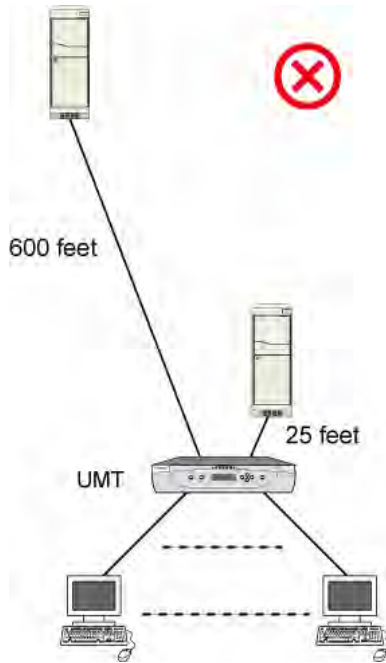
You may use Cat5 UTP cables of different cable lengths to connect servers and tiered devices to a Paragon switch, but the CABLE LENGTH DIFFERENCE SHALL NOT BE TOO LARGE.

Use of both very long and very short cables may result in video issues, especially when the channel connecting a long cable and the channel connecting a short cable are being accessed by adjacent user ports on a P2-UMT1664M model.

Example A: Appropriate cable length difference:



Example B: Improper cable length difference:



P2-HubPac Configuration and Multiple Video

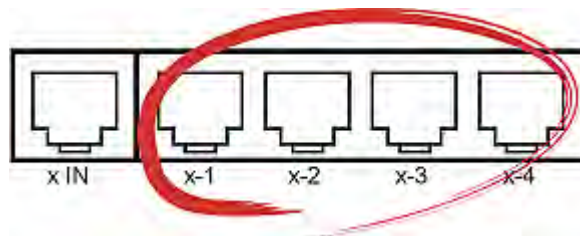
Read this section if performing the Multiple Video function in a Paragon II system in which the P2-HubPac is installed.

Configuration for Multiple Video

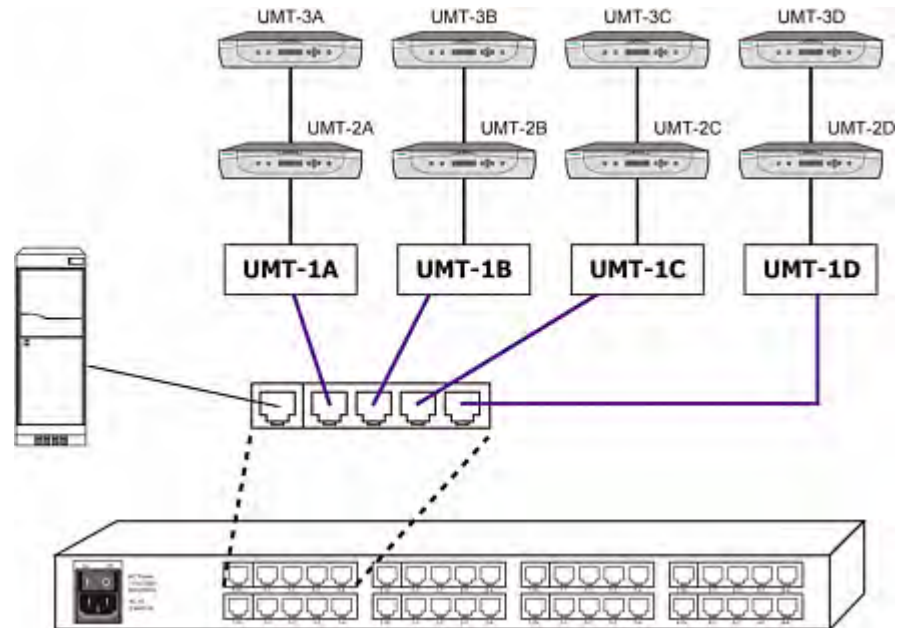
In order to perform the Multiple Video function in a system involving the P2-HubPac, **each "switch port" of the same five-port cluster of the P2-HubPac must be attached to a Paragon switch connected to a DIFFERENT Base Unit.**

In other words, the Paragon switches connected to the same cluster cannot share the same Paragon Base Unit.

This diagram indicates the four switch ports on a five-port cluster. The switch ports are marked as x-1, x-2, x-3 and x-4 respectively (x represents the cluster number).

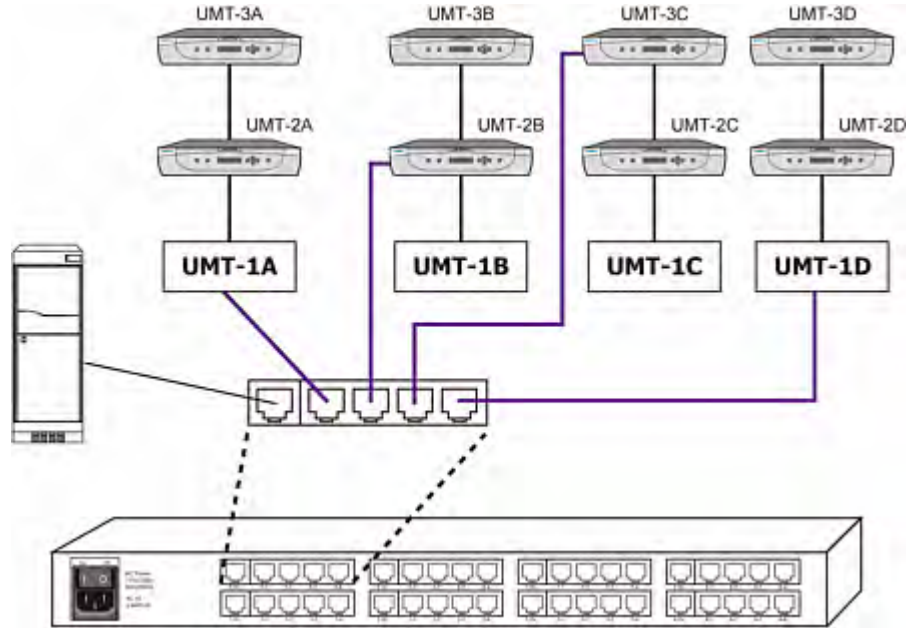


In the following illustrations, the Paragon Base Units are *UMT-1A*, *UMT-1B*, *UMT-1C* and *UMT-1D*. You can connect the HubPac's switch ports either to the Base Units or to the "Stacking Units" attached with these Base Units. The Multiple Video function works properly in such a configuration.

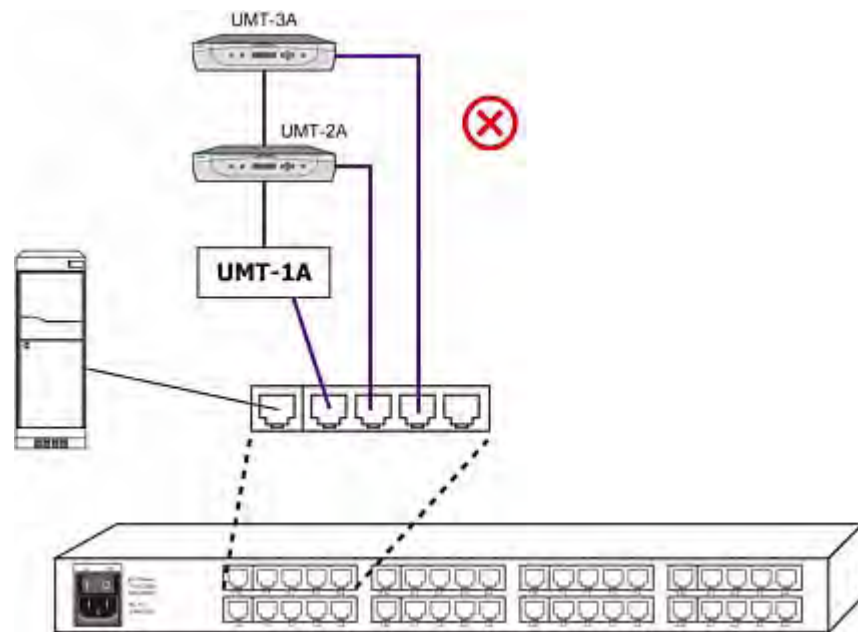


—OR—

You may connect the switch ports to the tiered Paragon switches of *different* Base Units. The Multiple Video function remains workable in this configuration.



The following diagram illustrates a P2-HubPac configuration in which regular channel access will work properly but *the Multiple Video function will fail*. To use the Multiple Video feature properly, do not connect the P2-HubPac to the Paragon Base Unit and its tiered Paragon switches.



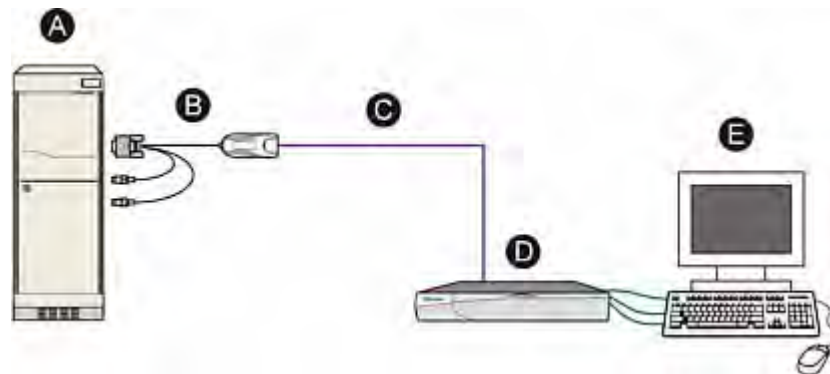
Chapter 11 User Station Direct Mode

A Paragon user station set to Direct Mode can be directly connected to a Paragon CIM, either temporarily for emergency “crash cart” access or permanently for non-switched extension purposes, without having to go through a Paragon Base Unit.

► To create a “Direct Mode” connection

1. If you have not already done so, follow the instructions in steps 5A and 5B of **A KVM System with a Single Paragon Switch** (on page 20) to attach the CIM to the server.
2. If you have not already done so, plug in and turn on your server or computer.
3. Turn off the user station.
4. Run Cat5 cabling directly between the user station and the CIM.
5. Turn on the user station. It should display a “DIRECT Mode: CIM connected” message on the screen.

While the user station is in Direct Mode, if the Cat5 cabling between the user station and the CIM becomes disconnected at any point for more than three to four seconds, the user station will exit Direct Mode. To re-establish Direct Mode, repeat the above steps.



A	Server
B	CIM
C	Cat5 cable
D	User station
E	Monitor, keyboard and mouse (connected to the user station)

► To return to normal operation from “Direct Mode”

1. Turn OFF the user station.

2. Disconnect the opposite end of the Cat5 cabling from the CIM.
3. Connect the opposite end of the Cat5 cabling to a user port of a Paragon Base Unit.
4. Run other Cat5 cabling from the channel port of a Paragon Base Unit to the CIM.
5. Turn ON the user station.

Chapter 12 Firmware Upgrade

To incorporate the newest Paragon II features, you can upgrade Paragon II Main Units, Stacking Units, user stations and P2-HubPac with the latest firmware on Raritan's website. Upgrades can be done via the network or the RS-232 connection.

Read the following sections if the device you want to upgrade is a Paragon Main Unit, Stacking Unit or user station. If the device is P2-HubPac, see **P2-HubPac Upgrade Operation** (on page 171) in this chapter for the upgrade procedure.

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General Update Procedure

Procedures for firmware upgrade of the Paragon II Main Unit, Stacking Unit, and user stations (P2-UST, P2-EUST or P2-EUST/C) all include these major steps.

- **STEP (A): Download the latest firmware and release notes**
- **STEP (B): Establish a connection between the device and the PC running Paragon Update**
- **STEP (C): (Optional) Verify the stacking-related configuration**
- **STEP (D): Launch the Paragon Update utility**

STEP (A): Download the Latest Firmware and Release notes

► **To download the firmware-related files**

1. Use your browser to visit Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).
2. Click **Paragon II** on the left pane.
3. Click the appropriate version number to locate the firmware you want on the right pane.
4. Click the **Firmware Upgrade** for the device you intend to upgrade.
5. Click the zipped firmware file.
6. (Optional) If this is your first time to download the program or firmware from the Raritan website, fill in the *Firmware Request* form, and click **Submit**.

7. When you see the http hyperlink on the right pane, click it.
8. Click **Save** to save the file on your computer.
9. Specify the location where you want to save the file, and click **Save**. Wait until the download completes.
10. Extract the file if it is a ZIP file. The extracted files include the newest Paragon Update utility, .hex files, and so on. The .hex file is a firmware file.
11. (Optional) For some versions, such as version 4.2, the downloaded firmware file does not include associated release notes. When this occurs, locate the release notes and download it from the same webpage where the firmware files are located.
12. Read the release notes for any necessary information.

STEP (B): Establish a Connection between the Device and the PC

The device intended to upgrade must be connected to the PC that runs the Paragon Update utility. There are two types of connections depending on your device.

- **Network connection:** If your device comes with a LAN port, such as Paragon II Main Unit, upgrade it by connecting it to the network and assigning an IP address to it. However, for Paragon II Stacking Unit, it must be upgraded by connecting to the Main Unit which is connected to the network.
- **RS-232 connection:** For those devices without the network port, such as user stations, this is the only method to upgrade them. Connect the device to one of the serial ports of the PC that runs the Paragon Update utility via the RS-232 cable.

Note: One DB9 male-to-female serial (RS-232) cable is shipped with the user station. It is a direct cable that can be used to upgrade the firmware with TXD, RXD and GND signals.

STEP (C): (Optional) Verify the Stacking-Related Configuration

This step is necessary when any Stacking Unit is connected to the Main Unit and the firmware upgrade of Stacking Units is also desired. For regular firmware upgrade which does not involve the boot loader or failsafe feature, Paragon allows you to update the Main Unit and “all” Stacking Units that are connected to the Main Unit in one single operation.

Before upgrading the Stacking Units, ensure these requirements are met.

- The Stacking Units are properly connected to the Main Unit and turned on.
- The “Stacking Support” setting in the Main Unit corresponds to the number of connected Stacking Units—that is, if there are three Stacking Units connected to the Main Unit, set the setting to 3. See **Stacking Support** (on page 41) for additional information.
- The value of the “Set Stack ID” setting in every connected Stacking Unit is unique: 1 up to 3. See **Installing a P2-UMT832S Stacking Unit** (on page 29) for additional information.

*Note: For “special” firmware upgrade involving the boot loader or failsafe feature, only one Stacking Unit is allowed to be connected to the Main Unit at one time. See the **Stacking Units** (on page 168) section of **Failsafe Upgrade Feature** (on page 165) for more information.*

STEP (D): Launch the Paragon Update Utility

Specify the device(s) to upgrade and the appropriate firmware in the Paragon Update utility. Note that Paragon Update utilized to upgrade devices must be the latest version downloaded along with the firmware. This is to ensure the upgrade is performed successfully. The update utility’s filename is “ParagonUpdate_xxx.exe” (xxx represents the version).

► To launch the Paragon Update utility

1. Double click “ParagonUpdate_xxx.exe.” The Paragon Update window appears.
2. Enter the information of the device that you want to upgrade in the Paragon Update utility, including the device’s name, IP address or the number of the serial port where the device connects, and so on.
3. Select the device by selecting its checkbox .
4. Click **Load Hex File** and navigate to select the appropriate firmware file.
5. Click **Send To Paragon**.
6. Click **Yes**. Then the utility starts to upgrade the selected device. If the device is a Main Unit, the Main Unit and every Stacking Unit (if any) connected to it are upgraded at one time.

For more details of the Paragon Update utility, see **Paragon Manager User Guide**. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

Note: Usually the .hex file for updating the firmware of both the Main and Stacking Units is the one whose name is "P2-xxx" (xxx represents the version) unless you are updating these units for obtaining failsafe upgrade feature or it is an update failure case for the Stacking Unit. If so, see later sections in this chapter for the appropriate .hex file.

Failsafe Upgrade Feature

In the past, whenever a firmware update failure occurred on the Paragon II Main Unit, Stacking Unit or a P2-UST user station, a return to Raritan is required for function restoration. Now Raritan provides the FAILSAFE upgrade capability, which enables you to restore its function back to normal by yourself when any update failure occurs.

The versions of firmware and boot loader required for different devices to support the failsafe upgrade feature

Device	Required version
Main Unit	Firmware version: Any version after 3B0K Boot loader version: 0C4 or later
Stacking Unit	Main Unit's firmware version: 3E5 or later Stacking Unit's boot loader version: 0C5 or later
P2-EUST or P2-EUST/C user station	Firmware version: Any version
P2-UST user station	Firmware version: 1F9 or later

Note: Boot loader is displayed as "F/W Loader" on the Front Panel LCD display.

The above-mentioned devices in Paragon II version 4.2 or later are already implemented with the failsafe upgrade feature. If your devices belong to earlier versions, you can upgrade them with the appropriate Paragon Update utility (version 2.4.1 or later). See subsequent sections for how to upgrade different devices for failsafe upgrade feature.

Main Units

► To update Main Units for the Failsafe Upgrade feature

To obtain the failsafe capability for your Paragon II Main Unit, you must follow three major steps.

- **STEP (A): Remove all Stacking Units**
- **STEP (B): Upgrade the boot loader**
- **STEP (C): Upgrade the firmware code**

Important: During the boot loader upgrade process, the Main Unit's settings are not accessible. Therefore, please note down your Main Unit's IP address before starting the boot loader upgrade.

STEP (A): Remove all Stacking Units

1. Disconnect any Stacking Unit(s) from the Main Unit.
2. Set the Main Unit's stacking support to "0." See **Stacking Support** (on page 41) for additional information.
3. The Main Unit restarts itself.

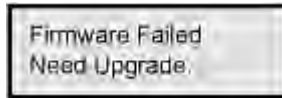
STEP (B): Upgrade the Boot Loader

Although you may upgrade the Main Unit through TCP/IP, it is highly recommended to upgrade the boot loader by connecting the cross-over network cable between the Main Unit and the PC with Paragon Update to avoid any potential risk.

1. Download the appropriate firmware version from Raritan's website. See **STEP 1: Download the Latest Firmware and Release Notes** under **General Update Procedure** (on page 162) for details.
2. Launch the Paragon Update utility: select "R-P2BL-0C4.hex" as the firmware update file, and click the "Send To Paragon" button. See **Paragon Manager User Guide** for detailed operation.
3. Wait until the upgrade process finishes.

Important: Interrupting the boot-loader upgrade process could result in permanent damage to the system.

- When the update completes, a message “Device Update Successful” appears on the PC’s monitor. The Main Unit’s LCD panel displays the following message, which indicates the boot loader is upgraded successfully.



STEP (C): Upgrade the Firmware Code

Follow the procedures described in **General Update Procedure** (on page 162) to upgrade the Main Unit with the latest firmware whose name is “P2-xxx.hex” (xxx represents the version).

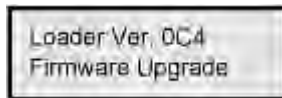
► To verify the firmware version

Use the Function Menu on the Front Panel to check the firmware version. See **Selecting a Function** (on page 40) for more information.

► To recover Main Units after upgrade failure

When any upgrade failure takes place, you can simply return the function back to normal with the Main Unit’s failsafe capability.

- Check the Front Panel LCD display to see whether the Main Unit enters the boot loader mode as shown below:



If not, press and hold ◀ and ▶ on the Front Panel of the Main Unit simultaneously, and power cycle the Main Unit at the same time. This forces it to enter the boot loader mode.

- Repeat the same upgrade procedure:
 - Activate the Paragon Update utility again
 - Select the same firmware file that was chosen when the upgrade failure occurred
 - Click the **Send To Paragon** button. For details on the operation of the Paragon Update utility. See *Paragon Manager User Guide* for more details.

Stacking Units

If the boot loader version of your Stacking Unit is earlier than 0C5, it does not have the failsafe capability, and you must upgrade it if the failsafe feature is desired. The upgrade of the Stacking Unit for failsafe capability requires these requisites:

- Keep only one Stacking Unit connected to the Main Unit at one time.
- The Main Unit must be implemented with Paragon II 4.2 firmware or later as detailed below.

Firmware compartment	Version
Boot loader	0C4 or later
Firmware code	3E5 or later

► To update Stacking Units for the Failsafe Upgrade feature

The major upgrade procedures may vary depending on the situation of your devices. For example, if the boot loader version of your Main Unit is already 0C4 and the firmware version is 3E5, you can skip STEP (A) below.

- **STEP (A): Update the Main Unit's boot loader to 0C4 and firmware to 3E5 or later**
- **STEP (B): Keep only one Stacking Unit connected**
- **STEP (C): Update the Stacking Unit's Firmware**

STEP (A): Update the Main Unit's Boot Loader to 0C4 and Firmware to 3E5 or Later

There are two types of scenarios:

- The boot loader version of the Main Unit is earlier than 0C4—you must upgrade its boot loader to 0C4 or later. See **Updating Main Units for Failsafe Upgrade Feature** in *Main Units* (on page 166) for details.
- The boot loader version of the Main Unit is 0C4 or later, but its firmware code is earlier than 3E5—download the firmware of version 4.2 or later, and upgrade it by following the procedure described in **General Update Procedure** (on page 162). The firmware file to choose is P2-xxx.hex (xxx represents the version).

STEP (B): Keep Only One Stacking Unit Connected

To upgrade the Stacking Unit for obtaining the failsafe capability, only one unit is allowed to connect to the Main Unit at one time. If there are more than one Stacking Unit or no Stacking Unit connected to the Main Unit, you must do the following:

1. Turn off the Main and Stacking Units.

2. Connect only one Stacking Unit to the Main Unit.
3. Turn on the Stacking Unit first.
4. Turn on the Main Unit.
5. Set the Main Unit's stacking support to 1. See **Stacking Support** (on page 41) for additional information.
6. Set the Stacking Unit ID to 1. See step 6 of **Installing a P2-UMT1664S Stacking Unit** (on page 30) for additional information.
7. Turn off both units.
8. Turn on the Stacking Unit first.
9. Turn on the Main Unit.

STEP (C): Update the Stacking Unit's Firmware

Both of the Stacking Unit's firmware code and boot loader will be updated after the following is done.

1. Make sure the Main Unit is connected, via network, to the PC that will run Paragon Update.
2. Launch the Paragon Update utility: select "R-P2SBL-0C5.hex" as the firmware file, and click the "Send To Paragon" button. See *Paragon Manager User Guide* for detailed operation.

Important: Do NOT interrupt the upgrade process. Otherwise it results in permanent damages.

3. Stacking Unit automatically restarts itself after the update completes.

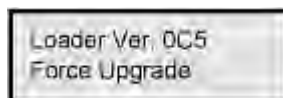
► To verify the firmware version

Use the Function Menu on the Front Panel to check the firmware version. See **Selecting a Function** (on page 40) for more information.

► To recover Stacking Units after upgrade failure

If a Stacking Unit encounters the update failure, with its failsafe capability, you can restore the Stacking Unit's function by yourself.

1. Make sure only one Stacking Unit (the one that encounters the update failure) is connected to the Main Unit. If not, see **STEP (B)** in the previous section "**Updating Stacking Units for Failsafe Upgrade Feature**" for instructions.
2. Check the Front Panel LCD display on the Stacking Unit to see whether it enters the boot loader mode as shown below:



If not, press and hold **FUNC** and **ESC** on the Front Panel of the Stacking Unit simultaneously, and power cycle the Stacking Unit at the same time. This forces it to enter the boot loader mode.

3. Follow the steps outlined in **General Update Procedure** (on page 162) to upgrade your Stacking Unit, but you must choose "R-P2SBL-0C5.hex" as the firmware file.

User Stations

The failsafe capability is a standard feature of P2-EUST and P2-EUST/C. P2-UST with firmware version earlier than 1F9 does not have this feature. For an older P2-UST, you can upgrade its firmware to get the failsafe feature.

► To update user stations for Failsafe Upgrade feature (P2-UST Only)

The procedures are the same as those outlined in **General Update Procedure** (on page 162). Note that the filename for upgrading the P2-UST user station for failsafe capability is "V5_1F9.hex" or later.

► To verify the firmware version

At the upgraded user station:

1. Activate the Paragon OSUI by pressing the hot key (default: **Scroll Lock**) twice quickly.
2. Press **F8** to display the user station's version information.

► To recover user stations after upgrade failure

As long as your user station has the failsafe capability, you can restore its function whenever the upgrade failure occurs.

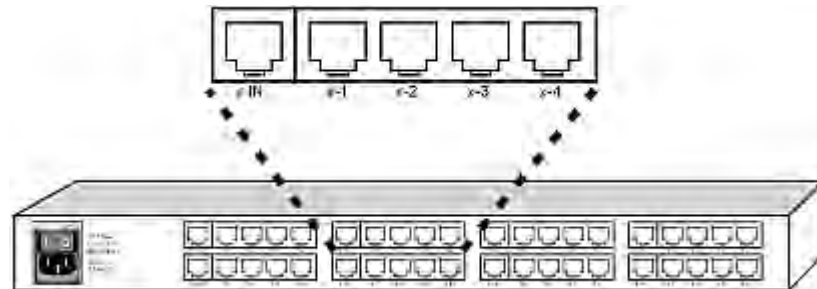
1. Power cycle the user station.
2. Repeat the same upgrade process until the upgrade is finished successfully.

P2-HubPac Upgrade Operation

In order to upgrade your P2-HubPac, it must be running at version 0C6 or later. To upgrade it, you must obtain a USB-to-RS485 cable (model: P2-IAPCIM) from Raritan. If you don't have the cable, please contact Raritan Technical Support. A special USB-to-RS485 driver is also needed and can be obtained from Raritan Technical Support.

Different from other Paragon II devices, the firmware upgrade of the HubPac requires the same upgrade operation to be performed 8 times on the same HubPac device. This is because the HubPac contains 8 five-port clusters and each cluster needs to be upgraded one after another.

The following diagram illustrates a five-port cluster, where x indicates the cluster number.



Firmware upgrade of the HubPac covers these major steps:

- **STEP (A): Get the latest firmware, driver and release notes**
- **STEP (B): Connect one cluster of the HubPac to the PC**
- **STEP (C): Install the USB-to-RS485 driver on the PC**
- **STEP (D): Launch the Paragon Update utility (version 2.4.4 or later)**
- **STEP (E): Repeat STEP (B) and STEP (D) for the other clusters**

STEP (A): Get the Latest Firmware, Driver and Release Notes

► To download the latest firmware-related files

1. Use your browser to visit Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).
2. Locate and download P2-HubPac's firmware and associated release notes.

The download procedure is similar to the procedure described in the section titled **STEP 1: Download the Latest Firmware and Release Notes** (see "**General Update Procedure**" on page 162) earlier in this chapter. Therefore, you can refer to that section for details.

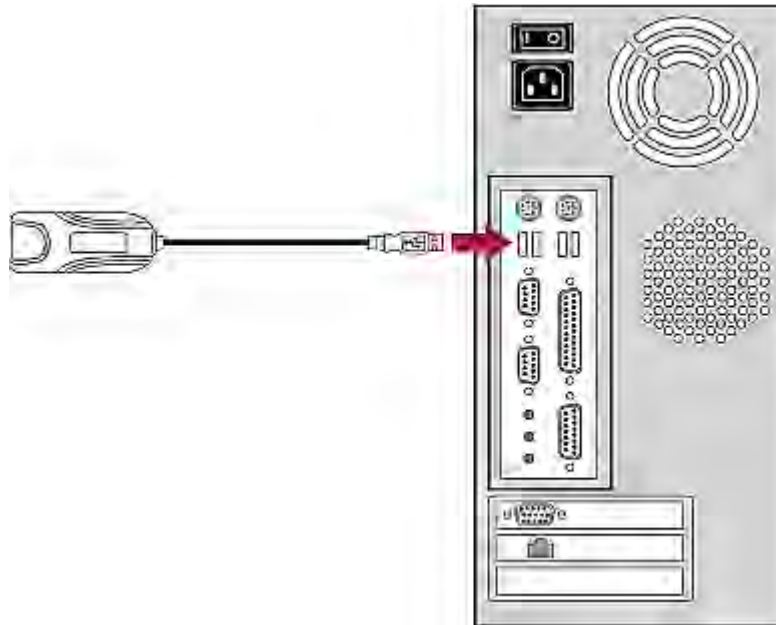
3. Obtain the USB-to-RS485 driver from Raritan Technical Support.

STEP (B): Connect One Cluster of the HubPac to the PC

After downloading the firmware, you can connect the HubPac, through the USB-to-RS485 cable, to the PC that is used to upgrade the HubPac.

► To connect a cluster to the PC

1. Connect the USB connector of the USB-to-RS485 cable to one USB port of the PC.



2. Connect one CAT5 UTP cable to the RS232 (RS485) connector of the USB-to-RS485 cable.



3. Connect the other end of the same CAT5 UTP cable to the server connection port of one cluster on the HubPac. The server connection port is the leftmost port on a cluster, and it is marked as **x IN**, where x is the cluster number.



Note: Raritan strongly recommends that you disconnect all Paragon switches from the HubPac to avoid any improper transmission of signals from Paragon switches during the firmware upgrade.

STEP (C): Install the USB-to-RS485 Driver on the PC

The USB-to-RS485 cable connects the HubPac and the PC that is used to upgrade the HubPac. Prior to the upgrade, install the USB-to-RS485 driver obtained from Raritan Technical Support on the PC. This driver is supported in both of Windows XP and 2000.

► To install the driver

The Windows operating system (Windows XP or 2000) automatically detects the connected USB-to-RS485 cable, and the *Found New Hardware Wizard* dialog appears.

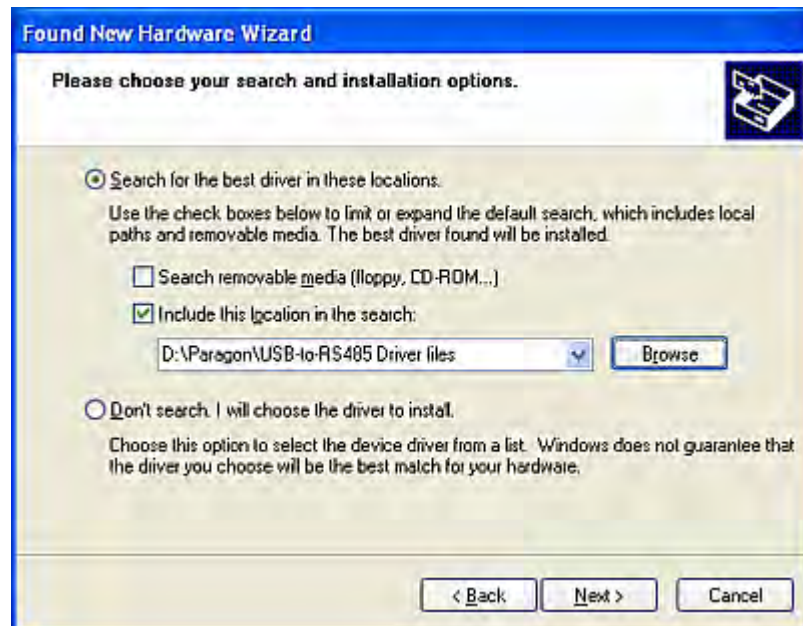
1. Select "Yes, this time only" and click **Next**.



2. Select "Install from a list of specific location (Advanced)" and click **Next**.



3. Select "Search for the best driver in their locations."
4. Select "Include this location in the search" and click **Browse** to navigate to the location where the USB-to-RS485 driver files are stored. Ensure the other option "Search removable media (floppy, CD-ROM...)" is NOT selected.



5. Click **Next**.
6. If a *Hardware Installation* dialog appears, click **Continue Anyway** to continue the driver installation.
7. Click **Finish** to complete the driver installation.

► **To check the COM port number**

After connecting the USB-to-RS485 cable to the PC and installing the driver, the PC assigns a COM port to it. This port number is indispensable for the firmware upgrade. Therefore, follow the procedure below to retrieve the port information.

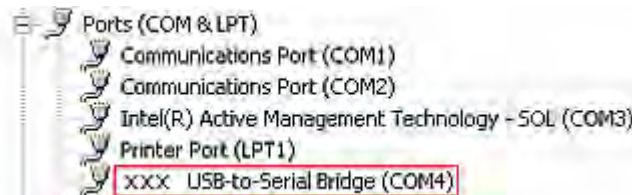
1. Choose **Start > Control Panel > System**. The *System Properties* dialog appears.
2. Click the **Hardware** tab.



3. Click **Device Manager**. The *Device Manager* window appears.



4. Click the plus (+) symbol beside **Ports (COM & LPT)** to expand the item.
5. Locate “USB to Serial Bridge (COMx),” where x is the COM port number that your PC assigns to the USB-to-RS485 cable. Write down the COM port number for later use.



Note: If you cannot find “USB to-Serial Bridge (COMx),” either the USB-to-RS485 driver has not been installed or the USB-to-RS485 driver installation was not successful. If this occurs, reinstall the USB-to-RS485 driver by following the procedure described in the previous section.

STEP (D): Launch the Paragon Update Utility

After the hardware connection is completed, you can execute the Paragon Update utility to upgrade the firmware. Note that Paragon Update version 2.4.4 or later supports this firmware upgrade. Earlier versions do not have this capability. Please use the latest version of the Paragon Upgrade utility which you downloaded along with the HubPac firmware to ensure the success of the upgrade.

Prior to the firmware update with Paragon Update, ensure the P2-HubPac is turned on.

► **To launch the Paragon Update utility**

1. Double click “ParagonUpdate_xxx.exe” (xxx represents the version). The *Paragon Update* window appears.
2. Specify the device information of the connected HubPac.
 - a. Type a name for the HubPac in the **Name** field.
 - b. Select <Default Serial> in the **IP address/Serial** field.
 - c. Type the COM port number that your PC assigns to the HubPac in the **Port** field.

	Name	IP address/Serial	Port	Encryption Key
<input checked="" type="checkbox"/>	HubPac	<Default Serial>	4	<Default No Encryption>

3. Select the checkbox () beside the HubPac device.
4. Click **Load Hex File** and navigate to select the appropriate firmware file.
5. Click **Send To Paragon**.
6. Click **Yes**. The utility starts to upgrade the “connected cluster” of the HubPac.
7. When the connected cluster is upgraded successfully, the “Device Update Successful” message appears.

Keep the *Paragon Update* window open if other clusters of the same HubPac are not upgraded yet. See the subsequent section for more information.

For more details of the Paragon Update utility, see **Paragon Manager User Guide**.

STEP (E): Repeat Steps (B) and (D) for the Other Clusters

After finishing the upgrade of one cluster, continue to upgrade the remaining clusters.

► **To upgrade the other clusters, repeat the following procedure on each cluster**

1. Disconnect the Cat5 cable attached with the USB-to-RS485 cable from the HubPac cluster on which the upgrade has finished.
2. Reconnect the Cat5 cable to the server connection port of “another cluster” on the same HubPac, as described in **STEP (B): Connect One Cluster of the HubPac to the PC** (on page 172).
3. Click **Send to Paragon** in the *Paragon Update* window to upgrade the connected cluster. The procedure is the same as those described in **STEP (D): Launch the Paragon Update Utility** (on page 178).

Upon upgrading 8 clusters successfully, the P2-HubPac firmware update is complete.

Appendix A Specifications

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Specifications of Paragon II Components

Paragon II switch	Description	Dimensions	Weight	Power
P2-UMT1664M	16 users x 64 server ports, expansion slot, stacking port, network port	17.32" (W) x 11.41" (D) x 3.5" (H) 440mm (W) x 290mm (D) x 89mm (H)	12.52 lbs 5.68 kg	100V/240V 50/60 Hz 0.6A
P2-UMT832M	8 users x 32 server ports, expansion slot, stacking port, network port	17.32" (W) x 11.41" (D) x 1.75" (H) 440mm (W) x 290mm (D) x 44mm (H)	9.83 lbs 4.46 kg	100V/240V 50/60 Hz 0.6A
P2-UMT442	4 users x 42 server ports, expansion slot, network port	17.32" (W) x 11.41" (D) x 1.75" (H) 440mm (W) x 290mm (D) x 44mm (H)	10.13 lbs 4.59 kg	100V/240V 50/60 Hz 0.6A
P2-UMT242	2 users x 42 server ports, network port	17.32" (W) x 11.41" (D) x 1.75" (H) 440mm (W) x 290mm (D) x 44mm (H)	10.03 lbs 4.54 kg	100V/240V 50/60 Hz 0.6A

Paragon II Stacking Unit	Description	Dimensions	Weight	Power
P2-UMT1664S	64 expansion server ports for stacking with P2-UMT1664M	17.32" (W) x 11.41" (D) x 3.5" (H) 440mm (W) x 290mm (D) x 89mm (H)	11.99 lbs 5.44 kg	100V/240V 50/60 Hz 0.6A
P2-UMT832S	32 expansion server ports for stacking with P2-UMT832M unit	17.32" (W) x 11.41" (D) x 1.75" (H) 440mm (W) x 290mm (D) x 44mm (H)	8.99 lbs 4.08 kg	100V/240V 50/60 Hz 0.6A

Paragon II user station	Description	Dimensions	Weight	Power
P2-UST	Analog access point with PS/2, USB and Sun consoles	11.4" (W) x 10.1" (D) x 1.75" (H) 290mm (W) x 255mm (D) x 44mm (H)	4.3 lbs 1.9 kg	100V/240V 50/60 Hz 0.6A
P2-EUST	Analog access point that provides enhanced video for PS/2, USB and Sun consoles	11.4" (W) x 10.1" (D) x 1.75" (H) 290mm (W) x 255mm (D) x 44mm (H)	4.3 lbs 1.9 kg	100V/240V 50/60 Hz 0.6A
P2-EUST/C	Analog access point that provides enhanced video for USB consoles and a built-in card reader for authentication	11.4" (W) x 10.1" (D) x 1.75" (H) 290mm (W) x 255mm (D) x 44mm (H)	4.3 lbs 1.9 kg	100V/240V 50/60 Hz 0.6A
P2-USTIP1	Remote digital access point for one KVM/IP user	17.2" (W) x 11.46" (D) x 1.72" (H) 440mm (W) x 291mm (D) x 44mm (H)	8.05 lbs (3.65 kg)	115V/230V 50/60 Hz 0.3A
P2-USTIP2	Remote digital access point for two KVM/IP users	17.2" (W) x 11.46" (D) x 1.72" (H) 440mm (W) x 291mm (D) x 44mm (H)	8.16 lbs (3.7 kg)	115V/230V 50/60 Hz 0.6A

Paragon II CIMS	Description	Dimensions	Weight
P2CIM-APS2	CIM for PS/2., provides automatic skew compensation with P2-EUST or P2-EUST/C	1.3" (W) x 3.0" (D) x 0.6" (H) 32mm (W) x 77.4mm (D) x 15.6mm (H)	0.20 lb 0.07 kg
P2CIM-APS2-B	CIM for IBM BladeCenter with PS/2, provides automatic skew compensation with P2-EUST or P2-EUST/C	1.3" (W) x 3.0" (D) x 0.6" (H) 32mm (W) x 77.4mm (D) x 15.6mm (H)	0.20 lb 0.07 kg
P2CIM-ASUN	CIM for Sun, provides automatic skew compensation with P2-EUST or P2-EUST/C	1.3" (W) x 3.0" (D) x 0.6" (H) 32mm (W) x 77.4mm (D) x 15.6mm (H)	0.13 lb 0.06 kg
P2CIM-AUSB	CIM for USB, provides automatic skew compensation with P2-EUST or P2-EUST/C	1.3" (W) x 3.0" (D) x 0.6" (H) 32mm (W) x 77.4mm (D) x 15.6mm (H)	0.20 lb 0.07 kg
P2CIM-AUSB-C	CIM for USB, provides automatic skew compensation, and emulates a card reader when used with P2-EUST/C	1.3" (W) x 3.0" (D) x 0.6" (H) 32mm (W) x 77.4mm (D) x 15.6mm (H)	0.20 lb 0.07 kg
P2CIM-AUSB-B	CIM for IBM BladeCenter with USB, provides automatic skew compensation with P2-EUST or P2-EUST/C	1.3" (W) x 3.0" (D) x 0.6" (H) 32mm (W) x 77.4mm (D) x 15.6mm (H)	0.20 lb 0.07 kg

Paragon II CIMS	Description	Dimensions	Weight
P2CIM-PWR	CIM for Integrated Power Control	1.3" (W) x 3.0" (D) x 0.6" (H) 32mm (W) x 77.4mm (D) x 15.6mm (H)	0.066 lb 0.03 kg
P2CIM-APS2DUAL	Doubles the number of users that may access a specific PC or server, and provides automatic skew compensation with P2-EUST or P2-EUST/C	1.42" (W) x 3.39" (D) x 0.65" (H) 36mm (W) x 86mm (D) x 16.5mm (H)	0.17 lb 0.08 kg
P2CIM-AUSBDUAL	Doubles the number of users that may access a specific PC or server, and provides automatic skew compensation with P2-EUST or P2-EUST/C	1.42" (W) x 3.39" (D) x 0.65" (H) 36mm (W) x 86mm (D) x 16.5mm (H)	0.17 lb 0.08 kg

Cat5 Cable Guidelines

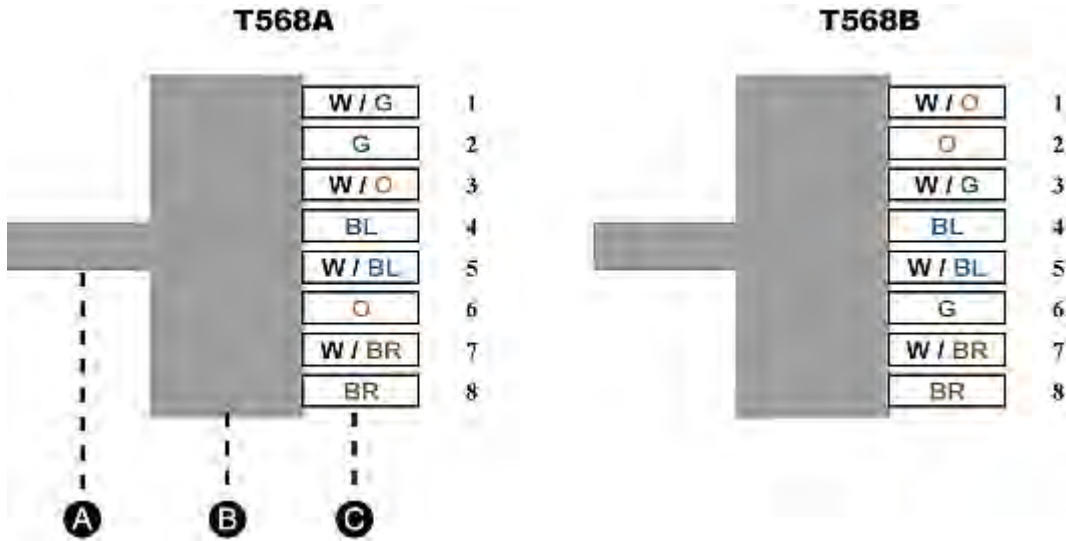
Use only straight-through-pinned four-pair (eight-wire) Cat5 unshielded twisted pair (UTP) cables, terminated with standard RJ45 plugs, for the Cat5 cabling links in your Paragon system.

If your existing Cat5 site-wiring system meets these requirements, feel free to send the signals through your site's patch panels, existing wiring, and so on, but you should keep the number of patches and splices to a minimum to avoid degrading the video signals. Maximum end-to-end cabling distance from any server to any user station should not exceed 1000 feet (304 m).

Please note that although users and servers can be located up to 1000 feet apart, for optimal video quality, limit cable length between the user station and CIM to less than 100 feet (30.5 m). For good video quality, limit cable length between the user station and CIM to less than 500 feet (152 m).

Looking into an RJ45 socket on any Paragon component, or looking at the cable plug from behind with the tab on the bottom, Pin 1 should be on the left and Pin 8 on the right, and the wires should be arranged this way, as per the TIA-568B standard:

Pin	Color	Function	Pair
1	White/Orange	TX (transmit signals)	Pair 2
2	Orange/White	RX (receive signals)	Pair 2
3	White/Green	TX	Pair 3
4	Blue/White	RX	Pair 1
5	White/Blue	TX	Pair 1
6	Green/White	RX	Pair 3
7	White/Brown	TX	Pair 4
8	Brown/White	RX	Pair 4



Component	
A	Cat5 cable
B	RJ45 connector
C	Pin

Color	
W	White
G	Green
O	Orange
BL	Blue
BR	Brown

Note: Use the configuration for T568A OR the configuration for T568B.

Appendix B Recommendation for Better Video Quality

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Deployment Recommendations

In the Paragon II system, video quality is usually affected by these factors:

- Type of the user station: P2-UST, P2-EUST, or P2-EUST/C
- UTP cable length between the user station and the CIM (server)
- UTP cable type: Belden or non-Belden cable

P2-EUST and P2-EUST/C have the function of automatic skew compensation when used with P2CIM-APS2, P2CIM-AUSB, P2CIM-AUSB-C or P2CIM-ASUN, and thus provides better video quality than P2-UST. Belden cable is proven to provide better video quality than non-Belden cable in Raritan's lab. Therefore, our recommendation for good or even excellent video quality is as follows:

With non-Belden cables

Cable length (feet)	Deployment
0 ~ 1000	P2-EUST or P2-EUST/C*

With Belden cables

Cable length (feet)	Deployment
≤ 500	P2-UST, P2-EUST or P2-EUST/C
501 ~ 1000	P2-EUST or P2-EUST/C*

* For P2-EUST or P2-EUST/C to provide automatic skew compensation, make sure this user station is used with the appropriate CIM type: P2CIM-APS2, P2CIM-AUSB, P2CIM-AUSB-C, P2CIM-APS2DUAL, P2CIM-AUSB-DUAL, P2CIM-ASUN, P2CIM-APS2-B, or P2CIM-AUSB-B.

Supported Resolutions on P2-EUST and P2-EUST/C

P2-EUST and P2-EUST/C (enhanced user stations) support resolutions that are 4:3, 16:10 (widescreen) or 16:9 (widescreen) aspect ratio.

*Note: A DDC adapter may be required if some resolutions are not available when connecting a widescreen monitor. See **Connecting the DDC Adapter** (on page 46).*

4:3 Aspect Ratio

Enhanced user stations support a wide range of 4:3 ratio resolutions. The table lists supported maximum resolutions and refresh rates and cabling length that work with them.

Maximum resolution	Refresh rate (Hz)	Cable length (feet)
1920x1440	60	Up to 750
1600x1200	60, 75, 85	Up to 750
1280x1024	60, 75, 85	Up to 1000

16:9 Aspect Ratio

Only one 16:9 ratio resolution is supported currently.

Resolution	Refresh rate (Hz)	Cable length (feet)
1920x1080	60	Up to 500

16:10 Aspect Ratio

Only three 16:10 ratio resolutions are supported currently.

Resolution	Refresh rate (Hz)	Cable length (feet)
1920x1200	60	Up to 500
1680x1050	60	Up to 750
1440x900	60, 75	Up to 1000

Appendix C Connecting Serial Devices to a Paragon II System

In This Chapter

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Operating a Serial CIM.....	191

Introduction to Serial CIMs

To connect an ASCII serial device, LAN/WAN component or a server through a serial port (RS-232) to the Paragon II system, use one of our serial CIMs. They are P2CIM-SER, P2CIM-SER-EU and AUATC. These CIMs can emulate an ASCII terminal and convert the serial data from the ASCII device to VGA video (800x600x60) and PS/2 keyboard signals. With this conversion, you can access and operate any ASCII serial device connected to the system.

The table lists the port difference of the serial CIMs:

Model	Serial port	Local port
P2CIM-SER	✓	
P2CIM-SER-EU	✓	
AUATC	✓	✓

Usually the use of P2CIM-SER or P2CIM-SER-EU is enough to satisfy your needs to access a serial device, unless you need to connect a local PS/2 or Sun keyboard and a VGA monitor to the device. In that case, choose AUATC, which provides a local port.

Here are some useful features of the serial CIMs:

- Interoperates with an ASCII device in the On Line Mode as if the device were connected to a text terminal
- Edits, copies, marks, and resends data to the ASCII serial device or computer in the Buffer Edit Mode
- Maintains eight pages of data in a circular buffer
- Provides 12 programmable keys for frequently-used character strings or commands

Note: The P2CIM-SER and P2CIM-SER-EU are functionally identical. The only difference between the two is that the P2CIM-SER-EU supports a wider variety of non-English language keyboards and character sets.

Installing a Serial CIM

Take these steps to attach a serial CIM to the serial port of a serial device or server and to your Paragon II system.

Installing P2CIM-SER or P2CIM-SER-EU

The installation of P2CIM-SER or P2CIM-SER-EU is quite easy.

► **To install a Serial CIM:**

1. Connect the CIM to a serial port on the serial device or computer, using its serial DB9 connector.
2. Connect the CIM to the KVM switch, using a standard Cat5 UTP cable.
3. Plug the CIM's USB connector into a powered USB port, or into a separately available Raritan PWR-SER-4 power adapter, to obtain power.

For detailed information on the CIMs, see *Paragon and Dominion KX Serial Device CIM User Guide*, which is downloadable from the **Raritan website** (<http://www.raritan.com>).

► **To download the Paragon and Dominion KX Serial Device CIM User Guide:**

1. Use your browser to visit Raritan's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).
2. On the left pane, click Paragon II > Other Support Files.
3. On the right pane, click P2CIM-SER User Guide.
4. Click *Paragon II CIM Serial User Guide* to open it.
5. (Optional) You can save it on your computer by clicking the Save icon.

Installing AUATC

1. Run an appropriate cable from AUATC's DB25 female DTE connector to the device's serial port. The type of cable will depend on what type of connector the port is and whether it's pinned as DTE (for a data source/destination such as a server) or DCE (for a data-communicating device such as a modem). Here are the product codes of some cables we recommend if the port is:
 - DB9 male DTE (most PCs, some routers, and so on)
 - DB25 male DTE (some older PCs, routers, and so on)
 - DB25 female DCE (many external modems, and so on)

If the device has some other type of serial port, call Raritan Technical Support.

2. If you need temporary “crash cart” access or permanent local control, you can set up a “local user station” (consisting of a keyboard and VGA monitor only) to AUATC. The keyboard can be either PS/2 or Sun type; a Sun keyboard will require a special setting in the Setup Screen.

To set up a “local user station,” plug a PS/2 keyboard into AUATC's 6-pin mini-DIN connector, or a Sun keyboard into its 8-pin mini-DIN connector. Then plug a VGA monitor into AUATC's HD15 connector.

Note: This local station will contend for keyboard control with the remote user stations attached to Paragon user stations based on a fixed one-second activity timeout. As soon as there has been no keyboard activity from the local station for one second, a remote station can take keyboard control, and vice versa.

3. Plug in and turn on the device. If possible, set it to communicate at 9600 bps, 8 data bits, no parity, and 1 stop bit. (These don't have to be the permanent serial settings, but the device must be set this way to establish initial communication with AUATC; later you can configure both the device and AUATC to better settings. If the device can't be configured for these settings, you'll need to temporarily attach a server or other device that can be.)
4. Plug AUATC's power supply into AUATC and a working AC outlet. If AUATC is installed and operating properly, AUATC's green LED will start blinking: once per second while the CIM is idle, more quickly while it's passing data in either direction.
5. Connect one end of a Cat5 UTP cable to the RJ45 port on AUATC. Connect the other end of the cable to RJ45 channel port #1 on the back of one of your Paragon Base Units, or to the RJ45 port on the back of a user station if you want Direct Mode access (see **User Station Direct Mode** (on page 160) for additional information).

Operating a Serial CIM

P2CIM-SER or P2CIM-SER-EU

These CIMs provide different communication modes for you to operate the ASCII serial device.

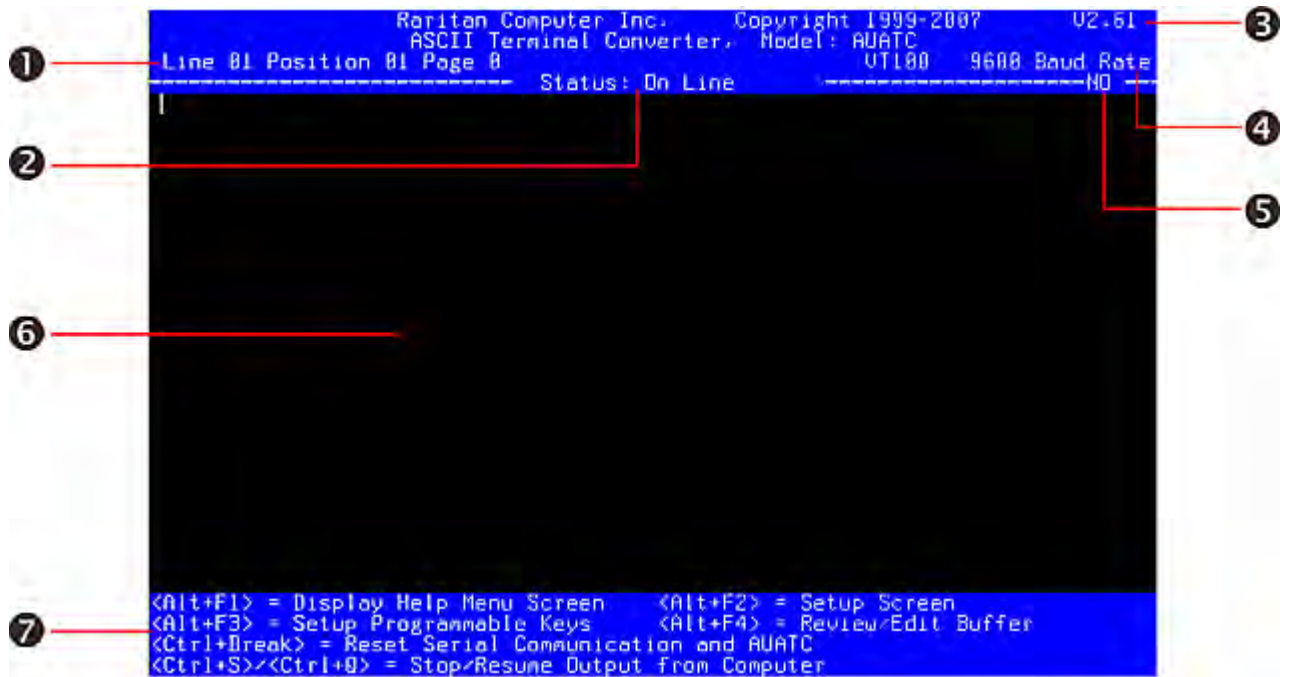
- **On Line**—Communicating with an ASCII device. The terminal screen area displays the interactions with the ASCII device.
- **Help**—Help screen displayed (Pressing **Alt+F1** displays the Help screen.)
- **Set Up**—Setup screen displayed. (Pressing **Alt+F2** or **Alt+F3** enters set-up mode.)
- **Buffer Edit**—Buffer displayed. (Pressing **Alt+F4** enters buffer review/edit mode.)

Raritan provides a detailed user guide about the operation and configuration of the two CIMs. Please see *Paragon and Dominion KX Serial Device CIM User Guide* for additional information. This user guide can be downloaded from the **Raritan website** (<http://www.raritan.com>).

AUATC

Screen Layout

AUATC produces eight-color video at 800 x 600 resolution, which can accommodate 32 lines of 80 text characters each. A typical ASCII terminal uses 24 lines, so AUATC uses the eight extra lines to provide system-status and help information. These eight lines are divided so that four are at the top of the screen and four are at the bottom.



①	Cursor position and buffer page number.
②	Communications status. The status can be one of the following: <ul style="list-style-type: none"> ▪ On Line—Communicating with an ASCII device. The terminal screen area displays the interactions with the ASCII device. ▪ Help—Help screen displayed (Pressing Alt+F1 displays the Help screen.) ▪ Set Up—Setup screen displayed. (Pressing Alt+F2 or Alt+F3 enters the set-up mode.) ▪ Buffer Edit—Buffer displayed. (Pressing Alt+F4 enters the buffer review/edit mode.)
③	Firmware version.
④	Terminal type and baud rate.
⑤	Access indicator. It indicates one of the following: <ul style="list-style-type: none"> ▪ LOC—Local port is active, either PS/2 keyboard or Sun keyboard ▪ RMT—Remote port (RJ45) is active.

Conveniently, you may program any of the PC keyboard's twelve function keys to trigger your most-often-used data-stream commands. Pressing any key set this way causes Paragon II to send the corresponding command to the device. During the online session, you can also send any of the following key combinations (press and hold **Ctrl** or **Alt**, press and release the command key, and release **Ctrl** or **Alt**) to control your communication with the device or to access AUATC's help and setup screens:

- **Ctrl + Break** (the **Pause/Break** key next to the **Scroll Lock** key): Resets both AUATC and the serial communication with the device.
- **Ctrl + S** (not case-sensitive): Sends a command to the device to temporarily stop it from sending any data; until the flow is allowed to resume, all output data will be queued by the device.
- **Ctrl + Q** (not case-sensitive): Sends a command to allow the device to resume sending data after being halted by the **CTRL + S** command.
- **Alt + F1**: Displays the Help screen.
- **Alt + F2**: Displays the Setup screen.
- **Alt + F3**: Displays the Set Up Programmable Keys screen.
- **Alt + F4**: Switch to Buffer Edit Mode.

Help Mode

```

Raritan Computer Inc. Copyright 1999-2007 02-61
ASCII Terminal Converter. Model: AUATC
Line BI Position BI Page # UT100 9600 Baud Rate
Status: Help
-----
ASCII Terminal Converter
Help Screen

On Line Commands:
<Ctrl+Break> = Reset Serial Communication and AUATC
<Ctrl+S>/<Ctrl+Q> = Stop/Resume Output from Computer

Set Up Commands:
<Alt-F1> = Display Help Menu
<Alt-F2> = Setup Screen
<Alt-F3> = Setup Programmable Keys
<Alt-F4> = Review/Edit Buffer
<Esc> = Exit

Buffer Edit:
<Home>/<End> = Go To First Page/Last Page
<PageDown>/<PageUp> = Go To Next Page/Previous Page
<Left>/<Right>/<Up>/<Down> = Move Cursor
<Insert> = Toggle Insert Mode
<Delete>/<Del> = Erase a Character in Position
<Back Space> = Erase a Character on the Left
<F6> = Begin Mark
<F7> = Send 'Marked' Buffer to Computer, and Return to On Line
<F10> = Clear Buffer, and Return to On Line
<Esc> = Exit, Return to On Line

-----
<Alt+F1> = Display Help Menu Screen <Alt+F2> = Setup Screen
<Alt+F3> = Setup Programmable Keys <Alt+F4> = Review/Edit Buffer
<Ctrl+Break> = Reset Serial Communication and AUATC
    
```

Buffer Edit Mode

AUATC stores the most recent eight pages of data from the attached ASCII device in a circular buffer. After switching the AUATC from On Line Mode to Buffer Edit Mode by pressing **Alt + F4**, you can review the contents of the buffer by moving the cursor with the arrow keys, **Page Up**, **Page Down**, **Home**, and **End**. You can also edit the data in the buffer with **Insert**, **Delete**, **Backspace**, and the other keys listed in the Help screen.

```

Raritan Computer Inc. Copyright 1999-2007 02.61
ASCII Terminal Converter Model: AUATC
Line 01 Position 01 Page 0 UT100 9600 Baud Rate
----- Status: Buffer Edit ----- RMT

```

[A large black rectangular area representing the buffer content is present here.]

```

<Home>/<End> = First/Last Page      <PageDown>/<PageUp> = Next/Previous Page
<↑>/<↓>/<←>/<→> = Move Cursor        <Insert> = Toggle Insert Mode
<Delete> = Erase a Character        <Back Space> = Erase a Character on the L
<F6> = Begin Mark   <F7> = Send Marked   <F10> = Clear Buffer   <Esc> = Exit

```


Configuring AUATC

Press **Alt + F2** to activate the Setup Screen, where you can select your desired serial-communication parameters (such as baud rate.) and local/remote output. The initial parameters will always start at their factory defaults, so make sure that the serial port or device to which AUATC is attached is temporarily configured for 9600 bps, 8 data bits, no parity, and 1 stop bit. (If the port or device cannot support all of these settings, you must temporarily attach one that can.) Also, if you want to perform initial configuration with a “local user station,” it must consist of a PS/2 keyboard and a VGA monitor.

Available data-rate (“Baud Rate”) settings are 2400, 4800, 9600, and 19,200 bps. You can select even, odd, or no (“None”) parity; 7 or 8 data bits; and 1 or 2 stop bits (but 7 data bits requires 2 stop bits). The terminal type is fixed at VT100.

For local/remote connection, choose **CAT 5&LOCAL** if you connect the AUATC both to a local monitor via the VGA HD15 connector and to Raritan's Paragon switch via the Cat5 port (RJ45); choose **LOCAL** if the unit is connected to a local monitor only.

```

Raritan Computer Inc. Copyright 1999-2007 02.01
ASCII Terminal Converter. Model: AUATC
Line 01 Position 01 Page 0 UT100 9600 Baud Rate
----- Status: Set Up ----- RMT
ASCII Terminal Converter Setup Screen

Baud Rate: 9600
Parity: NO
Data Bit: 8
Stop Bit: 1

Xoff: YES
Tab Setting: NO
Connection : CAT5&LOCAL

Keyboard Language: USA
Setup to: DEFAULT

Use <Tab> to Go to a Field to Edit
Use <↑> or <↓> to Change Parameter in a Field
<F11>/<F12> = Load/Save Setup Value; <Esc> Return to On Line

-----
<Alt+F1> = Display Help Menu Screen <Alt+F2> = Setup Screen
<Alt+F3> = Setup Programmable Keys <Alt+F4> = Review/Edit Buffer
<Ctrl+Break> = Reset Serial Communication and AUATC
    
```

To program any of your keyboard's twelve function keys with commands or data items you frequently have to send the device, activate the Set Up Programmable Keys screen by pressing **Alt + F3**. Once a string (with a maximum length of sixteen characters) has been assigned to a key, pressing that key while in On Line Mode will send the entire string to the device.

```

Raritan Computer Inc. Copyright 1999-2007 U2.61
ASCII Terminal Converter, Model: AUATC
Line #1 Position #1 Page #1 UT10B 9600 Baud Rate
Status: Set Up NO
-----
ASCII Terminal Converter
Setup Programmable Keys

<F1> = ^I?5I
<F2> = ^I?3I
<F3> = ^I?2I
<F4> = ^I?I
<F5> = ^I?M
<F6> = ^I?17"
<F7> = ^I?10"
<F8> = ^I?19"
<F9> = ^I?20"
<F10> = ^I?21"
<F11> = ^I?23"
<F12> = ^I?24"

<Tab>/<Shift-Tab> to a Field to Edit; Max. of 16 Characters
Use <CTRL-U> to Enter Special Character; e.g., <CTRL-U>+<Esc>,
<CTRL-U>+<CTRL-C>, <CTRL-U>+<CTRL-H> or <CTRL-U>+<Enter> for CR Key
Use <CTRL-Delete> to Reset Default Key
<F11>/<F12> = Load/Save Programmable Keys
<Esc> Return to On Line

<Alt+F1> = Display Help Menu Screen <Alt+F2> = Setup Screen
<Alt+F3> = Setup Programmable Keys <Alt+F4> = Review/Edit Buffer
<Ctrl+Break> = Reset Serial Communication and AUATC

```

Troubleshooting AUATC

If you do not get a device prompt:

1. If AUATC's screen is displayed on your monitor with the top and bottom help windows, make sure that it indicates **On Line** status. If not, press **Esc** to return to On Line Mode.
2. Make sure that AUATC and the attached device are both receiving power. AUATC's power supply should be securely connected to both AUATC and a working outlet. Its LED (next to the 6-pin mini-DIN PS/2 mouse connector) should flicker quickly if data is being transmitted and blink once per second at other times.
3. Make sure that the cable between AUATC and the device is securely attached at both ends. This must be the null-modem cable included with AUATC or one just like it.
4. Make sure that the serial-communication settings of AUATC match those of the device. Press **Alt + F2** to check AUATC's settings in its Setup Screen.

If you do not get any video or the video is degraded or distorted:

1. Make sure that all of your cables are connected securely.
2. Make sure that your monitor can handle 800 x 600 video resolution at a refresh rate of 60 Hz.

3. If you are at a remote user station's monitor, make sure that you are not running Cat5 cable too far end-to-end. The total length of Cat5 cabling from the serial device to the monitor should not be greater than 1000 feet (304 m).

Appendix D Other Raritan Components Working with Paragon II

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Paragon Manager Overview

Paragon Manager, Raritan's appliance management and configuration application, offers one coordinated graphical user interface that displays Device, User, Log, and Outlet information for your Paragon system. Paragon Manager can work with your Paragon II system, and allows you to manage various Paragon switches. This program is available on Raritan's website.

Installing Paragon Manager

To download Paragon Manager, follow these steps. See *Paragon Manager User Guide* for information on its features. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

► **To download Paragon Manager**

1. Use your browser to visit Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).
2. Click **Paragon II** on the left pane to open the list of support documents and files.
3. Click the version you want on the right pane.
4. Click **Firmware Upgrades**.
5. Click **Paragon Manager** to download the Paragon Manager program.
6. After clicking the program, the File Download dialog appears.
7. Click **Save** to save the file on your computer.
8. Specify the location where you want to save the file, and click **Save**. Wait until the download completes.
9. Extract the file if it is a ZIP file.
10. Double click the **ParagonManager-setup.exe** file to install Paragon Manager. Accept the default settings.

When installation is complete, a shortcut to the application has been added to your **Start** menu.

Remotely Refreshing IBM BladeCenter Channel Status

You can use Paragon Manager to remotely update the channel status of IBM BladeCenter after connecting and logging in to the Paragon system from Paragon Manager.

► **To refresh IBM BladeCenter Channel Status**

1. Verify whether the Device View panel sorts channels by channel numbers. If not, click the View By Channel tab.
2. Locate the IBM BladeCenter chassis channel, which is preceded with a plus sign.
3. Right-click the channel and select Property. The Channel Information Editor dialog appears.
4. Type `RefreshBLD-I` in the Name field. Note the command is case-sensitive.
5. Click OK and the Paragon system updates IBM Blade channel status for 2 to 4 minutes.

CommandCenter Secure Gateway Integration

Using Raritan's Dominion KX II KVM switch, you can remotely access and control the Paragon II system from CommandCenter Secure Gateway (CC-SG). The Paragon II system is regarded as a KX II channel so it appears as a node in CC-SG under this environment. You must first access this node, and then log in to it by going through the OSUI screen before you can access its servers.

Dominion KX II Integration

Dominion KX II is a digital KVM switch that can be directly managed by CC-SG. After connecting the Paragon II system to a KX II device that is managed by CC-SG, Paragon II is accessible from CC-SG. For complete compatibility, it is recommended that the KX II device connected to Paragon II is running version 2.1 or later.

The following Dominion KX II devices are supported for use with the Paragon II:

KX2-1nn*	KX2-2nn*	KX2-4nn*	KX2-8nn*
<ul style="list-style-type: none"> ▪ KX2-108 ▪ KX2-116 ▪ KX2-132 	<ul style="list-style-type: none"> ▪ KX2-216 ▪ KX2-232 	<ul style="list-style-type: none"> ▪ KX2-416 ▪ KX2-432 ▪ KX2-464 	<ul style="list-style-type: none"> ▪ KX2-832 ▪ KX2-864

* n represents a numeric digit.

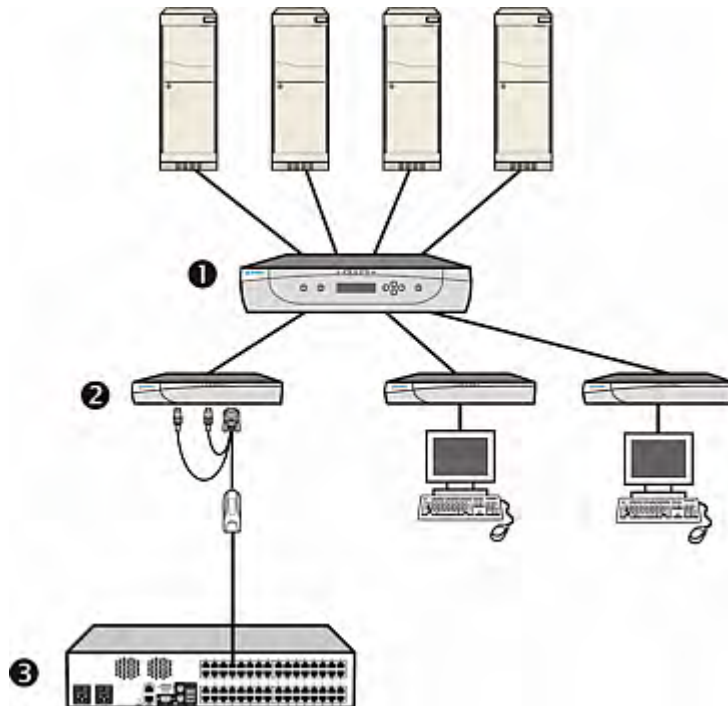
► To connect the Paragon II system to KX II:

1. Check whether the user station that you want to connect to KX II is implemented with version 4.6 firmware or later. If not, upgrade it. See **Firmware Upgrade** (on page 162) for upgrade instructions. The user station can be one of these:
 - P2-UST
 - P2-EUST
 - P2-EUST/C
2. Connect a compatible DCIM to this user station. If the system is a two- or three-tier system, ensure the user station is one of those connected to the Base Unit (first tier).

Only two types of DCIMs are supported in this integration:

 - If using DCIM-USB-G2, plug its connectors into the USB and video ports on the user station.
 - If using DCIM-PS2, plug its connectors into the PS/2 and video ports on the user station.
3. Connect the user station to a KX II 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 II device.
4. If you want to have more paths to access the same Paragon II system in KX II or CC-SG, repeat Steps 1 to 3 to connect additional user stations to KX II.

This diagram indicates the configuration integrating KX II.



❶	The Paragon II system involving Paragon switches, servers and user stations
❷	The user station with DCIM-USB-G2 or DCIM-PS2 attached
❸	KX II

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

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

When accessing the Paragon OSUI through KX II, 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.

*Note: User documentation for KX II and CC-SG can be downloaded from Raritan website's **Firmware and Documentation** section (<http://www.raritan.com/support/firmware-and-documentation/>).*

Supported Distance for KX II Integration

When using KX II as the front end of a Paragon system, you should restrict the cable length (distance) for good video quality.

Supported distance from the Paragon 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 II to the Paragon user station is up to 150 cable feet (45 m). For more detailed information, see Dominion KX II User Guide.

Appendix E Integration with Third-Party Switching Devices

The support for non-Raritan switching devices provides flexibility in satisfying special needs when using Paragon II.

- Paragon II supports Belkin's OmniView™ Secure KVM Switch as of release 4.4.1. The support allows users to meet stringent desktop security requirements.
- Paragon II supports NVISION® NV5128 Multi-format Router as of release 4.6. Integration with the router enables Paragon to route multiple audio and/or video signals from any audio/video equipment supported by the router.

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Using the OmniView Secure KVM Switch

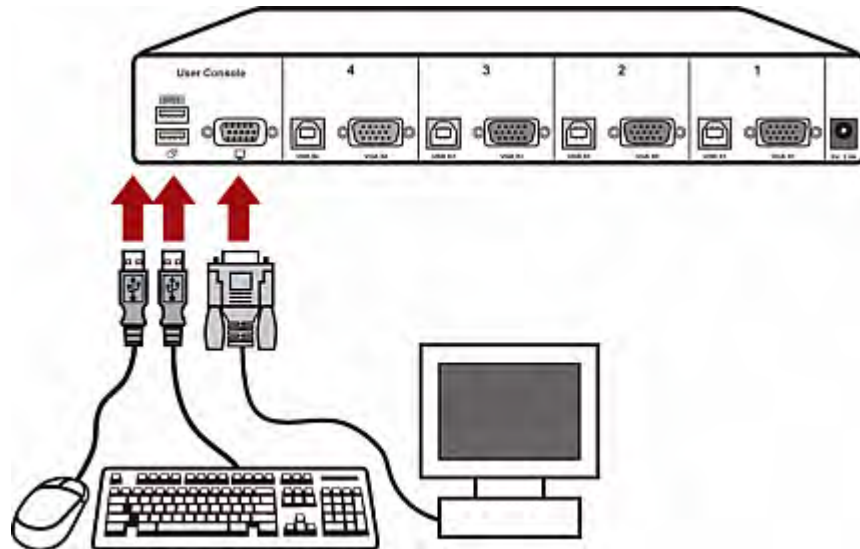
For U.S. DoD users, integration with OmniView Secure KVM Switch provides an EAL 4-assurance-level approach for access to the Paragon system and connected servers. The table lists all OmniView Secure KVM Switches which Paragon II supports:

Product name	Part number
OmniView Secure 2-Port KVM Switch	F1DN102U
OmniView Secure 4-Port KVM Switch	F1DN104U
OmniView Secure 8-Port KVM Switch	F1DN108U

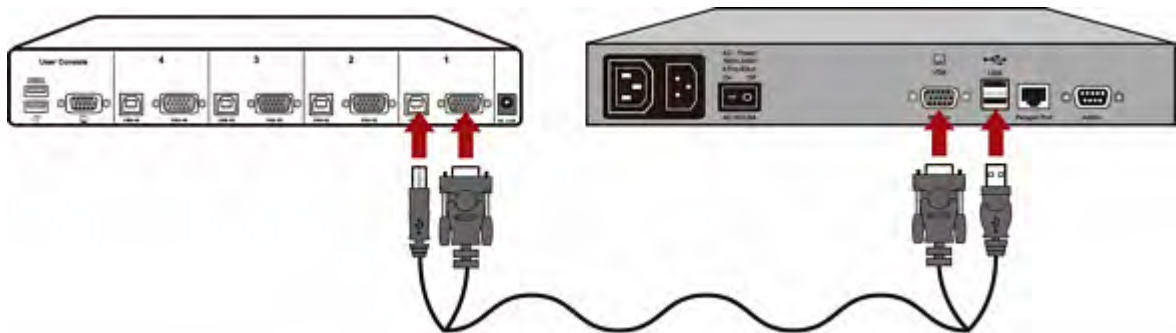
You can connect it to any P2-EUST/C user station for taking advantage of its EAL 4 security features.

► **To connect the OmniView Secure KVM Switch**

1. Connect the USB keyboard, mouse, and a VGA monitor to the OmniView Secure KVM Switch. For detailed information, see the user documentation shipping with the product.



2. Connect the OmniView Secure KVM Switch to the P2-EUST/C user station via the Belkin All-In-One USB KVM Cable.
 - a. Plug the Type-B USB and VGA connectors of the cable into an available set of Type-B USB and VGA ports of the OmniView Secure KVM Switch.
 - b. Plug the Type-A USB and VGA connectors of the cable into the USB and VGA ports of the user station.



3. Repeat Step 2 for all other user stations that you want to connect.
4. Connect the power adapter to the power jack of the OmniView Secure KVM Switch.

Now you can access the Paragon system and its servers from the OmniView Secure KVM Switch. For information on the operation of the OmniView Secure KVM Switch, see the user documentation that accompanies the product.

Special Notice with the P2-EUST/C Card Reader

If you use the OmniView Secure KVM Switch as the front end of the Paragon system and connect it to any P2-EUST/C device, you must obey these rules when using the P2-EUST/C card reader.

- Reinsert the smart card into the built-in card reader of P2-EUST/C each time when switching to a different server that requires the smart card authentication.
- When the built-in card reader is reading and transmitting the card data (indicated by the green blinking LED), do *not* press the buttons (Switch Selectors) on the OmniView Secure KVM Switch to switch channels. Doing this leads to the interruption of the card data transmission as well as the authentication failure.

Supported Keyboards

Not all USB keyboards supports the access to the Paragon system from the OmniView Secure KVM Switch. The table lists USB keyboards that are compatible with the Paragon configuration involving the OmniView Secure KVM Switch. However, USB keyboards not listed in the table may also work well.

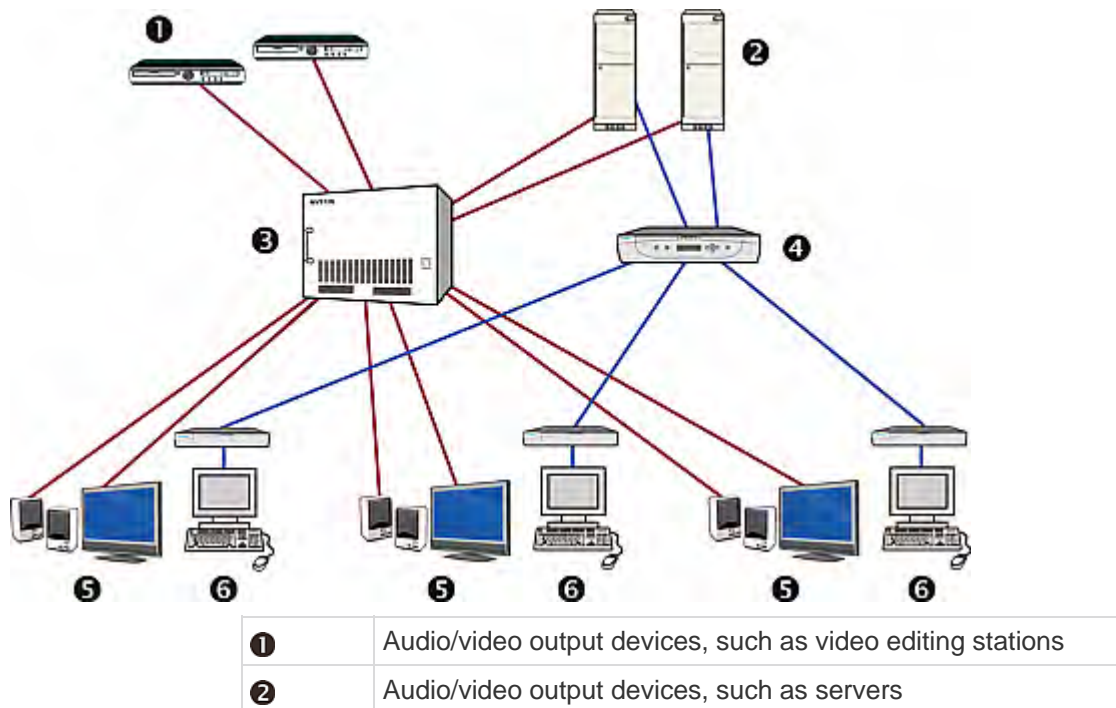
Manufacturer	Model/part number
Song.Win	KB-MED-U (MCK-30U)
Microsoft	Wireless MultiMedia Keyboard 1.0A (X09-57730)
	Digital Media Pro Keyboard (KC-0405)
	Nature Keyboard Elite (KU-0045)
Logitech	Cordless Keyboard (Y-RR54 and Y-RJ20)
	Cordless Desktop Pro (Y-RJ7)
	Elite Keyboard (Y-BF38)
	Corded Keyboard (Y-BN52)
ZIPPY	WK-808
Asima	N/A
GoodVision	JSKL-8831
Wintek	WK-808/KT-808
HP	C4768 (6512-UK)

Manufacturer	Model/part number
	KU-0316
SiliconGraphics	SK-2502U (GYUR58SK)
US	ACK-260UA
Kensington	Comfort Type USB/PS2 keyboard (K64338B)
Dell	RT7D50
SUN	TYPE6 USB

Using the NVISION NV5128 Multi-format Router

NVISION NV5128 Multi-format Router is a router that is commonly used by many broadcast or video production users for dealing with multiple audio and video formats. When you associate the Paragon system with the NV5128 router, you will be able to direct multiple audio and/or video signals from specified audio/video output devices to specified audio/video input devices by accessing a channel in the Paragon system. For example, you can direct a specific server's audio signals to the speakers near your user station when controlling that server, or have a DVD player output its audio and/or video signals to appropriate audio and/or video equipment by accessing a specific Paragon channel.

This diagram shows the overall hardware configuration:



③	NV5128 router
④	Paragon switch
⑤	Audio/video input devices, such as speakers and DVI monitors
⑥	User stations with a keyboard, mouse and monitor attached

Important: The audio/video routing function is only applicable to a "one-tier" system with up to 16 user ports and 128 channel ports, comprising either a single Main Unit or a Main Unit and Stacking Unit(s).

To enable this function, three basic steps are required.

- STEP (A): Install Appropriate Audio/Video Equipment
- STEP (B): Associate Router Ports with Paragon Ports in Paragon Manager
- STEP (C): Keep Paragon Manager Running and Connected

You perform STEP (A) only when the audio/video equipment is not installed, but it is always necessary to perform STEP (B) and STEP (C) each time when you want to activate the audio/video switching function.

STEP (A): Install Appropriate Audio/Video Equipment

If you haven't installed audio/video equipment properly, follow this procedure to install them.

► **To install audio/video equipment properly in the Paragon/NV5128 configuration**

1. Connect appropriate audio/video equipment to the NV5128 router, including:
 - Connection of audio/video output devices, such as audio/video editing devices and servers, to the source ports (input connectors) on the router.
 - Connection of audio/video input devices, such as speakers and monitors, to the destination ports (output connectors) on the router.

For more details, see the user documentation that accompanies the NV5128 router.

2. Place the audio/video input devices near appropriate user stations.

Tip: Note down the router's destination port numbers for these audio/video input devices and Paragon user port numbers for user stations. The information is required later when setting up the router association.

STEP (B): Associate Router Ports with Paragon Ports in Paragon Manager

The router directs audio/video signals from specified audio/video sources to specified audio/video destinations according to the router association data in Paragon Manager. The router association data, which is created using Paragon Manager 2.0.3 or later, associates Paragon's channel and user ports with the router's source and destination ports.

Depending on whether you have created the router association data for the connected Paragon switch, you can either create or import the association data in Paragon Manager. This section outlines general procedure to create or retrieve the data. For detailed information, see Paragon Manager help or User Guide, which can be downloaded from the **Raritan website** (<http://www.raritan.com>).

If you haven't installed Paragon Manager, first see **Installing Paragon Manager** (on page 199) for installation instructions.

► To create the router association data

1. Launch Paragon Manager on a client PC and connect it to the Paragon switch where you want to enable the audio/video routing function.
2. Specify the router by choosing **Router > Configure Routers**.
3. Associate Paragon channel ports with the router's source ports by choosing **Router > Configure Servers**. A channel port can be associated with up to 8 source ports.
4. Associate Paragon user ports with the router's destination ports by choosing **Router > Configure User Station**. A user port can be associated with up to 8 destination ports.
5. Save the router association data as an XML file by choosing **Router > Export Router Configuration**.

Important: If you do not save the router association data by exporting it, the data is lost when you quit Paragon Manager or disconnect the Paragon system. There is no other way to retrieve the data but to create it all over again.

► To import the router association data

1. Launch Paragon Manager on a client PC and connect it to the Paragon switch where you want to enable the audio/video routing function.
2. Import existing router association data by choosing **Router > Import Router Configuration**.

STEP (C): Keep Paragon Manager Running and Connected

Paragon Manager plays an important role in the Paragon/NV5128 configuration. It can monitor the channel access activity at the connected Paragon system and makes the router route audio/video signals when it detects any channel access.

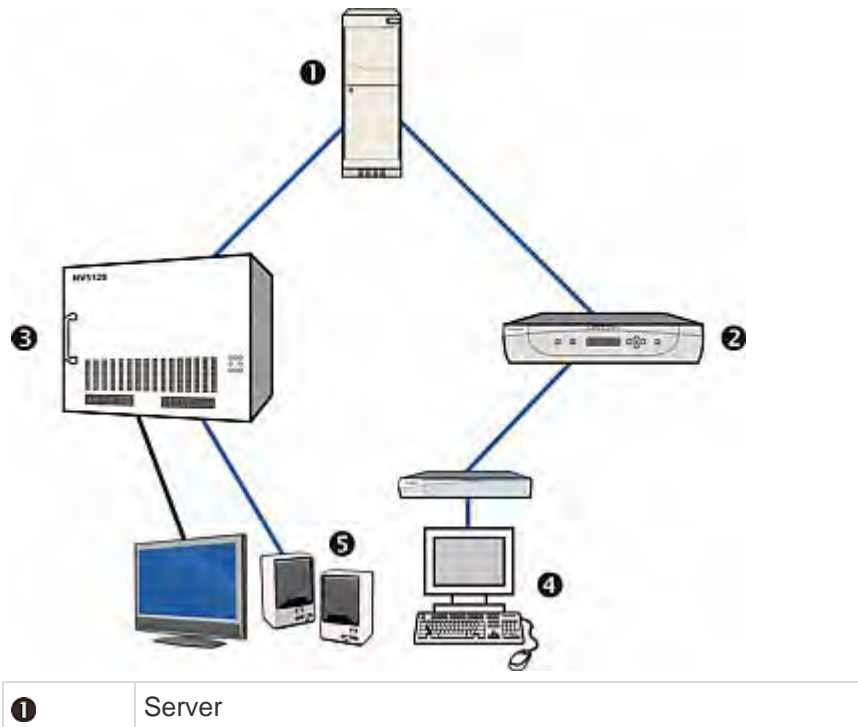
Check these points to ensure the function works properly:

- Paragon Manager is running.
- Paragon Manager is connected to the Paragon system where you want the audio/video routing function enabled.
- The router association data is implemented in Paragon Manager.

Important: Paragon Manager does not automatically import any existing router association data when it is connected to any Paragon system. You must import it manually or create the data from scratch. See *STEP (B): Associate Router Ports with Paragon Ports in Paragon Manager (on page 209)*.

Illustration: Routing a Server's Audio Signals

This section illustrates how to configure the system for directing a specific server's audio signals to speakers adjacent to your user station. The diagram indicates the hardware configuration.



②	Paragon switch
③	NV5128 router
④	User station with a keyboard, mouse and monitor attached
⑤	Speakers

For example, if you wish to hear the sound of the server connected to the channel port labeled 8 when operating the user station connected to the user port labeled 1, follow this procedure.

► **To enable audio switching for a specific server**

1. Verify the server is properly connected to the channel port 8 in the Paragon system.
2. Connect the same server to the NV5128 router via an appropriate audio cable.
 - Plug one end of the cable into the server's audio output connector and the other end to the router's audio source port.
 - In this illustration, we assume the audio source port on the router is labeled 3.

Tip: Note down the server's channel port number 8 and audio source port number 3. The information is required later when setting up the router association.

3. Connect a set of speakers to the router's audio destination port, and place the speakers around the user station connected to the user port labeled 1.
 - In this illustration, we assume the audio destination port on the router is labeled 4.

Tip: Note down the destination port number 4 and user port number 1. The information is required later when setting up the router association.

4. Launch Paragon Manager and connect it to the Paragon system where the desired server is connected.
5. Create the router association data in Paragon Manager.
 - a. Choose **Router > Configure Routers** to specify the router where the server and speakers are connected.
 - b. Choose **Router > Configure Servers** to associate the channel port 8 with the source port 3. The source port is an audio-input connector so you must select the Audio radio button.
 - c. Choose **Router > Configure User Station** to associate the destination port 4 with the user port 1. The destination port is an audio-output connector so you must select the Audio radio button.

Tip: To keep the association data for use in the future, choose Router > Export Router Configuration to export the data.

6. Keep Paragon Manager running and continuously connected to Paragon.

Now when you access the channel port 8 by operating the user station connected to user port 1, you will be able to hear the server's sound via the speakers near your user station.

Tip: If you install a set of speakers around each user station, and associate them properly in Paragon Manager, you will be able to hear the sound of the channel-8 server from any user station.

Audio/Video Routing Characteristics

Before performing the audio/video routing function, you should check the number of audio/video sources associated with the channel you want to access and the number of audio/video destinations associated with the user port you are using.

The routing function has these characteristics:

- Audio sources are routed to audio destinations, and video sources to video destinations.
- Signals are routed from source ports to destination ports based on the port number sequence.

For example, if channel port 8 is associated with audio source ports 1 through 3, and user port 1 is associated with audio destination ports 4, 7 and 9, then when you access channel 8 from user port 1, the audio routing directions are:

Source 1 --> Destination 4

Source 2 --> Destination 7

Source 3 --> Destination 9

- When the number of source ports is equal to or less than the number of destination ports, every source can find a destination to output their signals.
- When there are more source ports than destination ports, the first sources can find destinations to output the signals, but not the last sources.

For example, if a channel is associated with 3 audio source ports, but the user port is associated with 2 audio destination ports, then only the first two audio sources' signals are routed and the last audio source finds no destinations for signal routing.

Tip: You can check the routing results in Paragon Manager. For more information, see Paragon Manager help or the User Guide.

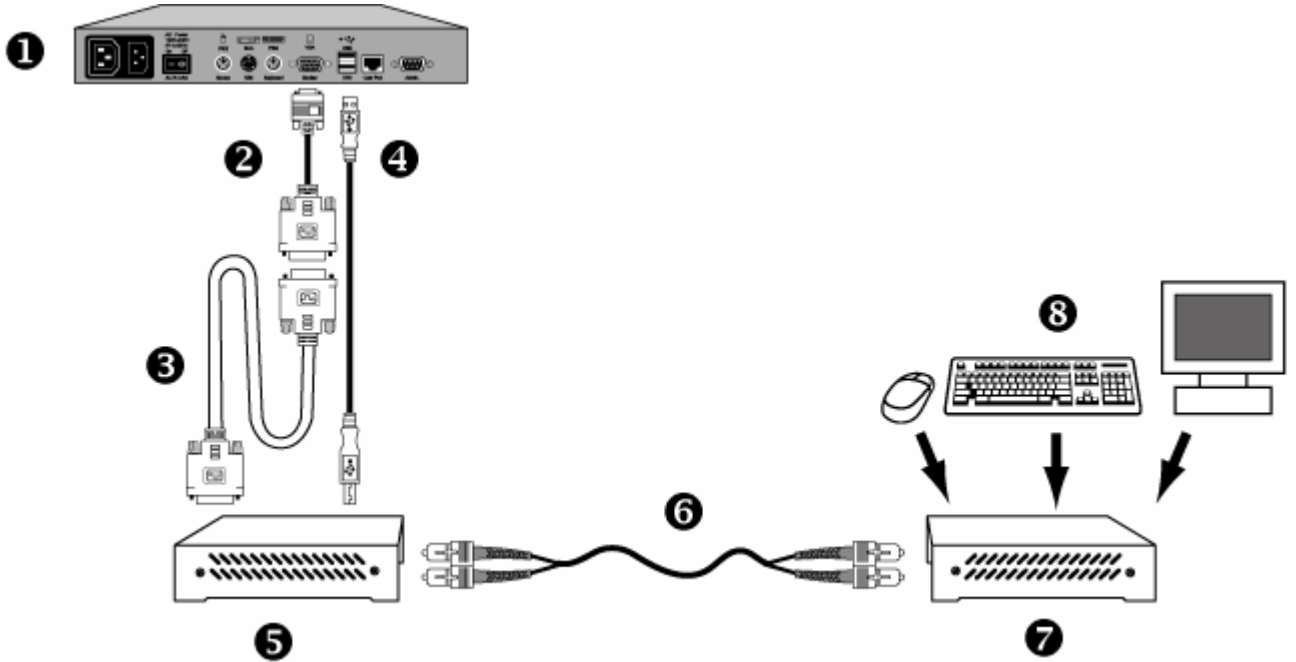
Using the IHSE DDXi Digital KVM Extender

With the use of an IHSE DDXi digital KVM extender, the user can be located 4921 feet (1500 m) away from a Paragon II user station. Currently Paragon II only supports the DDXi K443-2U digital DVI/VGA KVM extender.

▶ **To connect the DDXi digital KVM extender**

1. Turn OFF all devices.
2. Connect the desired user station to the DDXi K443-2U local unit via the CPU KVM cables provided by IHSE as described below:
 - a. Plug the USB-A connector of the USB cable provided by IHSE into the USB-A port of the user station, and the USB-B connector into the DDXi K443-2U local unit.
 - b. Because the user station comes with the VGA connector, you must connect the VGA-to-DVI adapter (436-VD) to the DVI cable (436-II).
 - c. Plug the VGA connector of the adapter into the VGA port of the user station.
 - d. Plug the free end of the DVI cable to the DVI port labeled "IN" on the DDXi K443-2U local unit.
3. Connect the DDXi K443-2U local unit and remote unit via an interconnect cable.
4. Connect your keyboard, mouse and monitor to the DDXi K443-2U remote unit.

5. Turn ON all devices.



❶	Paragon II user station
❷	VGA-to-DVI adapter
❸	DVI cable
❹	USB-A to USB-B cable
❺	DDXi K443-2U local unit
❻	Interconnect cable
❼	DDXi K443-2U remote unit
❽	Keyboard, mouse and monitor

For more information on the DDXi K443-2U digital KVM extender, see the user documentation accompanying that product.

Using the SMK-LINK RemotePoint Emerald Navigator Remote Control

Paragon II supports the use of a SMK-LINK RemotePoint Emerald Navigator laser pointer and presentation tool, which comprises a receiver and a remote control.

This presentation tool allows you to remotely navigate through the Paragon II OSUI at a distance up to 100 feet. For example, you can use it to scroll down or up on the OSUI page, select a specific channel, or even change the OSUI settings without using a keyboard. Note that this presentation tool only works with the P2-EUST user station.

To use this presentation tool, you must first configure its buttons using a computer before using it to control the Paragon II OSUI.

► **To configure the RemotePoint Emerald Navigator presentation tool**

1. Download the configuration program from <http://www.smklink.com/library/media/other/IEdeploy.msi>, and install it on the computer.
2. Plug the receiver of the presentation tool into the USB port of the computer.
3. Run IERemotePoint Customizer.exe.
4. When the software shows "Dongle detected, Select Remote...", select the right device for customization.
5. In the Select Profile field, select Custom.
6. Configure four buttons of the remote control of the presentation tool in the following way:
 - a. In the Button 1 field, select Down Arrow.
 - b. In the Button 2 field, select Up Arrow.
 - c. In the Button 3 field, select Enter.

- d. In the Button 4 field, select F11. Note that this button will function as the Paragon II hot key, which by default is Scroll Lock.



7. Click Program Receiver with Selections to complete the customization.

After finishing the customization, you can plug the receiver into the USB-A port of the P2-EUST user station, and use the remote control to navigate through the Paragon II OSUI after logging in to the OSUI.

Appendix F More Resources or Information

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Powering-On Sequence of Multi-Tier Configuration

In a multi-tier configuration, the order of powering ON is critical to proper function.

- When turning ON existing stable configurations (that is, if you are NOT replacing or adding Paragon switches and NOT swapping their order), or when you are power cycling a cascaded configuration, follow this sequence:
 1. Turn ON the third tier (if a third tier exists).
 2. Turn ON the second tier.
 3. Turn ON the base tier (first tier).
- For configurations where Paragon switches are added, replaced, or swapped (in order), follow this sequence:
 1. Turn ON the third tier (if a third tier exists).
 2. Turn ON the second tier.
 3. Turn ON the base tier (first tier).
 4. Perform a partial reset of the database on impacted Paragon switches. For example, if you swap the switches connected to the base tier, perform the partial reset on the base tier. If you swap the switches connected to the second tier, perform the partial reset from the second tier to the base tier. For information on partial reset, see **Reset Unit** (on page 43).
- User stations can be turned ON and OFF at any time as needed.

There is a five-second ON/OFF down time in the Paragon switch or Paragon II power cycle.

Quick Reference Chart

The quick reference table provides you another alternative to quickly find the section that contains the information related with some tasks you want to accomplish.

Some features may need to refer to the *Paragon Manager User Guide* for additional information. This user guide is available on Raritan website's **Firmware and Documentation section** (<http://www.raritan.com/support/firmware-and-documentation/>).

Password

To...	See...
Change or delete the password	Password Change or Deletion (on page 80)

Hot Key Settings

To...	See...
Change hot key assignments, such as the OSUI hotkey and Previous Channel key	User Profile Parameters and How to Change Settings (on page 78)
Change the Up/Down Channel key	Performing the Up/Down Channel Function (on page 74), or User Profile Parameters and How to Change Settings (on page 78)

Autoscan Settings

To...	See...
Change the autoscan mode	User Profile Parameters and How to Change Settings (on page 78)
Turn on or off the autoscan mode	Keyboard-Controlled OSUI Functions (on page 81), or Autoscan and Autoskip (on page 123)
Set up the scan rate for "global" autoscan mode	User Profile Parameters and How to Change Settings (on page 78)
Set up the scan rate for "individual" autoscan mode	Channel Configuration (on page 111)

Timeout Settings

To...	See...
Set up universal logoff timeout settings	System Configuration (on page 101)
Set up the logoff timeout settings for a specific user station	User Port Timeout (on page 115)
Set up the server control timeout settings for PC Share mode	System Configuration (on page 101)

Network Settings

To...	See...
Change the IP address using the front panel controls	Set IP Address (on page 42)
Change the IP address using the OSUI	Case 1. Setting the Network Configuration (on page xi), or Network Settings (on page 121)

Channel Access

To...	See...
Access the previously accessed channel without going through the OSUI	User Profile Parameters and How to Change Settings (on page 78)
Access the available channel next to the current one in the alphanumerical order without going through the OSUI	Performing the Up/Down Channel Function (on page 74)

Video

To...	See...
Adjust the video quality	Video Gain Adjustment (on page 61) or Skew Compensation with P2-EUST or P2-EUST/C (on page 62)
Direct the video/keyboard/mouse outputs of a specific server to a specific user station (administrators only)	<ul style="list-style-type: none"> • Case 4. Local Video Redirection (Forced Video) (on page xiii) • Operating Forced Video Using OSUI (on page 106) • Operating Forced Video Using Paragon Manager (on page 107) • Paragon Manager User Guide
Direct the video/keyboard/mouse outputs of a specific server to a specific user station (users with video-redirection privileges)	<ul style="list-style-type: none"> • Operating Forced Video Using Paragon Manager (on page 107) • Paragon Manager User Guide
Enable a single server to output up to four video ports' signals simultaneously	<ul style="list-style-type: none"> • Case 5. Using Multiple Video Ports (on page xiv) • Concurrent Multiple Video Outputs (on page 83) • Channel Association for Multiple Video (on page 108) • Paragon Manager User Guide
Enable up to four servers to output their video signals simultaneously	<ul style="list-style-type: none"> • Case 5. Using Multiple Video Ports (on page xiv) • Concurrent Multiple Video Outputs (on page 83) • Channel Association for Multiple Video (on page 108) • Paragon Manager User Guide

Power

To...	See...
Turn off, turn on or power cycle a power strip	<ul style="list-style-type: none"> • Case 3. Controlling a Device's Power (on page xii) • Controlling Power to an Outlet (on page 126)
Power cycle a Paragon switch	Reset Unit (on page 43), or Controlling Power to an Outlet (on page 126)
Turn on or off a Paragon switch when it is connected to a Raritan power strip	Controlling Power to an Outlet (on page 126)
View a channel's Power Control Menu	Keyboard-Controlled OSUI Functions (on page 81)
View power strip parameters	Getting Power Strip Unit Status from the Outlet Selection Menu (on page 127)

Product Information

To...	See...
Check the Paragon switch's firmware version and serial number	Display Ver./SN (on page 40)
Check the user station's firmware version and serial number	Information Menu (on page 82)

Reset

To...	See...
Perform a partial or full reset using front panel controls	Reset Unit (on page 43)
Perform a partial or full reset using the OSUI	System Reset (on page 120)

Troubleshooting

Symptom	Probable cause
No Power.	<ul style="list-style-type: none"> Loose Power Cord. Power switch is off. Paragon II switch or user station surge protection invoked during a power recycling process. Turn off the unit, wait for 20 seconds, and then power the unit on.
All computers have no video display.	<ul style="list-style-type: none"> Loose Cat 5 UTP cable. Loose monitor connection. The user station is connected and functioning properly if Num Lock key lights keyboard's Num Lock LED.
Monitor video display for some connected computers is distorted.	Monitor type does not match video output designation from the server.
Keyboard non-functional, even though there is no keyboard error at power up. Cannot input to any computer.	<ul style="list-style-type: none"> Loose keyboard connection to the user station. Loose Cat5 UTP cable. Keyboard broken. Hot-swap with a new keyboard.
Repeated "Keyboard ERROR" at computer power-up.	<ul style="list-style-type: none"> Loose cable from the server to the CIM. Loose Cat5e UTP cable. Paragon II components may be out of order. Verify that the server recognizes a keyboard that is directly connected. Contact Raritan Technical support for assistance. See the last page for global

Symptom	Probable cause
	contact information.
Keyboard suddenly locks-up when a particular computer is selected, but operates normally when other computers are selected.	<ul style="list-style-type: none"> Loose keyboard cable connection. Voltage spike (increase) or brown out (decrease) in power supply to connected Paragon II switch. Turn off the Switch, wait for 20 seconds, and then turn on the unit. Powering Switch from a UPS avoids variation in power supply to Switch.
Repeated "MOUSE INSTALLATION FAILURE" at computer power-up.	<ul style="list-style-type: none"> Loose mouse cable from the server to the CIM Loose Cat5 UTP cable. If an error occurs only with new servers being added to the system, contact Raritan Technical Support for assistance—mouse emulation firmware may need to be upgraded for compatibility with newer servers. See the last page for global contact information.
Mouse suddenly locks up when a particular computer is selected, but operates normally when other computers are selected.	<ul style="list-style-type: none"> Loose cable from the server to the CIM. Loose Cat5 UTP cable. Paragon II components may be out of order. Verify that the server works with a mouse directly connected. Contact Raritan Technical support for assistance. See the last page for global contact information.
OSUI non-functional.	Replace the keyboard. OSUI works only with PS/2 or extended AT-style keyboards.
Video is "fuzzy" or out of focus.	<p>Video Gain Adjustment is required (especially needed with LCD flat panel monitors).</p> <ul style="list-style-type: none"> Activate OSUI (by pressing the Scroll Lock key twice rapidly). Use numeric keypad + and - keys to adjust the video image until it is in focus.
The USB Combo keyboard and USB mouse do not function properly.	You may not follow the procedure described in this user guide to connect the USB Combo keyboard and mouse. Power cycle the user station to resolve the issue. See How to Connect a USB Combo Keyboard (on page 48) for more information.
Access to an available channel is unsuccessful and the OSUI shows "Switch busy. Please try again."	<p>If two or more users highlight the same channel and press Enter to access the channel almost "at the same second," the access conflict occurs. The system will accept one user's access and reject the others. Those who are rejected see the message "Switch busy. Please try again." on the OSUI.</p> <p>When this occurs, try to access the same channel again seconds later in the PC Share or Public View mode, or after the occupying user releases the channel in the Private mode.</p>

Symptom	Probable cause
The mouse lags slightly or the OSUI menus overlap while a P2-HubPac is installed in the Paragon system.	<p>Check whether your P2-HubPac and user stations are of the following firmware versions:</p> <ul style="list-style-type: none"> • P2-HubPac: 0D1 • P2-EUST: 3F1 to 3F5 • P2-EUST/C: 4F5 • P2-UST: 1FF <p>If yes, do the following to resolve the issue:</p> <ul style="list-style-type: none"> • For enhanced user stations, upgrade them to the latest firmware versions -- <ul style="list-style-type: none"> ▪ P2-EUST: 3F6 or later ▪ P2-EUST/C: 4F6 or later • For a P2-UST user station, downgrade its firmware version to 1FE.

Paragon II FAQs Online

Frequently Asked Questions for Paragon II are located online on the Raritan website.

1. Visit the **Raritan website** (<http://www.raritan.com>) with your browser.
2. Click Products > Analog KVM > Paragon II.
3. Click any Paragon II switch listed on the webpage, such as P2-UMT1664M or P2-UMT832M.
4. Click the FAQ tab.

You can either read the FAQ online or download the FAQ PDF file.

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