

Question	Answer
Paragon II Overview	
What is Paragon II?	Paragon II is an enterprise-class, Cat5 analog keyboard, video, mouse (KVM) solution that gives IT professionals the power to securely access and control servers and other network devices anytime, anywhere.
How does Paragon II support the use of smart cards?	Paragon II supports the use of smart cards through its built-in reader, provided with the P2-EUST/C user station. With this support, Paragon II enhances security for both the private sector and government agencies. Because the solution supports the use of DoD CAC and PIV cards, Paragon II enables the United States Department of Defense and its affiliated agencies to easily comply with HSPD-12, maintaining high security during convenient KVM access of servers. Plus, Paragon II is FIPS 201 approved. Access to Windows® and Linux® servers is supported.
What is a CAC, PIV or smart card reader?	<p>A smart card reader is a computer peripheral that “reads” a card’s information, and provides it to an authentication platform for verification of a user’s credentials. Today’s readers are typically compact in size and connect to a PC or server via a USB port. Some computer keyboards and laptop PCs have a built-in card reader. The Paragon II smart card reader is built into its P2-EUST/C user station.</p> <p>Common access cards (CAC) and personal identity verification (PIV) cards are special types of smart cards issued by the U.S. Department of Defense. They serve as standard identification for active duty military personnel, reserve personnel, civilian employees and eligible contractor personnel. They are also used for authentication to access DoD computers, networks and certain DoD facilities. Additionally, many private sector firms have implemented the use of smart card technology to enhance the security of their own operations.</p>
With what type of smart cards is Paragon II compatible?	In general, Paragon II is compatible with smart cards that follow the ISO 7816 Class A and AB specifications. Within the U.S. government, Paragon II supports the use of CAC and PIV cards.
I’m an existing Paragon II customer. How do I implement the smart card reader?	Customers who wish to install the smart card reader solution will need to purchase a new P2-EUST/C or P2-EUST/C-GOV user station. The special computer interface module is also needed for P2CIM-AUSB-C or P2CIM-AUSB-C-GOV for each server requiring smart card authentication. Lastly, a firmware upgrade of the Paragon II UMT switch to the current release is required.
Which Paragon II CIMs are compatible with the smart card reader solution?	A special version of Paragon II CIMs (P2CIM-AUSB-C or P2CIM-AUSB-C-GOV) is used with the smart card reader solution. In addition to providing smart card reader capabilities, these CIMs provide all the functionality of the P2CIM-AUSB and may be used with standard USB and Sun™ USB servers.
Can the P2-EUST/C be used with other CIMs?	The P2-EUST/C user stations are compatible with all Paragon II CIMs. As a result, the P2-EUST/C is perfect for use in mixed configurations that consist of servers with and without smart card authentication requirements.

I have an external smart card reader. Can I plug it into the user station?

Paragon II does not support an external smart card reader. For the added security of a contained solution – and for the convenience that a built-in reader provides, Raritan has integrated the smart card reader into the Paragon II Enhanced User Station (P2-EUST).

By integrating the smart card reader into the Paragon II platform, you are assured that the reader is compatible with Paragon II and is simply a “plug-and-play” experience.

Does the smart card reader adhere to all industry standards and specifications?

Raritan has partnered with SCM Microsystems, a leading supplier of standards-compliant smart card readers, to integrate the SCM reader into our enhanced user station. SCM has provided more than 2.5 million GSA-approved readers to the DoD and its agencies. Our partnership allows Raritan to leverage SCM’s extensive security, technology and expertise. Customers benefit by knowing that their Paragon II includes a certified smart card reader solution that adheres to all industry standards and specifications.

Can Paragon II be accessed remotely?

Yes, there are two remote access options. First, the P2-USTIP enables two users to remotely access their Paragon II-connected servers anytime, anywhere via a Web browser. The Dominion® KX II may also be used for IP access to Paragon II. This option is perfect when your access solution requires both analog and IP access, or when support of an authentication/authorization platform is needed. CommandCenter® Secure Gateway may also be used when accessing Paragon II through the KX II.

What is video redirect (forced video)?

Video redirect is a function that allows an administrator to redirect a server’s video signal from one user station to another. This is particularly useful in NOC environments, corporate briefings, training centers and other places where video information must be displayed to several people.

Does Paragon II support the IBM BladeCenter®?

Paragon II provides support of the IBM BladeCenter through a single CIM connection per BladeCenter chassis. There are two Paragon II CIMs that support the BladeCenter (P2CIM-APS2-B and P2CIM-AUSB-B). The user experience is similar to working with a tiered Paragon II configuration, in that one user may access the servers within a BladeCenter chassis at one time. Please reference the Paragon II user guide for details on supported BladeCenter models.

What is multiple video?

Multiple video, also known as “port following switch,” enables multiple user stations (up to 16 connected to the same PII switch) to simultaneously view the video output of multiple servers or servers with multiple video ports. Channel port association for using this feature is configured in Paragon Manager®. Port sharing may be performed between stacked units of the same Paragon II UMT.

Does Paragon II support any widescreen resolution?

Paragon II supports the use of several widescreen resolution settings when using a VGA monitor (LCD displays only). Please refer to the user guide for further details.

Does Paragon II support ruggedized keyboards intended for harsh environments?

Paragon II supports Cortron® keyboard Model 121 for KVM access in rugged environments. Cortron keyboards are the leading choice for military and other mobile and outdoor installations. Note that only the P2CIM-AUSB, -APS/2 and -ASUN CIMs are required to support Cortron keyboards. Please see the release notes and user guide for further details on supported features when using these CIMs.

Does Paragon II support the Kensington Expert Mouse®?

Paragon II supports the Kensington Expert Mouse and Turbo Mouse Trackball, which are popular choices of Macintosh® users.

Note that this feature is supported by the Paragon II Enhanced User Station (P2-EUST) and for local port access only. Since PS/2 enables the use of up to three mouse buttons and these products include five or more, they should be used only when accessing servers that are connected with the P2CIM-AUSB.

I have Paragon I user stations. Can they be used with Paragon II switches and CIMs?

There were three hardware generations in Paragon I. Hardware Version III components can be used with Paragon II.

What cable lengths does Raritan recommend for optimal video quality?

The maximum recommended cable communication path from P2-EUST to a P2-UMT to a P2CIM is 1000 feet (305 m). The maximum recommended length when using the P2-UST is 500 feet (152 m). If using non-Belden cable, Raritan recommends deployment of the P2-EUST in all configurations, regardless of cable length, to ensure the best performance possible. If using Belden cable, customers may choose between the P2-UST and P2-EUST for deployments of less than 500 feet (152 m) between the user station and the target device.

The P2-EUST supports the industry's highest resolutions with up to 1920 x 1440 at distances up to 1000 feet (305 m), at refresh rates of 60 Hz. There have been many cases in which the P2-EUST has been deployed at distances of greater than 1000 feet from the target device with excellent video performance.

Do I have to adjust video settings every time I log in?

No. Paragon II will retain the previous video settings. If the P2CIM-Axxx CIMs with automatic skew compensation support are deployed, the video will be automatically adjusted. Users do not have to manually adjust the video clarity for each channel, saving time during product installations.

Do both the P2-UST and P2-EUST support the Deko® FastAction Keyboard?

No. Only the P2-EUST supports the Deko FastAction Keyboard.

Does Paragon II support audio access?

While Paragon II does not connect directly to the audio ports of a target server, Paragon II now includes a control interface for the NVISION® NV5128 audio/video router. This feature not only delivers audio to Paragon II users, but will also allow them to switch digital video to their workstation. The control interface is built into Paragon Manager, which continuously monitors usage of the P2-UMT, and through the NV5128, "switches" audio and/or digital video to users based on easy mapping that's configured by an administrator.

What is "ghosting"?

"Ghosts" describe the port names of the CIMs that may remain on their channel ports after the CIMs have been disconnected; these records appear in black on the OSD of the local user port, or are marked as inactive in other Raritan interfaces that work with Paragon II. Ghosting support allows administrators to elect to either keep or delete these ghost records on any given system.

Does P2-HUBPAC support automatic skew compensation?

Yes. P2-HUBPAC supports automatic skew compensation.

Stacking

Paragon II is a stackable switch. Can I stack logical units to increase the number of ports available?

Yes. Paragon II provides a stacking capability that eliminates the need to run cable between logical “tiers,” and instead uses only a single stacking cable and stacking units to add up to 128 ports.

I’d like to eliminate all Cat5 cables between cascaded Paragon II units. Can I do this?

Yes. For up to 128 server ports per switch, you can use Paragon II’s exclusive stacking capability instead of cascading. If you require more than 128 ports, cascading can be implemented in addition to stacking.

Will stacking use up my ports as cascading does?

No. With just one stacking cable, you can stack P2-UMT832M and P2-UMT1664M units with P2-UMT832S and P2-UMT1664S units, using the dedicated expansion ports. This gives you 100% non-blocked access without sacrificing server or user ports.

How many Paragon II switches can be stacked?

You can stack four P2-UMT832 switches (one P2-UMT832M plus three P2-UMT832S) and two P2-UMT1664 switches (one P2-UMT1664M plus one P2-UMT1664S).

Can you stack second and third tier units?

Yes. Please consult the Paragon II manual for configuration and compatibility guidelines.

Administration

How can I check the UMTx firmware version?

Select “scroll lock” twice and then select function “F8.” A field named “firmware ver:” will display the firmware being used.

Is there an easier way to upgrade the firmware without plugging in a serial cable for each Paragon component?

Yes. Paragon Manager allows you to “push” the firmware to any device connected to Paragon II.

Paragon II has event-logging capabilities. Is there a way I can save this to an offline file for future auditing purposes?

Yes. Paragon Manager will allow you to save and store all system events to an appropriate text file.

Can I restore my saved Paragon overview files on Paragon II?

Yes. Paragon Manager can read Paragon overview files and restore this information into a Paragon II switch.

Does each unit have a network port for firmware upgrades or just the base?

All Paragon II switches have a network port for firmware upgrades. Each unit can be assigned an IP address and is recognized by the Paragon Manager software via the network.

Integrated Power Management

What is Integrated Power Management?

Integrated Power Management offers control of Raritan Remote Power Management units connected to Paragon II through a menu choice on the same OSD as server management.

Can I access and control all my connected power units via the Paragon II OSD?

Yes. Paragon II lets you control power to any connected device, set security permissions on a per-outlet basis, power on/off and recycle power to multipower supply servers, and get status information from each connected strip.

Compatibility

I have a serially controlled device (e.g., UNIX® server, hub). Can I use Paragon II to access & control this device?

Yes. Simply connect a P2CIM-SER. This CIM will convert the RS-232 connection to PS/2 and VGA video. Connect the P2CIM-SER to your serially controlled device, and then connect it to your Paragon II switch with Cat5 cable for access up to 1000 feet (305 m).

I have Suns and/or Macs in addition to PCs. Can I access and control them all with Paragon II?

Yes. The Paragon II user station has built-in ports for PS/2, Sun or USB keyboards and mice. Use Raritan's Sun or Mac adapters to convert keyboard and video ports to PS/2 keyboard/mouse and VGA video.

I have a digital Alpha running UNIX and another running OpenVMS, which use a special LK111 or LK461 keyboard. How will that affect operation with my switch?

The Alphas will operate flawlessly. Raritan's emulation incorporates unique functions to support LK111 or LK461 keyboards running UNIX and OpenVMS.

I have a digital Alpha running UNIX and want to use a standard PS/2 keyboard. How will that affect operation with my switch?

Simply connect a Raritan converter (AUKME) to any Alpha running UNIX, and all computers will operate flawlessly with a standard PS/2 keyboard.

Cabling

Category 5e UTP is standardized. Why can't I simply use any Category 5e UTP cable with Raritan products, instead of Raritan-certified cable?

Because UTP cabling is designed to transmit digital data, cable specifications are optimized for that application. However, because video data is, by its very nature, analog, Raritan's exclusive technology – which enables such high-bandwidth video information to be transmitted over relatively thinly-shielded Category 5e, 6 or 7 UTP cables – requires even stricter tolerances for certain cable properties.

One particular UTP cable characteristic – delay skew – has a large impact on your Raritan system performance. UTP cabling consists of four "twisted pairs" of wire, each carrying one set of data. In order to minimize cross-interference between the pairs, each pair must be twisted at slightly different rates (twists/foot). Over long lengths of cable, however, slight differences in twist rates result in measurably different rates of data transmission among each twisted pair. The arrival time delta is called "delay skew."

How does this affect your Raritan solution? Raritan products send red, green and blue video information each over a different twisted pair; if that information does not arrive at the same time, observed video will be blurry. Raritan's unique algorithms correct for this behavior, but physical limitations create upper limits to the success of any algorithm.

Can I use Category 6 UTP cable?

Yes. Currently only one Category 6 UTP cable product is Raritan-certified for use with Raritan products. Raritan continues to test new Category 6 UTP cabling products as they are released to the market.

Can I use non-certified Category 5e UTP cable?

Yes. But you may not get the same performance as you would with Raritan-certified Category 5e, 6 or 7 UTP cable. Using non-certified Category 5e UTP cable with Raritan products results in degraded video performance, ranging from mildly irritating to unusable.

Non-certified cable may be used acceptably with Raritan products only when the total cable distance between any user console and any connected device is less than 300 feet.

Because cable products certified by Raritan do not cost more than competing cable offerings, Raritan strongly suggests that users utilize Raritan-certified cabling for maximum performance with Raritan product applications.

Can I use plain Category 5 UTP cable, instead of Category 5e UTP?

Yes, However, you may not get the same performance as you would with Raritan-certified Category 5e, 6 or 7 UTP cable. Standard Category 5 UTP cable may not have the necessary characteristics for transmitting high-quality video over long distances.

What UTP cable does Raritan recommend for use with the Paragon UMT?

Raritan certifies the following Category 5e UTP and Category 6 UTP cable products for use with the Paragon UMT.

Category 5e UTP:

Belden DataTwist 350 UTP – #1700A – Solid

Belden DataTwist 350 patch – #1752A – Stranded

Category 6 UTP:

Belden MediaTwist – #1872A – Solid

Use of non-certified cabling can result in video and data degradations that users may find unsatisfactory. The Raritan-certified cable products listed above are widely available and competitively priced.

When using Raritan-certified cable, users can transmit video signals at distances up to 1000 feet (305 m) at 1920 x 1440 @ 60 Hz, and up to 1000 feet (305 m) at 1600 x 1200 @ 75 Hz and 85 Hz.

[Note: Raritan does not have any marketing relationship with Belden, nor does Raritan receive any financial incentive for recommending Belden products.]

What happens if I do not use Raritan-certified cable?

Cable products that are not specifically certified by Raritan will not provide you with maximum performance and may cause your video to look blurry; in particular if the video signal is of high resolution, or if the video signal must be transmitted over long distances. Furthermore, LCD monitors can become unusable. We have seen greater tolerances using the new P2-EUST, but still recommend using the cable described to ensure the highest video quality.

Can I use standard Ethernet (10BASE-T) cable?

No. Standard Ethernet cable does not have the necessary bandwidth characteristics for transmitting high-quality video over long distances.

Hot-Key Function

I don't want to use the "scroll lock" to activate hot-key. What are my options?

The hot-key activator can be easily changed to a variety of different keys. When in hot-key mode, touch the desired new hot-key activator followed by the Enter key.

Trackball Keyboard

Can I use a trackball keyboard?

You can plug any PS/2 keyboard in the keyboard user port of a Raritan KVM switch.

Connecting USB Devices

My computer has USB connectors. Can I connect it to a Raritan KVM switch?

Yes. The P2CIM-AUSB is available for use with servers that have USB connections for mouse and keyboard. If the server requires smart card authentication, use P2CIM-AUSB-C.

P2ZCIMS

What is the resize command? What does it do? Why is it useful?

This command is issued to set the chain size. The chain size is the maximum number of P2ZCIMS allowed in the chain. Smaller chains have better power status reporting. The resize command can also be used to optimize the database memory in Paragon systems. Consult the Specifications section to see how this command is issued. The user must increase the chain size if more P2ZCIMS are added to the chain.

Example: Suppose you have eight new P2ZCIMS and you attach them to the Paragon UMT. The user will see 42 database entries for the chain. This could be a wasteful use of database memory for users who only wish to have a maximum of eight P2ZCIMS on that chain. The resize command can be sent to set the chain to eight P2ZCIMS. Now the user will only see eight database entries for that chain. Note: If more P2ZCIMS need to be added to the chain, the chain will need to be resized.

What is the refresh command? What does it do? Why is it useful?

This command is issued to reset the communication addresses to the factory default. The Master P2ZCIM then reassigns the communication addresses sequentially. The communication address order will be different after using this command. This can also be useful for fixing a problem when all other methods fail. Consult the Specifications section to see how this command is issued.

Example: Suppose a user has a P2ZCIM that appears as Channel 42 in the Paragon User Station Channel view. The user disconnects this P2ZCIM from the chain and wishes to add it to another chain. When looking at the Channel view, the user notices that the P2ZCIM still appears as Channel 42 on the new chain. The user then issues the refresh command so that the P2ZCIMS reorder sequentially.

How can I check the CIM firmware version?

Switch to the CIM. Open up a text window (WordPad, Text Pad, Note Pad, etc.). Press and hold "Left Control." Then press "Num Lock." The firmware version will be printed out. If it is a USB CIM, you will be able to choose the keyboard type. To exit this mode, press "ESC" (Escape key).

My P2ZCIM chain disappeared when I turned off a computer and it reappeared 20 seconds later. What happened?

The Master P2ZCIM may have been turned off. If this is the case, then a new P2ZCIM became the Master and the database had to be rebuilt. This is a normal operation.

I only see some of my P2ZCIMs. What is going on?

This can happen for a variety of reasons. Listed below are some of the common techniques for fixing this issue.

1. Wait a couple of minutes. The Master P2ZCIM may be temporarily confused due to resizing, communication address conflicts, multiple Masters, etc.
2. Make sure that all the P2ZCIMs in the chain have power.
3. Check all the cables.
4. Make sure the terminator is in place.
5. Are there any P2ZCIMs in the chain that do not have communication addresses? P2ZCIMs without communication addresses will beep once every minute. The LED will flash on and off rapidly. If this is the case, check the chain size. Resize if necessary.

If none of these techniques works, try refreshing the P2ZCIM chain.

I can't see all of the P2ZCIM names, but the status seems correct. How can I fix this?

The Master P2ZCIM may have been confused. Usually the chain will fix itself, if the user waits a couple of minutes. If that does not work, issue the refresh command.

It took a while for the P2ZCIM to be reported as off. Why?

Due to the possible occurrence of data collisions, a P2ZCIM status must be checked three times to determine whether or not it is off. This detection proceeds more quickly if the size of the chain is roughly proportional to the number of P2ZCIMs in the chain. Resize the chain to optimize the performance.

I disconnected a complete P2ZCIM chain from the UMT and added it to the tail of another P2ZCIM chain. I was finally able to see all the P2ZCIMs, but it took almost a minute. What happened?

Before connecting the chains, you had one Master per chain. There can be only one Master per chain. When you connected the chain, there were suddenly two Masters in the chain. It took a while for this condition to clear. This is a normal operation.

Keyboard and mouse behavior are sometimes erratic when powering up a computer. Why?

When computers are powered up, P2ZCIM(s) try to obtain communication addresses from the Master P2ZCIM. Using the keyboard and mouse during power-up increases the chance of data collision, thereby increasing the chance of missed keystrokes and erratic mouse behavior. Generally the user will see slow keyboard/mouse performance instead of dropped keyboard and mouse packets. If the Master P2ZCIM loses power, the user may be switched off from the P2ZCIM. We suggest waiting for power-up to be completed before communicating with the P2ZCIMs.

Is there a way to find the Master P2ZCIM in a chain?

Yes. The P2ZCIMs' LED status can be used to detect the CIM states. Please read the LED Status section for more information.

Can Raritan's Z-Series ZU42 CIMs work with P2ZCIMs?

No. P2ZCIMs use a different protocol, which is not compatible with ZU42.

A P2ZCIM is beeping every 30-40 seconds and the LED is blinking very rapidly. Why is this happening?

A P2ZCIM will beep once every minute to notify the user that it did not get a communication address. The user should check to make sure that the number of P2ZCIMs has not exceeded the chain size. If the size is correct, the problem should disappear after a couple of minutes. If not, check again to make sure the chain size is correct. The beeping P2ZCIM will increase the communication address request delay to 40-55 seconds. The data collision introduced by continued communication address requests should not affect keyboard and mouse functionality; however, if many units cannot get communication addresses, keyboard and mouse response may slow down. Beeping P2ZCIMs can also occur if two chains are connected together to make one chain.

The P2ZCIM beeps when it first receives power. Why?

This is a normal operation. The beep notifies the user that the CIM has powered up correctly.

I connected a powered-on P2ZCIM to another chain and now the chain size is wrong. What happened?

The P2ZCIM you added was a Master P2ZCIM. When it was added to the new chain, it became the Master of that chain as well. The added P2ZCIM reset the chain to use its last-known chain size. To prevent this problem, the user should momentarily power off a P2ZCIM before adding it to a new chain. The user can resize the chain to correct this issue.

Enhanced User Station

What are the differences between the older, discontinued Standard User Station (P2-UST) and the Enhanced User Station (P2-EUST)?

The P2-EUST supports video quality at longer distances and higher resolutions than the P2-UST did. When used with automatic P2CIM-Axxx CIMs, the P2-EUST will support automatic skew compensation, based on cable distance and cable types. If desired, automatic skew compensation can be manually overridden. The improved video quality permits the range of video gain settings to go from -15 to +15 for the P2-UST and from 0 to +6 for the P2-EUST.

What is skew compensation and why is it necessary?

Red, green and blue signals have different skews (time delays) when traveling the distance from the target server to the monitor connected to a user station, due to differences in cable distance and type. Skew compensation resynchronizes the red, green and blue signals by adding a time delay on the signal that arrives at the user station earlier than the others.

When I use the P2-EUST, how can I adjust the video quality to change the skew compensation and gain settings?

Skew compensation is automatic on the P2-EUST, using the automatic P2CIM-Axxx CIMs. This automatically adjusts for signal losses based on cable distance and type. Manual skew compensation can, however, override the P2-EUST's automatic adjustment, and will continue to be provided with older CIMs.

To manually set skew compensation, connect to the channel you wish to adjust. Press the hot key to activate the Selection Menu and click on the [*] or [/] keys on your numeric keypad to select red, green or blue skew delay. Then click on the [+] or [-] keys on your numeric keypad. The skew compensation range is 0 to 31.

To set video gain, see the adjustment value appearing in the message banner at the bottom of the screen; click the [+] and/or [-] keys to adjust video gain from 0 to +6 (or from -15 to +15 for the P2-UST) until you are satisfied with the video quality.

What video resolution and distances can the P2-EUST support?

Video quality is often subjective and depends on the cable and monitor being used, the cable distances and the resolution that a user has set. The P2-EUST provides video resolutions greater than 1920 x 1440 at distances over 1000 feet (305 m) at refresh rates of 60 Hz, and 1600 x 1200 at distances up to 1000 feet (305 m) at refresh rates of 75 Hz and 85 Hz.