

Technical Bulletin and FAQs for Paragon II ZCIMS September, 2006

The following contains important technical information as it relates to the Paragon II ZCIMS.

Important Notes and Limitations:

- For the P2-UMT1664 and P2-UMT832 Paragon II switches **ONLY** (not the P2-UMT442 and P2-UMT242), when powered down and connected to the P2ZCIM-PS2, P2ZCIM-SUN or P2ZCIM-USB, there may be electrical leakage from the switch that can cause the P2ZCIM names to get duplicated or corrupted within the database. For those customers experiencing this problem, all P2ZCIMS must have the latest firmware.
- For those customers not experiencing the above problem, there can be a mix of old and new firmware but **NOT** on the **same P2ZCIM chain**.
- If you have older versions of P2ZCIMS (i.e., P2ZCIM-PS2 - Z2PS2-0A3L, P2ZCIM-SUN - Z2SUN-0A3L, P2ZCIM-USB - Z2USB-0A4K) and are experiencing the problems as described above, please update the P2ZCIM firmware versions. The latest versions are P2ZCIM-PS2 – Z2PS2-0B8, P2ZCIM-SUN – Z2SUN-0B9, P2ZCIM-USB – Z2USB-0B8. A customer can identify the firmware on their older P2ZCIMS by two methods:
 - The back of the P2ZCIM will have a label that lists the firmware version (F/W: Z2PS2-0A3I). An example of this is shown below:



- P2ZCIMS with the updated firmware (includes the changes for this release) will look something like this:



- In addition, there is a command "Ctrl NumLock" that can be run using a text editor (i.e., WordPad) that will print out the firmware version.
- The Resize command used to set the P2ZCIM chain size and to optimize the database memory in Paragon systems is not supported in this release.
- P2ZCIMS are not supported in PCCI configurations.

- P2ZCIMs are an excellent but cheaper solution best suited in static environments. Sales and resellers should stay away from selling P2ZCIMs into Dynamic environments which consist of frequent:
 - Power cycling of servers
 - Switch resets while the Paragon database is still being stabilized
 - P2ZCIM addition/deletion or movement of P2ZCIMs from chains
- Rules to Follow
 - Ensure that the latest compatible firmware for P2ZCIMs and corresponding Paragon system is being used
 - When P2ZCIMs are used, at least one out of 20 P2ZCIMs needs to be powered
- Recommendations and Hints
 - Ensure that the Cat5 cable is correctly deployed and test for proper connectivity
 - Do not communicate with P2ZCIMs during Server boot-up
 - P2ZCIM configurations take longer than UMT configurations to ensure proper communication
 - Ensure that correct Paragon powering up sequence is followed.
- We recommend that the customer with older P2ZCIMs contact Raritan Technical Support for further assistance at 1-800-724-8090.

Frequently Asked Questions

General Questions

QUESTION	ANSWER
What are Paragon II ZCIMs (P2ZCIMS)?	P2ZCIMs are used in conjunction with Paragon II and Paragon I HW3 (running Paragon II code) and supports PS2, USB and SUN configurations. For a single user, up to 42 P2ZCIMs using standard based UTP Cat5 cable is allowed. It supports up to 42 directly connected, multi-platform servers located up to 1000' feet away from the user.
Which types/models of P2ZCIMs are available?	<p>P2ZCIMs are available in three basic models:</p> <ul style="list-style-type: none"> • P2ZCIM-PS2 - for PS2 • P2ZCIM-USB - has a toggle switch to allow for USB and SUN-USB environments • P2ZCIM-SUN – for SUN <p>In addition, three “long cable” models are also available. The “L” models feature longer cables (36”) for use in server racks with cable management arms:</p> <ul style="list-style-type: none"> • P2ZCIM-PS2L • P2ZCIM-USBL • P2ZCIM-SUNL
How do P2ZCIMs work?	P2ZCIMs, in conjunction with Paragon II, allows for 42 ZCIMs to connect in a ‘daisy-chain’ to your server's keyboard, video and mouse ports. These signals are compressed and sent securely over a UTP Cat5 cable. Using the Paragon II User Station and UMT, an administrator has the ability to grow the chain and select between target server consoles.
How are P2ZCIMs designed to grow with a business?	P2ZCIMs can be purchased as easy starter kits as well as individually. A system administrator can purchase only the required amount of modules necessary for their immediate needs.
How easy is it to add servers with P2ZCIMs?	It's simply a matter of connecting additional P2ZCIMs to the additional server's keyboard, video and mouse port and connecting it into the cable daisy chain.
What interfaces does the P2ZCIMs support?	P2ZCIMs provide access to multiple platforms including Sun, USB and PS2.

Are P2ZCIMs “plug and play”?	PS2 and SUN keyboards and mice are not “plug and play”. If you are adding a P2ZCIM-PS2 and P2ZCIM-SUN, it is necessary to first have the computer powered off. This is due to the way computer’s support PS2 devices. USB keyboards and mice are “plug and play” and do not require the computer to be powered off.
Is there any software requirement for PCs connected to a Paragon II switch?	No. The Raritan KVM switch does not require any software to be loaded or operated, it is 100% software independent.
How can users be sure of security of access and control?	Using the Paragon II user admin function, a user can assign access control password to the P2ZCIM making it highly secure. It acts like another tiered device within the network.

Installations/Commands

QUESTION	ANSWER
How can I find out the firmware version of my P2ZCIM?	Open a text editor window such as word pad. Hold the Left Ctrl key and press the NumLock key. The current firmware version will be printed out. The P2Z USB CIM will also print out the current USB keyboard settings. Press the ESC key to exit this mode.
Is there a way to upgrade P2ZCIMs?	P2ZCIMs can be upgraded using a Master Console User Station (MZUST). We recommend talking to tech support for further assistance (1-800-724-8090).
Do P2ZCIM chains require a RJ-45 terminator?	Yes – a RJ-45 terminator (TER-ZCIM) is required at the end of each P2ZCIM chain.
What is the Resize Command? What does it do? Why is it useful?	<i>This command is currently not supported.</i> This command is issued to set the Chain Size. The Chain size is the maximum number of CIMs 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. The size limit is 42. Users can set the chain size from the Paragon User Station, Channel Configuration submenu by saving Device Name: SetPZSize-XX where XX is 01-42. The user must increase the chain size if more CIMs are added to the chain. <i>Example: Suppose you have 8 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 8 P2ZCIMs on that chain. The resize command can be sent to set the chain to 8 CIMs. Now the user will only see 8 database entries for that chain. Note: If more ZCIMs need to be added to the chain, the chain will need to be resized.</i>



QUESTION	ANSWER
<p>What is the Refresh Command? What does it do? Why is it useful?</p>	<p>This is the command, which is issued to reset the Communication Addresses to the factory default. The Master CIM will then re-assign 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. See the Specifications section to see how this command is issued.</p> <p><i>Example: Suppose a user has a P2ZCIM which appears as Channel 42 in the Paragon User Station Channel view. The user disconnects this CIM from the chain and wishes to add it to another chain. When looking at the Channel view, the user notices that the CIM is appearing as Channel 42 on the new chain. The user can issue the Refresh command so that the CIMs reorder sequentially.</i></p>
<p>I took one P2ZCIM and added it to another chain. It now appears towards the end of the list. Why doesn't it add itself to the first available channel?</p>	<p>P2ZCIMs always request to use their last used communication address. The Master will grant this as long as that communication address is available. The communication addresses in a chain can be reset by using the Refresh command.</p>
<p>I connected a powered-on P2ZCIM to another chain and now the chain size is wrong. What happened?</p>	<p>The P2ZCIM you added was a Master CIM. When it was added to the new chain, it became the Master of that chain as well. The added CIM resets the chain to use its' last known chain size. The user should momentarily power off a CIM before adding it to a new chain to prevent this problem.</p>
<p>Keyboard and Mouse is sometimes erratic when powering up a computer. Why?</p>	<p>We suggest that the user does not communicate with the CIMs when powering up computers. This is because the powered up CIM(s) are trying to obtain communication addresses from the Master CIM. This increases the chance of data collision. The potential for missed keystrokes and erratic mouse behavior increases as the rate of data collision increases. Generally the user will see slow keyboard/mouse performance instead of dropped keyboard and mouse packets. If the Master CIM loses power, the user may be switched off from the CIM.</p>
<p>How do I connect a PC with a DB9 serial mouse port to a Paragon II switch?</p>	<p>The CCPdd cable comes with an adapter to convert the 6-pin mouse connection to 9 pin. The conversion of serial to PS/2 mouse is handled by the firmware in the KVM switch.</p>

Cabling

QUESTION	ANSWER
<p>Can I use plain Category 5 UTP cable or non-certified Category 5e UTP cable, instead of Category 5e UTP?</p>	<p>Yes; however, you may not get the same performance as you would with Raritan certified Category 5e UTP or Category 6 UTP, or Category 7 UTP cables. Standard Category 5 UTP cable may not have the necessary characteristics for transmitting high-quality video over long distances</p>
<p>Category 5e UTP is standardized. Why can't I simply use any Category 5e UTP cable with Raritan products?</p>	<p>Because the intended application of UTP cabling is the transmission of 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 5 UTP and Category 6 UTP cables - requires even stricter tolerances for certain cable properties.</p> <p>One particular UTP cable characteristic has a large impact on how well your Raritan system performs: delay skew. 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 results in measurably different rates of data transmission among each twisted pair. The arrival time delta is called "delay skew".</p> <p>How does this affect your Raritan solution? Raritan products sends 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. The TIA/EIA specification for delay skew tolerance is 45 nanoseconds for Category 5 UTP and Category 5e UTP cable. However, in analog video applications, a delay skew longer than 15 nanoseconds usually results in inadequate video performance at high resolutions (XGA and higher).</p> <p>Raritan-certified cable products happen to surpass the acceptable tolerances of the TIA/EIA's specification for delay skew, and hence are best suited for connecting Raritan components.</p>
<p>Can I use standard Ethernet (10BASE-T) cable?</p>	<p>No - Standard Ethernet cable does not have the necessary bandwidth characteristics for transmitting high-quality video over long distances.</p>

Compatibility

QUESTION	ANSWER
Can P2ZCIMs be used with Paragon I UMTs?	Yes – but with the following limitations: Only Paragon I, HW III with Paragon II firmware
I have a serially controlled device (i.e. Unix server, hub). Can I use my Paragon II switch to access and control this device?	Yes. Raritan's ASCII Terminal Converter (AUATC) adapter will convert the RS-232 connection to PS/2 and VGA video. Connect the AUATC to your serially controlled device, and then connect to your Paragon II switch with CCPdd or UTP Cable for access up to 650 feet.
I have Suns and/or Macs in addition to PCs. Can I control them all from a single keyboard, mouse and monitor?	Yes. The P2ZCIM-USB CIM handles SUN, Macintosh and PC (Windows including Linux) with USB configurations. The P2ZCIM-PS2 handles systems that require PS2 configurations.
How do I configure the P2ZCIM USB to work with either my Sun USB or PC USB machines?	There is a toggle switch on the P2ZCIM-USB CIM. This switch can be changed to support either SUN USB machines or PC USB machines.
Can P2ZCIMs be mixed with UKVMSPDs on a chain?	No – we can not mix P2ZCIMs with the Paragon I version of ZCIMs on a chain.
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 keyboard running UNIX and OpenVMS.
Can ZU42 CIMs work with P2ZCIMs?	No. P2ZCIMs use a different protocol, which is not compatible with ZU42.
Can P2ZCIMs be used with ZU42 USTS?	No. P2ZCIMs use a different protocol, which is not compatible with ZU42.
Can I use a trackball keyboard?	You can plug any PS/2 keyboard in the keyboard user port of the Paragon II switch.

QUESTION	ANSWER
Can I use a flat screen monitor?	The monitor needs to be VGA, with an HD15 connector, and support the resolution and refresh rate of the video settings on the target servers. Make sure the LCD monitor will work when connected directly to all the PCs in a stand-alone mode.
Can I use a touch-screen monitor with my Paragon II switch?	No. Most touch-screen monitors use a serial connection to interact with the PC. Currently, Paragon II switches do not support the use of this style monitor.

Usability

QUESTION	ANSWER
How can I get access to more servers if I have already connected computers to all my Paragon II switch channels?	Cascade any KVM switch (except SwitchMan) to expand the capacity.
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 either "num lock" or "caps lock". When in hot-key mode, touch the desired new hot-key activator followed by the enter key.
Is there a way to find the Master CIM in a chain?	Yes. The CIMs LED status can be used to detect the CIMs states. If the LED is blinking on and off, but at a regulated, moderate speed (i.e., every half second), the P2ZCIM is acting as Master of the chain. Please read the LED Status section of the user manual for more information.

Technical Issues

QUESTION	ANSWER
My P2ZCIM chain disappeared when I turned off a computer and it reappeared 20 seconds later. What happened?	The Master CIM may have been turned off. If this is the case then a new CIM became the Master and the database had to be rebuilt. This is normal operation.

QUESTION	ANSWER
<p>I only see some of my P2ZCIMs. What is going on?</p>	<p>This can happen for a variety of reasons. Listed below are some of the common techniques for fixing this issue.</p> <ol style="list-style-type: none"> 1. Wait a couple of minutes. The Master CIM may need some time to react due to Resizing, Communication Address conflicts, Multiple Masters, etc... 2. Make sure that all the CIMs in the chain have power. 3. Check all the cables. 4. Make sure the terminator is in place. 5. Are there any CIMs in the chain, which do not have Communication Addresses? CIMs 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. <p>If none of these techniques work, try refreshing the ZCIM chain.</p>
<p>I can't see all of the CIM names, but the status seems correct. How can I fix this?</p>	<p>If the user waits a couple of minutes, usually the chain will fix itself. If that does not work, issue the Refresh command.</p>
<p>It took awhile for the P2ZCIM to be reported as off. Why?</p>	<p>Due to the occurrence of Data Collision, a CIM status must be checked 3 times to determine whether or not it is off. The detection can be quicker if the size of the chain is roughly proportional to the number of CIMs in the chain.</p>
<p>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 CIMs but it took almost a minute. What happened?</p>	<p>Prior to connecting the chains, you had one Master per chain. There only can be one Master per chain. When you connected the chain, there were suddenly 2 Masters in the chain. It took a while for this condition to clear. This is normal operation.</p>

QUESTION	ANSWER
<p>I have a P2ZCIM that is beeping every 30-40 seconds. Also, I noticed that the LED is blinking very rapidly. Why is this happening?</p>	<p>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 CIMs 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 CIM 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 there are many units which can not get Communication Addresses it might cause slower keyboard and mouse response. Beeping CIMs can also occur if the 2 chains are connected together to make one chain.</p>
<p>The P2ZCIM beeps when it first receives power. Why?</p>	<p>This is normal operation. The beep notifies the user that the P2ZCIM has powered up correctly.</p>
<p>My mouse seems to be erratic and jumps around opening windows. What's happening?</p>	<p>There is a possibility that the proper mouse driver is not loaded or the mouse is not recognized. Check to make sure the mouse driver is correct for the mouse type you are using.</p>