

Topic: Incorrect USB Power Settings Cause C/Ports to Lose Connectivity
Component(s) Affected: R1200 Blades, C/Ports, Disk Images
Date: November 12, 2004

OVERVIEW / ENVIRONMENT

Incorrect USB Power Management settings can cause C/Ports connected to R1200 and R2100 Blades to become unresponsive to any input at the C/Port.

DETAILED DESCRIPTION

This Tech Bulletin addresses a number of symptoms with interrelated causes and effects. The most common symptom is that C/Ports lose connectivity in unpredictable ways, connectivity cannot be restored at the C/Port, and troubleshooting the problems isn't always successful or repeatable.

In almost all cases, these problem are symptomatic of improper USB Power Management settings in the System Control Panel. The actual causes run deeper.

Quick-Fix Resolution:

1. Reboot the Blade locally (at the Blade).
2. From the System Control Panel, disable Power Management for all USB Root Hubs listed. Uncheck the "Allow the computer to turn off this device" box for all USB Root Hubs listed. See Figure 1.
3. Reboot the Blade again.

The user should regain control at the C/Port, at least temporarily — until the next hardware reconfiguration or C/Port cable hot-swap.

Note: This may not resolve the underlying causes of the problem. It only gets the user back online.

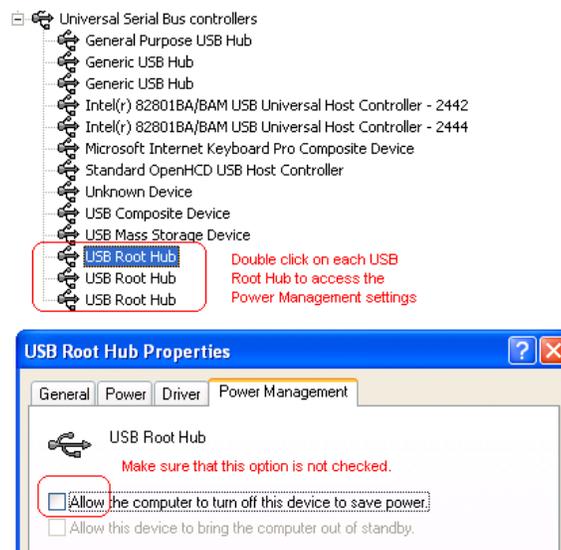


Figure 1 Device Manager Window, Hardware Tab, Viewed by Type

A number of factors contribute to this problem. First and most significantly, firmware inside the C/Port recognizes but does not always accurately report the existence of a USB device attached to the Blade, even though the C/Port is itself a USB device. So when the Blade reboots, it polls the USB ports and locates the C/Port as a USB device, and configures it appropriately. If other USB devices such as a keyboard, mouse, or mass storage device (assuming mass storage *has* been activated on the host Blade for the connected C/Port) are connected to the C/Port at reboot, they are recognized as well. Notably, PS/2 input devices are recognized as a part of the C/Port, and will properly wake up the Blade if they were plugged in at startup.

However, if users or administrators hot-swap cables on the C/Port, including using a Switching Backpack to reassign either the Blade or the C/Port, incorrect USB power settings can cause the C/Port to become inaccessible. If the USB Root Hubs are set to “save power” (see Figure 1), the system may recognize the momentary disconnection of any USB device to mean that all USB devices have been disconnected, including the C/Port itself. Thus, all control at the C/Port can be lost completely until the system is rebooted locally.

The likeliest culprit among the USB Root Hubs is the third hub in the list shown in Figure 1. This list typically has either three or four hubs. The third hub *must* remain unchecked. This hub can become checked without notice when one of the following situations occurs:

- A hyperthreaded drive image has been installed on a system with a non-hyperthreaded processor.
- Drive image defaults have been incorrectly set for the processor.
- Unknown USB or KVM hardware has been hot-swapped at the C/Port after Windows has booted. Windows will not recognize new KVM hardware until restart, and may not recognize new USB hardware unless the device works with one of the default USB drivers in Windows.

ClearCube drive images are specially prepared to prevent these problems or to mitigate their effects. Drive images are configuration-specific, and while many organizations have significant reasons to develop custom configurations and images, changing some settings may cause unpredictable results.

RESOLUTION

Follow the procedure on the first page of this Technical Bulletin to reset USB power-saving to “off” each time this problem re-occurs until your drive image has been corrected.

Use the correct drive image for your Blade. Do one of the following:

- Use ClearCube-supplied drive images.
- Use the correct image.
- Do not apply a hyperthreaded image on a Blade that has a non-hyperthreaded processor (e.g., a Celeron processor).
- If you develop your own drive images, ensure that you correctly specify hyperthreading in the images you create. Work with your ClearCube systems engineer and with ClearCube technical support to ensure that your custom configurations use valid, tested settings.

Configure your hardware and system correctly.

- Ensure that power saving for the third USB Root Hub is always turned OFF.
- Ensure that the correct drivers are loaded on your system, and test drivers for devices that cannot use the default Windows drivers. ClearCube cannot test every driver written for every peripheral device available for Windows systems.
- Be aware that your Blade may not reliably recognize a new and previously unknown USB device that is hot-plugged into a C/Port after Windows completes booting. Should this occur, the most practical resolution is to reboot the Blade locally. This issue is documented in Tech Bulletin SE0053CP, *Hot-Plugging the Digital Link after Booting Windows*.
- Do not attach a USB device at the Blade to circumvent this behavior. PS/2 mice and keyboards will be recognized if they were present at the last reboot, but other peripheral USB devices at the C/Port may be disabled. This issue is described in Tech Bulletin SE0052CP, *USB Devices on Blade Front Panel Disables C/Port USB Storage*.

A solution to correct this issue for C/Ports already in service is not anticipated. Resolution of this issue has been added to the feature set for future C/Ports. Windows XP Service Pack 2 resolves part of this issue by polling hardware at startup to prevent incorrectly assigning hyperthreading status.

Related Tech Bulletins:

- CC0004UK, *Setting The Power Management Tab For USB In Windows XP*
- MK0022CP, *Unplugging USB Devices from C/Ports When Using MS Media Player*
- MK0031CP, *PS/2 Keyboard Hot Function Keys*
- SE0041JS, *Universal C/Port (UCP), PS/2 KVM Switches*
- SE0052CP, *USB Devices on Blade Front Panel Disables C/Port USB Storage*
- SE0053CP, *Hot-Plugging Digital Link after Booting Windows*
- SE0072CP, *S1 and S3 Standby Modes on R1200 with Windows XP*

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