

xSeries 366
Service and Support Considerations

Rev 2.7.1

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IBM CONFIDENTIAL

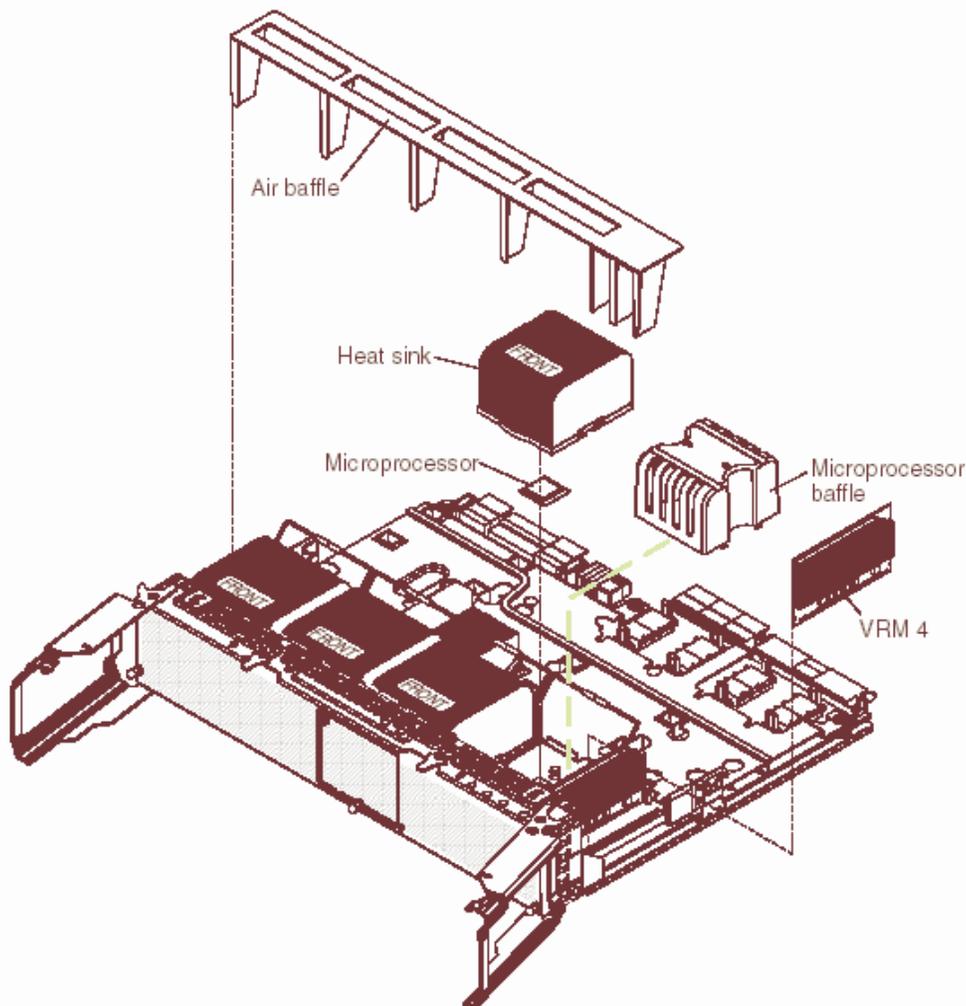
Overview

This document is intended to assist the Service and Support teams in some potential problems they may likely encounter on the x366.

I. Mechanical Concerns

A. *Microprocessor tray removal*

When removing the microprocessor tray through the front of the server, the memory cards or planar will be damaged unless the memory cards are removed first. Please note that all Fans must be removed as well before CPU tray can be removed. Also during removal of the tray, the microprocessor heat sinks may hit or interfere with the top of the chassis making removal difficult. To help alleviate the heat sink chassis interference, lift up on the top of the chassis while removing the tray. A recommended lift point is via the drive bay. Please see <http://www-307.ibm.com/pc/support/site.wss/migr-60199.html> for additional information on tray removal.



B. SAS Hard Disk Backplane

Connectors on both the SAS hard disk drives and SAS backplane can become damaged if the SAS backplane is not seated properly which can keep the Hard Disk Drives from aligning properly on the backplane. Insure the SAS backplane is fully seated properly before installing the hard disks. Three tabs on the backplane assembly must fully seat into appropriate slots in the chassis.

C. x366 Capacitors: Shearing Off Elpida Memory Dimms

Warning:

The system may have intermittent memory failures if the DIMM decoupling capacitors are broken. PC3200 DIMMs have a characteristic physical design where decoupling capacitors are placed near the connector edge of the DIMM. The placement places the capacitors in a position where the decoupling capacitors can easily be sheared off.

This is not a problem when one is careful to place the DIMM in the connector. A problem may arise if the unwary hand places the DIMM in between the connectors. The capacitors are small and will easily break off if the DIMM is placed in between the connectors.

Correct Action:

DIMMs must be carefully placed in the connector by aligning the DIMMs inside the connector card guide and aligning the card so the connector key and the connector match. Please see Memory Handling Guide at http://www.samsung.com/Products/Semiconductor/Support/Label_CodeInfo/memory_module_handling_guide.pdf. The guide on Samsung's website applies to all memory manufacturers and is the method approved by IBM.

DDR2 memory DIMMs cannot be handled in the same manner as the prior generation DDR1 memory DIMMs. DDR1 DIMMs are more tolerant to mishandling. Improper DDR2 DIMM handling can result in mechanical damage to the components on the DIMMs such as cracked solder joints and solder joint separation.

D. Unable to disengage left front Bezel Cover Latch

When harddrives are installed in the two left most slots, it may be difficult and/or impossible to press the left front bezel latch to remove the front cover. The solution is to power the machine off and remove the left two drives, then remove bezel by pressing the left and right bezel release buttons.

E. Power protection cap falls off

Under normal conditions, the protection cap will prevent inadvertent actuation of the power switch. There have been reports where the protection caps will not remain attached to the bezel. The power button protection cap is now being heat-stake attached. Please contact the IBM support to obtain a replacement.

F. Force Power On jumper on I/O board s labeled incorrectly in PD Guide

The Force Power On jumper on the I/O board is labeled incorrectly in the PD Guide. The layout in the PD Guide show pins 1 2 3 from left to right but actually they are 3 2 1. Pins 1 and 2 should be jumpered to force power on.

Please note that as of right now, the Force Power On Jumper does not by-pass the front panel switch. Once the jumper is moved, the fans will spin up and the server will appear to power on and hang at CP 0b. with nothing appearing on the screen. The CR11 led on the PCI-X board will also be out. You must press the front panel power button in order for the server to fully power on. Once the button is depressed, the CP codes will scroll through as normal, the PCI-X CR11 led will come on solid, and shortly after the server will post text on the screen as normal.

G. Bent Pins on memory board and possible F2 Checkpoint hang

If the server hangs during post at checkpoint F2 listed on Super I/O card, then check the memory card/s for possible bent pins. Replace the card if found to have bent pins.

H. USB Floppy drive does not ship with the server

A floppy drive is not included with this server. If there are updates that can only be done through bootable diskette, then the customer must provide his own USB floppy drive.

I. Problems Accessing CDROM

If a customer is having problems accessing CDROM's during normal operation, then have them update the CPLD code to version 1.01. CPLD code can be obtained at <http://www-307.ibm.com/pc/support/site.wss/MIGR-60630.html> .

II. Lightpath

A. System Information Light comes on when BMC System Event Log Full

The baseboard management controller (BMC) system event log (SEL) can have a tendency to fill up quickly with many informational type messages. Once the BMC log is 70% full (approx 358 entries), the system bang light is illuminated. In environments where A/C power is cycled often, the tendency for to log to fill quickly is particularly a problem. Flashing the BMC firmware will also add many informational type messages to the SEL.

To clear the Bang Light for a full SEL, Restart the server and press F1 when prompted to start the Configuration/Setup Utility program.

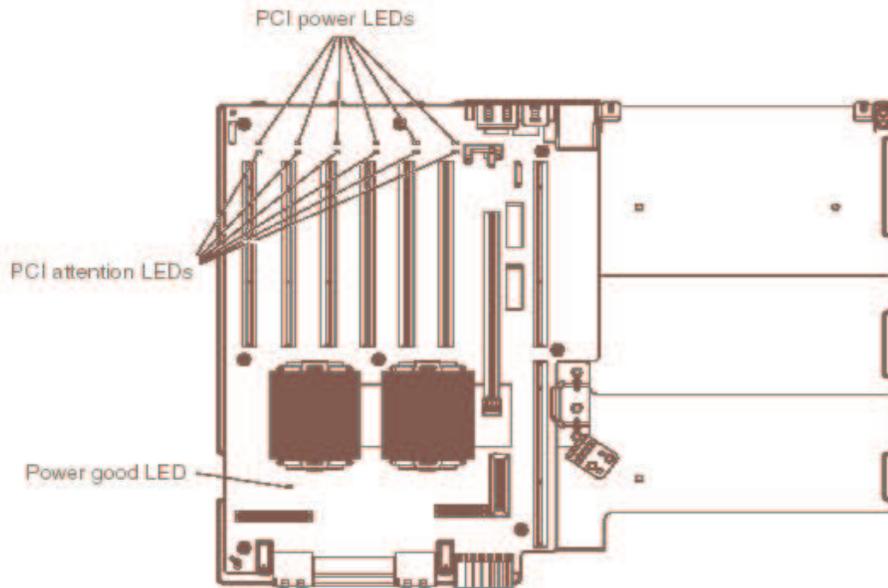
- a. Select **Advanced Setup**;
- b. Select **Baseboard management controller (BMC) settings**;
- c. Select **BMC System Event Log**
- d. Select **Clear error logs** to clear the BMC system event log.

They can also be cleared online using the SMBridge command line tools. Please refer to <http://www-307.ibm.com/pc/support/site.wss/MIGR-57729.html> for additional information on SMBridge.

B. PCI slot Attention and Power LED's reversed

In other systems, when viewing the PCI slots from the rear of the system, a PCI error condition can be seen because the amber "attention" LED is light-piped to the rear of the system. On the x366 however, the PCI slot Attention and Power LED's are reversed so the green "power" LED is seen on any populated slot when the system is powered on. To see whether there is a PCI error, first check the LightPath panel. If the "PCI" LED is lit, then remove the top cover and view the individual slot Attention LED's to determine which slot is affected.

The following illustration shows the LEDs on the PCI-X board.



C. LED indicators for a faulty VRM

For the pluggable VRMs, initial BMC firmware levels will illuminate the VRM, CPU and PCI board LEDs during a VRM fault. Newer code versions will illuminate only the VRM and CPU. Regardless of the BMC firmware level, sensor circuitry is unable to tell if a VRM fault is the result of a CPU or VRM failure. Since VRMs are less expensive, a VRM should be replaced, prior to replacing the CPU.

Add the level of BMC code that has the fix.

SP LED blinks yellow in normal operation or good condition.

D. Dim LED's on front panel indicator:

Power off the system, remove the white flex Op Panel cable from the I/O board, and inspect the metal contact for damage. If the metal contacts are lifted from the cable substrate, or if there are signs of the metal being scraped, the cable should be replaced. The plastic contact separators on the I/O board connector (where the flex cable plugs in) are sharp and can scrape the metal contacts on either end of the cable when the flex cable is inserted. Please see <http://www-307.ibm.com/pc/support/site.wss/MIGR-60141.html> for further information.

In addition, this symptom may result from a blown fuse on the IO Adapter, often as a result of problems with the flex cable mentioned above.

E. Disabling onboard Broadcom Nics result in Information Light coming on:

The System Info (!) LED on the Operator Information Panel & Log LED on the Lightpath Panel will come on at POST and stay on if the on-board NIC is disabled in BIOS Setup. This is not a hardware problem. The "Planar/PCI Device is disabled or not responding" message will show in the System event Log (SEL). This message is the cause of the LED's coming on. In the upcoming BIOS release this message will be removed. If you re-enable the on-board NIC, or clear the log, the System Info (!) & Log LEDs should go out if your logs are less than 70% full. What actually happens is the LEDs stay lit until you AC Power Cycle the system.

III. Power Supply Considerations

A single x366 power supply is rated a 1300 Watts when used with a 220 V ac source, and is capable of powering a fully loaded server without redundancy. With 110 V ac, this power rating falls to 650 Watts for the same single power supply.

A. System configuration

A single 110V ac power supply can support a maximum configuration of 1 microprocessor, 2 PCI-X adapters, 3 hard disk drives, and 4 DIMMs. If you exceed this configuration you must either install a second power supply or use 220V ac input.

If two power supplies are installed on 110V, the server will not support a full configuration (700-800W) with redundancy. 220V must be used in order to maintain full redundancy with a full configuration.

B. Fuel Gauge

The NONRED LED will be illuminated when the server is operating with non-redundant power. If a power supply or its ac power source fails, the system will move to an over spec state.

The Over spec LED will be illuminated when there is insufficient power to power the system. When in an over spec state, an optional power supply can be added if only one power supply is installed. Another alternative to fixing the over spec condition is to use a 220V ac input source.

C. Power Supply Failure and Replacement

It is advisable to check the System Event Log (SEL) for other error conditions prior to replacing a suspected bad power supply. As an example, a shorted circuit board would likely show improper voltage levels in the SEL due to current limiting circuit protection.

IV. Machine Will Not Power On

If the X366 system will not power up, please check for the following in order.

A. If an RSA2 Slimline option was just installed, System may be temporarily hung. Allow system at least 15 minutes to complete POST if a new RSA2 Slimline has just been installed. Reason: the default option firmware results in a 10-12 minute temporary hang with x366 BIOS. If the system eventually completes POST, flash the BIOS and BMC code to the latest level. The new BIOS/BMC reduces the 15 minute wait at POST. Then flash update the RSA2 Slimline. See <http://www-307.ibm.com/pc/support/site.wss/MIGR-59095.html> for additional information.

B. Power off the system, remove the white flex Op Panel cable from the I/O board, and inspect the metal contact for damage. If the metal contacts are lifted from the cable substrate, or if there are signs of the metal being scraped, the cable should be replaced. The plastic contact separators on the I/O board connector (where the flex cable plugs in) are sharp and can scrape the metal contacts on either end of the cable when the flex cable is inserted. Another symptom of a defective Flex Op cable would be dim leds on the front panel display of the server. Please see <http://www-307.ibm.com/pc/support/site.wss/MIGR-60141.html> for further information.

C. Over heated inductors at these locations L14, L17, L28, L29, and L32 on the PCI-X board can cause power faults which will prevent the server from powering on. Please see ECA064 for further information

V. RSA2 and BMC Related Issues and Errors

A. SMBridge and Syscon Utilities

1. The SMBridge utility and instructions on how to use it can be obtained via the web here <http://www-307.ibm.com/pc/support/site.wss/MIGR-57729.html> . Use this to pull BMC data remotely. The default IP of the BMC is 10.1.1.97, Subnet 255.255.255.0. The IP can be changed in F1 is required.
2. Syscon is another utility available to pull BMC data that differs slightly from SMBridge. Use the Same BMC IP to retrieve the logs. Please contact your regional IBM Support for this utility if needed.
3. Please contact IBM Support to have the BMC data analyzed.

B. RSA Configuration Settings and PCI slot information disappears in bios

If a customer states they can no longer see RSA configuration or PCI slot information under Advanced Settings in F1, have them update their BMC code to 1.07 or later and bios level 1.03 or later.

C. RSA does not communicate with BMC immediately on AC power Cycle

After an AC power cycle (power removed and reapplied to the server), the RSA does not log events from the BMC for first 2 minutes. HOWEVER, if you wait 2- 2 ½ minutes before pressing power, the RSA WILL record BMC events during the power up sequence. If PD is being done and you cannot boot the machine, please wait two minutes before pressing the power button and then pull BMC and RSA logs.

D. Cannot Change RSA2 IP in Bios

On certain occasions after an RSA 2 Slimline adapter is installed, you will not be able to change the IP address, Subnet, or Gateway for the card from 4.9.1.1 in F1. This error condition is a result of BMC to RSA communication failure. Flashing the RSA to the correct x366 RSA code will correct the problem.

Ignoring the settings in F1, use another machine and crossover cable to the RSA and use the following IP to access the RSA via web interface:

Default RSA2 IP: 192.168.70.125

Once logged in, flash the RSA to current firmware to correct the error.

E. DHCP enabled by default on RSA2

The default network setting on an RSA2 Slimline adapter is DHCP first, then Static. There will be a 3-4 minute delay period in network access to the card each time the card is restarted. It is during this period that the RSA will be looking for an IP from a DHCP server. If it is unable to obtain a valid IP, it will revert to the default static IP and will once again be accessible from the network. It is recommended to set to Static IP if the card is not using DHCP.

F. 1602 Communication failure and/or long POST after RSA2 Installation:

If an RSA2 Slimline option was just installed, System may be temporarily hung on POST. Allow system at least 15 minutes to complete POST if a new RSA2 Slimline has just been installed. Reason: the default option firmware results in a 10-12 minute temporary hang with x366 BIOS. If the system eventually completes POST, flash the

BIOS and BMC code to the latest level. The new BIOS/BMC reduces the 15 minute wait at POST. Then flash update the RSA2 Slimline. See <http://www-307.ibm.com/pc/support/site.wss/MIGR-59095.html> for additional information. Additional symptoms may include a hang at checkpoint c7 and/or a 1602 communications error on the monitor.

G. Flashing RSA and BMC

- RSAII can be updated remotely (via web interface. Default IP address 192.168.70.125, subnet 255.255.255.0) or through Windows using Wflash or Linux using Lflash.
- BMC is a separate update done via diskette or Update Express CD.

H. Error in Logs: “Redundant PCI Bridge link failed”

If this message is seen in the hardware logs, please check the cpu card for any possible bent pins. If unable to correct the bent pin, then replace the cpu card.

I. Error in logs: “Machine check asserted – SPINT.Hurricane”

Symptom: A false SPINT could occur in the hardware event log.

The initial x366 systems that shipped are missing one rework that could allow false SPINTs to occur. If the system has all of the following symptoms, then the CPU card should be replaced.

- * CPU Card PN = 13M8079
- * BMC event log indicates that a Machine check occurred
- * SPINT VERSION 2 DUMP:

First Fire	01
Machine Check Capture register	08C108 = 00000000 00010000

Action: Replace CPU Card with Card P/N 13M8092

J. BMC log fills up rapidly

The LOG light path LED lights when the BMC log is 70% full, approximately 370 entries.

Depending on the system configuration, each A/C power cycle results in about 100-150 entries created in the log.

Warm boots or Ctrl-Alt-Del results in only 4-7 entries.

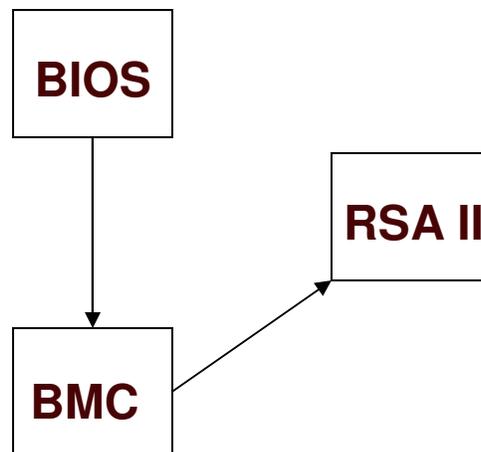
During initial setup or extensive Problem Determination, the log can fill rapidly because A/C power cycles are common when installing boards, CPU's, memory, etc.

Unlike the RSA log which wraps new entries, no further entries can be created in the BMC log when it is full with 512 entries..

To insure there is sufficient space for future events, Servicicers should clear the BMC log just prior to leaving the call.

Please contact Support for instructions on how to clear the BMC logs and refer to internal Retain Tip **H026578**.

K. Below is a diagram of the boot order communication between CPU, BMC, and RSA2



VI. SAS and ServeRAID 8i Related Issues

A. ServeRAID logs can only be pulled from OS ServeRAID Manager

ServeRAID logs can ONLY be pulled from ServeRAID Manager in the operating system with ServeRAID Manager Agent running. If the Agent is not running, logs cannot be pulled. Unlike previous ServeRAID adapters, the 8i does not contain NVRAM so the ServeRAID CD will not work.

B. No Current Red Hat released 8i Drivers

Currently there are no released versions of device drivers for 8i RHEL 3 U5. The beta is in test and it can not be given to customer at this time. It is targeted for release in the 3rd quarter of 2005. The 8i driver can be compiled using the code on 8i Support CD as per the instruction documented in the Installation guide under books directory of the CD as per instructions in Appendix A and that is supported.

C. Possible data loss with 8i 5EE raid array

A problem has been found that can put data at risk in 5EE arrays during compaction and expansion cycles. While the risk can be mitigated in some cases by re-synchronizing the array, it is strongly recommended that ServeRAID 8i arrays not be configured in a 5EE configuration until a fix for the problem has been released. Target for the fix is Sept, 2005. See Retain Tip **H184325** for further information.

D. Replacement harddrive will not rebuild

Under certain circumstances replacement drives will not rebuild when placed back into an array. Here are a few steps you can try to start the rebuild if it does not kickoff on replacement:

1. Pull the drive out, wait 30 seconds and then place back in
2. Reboot the server and repeat step 1
3. Check the harddrive firmware in ServeRAID manager. If the firmware on the replacement drive is 511 or any other drive has 511 code, then contact the Backoffice to obtain a Beta copy of the SAS harddrive firmware update utility. Please see section VI. E for further information on updating the SAS drive Firmware.

511 code was a prerelease code level and should have never gone out to the field, however some FRU stock drives have been identified to contain this code level. If they do contain this level, it must be flashed to the release level 512.

PE is aware of the rebuild problem and will be issuing an 8i code update in the future to address this.

E. Cannot Update SAS harddrive firmware with ServeRAID 8i installed

Currently there is a beta SAS harddrive firmware update program available through IBM Support. Please note that if you are asked to update the SAS harddrive firmware and the customer has an 8i installed, they will need to remove the 8i in order for the drives to update. Our Engineering team is aware of the issue and is working on a resolution.

F. 8i Data scrubbing is off by default

Data scrubbing on a ServeRAID 8i is off by default. It is recommended that the customer turn this feature on for maximum data protection using either ServeRAID Manager within the OS or using the ServeRAID CD.

G. "Command Timeout" Error on boot

If the customer sees a Command Timeout error on boot, the drive that times out is defective and needs to be replaced.

H. "kernel panic" error may be seen during POST

Linux messages may appear at POST when the ServeRAID 8i initializes because the 8i runs on a Linux base.

For example, a kernel panic may be displayed.

In that case, the 8i controller SAS subsystem should be debugged per the x366 Problem Determination Guide.

Under certain circumstances pulling the card, rebooting to F1 and restoring defaults, then placing the card back in and powering up will correct the error.

I. ServeRAID logs do not show drive array assignment

For RAID-1 and RAID-10 (mirrored) arrays, the ServeRAID Manager configuration logs (Raid1x.log) file and the ARCCONF GETCONFIG log will not indicate which physical drives are mirrored together. RAID-5, RAID-50 and other parity arrays will indicate the stripe order in these logs. The implementation of mirrored disks in the SAS environment do not use stripe orders or stripe units so this information, was inadvertently left out.

J. Front Bezel Slot id's do not match the ServeRAID Configuration Log SCSI id's

If a customer is using an 8i and a ServeRAID support archive or an ARCCONF GETCONFIG log is pulled, please note that the drive assignments in the logs will not correlate to the front bezel id's. For GA level systems, the ServeRAID Manager GUI will correlate the ID to Slot properly. Only the ServeRAID logs are incorrect. If a specific action must be taken on a physical disk based on the ServeRAID log information, verify the correct disk is selected by comparing the disk serial numbers before proceeding. See the diagram below for a better understanding of how the ServeRAID configuration logs correlate to the front bezel layout:

**Current ID layout for SAS
Backplane on Bezel**

0	1	2
3	4	5

**Current ID layout for
Configuration logs from
ServeRAID Manager**

0	1	2
4	5	6

K. Windows 2003, ARCSAS.SYS System Event Errors, Event ID 0

The ServeRAID-8i ARCSAS.SYS driver may produce red bulleted errors in the Windows 2003 System Event log. This error is actually informational, as the ServeRAID driver was designed to take advantage of enhancements made for this new storage architecture in Windows 2003 Service Pack 1. Applying Service Pack 1 or higher will remove the ARCSAS.SYS error events and will improve overall performance of the SAS subsystem.

VII. Miscellaneous

A. Onboard Broadcom Q&A

Here are a few basic questions customers may ask regarding the default operation of the onboard broadcom nic.

1. Why is the Default setting on Nic1 10/100 full?

Default setting on the NIC is set to Auto-Negotiate, and should link at the speed of the switch when system power is on. When in stand-by, the speed setting on port 1 downgrades to 10/100 due to IPMI (BMC) settings. 10/100 is the default set by Broadcom for the IPMI link (into the BMC) when in standby. This setting has remained at default because we were not aware of any need to change it.

2. Is there any reason why the customer should not change this default value?

IPMI (BMC) communications have not been tested with the IPMI link set to other than 10/100. It may work at 1000, but support would be limited in case of errors/faults. With the link set to '1000' or to 'all', the port should link at 1000 when in stand-by.

3. Are there any plans to change this?

Presently there are no plans. But if there are enough requests into Marketing/Sales, the PDT could make the change & submit for testing, then firmware update can be posted on website, and subsequently EC'd into card manufacturing.

B. 00180102 PCI device resource allocation failure on POST:

This POST error code is likely to be encountered by customers. The work around is described on the web here <http://www-307.ibm.com/pc/support/site.wss/MIGR-59032.html> and is repeated below for convenience.

One (1) or more of the following can be tried to resolve the symptom:

- If multiple drive adapters are set up to boot, including onboard, disable the BIOS on any adapter that does not require booting. The onboard devices can be completely disabled in the Configuration/Setup utility program.
- Other adapters may use the ROM space, including the slim line Remote Supervisor Adapter (RSA-2), if installed. Disabling the BIOS on these cards may remedy the problem.
- Load defaults in SCSI select utility program.

- Disable PXE boot for onboard Ethernet if not needed.
- Take any network adapter out of the startup sequence.
- Reallocate the boot order of the adapters so that the adapters with larger boot ROMs get more space to load.

For additional information on this error please refer to the website document.

C. PCI scan sequence

The server scans devices and PCI-X slots to assign system resources in the following order: integrated Ethernet controller, integrated SAS controller, and then PCI and PCI-X slots 1 through 6. **Note:** To change the order in which the server scans devices and PCI-X slots, start the Configuration/Setup Utility program and select **Start Options** from the main menu.

The startup sequence under **Start Options** specifies the scan order in which the server checks devices to find a boot record. The server starts from the first boot record that it finds. 00180102 PCI device resource allocation failures can sometimes be resolved by changing the startup sequence.

D. Windows 2000 Remote Install Blue Screens w/o SP3

Symptom: Windows 2000 Server Remote Installation Blue screens

Solution:

Since the x366 requires a SCSI (SAS) device driver that is not available on the base Windows 2000 installation disk, use a version of Windows 2000 Server that includes at least Service Pack 3 updates for remote installations. Refer to **Microsoft Knowledge Base Article - 302098**. "INACCESSIBLE_BOOT_DEVICE" message after changing a SCSI adapter resource.

E. IBM Director 4.21 requires patching before running on an x366

In order for IBM Director 4.21 to run correctly on an x366 it must be patched. Failure to do so will result in false errors. Please review the document located here for further information:

ftp://ftp.software.ibm.com/pc/pccbbs/pc_servers_pdf/dir4.21_x366_known_issues.pdf

VIII. Performance Related Issues

Configuring Memory for Optimum Performance

1. The number of installed memory DIMMs is critical to optimal performance because it is not possible for the chipset to yield high performance if it is waiting on memory accesses. The optimal configuration is with all 16 DIMM slots populated. If price is a concern, eight DIMMS will usually provide similar performance compared to 16 DIMMS. The maximum difference is usually about 3 - 5%. Four total DIMMs will be slower than 8 DIMMS by up to 5-10% for some applications.
2. Use more than one memory card to improve performance. The x366 supports four memory cards and each card supports four DIMM's. With four DIMM's in a single memory card the x366 will be about 50% slower than with four DIMMS in two memory cards.
3. The x366 is set by factory default with the highest memory scrubbing protection, but memory scrubbing reduces performance. To optimize memory performance (to have identical redundancy to DELL and HP systems) navigate in BIOS Setup: under Advanced Functions/Memory, set High Performance Memory Array (HPMA).
4. The x366 is set with factory defaults to optimize database transaction processing. However, if the server will perform file server or web server tasks optimize the x366 BIOS configuration with the following:
 - go to BIOS Setup, under Advanced Functions/CPU, and set HW Prefetch to DISABLED.Prefetch forces the processors to prefetch extra cache lines for every request. For applications that don't take advantage of prefetch (JAVA, File Server, Web Server) this slows performance. Disabling Prefetch can improve performance 10 - 20% for these applications.

VIII. x366, x260, x460 Health Checklist

Lightpath LED's

Check the following locations to insure no LightPath diagnostic LED's are lit:

- Operator Information Front Panel
- Operator Information Inside Panel
- Memory Board
- PCI-X slot LED's when the board is viewed from inside the box
- PCI-X board Power good LED
- VRM and CPU LED's on the CPU board when viewed from the front with front bezel removed.

System Code

- Check the following code are at the latest available on the IBM website
 - BIOS, BMC, RSA2 (if installed), CPLD, Diagnostics
- If code updates are required, please refer to the IBM x366 x460 Firmware Update section in the FAQ.

System Boards, Options

- Confirm that PCI-X board not affected by ECA064
<http://www.ibm.com/support/docview.wss?uid=psg1MIGR-60781>
- Ensure all Options are on ServerProven Hardware Compatibility by checking
<http://www.ibm.com/servers/eserver/serverproven/compat/us/index.html>
then click on **xSeries Compatibility**

Operating Systems, Drivers

- Ensure Operating Systems by version are on ServerProven NOS Compatibility by checking
<http://www.ibm.com/servers/eserver/serverproven/compat/us/nos/matrix.shtml>
 - Check dependencies by clicking the checkmark in the compatibility chart, e.g. SP1 is listed as a requirement for Windows 2003 32-bit
- Check for latest drivers at x366 Driver Matrix at:
<http://www.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-59142>

Troubleshooting

- Review the xSeries 366, xSeries 460, and xSeries MXE 460 FAQ, Hints and Tips
- Refer to the Problem Determination and Service Guide IBM eServer xSeries 366

IX. x366, x460 Firmware Update

Update System Firmware using preferred methods

For Systems which can be rebooted, e.g. new installs or not in production

1. Run Update Xpress

Hint: a modified Update Xpress CD with the latest is available from the Back Office for limited distribution.

2. Run CPLD update diskette. Remove AC power after update to take effect.
3. Run ServeRAID 8i Support CD if 8i installed
4. Run SAS HDD Firmware Update CD
5. Update RSA2 firmware remotely per the procedure below

For Systems required to remain in production (code becomes effective at next planned reboot)

1. Download and run either the Windows or Linux Packages for BIOS, BMC, RSA2, and Diagnostics
2. Work with customer to plan the update for ServeRAID 8i, SAS HDD firmware, and/or RSA2 firmware.

Notes

- If this system is in a Microsoft cluster, it must be physically removed prior to performing any updates.
- If this is a multi-node x460/MXE-460, each node will need to be booted standalone, or delete the scalable partition until the updates are complete.
- See **Common Downloadable Files** below to access update images.
- See **Use a USB Floppy Disk Drive to Update System Firmware** and **Use a PC connected to the RSA2 to Update System Firmware** below for alternate methods

Update RSA2 Firmware

1. Connect a PC to the Server RSA2 using an ethernet (straight-through or crossover) cable.
2. Login to the RSA II using default network settings:
 - a. Change laptop IP address to 192.168.70.200
 - b. Change laptop subnet mask to 255.255.255.0
 - c. Open internet browser and type 192.168.70.125 in address/location bar
 - d. At login screen use the following:
 - Default Login Name: USERID (all caps)
 - Default Password: PASSWORD (all caps and zero replaces the letter O)
3. Download RSA II firmware to a folder on the laptop.
4. From the RSA2 main menu, select the 'Firmware Update' option under the 'Tasks' menu on the left
5. Select the following files, individually, in the order listed:
 - PAETBRUS.pkt
 - PAETMNUS.pkt
6. After completing the RSA2 firmware update, select the 'Restart ASM' option from the 'ASM Control' menu on the left.

Notes

- See **Common Downloadable Files** below to access update images.

Common Downloadable CD and diskette images

- Update Xpress CD - <http://www-307.ibm.com/pc/support/site.wss/MIGR-53046.html>
- BIOS diskette - <http://www-1.ibm.com/support/docview.wss?uid=psg1MIGR-61257>
- Diags diskettes - <http://www-1.ibm.com/support/docview.wss?uid=psg1MIGR-62889>
- BMC diskette - <http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-59922>
- Adaptec SAS BIOS diskette - <http://www-306.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-61993>
- SAS Hard Disk Drive Firmware CD - <http://www-307.ibm.com/pc/support/site.wss/document.do?sitestyle=ibm&Indocid=MIGR-62832>
- CPLD diskette - <http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-60630>
- RSA Firmware - <http://www-307.ibm.com/pc/support/site.wss/MIGR-59068.html>
- ServeRAID Drivers Matrix - <http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-495PES#serveraid8i>
- ServeRAID Firmware CD's - <http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-61529>
- IPMI Drivers - <http://www-307.ibm.com/pc/support/site.wss/MIGR-57774.html>

In general, Common downloadable files can be checked at <http://www.ibm.com/pc/support/>

- For all downloads, select **Downloads and Drivers**, then pull-down **Servers** brand and **x336 or x460** family.
- For Drivers only, select **Driver Matrices** then **Servers** to get to **Software and Device Drivers – Servers**. Then choose one of the following:
 - Select **x366** to get to the **Driver Matrix**.
 - Select **Update Xpress, ServerGuide, or ServeRAID**

Use a USB Floppy Disk Drive to Update System Firmware

Install the USB Floppy Disk Drive and flash the following diskettes

1. BIOS (Boot to BIOS diskette and select option 1)
2. Diagnostics (Boot to BIOS diskette and select option 2)
3. BMC (Boot to BMC diskette)
4. Adaptec SAS BIOS (Boot to SAS BIOS diskette) (only required if 8i is NOT installed)
5. SAS HDD FW Update CD (Download the file, extract image to CD, then boot to it)
6. CPLD (Boot to diskette) Once CPLD completes, AC power must be removed from the system for 30-45 seconds and then reconnected
7. Update RSA2 firmware remotely per the procedure below

Notes

- If this system is in a Microsoft cluster, it must be physically removed prior to performing any updates.
- If this is a multi-node x460/MXE-460, each node will need to be booted standalone, or delete the scalable partition until the updates are complete.
- Please check each update's readme to determine if there are code co-dependencies that require shifting the update order.
- To create diskettes with the **.img** extension
 - under Linux, use the dd command
Example: `dd if=/xxxxxxx.img of=/dev/fd0` where **/dev/fd0 = path to floppy drive**
 - under Windows, use the following command
`dsk4w32 filename.img a: /f`
dsk4w32.exe is available in the ServeRAID Support CD in the \Diskette\Tools folder.
- See **Common Downloadable Files** above to access update images.

Use a PC connected to the RSA2 to Update System Firmware

If a USB FDD is not available, but there is a RSA II installed in the system, the following updates can be performed via the Remote Control facility:

1. Download the system update .img files to the PC
2. Log into the RSA II
3. Select 'Remote Control' under the 'Tasks' menu
4. Select 'Start Remote Control in Single User Mode'

Hint: After starting Remote Control, move the video speed slider to 5MB

5. Choose 'Select File' option from the text box on the left.
6. Click '>>'
7. Select 'Mount Drive'
8. Browse for the .img file and select it.
9. Select 'Yes' on the popup box to perform upload.
10. Press 'Ctrl + Alt + Del' button to reboot system and perform update.

Hint: To make the updates quicker, after the flash has completed, and if there are more updates that need be performed, an option will appear on the Remote Control screen to reboot the server. Prior to performing this reboot, perform the following:

- Select the .img file from the text box on the right.
- Select 'Unmount Drive'.

11. Repeat steps 1-10 until all updates have been completed.
12. Once all updates have been completed, unmount the last file used then reboot system.

Notes

- The diagnostics cannot be updated via the Remote Control option because it requires two diskettes and the Remote Control feature only allows one diskette *.img file to be mounted at a time. The Windows/Linux updates can be used to perform the update to the diagnostics.
- See **Common Downloadable Files** below to access update images.