

PROLIANT 8500 PENTIUM III XEON TROUBLESHOOTING GUIDELINE

Version 1.0 – 8/12/1999

Assumptions

- Proliant 8500 Pentium III Xeon minimum system requirements have been met (see Appendix A)
Refer to the Proliant 8500 Pentium III Xeon “Maintenance and Service Guide”, “Setup and Install Guide”, “Illustrated Parts Catalogue”. When available

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Section 1

STATUS INDICATORS:

- **Integrated Management Display (IMD): Liquid Crystal Display (LCD)**
Located on front of system, used to monitor progress during POST and to display cautions and critical error messages.
- **POWER-ON LED:**
Located on the front panel beside power switch. When pushed, green indicates good +5V output from power supply. Flashing amber indicates a system fault.
- **POWER SUPPLY LEDs:**
Located on rear of unit next to AC power input.

Power Supply LED Table

Table 1 –1: Power supplies LEDs indicator definitions

Top LED (Status)	Green	No fault detected in this power supply
	Green/Amber flashing	Power supply failed to restart after a prolonged fault
	Green flashing	Power supply will start within 20 seconds or software shutdown (software shutdown mode won't restart unless power switch is cycled).
	Amber flashing	Failed self test
	Amber	Fault detected in this power supply
	Off	System in standby mode or interlock(s) disabled
Bottom LED (AC Power)	Green	AC power is connected to this power supply
	Off	No AC power connected to this supply

SYSTEM LEDs:

Table 1 – 2: Processor and I/O board LEDs:

	On the I/O Board: (In front of PCI slot 1)	On the Processor Board: (Behind processor 1 and 2. Impossible to view)
Silk screen		
Aux 5v	CR47	n/a
+12v	CR1	CR505
5V	CR2	CR504
+3.3v	n/a	CR501
+2.5v	n/a	CR503
VTT	n/a	CR502
ROC 2	CR6	n/a
ROC 3	CR5	n/a
ROC 4	CR4	n/a
ROC 5	CR7	n/a
ROC 6	CR8	n/a

NOTE: If any of the voltages are missing on the System I/O board, the system will not come out of reset (won't boot)

The voltage level LEDs are an indication that the voltage rail is present when ON (green). The Aux 5v should be present all the time the power cord is plugged in and connected to facility power.

- **INTERLOCK LEDs:**

Interlock circuitry exists to pinpoint missing or unseated processor, VRM, memory board, or I/O module. (NOTE: Chassis panels are not connected to interlocks). The interlock LEDs can be view on the top of the system along with their corresponding label.

- **I/O BOARD LEDs:**

Definitions to be added later.

- **PORT 84 LEDs:**

Port 84 LEDs will not be populated on production machines. If a PCI Port 84 card is being used, it must be installed in one of the primary/compatibility bus slots 7, 8 or 9.

CAUTION:

Be aware that whenever power is applied to the system (power cord plugged in), even when the power switch is OFF, there is +5v power on inside the system. The AUX 5V power is ON anytime the power supply is plugged in and the AUX 5V LED on the I/O board should also be ON to indicate its presence. This should also provide power for the IMD, which should also be ON.

- **HOT PLUG PCI SLOT LEDs:**

Each hot plug PCI slot is accompanied with an LED to indicate whether it's active. If the LED is not ON it could mean one of two things. First the hot plug latch must be in the down position and second it must not be disabled in software.

Section 2

SYSTEM BOARD SWITCHES:

I/O CONFIGURATION SWITCH (SW1)

Table 1 – 3:

SW1 Processor Board Configuration Switch		
Switch	Function	Default
S1	On-board Video Disable	OFF
S2	Configuration Lock	OFF
S3	Rack Mount Configuration	OFF
S4	Disable Floppy Boot	OFF
S5	Boot Password Disable	OFF
S6	Clear Configuration Contents	OFF

Located on I/O board in front of PCI slots 10 and 11.

PROCESSOR CORE / BUS FREQUENCY RATIO SWITCH (SW1 AND SW2)

Located on Processor board on the left side of the memory board connector.

Table 1 - 3

Switch				Bus / Core Ratio
1	2	3	4	
0	0	0	0	1 / 2
0	0	0	1	1 / 6
0	0	1	0	1 / 4
0	0	1	1	1 / 8
0	1	0	0	1 / 3
0	1	0	1	1 / 7
0	1	1	0	1 / 5
0	1	1	1	Res.
1	0	0	0	2 / 5
1	0	0	1	2 / 13
1	0	1	0	2 / 9
1	0	1	1	2 / 3
1	1	0	0	2 / 7
1	1	0	1	2 / 15
1	1	1	0	2 / 11
1	1	1	1	1 / 2

0 = Closed

1 = Open

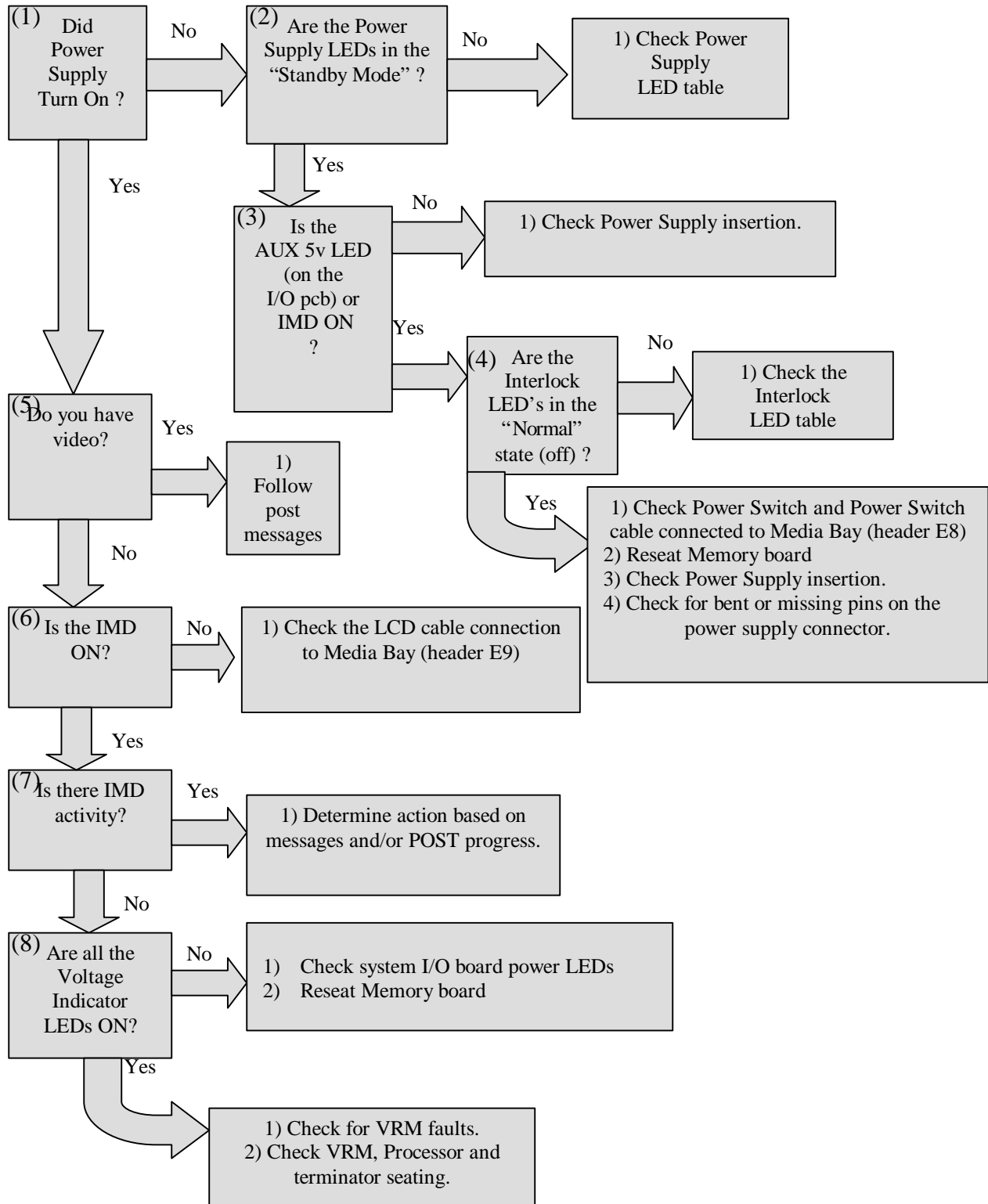
Default is all switches “off”. In this state the ROM interrogates the installed processors and determines the nominal Bus / Core Ratio the system will operate.

Section 3

TROUBLE-SHOOTING

On the next page is a basic trouble-shooting flowchart for the Proliant 8500 Pentium II Xeon system. This flowchart is to assist in determining the cause of a system either not powering up, or one that powers up but won't boot (complete POST). Follow the flowchart to determine appropriate actions based on the symptoms observed. The flowchart will also refer to tables indicating the state of a particular sub-system based on the status of certain LEDs. Immediately after the trouble-shooting flowchart are the flow chart's decision boxes in a textual form with more details. The final section is reserved for additional troubleshooting tips that can be useful in getting a system operational.

ProLiant 8500 Pentium III Xeon Power Up failure Flowchart



FLOWCHART DECISION BOXES

1) Did the POWER SUPPLY turn ON?

Did the Power-ON LED on the front panel turn on? Did the power supply fans and system fans turn on (Visually see them spinning or hear them)? Are both power supply status LEDs on (solid green). See Table 1 – 1. Also see Appendix B for normal power up sequence.

NO: Reason for power supply not to turn ON:

- Interlock problem (Check Interlock LEDs on top of system)
- Power Supply Problems (bad supply, supply insertion)
- Input power bad

Go to decision box 2.

YES: Power supply turned ON, Interlock and power seems to be ok. Go to decision box 5.

2) Are the POWER SUPPLY status LEDs in Standby mode (bottom LED solid green, top LED off)?

NO: If either of the power supply status LEDs isn't in this state, then check the power supply LED table to determine its state (Table 1 – 1). From that, there should be an indication of where the problem is. If one of the power supply LED flashes green and then briefly flashes amber and then goes back to flashing green, that is also a pretty good indication that a power supply is not seated properly or the power supply is crowbarred.

YES: The power supply appears to not have been told to turn on, so the problem should be the power supply not fully inserted (and/or bent pins on its connector). Check Power Switch and Power Switch cable connected to the header E8 in the rear of the Removable Media Bay Module. Go to decision box 3.

3) Is the AUX 5V LED ON (on system I/O board)?

Is AUX 5V LED (CR47) on the I/O board ON? The Aux 5v is the power source for the interlock LEDs. If that power source isn't there, the interlock LEDs won't light to indicate interlock problems. That is also an indication that there is a problem other than interlocks that is keeping the power supply from turning on.

NO: This is an indication that the Interlock LEDs aren't applicable and that the Power Supply or a connection to it is bad.

- Check power supply insertion and for missing/bent pins on power supply.
- Check for possible shorts to the Aux 5v.

YES: Interlock power is good, indicates the interlock LEDs can be used, go to decision box 4.

4) Are the Interlock LEDs in the "Normal" (off) state?

Normal state is when the all System Interlock LEDs are OFF.

NO: The System Interlock LEDs (located on top of the system) when ON indicates that an interlock violation exists. This should give you some indication who's at fault. Reseat the board, processor or module identified by the interlock LEDs.

YES: If all Interlock LEDs are OFF (no indication of interlock problems) then check the following:

- Check the power switch and power switch cable connected to the Media Bay module (E8)
- Reseat Memory board.
- Check power supply insertion and for missing/bent pins on power supplies.

5) Is there video on the monitor?

On the video monitor, does any graphics or text appear?

YES: If video is present, then follow any messages that are displayed on the screen (i.e. post errors, etc.).

NO: If monitor is connected and no video is present, go to the next decision box (6).

6) Is the IMD on?

Is there something displayed on the IMD and the backlight ON?

NO: The IMD is not properly connected or not working. Check the following:

- Check the LCD cable and its connection between the IMD and the Media Bay Module. (E8).
- Check for Aux 5v on the I/O board (CR47)

YES: If the IMD is on, it can provide useful information about the progress of the system during post. Go to the next decision box (7).

7) Is there IMD activity?

IMD activity is defined by the IMD resetting and/or new messages being displayed. If the only thing displayed is from an earlier message, then that doesn't qualify as activity. Old information on the IMD will remain as long as power to the IMD is there. The old messages "go away" when the IMD is reset during normal boot process. Error logs don't "go away" only the displayed messages.

YES: If there is IMD activity, the progress through post can provide valuable information to where possible problems are. Also error messages and alerts are displayed.

NO: If there is no IMD activity (it doesn't reset or display POST progress), that is an indication that the system is possibly not coming out of reset and that the processor(s) aren't executing code. (Note: The checking the CD-ROM drive for constant flashing Activity LED as an indication of being held in Reset). Go to decision box 8 to continue zeroing in on possible problems.

8) Are all the Voltage Indicator LEDs ON?

Voltage Indicator LEDs are located on the I/O and Processor boards. However the ones on the Processor board can not be easily viewed. Refer to Table 1 - 2

NO: If any of the voltage indicators LEDs are not ON, check the following for possible causes.

- Check the power supply pins for missing/bent pins.
- Reseat Memory Board in Processor Module.

YES: If all the voltage indicator LEDs are ON then the system may not be booting due to bad VRM or processor. To determine who is at fault you may have to swap in a known good processor or VRM.

Section 4

Troubleshooting Tips

A.) Unable to locate hard drives:

There is a small board that plugs into the I/O board that connects the SCSI bus. Without this board installed, the system will not be able to locate the hard drives.

Section 5

Appendix A

PROLIANT 8500 Pentium III Xeon Minimum Configuration:

Refer to Quickfind's Proliant 8500 Pentium III Xeon "Maintenance and Service Guide",

1.) Processors

- A minimum of one Processor needs to be installed in one the processor slots along with a VRM (power module) for the socket. Unpopulated processor slots **must** have a termination card installed for proper bus termination. No VRM's are necessary for these slots.
- NOTE: If both Right and Left Processor buses are populated with processors the TAG RAM modules must be installed.

2.) Power Supply

- At least one supply must be installed.

3.) Fans

- At least one I/O fan must be installed.

4.) Memory

- Minimum 128MB. At least two (60ns or faster) buffered ECC protected DIMM's; SDRAM.
- Bank of 2 DIMMs: must be same type, size, speed and manufacturer

Appendix B:

OBSERVATIONS OF A TYPICAL POWER UP SEQUENCE

Under normal conditions, the following power-up sequence should be typical (note: the power supply LEDs are located on back of the unit next to the AC power input):

- Unit is turned off and disconnected from any power source (power cord unplugged)
 - Both power supply LEDs are OFF (clear)
 - Integrated Management Display (IMD) is OFF (dark) - {this is the LCD on the front of unit}

The typical power supply power-up sequence would be:

- Good facility power applied to unit (unit still turned off)
 - Top LED OFF (clear) and Bottom LED ON (solid green)
 - IMD turns on and displays model and firmware information
- Power switch turned ON

- Top power supply LED begins flashing (green) and Bottom LED ON (solid green)
- This is the indication that the power switch is on and the power supply is in a power on delay mode
- No change in the IMD
- When power-on delay is up, unit turns on
 - Top Power Supply LED will momentarily flash yellow then both LEDs should stay green, Top power supply LED ON (solid green) and bottom LED on (solid green)
 - Power-On LED comes ON (on the front of the unit)
 - IMD resets and then starts initialization sequence (refer to Appendix more details on the IMD initialization sequence)
 - All the fans begin spinning, (a green LED on each of the fan assemblies should turn on)
- After a few seconds, the fan controller will turn off the redundant fans (ones closest to the front of the unit, 1 for each zone). Note that a turned off fan may still spin due to the air being forced through it by the other fans. Typically the redundant fans being turned off is most notable by the change in sound.
 - The green LED for each of the fans should remain ON (even the fans turned off by the fan controller)
 - Only if there is a fan failure should the green LED turn OFF and the red LED turn ON
 - The IMD will continue to display the initialization sequence progress

IMD (Integrated Management Display) or the LCD

- 1) The IMD is off (dark) unless AC power is applied to the power supply and the +5v AUX is on.
- 2) When it comes up, it displays:
 - COMPAQ LCD
 - MODEL # 56022
 - LCD FIRMWARE 1.9
- 3) When AC power is first applied and it comes up, the buttons have no effect on the display. The system will have to be powered up first.
- 4) When the system is powered on, the IMD will start its initialization sequence. The LCD screen will be cleared, it will display the model # and the LCD firmware revision and then the bottom line will have "MAIN MENU". The other 3 lines will begin displaying the initialization sequence:
 - System Init.
 - PCI Auto Cfg.
 - Video
 - Memory Test
 - Memory Init.
 - Floppy Drive
 - Option ROMs
 - SCSI Devices
 - F1 Prompt
- 5) A rotating line will appear by each of the above prompts to indicate that section of post is being executed. When post completes that section, the rotating line will be replaced by a check mark.
- 6) If the display is not "messed" with, when the system is powered down, the display will indicate: System Powered OFF

The above sequence is for a system with minimal hardware under normal operation.

