intel. Technical Advisory

TA-240-1

5200 NE Elam Young Parkway
Hillsboro, OR 97124

January 14, 2000

Some L440GX+ based servers may experience a system hang when add-in cards are installed in PCI slots 5 or 6

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Products Affected
BOXL440GX, BOXL440GXC, LWBB, LWBBS, LB440GX

Description
Intel's Server Products Division (SPD) test labs have reproduced a system hang on some L440GX+ based servers by installing PCI cards requiring a high I/O bandwidth, such as a SCSI RAID controller, into PCI slots 5 or 6. The hang has been seen to occur after POST while either booting an Operating System or while performing data transactions on the secondary PCI bus using a system stress program.

Note: LB440GX server platforms utilize a PCI riser card in PCI slot 5 of their L440GX+ server board. This issue may also occur with PCI add-in cards plugged into the riser card in these platforms.

The issue is not OS dependent, nor is it related to any specific add-in card.

Root Cause
A manufacturing process variation may have affected operation of the 21150BC Bridge chip's internal clamp circuits when exposed to fast edge rates. This process variation may have contributed to a marginal condition between the 440GX chipset and the 21150BC Bridge chip on some L440GX+ server boards.

There is no issue when add-in cards are only installed in PCI slots 1 – 4.

Corrective Action
The Intel SPD Engineering team has developed a software fix for this issue and has incorporated it into a new System BIOS, version 11.1. Compensation circuits on the 440GX will be enabled through a buffer strength setting in the BIOS to reduce the effect of the edge rates to the 21150BC bridge chip. System BIOS 11.1 will be installed on all L440GX+ server boards in our factory, is posted to IBL, and will be made available on Intel's Support web site at http://support.intel.com.

In addition, hardware changes will be made to the server board design to further decrease the possibility of failures. Intel manufacturing will be implementing a change, for all new shipments, by routing a 5volt signal to pin 124 of the 21150BC bridge chip.

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Added Wire

C4D2

C4D4

156 C5D3

R5D1
RP5D1
RP5D1
RP5D1

Solder Mod Wire from
Pin 124 of U4D1
to Pin shown on C4D2

U4D1

Pin 124

104

A94

B94
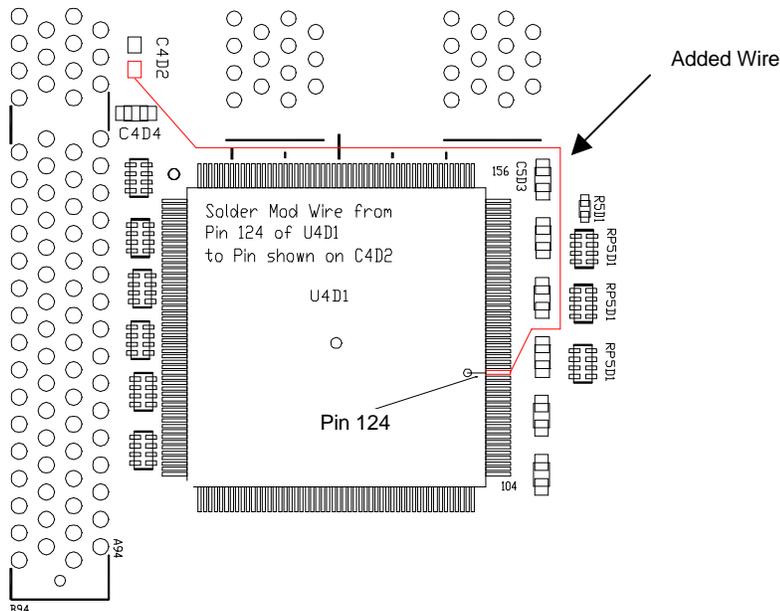
- LB440GX+ systems with BIOS 11.1 and the hardware change will be labeled with a PBA # of 704293-510 or PBA # 704293-515
- OEM L440GX+ server boards with BIOS 11.1 and the hardware change will be labeled with a PBA # of 704293-515
- Boxed L440GX+ server boards with BIOS 11.1 and the hardware change will be labeled with either AA# of 721242-010 or AA# 721242-011

PBA numbers or AA numbers can be found on a white sticker on the edge of the server board near the ISA slot.

Intel Recommendations
Anyone encountering this issue on any of their existing L440GX+ based servers should upgrade their system BIOS to version 11.1 or later.

Please contact your Intel Sales Representative if you require more specific information about this issue.

Server Products Division (SPD)
Enterprise Server Group (ESG)
Communication Products Group (CPG)
Communication and Internet Server Division (CISD)
Intel Corporation