

# intel® Technical Advisory

TA-0282-1

5200 NE Elam Young Parkway  
Hillsboro, OR 97124

June 14, 2000

## OCPRF100 & SRPM8 Server Systems could experience data corruption, due to the Hot Plug Controller (HPC) incorrectly accepting memory transactions targeted for above the 4GB boundary.

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### Products Affected

Product Code	Description
FOCIOCARR	OPRF100 - I/O Carrier (single)
BOCIOCARR	OPRF100 - I/O Carrier (bulk)
FOCIOCARX	OPRF100 - I/O Carrier (single)
TBD	SRPM8 Server System - Integration Kit (To-Be-Determined)
SPMCBT	SRPM8 Server System - Model 0
SOCCBCHSYS	OCPRF100 Server System - Integrated SKU
SOCCBSYSM0	OCPRF100 Server System - Model 0

### Description

SRPM8 & OCPRF100 Server Systems could experience data corruption, due to the Hot Plug Controller (HPC) incorrectly accepting memory transactions targeted for above the 4GB boundary. When using an OS that allows upstream PCI memory access above the 4GB boundary, and using a PCI device that is mapped above the 4GB boundary and the lower 32bits of its address is the same as the HPC's Base Address Register, then reads and writes will get sent to the PCI device instead of memory.

SRPM8 & OCPRF100 Server Systems use the Intel Profusion chipset. The Profusion chipset consists of a Memory Access Controller (MAC) chip, a Data Interface Buffer (DIB) chip, and four Compaq PB64 host to PCI bridge chips with the HPC imbedded. It appears to be the combination of the PB64 in conjunction with the HPC that causes the Profusion chipset to exhibit the potential for data corruption.

Systems susceptible to this issue must be running an OS that supports more than 4GB of memory, and have greater than 4GB of memory installed. There are two OS's supported on the SRPM8 & OCPRF100 Server Systems that support greater than 4GB of memory; they are Windows 2000, and SCO UnixWare 7.X.

The other supported operating systems for the SRPM8 & OCPRF100 Server Systems do not support more than 4GB of memory and are not subject to this issue, this includes Windows NT 4.0. Note that Windows NT 4.0 can be configured with greater than 4GB of memory by using PSE36, but the PSE36 driver does not allow upstream PCI memory access above the 4GB boundary so this issue does not apply.

### Root Cause

The PCI bus interface in the PB64 bridge chip causes reads and writes destined for memory to be sent to the HPC.

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## Workarounds/Limitations

For **Windows 2000** Microsoft will disable the HPC's Base Address Register (BAR) in Windows 2000 Service Pack 1 and DataCenter. Therefore, a new driver will be required to access the HPC's Base Address Registers through an alternative-addressing feature. Both Windows 2000 SP1 (or Windows 2000 DataCenter) and the new Windows 2000 PHP driver are required.

Prior to the availability of SP1, Compaq recommends disabling the HPC manually through the OS device manager. Therefore no PCI Hot Plug functionality will be available with >4GB memory. Microsoft is including this recommendation and user instruction set in the Windows 2000 SP1 release notes.

For **SCO UnixWare 7.X**, support for greater than 4GB of memory is not the default setting and must be enabled after the initial installation. There is no workaround that allows a system running UnixWare 7.X to support greater than 4GB of memory. Therefore Intel recommends the SRPM8 & OCPRF100 Server Systems running under UnixWare 7.X be limited to less than 4GB of memory.

## Resolution

This issue will be fixed in the PB64-X bridge chip to be incorporated in a future release of the I/O carrier board.

## Intel Recommendation

Follow the direction, described in the *Workarounds/Limitations* section of this document that applies to your system configuration.

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

Server Products Division  
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