Itanium™ Systems Overview

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Agenda

- AL460GX MP Server
  - Server Requirements
  - Server Architecture
- BS460GX DP Workstation
  - Workstation Requirements
  - Workstation Architecture
- Summary
- Call to Action
Customer Server Requirements

- **RAS**
  - Improve Availability
  - Enhance Manageability and Diagnostics

- **Performance**
  - More Memory/Users Supported
  - Improve Memory and I/O Bandwidth
  - Increase System Scalability
  - Improve Application Performance

- **OS/Software**
  - Enterprise-class IA-64 OS Support
  - Wide Choice of Software Offerings
Customer Server Requirements

- RAS
  - Hot Swap Redundant Power Supplies and Fans
  - Hot Swap Disk Drives
  - Serviceability, Accessibility
  - Diagnostic LEDs

- Performance
  - 10 PCI Slots
  - 64/66 PCI

- SHV
  - Integrated Rack Mount - 7U x 28”
Customer Server Requirements

- **RAS**
  - IPMI 1.0, WFM 2.0, CIM Compliant
  - Hot Plug PCI
  - System Management Controller
  - EMP via LAN and Modem

- **Performance**
  - QUAD Itanium™ Processors
  - Support Maximum Memory
  - Multiple Independent I/O Paths
  - Maximum I/O Bandwidth
  - 10 PCI Slots
AL460GX Functional Diagram

RAS Features:
- ECC
- PARITY
- MCA

Memory:
- Dual Memory Ports
- 4.2 GB/sec peak
- 64 SDRAM DIMMS
- 64 GB max

I/O Busses:
- PXB: 64b/33MHz PCI
- WXB: 64b/66MHz PHP

F-16 Bus:
- 4 pt-to-pt connects
- 16 bits wide
- 533 MB/sec each

FWH:
- 4 MB
- Block Locking

IA-64 Track
Memory:
- Dual Memory Ports
- 4.2 GB/sec peak
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FWH:
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- Block Locking
AL460GX I/O Baseboard

- Parallel Port, Serial Ports, USB, Kbd, Mouse
- Legacy I/O Board
- Embedded Video, U3 SCSI, 10/100 LAN
- 10 PCI Slots
- 82460GX PXB
- 82460GX WXB
- I/O Baseboard
- IA-64 Track
**AL460GX Complete Board Set**

**Legacy I/O board:**
IFB, USB, FWH, BMC, ICMB

**I/O Baseboard:**
PCI, Video, LAN, and SCSI
PX, WXB

**Sideplane:**
F16 Interconnect
DC-DC converters

**Quad Processor Baseboard**

**Dual memory boards:**
64 DIMM sites

**IA-64 Track**
AL460GX Chassis Features

4 Hot Plug SSI power supplies
48V distributed power
12V Standby

10 PCI Slots
8 PHP 66MHz 64-bit
2 33MHz 64-bit

Integrated Rack Mount
- 7U x 28”(d)
- 4 172mm fans
- 2 120mm fans

Peripheral Bays:
- 2 HS 1” LVDS SCA HD
- 1/2” LS120
- 1/2” CD-ROM

Front to Back Passive Cooling

Processor memory complex

IA-64 Track
Agenda

• AL460GX MP Server
  ◆ Server Requirements
  ◆ Server Architecture

• BS460GX DP Workstation
  ◆ Workstation Requirements
  ◆ Workstation Architecture

• Summary

• Call to Action
Customer Workstation Requirements

- **Performance**
  - More memory and memory addressability
  - AGP Pro graphics
  - Reduce memory latencies
  - Improve I/O bandwidth
  - Increase system scalability
  - Improve application performance

- **OS/Software**
  - Enterprise-class IA-64 OS support
  - Wide choice of software offerings
Customer Workstation Requirements

- Fits in office environment
  - Deskside system dimensions
  - Quiet
  - Power
    - 110-230 VAC auto-ranging
  - Rack mountable
  - Scaleable
- Accessible
  - <5 minutes to access PCI and memory
Customer Workstation Requirements

- **RAS**
  - WFM 2.0
  - PC99a Workstation

- **Performance**
  - Dual Itanium™ processor capable
  - Support Maximum Memory
  - Maximum I/O bandwidth
  - 4 available PCI slots with AGP Pro installed
  - Integrated I/O
    - LAN, SCSI, Audio
Workstation Architecture

Functional Diagram

RAS Features:
- ECC
- PARITY
- MCA

I/O Busses:
- PXB: 64b/ 33MHz PCI
- WXB: 64b/66MHz PCI
- GXB: AGP 4x

F-16 Bus:
- 4 pt-to-pt connects
- 16 bits wide
- 533 MB/sec each

Memory:
- Dual Memory Ports
- 4.2 GB/sec peak
- 16 SDRAM DIMMS
- 16 GB max

Address Bus
Data Bus

I/O Busses:
PCI 64/66
PCI 64/66

F-16 Bus:
- 4 pt-to-pt connects
- 16 bits wide
- 533 MB/sec each

Emergency Control
Chassis intrusion

DMI
HW/ FW

Fan Control
Temp
Voltage

Intel

IA-64 Track
CPU Board

- Compact CPU board
- 12V Power Pods mount directly to backing plate
- Itanium™ processor sockets
- FSB Connector

IA-64 Track
I/O Board

- Components on F16:0
- IFB
- FWH
- 10/100 LAN
- Audio
  - Front and rear connectors
- 4 USB
  - 2 front panel, 2 rear panel
Memory Boards

- Four-way interleaved memory
  - Both boards enable maximum bandwidth
- Air channeled through MECs
- MEC RMs contain fan mount

MDC
MAC
8 DIMM Slots
DC-DC Converters
BS460GX Board Set

- MECs (Dual Memory Expansion Cards) support up to 16 GB
- CPU Board: Itanium™ processors and Power Pods
- I/O Board: Supports USB, PCI Audio and LAN
- Baseboard: 4 64/66 PCI, 2 64/33 PCI, AGP Pro, Dedicated SCSI Slot
- Power Pod
- Itanium™ processor
- AGP Pro
- Dual Memory Expansion Cards
- SCSI
- IA-64 Track
BS460GX WTX Chassis Features

Peripheral Bays:
- (3) 5 1/4”, (1) 3 1/2”

Chassis: WTX
- 17.3”(h) x 23”(d) x 9.9”(w)
- Rackable (rack kit opt.)
- 8 system fans
- Highly accessible

Office Environment
- Mini-tower (deskside)
- Standard power outlet
- PFC, 1 cord

HD Bays:
- (5) 1” HD’s or (3) 1.6”

IA-64 Track
Intel Labs
System Airflow

Sensors in 3 thermal zones control fans speeds as required for Processors, Memory and I/O.
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- **Summary**
- **Call to Action**
Summary

- IA-64 begins with Itanium™
- Enterprise Ready RAS Features
- High performance memory and I/O subsystems
- Scalable systems
- SHV IA-64 systems
- Systems launched Concurrent Time to Market with the Itanium™ processor
Call to Action

- Get ready for IA-64 now
- OEMs: Continue working with Intel Field
- IHVs: Optimize your peripherals and drivers for IA-64 now
- ISVs: Develop IA-64 apps to take advantage of system features
  - Large system memory and addressability
  - AGP 4X bandwidth
  - Multiple high speed I/O buses
IHV’s Engaged
Backup
AL460GX Board Set Features

- Supports 1-4 Itanium™ Processors
- Implements 82460GX PCIset
- 64GB Memory Capacity (using 1GB DIMMs)
  - PC100 SDRAM (revision 1.2 compliant)
  - 64 total DIMM population sites
- High Performance I/O Capabilities
  - 4 F16 Channels
  - 8 PCI Hot-plug 64-bit/66-Mhz slots
  - 2 64-bit PCI 33-Mhz Slots
  - Integrated I/O (mouse/keyboard, serial, parallel, USB, SCSI, video, ethernet)
  - Server Management: EMP via LAN/Modem, DPC, Remote Mgmt., Service Partition, CIM, IPMI
AL460GX System Features

- Integrated Rack Mount Chassis 7U x 28 inch
- Integrated IDE Peripherals: CD-ROM, FD LS-120
- 2x3.5” SCA Drive Bays (1” Form Factor)
- 2 Low Voltage Differential SCSI Channels
- Power Subsystem
  - 3+1 redundant, hot plug SSI compliant power supplies
  - 48V distributed power, 10 DC-DC converters
- N+1 redundant hot-plug fans
- IPMI, CIM, and WFM Compliant Server Management
AL460GX Server Management

+ ESM Integration
LDSM, HP Openview, CA Unicenter, Internet Explorer, Netscape

+ Intel Server Control (ISC 3.x)
Health monitoring, LAN Alerting, OS-independent paging (PEP), remote diagnostics/config/control

+ Emergency Management Port (EMP)
Out-of-band, modem-based emergency management, power up/down, reset, view SEL

+ Chassis Instrumentation
Hot plug PCI, hard drives, fans, power supplies

+ Server Board Instrumentation
IPMI 1.0 BMC, readings of out-of-band baseboard sensors (temperature, voltage, processor, memory)

Management capabilities built in from the ground up!
BS460GX Board Set Features

- Supports 1-2 Itanium™ Processors
- Implements 82460GX PCIset
- 16GB Memory Capacity (using 1GB DIMMs)
  - PC100 SDRAM (revision 1.2 compliant)
  - 16 total DIMM population sites
- High Performance I/O Capabilities
  - 4 F16 Channels
  - 1 AGP Pro 4x slot
  - 4 64-bit PCI 66-Mhz Slots
  - 2 64-bit PCI 33-Mhz Slots
  - Integrated I/O (USB, Audio, Ethernet)
More Features

- ACPI Support
  - S1, S4, S5 States
- PC99/Workstation Compliant
- PCI Power Management Support
- SMBus
- Thermal Monitoring
- Audio out system speaker
- Memory dump switch
  - Enhanced debugging