

Itanium™ Systems Overview

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Mark Swearingen

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

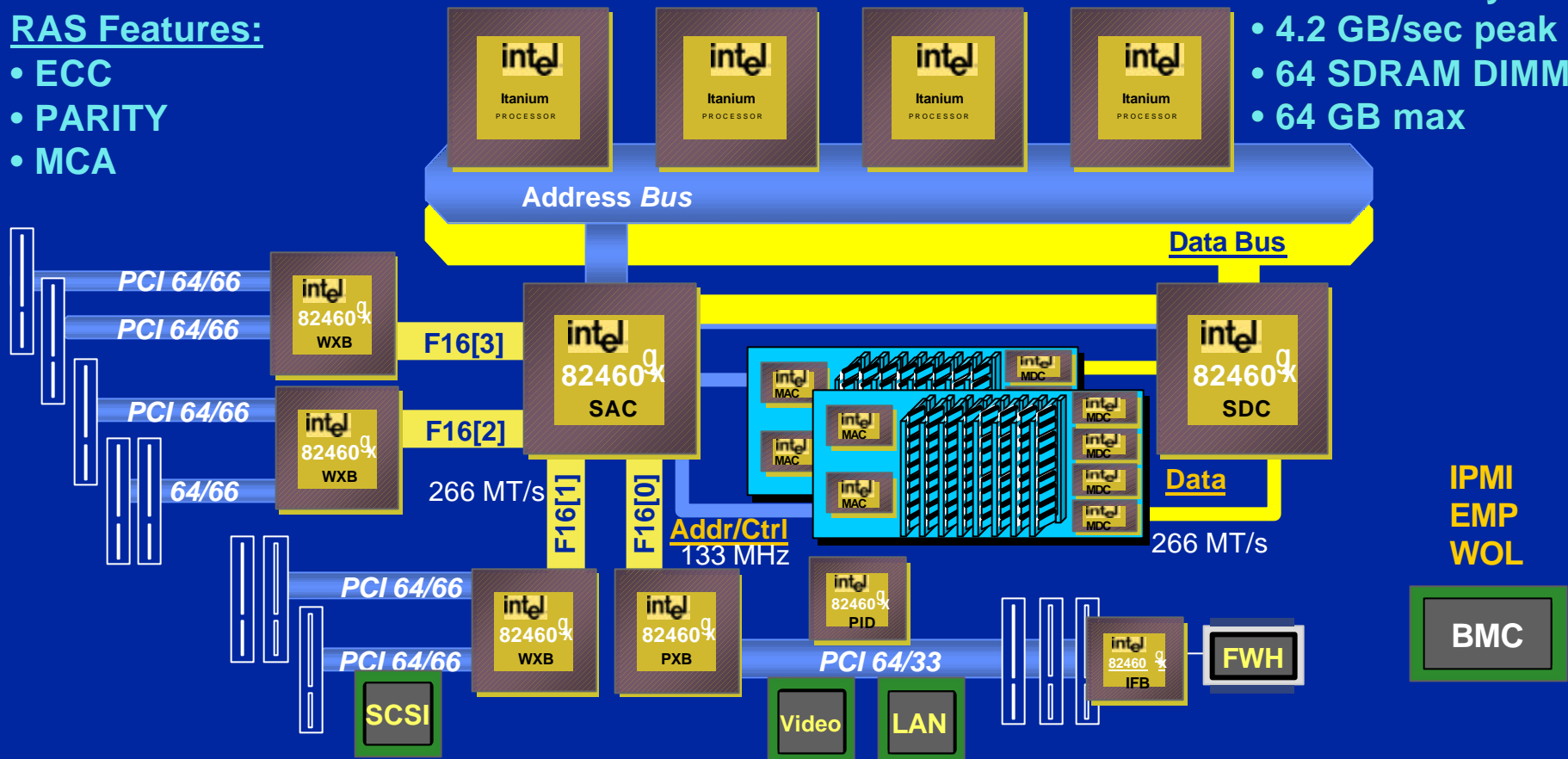
AL460GX Functional Diagram

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



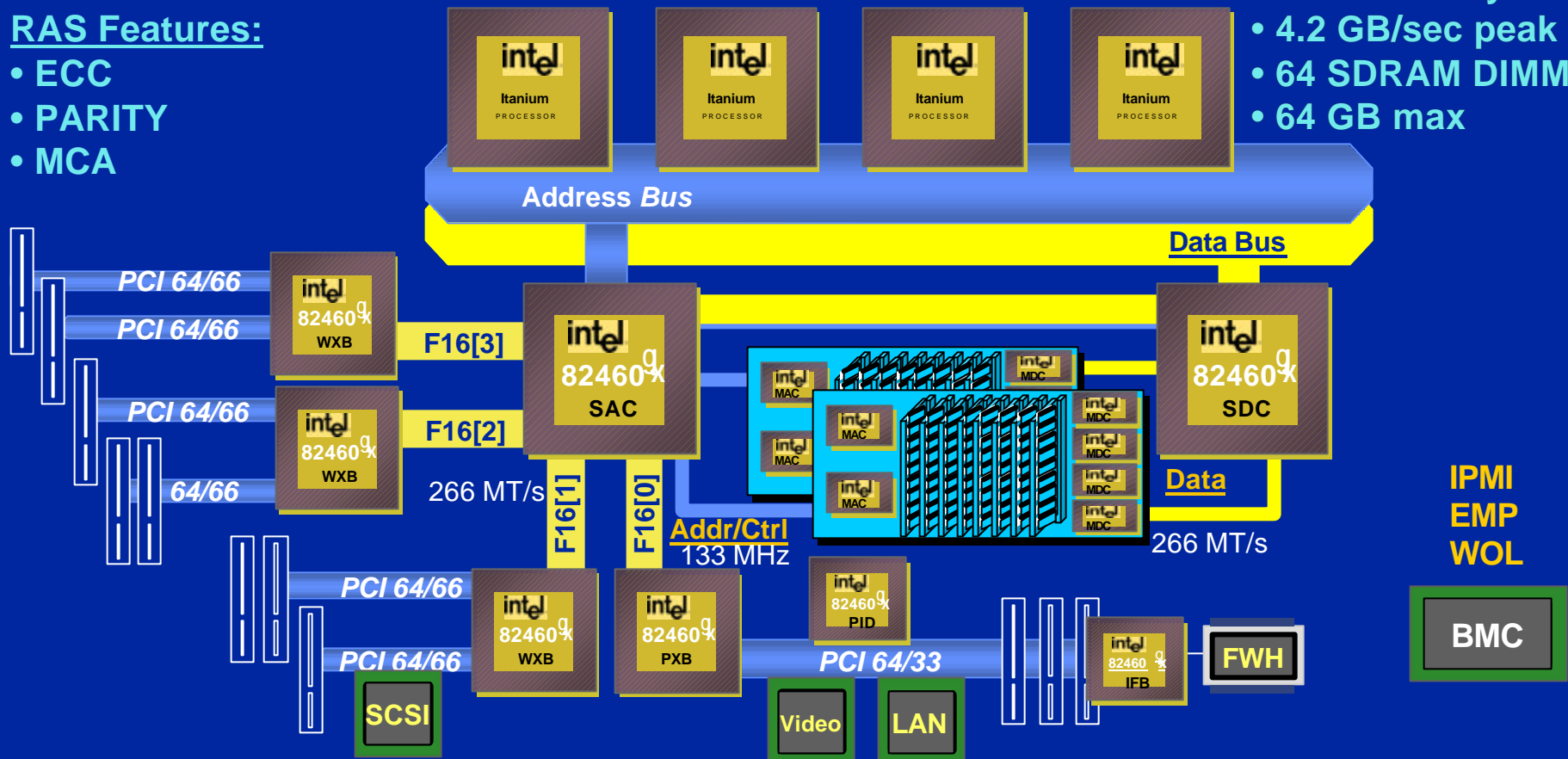
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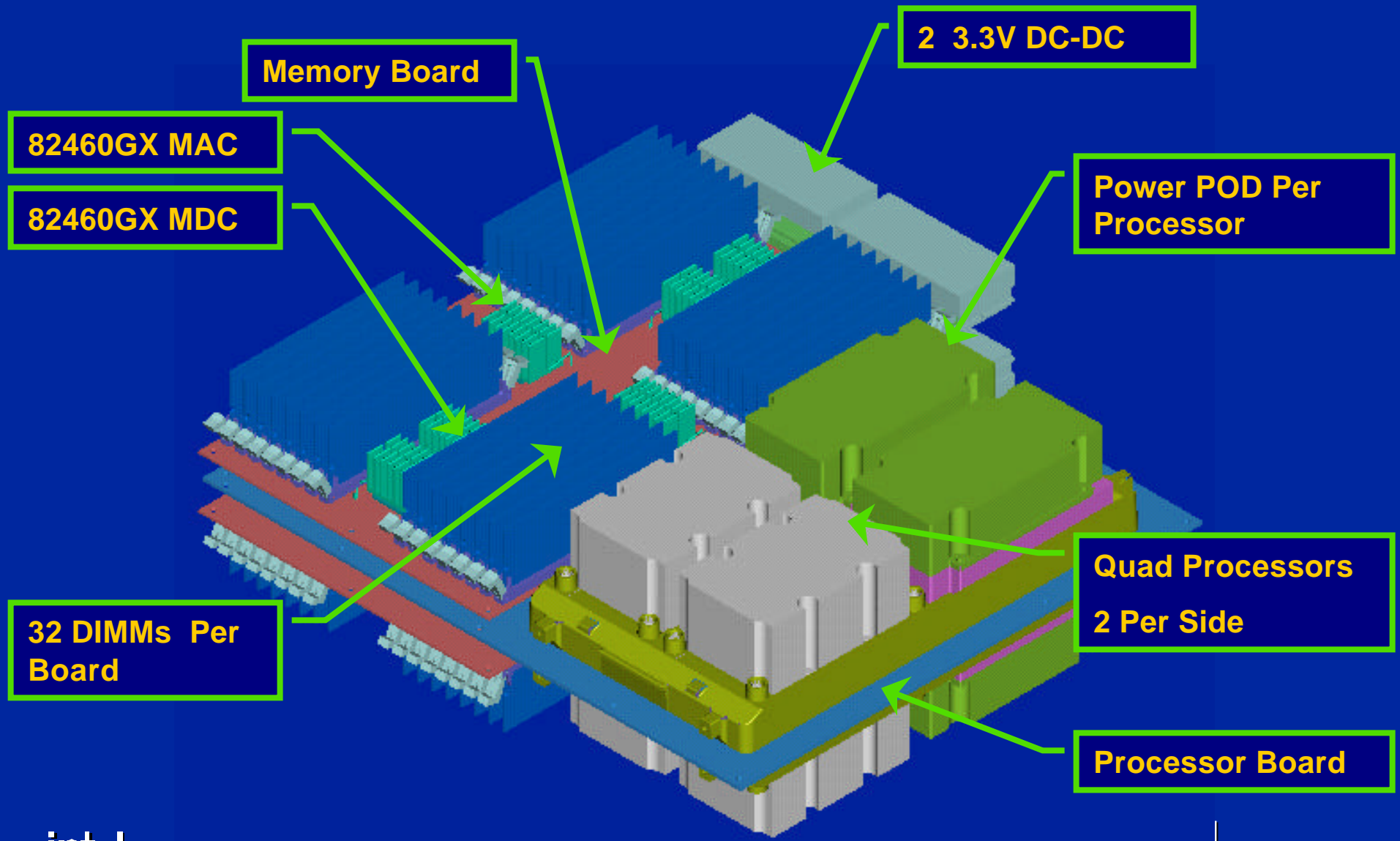
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IA-64 Track



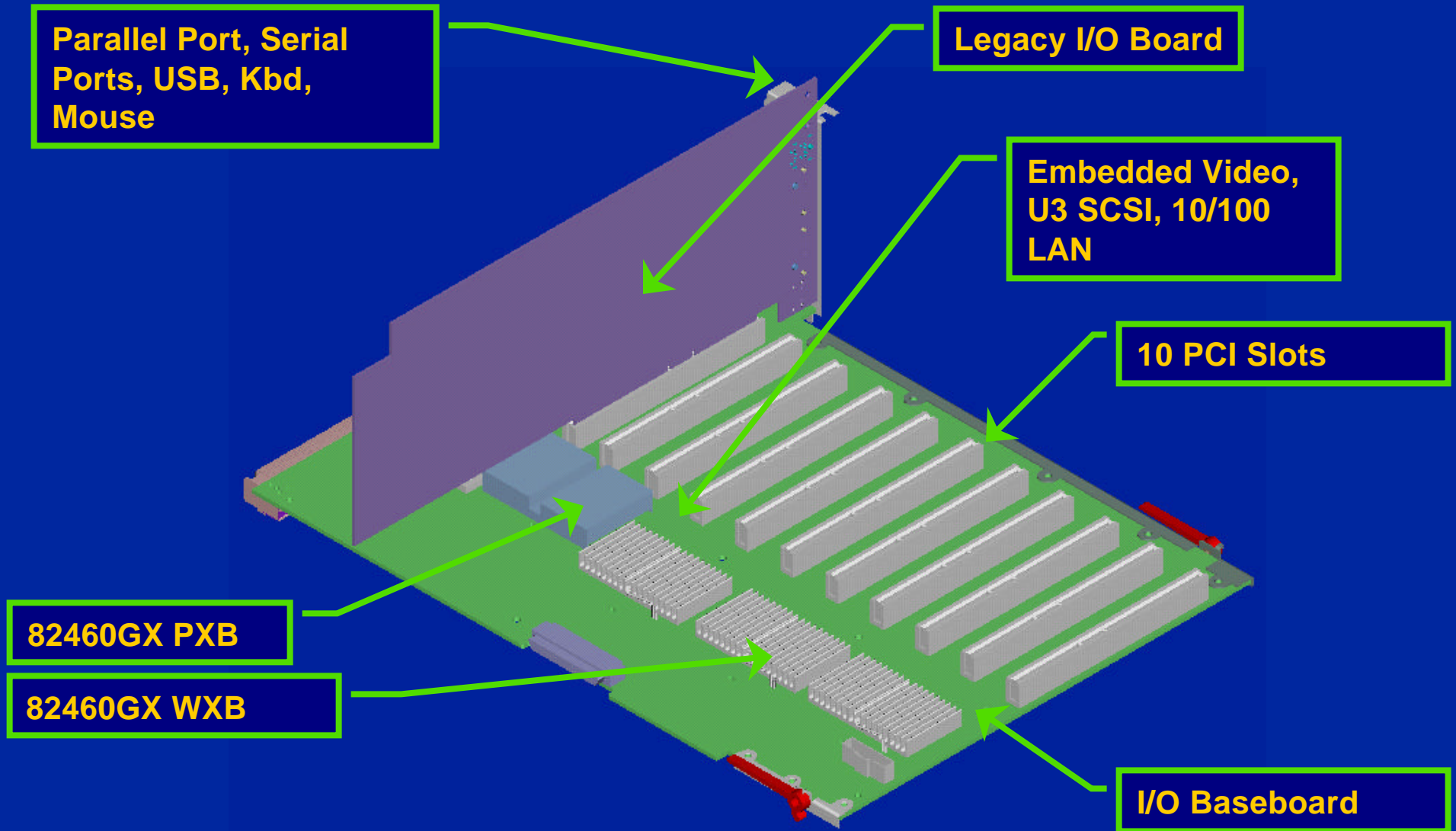
AL460GX Processor/Memory Boards



IA-64 Track



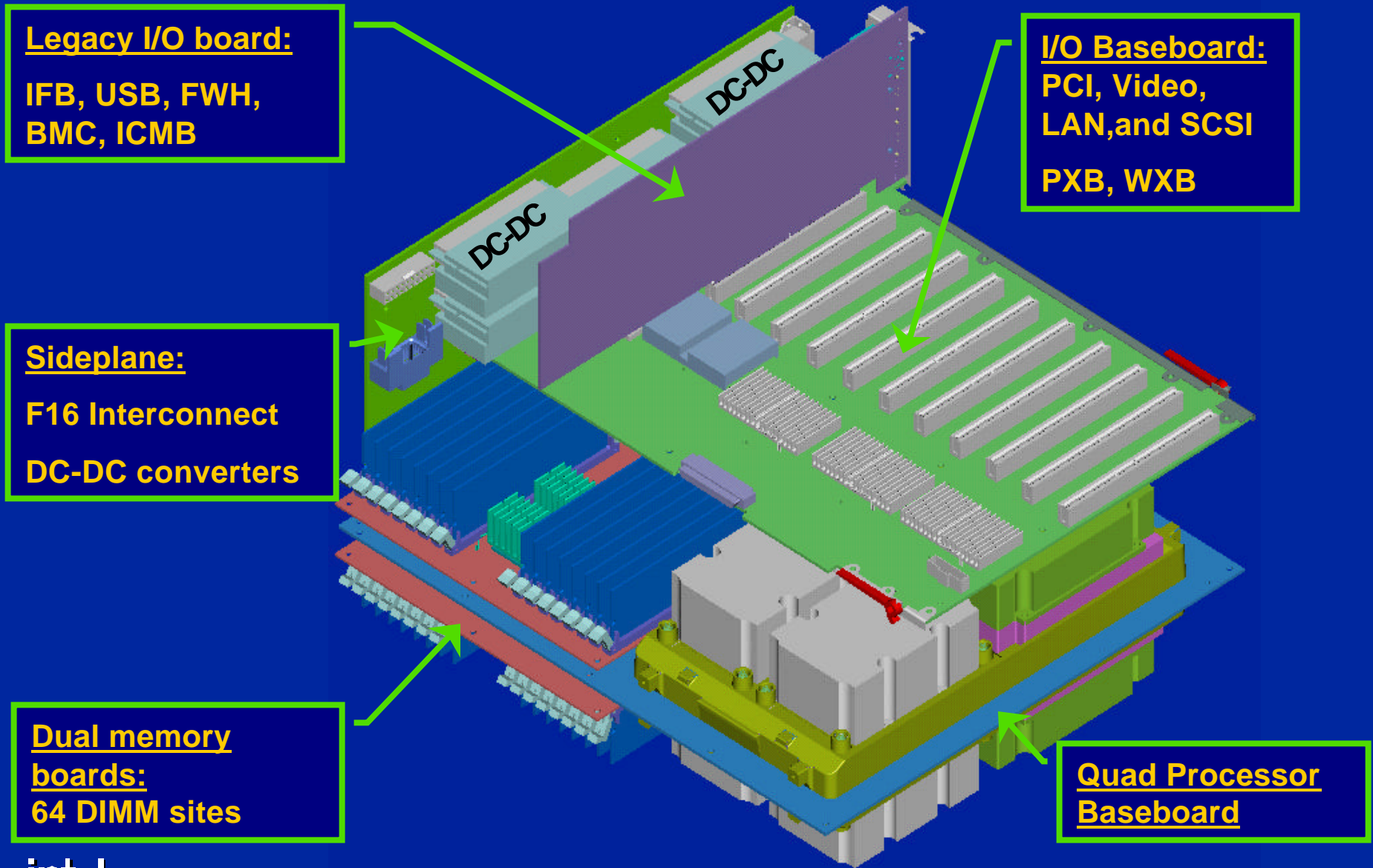
AL460GX I/O Baseboard



IA-64 Track



AL460GX Complete Board Set



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

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

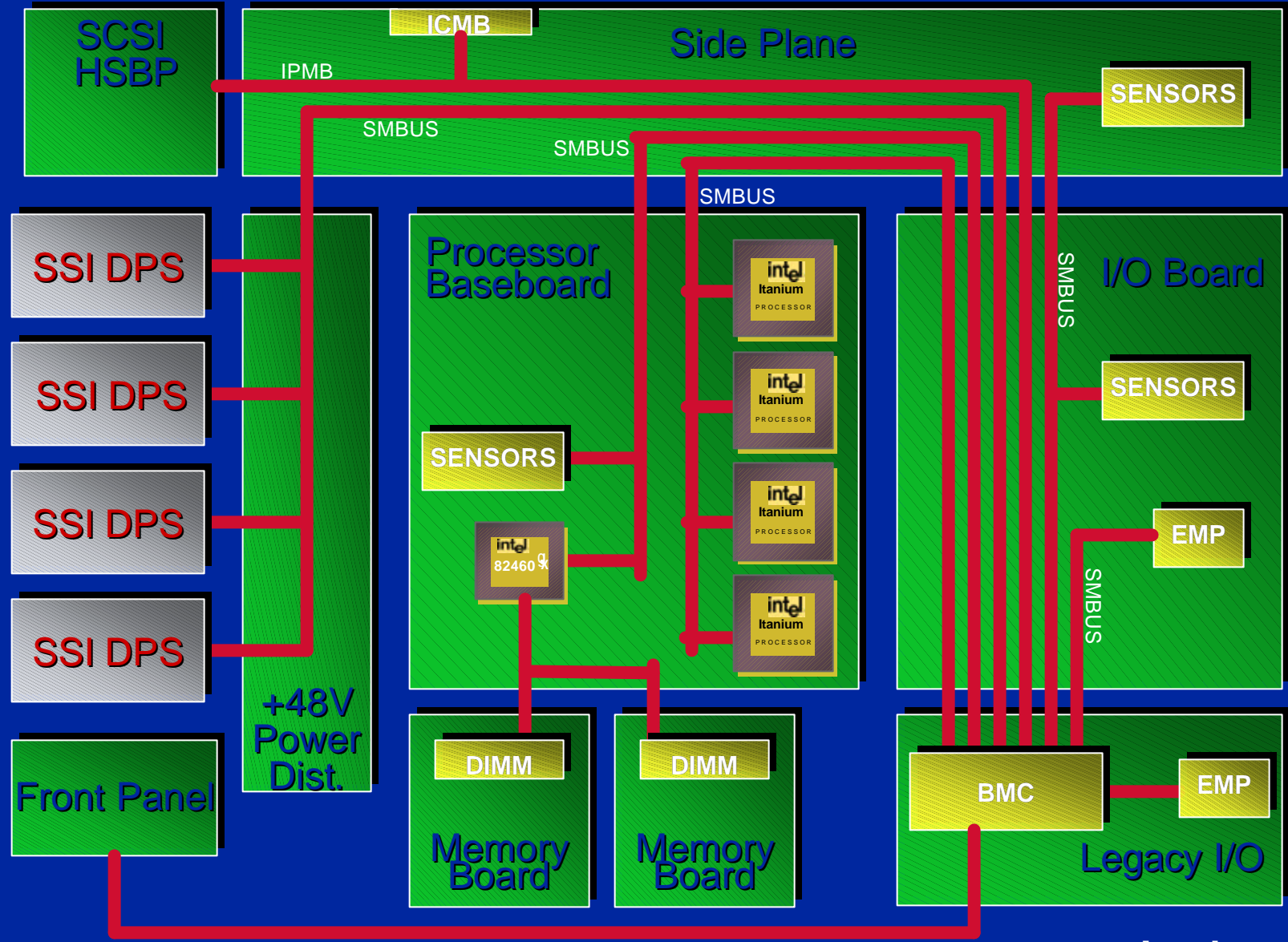
Sideplane:
F16 Interconnect
DC-DC converters

Dual memory boards:
64 DIMM sites

Quad Processor Baseboard



AL460GX System Management

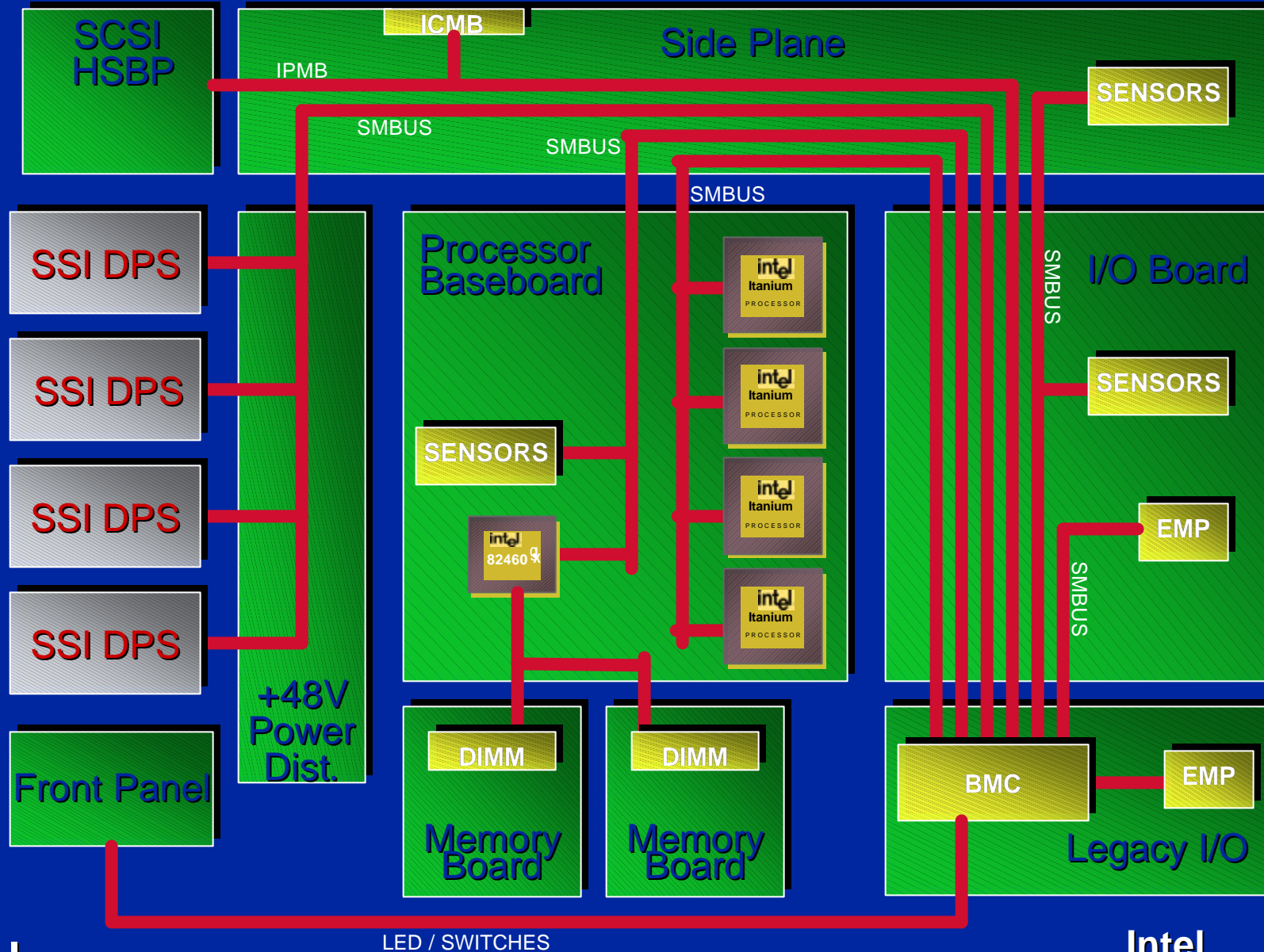


LED / SWITCHES

IA-64 Track



AL460GX System Management



LED / SWITCHES

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

Processor
memory
complex

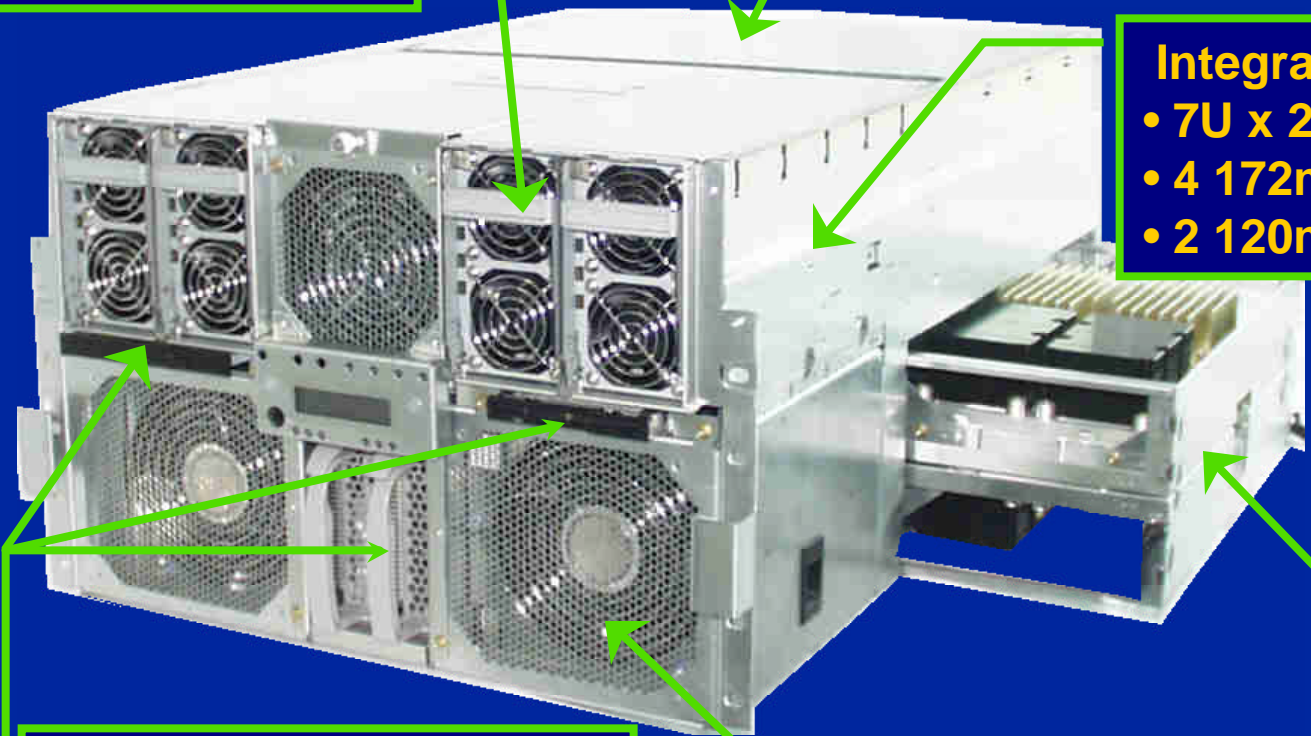
Peripheral Bays:
• 2 HS 1" LVDS SCA HD
• 1/2" LS120
• 1/2" CD-ROM

Front to Back
Passive Cooling

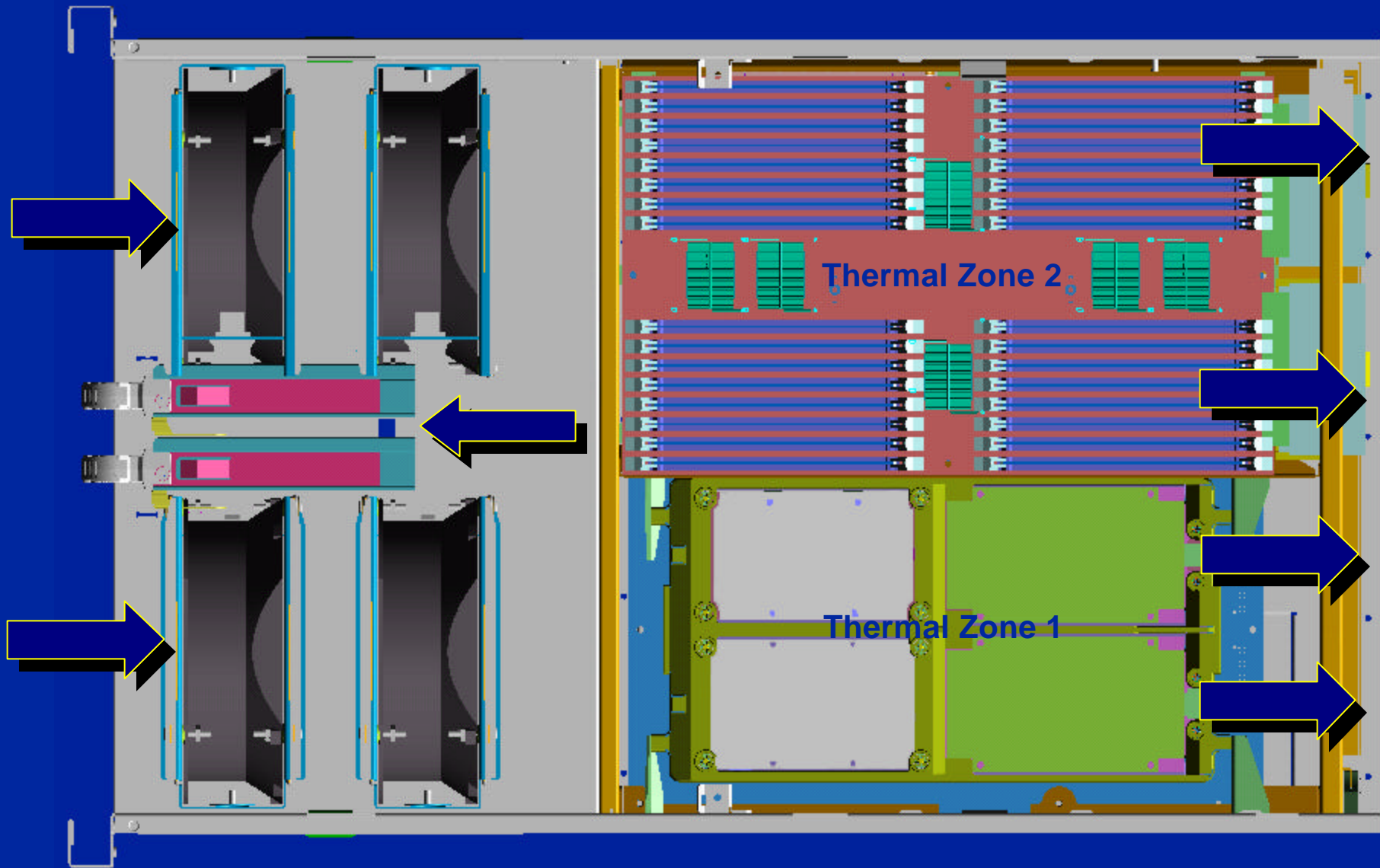
IA-64 Track

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System Airflow



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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
 - ✓ Scalable
- 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

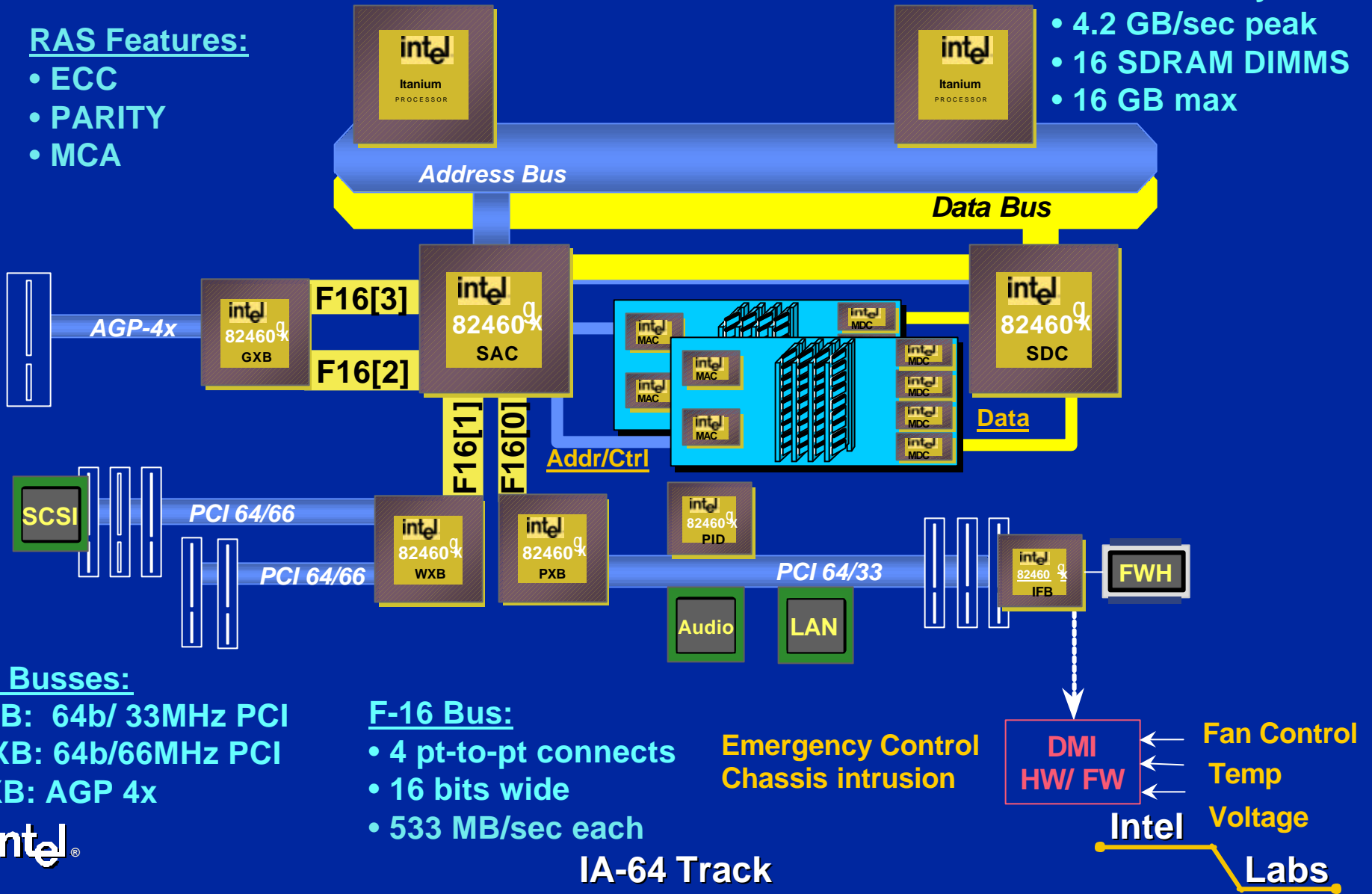
Functional Diagram

Memory:

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

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

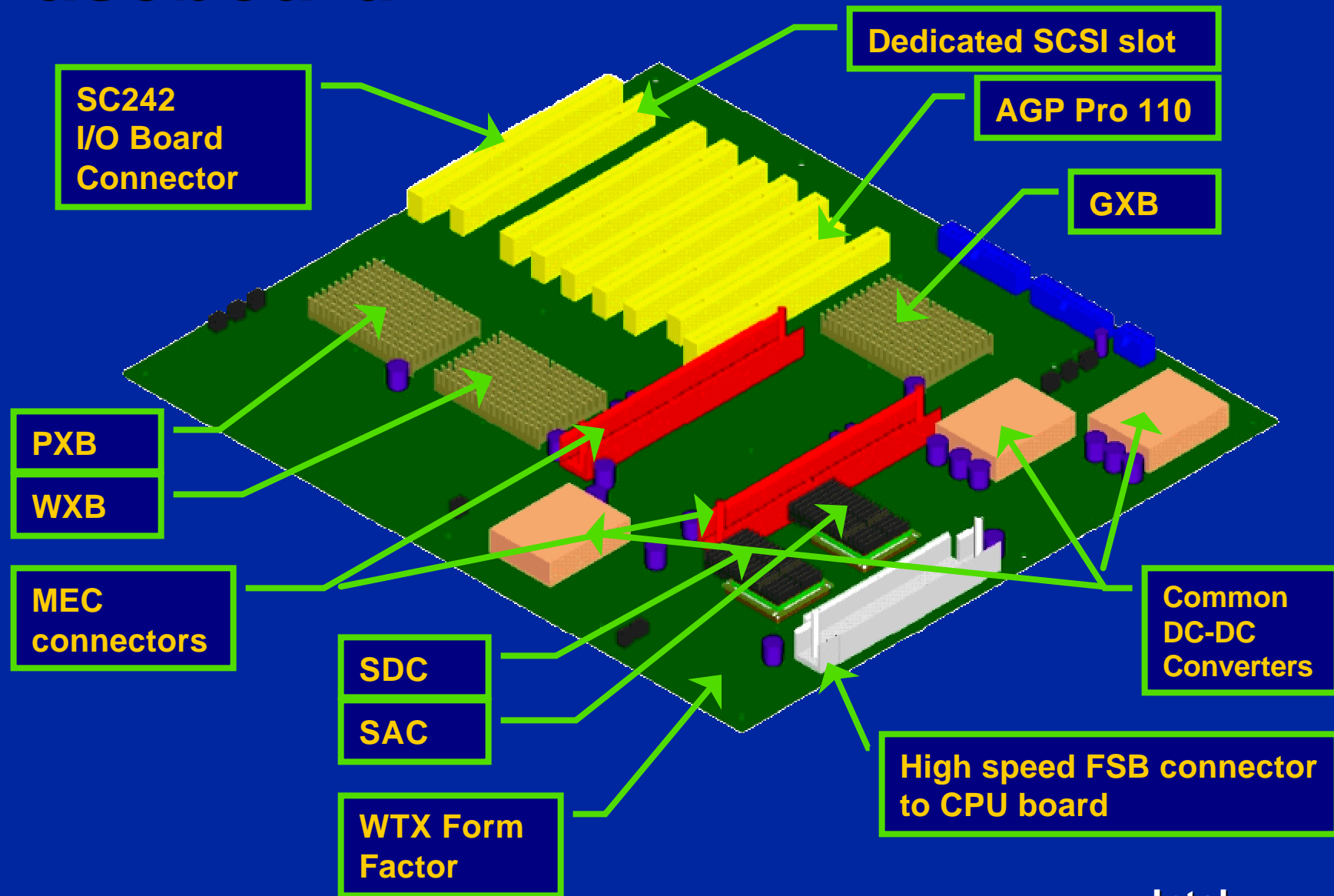
Emergency Control
Chassis intrusion



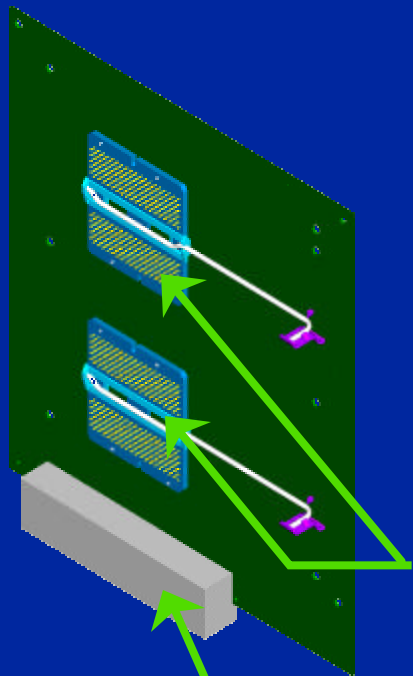
IA-64 Track

Intel Labs

Baseboard

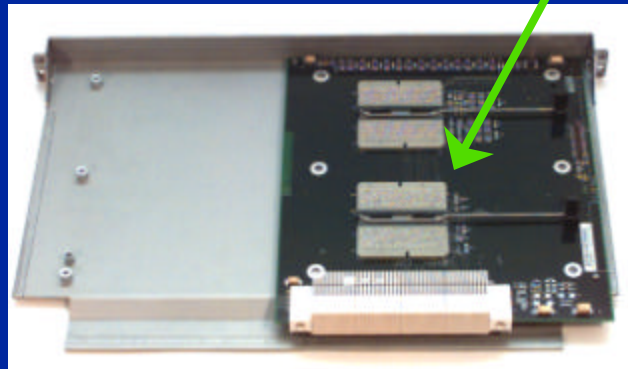


CPU Board



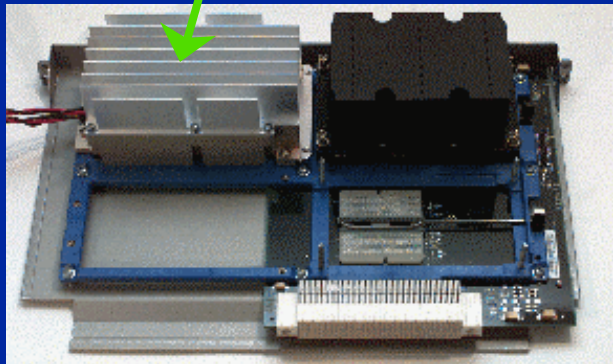
**Itanium™
processor
sockets**

**FSB
Connector**

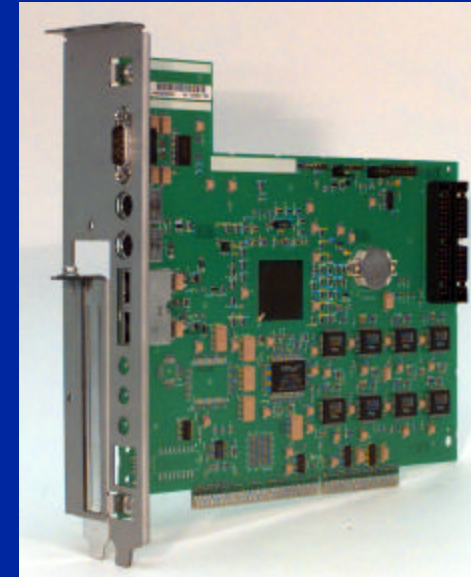
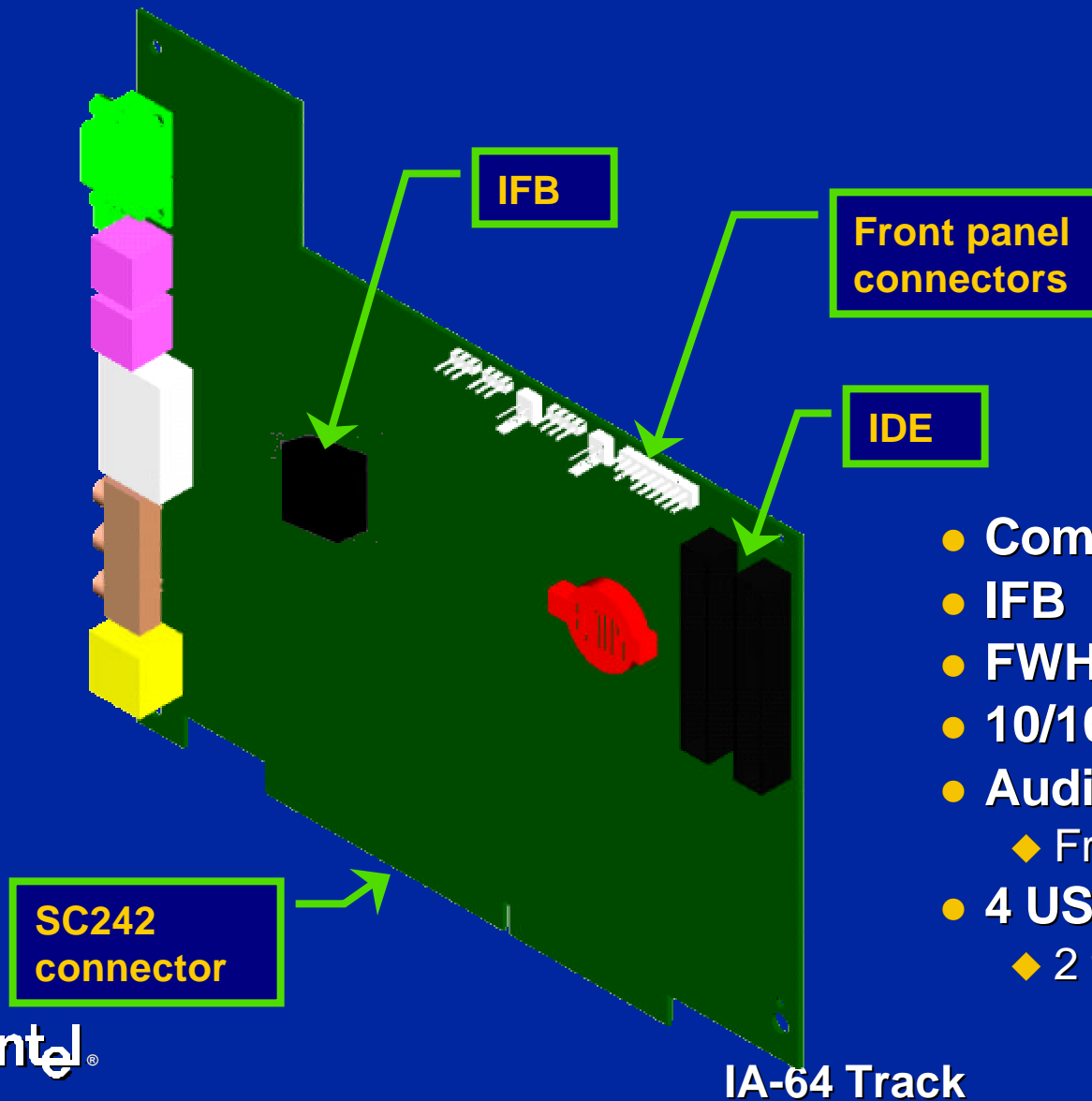


**Compact
CPU board**

**12V Power Pods
mount directly to
backing plate**

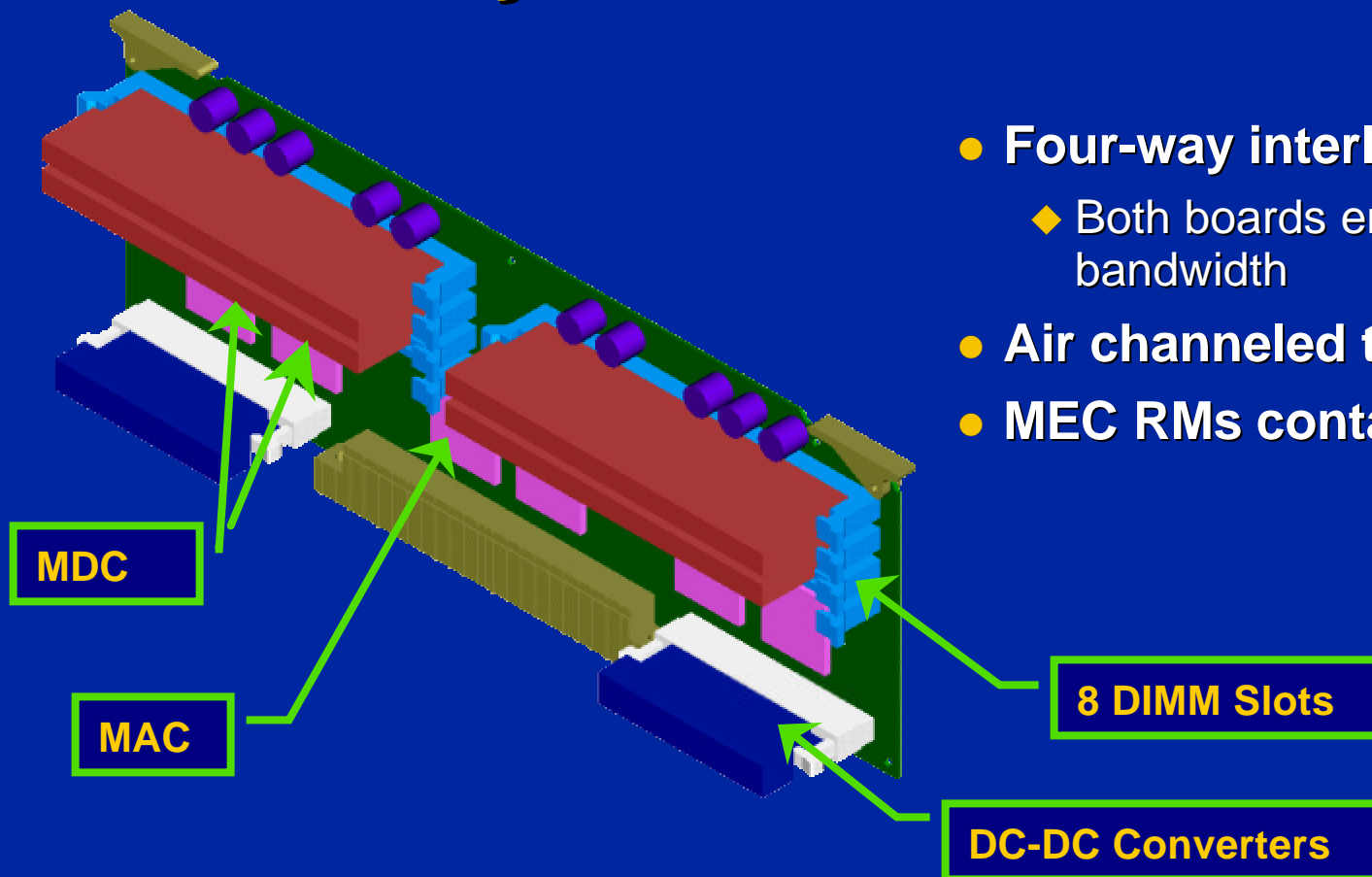


I/O Board



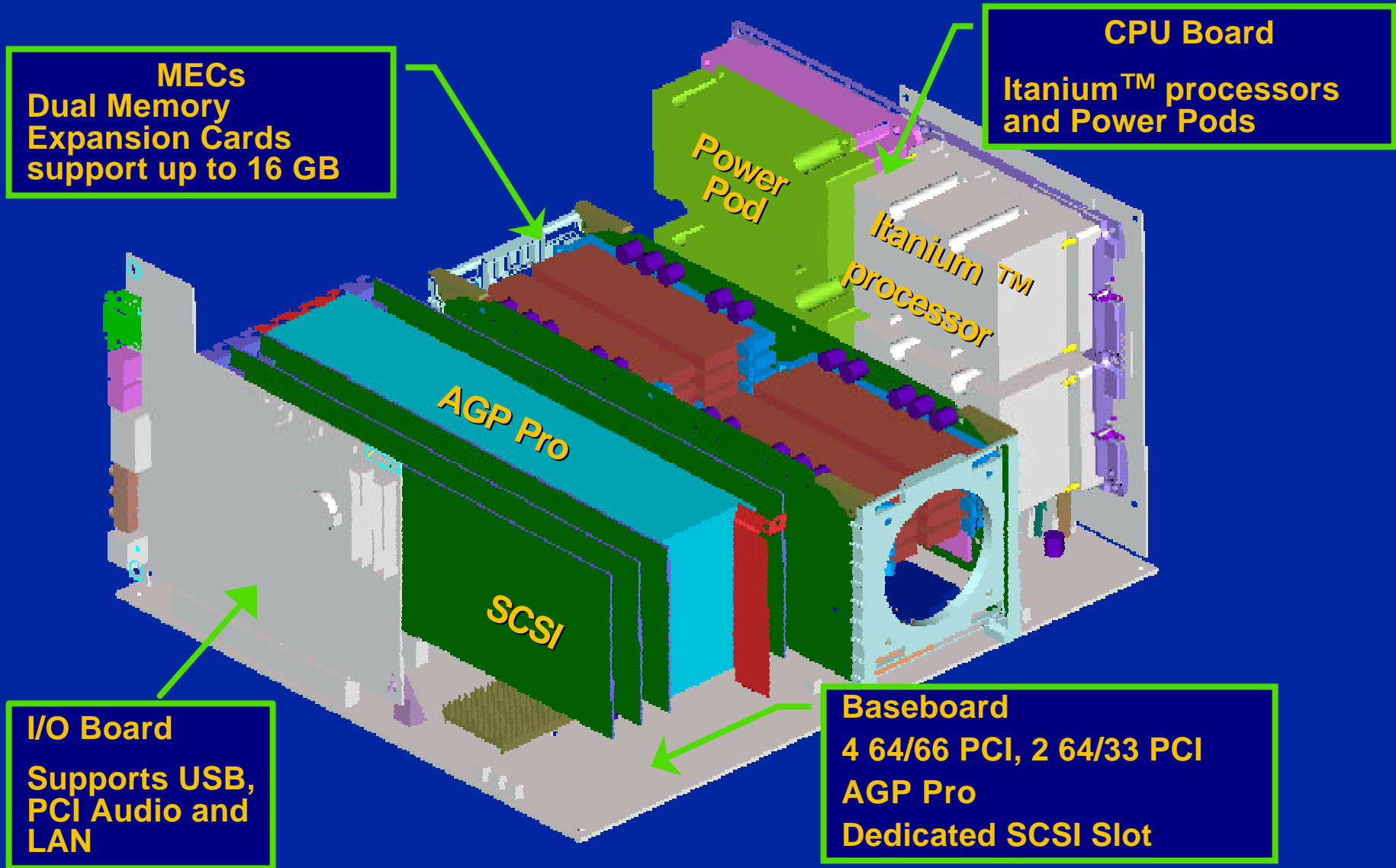
- Components on F16:0
- IFB
- FWH
- 10/100 LAN
- Audio
 - ◆ Front and rear connectors
- 4 USB
 - ◆ 2 front panel, 2 rear panel

Memory Boards



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

BS460GX Board Set



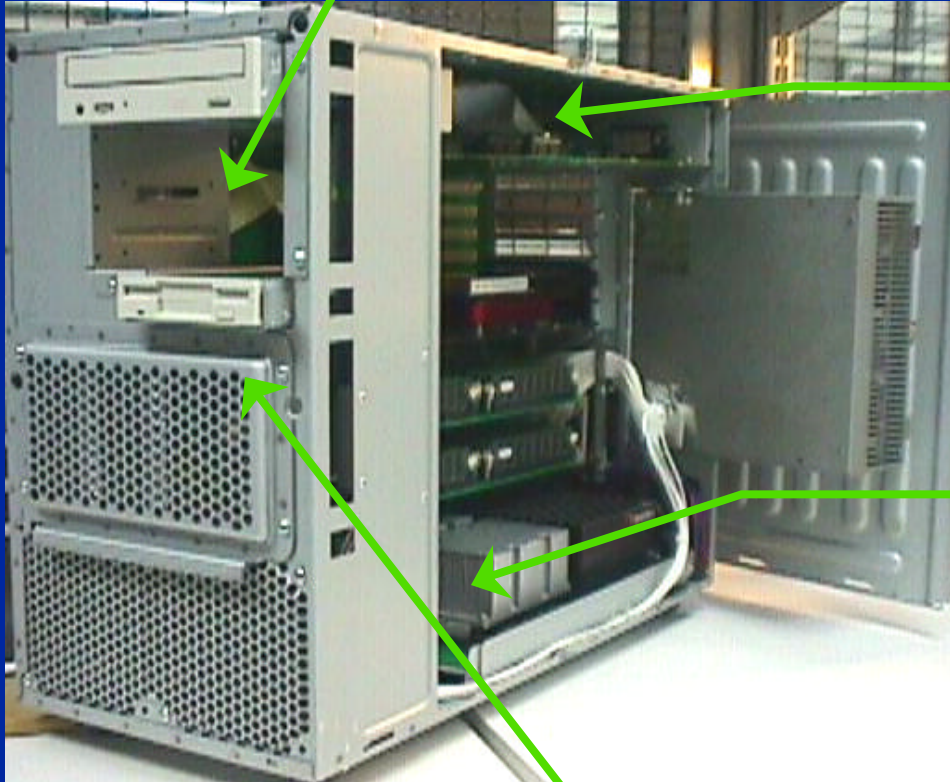
IA-64 Track



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

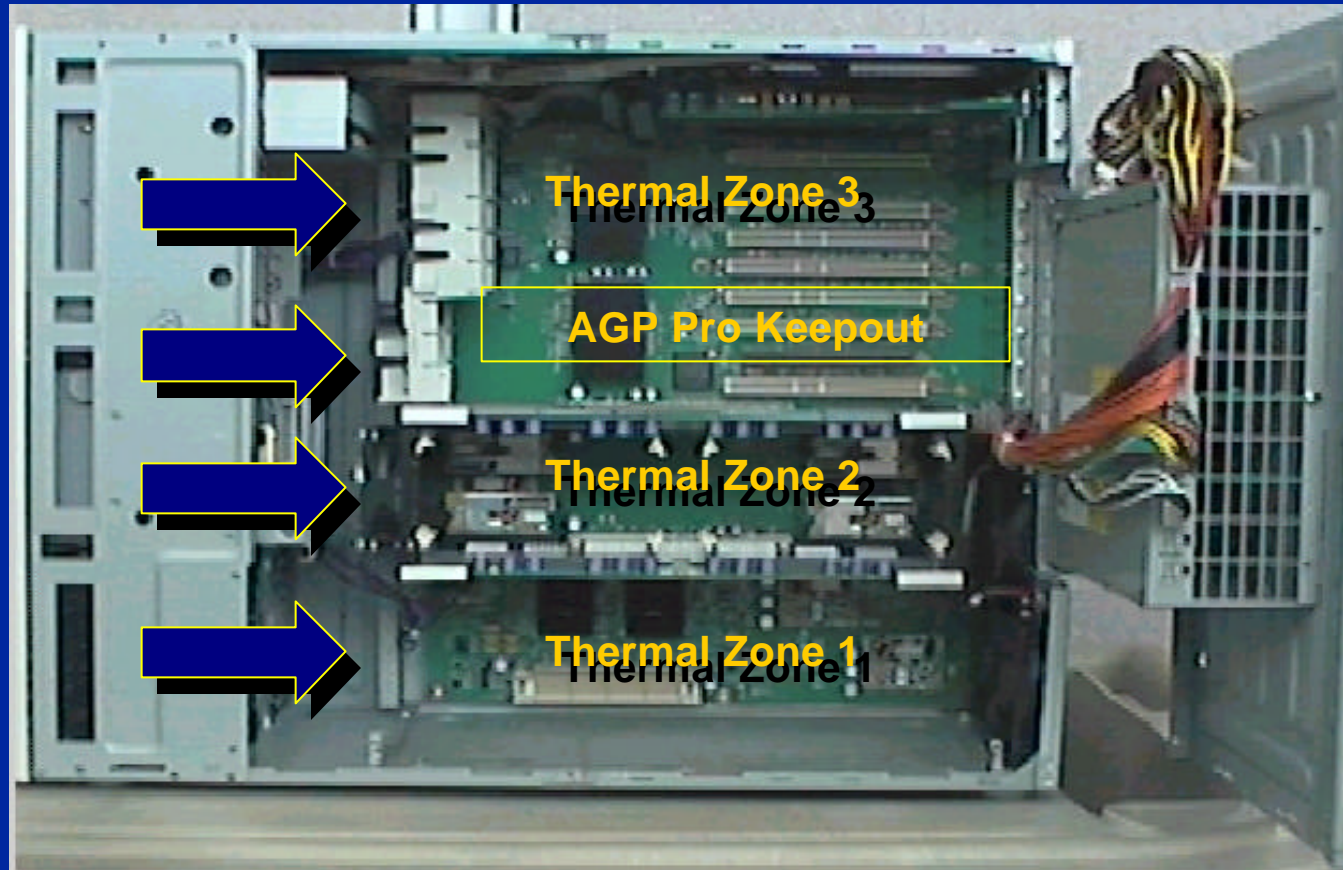
Office Environment

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

HD Bays:

- (5) 1" HD's or (3) 1.6"

System Airflow



Sensors in 3 thermal zones control fans speeds as required for Processors, Memory and I/O

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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**
- **IHV: 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



IA-64 Track



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



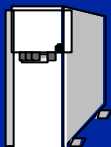
+ Intel Server Control (ISC 3.x)

Health monitoring, LAN Alerting, OS-independent paging (PEP), remote diagnostics/config/control



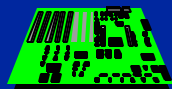
+ Emergency Management Port (EMP)

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

