IBM *e*.server™ BladeCenter™: Processor Blade Solutions

Highlights

IBM® and Intel® have developed the Blade Open Specification (BOS) to enable companies to develop and build compatible switch modules, blade daughter cards (adapter cards), and appliance and communications blades. Hardware developers can now more easily develop and build compatible blade products in these categories and participate in the rapidly growing blades marketplace served by the IBM *e*.server BladeCenter and the Intel Enterprise Blade Server platforms. Through the release of the design specification, we can harness the development power of the industry and deliver a more comprehensive solution roadmap for our diverse customer base.

This document provides an overview of the content in the Blade Server Base Specification for Processor Blade Subsystems volume of the base specification.

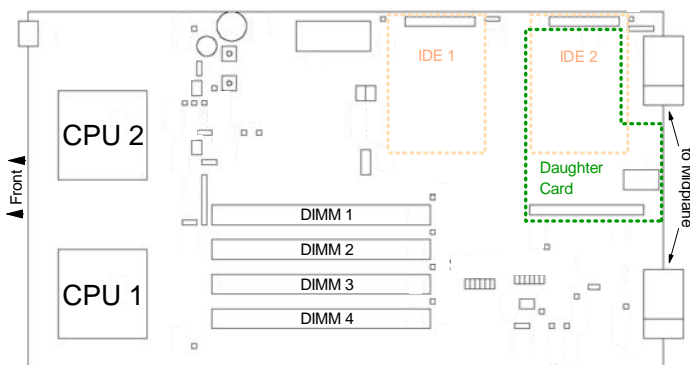For more information and access to the open design specification, go to:
http://www.ibm.com/servers/eserver/bladecenter/signin.html

Figure 1. Example of a Processor Blade Circuit Board

Functional Overview

The standard IBM eServer BladeCenter chassis is a 7U, rack-mounted enclosure which provides 14 slots for Processor Blades. The BladeCenter chassis will accept a wide variety of Processor Blades. The chassis mid-plane provides interconnections and communication paths among the blades, power, fan control, Management Modules, high-speed communication Switch Modules, and shared resources such as front and back-panel LEDs, CD-ROM drive, and diskette drive. These interfaces are duplicated on the mid-plane through two identical sets of connectors to provide redundancy and eliminate single points of failure.

A Processor Blade is an enclosure which houses the server hardware. In Figure 1 to the left and the photo above, is shown a populated circuit board from a typical blade. In this example, the blade consists of two processors, the core logic chipset, memory, service processor, front panel user interface, IO buses, one or two optional 1.8" hard drives, and one optional daughter card. The daughter card can optionally provide I/O expansion through the mid-plane, or it may provide non-I/O functions on the PCI bus. Other expansion features may be present on the blade to support additional options.

The BladeCenter will accept a wide variety of ProcessorBlades that can provide enhanced capabilities. In most cases, a blade is implemented as a single width unit. However in some cases the ProcessorBlade may take up two or more slots, depending upon power, space, and option/expansion requirements.

The ProcessorBlade subsystem can use any processor and associated logic as long as it complies with the mechanical and electrical interfaces required to interact with other subsystems with in chassis, and it meets the power and cooling requirement of the BladeCenter architecture specification.

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Circuit Board: 394.2 x 226.99 mm (15.52" x 8.937")
Thickness: 1.83 +/- 0.178 mm (0.072" +/- 0.007")
Top side max component height: 22 mm (single), 52 mm (double)
Bottom side maximum component height: 2 mm

Enclosure: 245 tall x 29 wide x 446 mm deep (9.7" x 1.14" x 17.6")
sheet metal enclosure with removable cover
EMC protection via gasket on left of enclosure
Retention: Double cam lever with snap latch

Power: 250 W maximum
Cooling: 250 W maximum ProcessorBlade heat dissipation
Airflow: 18-32 CFM per Blade, front to back
Temperature rise: 17 C nominal (23 C max)

Connectors: each Blade has two sets of the following connectors:
      Signal - 60 pin Molex VHDM with alignment pin
      Power - Molex power blade with 2, 30 Amp power blades
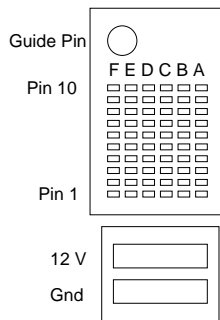
User Interface Controls (on the top front of the blade):
      5 LEDs
      2 Buttons
      2 Botton/LED combinations
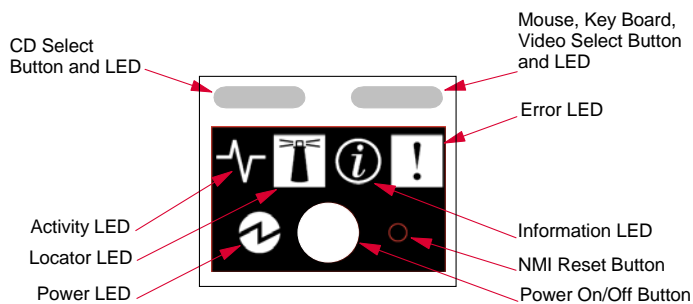
Figure 2. User interface panel on front of blade

Signals	Qty	Wire Count	Type	Destination
Network	4	4 ea	I/O – 1-2.5Gbps	4 Switch Modules
USB - KVM	2	2	I/O – USB1.0	2 Mgmt Modules
KVM Control	2	2	Output – DC	2 Mgmt Modules
USB -CD/Floppy	2	2	I/O – USB1.0	Media Tray
CD/Floppy Control	2	3	Output – DC	Media Tray
Management RS485 bus	2	2	I/O – 56Khz	2 Mgmt Modules
Management I2C bus	2	2	I/O – 100Khz	2 Mgmt Modules
Presence / Slot ID	2	5	1 out, 4 in – DC	2 Mgmt Modules
MM failover control	2	1	Input – DC	2 Mgmt Modules
Video	2	5	Output - ?Mhz	2 Mgmt Modules
Reserved	2	4		
12V Standby Power	2	1	In - DC	2 Power Modules
GND	2	23	In - DC	2 Power Modules
		60+60		
Signals	Qty	Wire Count	Type	Destination
12V	2	1	In - DC	2 Power Modules
GND	2	1	In - DC	2 Power Modules
		4+4		

Table 1. Pins available on the interface connectors

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