Open Specifications for Industry suppliers

IBM eserver™ BladeCenter™: Blade Daughter Card 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 eserver 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 Blade Daughter Cards 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

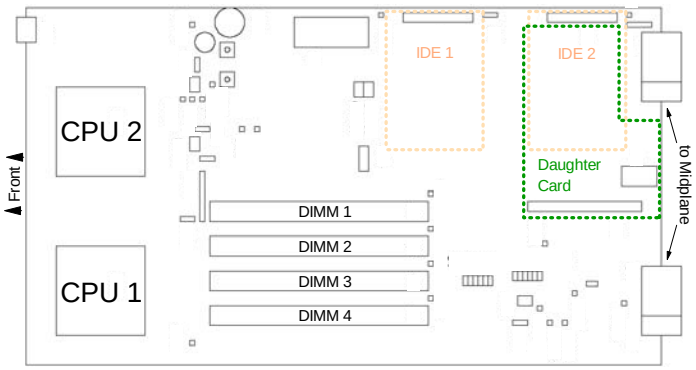

Figure 1. Example Blade with Daughter Card

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 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 Daughter Card attaches to the Processor Blade via a 200-pin Molex connector, in this example, displacing one of the optional IDE drives, as shown in Figure 1. A 64-bit, PCI-X bus connects the daughter card, through the core chipset, to the CPUs, memory, and other blade resources. Dual I/O interfaces provide two differential pairs (4 wires) per link. Each link supports a full-duplex SerDes connection up to 2.5 Gbps. The dual links provide access to switch module slots 3 and 4. The I/O Daughter Card is intended to provide a wide range of processor blade expansion options, such as:

- Additional Ethernet I/O
- Fiber Channel I/O
- Custom function HW accelerator or co-processor
- InfiniBand I/O
- Unique blade clustering support

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Board: 5” x 3 ¾” (Figure 2 below)
Thickness - 1.58mm +/- 10%.
Top side maximum component height: 5.4 mm
Bottom side maximum component height: 8 mm

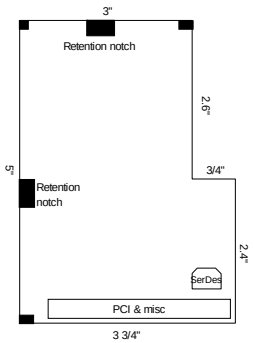

Figure 2. Example Daughter Card

Retention:
Two clips (Top and Left), two mated connectors

Power:
Board: max: 10W
3.3v @ 3A max
5.0v @ 2A max
12v @ 0.25A
3.3VAux @ 0.75A max (always on)

Airflow: 350-400 lfm
Max air temperature: 52C (67C for Telco)
I2C Chip: 24C32 Serial EEPROM
Connectors:
PCI and misc: Molex 500600-2009
SerDes: Molex 75003-2000

Signals	Qty	Wire Count	Type	Destination
64-bit PCI-X	1	96+3*	I/O - 133Mhz	PCI Bridge
I2C	1	3	I/O - 100 Khz	SP processor
V_IO	1	7	Input - DC	I/O drive voltage
Aux 3v	1	3	Input - DC	Card stdby pwr
3.3V	1	13	Input - DC	Card pwr
12V	1	1	Input - DC	Card pwr
5V	1	8	Input - DC	Card pwr
GND	1	66	Input -DC	Card gnd
		200		
Signals	**Qty**	**Wire Count**	**Type**	**Destination**
Network	2	4	I/O - 1-2.5Gbps	2 Switch Modules
		8		

Table 1. Pins available on the interface connectors

Notes:
*96 pins = standard PCI-X
3 pins additional to support a second PCI-X device (Request, Grant, Interrupt)

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The BladeServer Base Specification for Blade Daughter Cards contains the following sections:

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