



Product Brief  
Telecom and Compute Boards

# Intel NetStructure® MPCBL0040 Single Board Computer

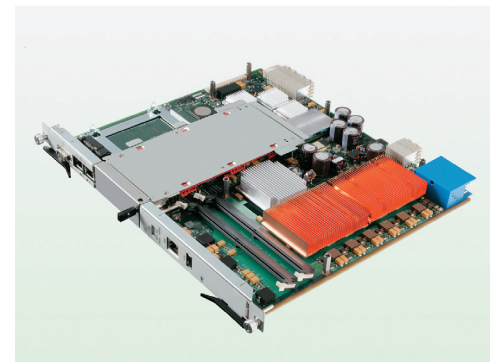
The Intel NetStructure® MPCBL0040 single board computer is the latest in a series of high compute boards introducing powerful multi-core architecture compliant with the Advanced Telecom Computing Architecture (AdvancedTCA\*) specification. The MPCBL0040 features two Dual-Core Intel® Xeon® LV 2.0 GHz processors, providing a total of four processor cores per board. This design achieves significant performance improvements in multithreaded applications such as IP Multimedia Subsystem (IMS), IPTV, and Wireless Control Plane applications.

The MPCBL0040 is also designed to interoperate with AdvancedTCA products from Intel and with third-party building blocks meeting the PICMG\* 3.0 specification.

## Dual-Core Intel® Xeon® LV 2.0 GHz Processor

The processor subsystem on the MPCBL0040 offers:

- Dual processor support, which includes an enhanced bus arbitration protocol, power-optimized 667 MHz front-side bus (FSB), and a 2 MB shared L2 cache per physical processor enabling four high-performance cores per platform
- 36-bit memory addressing using Physical Address Extension (PAE) that provides support for up to 8 GB of memory on the MPCBL0040



- FSB address, data parity, ECC memory, and an enhanced error reporting mechanism through Machine Check Architecture (MCA) that ensures reliability and data integrity

## AdvancedMC

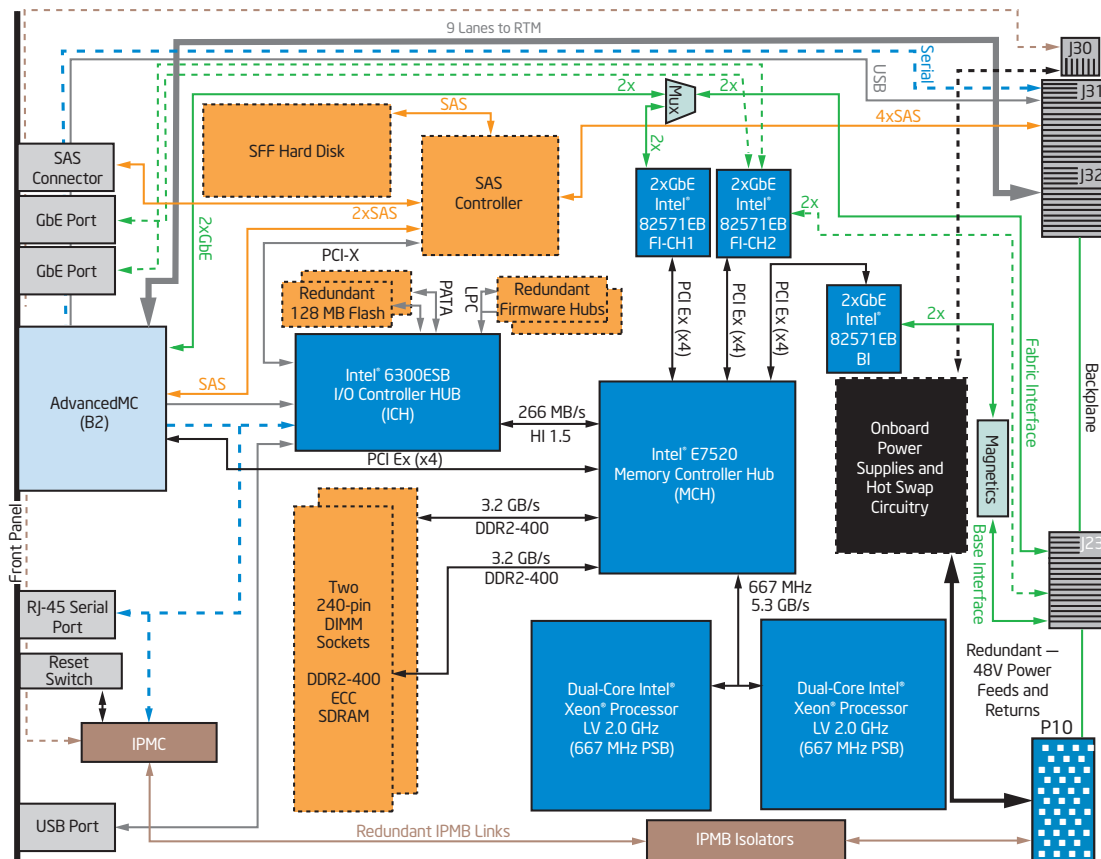
The MPCBL0040 has one AdvancedMC\* site, which supports the next-generation mezzanine card standard optimized for AdvancedTCA. AdvancedMC uses PCI Express\* and Gigabit Ethernet for maximum throughput. In addition, the increased board area and power envelope enables the MPCBL0040 to support high-density I/O and processor mezzanines.

AdvancedMC provides full hot swap support and allows management via an onboard IPMB bus. AdvancedMC cards can also reduce time-to-market because AdvancedMC provides baseboard modularity via an easy-to-use expansion slot that requires no infrastructure changes.

Features	Benefits
<b>Processor: Two Dual-Core Intel® Xeon® LV 2.0 GHz processors featuring multi-core technology</b>	Performance boost from processor technology enables superior subsystem scalability and greater density (more subscribers/transactions per board) to allow more network elements in an AdvancedTCA chassis, which improves system scalability
<b>Chipset: Intel® E7520 provides direct connection between the MCH and PCI Express components and AdvancedMC modules</b>	Supports outstanding I/O throughput by delivering higher bandwidth with PCI Express for improved platform performance
<b>Interface: Dual Star Gigabit Ethernet base and fabric interfaces (compliant with PICMG 3.0 and 3.1, option 2)</b>	Backplane supports high I/O requirements and access to high-speed storage systems
<b>Mezzanine Site: One AdvancedMC</b>	Allows module hot add and hot swap, higher throughput bandwidth than PMCs, and easy expandability
<b>Management: Intelligent Platform Management Controller (IPMC)</b>	Enables carrier-grade system reliability and manageability such as controlling board power and monitoring onboard sensors using dual Intelligent Platform Management Bus (IPMB) connections
<b>High Availability Features: Redundant BIOS images, IPMC firmware images, and dual 128 MB flash drives</b>	Redundancy on key items enables high reliability for field deployments
<b>Option for enterprise-class hard drive, which allows Serial Attached SCSI (SAS) drives with MTBF over 1 million hours</b>	Provides high reliability, low latency data access for boot up and other local storage
<b>Multiple storage options (local hard drive, front SAS ports, redundant 128 MB flash drives, and Rear Transition Module hard drive)</b>	Supporting multiple onboard and external storage options allows configuration flexibility

## Block Diagram

Figure 1. MPCBL0040 Block Diagram



## Technical Specifications

### Processor

Type	Dual-Core Intel® Xeon® LV 2.0 GHz processor
Core	Dual core using Chip Multi-Processing (CMP) architecture
Processor Side Bus	667 MHz

### Memory

Cache Memory	2 MB L2 cache per processor
Maximum Memory Capacity	8 GB SDRAM using two 4 GB DDR2-400 Registered ECC SDRAM DIMMs
Number of DIMM Slots	2

### Chipset

Memory Controller Hub	Intel® E7520
I/O Controller Hub	Intel 6300ESB

### Operating System

Linux	Validated with MontaVista Linux Carrier Grade Edition (CGE)* 4.0 Validated with Wind River Platform for Network Equipment, Linux Edition* 1.2
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### Power

Supported Voltage (Normal)	-38VDC to -72VDC
Maximum Power Draw	190W (with maximum memory installed and 25W for AdvancedMC* slot)

### Environmental

Ambient Temperature	Operating (normal): 5°C to 40°C (board intake temperature) Operating (short term): -5°C to 55°C Storage: -40°C to 70°C
Airflow	Operating: 30 CFM per minute minimum
Humidity	Operating: 15% to 90% non-condensing at 55°C Storage: 5% to 95% non-condensing at 40°C
Vibration	Operating: 5 to 100Hz: 1G @ 0.25 octave/minute; 100 to 500Hz: 1G @ 1 octave/minute
Shock (unpackaged)	Operating: 30 G/11 ms half sine Non-operating: 50 G, 170 inches/second trapezoidal

### Connections

Front Panel I/O	One USB 2.0 port One serial port (RJ-45) One x4 SAS connector with support for 2 SAS ports One AdvancedMC single-width, full-height slot (x4 PCI Express, Dual Gb Ethernet) Two 10/100/1000 Ethernet ports LEDs for hot swap, out of service, health, hard drive activity, and Ethernet ports
Backplane	Dual Gigabit Ethernet (AdvancedTCA Base Interface) Quad Gigabit Ethernet (AdvancedTCA Fabric Interface; PICMG 3.1, option 2) Dual IPMB connections (Zone 1) Support for Rear Transition Module (Zone 3)
Rear Transition Module Ports	4x SAS ports Serial port USB port

## Technical Specifications (cont.)

### Storage

Type	Onboard storage controller with RAID 0/1 support Support for onboard 2.5-inch Small Form Factor (SFF) Serial Attached SCSI (SAS) hard drive Redundant 128 MB flash drives Front panel SAS connector Support for SFF SAS hard drive on Rear Transition Module
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### Physical

Height	8U, 14 in. (35.56 cm)
Width	1.2 in. (3.048 cm)
Depth	11.02 in. (28 cm)
Weight	7 pounds (3.18 kg)– without packaging 8.82 lbs. (4.01 kg) – with packaging

### Specification Compliance

AdvancedTCA	AdvancedTCA 3.0 R1.0 and ECN001
AdvancedMC	AMC.0, AMC.1, AMC.2
NEBS	Demonstrated NEBS Level-3 compliance
IPMI	IPMI v2.0

### Regulatory Compliance

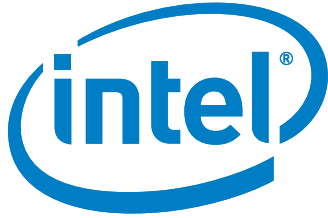
Safety	UL/cUL 60950-1 Safety for Information Technology Equipment E96804 EN/IEC 60950-1 Safety for Information Technology Equipment (CB Report and Certificate)
Emissions	CISPR22:1997 & 2003/EN55022:1998 & EN55022 A1:2000 & A2:2003 Class A EN 300 386 V1.3.2:2003 FCC Rules CFR 47:2003 Part 15B Class A ICES-003, Issue 4 (CISPR 22:1997 & A2:2002) Class A
Hazardous Substances	Content meets requirements of EU RoHS Directive relying on exemptions for lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunications ("Telecom") and for lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages ("Flip Chip"). Products using Telecom exemption ONLY comply with the RoHS Directive if used in exempted applications. Products using Flip Chip exemption may be labeled as Pb-free-Second Level Interconnect.

### Warranty

Intel® Telecom Products Warranty Information at <http://www.intel.com/network/csp/products/3144web.htm>

## Single Board Computer Product Line Overview Table

Product	Processor	Core	Chipset	Mezzanine Slots
MPCBL0001	Dual Low Voltage Intel Xeon processors (2.0 GHz)	Single	Intel E7501	1 PMC
MPCBL0010	Low Voltage Intel Xeon processor (2.8 GHz)	Single	Intel E7520	2 AdvancedMC
MPCBL0020	Intel® Pentium® M processor 760 (2.0 GHz)	Single	Intel E7520	3 PMC
MPCBL0030	Dual Low Voltage Intel Xeon processors (2.8 GHz)	Single	Intel E7520	1 PMC
MPCBL0040	Dual Dual-Core Intel Xeon LV 2.0 GHz processors	Dual	Intel E7520	1 AdvancedMC



[www.intel.com/go/atcaprod](http://www.intel.com/go/atcaprod)

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