

Product Brief

Intel® Carrier Grade Server TIGH2U

Telecom and Compute Products



Intel® Carrier Grade Server TIGH2U

Product Overview

The Intel® Carrier Grade Server TIGH2U is a NEBS-3 and ETSI-compliant 2U carrier-grade rack-mount server, delivering industry-leading performance-per-watt over previous-generation rack-mount servers. It features the Quad-Core Intel® Xeon® processor 5400^A series – based on Intel's latest 45nm technology – to provide breakthrough performance and energy efficiency for compute- and I/O-intensive applications and workloads.

This high-performing server is an excellent choice for the demanding environment and limited space of the central office and high availability data centers. It enables OEMs and TEMs to create specialized, value-added solutions for a variety of telecom applications including unified messaging, SolP, call control, media and signaling gateways, and operational system support.

The TIGH2U is designed to be fire-resistant and to withstand extreme heat, humidity, altitude and zone 4 earthquake shock. Advanced server management and telco alarm management features provide visual, audible (optional) and SNMP event indications of faults, consistent with the rigid requirements of the telecom central office environment.

45nm Quad-Core Intel® Xeon® Processor 5400^A Series with Extended Life Cycle Support

Dual-processor platforms based on the Quad-Core Intel Xeon processor 5400 series provide high levels of computing for threaded applications, delivering eight-thread, 32- and 64-bit processing capabilities with 12 MB of L2 cache per processor. Based on 45nm enhanced Intel® Core™ microarchitecture, the processor delivers up to 38-percent improvement in performance-per-watt¹ over previous-generation Intel® quad-core processors. It has also been demonstrated to deliver up to 2x faster performance² than Intel® dual-core processors, and up to 5x increased performance³ over Intel® single-core processors.



Support for Intel® Advanced Technologies

The Intel Carrier Grade Server TIGH2U supports many of Intel's advanced hardware technologies, including:

- Intel® Virtualization Technology⁴ (Intel® VT) provides hardware assistance for software-based virtual environments, allowing multiple operating systems and applications to run in independent partitions. It helps reduce total cost-of-ownership by facilitating remote upgrades of applications and operating systems.
- Intel® I/O Acceleration Technology⁵ (Intel® I/OAT), supported by the server chipset, significantly improves data throughput via hardware- and software-supported I/O acceleration by reducing CPU over-head to free resources for more critical tasks. Additionally, it provides network acceleration that scales seamlessly across multiple Gigabit Ethernet (GbE) ports.
- Intel® 64 Architecture⁶ provides flexibility for 64-bit and 32-bit applications and operating systems.
- Fully Buffered DIMM (FB-DIMM) technology enables the flexibility to optimize system for performance and capacity or for cost effectiveness and power efficiency.

Intel® Carrier Grade Server TIGH2U

Standard Features

Support for two Quad-Core Intel® Xeon® processors 5400^A series

Three-year extended life cycle support with possible extension to five years

Shallow 20-inch depth

600W AC or DC hot-swap power supply

Telco alarm management

Two rear-panel GbE NIC (Cu) ports

Eight FB-DIMM slots (240-pin DDR2-533/667 MHz)

Drive trays for up to six hot-swap 2.5-inch SAS hard disk drives

Bay supports optical drive (purchased separately)

Up to five PCI slots for flexibility and additional I/O

Benefits

- New 45nm enhanced Intel® Core™ microarchitecture boosts performance on multiple applications/user environments and data-demanding workloads
- Faster performance with improved energy efficiency enables denser deployments

- Reduces customer risk for long product roll-outs
- Fewer platform transitions requiring additional testing and software

- Increases installation and service flexibility

- Flexibility of installation and applications; uninterrupted operation (DC)
- Upgradeable to second power supply for redundancy

- Front-panel feature supports central office alarm systems

- Scalable Ethernet ports, upgradeable to 20 GbE (max) based on PCI configuration and optional I/O modules

- Maximum 32 GB memory (non-mirrored mode)

- High-performance, enterprise-class drives for 24/7 operation

- Accommodates Slimline CD-ROM; CD-R/W; CD DVD-R/W

- Low-profile riser supports two PCIe x4 slots
- Full-height, full-length riser supports three slots (two PCIe x4 [or 1 PCIe x8] and one PCI-X)

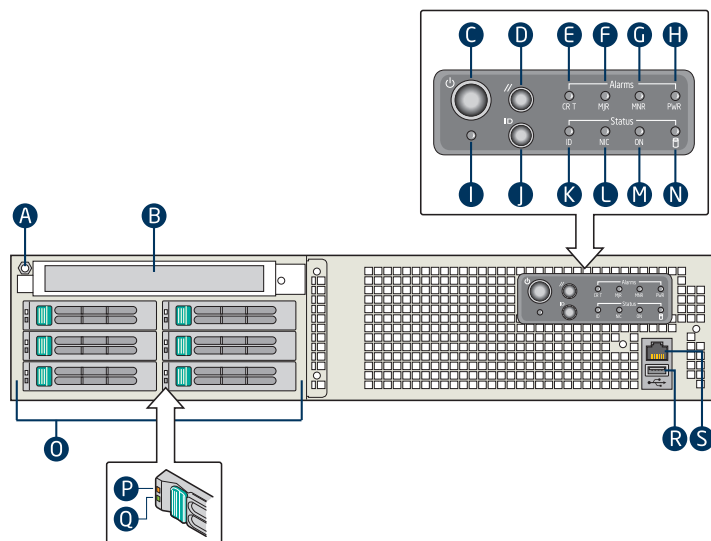


Figure 1. Intel® Carrier Grade Server TIGH2U front panel

- A Anti-static connection
- B Optical drive (optional) or filler panel
- C Power switch
- D Reset switch
- E Critical alarm LED
- F Major alarm LED
- G Minor alarm LED
- H Power alarm LED
- I NMI switch
- J ID switch
- K System ID LED
- L NIC activity LED
- M Main power LED
- N HDD activity LED
- O Hard drive bays (supports six 2.5" SAS)
- P Drive fault indicator (one per hard drive)
- Q Drive activity indicator (one per hard drive)
- R USB port 2 connector
- S RJ45 serial port connector (COM 2)

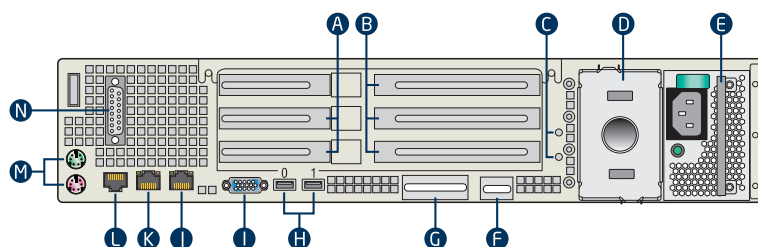


Figure 2. Intel® Carrier Grade Server TIGH2U rear panel

- A Low-profile PCIe add-in cards or filler panels
- B Full-height PCI-X/PCIe add-in cards or filler panels
- C Grounding studs (for DC system)
- D Power supply #2 slot (filler panel shown)
- E Power supply #1 (AC module shown; DC modules also available)
- F GCM port connector (optional) or filler panel
- G I/O expansion module connector (optional) or filler panel
- H USB 0 and USB 1 port connectors
- I Video connector
- J GbE NIC 2 connector
- K GbE NIC 1 connector
- L RJ45 serial port connector (COM 2)
- M PS/2 keyboard and mouse connectors
- N Telco alarms connector

Optional Features

Hardware RAID 5
 Intel® Remote Management Module 2
 Flash storage capability supports Intel® Z-U130 Value Solid State Drive (Purchased separately)
 Optional I/O modules (rear)
 Additional full-height riser options for PCI-X

Benefits

- Greater protection and reliability of data storage
- Lights-out management
- High-speed, high-density storage, faster boot times, USB interface
- Enables additional external SAS storage or two additional GbE NIC (Cu) ports on rear panel
- PCI-X (active): three independent PCI-X, each with maximum 133 MHz
- PCI-X (passive): two PCI-X with maximum 100 MHz and one PCI-X (66 MHz) all on a shared PCI bus

Order Information

TLHA0201W
 TLHD0201W

Description

Base model with AC power supply
 Base model with DC power supply

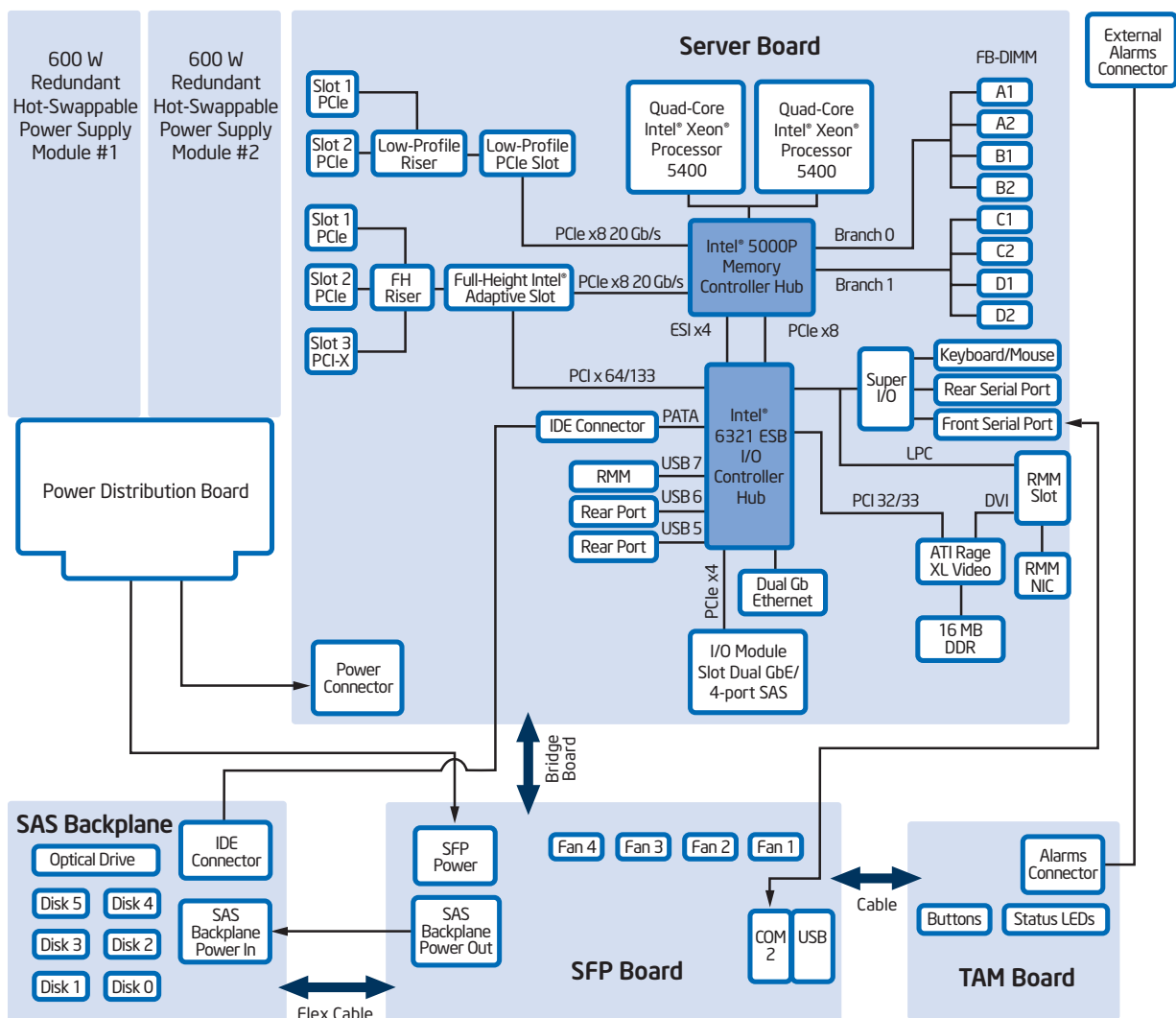


Figure 3. Intel® Carrier Grade Server TIGH2U block diagram (shown as fully configured system with all optional features included)

Specifications

Processor

Type	Two (2) Quad-Core Intel® Xeon® processors 5400 ⁴ series with 12 MB cache
Front-side bus	1333 MHz

Chipset

Memory Controller Hub	Intel® 5000P Memory Controller Hub (MCH)
I/O Controller Hub	Intel® 6321ESB I/O Controller Hub (ICH)

Connections

Two (2) PCI risers supporting up to five PCI slots (included)	<ul style="list-style-type: none"> One (1) low-profile riser supporting two PCIe x4 slots One (1) full-height, full-length riser supporting three slots (two PCIe x4 [or one PCIe x8] and one PCI-X)
Additional full-height riser configuration (optional)	<ul style="list-style-type: none"> PCI-X (active): Three (3) independent PCI-X slots (133 MHz max) PCI-X (passive): Two (2) PCI-X slots (100 MHz max) and one PCI-X slot (66 MHz) on shared bus
GbE NIC (CU) ports	<ul style="list-style-type: none"> Two (2) on base board (rear) Two (2) via optional I/O Module (rear, optional) Three (3): One front/two rear
USB 2.0 ports	Three (3): One front/two rear

Storage

Type	SAS 2.5-inch hot-swap HDD
Redundancy	RAID 1 and RAID 5
Internal	Carrier with six HDD trays
External	SAS port on rear supports JBOD

Environmental

Temperature, operating	+5° C to +40° C (41° F to 104° F)
Temperature, short-term operating (<96 hrs)	-5° C to 50° C
Temperature, non-operating	-40° C to 70° C (-40° F to 158° F)
Altitude	0 to 1,800 m (0 to 5,905 ft) @ 40° C 0 to 4,000 m (0 to 13,123 ft) @ 30° C
Humidity, operating	5% to 85%
Humidity, short-term operating	5% to 90%
Humidity, non-operating	93%, non-condensing at temperatures of 23° C (73° F) to 40° C (104° F)
Vibration, operating	Swept sine survey at an acceleration amplitude of 0.1 G from 5 to 100 Hz and back to 5 Hz at a rate of 0.1 octave/minute; 90 minutes per axis on all three axes as per Bellcore GR-63-CORE standards
Vibration, non-operating	Swept sine survey at an acceleration amplitude of 0.5 G from 5 to 50 Hz at a rate of 0.1 octaves/minute, and an acceleration amplitude of 3.0 G from 50 to 500 Hz at a rate of 0.25 octaves/minute, on all three axes as per Bellcore GR-63-CORE standard. 2.2 Grms, 10 minutes per axis on all three axes
Shock, operating	Half-sine 2 G, 11 ms pulse, 100 pulses in each direction, on each of the three axes ⁷

Environmental, continued

Shock, non-operating	Trapezoidal, 25 G, 170 inches/sec delta V, three drops in each direction, on each of the three axes ⁴
Acoustic	Sound pressure: < 55 dBA at ambient temperatures < 24° C measured at bystander positions in operating mode

Memory

Maximum memory capacity	32 GB (non-mirrored mode)
DIMM slots	Eight (8)
Memory type	FB-DIMM technology at 533 and 667 MHz

Physical

Height	3.45 inches (87.6 mm)
Width	17.14 inches (435.3 mm)
Depth	20 inches (508 mm)

Regulatory Compliance

Safety	UL 60950-1, 1st Edition/CSA 22.2 60950-1, Low Voltage Directive 2006/95/EC, GS to EN60950-1, 1st Edition CB Certificate and Report to IEC60950-1, 1st Edition and all international deviations
Electromagnetic Compatibility:	
Australia/New Zealand	C-tick, Class A
Canada	ICES-003, Issue 4, Class A Limit
China	CCC Approval, Class A (EMC and Safety)
Europe	EMC Directive, 2004/108/EC EN55022, Class A Limit, Radiated and Conducted Emissions EN55024 Immunity Characteristics for ITE EN61000-4-2 ESD Immunity EN61000-4-3 Radiated Immunity EN61000-4-4 Electrical Fast Transient EN61000-4-5 Surge EN61000-4-6 Conducted RF EN61000-4-8 Power Frequency Magnetic Fields EN61000-4-11 Voltage Fluctuations and Short Interrupts EN61000-3-2 Harmonic Currents EN61000-3-3 Voltage Flicker
International	CISPR 22, Class A Limit, CISPR 24 Immunity VCCI Class A
Japan	RRL Approval, Class A
Korea	Gost Approval
Russia	BSMI Approval, CNS 13438, Class A and CNS13436 Safety
Taiwan	FCC 47 CFR Parts 2 and 15, Verified Class A Limit
USA	

Embedded Intel® Architecture in Networking and Communications: intel.com/netcomms/

⁴Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

See http://www.intel.com/products/processor_number for details.

¹Quad-Core Intel® Xeon® processor 5300 series. Up to 38% (1.38x) higher Perf/Watt/E5450 vs E5335 – Published/measured results on SPECjbb2005* – Oct 2, 2007.

²Dual-Core Intel® Xeon® processor 5100 series. Up to 119% (2.19x) higher Performance X5460 vs 5160 – Published/measured results on SPECjbb2005* – Oct 2, 2007.

³Single-Core 64-bit Intel® Xeon® processor 3.80 GHz. Up to 443% (5.43x) higher Performance X5460 vs Xeon 3.80 – Published/measured results on SPECint*_rate_base2006 – Oct 2, 2007.

⁴Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

⁵Intel® I/O Acceleration Technology (Intel® I/OAT) requires an operating system that supports Intel I/OAT.

⁶64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel® 64 architecture. Performance will vary depending on your hardware and software configurations. Consult with your system vendor for more information.

⁷As per 25-GS0009 Boards and Systems Environmental Governing Specification.

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