

GR160 F1 specifications

Product overview

The 1U Gateway GR160 F1 is a dual socket server for space-conscious users who demand highest performance and expansion capability. Offering high performance, innovative technology, and comprehensive management features, the Gateway GR160 F1 delivers a cost-optimized solution for SMB environments.

Internal view



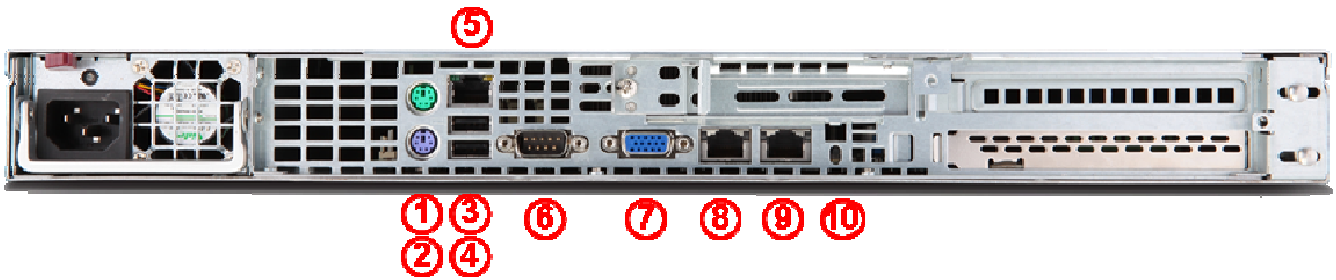
- 1 1 x 720 W 80 PLUS® gold-level efficient easy-swap power supply
- 2 2 x Intel® Xeon® X5600 series processors
- 3 12 x DDR3 ECC registered / unbuffered DIMMs
- 4 N+1 redundant cooling fans
- 5 3 x PCIe expansion slots
- 6 1 x slimline ODD bay
- 7 4 x 3.5" hot-swappable hard drive bays

Front ports and I/O

- 1 2 x USB 2.0 ports
- 2 Power button, ID button, COM port, LED indicators (Power, HDD activity, LAN1 status, LAN2 status, ID)

GR160 F1 specifications

Rear View



Rear I/O

- 1,2 PS2 mouse and keyboard ports
- 3,4 2 x USB ports
- 5 Management port (RJ-45)
- 6 Serial port
- 7 Video port
- 8,9 2 x Gigabit LAN port (RJ-45)
- 10 System ID LED

What's New

- New Intel® Xeon® 5600 Series processors
Intel Xeon X5675, X5672, E5649, E5645, E5607, E5606, E5603
- Easy-swap power supply with 80 PLUS® gold-level efficiency
- Smart Server Manager v1.1 with improved management functionality

Product Specifications

Processors and chipset

- Up to two Intel Xeon 5500 / 5600 Series processors
- Intel® 5520 Chipset

Memory

- Memory capacity:
 - Registered DIMM: 1 / 2 / 4 / 8 GB
 - Unbuffered DIMM: 1 / 2 / 4 GB
- Up to 96 GB, using registered DIMMs when fully populated with 2 DIMMs per channel, 12 slots
- Up to 48 GB, using unbuffered DIMMs when fully populated with 2 DIMMs per channel, 12 slots

Network controllers

- Integrated Intel 82576EB dual port Gigabit Ethernet Controller

Storage

- Hard disk form factor: 3.5"
- Type: SAS / SATA / SSD with hot-plug capability
- 3.5" Maximum capacity:
 - Up to 8 TB SATA HDD (2 TB 3.5" x 4 HDDs)
 - Up to 2.4 TB SAS (600 GB 3.5" x 4 HDDs)

Storage controllers

GR160 F1 specifications

- Integrated Intel® ICH10R Serial ATA host controller (six 3 Gb/s SATA ports) with RAID 0, 1, 5, 10 support

Expansion slots

- PCIe® x16 slot
- Dual-port LAN card (PCIe x8 slot)
- Flex I/O x8 slot

Management

- Gateway Smart Server Manager v1.1
- Gateway Smart Console
- iBMC management controller, supporting base board management and KVM-over-IP

Deployment/serviceability

- Gateway Smart Setup
- BIOS Update Tool
- IPMI Firmware Update Tool

Certified operating systems

- Windows Server® 2008
- Windows Server 2008 R2
- Windows Server 2003 R2
- Red Hat® Enterprise Linux® 5.4
- SUSE® Linux® Enterprise Server 11
- VMware ESXi™ 4
- VMware ESX™ 4

Input/output interface

Front

- Power button
- Two USB 2.0 ports
- Serial port
- Power/Standby LED
- HDD Activity LED
- Two LAN activity LEDs (LAN1, LAN2)
- ID button
- ID/System Status LED

Rear

- Two PS/2 ports (keyboard and mouse)
- Two USB 2.0 connectors
- Two Gigabit Ethernet LAN ports (RJ-45)
- Management port (RJ-45)
- Serial port
- Video port
- ID button
- ID LED

Optical drive

- Slim-line SATA DVD Super Multi

GR160 F1 specifications

Chassis/form factor

- 1U rack optimized

Power supply

- 720 W 80 PLUS® gold-level efficient easy-swap power supply

Regulatory compliant standards

EMC

- FCC (Class A)
- CE (Class A)
- BSMI (Class A)

Safety

- UL/cUL
- CB
- Nemko/GS

Environmental Specifications

Dimensions	432 (W) x 650 (D) x 43 (H) mm (17 x 25.6 x 1.7 inches)	
Weight	Maximum	31.8 kg (70 lbs.)
	Minimum (includes a single HDD, CPU and RAM, and PSU)	24.5 kg (54 lbs.)
System inlet temperature	Operating	10° - 35° C (50° - 95° F)
	Non-operating	-40° - 70° C (-40° - 158° F)
Relative humidity	Operating	8 - 90 %
	Non-operating	5 - 95 %
Acoustics	Idle	
	LWAd	N/A
	LpAm	59.3 dBA
	Operating	
Power	LWAd	N/A
	LpAm	63.6 dBA
	Rated Steady –state power	720 W
	Maximum Peak Power	728 W
	BTU rating	~2457 BTU/hr at 100 - 240 VAC

GR160 F1 specifications

Technical specifications

PCIe® specifications

The primary I/O bus for the main board is PCIe Gen2. The following table lists the characteristics of the PCI-E bus segments. Details about each bus segment follow the table.

NOTE: The signaling bit rate of PCI Express is 2.5Gbit/s one direction per lane for Gen 1 and 5.0Gbit/s one direction per lane for Gen 2.

Expansion slot	Number	Type	Bus width ¹	Voltage	Connector	Location	Length
PCIe x16	1	PCIe Gen2	x16	3.3V	x16	Riser, left	Full height
PCIe x8	1	PCIe Gen2	x8	3.3V	x8	Riser, right	Proprietary LAN
Flex I/O	1	PCIe Gen2	x8	3.3V	x8	Riser, left	Full height

NOTE:

1. Indicates the number of physical electrical lanes running to a PCIe® connector.
2. Default bus assignment (in decimal). Inserting cards with PCI™ bridges may alter the actual bus assignment number.
3. Slots are enumerated differently based on the operating system. Microsoft® operating systems enumerate Device ID by bus starting from the lowest bus to the highest.

Onboard storage specifications

Item	Description
Controller	Intel® 82801JR (ICH10R) I/O Controller Hub
Simultaneous drive transfer channels	6 onboard SATA ports
Max throughput per channel	3 Gb/s
Data transfer method	<ul style="list-style-type: none"> • Non-RAID mode • RAID mode
Drive type supported	Serial ATA
RAID levels support	<ul style="list-style-type: none"> • RAID 0, 1, 10, 5 (Intel software RAID) • RAID 0, 1, 10 (Adaptec software RAID)
RAID function support	<p>NOTE: Intel software RAID only supports Windows OS</p> <ul style="list-style-type: none"> • Supports multiple logical volumes • Setup through ROM based Array Configuration Utility • Installation scripting support
RAID OS support	<p>NOTE: This controller does not support LED functions</p> <ul style="list-style-type: none"> • Windows Server 2008 • Windows Server 2008 R2 • Windows Server 2003 • Red Hat Enterprise Linux 5.4

GR160 F1 specifications

Additional features

- SuSE Linux Enterprise Server 11
- NCQ (Native Command Queuing)
- AHCI (Advanced Host Controller Interface)

Onboard LAN specifications

Item	Description
Controller	Intel® 82576EB Gigabit Ethernet Controller (2 ports total)
Network interface	10Base-T / 100Base-TX / 1000Base-T
Compatibility standards	<ul style="list-style-type: none"> • IEEE 802.3 Ethernet interface for 10BASE-T • IEEE 802.3ab Ethernet interface for 1000BASE-T • IEEE 802.3u Ethernet interface for 100BASE-TX
Manageability	<ul style="list-style-type: none"> • NC-SI, SMBus • PXE, iSCSI boot
Virtualization acceleration	<ul style="list-style-type: none"> • Intel® I/O Acceleration Technology • Virtual Machine Device Queues (VMDq) • PCI-SIG SR-IOV implementation
Connector	RJ-45
Supported cable type	CAT 5e wire

Memory specifications and population

Item	Description
Supported memory types	<ul style="list-style-type: none"> • Registered DDR3 1066 / 1333 MHz • Unbuffered DDR3 1066 / 1333 MHz

NOTE: Gateway does not qualify mixed memory configurations of memory type, capacity or make.

Population

Gateway's validated memory populations are listed below.

NOTE: Support for 8 GB DIMMs may vary by regional availability.

Single processor configuration guide

NOTE: Quad Rank DIMMs and Unbuffered DIMMs can only use a maximum of 6 slots

DIMM #	DIMM 1B	DIMM 1A	DIMM 2B	DIMM2A	DIMM3B	DIMM3A
1		X				
2		X		X		
3		X		X		X
4	X	X	X	X		
6	X	X	X	X	X	X

GR160 F1 specifications

Dual processor configuration guide

NOTE: Quad Rank DIMMs and Unbuffered DIMMs can only use a maximum of 6 slots per CPU (12 slots total)

DIMM #	CPU 1						CPU 2					
	1B	1A	2B	2A	3B	3A	1B	1A	2B	2A	3B	3A
2		X						X				
3		X		X		X						
4		X		X				X		X		
6		X		X		X		X		X		X
8	X	X	X	X			X	X	X	X		
9	X	X	X	X	X	X		X		X		X
12	X	X	X	X	X	X	X	X	X	X	X	X

* support depends on 8GB DIMM available

Mirroring mode:

- For mirroring mode, the memory contains a primary image and a copy of the primary image. Therefore, the effective size of memory is reduced by at least one-half.
- Follow the population rules described in independent mode.
- Mirroring mode needs the channel 1 & channel 2 with identical DIMM. DIMM slot populations within a channel do not have to be identical but the same DIMM slot location across channel 1 and channel 2 must be the same. DIMM1A and DIMM2A should be the same type, size and manufacturer. DIMM1B and DIMM2B memory should be the same type, size and manufacturer. DIMM1C and DIMM2C memory should be the same type, size and manufacturer.
- Same rule is applied to the CPU2.
- Please refer to the User Guide for complete population for both single and dual processor configurations.

Lockstep mode:

- In Lockstep Channel Mode, each memory access is a 128-bit data access that spans Channel 1 and Channel 2. This is done to support SDDC for DRAM devices with 8-bit wide data ports. The same address is used on both channels such that an address error on any channel is detectable by bad ECC. Lockstep Channel mode is the only RAS mode that supports x8 SDDC.
- Follow the population rules described in independent mode.
- Lockstep mode needs the channel 1 & channel 2 with identical DIMM. DIMM slot populations within a channel do not have to be identical but the same DIMM slot location across channel 1 and channel 2 must be the same. DIMM1A and DIMM2A should be the same type, size and manufacturer. DIMM1B and DIMM2B memory should be the same type, size and manufacturer. DIMM1C and DIMM2C memory should be the same type, size and manufacturer.
- Same rule is applied to the CPU2.
- Please refer to the User Guide for complete population for both single and dual processor configurations.

GR160 F1 specifications

Sparing mode:

- In this mode, if system detects degrading memory and system still not crash, the data in failed channel will be copied to spare channel. Failed channel is then isolated and spare channel becomes active. But if any uncorrectable error happens before the isolation, it will still cause the system stop normal operation.
- Follow the population rules described in independent mode.
- Sparing mode need all three channels with identical DIMMs. 1A, 2A and 3A should be the same type, size and manufacturer. 1B, 2B and 3B memory should be the same type, size and manufacturer. Same rule is applied to CPU2.
- Memory sparing mode is only supported by Intel Xeon 5600 series processor. Intel Xeon 5500 series processor **does NOT support the memory sparing mode**.
- Please refer to the User Guide for complete population for both single and dual processor configurations.

Memory Identification

Generally, there are some memory information printed on the label of DIMM, but different vendor may have different format. For example:

4GB 2Rx4 PC3-10600R xx xx xxx

1. Density

- 1GB, 2GB, 4GB, 8GB

2. Rank

- 1R = Single Rank
- 2R = Dual Rank
- 4R = Quad Rank
- Note: if any quad rank DIMM is used, maximum only 2 DIMM per channel can be supported

3. Bit Organization

- This platform supports x4 and x8
- Note: It's not recommend to mix DIMM with different bit organization in one system

4. Speed

- PC3 – 6400 => DDR3- 800
- PC3 – 8500 => DDR3- 1066
- PC3 – 10600 => DDR3- 1333

GR160 F1 specifications

Power specifications

720W Power Supply

Operational Input Voltage Range (Vrms) 100 to 240

Frequency Range (Nominal) (Hz) 60/50

Nominal Input Voltage (Vrms)	100	120	208	200	220	230	240
Max. Rated Output Wattage	720	720	720	720	720	720	720
Nominal Input Current (A rms)	8.46	6.97	3.80	3.87	3.74	3.5	3.29
Max. Rated Input Wattage Rating (Watts)	846.0	836.4	790.4	774.0	822.8	805.0	789.6
Max. Rated VA (Volt-Amp)	837.54	828.03	774.59	758.52	806.34	788.9	773.81
Efficiency (%) at Max. Rated Output Wattage	88.12	89.49	90.95	90.74	91.51	91.92	92.27
Power Factor	0.99	0.99	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.17	0.19	0.29	0.31	0.35	0.37	0.41
Max. Inrush Current (A peak)	17.24	19.41	18.52	16.88	16.48	20.47	22.54
Max. Inrush Current Duration (mS)	4.62	4.58	4.61	4.62	4.64	4.63	4.64
Max. British Thermal Unit Rating (BTU/hr)	2456.64	2456.64	2456.64	2456.64	2456.64	2456.64	2456.64

GR160 F1 specifications

Gateway server software utilities

- Smart Setup 2.0 Easy deployment via the latest version of Gateway's Smart Setup. Smart Setup is available both in box as a driver packed installation DVD or a downloadable file to be put into a USB 2.0 device, and eases the deployment of Gateway servers for any certified OS. Through its unique interface, users may select to have all the correct drivers be pre-deployed for the OS of their choosing, as well as setup hardware RAID devices, BMC settings (where available), and even clone the pre-settings to a bootable USB device to ease mass server deployments.
- Smart Console Web-based management utility to simplify system management with embedded iBMC, system monitoring and alerting, event handling, remote power control and KVM-over-IP. Smart Console is OS independent and offers virtual media through floppy, ODD, and removable disk.
- Smart Server
Manager v1.1 Offering 24-7 monitoring for system health and performance.
- Delivers proactive event management features including system event logging, event handling from e-mail and SNMP Trap (PET) alerting.
 - Monitors onboard hardware, operating systems and virtual machines
 - Allows remote control from KVM and Power control
 - Satisfies management in web-based UI, role-based administration, and automated management scripts.

GR160 F1 specifications

Available options

Processors (up to 2)

Intel® Xeon® processor (Six Core)

X5675 (12 MB L3 cache, 3.06 GHz, DDR3-1333 MHz, 95W)

X5670 (12 MB L3 cache, 2.93 GHz, DDR3-1333 MHz, 95 W)

X5660 (12 MB L3 cache, 2.80 GHz, DDR3-1333 MHz, 95 W)

X5650 (12 MB L3 cache, 2.66 GHz, DDR3-1333 MHz, 95 W)

L5640 (12 MB L3 cache, 2.26 GHz, DDR3-1333 MHz, 60 W)

E5649 (12 MB L3 cache, 2.53 GHz, DDR3-1333 MHz, 80 W)

E5645 (12 MB L3 cache, 2.40 GHz, DDR3-1333 MHz, 80W)

Intel® Xeon® processor (Quad Core)

X5672 (12 MB L3 cache, 3.20 GHz, DDR3-1333 MHz, 95W)

X5667 (12 MB L3 cache, 3.06 GHz, DDR3-1333 MHz, 95 W)

X5570 (8 MB L3 cache, 2.93 GHz, DDR3-1333 MHz, 95 W)

X5560 (8 MB L3 cache, 2.80 GHz, DDR3-1333 MHz, 95 W)

X5550 (8 MB L3 cache, 2.66 GHz, DDR3-1333 MHz, 95 W)

E5640 (12 MB L3 cache, 2.66 GHz, DDR3-1066 MHz, 80 W)

E5630 (12 MB L3 cache, 2.53 GHz, DDR3-1066 MHz, 80 W)

E5620 (12 MB L3 cache, 2.40 GHz, DDR3-1066 MHz, 80 W)

L5630 (12 MB L3 cache, 2.13 GHz, DDR3-1066 MHz, 40 W)

L5609 (12 MB L3 cache, 1.86 GHz, DDR3-1066 MHz, 40 W)

E5607 (8 MB L3 cache, 2.26 GHz, DDR3-1066 MHz, 80 W)

E5606 (8 MB L3 cache, 2.13 GHz, DDR3-1066 MHz, 80 W)

E5603 (4 MB L3 cache, 1.60 GHz, DDR3-1066 MHz, 80 W)

E5540 (8 MB L3 cache, 2.53 GHz, DDR3-1066 MHz, 80 W)

E5530 (8 MB L3 cache, 2.40 GHz, DDR3-1066 MHz, 80 W)

E5520 (8 MB L3 cache, 2.26 GHz, DDR3-1066 MHz, 80 W)

E5507 (4 MB L3 cache, 2.26 GHz, DDR3-800 MHz, 80 W)

E5506 (4 MB L3 cache, 2.13 GHz, DDR3-800 MHz, 80 W)

E5504 (4 MB L3 cache, 2 GHz, DDR3-800 MHz, 80 W)

L5530 (8 MB L3 cache, 2.40 GHz, DDR3-1066 MHz, 60 W)

L5520 (8 MB L3 cache, 2.26 GHz, DDR3-1066 MHz, 60 W)

L5506 (4 MB L3 cache, 2.13 GHz, DDR3-800 MHz, 60 W)

Intel® Xeon® processor (Dual Core)

GR160 F1 specifications

E5503 (4 MB L3 cache, 2 GHz, DDR3-800 MHz, 80 W)

E5502 (4 MB L3 cache, 1.86 GHz, DDR3-800 MHz, 80 W)

Memory

Memory type	Registered / Unbuffered DDR3 ECC memory
Capacities	1 / 2 / 4 / 8 GB DIMMs
DIMM number	12
Max memory	96 GB (48 GB unbuffered)

Hard drives

Type	Interface, bandwidth	Capacities (RPM)
Enterprise SATA, 3.5"	3 Gb/s	250 GB (7.2K)
		500 GB (7.2K)
		750 GB (7.2K)
		1 TB (7.2K)
		2 TB (7.2K)
Enterprise SAS, 3.5"	6 Gb/s	146 GB (15K)
		300 GB (15K)
		450 GB (15K)
		600 GB (15K)

NOTE: SAS drives require an add-on RAID card

Optical drives

DVD-ROM
SuperMulti (DVD ± RW)

RAID cards

Model	Port number	RAID support
LSI® MegaRAID SAS 9240-4i	4 internal ports	0, 1, 5, 10
LSI® MegaRAID SAS 9260-8i*	8 internal ports	0, 1, 5, 6, 10, 50, 60
Flex I/O, LSI® SAS 2108*	8 internal ports	0, 1, 5, 6, 10, 50, 60

*Battery Backup Unit BBU07 available

RAID HBA for Tape Drive

Note: LTO tape drives require an add on card for external or internal connectivity

Model	Port number	RAID support
LSI® SAS3442E-R	4 internal / 4 external ports	0, 1, 10

GR160 F1 specifications

Ethernet network cards

Model	Port number	Bandwidth
Intel® Gigabit CT2 desktop adapter	1	10/100/1000 Mbps
Supermicro AOC-SG-i2 server adapter	4	10/100/1000 Mbps
Supermicro AOC-SG-i4 server adapter	4	10/100/1000 Mbps
Supermicro AOC-STGN-i2S server adapter (DA2)*	2	10 Gbps
Intel® X520-SR1 server adapter*	1	10 Gbps
Intel® X520-SR2 server adapter*	2	10 Gbps
Intel® X520-LR1 server adapter*	1	10 Gbps

***Note:** Intel's 10GbE cards vary in terms of their connector type. The X520-DA2 is a copper connector for lengths up to 7M, while the X520-SR1/2 is an optical connection for cables up to 550M. The X520-LR1 is for even longer cable lengths up to 10km.

Fibre Channel HBAs

Model	Port number	Bandwidth
Qlogic® QLE2460	1	4 Gb/s
Qlogic® QLE2462	2	4 Gb/s
Qlogic® QLE2560	1	8 Gb/s
Qlogic® QLE2562	2	8 Gb/s

Tape Backup Unit (TBU)

Model	Tape capacity	Form factor
LTO Ultrium-3, 3Gb/s SAS	400/800 GB	External 1U rack
LTO-4, 3Gb/s SAS	400/800 GB	External 1U rack

TPM module

TPM module with STMicro chip

GR160 F1 specifications

Service and support

Gateway Servers offer a comprehensive service suite to take care of daily IT needs. Users can select the 3-year standard warranty or choose extended warranties and services.

In a continuing effort to improve the quality of our products, information in this document is subject to change without notice. Images shown are only representations of some of the configurations available for this model. Availability may vary depending on region.

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NOTE: Extension warranty services may vary by country. Please contact Gateway authorized resellers for more information.

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