GIGABYTE™

G591-HS0

HPC Server - 5U 32 x PCIe GPU Server

Features

- Supports 5G network infrastructure
- Up to 32 x PCIe low profile GPU slots
- Up to 8 x PCIe low profile high speed LAN connectivity slots
- 2nd Gen. Intel® Xeon® Scalable Processors
- 6-Channel RDIMM/LRDIMM DDR4, 24 x DIMMs
- Supports Intel® Optane™ DC Persistent Memory
- 2 x GbE LAN ports (Intel® I350-AM2)
- 4 x 2.5" NVMe, 6 x 2.5" SATA/SAS hot-swap HDD/SSD bays
- 1 x low profile PCIe Gen3 expansion slots in front side
- 1 x OCP 2.0 Gen3 x8 mezzanine slot
- Aspeed® AST2500 remote management controller
- 4 x 80 PLUS Platinum 2200W redundant PSU

Intel® Xeon® Scalable Family Processors

GIGABYTE's Intel® Xeon® Scalable Processor family servers are available in dual socket configurations, and are compatible with the full family of different SKUs (Bronze, Silver, Gold and Platinum) that are workload optimized to support different applications, from enterprise IT database, cloud and storage to the most high-demand HPC workloads.

Compute:
- Up to 28 cores / 56 threads per socket
- Up to 38.5 MB L3 cache (non-inclusive)
- Up to 3x UPI socket interconnects @10.4 GT/s
- CPU TDP 70W – 205W

Memory:
- 6 channels, 2 DIMMs per channel
- Up to 12 DIMMS per socket
- Up to 2933MHz max memory speed
- Intel Optane DC Persistent Memory ready

I/O:
- 48 PCIe 3.0 lanes per socket

## Intel® Optane™ DC Persistent Memory Ready

GIGABYTE's 2nd Gen. Intel® Xeon® Scalable family servers come ready to support Intel Optane DC Persistent Memory, a revolutionary new product that re-defines traditional memory & storage architectures by enabling a large persistent memory tier between DRAM and SSDs, that's higher capacity than DRAM and faster than SSDs, enabling the user to bring more data closer to the CPU for faster time for insight.

GIGABYTE Management Console (AMI MegaRAC SP-X)

This GIGABYTE server product utilizes a AMI MegaRAC SP-X platform for BMC server management, with a feature rich and easy to use browser-based graphical user interface.
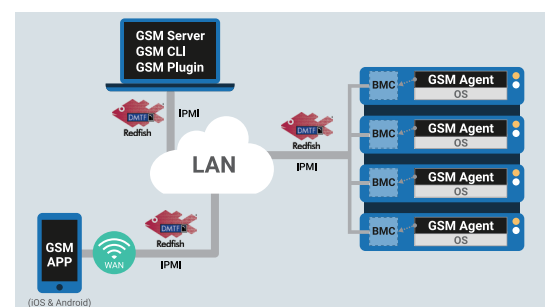
- **RESTful API support** (including the latest DMTF standards of Redfish) allows the administrator to integrate with 3rd party applications for server management
- **HTML5-based iKVM** remote management client included as a standard feature, no additional add-on license required to purchase
- **Detailed FRU information** from SMBIOS
- **Pre-event automatic video recording** feature from 10 to 30 seconds
- **SAS / RAID controller monitoring** feature
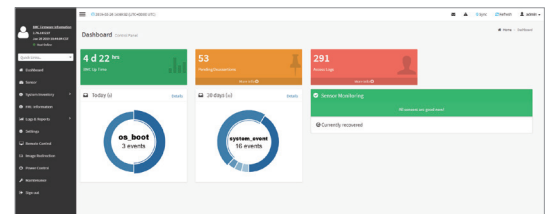
GIGABYTE Server Management (GSM)

GIGABYTE Server Management (GSM) is GIGABYTE's proprietary multiple server remote management software platform, available as a free download from each GIGABYTE server product page. GSM is compatible with either IPMI or Redfish (RESTful API) connection interfaces, and comprises the following sub-programs:

- **GSM Server** • **GSM CLI** • **GSM Agent** • **GSM Mobile** • **GSM Plugin**

Specification

Dimensions (WxHxD)	5U
	447 x 219.6 x 900 mm
		Power Supply	4 x 80 PLUS Platinum 2200W redundant PSUs
			
			AC Input:
			- 100-127V~/ 14A, 47-63Hz
			- 200-240V~/ 12.6A, 47-63Hz
			
			DC Output:
			- Max 1200W/ 100-127V~
			  +12.12V/ 95.6A
			  +12Vsb/ 3.5A
			- Max 2200W/ 200-240V
			  +12.12V/ 178.1A
			  +12Vsb/ 3.5A
			
			NOTE: The system power supply requires C19 type power cord

Motherboard	MG61-G40		
CPU	2nd Generation Intel® Xeon® Scalable Processors Intel® Xeon® Scalable Processors Intel® Xeon® Platinum Processor, Intel® Xeon® Gold Processor, Intel® Xeon® Silver Processor and Intel® Xeon® Bronze Processor NOTE: If only 1 CPU is installed, some PCIe or memory functions might be unavailable		

Dimensions (WxHxD)
5U
447 x 219.6 x 900 mm

Motherboard
MG61-G40

CPU
2nd Generation Intel® Xeon® Scalable Processors
Intel® Xeon® Scalable Processors
Intel® Xeon® Platinum Processor, Intel® Xeon® Gold Processor,
Intel® Xeon® Silver Processor and Intel® Xeon® Bronze Processor
NOTE: If only 1 CPU is installed, some PCIe or memory functions might be unavailable

Socket
2 x LGA 3647, Socket P

Chipset
Intel® C621 Express Chipset

Memory
24 x DIMM slots
DDR4 memory supported only
6-channel memory per processor architecture
RDIMM modules up to 64GB supported
LRDIMM modules up to 128GB supported
Supports Intel® Optane™ DC Persistent Memory (DCPMM)
1.2V modules: 2933(1DPC)/2666/2400/2133 MHz

NOTE:
1. 2933MHz for 2nd Generation Intel® Xeon® Scalable Processors only
2. Intel® Optane™ DC Persistent Memory for 2nd Generation Intel® Xeon® Scalable Processors only
3. The maximum number of DCPMM that can be installed is based on a maximum operating (ambient) temperature of 35°C
4. To enquire about installing a greater number of DCPMM, please consult with your GIGABYTE technical or sales representative

LAN
2 x 1Gb/s BASE-T LAN ports (Intel® I350-AM2)
1 x 10/100/1000 management LAN

Video
Integrated in Aspeed® AST2500
2D Video Graphic Adapter with PCIe bus interface
1920x1200@60Hz 32bpp, DDR4 SDRAM

Storage
4 x 2.5" NVMe, 6 x 2.5" SATA/SAS hot-swap HDD/SSD bays
SAS card is required to enable the drive bays

SATA
Supported

SAS
-

RAID
For SATA drives:
Intel® SATA RAID 0/1/10/5

For U.2 drives:
Intel® Virtual RAID On CPU (VROC) RAID 0, 1, 10, 5
Note: VROC module is compatible for Intel® SSD only

Expansion Slots
32 x PCIe x16 low profile half-lengh slots (Gen3 x16) for GPUs
8 x PCIe x16 low profile half-lengh slots (Gen3 x16) for LAN connectivity

1 x PCIe low profile half-lengh slots (Gen3 x8) for add-on cards (Front side)

1 x OCP 2.0 mezzanine slot (Rear side)
- PCIe Gen3 x8
- Type1, P1, P2, P3, P4, K2, K3

Internal I/O
1 x TPM header, 1 x VROC connector, 1 x Front VGA header, 1 x Serial header

Front I/O
2 x USB 3.0, 1 x VGA, 2 x RJ45, 1 x MLAN (Primary), 1 x Power button with LED, 1 x ID button with LED, 1 x Reset button, 1 x System status LED, 1 x HDD access LED, 2 x LAN activity LEDs

Rear I/O
1 x MLAN (Reserved, enabled by jumper switch)

Backplane I/O
Speed and bandwidth: SATA 6Gb/s, SAS 12Gb/s per port

TPM
1 x TPM header with SPI interface
Optional TPM2.0 kit: CTM010

System Fans
10 x 60x60x76mm (21,700rpm)

Weight
Net Weight: 50.18 kg / Gross Weight: 60.5 kg

Power Supply
4 x 80 PLUS Platinum 2200W redundant PSUs

AC Input:
- 100-127V~/ 14A, 47-63Hz
- 200-240V~/ 12.6A, 47-63Hz

DC Output:
- Max 1200W/ 100-127V~
  +12.12V/ 95.6A
  +12Vsb/ 3.5A
- Max 2200W/ 200-240V
  +12.12V/ 178.1A
  +12Vsb/ 3.5A

NOTE: The system power supply requires C19 type power cord

System Management
Aspeed® AST2500 management controller
GIGABYTE Management Console (AMI MegaRAC SP-X)

Dashboard
JAVA Based Serial Over LAN
HTML5 KVM
Sensor Monitor (Voltage, RPM, Temperature, CPU Status …etc.)
Sensor Reading History Data
FRU Information
SEL Log in Linear Storage / Circular Storage Policy
Hardware Inventory
Fan Profile
System Firewall
Power Consumption
Power Control
LDAP / AD / RADIUS Support
Backup & Restore Configuration
Remote BIOS/BMC/CPLD Update
Event Log Filter
User Management
Media Redirection Settings
PAM Order Settings
SSL Settings
SMTP Settings

OS Compatibility
For Cascade Lake processors:
Windows Server 2012 R2 with Update
Windows Server 2016
Windows Server 2019
Red Hat Enterprise Linux 7.6 (x64) or later
Red Hat Enterprise Linux 8.0 (x64) or later
SUSE Linux Enterprise Server 12.3 (x64) or later
SUSE Linux Enterprise Server 15 (x64) or later
Ubuntu 18.04 LTS (x64) or later
VMware ESXi 6.0 Update3 or later
VMware ESXi 6.5 Update2 or later
VMware ESXi 6.7 Update1 or later
Citrix Xenserver 7.1.0 CU2 or later
Citrix Xenserver 7.5.0 or later
Citrix Hypervisor 8.0.0 or later

Operating Properties
Operating temperature: 10°C to 35°C
Operating humidity: 8%-80% (non-condensing)
Non-operating temperature: -40°C to 60°C
Non-operating humidity: 20%-95% (non-condensing)

Packaging Content
1 x G591-HS0, 2 x CPU heatsinks, 1 x Rail kit,
1 x VROC module, 2 x Non-Fabric CPU carrier

Part Numbers
Barebone with rail kit: 6NG591HS0MR-00
- Motherboard: 9MG61G40NR-00
- VROC module: 25FD0-R181N0-10R
- Rail kit: 25HB2-A96100-K0R
- CPU heatsink: 25ST1-323206-A0R
- Power supply: 25EP0-222003-D0S
- C19 type power cord 125V/15A (US): 25CP1-018000-Q0R (in option)
- C19 type power cord 250V/16A (EU): 25CP3-01830H-Q0R (in option)
- C19 type power cord 250V/15A (US): 25CP1-018300-Q0R (in option)