G291-2G0
HPC System - 2U DP 8 x Gen3 GPU Server

**Features**

- Supports up to 16 x single slot GPU cards
- NVIDIA® validated GPU platform; Supports for NVIDIA® Tesla®
- 2nd Gen. Intel® Xeon® Scalable Processors
- 6-Channel RDIMM/LRDIMM DDR4, 24 x DiMMs
- Supports Intel® Optane™ DC Persistent Memory
- 2 x 10Gb/s BASE-T LAN ports
- 1 x Dedicated management port
- 8 x 2.5" SATA/SAS hot-swap HDD/SSD bays
- 16 x PCIe Gen3 expansion slots for GPUs
- 2 x PCIe x16 Half-length low-profile slots for add-on cards
- Aspeed® AST2500 remote management controller
- 2+0 2200W 80 PLUS Platinum power supply

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

NVIDIA® Tesla® P4 Support
GIGABYTE’s G291-2G0 has been optimized to work with NVIDIA’s Tesla P4, one of the world’s most popular inference accelerators. The Tesla P4’s small form factor and 50W/75W power footprint design delivers 22 TOPs of inference performance with INT8 operations to slash latency by 15X. It also provides an incredible 60X better energy efficiency than CPUs for deep learning inference workloads, letting hyper scale customers meet the exponential growth in demand for AI applications.

GIGABYTE Management Console (AMI MegaRAC SP-X)
This GIGABYTE server product utilizes an 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**
2U

(WxHxD) 448 x 87.5 x 800 mm

**Motherboard**
MG51-G21

**CPU**
2nd Generation Intel® Xeon® Scalable 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, TDP up to 205W

**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 10Gbs/ BASE-T LAN ports (Intel® X550-AT2)

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

2D Video Graphic Adapter with PCIe bus interface

**Storage**
8 x 2.5" SATA/SAS hot-swappable HDD/SSD bays

SAS card is required to enable the drive bays

**SATA**
1 x 7-pin SATA/AS bays with SATA DOM supported

By using pin_8 or external cable for power function

**SAS**
Supported via add-on SAS Card

**RAID**
Intel® SATA RAID 0/1/0/5

**Expansion Slots**
16 x PCIe x16 slots (Gen3 x16 bus) for GPUs

2 x PCIe x16 (Gen3 x16 bus) Half-length low-profile slots

OCF type add-on card as an option

- Maximum limitation of GPU card: 285mm (L) x 111.5mm (W) x 39.5mm (H)
- System is validated for population with a uniform GPU model
- Support is not provided for mixed GPU populations

**Internal I/O**
1 x 18-pin power connector, 1 x 14-pin power connector, 2 x 8-pin power connectors, 2 x 4-pin power connectors, 1 x USB 3.0 header, 1 x TPM header, 1 x WRCG connector, 1 x HDD back plane board header, 1 x 12-pin front panel header, 1 x 23-pin front panel header, 1 x JTAG header, 2 x SATA SGPIO headers, 1 x Front VGA header, 1 x Serial header, 1 x IPMB connector, 1 x P12V standby connector, 1 x PMBus selection jumper, 1 x Clear CMOS jumper, 1 x LT debug jumper

**Front I/O**
1 x Power button with LED, 1 x ID button with LED, 2 x LAN activity LEDs, 1 x HDD activity LED, 1 x System status LED, 1 x Reset button

**Rear I/O**
2 x USB 3.0, 1 x VGA, 2 x RJ45, 1 x MLAN, 1 Power button with LED, 1 x ID button with LED, 1 x Reset button, 1 x NMI button, 1 x System status LED

**Backplane I/O**
8 x SAS/SATA ports

Bandwidth: SATAIII 6Gb/s or SAS 12Gb/s per port

**TPM**
1 x TPM header with SPI interface

Optional TPM2.0 kit: CMT010

**Power Supply**
2+0 2200W 8 PLUS Platinum power supply

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

DC Output:
- Max 1500W/ 100-127V~/ +12.12V/ 95.6A
+12Vab/ 3.5A
- Max 2200W/ 200-240V
+12.12V/ 17.8A
+12Vab/ 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 C02 or later

Citrix Xenserver 7.5.0 or later

Citrix Hypervisor 8.0.0 or later

**Weight**
Net Weight: 30 kg / Gross Weight: 36 kg

**System Fans**
8 x 80x80x38mm (1360rpm)

**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**
2 x Non-Fabric CPU carrier

**Part Numbers**
Barebone with rail kit: 0NG29120GMR-00

Motherboard: 0MG51G21NR-00

Tool-less rail kit: 25H82-466102-K00

Power supply: 25EP0-222001-0DS

2 x NVMe cable kits: 6NG291203SPRW-00 (optional)

2 x 7mm internal SSD cable kit: 6NG2912815R-00-100 (optional)

C19 type power cord 125V/15A (US): 25CP1-018000-Q0R (optional)

C19 type power cord 220V/18A (EU): 25CP3-018300-Q0R (optional)

C19 type power cord 220V/20A (UK): 25CP1-018000-Q0R (optional)

C19 type power cord 220V/25A (Japan): 25CP1-018000-Q0R (optional)