G291-Z20
HPC System - 2U UP 8 x Gen3 GPU Server

Features
Able to support up to 8 double slot GPGPU or co-processor cards, the G291 Series enables world-leading HPC within a 2U chassis.

- Supports up to 8 x double slot GPU cards
- AMD EPYC™ 7002 and 7001 series processor family
- 8-Channel RDIMM/LRDIMM DDR4, 8 x DIMMs
- 2 x 10Gb/s SFP+ LAN ports (Mellanox® ConnectX-4 Lx)
- 1 x Dedicated management port
- 8 x 2.5" SATA hot-swap HDD/SSD bays
- 2 x M.2 with PCIe Gen3 x4/x2 interface
- 8 x PCIe Gen3 expansion slots for GPU cards
- 2 x PCIe Gen3 x16 low-profile slots for add-on cards
- Aspeed® AST2500 remote management controller
- 2+0 2200W 80 PLUS Platinum power supply

AMD EPYC™ 7002 Series Processor (Rome)
The next generation of AMD EPYC has arrived, providing incredible compute, IO and bandwidth capability – designed to meet the huge demand for more computing in big data analytics, HPC and cloud computing.

- Built on 7nm advanced process technology, allowing for denser compute capabilities with lower power consumption
- Up to 64 core per CPU, built using Zen 2 high performance cores and AMD’s innovative chiplet architecture
- Supporting PCIe Gen 4.0 with a bandwidth of up to 64GB/s, twice of PCIe Gen 3.0
- Embedded security protection to help defend your CPU, applications, and data

AMD Radeon Instinct™ MI50 Support
This GIGABYTE server features support for AMD’s Radeon Instinct™ MI50 compute card, designed to deliver high levels of performance for deep learning, high performance computing (HPC), cloud computing, and rendering systems.

NVIDIA® Tesla® V100 Support
GIGABYTE’s AMD EPYC server systems and motherboards are fully compatible and qualified to use with NVIDIA’s Tesla® V100 GPU, an advanced data center GPU built to accelerate AI, HPC, and graphics. Powered by NVIDIA’s Volta™ architecture and with 640 Tensor Cores, the Tesla® V100 has broken the 100 teraflops (TFLOPS) barrier of deep learning performance — enabling data scientists, researchers, and engineers to tackle challenges that were once impossible.

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. Notable features include:

- 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
- 448 x 67.5 x 800 mm

**Motherboard**
- MZ21-G20

**CPU**
- AMD EPYC™ 7002 series processor family
- Single processors, 7nm
- Up to 64-core, 128 threads per processor
- TDP up to 225W, cTDP up to 240W
- Fully support 280W
- Compatible with AMD EPYC™ 7001 series processor family

**Socket**
- Socket SP3

**Chipset**
- System on Chip

**Memory**
- 8 x DIMM slots
- DDR4 memory supported only
- 8-Channel memory architecture
- RDIMM modules up to 64GB supported
- LRDIMM modules up to 126GB supported
- Memory speed: Up to 3200/ 2933 MHz
  - Note: *Follow BIOS setting and memory QVL list if running 3200 Mhz

**LAN**
- 2 x SFP+ 10Gb/s LAN ports (Mellanox® ConnectX-4 Lx)
  - 1 x 10/100/1000 management LAN

**Video**
- Integrated in Aspeed® AST2500
- 2D Video Graphic Adapter with PCIe bus interface

**Storage**
- 8 x 2.5" SATA/SAS hot-swappable HDD/SSD bays
- SAS card is required for SAS devices support
- Recommended 12Gb/s SAS cards: CRA4448, CRA4548

**SATA**
- Supported

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

**RAID**
- -

**Expansion Slots**
- 8 x PCIe x16 slots (Gen3 x16 bus) for GPUs
- 2 x PCIe x16 (Gen3 x16 bus) Half-length low-profile slots
  - 1 x M.2 slot:
    - M-key
    - PCIe Gen3 x4
    - Supports NGFF-2242/2260/2280/22110 cards
  - 1 x M.2 slot:
    - M-key
    - PCIe Gen3 x2
    - Supports NGFF-2242/2260/2280/22110 cards
  - 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
  - For the latest GPU cards QVL, please contact your GIGABYTE representative

**Internal I/O**
- 1 x TPM header, 1 x Si-SAS connectors, 2 x M.2 slots, 1 x Serial header, 1 x Blizzer

**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 SFP+, 1 x MLAN, 1 x Power button with LED, 1 x ID button with LED, 1 x Reset button, 1 x MIM 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 LPC interface
  - Optional TPM2.0 kit: CTM000

**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 1200W/ 100-127V– +12.12V/ 95.6A
    - +12Vsb/ 3.5A
    - +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/SSMC/PPLD Update
- Event Log Filter
- User Management
- Media Redirection Settings
- PAM Order Settings
- SSL Settings
- SMTP Settings

**OS**
- 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 SP4 ( x64) or later
  - SUSE Linux Enterprise Server 15 SP1 ( x64) or later
  - Ubuntu 16.04.6 LTS (x64) or later
  - Ubuntu 18.04.3 LTS (x64) or later
  - VMware ESXi 6.5 EP15 or later
  - VMware ESXi 6.7 Update3 or later
  - Citrix Hypervisor 8.1.0

**Compatibility OS**
- Windows Server 2016 ( X2APIC/256T not supported)
- Windows Server 2012 R2 ( X2APIC/256T not supported)
- Windows Server 2016 ( X2APIC/256T not supported)
- Windows Server 2012 R2 ( X2APIC/256T not supported)
- Windows Server 2016 ( X2APIC/256T not supported)
- Windows Server 2012 R2 ( X2APIC/256T not supported)
- Windows Server 2016 ( X2APIC/256T not supported)
- Windows Server 2012 R2 ( X2APIC/256T not supported)
- Windows Server 2016 ( X2APIC/256T not supported)

**Weight**
- Net Weight: 29.5 kg
- Gross Weight: 34.7 kg

**System Fans**
- 8 x 80x80x38mm (1500rpm)

**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**
- Barebone with rail kit: 6NG291Z20MR-00-A*

**Part Numbers**
- Barebone with rail kit: 6NG291Z20MR-00-A*