

GIGABYTE™

OCP Japan Forum

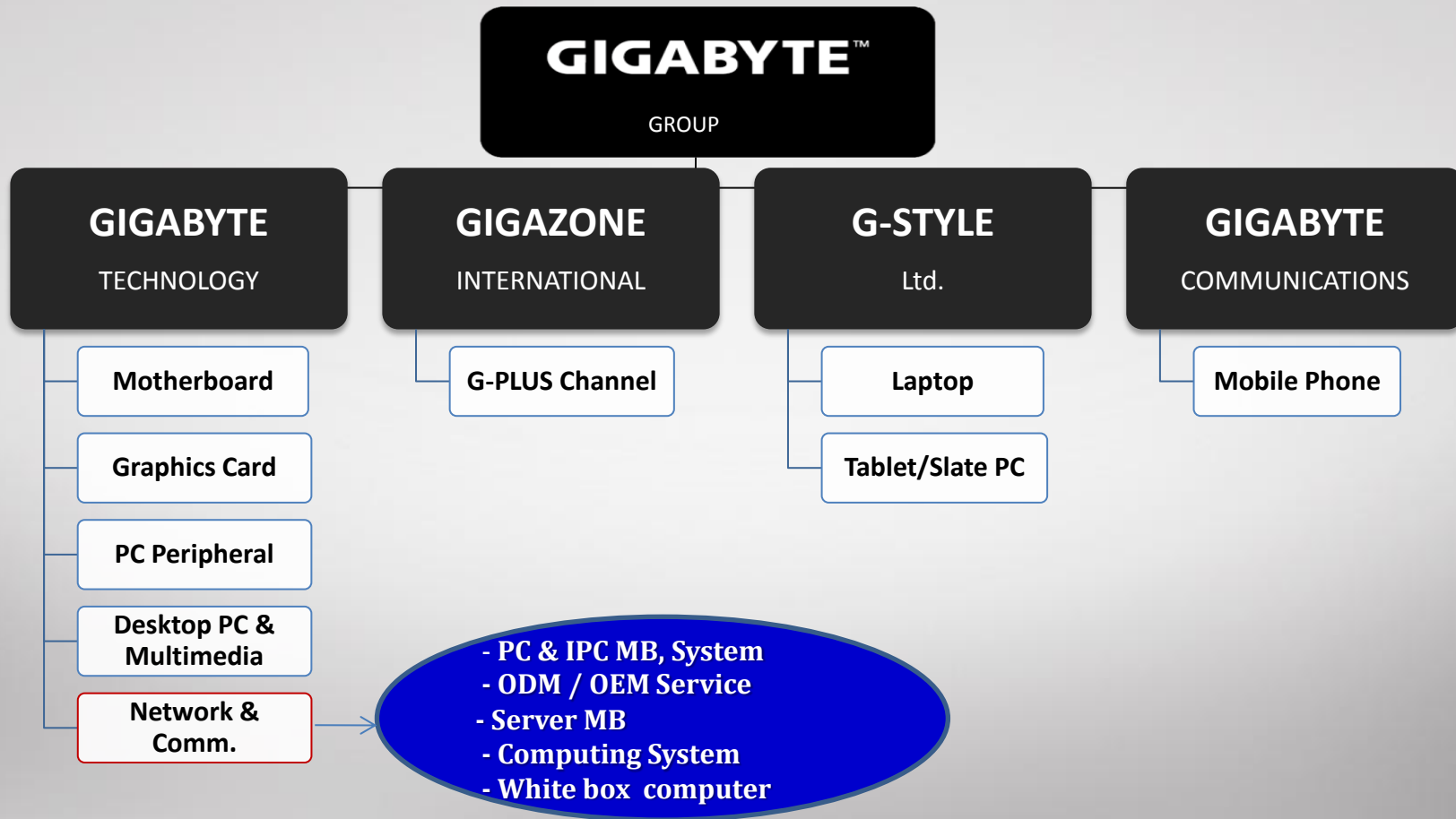
GIGABYTE Racklution Introduction

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Sr. BD Manager, NCBU

June 26th , 2015

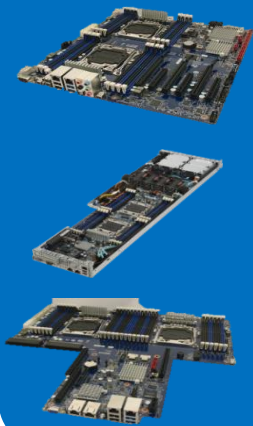
GIGABYTE Group Overview



NCBU(Network communication BU) PRODUCTS

Server Boards

Single Socket
Dual socket
Workstation
Proprietary



Server Nodes

1U/2U/3U
High Density
Micro Server
HPC - GPGPU



Server Rack System

Open Rack
OCP
Cloud system



Server Storage

High density
Cold storage
NAS



Server Network

On-board
Add-on
solution

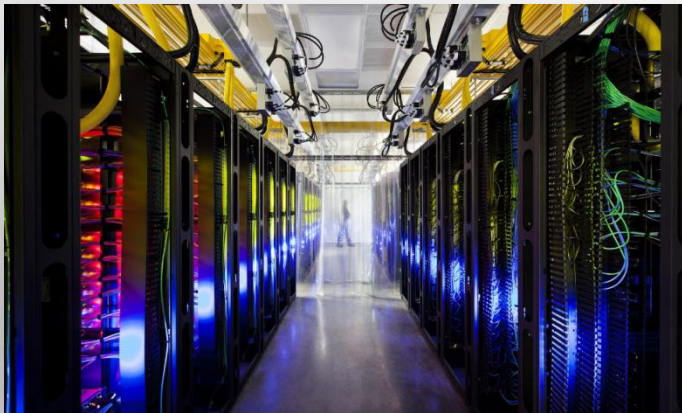


Embedded PC system

IoT Gateway
Embedded
Thin Client
Industrial



Professional experience with Data Center



For years,
GIGABYTE have participated tons of
designing and manufacture for worldwide
datacenter projects.

- **Worldwide support experience**
 - **Full-structure design, ODM, OEM** experience with companies from North Europe, North America, Russia, Japan, China...etc.
- **Multi-type companies (various fields) experience**
 - **Manufacture** and **co-build data center management system** with Internet provider, Telecommunication, Search engine, National research center...etc.

GIGABYTE Racklution series

“Solution”, “Revolution”, and “Conclusion”

Discover Our Datacenter Solutions

- Cutting Edge Modular Design
- Extreme Power Efficiency
- Full Scalability
- Easy Assembly & Handling



GIGABYTE Racklution Roadmap

2015 Q2

2015 Q3

2015 Q4

2016 Q1

2016 Q2

ST series
19" tray

1U1N & 1U2N & JBOD
Romley Platform. MP



SE series
Standard enhance

New 19" Solution Channel Standard
(Under Planning)

Mass Customization Available

- with Gigabyte server motherboards
- with Intel platforms, ARM platforms
- with on-board or add-on network solutions
- with add-on storage solutions
- with high density GPU solutions

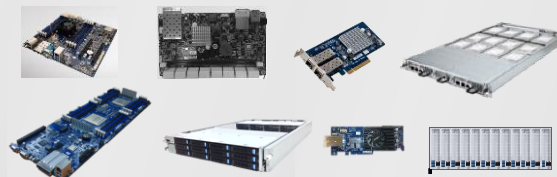
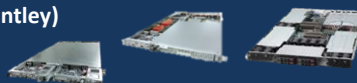
EX series
21" tray

1U 1N & 1U 2N & JBOD
Grantley Platform MP



OS series
OCP standard

Intel - 1U1N & 1U2N (Grantley)
ARM - 1U1N & 1U2N



-- with density/performance valued combo
1UJBOD & 2UJBOD & 3U12N & 1UGPU

GIGABYTE Racklution - System Map

Computing

From Single to Multiple Processor , x86/ARM/GPGPU for computing
Universal Tray for Pure/Mixed Environment for different application

General x86 Computing Node

Easy to Adopt Off-the-shelf standard boards
uATX/ATX/EATX UP/DP/MP with 3.5"/2.5" HDD

High Density x86 Computing Node

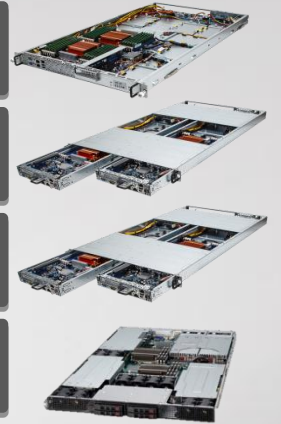
Ivy Bridge / Grantley / Purley DP Half Width boards,
Denlow / Greenlow UP mini-ITX Boards
1U 2-Node computing tray

High Efficiency ARM based Computing Node

High Density and High Efficiency ARM x64 architecture
For MicroServer and/or Xeon Grade Applications

High Performance GPU/GPGPU Computing Node

For GPGPU HPC , VDI & Media application with GPU
1U 1 or 2 Computing Node computing + 1 to 2 GPGPU / GPU



Storage

From direct attached to scale out storage
High Density JBOD and flexible data nodes for cloud and cold storage

JBOD Node

16x 3.5" HDD in 1U / 24 x3.5" HDD in 2U
Support Cascading and Dual Channel SAS supported for 1U JBOD
Support Cascading and Single Channel SAS supported for 2U JBOD

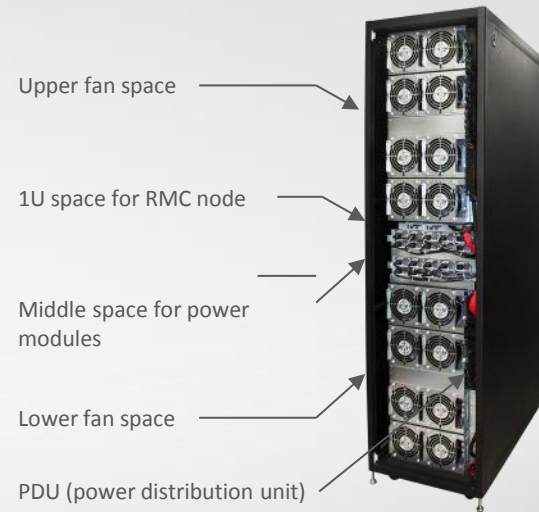
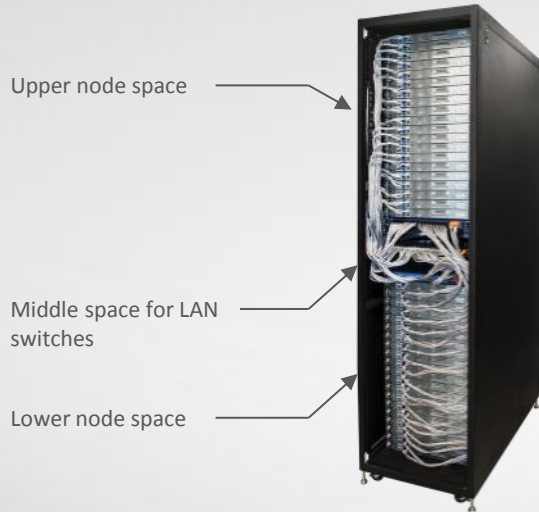
Data Node

Flexible Configuration for Data Node / Scale Out Storages
With Efficient x86 or ARM based controller + 16 HDDs in 1U



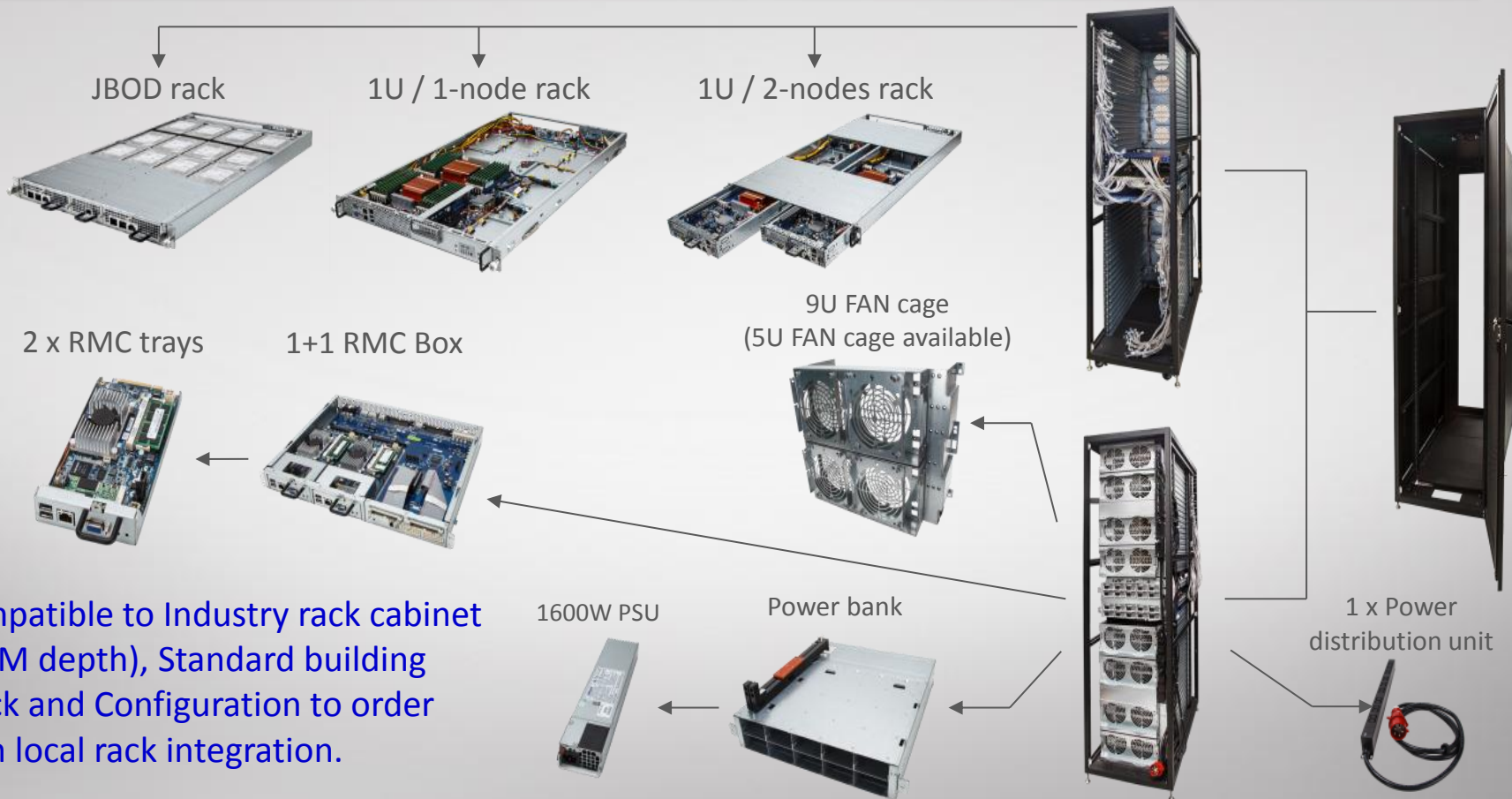
GIGABYTE Racklution-ST/SE

Base on 19" standard rack for system integration



Height	Power Bank (Set/Max Watts)	LAN Switch sapce	Main Node Space	Total Number of Nodes (1U/2-Nodes Racks)	Total Number of Nodes (1U/1-Node Racks)
47U	2/32kW	7	20U + 20U	80	40
44U	1/16kW	4	20U + 20U	-	40
42U	1/19.6kW	5	16U+20U	72	36
25U	1/16kW	5	10U + 10U	40	20

GIGABYTE Racklution-ST



Racklution-OS System Overview

Rack Dimension: 86.6 x23.6 x42 inch (2,200 x600 x 1067mm)



3 OU ToR Switch

18 OU rackmount

2.5OU Power Shelf

18 OU rackmount



2430W PSU x 6 (208/230Vac Dual Inputs)

2.5U Power shelf system up to 12.5kW capacity with power supplies 5+1 redundant configuration



1U 2 Compute Nodes

ARM



1U Compute Node



3U 12 Nodes



1U GPU Node



2U JBOD

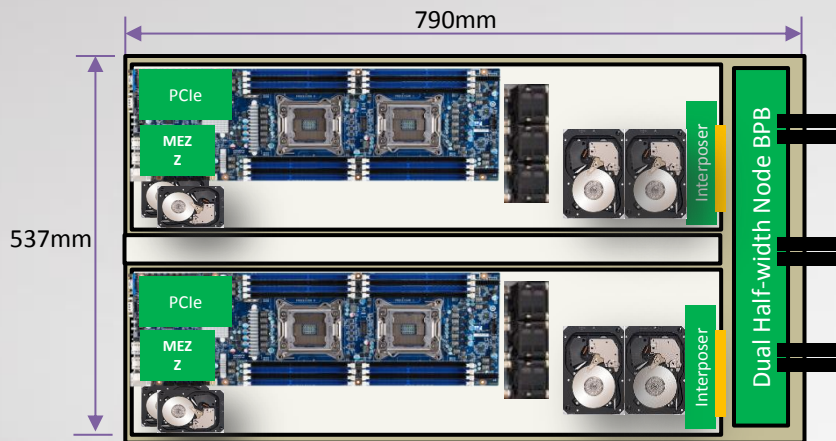


1U JBOD

Confidential

GIGABYTE

GIGABYTE Racklution Series - 1U 2 Computing Nodes



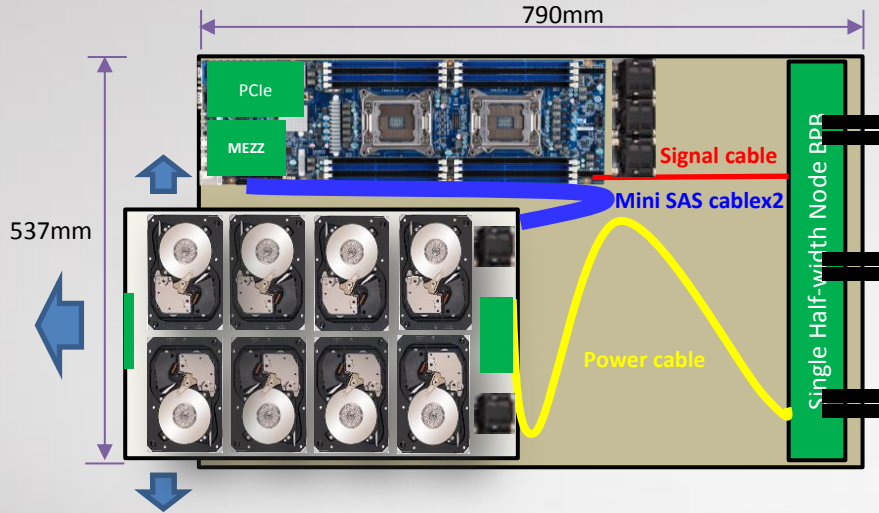
- High density computing tray
- Tray width extend to 21" get more space for thermal optimization & easier cable routing
- Support 2 hot swappable 2.5" HDD on front side & 2 easy swappable 3.5" HDD on rear side
- Each node can be removed without shut down tray power when maintains
- 2 PCIe expansion slots for support more functions (1 standard PCIe MD2 & 1 Mezzanine)



Specifications

Form Factor	1U 2Nodes
Access	Front
HDD / SSD Bays	2 x 2.5" Hot Swappable HDD tray in front 2 x 3.5" internal fixed trays Mounted on anti-vibration rubber spacers

GIGABYTE Racklution Series - 1U 1 Computing Node



- Half width Motherboard (Grantley Platform)
- Support up to 8 x 3.5" hot swappable HDDs
- HDD tray tool-less design for easy maintains
- 2 PCIe expansion slots for support more functions (1 standard PCIe MD2 & 1 Mezzanine)



Specifications

Form Factor	1U
Access	Front
HDD / SSD Bays	8 x 3.5" Hot Swappable Trays

GIGABYTE Racklution Series – 1U/2U JBOD



- *1U JBOD supports up to 16 hot swappable HDDs*



- *2U JBOD supports up to 24 hot swappable HDDs*
- *Cable ARM design for operation of 2nd row HDD same as 1st row when maintains.*

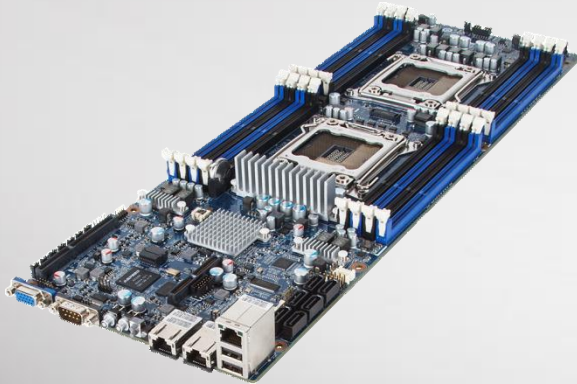
Specifications

Form Factor	1U
Access	Front
HDD / SSD Bays	16 x 3.5" internal trays
SAS / SATA	2 x LSI SAS2X28 expander trays 2 x Internal Mini-SAS connectors for JBOD extensions 4 x External SAS 6GB/s ports for inter-rack connections
Server Management	ASPEED AST1050 controller IPMI 2.0 1 x 10/100/1000Mbps management port

Specifications

Form Factor	2U
Access	Front
HDD / SSD Bays	24 x 2.5"/ 3.5" HDD Hot Swappable Tray
SAS / SATA	1 x LSI SAS3 X 36 expander 2 x External SAS 12GB/s ports for inter-rack connections
Server Management	ASPEED AST1050 controller IPMI 2.0 1 x 10/100/1000Mbps management port

Half Width MB Solution – Grantley Platform



MH70-HD1

	MH70-HD1
Form Factor	Proprietary half-width 165W x 492D mm (6.5" x 19.4")
CPU	Intel Haswell Xeon E5-2600 v3 Single Processor Socket (LGA 2011) Socket R3
Chipset	Intel C610 (Wellsburg)
Memory	16 x DIMM slots support four channel, 1333 MT/s Single Rank or Dual Rank RDIMMs; 1866MT/s (2 DPC), 2133MT/s (1 DPC), 2133 MT/s w/LRDIMM (2 DPC), RDIMM, LRDIMM (3DS w/Broadwell)
LAN	Dual Gigabit Ethernet LAN ports (Intel I350-AM2) 1 x Management LAN
Video	Integrated in ASPEED 1920x1200@60Hz 32bpp
SATA	6 x SATA III 6Gb/s ports
RAID	Intel SW RAID 0/1/5/10
Expansion Slots	1 x Mezzanine I/F PCIe x8 (@Gen3 x8 bus) slot 1 x Low profile PCIe x16 (@Gen3 x16 bus) slot
Rear I/O	2 x USB 2.0, 2 x RJ45, 1 x 10/100 management LAN 1 x Serial, 1 x VGA 1 x Power button, 1 x ID Switch button with LED 1 x NMI button, 1 x BMC reset button, 1 x Power status LED
Server Management	ASPEED IPMI 2.0, iKVM

Accessories – Add on Card Solution (Networking)

GC-MLBZ1



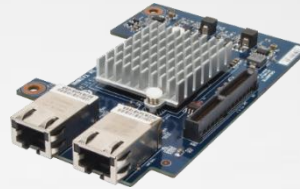
Broadcom 10G SFP+

GC-MLIZS



Intel 10G SFP+ Mezz.

GC-MLIZ



Intel 10G BaseT Mezz.

GC-MNXE2



Infiniband (FDR) ports

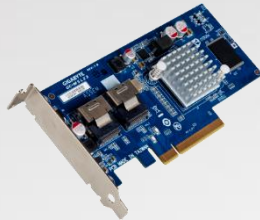
Accessories – Add on Card Solution (Storage Card)

GC-MSLZ1



LSI 6G 8Ports (Internal)
SAS/SATA
Hardware RAID
Mezz. Card

GC-MSLZ2



LSI 6G 8Ports (Internal)
SAS/SATA
Firmware RAID
Card

GC-MSLZ3,4



LSI 6G 8Ports (external)
SAS/SATA
Firmware RAID
Card

GC-RA200-8



LSI 6G 8Ports (Internal)
SAS/SATA
Firmware RAID
Card

GC-RA201-A



LSI 6G 8Ports (Internal)
SAS/SATA
Hardware RAID
Card

CRA333-8



LSI 12G 8Ports (Internal)
SAS/SATA
Firmware RAID
Card

CSA4-02G



PMC 12G 16Ports (Internal)
SAS/SATA HBA
Card

CSA4-03G

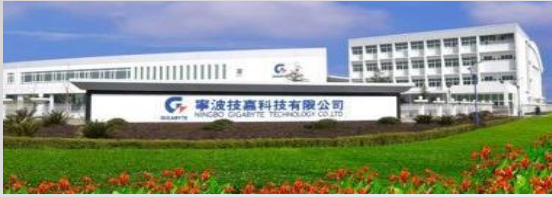


PMC 12G 16Ports
(8 Internal, 8 External)
SAS/SATA HBA
Card

Key Takeaways

- GIGABYTE offers “Design and Manufacturing Service” to customers from around the world.
 - Mature EE/ME design and professional system integration
 - Leverage innovative high computing technology & assembly expertise
- Customer Driven Innovation
 - Brainstorming with customers from around the world
 - Extensive design experiences and wide design investigations to satisfy the needs of SI/ODM customers requests
- Well Experienced in Building Converged Infrastructure
 - Provide leading edge 19” Rack, 21” Rack and OCP compliant Rack
 - Co-built data center with ISP, Telco and National Research Center world wide

Manufacturing Capacity



Ning-Bo, China



Dong-Guan, China



Nan-Ping, Taiwan

Product Type	Ning-Bo	Dong-Guan	Nan-Ping	Total / Monthly
Motherboard	650 K	680 K	320 K	1,650 K
Graphics Card	100 K	320 K	150 K	570 K
Server	30 K	20 K	5 K	50 K
System Product	100 K	95 K	5K	200 K
Laptop	45 K	-	20 K	65 K
Mobile Phone	30 K	-	20 K	50 K
Floor Space	60,000 M ²	38,000 M ²	45,000 M ²	

Global Operation & Support Centers

Europe

- UK
- Bulgaria
- Czech
- France
- Germany
- Holland
- Hungary
- Israel
- Poland
- Romania
- Russia
- Spain
- Turkey
- Ukraine

Middle East & Africa

- Dubai
- Egypt
- Saudi Arabia
- South Africa

Asia & Oceania

- Australia
- Bangladesh
- Hong kong
- India
- Indonesia
- Japan
- Korea
- Malaysia
- Myanmar
- Philippines
- Singapore
- Thailand
- Vietnam

Taiwan

- Taipei
- Hsintien
- Taoyuan
- Hsinchu
- Taichung
- Tainan
- Kaoshiung

North America

- USA
- Mexico

South America

- Brazil
- Peru
- Argentina

China

- Baotou
- Beijing
- Canton
- Changchun
- Changsha
- Changzhou
- Chengdu
- Chongqing
- Dalian
- Dongguan
- Fuzhou
- Guiyang
- Hangzhou
- Harbin
- Hefei
- Jinan
- Jingzhou
- Kunming
- Lanzhou
- Lhasa
- Longyan
- Nanchang
- Nanjing
- Nanning
- Ningbo
- Océ
- Qingdao
- Quanzhou
- Seaport
- Shanghai
- Shantou
- Shenyang
- Shenzhen
- Shijiazhuang
- Suzhou
- Taiyuan
- Taizhou
- Urumqi
- Wenzhou
- Wuhan
- Wuxi
- Xiamen
- Xi'an
- Xuzhou
- Zhengzhou
- Zhongshan
- Zhuhai

GIGABYTE™

Upgrade Your Life

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