AI x HPC

FUJITSU Server PRIMERGY CX400

One of the Top 10 Supercomputers in the World is built from CX400

ABCI System with PRIMERGY CX400

- One of the Top 10 Supercomputers in the World-

FUJITSU

- AI Bridging Cloud Infrastructure (ABCI)
  - Customer: AIST (National Institute of Advanced Industrial Science and Technology)
- AI Processing Performance of 550 Petaflops
- Theoretical Peak Performance: 550PF (half-precision), 37PF (double-precision)
- Main System Configuration:
  - PRIMERGY CX2570 M4 (1,088Nodes, 2,176CPUs)
  - NVIDIA® Tesla® V100 (4,352GPUs)
  - Intel®SSD DC P4600Series

NVIDIA®

PRIMERGY Multi-Node Systems

FUJITSU

Density optimized server infrastructures for HPC computing

PRIMERGY CX400 M4

Workload-specific power in a compact and modular form factor

PRIMERGY CX2550 M5

Cloud/HPC optimized half-width 1U server node

PRIMERGY CX2560 M5

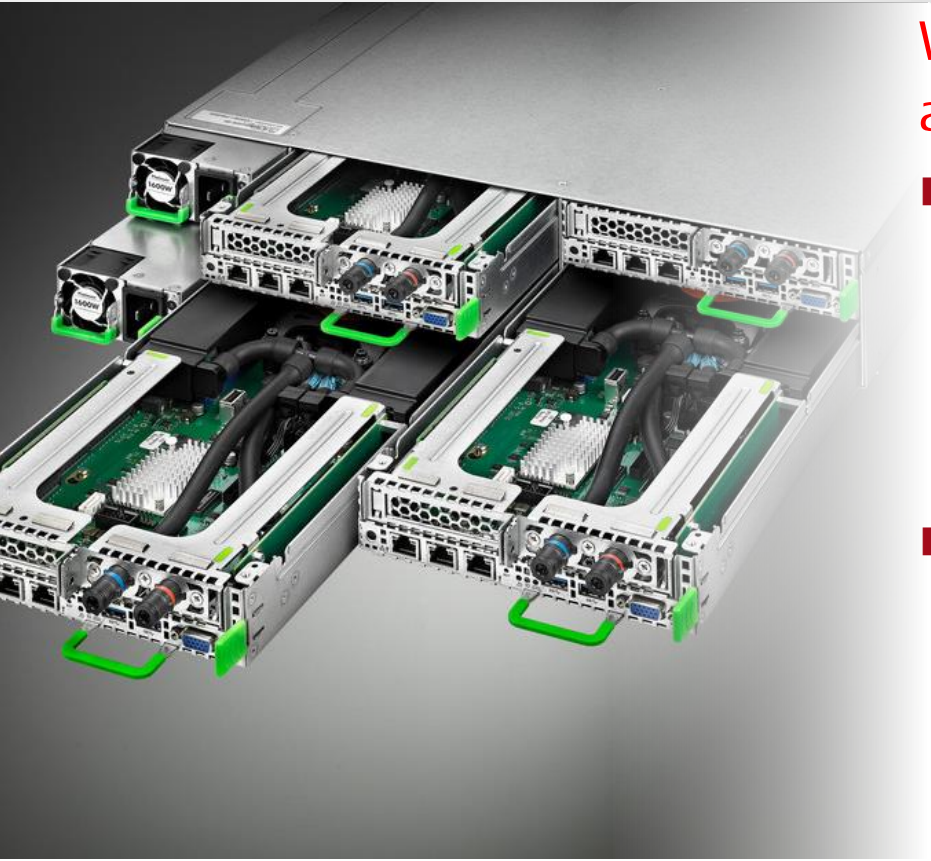
All-round half-width 1U server node

PRIMERGY CX2570 M5

HPC/AI optimized half-width 2U server node

Comprehensive support services available

FUJITSU Server PRIMERGY CX400 M4
Brief Description



Workload-specific power in a compact and modular form factor

- The FUJITSU Server PRIMERGY CX400
  - is a modular enclosure for the Fujitsu multi-node ecosystem
  - combines the density and efficiency of blade-like servers with the simplicity and cost benefits of rack-based systems
- The PRIMERGY CX server nodes provide:
  - High Performance and Technical Computing,
  - Deep Learning,
  - Power for VDI, infrastructure virtualization,
  - Web Services, Cloud Computing

FUJITSU Server PRIMERGY CX400
Server Node Overview

PRIMERGY CX400 M4 Enclosure

Front view

Rear view

Optimized server nodes for a variety of workloads

PRIMERGY CX2550 M5

- Use case: HPC node
- Up to 4 nodes/chassis
- 2x CPU's (3 UPI links / up to 205W)
- 16x DIMMs
- Omni-Path support
- 2x 2.5" storage drives per node
- 2x PCIe Gen 3 slots
- Air cooling / Liquid cooling

PRIMERGY CX2560 M5

- Use case: All-round/Cloud node
- Up to 4 nodes/chassis
- 2 CPU's (3 UPI links / up to 150W)
- 16x DIMMs
- 6x 2.5" storage drives per node
- DynamicLoM OCP
- 2x PCIe Gen3 slots
- Air cooling

PRIMERGY CX2570 M5

- Use case: HPC/VDI node
- Up to 2 nodes/chassis
- 2 CPU's (3 UPI links/ up to 205W)
- 16x DIMMs
- 6x 2.5" storage drives per node
- 2x GPU (PCIe) or 4x GPU (SXM2)
- DynamicLoM OCP
- 1x PCIe slots
- Liquid cooling

FUJITSU Server PRIMERGY CX400
Features At A Glance

Maximize Efficiency

New Intel® Xeon® Processor Scalable Family (up to 28 Cores, UltraPath Interconnect, Omni-Path support, ...)

Enhanced DDR4 modules with 1.5x higher memory bandwidth and up to 3 TB capacity

Reduce the needed power for cooling and operating costs thanks to Cool-safe® Advanced Thermal Design and Cool-Central® Liquid Cooling Technology

Optimize Workloads

Flexible configuration options: Mix of different server nodes in one chassis to meet various requirements

Most advanced GPUs, NVMe devices to accelerate demanding HPC, hyperscale, and enterprise data center workloads

Redundant hot-plug fans and redundant hot-plug PSUs ensure increased availability

Simplify Complexity

Onboard LAN for basic Ethernet, DynamicLoM for extended requirements

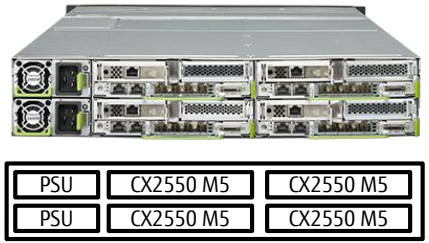
iRMC S5 comes with new interactive web UI and conforms to Redfish providing unified API support for heterogeneous environment

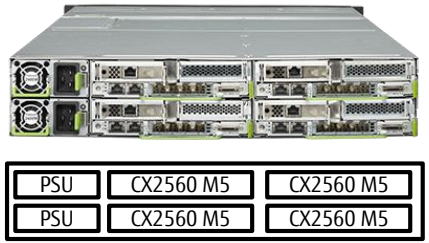
Enable faster IT service by automating and simplifying infrastructure operations across compute, storage and networking with ServerView Infrastructure Manager.

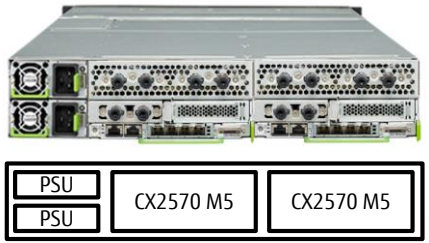
Node Allocation & PSU Configuration
Rear View

FUJITSU

Supported configurations:







PSU	# of PSU's	Input Voltage	CX2550 M5 (AC)	CX2550 M5 (LC)	CX2560 M5	CX2570 M5
1600 W	2	AC 100V	Up to two nodes (< 150W CPU)	Up to two nodes (< 150W CPU)	Up to two nodes (< 130W CPU)	No support
1600 W	2	AC 200V	No configuration limitation	Up to 165W CPU	Up to 130W CPU	Up to 1 node
2400 W	1	AC 200V	Up to three nodes (< 150W CPU)	Up to three nodes (< 150W CPU)	Up to three nodes (< 130W CPU)	No support
2400 W	2	AC 200V	No configuration limitation	No configuration limitation	No configuration limitation	No configuration limitation

FUJITSU Server PRIMERGY CX2570 M5

Liquid cooling

Usage Scenarios

- Virtualized Desktop Infrastructures
- High Performance and Technical Computing

Overview

- Half-width 2U server node
- Up to 2x CX2570 M5 per CX400 M4 chassis
- 2x Intel® Xeon® Processor Scalable Family (3x Ultra Path Interconnect (UPI) links)
- 16 DIMMs per node (up to 2,048 GB DDR4 memory)
- 2x GPU (PCIe) or 4x GPU (SXM2 with LC)
- 1x DynamicLoM OCP + 1x PCIe slot (Gen3 x16)
- 2x 1GbE (Mgmt. LAN / Onboard NIC)
- Up to 6x 2.5" SAS/SATA (thereof 2x PCIe)
- Internal Boot Devices: 1x mirrored USB / 2x M.2 slots (PCIe/SAS)
- 1x TPM / 1x MicroSD for BMC

Boost performance for HPC and Hyperscale workloads

FUJITSU

- Accelerate most demanding HPC, hyperscale data center workloads as well as improve virtual desktops and applications
- Horsepower needed to run bigger simulations faster than ever before
- PRIMERGY CX2570 M5 supports up to 4 GPU accelerators with SXM2, or 2 GPUs with PCIe Full Height/Length form factor
- Available options
  - NVIDIA Tesla V100 (for SXM2)
  - NVIDIA Tesla V100 (for PCIe)

NVIDIA

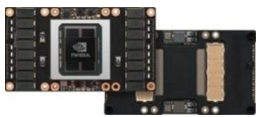
Graphic Processor Options for CX2570M5

FUJITSU

NVIDIA Tesla V100 (for SXM2)

World's most advanced data center GPU

- max. 4x per system
- Superior strong-scaling performance for HPC and hyperscale applications
- 3584 NVIDIA CUDA Cores
- GPU Memory: 16 GB CoWoS HBM2
- Double-Precision Performance: 5.3 TeraFLOPS
- Single-Precision Performance: 10.6 TeraFLOPS



NVIDIA Tesla V100 (for PCIe)

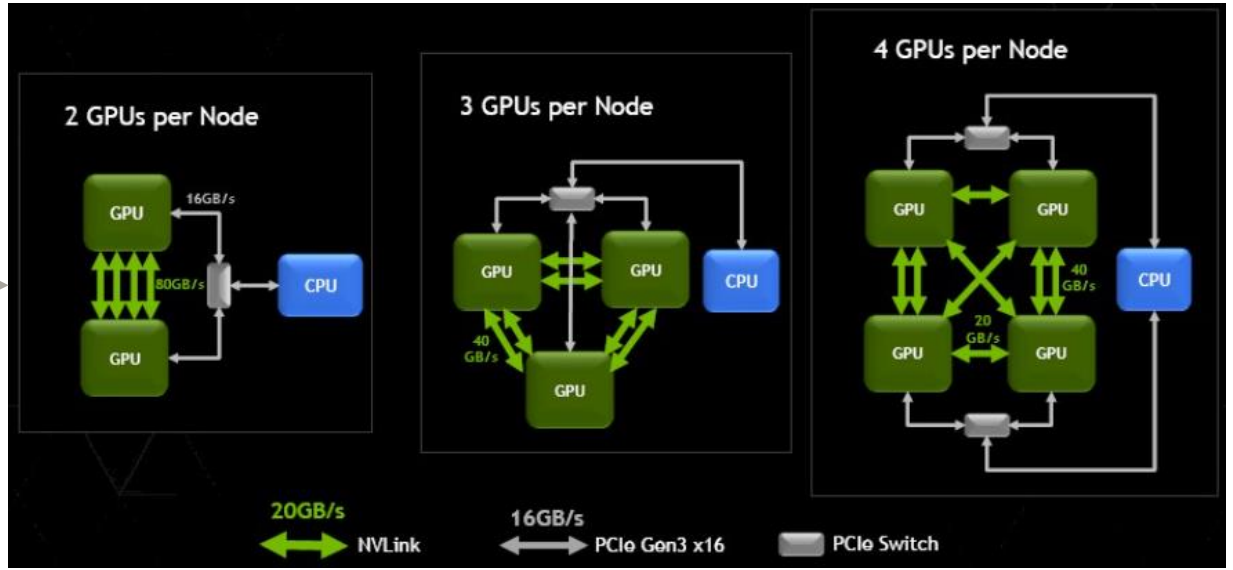
- max. 2x per system
- Boost throughput and save money for HPC and hyperscale data centers
- 3584 NVIDIA CUDA Cores
- GPU Memory: 16GB CoWoS HBM2
- Double-Precision Performance: 4.7 TeraFLOPS
- Single-Precision Performance: 9.3 TeraFLOPS

Flexible PCIe Topology for GPGPU (1/2)

PCI Card

SXM2

Multi-GPU coupled by NVLink



Flexible PCIe Topology for GPGPU (2/2)

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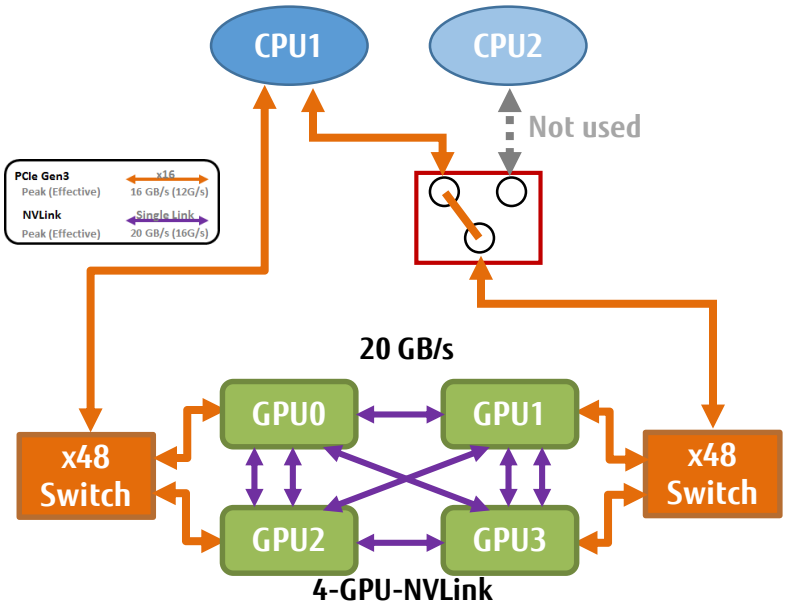
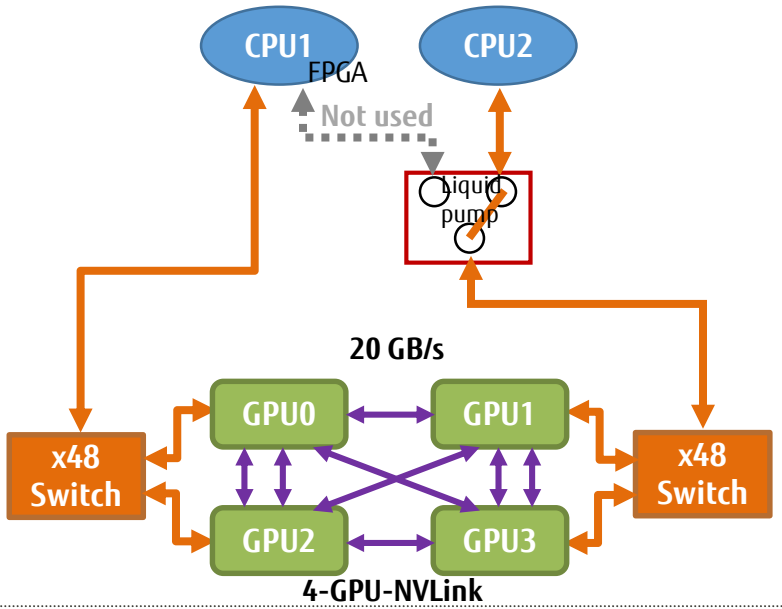
Attach all GPUs to CPU1

- Use case: For ISV applications
- Benefit: Lower license fee due single CPU



Split GPUs equally to CPU1 and CPU2

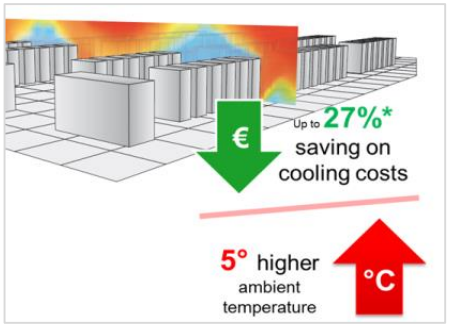
- Use case: For In-house applications
- Benefit: Efficient utilization w/ max Bandwidth



Reduce Cooling and Operating Costs

Cool-safe® Advanced Thermal Design

- Enables server operation in an extended ambient temperature range (5°C – 45 °C)
- Helps save cooling costs and opens new possibilities
- Released for most of PRIMERGY servers, ETERNUS storage and network infrastructure components
- Very few limitations (e.g. choice of CPU, GPUs)
- No restriction on operation time



Cool-Central® Liquid Cooling Technology

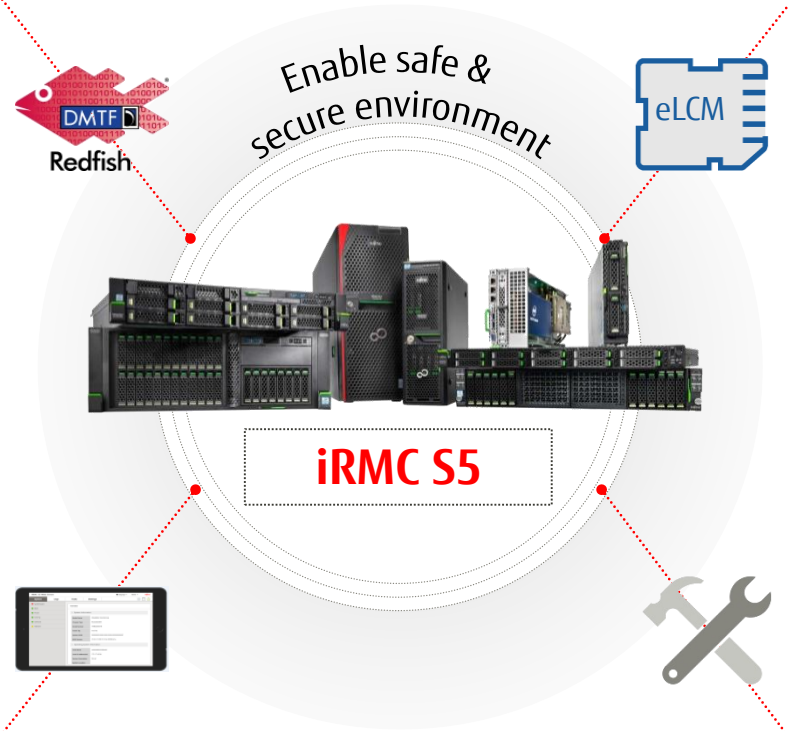
- Removes heat from CPUs and memory modules within the server
- Captures 60% to 80% of server heat
- Allaows 2.5x-5x increases in server density
- Delivers 50%+ reductions in cooling costs

iRMC S5
increasing security and server admin productivity

FUJITSU

Increase productivity

Unified API for today's scalable heterogeneous datacenter environment



Reduce vulnerability

Ensure chain of trust for provisioning having eLCM preloaded on server with **HTTPS support**

Ease of Management

New modern, intuitive and secure **user interface** with hand held device support (tablets)

Simplify Operations

Faster results and fewer errors with template based deployment with **new profile templates**

ServerView® Infrastructure Manager (ISM)

FUJITSU

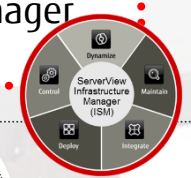
Cloud/Hybrid IT Management

Infrastructure Management

vmware®

Microsoft® System Center

FUJITSU Software ServerView® Infrastructure Manager



Agile aggregation of **COMPUTE** power

FUJITSU Server PRIMERGY CX400 M4

Agile and hyper-scale **STORAGE** systems

FUJITSU Business-Centric Storage Solutions

Agile **NETWORK** technology

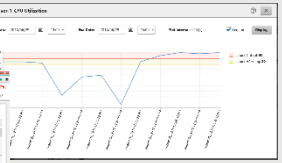
FUJITSU Ethernet ToR Switch (PSWITCH 2048)

Converged Lifecycle Management

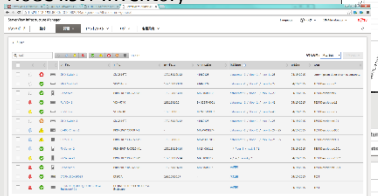
FUJITSU

Management

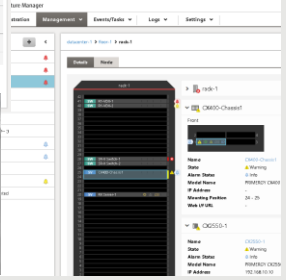
Utilization, Power & Threshold



Node list / Inventory

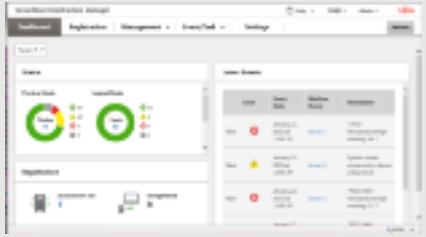


Rack View / Node Status



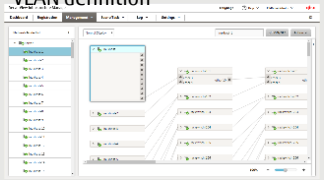
Floor View

Dashboard

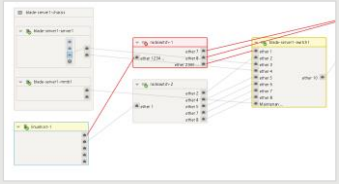


Topology (VLAN/SAN Mgmt)

VLAN definition

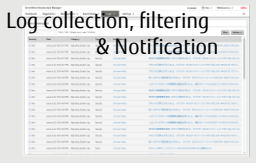


Topology view w/VMs



Maintenance

Log collection, filtering & Notification

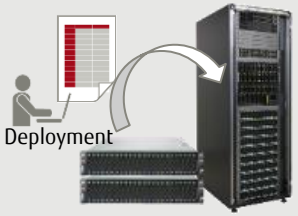


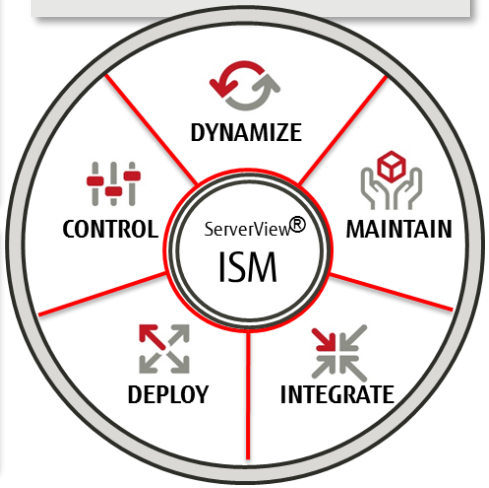
Firmware updates

Profile Management (Installation)

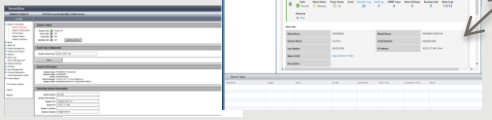
Profiles

Deployment

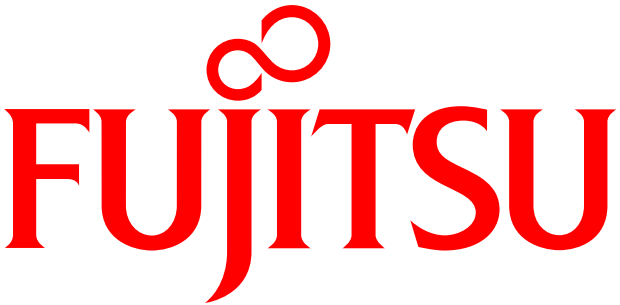




Integration (plugins)



vCenter
vRealize
System
Center



shaping tomorrow with you