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shaping tomorrow with you

Your Gateway to HPC simplicity

FUJITSU x86 HPC Cluster

INTERNATIONAL
SUPERCOMPUTING CONFERENCE

Tutorials: June 16
Conference: June 17–20
Exhibition: June 17–19

ISC'13
The HPC Event

Leipzig, Germany
June 16–20, 2013

FTS PUBLIC

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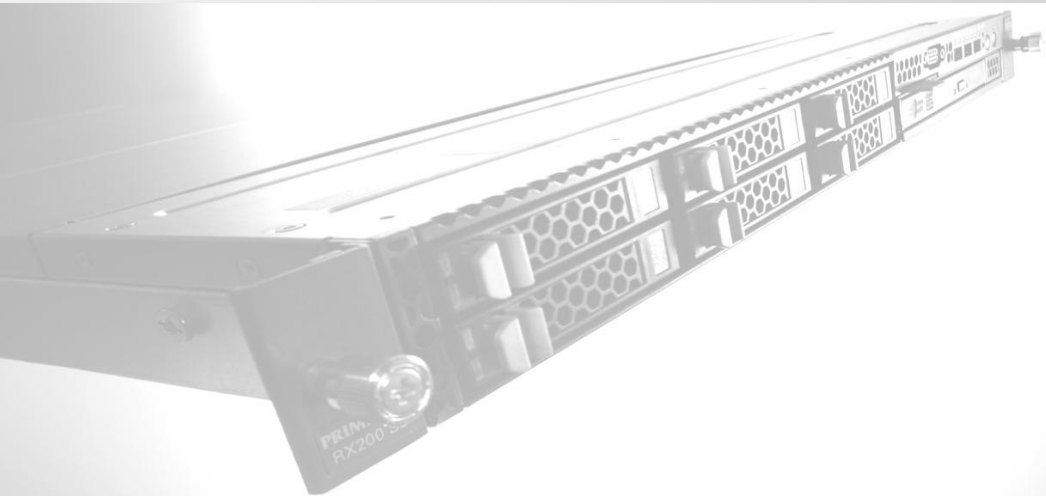
FUJITSU HPC Platforms : PRIMERGY and CELSIUS



Fujitsu x86 Server

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HPC Platforms | HPC Cluster Suite | FEFS(Luster)

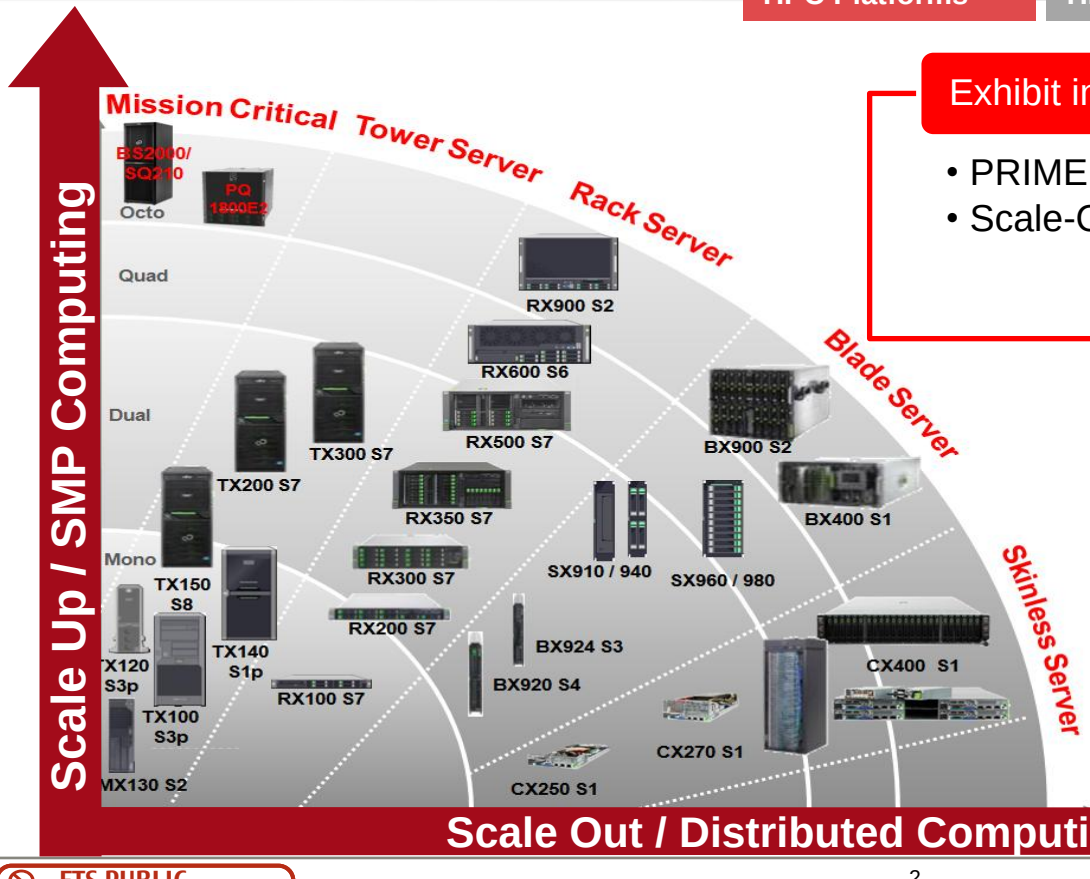

Exhibit in the booth

- PRIMERGY CX400 S1 Multi-Node System
- Scale-Out Smart for HPC and Cloud Computing

PRIMERGY CX400 (CX250 S1 / CX270 S1)

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HPC Platforms | HPC Cluster Suite | FEFS(Luster)

High Density / Scalability in 2U

- Up to 4 nodes **CX250 S1** (1U)
- Or Up to 2 nodes **CX270 S1** (2U)
  2x Intel® Xeon® E5-2600 processors / node
- 16 DIMMs, up to 1600MHz
- Up to 12x 3.5” or 24x 2.5” HDD
- **FDR Infiniband**
- **1x GPGPU** Option within CX270 S1 (2U node)

HPC Usage Scenarios

Compute Node

GPU Node

PRIMERGY BX400 / BX924 S3

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HPC Platforms | HPC Cluster Suite | FEFS(Luster)

Offers an HPC Cluster “in a box” in 6U

- 2x Intel® Xeon® E5-2600 processors / blade
- Up to 8 different types of server and storage blades
- **FDR Infiniband**
- Certified for Schlumberger Eclipse application
- Ideal for Midmarket (w/o Rack infrastructure)

HPC Usage Scenarios

Head Node	Compute Node
HPC Cluster in a Box	In-build nodes + Storage

PRIMERGY BX900 S2 / BX924 S3

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HPC Platforms | HPC Cluster Suite | FEFS(Luster)

Top blade density and top I/O bandwidth in 10U

- 2x Intel® Xeon® E5-2600 processors / blade
- Up to 18 different types of server and storage
- **FDR Infiniband**

HPC Usage Scenarios

- Head Node
- Compute Node
- HPC Cluster in a Box
- In-build nodes + Storage

PRIMERGY RX200 S7

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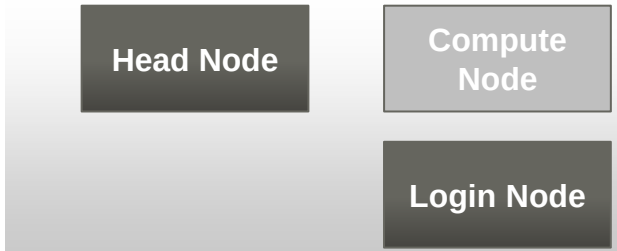
HPC Platforms | HPC Cluster Suite | FEFS(Luster)

Maximum productivity in a 1U

- 2x Intel® Xeon® E5-2600 processors / node
- 24 DIMMs with up to 768GB DDR3, 1600MHz
- Up to 8 HDD
- **FDR Infiniband**

HPC Usage Scenarios



PRIMERGY RX300 S7

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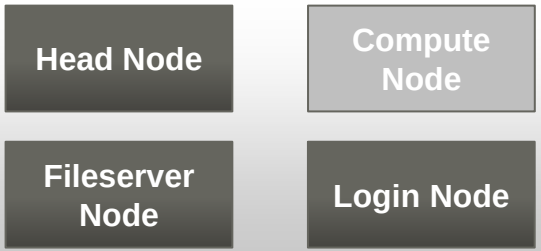
HPC Platforms | HPC Cluster Suite | FEFS(Luster)

Versatile power house in 2U

- 2x Intel® Xeon® E5-2600 processors / node
- 24 DIMMs with up to 768GB DDR3, 1600MHz
- Up to 16 HDD
- **FDR Infiniband**

HPC Usage Scenarios



PRIMERGY RX350 S7

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HPC Platforms | HPC Cluster Suite | FEFS(Luster)

With big Storage capacity and GPGPU in 4U

- 2x Intel® Xeon® E5-2600 processors / node
- 2x NVIDIA® Tesla™ GPGPU's - K20 or K20X each with up to 2688 cores
- Up to 24 DIMMs with 768 GB memory, 1600MHz
- Up to 24 HDD
- LTO drives
- **FDR Infiniband**

HPC Usage Scenarios

- Head Node
- Compute Node
- Fileserver Node
- Accelerator Card Node

Support Xeon Phi and Kepler

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HPC Platforms | HPC Cluster Suite | FEFS(Luster)

RX350 S7

2x / Node

available

CX400 S2 / CX270 S2

1x / CX270

2x / CX400

From Q3/2013

Xeon Phi 5110P

- 60 cores / 1.053GHz / 240 threads
- Up to 1 teraflops double-precision p

NVIDIA K20 / K20X (Kepler)

- Up to 2688 cores / CPU clock 732 MHz
- Up to 1.32 teraflops double-precision

Intel Xeon Phi 5110P Specification

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HPC Platforms | HPC Cluster Suite | FEFS(Luster)

- Key Specifications:
  - 60 cores/1.053 GHz/240 threads
  - Up to 1 teraflops double-precision peak performance
  - 8 GB memory and up to 320 GB/s bandwidth
  - Supported by the latest Intel® software development products
  - 512-bit wide vector engine
  - 32 KB L1 I/D cache, 512 KB L2 cache (per core)
  - 245W TDP
  - x16 PCIe form factor (requires IA host)
    - Double wide, full height, full length cards

- Ideal for:
  - Highly parallel applications using over 100 threads
  - Memory bandwidth-bound applications
  - Applications with extensive vector use

CELSIUS C620 – for HPC

Product description

- 1U Rack-Mount workstation
- Highest performance packed in only one unit
- **Optimal for High Performance Computing and Remote CAD, CAE, DCC, Visualization**
- Certified for CAD and DCC workstation applications

Technology

- Intel® Xeon® E3-12xx v2 or Core™ i3 processor
- Intel® C216 chipset
- Intel® vPro™ technology / iAMT 8.0
- Integrated graphics or up to high-end 3D graphics / GPGPU, (Xeon Phi coming soon)
- Up to 32 GB DDR3 ECC memory
- iAMT or IPMI system management

CELSIUS R920 – for HPC

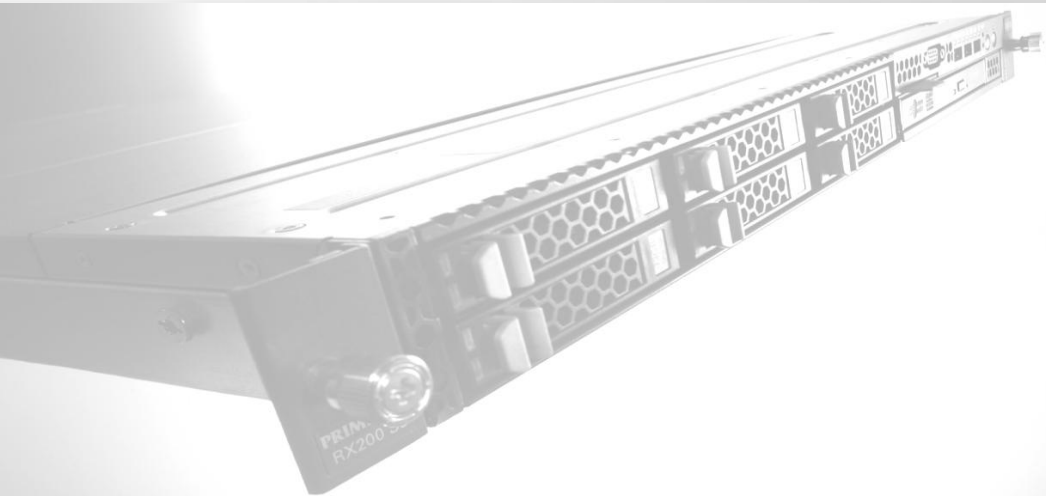
Product description

- **For high-end CAE, EDA, DCC, VR/VIS, Simulation and Geosciences**
- Certified for all leading CAD/CAE and DCC workstation applications
- ENERGY STAR® 5.0 compliant
- Full remote system management with Intel® vPro™
- Dynamic USB security – HW-based USB access control
- Optimized thermal management for best-in-class noise emission of just 23 dB(A)

Technology

- Up to two Intel® Xeon® E5-2600 processors
- Intel® C602 chipset
- Up to 3 ultra-high-end graphics cards, 2 GPUs, Xeon Phi coming soon
- Up to 512 GB DDR3 ECC memory

FUJITSU software HPC Cluster Suite



Brings Simplicity to HPC

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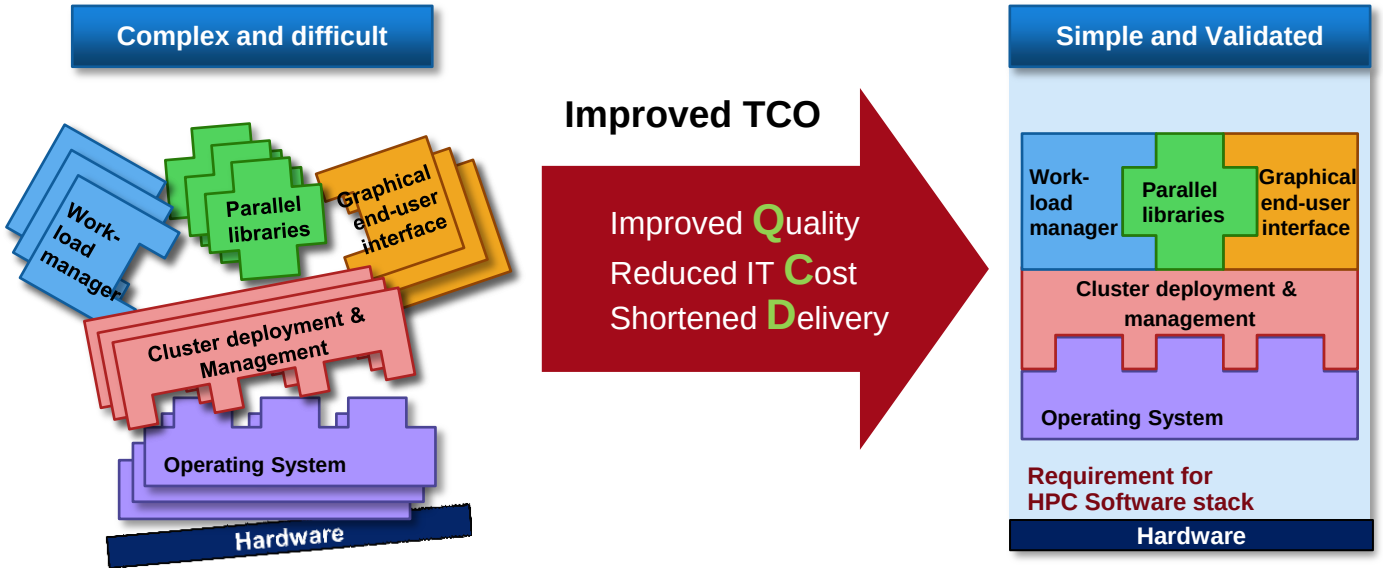
HPC Platforms | HPC Cluster Suite | FEFS(Luster)

- **Software choices on the market are wide and varied**
- **Easy configuration control and cluster extension**

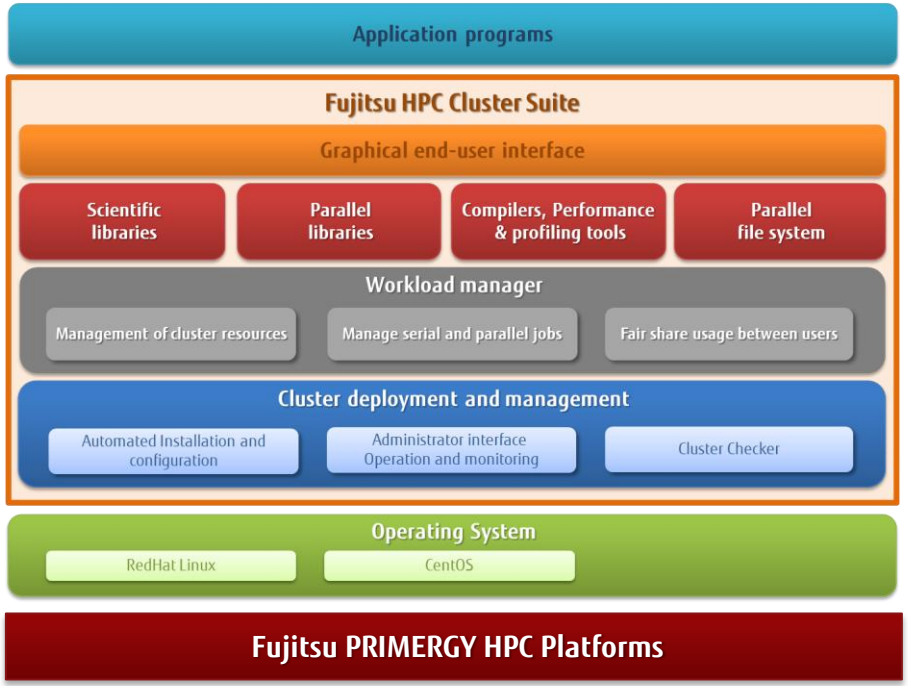


Comprehensive and flexible HPC solution

HPC Platforms | HPC Cluster Suite | FEFS(Luster)

- **Comprehensive software stack**
  - Popular workload managers
  - General HPC Open Source Software
  - Alliance with leading ISVs
  - Highly scalable parallel file systems
  - Graphical interface simplifies usage

- **Fully validated HPC solution**



Clear benefits from “Standardized” HPC solution

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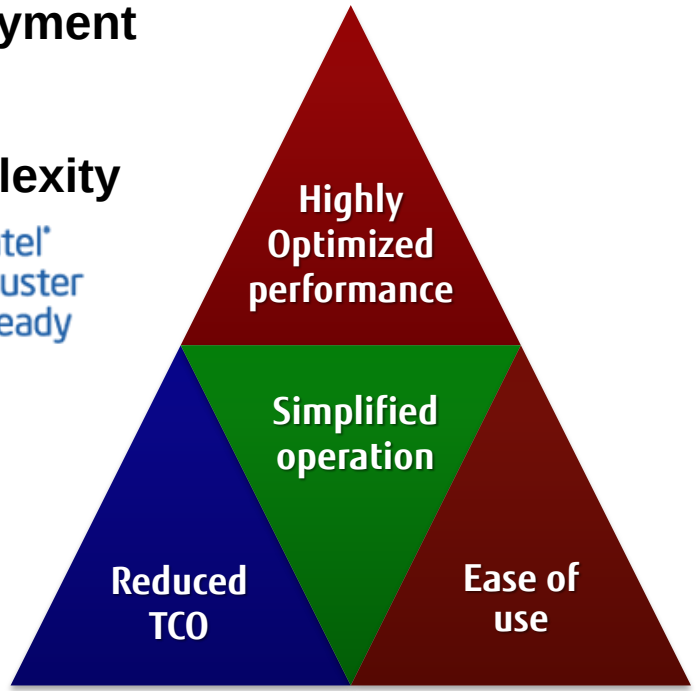
HPC Platforms | HPC Cluster Suite | FEFS(Luster)

- **Optimal application configuration**
- **Immediate system readiness and faster deployment**
- **Simplifies HPC usage and management**
- **Dramatically reduce cluster purchasing complexity**
  - **Delivered with Intel® Cluster Ready**
    - Accelerate your cluster deployment timeline
    - “Quality assurance” for your cluster purchase

Intel® Cluster Ready



HPC Gateway value proposition

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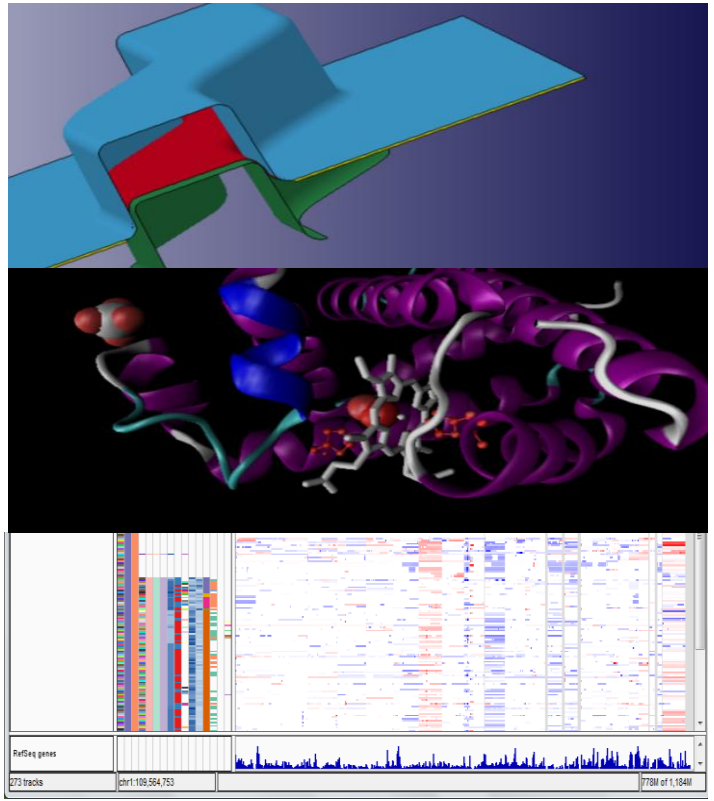
HPC Platforms | HPC Cluster Suite | FEFS(Luster)

- Access expertise in application methods without the IT pain
- Direct visibility on processes and experiments
- Traceability for assured and secure operations
- Scalable and Agile resources usable from single view



HPC Gateway for CAE

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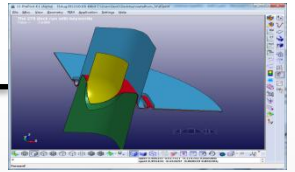
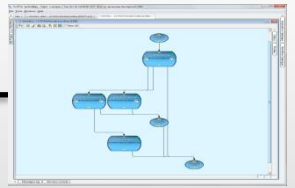
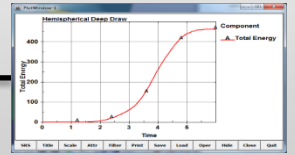
HPC Platforms | HPC Cluster Suite | FEFS(Luster)

Crash & Forming HPC Gateway

- Toolset for computation and visualisation
- Proven application workflow methods

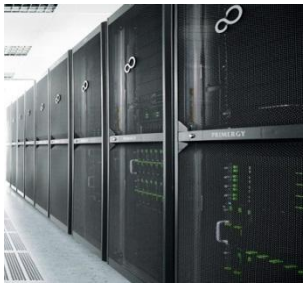






- Information organisation and sharing
- Audit, reporting and billing

Providing domain expertise in-built for HPC Solutions to vertical sectors



Strong relationship

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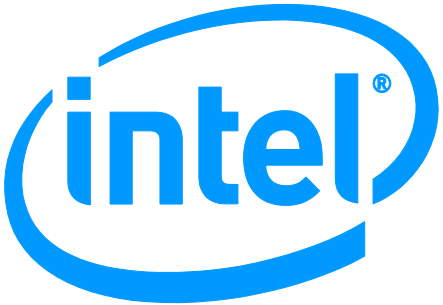
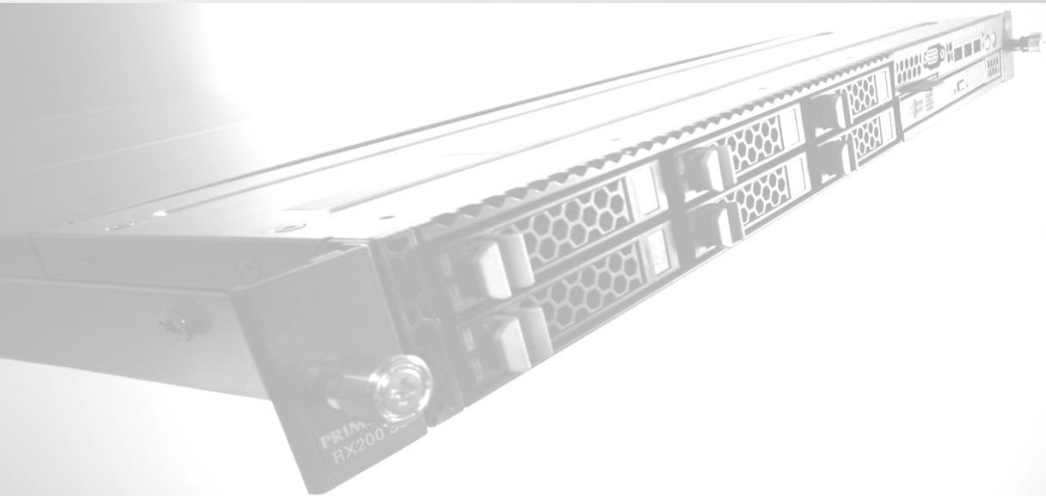
HPC Platforms | HPC Cluster Suite | FEFS(Luster)

Altair



FUJITSU software FEFS



FEFS - Scalable parallel file system (optional)

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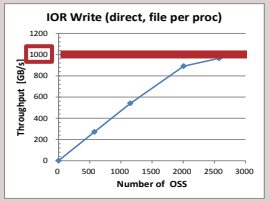
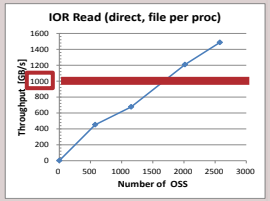
Highly scalable and easy-to-install parallel file system based on Lustre

High-speed & large-scale

- Enable high-speed parallel processing
  write **965 GB/s** read **1486 GB/s**





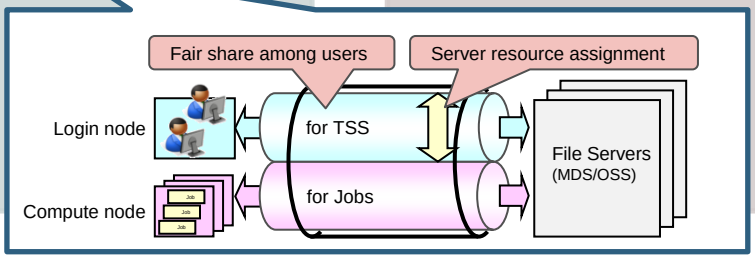
- Very large-scale file systems with up to 8 Exabyte(EB)

Feature differentiations

- Extended File system size limitation

Max size	FEFS	Lustre
file system	8EB	64PB
file	8EB	320TB

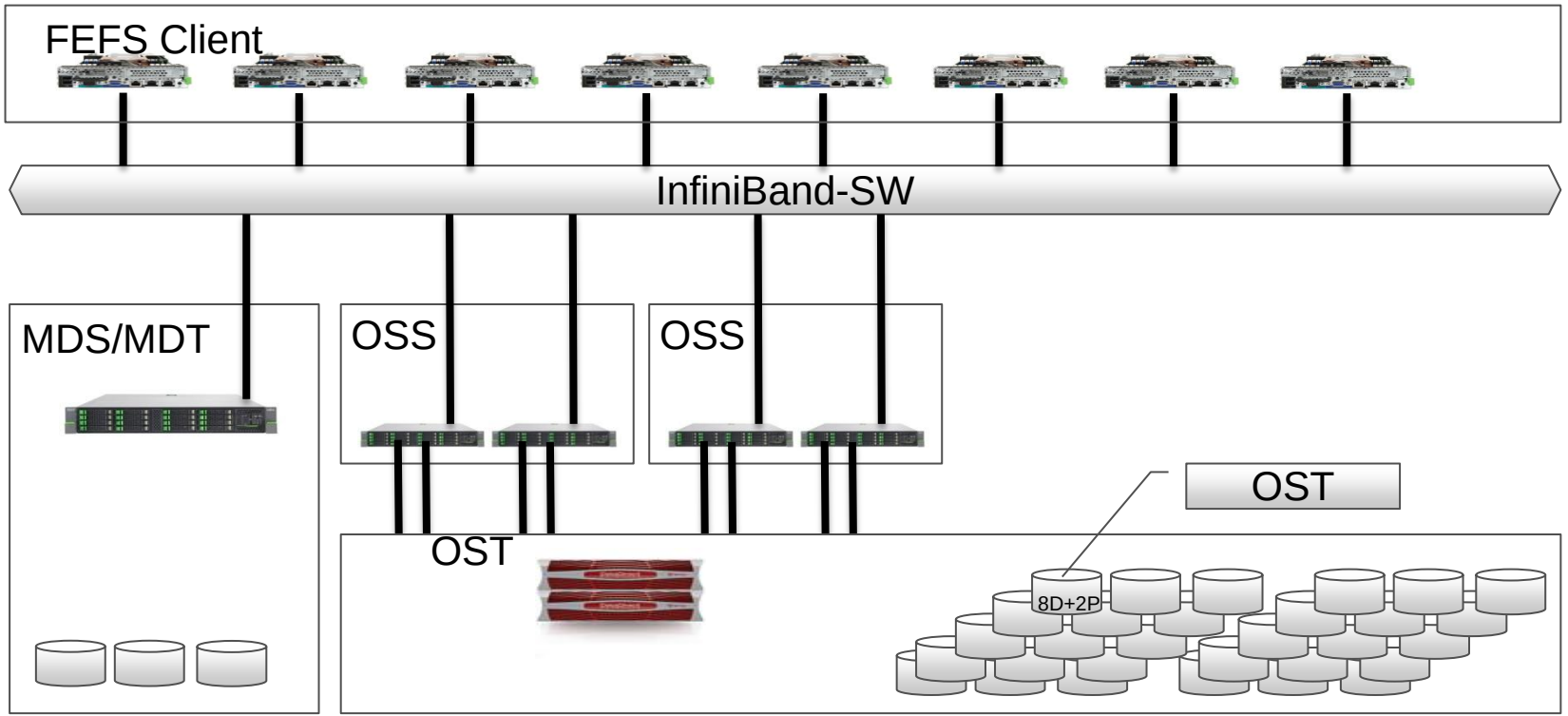
- Directory level quotas
- Fair share I/O (QoS)



Reliability differentiations

- Fully validated with HPC Cluster Suite
- Configuration files automatically
- Built-in High Availability
- Additional Bug fixed

Configuration



FEFS with : DDN Read performance (MiB/s)

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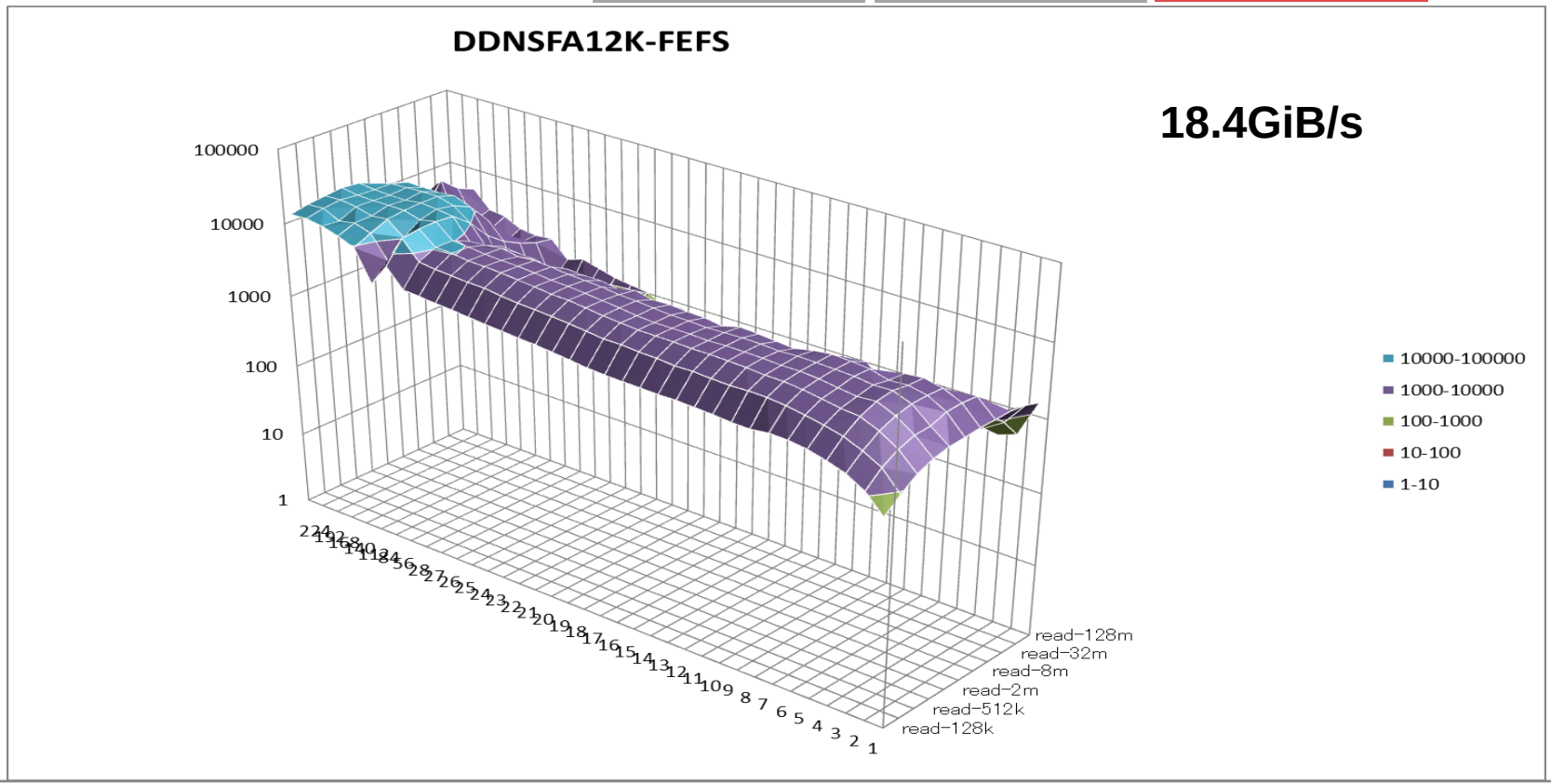

FEFS with : DDN Write performance (MiB/s)

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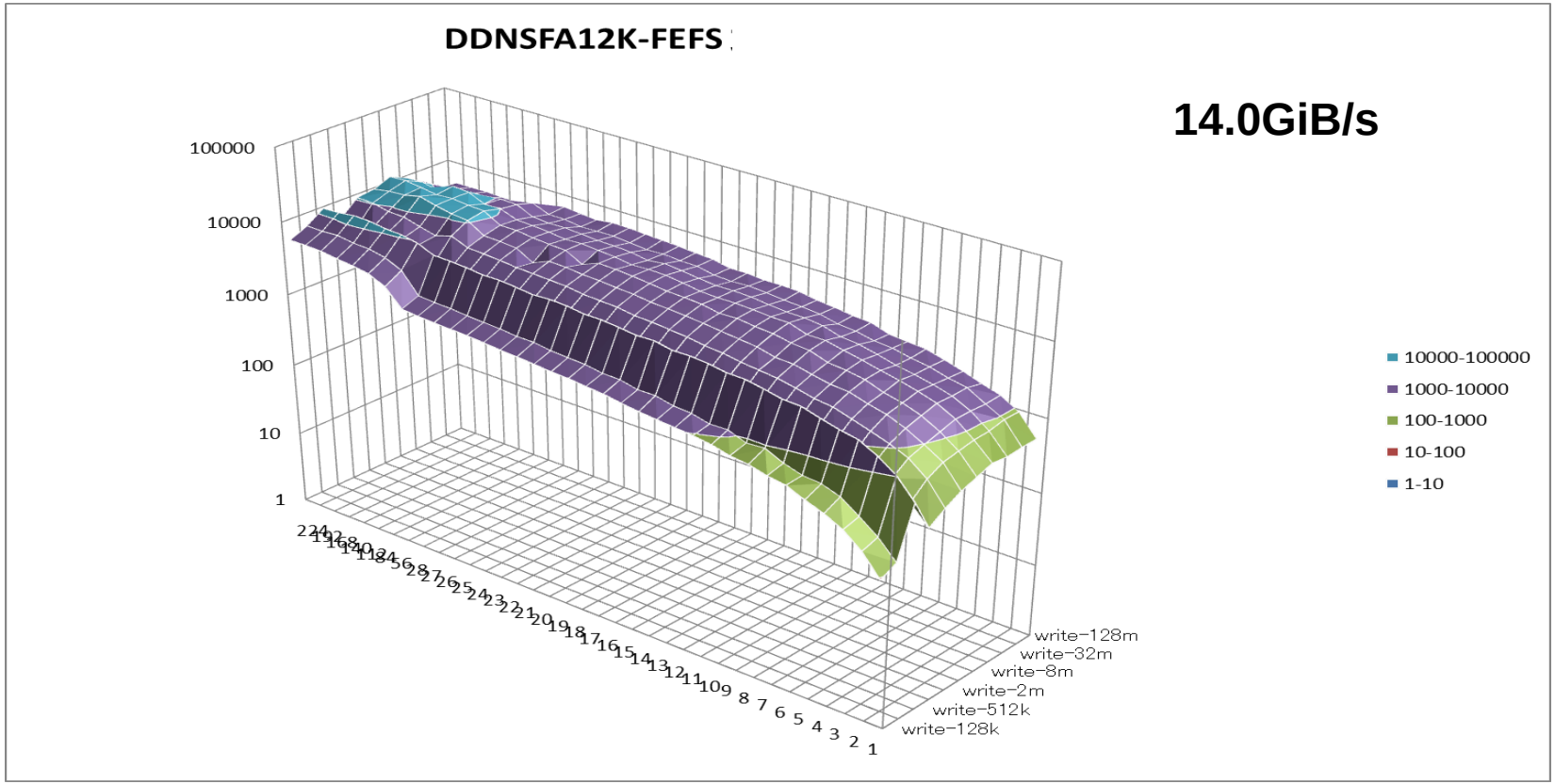

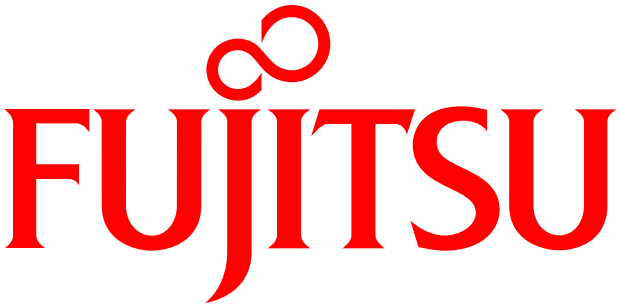

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