March 21, 2012

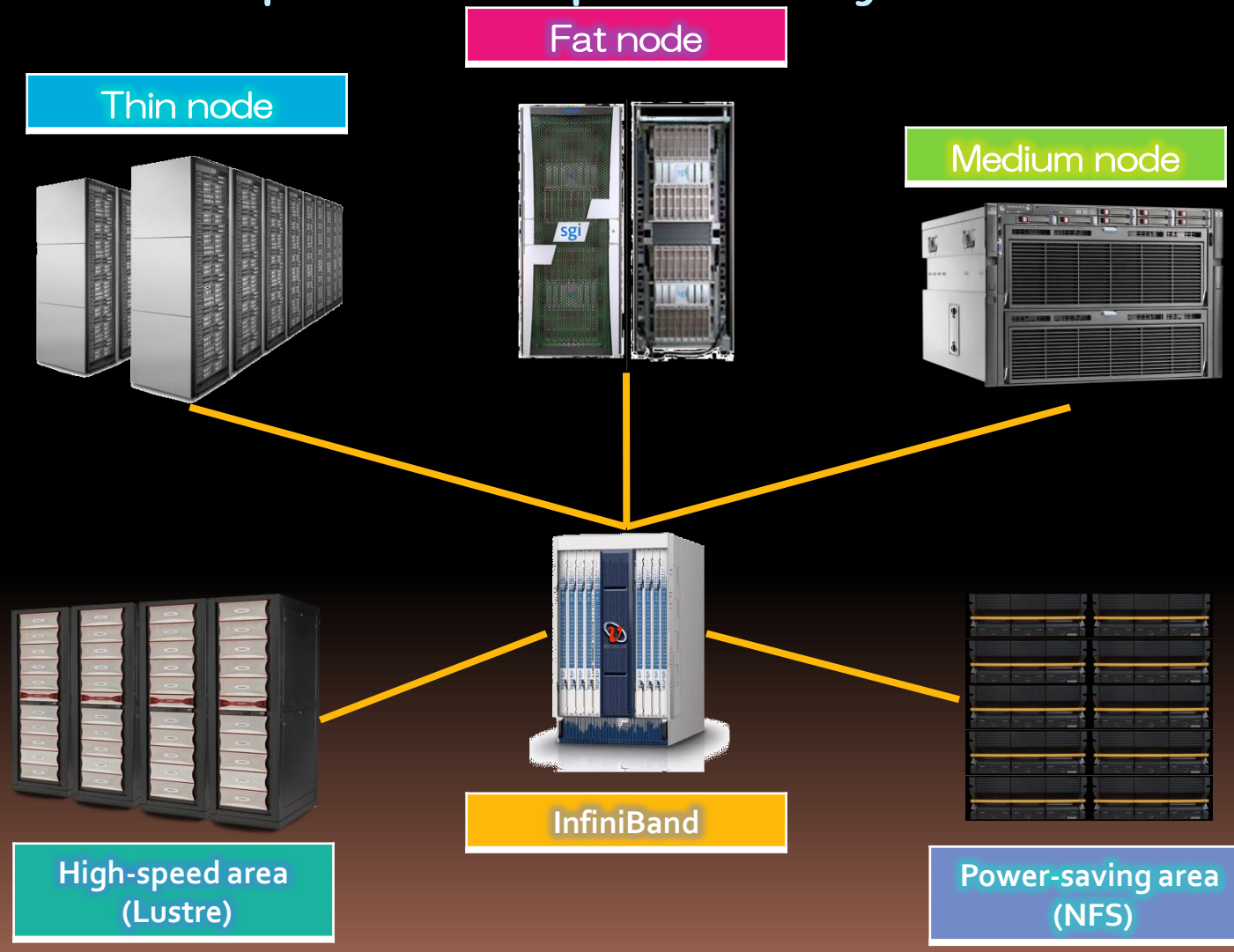
Explanatory meeting for users of new supercomputer system (Introduction to the system)

Introduction of new supercomputer system
-- Characteristics of new supercomputer system --

- 30 GB/s of high-speed file I/O is realized by adopting the cluster file system “Lustre.”
- The fat node on which 10 TB of large-scale sharing memory is mounted is constructed as only one server for de novo assembly.
- 352 thin nodes on which the next-generation micro architecture “Sandy Bridge” is mounted are introduced to realize a total of 117 TFLOPS of processing speed.
- PUE (an index that indicates the energy efficiency of the data center) of 1.17 is realized (at the measurement) by introducing an efficient air-conditioning system.

Introduction of new supercomputer system

-- Overview of new supercomputer system --



Introduction of new supercomputer system

-- Calculation mode (for initial introduction)

Fat node (SGI Altix UV1000)	
Node count	1
CPU	Xeon 2.66GHz (8-core) × 96 sets
Memory	10 TB
Disk	SAS 600 GB (RAID1) × 1 set
OS	Red Hat Enterprise Linux Server 6.1

CPU performance: 8.2 TFLOPS

Medium node (HP ProLiant DL980 G7)	
Node count	2
CPU	Xeon 2.40GHz (10-core) × 8 sets
Memory	2 TB
Disk	SAS 600 GB (RAID1) × 1 set
OS	Red Hat Enterprise Linux Server 6.1

CPU performance: 1.5 TFLOPS

Thin node			
Node count	212	76	64
CPU	SandyBridge 2.60 GHz (8-core) × 2 sets (total 704 sockets)		
GPU	None		Telsa M2090
Memory	64 GB		
Disk	SAS 600 GB (RAID1) × 2 sets	SAS 600 GB (RAID1) × 1 set + SSD 400 GB × 1 set	
OS	Red Hat Enterprise Linux Server 6.1		

CPU performance: 117 TFLOPS
GPU performance: 42.6 TFLOPS

* CPU, GPU, Memory, and Disk indicate the value per node

Introduction of new supercomputer system
-- Calculation node (for intermediate enhancement) --

Fat node	
Node count	No enhancement
CPU	
Memory	
Disk	
OS	

Medium node	
Node count	2
CPU	Intend to provide HP ProLiant DL980 or equivalent
Memory	
Disk	
OS	Not decided

CPU performance:
1.5 TFLOPS

Thin node			
Node count	212	76	64
CPU	Not decided (total 704 sockets or more)		
GPU	None		Not decided
Memory	64 GB or more		
Disk	SAS 600 GB (RAID1) × 2 sets	SAS 600 GB (RAID1) × 1 set + SSD 400 GB × 1 set	
OS	Not decided		

CPU performance:
Not decided
GPU performance:
63.8 TFLOPS

* CPU, GPU, Memory, and Disk indicate the value per node

Introduction of new supercomputer system

-- High-capacity external storage device --

High-speed area (Lustre)		
	For initial introduction	For intermediate enhancement
Capacity	2 PB	5 PB
File system	Lustre	Lustre
Number of file systems	2-file system structure	3-file system structure

Power-saving area (NFS)		
	For initial introduction	For intermediate enhancement
Capacity	3 PB	2.5 PB
File system	ZFS	ZFS
Number of file systems	9-file system structure	9-file system structure

Introduction of new supercomputer system

-- What is Luster? --

- It is a two-file system configured as a distributed file system.
- 2 units (total 4 units) of MDS distribute and manage the metadata per file system, and 24 units of OSS distribute and manage the entity data.
- The entity data is striped for more than one OSS for realizing a high-speed file I/O.