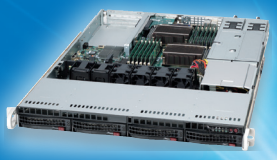
SUPERMICRO®

Apache™ Hadoop®

High Performance Enterprise Hadoop Infrastructure



1U SC815 - Name Nodes

SC826 - 12 Drives

4U Fat Twin™ FT4- 8 Drives per Node

SC825 - 8 Drives

2U Twin SC827 - 6 Drives per Node

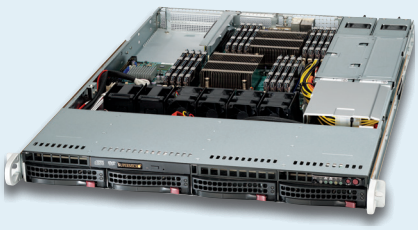
10GbE/1GbE Switches

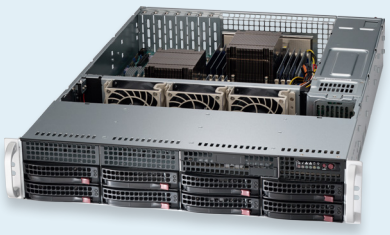
The industry's broadest line of Enterprise Hadoop Infrastructure & Server Building Block Solutions®

- **Wide range of servers based upon Intel® Xeon® Processor E5-2600 series**
- **Enterprise-ready compute and storage with high reliability, quality and performance at an affordable price point**
- **Hot Swap Direct Attach 4x, 6x, 8x, and 12x 3.5" Hard Disk Drives per Node**
- **Up to Platinum Level (95%+) Efficiency - Redundant Power Supplies with PMBus**
- **Remote Systems and Cluster Management with Onboard IPMI and included IPMI View**
- **Cost effective Layer 3 10GbE Switches and Layer 3 1GbE Switches with 10GbE uplinks**

www.supermicro.com/hadoop

March 2013





MODEL	815 Name Node /Job Tracker	827 2U Twin Data Node (6x 3.5" HDDs per Node)	825 Data Node (8x 3.5" HDDs)
Key Features	• Optimized Hadoop Name Node • IPMI 2.0 + KVM with dedicated LAN for remote management • Cost effective, high performance, power efficient • Flexible WIO controller or I/O add-on cards • 4x3.5" hot-swap drive bays • Redundant 700W Gold Level (93%) high-efficiency power supplies	• Optimized Hadoop Twin Data Node • IPMI 2.0 + KVM with dedicated LAN for remote management • Cost effective, high performance, power efficient • Two 6x HDD Nodes in 2U of rack space • 6x 3.5" hot-swap drive bays per node • Redundant 920W Platinum Level (94%) high-efficiency power supplies	• Optimized Hadoop Data Node • IPMI 2.0 + KVM with dedicated LAN for remote management • Cost effective, high performance, power efficient • 8x 3.5" hot-swap drive bays • Redundant 740W Platinum Level (94%) high-efficiency power supplies
Processor Support	Intel® Xeon® processor E5-2600	Intel® Xeon® processor E5-2600	Intel® Xeon® processor E5-2600
Chipset	Intel® 602 chipset with QPI up to 8.0GT/s	Intel® 602 chipset with QPI up to 8.0GT/s	Intel® 602J chipset with QPI up to 8.0GT/s
System Memory (Max)	64GB (Max. 512 GB in 16 x DDR3 Reg. ECC RDIMM)	32GB (Max. 256 GB) of DDR3 Reg. ECC Per Node (2 nodes per system)	32GB (Max. 512 GB in 16 x DDR3 Reg. ECC RDIMM)
Expansion Slots	2x PCI-E 3.0 x16	3x PCI-E 3.0 x 8 slots	6x PCI-E 3.0 x 8
OnBoard & AOC HBA Controllers	Intel® 602 SCU SATA RAID 0, 1, 5, 10 support AOC - Hardware RAID LSI 2208 controller RAID 0, 1, 5, 6, 10	Intel®602 SCU and AHCI SATA RAID 0, 1, 5, 10 support	Intel® 602J SCU SATA RAID 0, 1, 5, 10 support LSI 2308 controller IT Mode
Networking /VGA/Audio	Intel® i350 Dual Port Gigabit Ethernet Virtual Machine Device Queues reduce I/O overhead G200 (Renesas SH7757 BMC)	Intel® i350 Dual Port Gigabit Ethernet Virtual Machine Device Queues reduce I/O overhead G200 (Renesas SH7757 BMC)	Intel® i350 Quad/4 Port Gigabit Ethernet Virtual Machine Device Queues reduce I/O overhead G200 (Renesas SH7757 BMC)
Manageability	Dedicated IPMI 2.0 with virtual media over LAN and KVM-over-LAN support	Dedicated IPMI 2.0 with virtual media over LAN and KVM-over-LAN support	Dedicated IPMI 2.0 with virtual media over LAN and KVM-over-LAN support
Drive Bays	4x 3.5" SAS/SATA hot-swap HDD bays - 4x 300GB 15K HDD	12x 3.5" SATA hot-swap HDD bays 6x 3.5" HDD per node	8x 3.5" SAS/SATA hot-swap HDD bays
Power Supply	Redundant (1+1) 700W Gold Level (93%) high-efficiency power supplies w/ PMBus	Redundant (1+1) 920W Platinum Level (94%) high-efficiency power supplies w/ PMBus	Redundant (1+1) 740W Platinum Level (94%) high-efficiency power supplies w/ PMBus
Cooling System	4x 4cm heavy duty counter-rotating fans	4x 8cm heavy duty fans with PWM fan speed control	3x 8cm 6300rpm hot-swap PWM cooling fans
Form Factor	1U rackmount chassis (25.6" depth) 17.2"W x 1.7"H x 25.6"D (437 x 43 x 650mm)	2U rackmount chassis (28.5" depth) 17.25"W x 3.47"H x 28.5"D (438 x 88 x 724mm)	2U rackmount chassis (25.5" depth) 17.2"W x 3.5"H x 25.5"D (437 x 89 x 648mm)

SUPERMICRO® *High-Performance Enterprise Hadoop Infrastructure*

FT4 Data Node (8x 3.5" HDDs per Node)

- Optimized Hadoop Data Node
- IPMI 2.0 + KVM with dedicated LAN for remote management
- Cost effective, high performance, power efficient
- 4 Nodes of 8 x HDD per node in 4U of rack space
- 32 x 3.5" hot-swap drive bays
- Redundant 4x1280W Platinum Level (95%+) high-efficiency power supplies

Intel® Xeon® processor E5-2600
Intel® 602 chipset with QPI up to 8.0GT/s
32GB (Max. 512 GB) of DDR3 Reg. ECC per Node
1x PCI-E 3.0 x 8 1x MicroLP PCI-E 3.0 x 8
Intel® 602 SCU and AHCI SATA RAID 0, 1, 5, 10 support
Intel® i350 Dual Port Gigabit Ethernet Virtual Machine Device Queues reduce I/O overhead G200 (Renesas SH7757 BMC)
Dedicated IPMI 2.0 with virtual media over LAN and KVM-over-LAN support
32x 3.5" SATA hot-swap HDD bays 8x 3.5" HDD per Node
Redundant 4x1280W Platinum Level (95%+) high efficiency power supplies w/ I2C & PMBus
3x 8cm 6300rpm hot-swap PWM cooling fans
4U rackmount chassis (29" depth) 17.63"W x 6.96"H x 29"D (448 x 177 x 737mm)

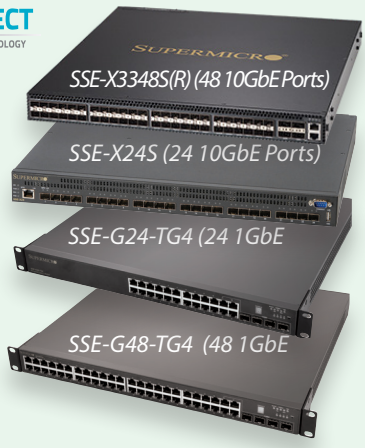
cloudera CONNECT CERTIFIED TECHNOLOGY

826 Data Node (12x 3.5" HDDs)

- Optimized Hadoop Data Node
- IPMI 2.0 + KVM with dedicated LAN for remote management
- Cost effective, high performance, power efficient
- 12x 3.5" hot-swap drive bays
- Redundant 740W Platinum Level (94%) high- efficiency power supplies

Intel® Xeon® processor E5-2600
Intel® 602 chipset with QPI up to 8.0GT/s
32GB (Max. 512 GB) of DDR3 Reg. ECC
6x PCI-E 3.0 x 8
Intel® 602J SCU and AHCI SATA RAID 0, 1, 5, 10 support LSI 2308 controller IT Mode
Intel® i350 Quad/4 Port 1G Gigabit Ethernet Virtual Machine Device Queues reduce I/O overhead G200 (Renesas SH7757 BMC)
Dedicated IPMI 2.0 with virtual media over LAN and KVM-over-LAN support
12x 3.5" SAS/SATA hot-swap HDD bays 2x 2.5" SAS/SATA HDD bays
Redundant (1+1) 740W Platinum Level (94%) high-efficiency power supplies w/ PMBus
3x 8cm hot-swap cooling PWM fans
2U rackmount chassis (25.5" depth) 17.2"W x 3.5"H x 25.5"D (437 x 89 x 648mm)

cloudera CONNECT CERTIFIED TECHNOLOGY



1GbE & 10GbE Ethernet Switches

Key Features

- Layer 2 / 3 Ethernet Switching
- Link aggregation (LACP)
- Jumbo frames
- VLAN support

Configuration Flexibility

- **SSE-G24-TG4**

- 24 ports of RJ45 1Gbps Ethernet with 4 SFP Combo ports
- 4 ports 10Gbps Ethernet (CX4, XFP, or SFP+)
- Stacking

- **SSE-G48-TG4**

- 48 ports of RJ45 1Gbps Ethernet with 4 SFP Combo ports
- 4 ports 10Gbps Ethernet (CX4, XFP, or SFP+)
- Stacking

- **SSE-X24S / SSE-X3348S(R)**

- 24 / 48 ports 10Gbps Ethernet (SFP+)
- Reverse airflow option

Management

- Web-based management interface
- Industry standard CLI with telnet, SSH or local management port
- Scripting
- Logging

Routing

Multicast

- Quality of service and DiffServ
  - 8 priority queues per port
  - Adjusted WRR and Strict Priority Scheduling
- Security
  - 802.1x port based authentication
  - RADIUS and TACACS+ authentication
  - SSH / SSL encryption

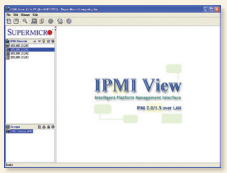
Dimensions

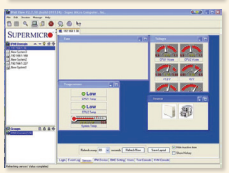
- 17.3"W x 15.2"D x 1.7"H (440 x 386 x 43mm)

For More Information:
http://www.supermicro.com/products/nfo/networking.cfm#switch

IPMI Server Management

- HW fault alerts – E-mail or SNMP
- Redundant access for management
- Support for open standards (SMASH 2.0, LDAP, WSMAN)
- VLAN support
- KVM and Virtual Media and SOL (no additional license needed)
- Easy maintenance (Command line flash tools for firmware update)





For More Information:
http://www.supermicro.com/products/nfo/IPMI.cfm

SUPERMICRO® High Performance Enterprise Hadoop® Infrastructure

Hadoop is an open-source project administered by the Apache Software Foundation. Hadoop's contributors work for some of the world's biggest technology companies. That diverse, motivated community has produced a genuinely innovative platform for consolidating, combining and understanding data. Enterprises today collect and generate more data than ever before. Relational and data warehouse products excel at OLAP and OLTP workloads over structured data. Hadoop, however, was designed to solve a different problem: the scalable, reliable storage and analysis of both structured and complex data. As a result, many enterprises deploy Hadoop alongside their legacy IT systems, allowing them to combine old and new data sets in powerful new ways. Technically, Hadoop consists of two key services: reliable data storage using the Hadoop Distributed File System (HDFS) and high-performance parallel data processing using a technique called MapReduce. Hadoop runs on a collection of commodity, shared-nothing servers. You can add or remove servers in a Hadoop cluster at will; the system detects and compensates for hardware or system problems on any server. Hadoop, in other words, is self-healing. It can deliver data - and can run large-scale, high-performance processing jobs - in spite of system changes or failures.

Why Are Supermicro's Turnkey Cluster Racks ideal for Apache™ Hadoop®?

Supermicro designs and develops the ideal turnkey pilot racks for getting started with Apache™ Hadoop®. Leveraging Supermicro's optimized servers and switches as a foundation, Supermicro has designed two turnkey racks to get anyone started – 14U and 42U versions. Supermicro has focused on integration, remote systems and power management to lower the deployment and commissioning timeframes to provide developers access to native hardware environments, quickly and easily.

14U Rack

42U Rack

14U Hadoop Rack

- Optimized 14U Hadoop Rack
- IPMI 2.0 + KVM with dedicated LAN for remote management
- Cost effective, high performance, power efficient server nodes
- 2 Primary / Secondary Name Nodes 64 GB Memory Per Node
- 8 Data Nodes 32 GB Memory Per Node
- 48TB Raw HDFS Capacity
- 2x Intel® Xeon® E5-2600 Processors per Node
- Platinum Level (94%) efficient power supplies

14U Hadoop Rack BOM

- 2x SYS-HNW0-15026364-HADP
- 4x SYS-HDT0-27126332-HADP
- 1x SSE-G48-TG4 (48 Ports)
- 1x SC512 1U Server (Cluster SSM Server Management)
- 1x 2U PDU
- Integrated, Cabled, Labeled, Tested, Crated and Shipped as turnkey rack PN# SRS-14UL63-HADP-TL

42U Hadoop Rack

- Optimized 42U Hadoop Rack
- IPMI 2.0 + KVM with dedicated LAN for remote management
- Cost effective, high performance, power efficient server nodes
- 3x Primary / Secondary Name Nodes 64 GB Memory Per Node
- 36x Data Nodes 32 GB Memory Per Node
- 216-1728TB Raw HDFS Capacity
- 2x Intel® Xeon® E5-2600 Processors per Node
- Platinum Level (94-95%) efficient power supplies

42U Hadoop Rack BOM

- 3x SYS-HNWX-19026364-HADP
- 18x SYS-HDTX-27126332-HADP
- 1x SSE-G48-TG4 (48 1G Ports)
- 1xSSE-X3348SR (48 Ports 10G SFP+)
- 1x SC512 1U Server (Cluster SSM Server Management)
- 4x PDU
- Integrated, Cabled, Labeled, Tested, Crated and Shipped as turnkey rack PN# SRS-42XL63-HADP-TL
- 42U Fat Twin Hadoop Lead Rack PN# SRS-42XL63-HADP-FL

Optimized Hadoop Nodes

Supermicro's extensive line of products include 1U, 2U and 4U rack mount servers optimized for Hadoop. Customers can order the following configurations from their local Supermicro reseller. Supermicro Hadoop systems feature the industry's leading thermal and power designs to deliver optimal performance-per-watt and performance-per-dollar.

Supermicro Model #	Description
SYS-HNW0-15026364-HADP	1U Hadoop 815 Name Node 6C E5-2630 2.3G 15M 7.2G 95W 64GB MEM
SYS-HDT0-27126332-HADP	2U Hadoop 827 **6** 1TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HDT0-27226332-HADP	2U Hadoop 827 **6** 2TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HDF0-24126332-HADP	4U Hadoop FT4 **8** 1TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HDF0-24126332-HADP	4U Hadoop FT4 **8** 2TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HDD0-25126332-HADP	2U Hadoop 825 **8** 1TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HDD0-25226332-HADP	2U Hadoop 825 **8** 2TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HDD0-26126332-HADP	2U Hadoop 826 **12** 1TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HDD0-26226332-HADP	2U Hadoop 826 **12** 2TB 6C E5-2630 2.3G 15M 7.2GT 95W 32GB MEM
SYS-HNWX-19026364-HADP	1U Hadoop 819 Name Node 6C E5-2630 2.3G 64GB MEM 10GSFP+
SYS-HDTX-27126332-HADP	2U Hadoop 827 **6** 1TB 6C E5-2630 2.3G 32GB MEM 10GSFP+
SYS-HDFX-24126332-HADP	4U Hadoop FT4 **8** 1TB 6C E5-2630 2.3G 32GB MEM 10GSFP+
SYS-HDDX-26126332-HADP	2U Hadoop 826 **12** 1TB 6C E5-2630 2.3G 32GB MEM 10GSFP+

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