



Personal Systems Reference

Lenovo® Secure Managed Client Storage Array Appliance

- *the centralized data repository for the Secure Managed Client (SMC) alternative client computing solution*

April 2010 - Version 376



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Lenovo® SMC Storage Array



Lenovo SMC Storage Array - Front

*12 x 3.5" high capacity Hot-swap SATA disk drives
6, 9, and 12TB¹ raw storage capacities
Hardware-based RAID 5 protection of storage data*



Lenovo SMC Storage Array - Rear

*Supporting 6 gigabit ethernet ports (2 integrated, 4 provided by dual NIC PCIe add-in cards)
Redundant power supply on selected models*

Lenovo® SMC Storage Array (8332)

Name	Type-model	Slot x bay	Proc-essor(s)	GHz	Cores	Memory DIMMs	Memory speed	Boot disks	Storage disks	Disk controller	RAID*	Optical	Power supply(s)	Ethernet	Global	Avail date
SMC-SAN	8332-11U	6x14	1xE5205	1.86	2	2x1GB	667MHz	2x120GB ²	12x500GB	SATA	1/5	None	1x850W	6xGB	Gbl	Jun 09
SMC-SAN	8332-12U	6x14	1xE5205	1.86	2	2x1GB	667MHz	2x120GB	12x750GB	SATA	1/5	None	1x850W	6xGB	Gbl	Jun 09
SMC-SAN	8332-13U	6x14	1xE5205	1.86	2	2x1GB	667MHz	2x120GB	12x1000GB	SATA	1/5	None	1x850W	6xGB	Gbl	Jun 09
SMC-SAN	8332-14U	6x14	1xE5205	1.86	2	2x1GB	667MHz	2x120GB	12x500GB	SATA	1/5	None	2x850W	6xGB	Gbl	Jun 09
SMC-SAN	8332-15U	6x14	1xE5205	1.86	2	2x1GB	667MHz	2x120GB	12x750GB	SATA	1/5	None	2x850W	6xGB	Gbl	Jun 09
SMC-SAN	8332-16U	6x14	1xE5205	1.86	2	2x1GB	667MHz	2x120GB	12x1000GB	SATA	1/5	None	2x850W	6xGB	Gbl	Jun 09

* Two boot disk drives in RAID³ 1, twelve storage disk drives in RAID 5

- Enterprise-class storage capabilities, supporting up to 12 terabytes of storage
- Proven Intel® design quality and durability

Processor(s)	One processor standard, Intel Xeon® Processor E5205 with dual-core, 1066MHz system bus, and 6MB L2 cache	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>2U Rack top</p> </div> <div style="width: 45%;"> <p>Front</p> <p>Rear</p> </div> </div> <ul style="list-style-type: none"> • 2U Mechanical; rack-mount only • Business black color front; metal case • 19.02"W x 27.83"D x 3.46"H • 483mm W x 707mm D x 87.9mm H • 63.3 lb (28.7kg) max configuration • Toolless top cover removal • Toolless storage disks removal <table border="0"> <tr><td>Bay 1</td><td>2.5"</td><td>0.5" high</td><td>internal</td><td>std boot disk</td></tr> <tr><td>Bay 2</td><td>2.5"</td><td>0.5" high</td><td>internal</td><td>std boot disk</td></tr> <tr><td>Bay 3</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 4</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 5</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 6</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 7</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 8</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 9</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 10</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 11</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 12</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 13</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> <tr><td>Bay 14</td><td>3.5"</td><td>1" high</td><td>external</td><td>std storage disk</td></tr> </table>	Bay 1	2.5"	0.5" high	internal	std boot disk	Bay 2	2.5"	0.5" high	internal	std boot disk	Bay 3	3.5"	1" high	external	std storage disk	Bay 4	3.5"	1" high	external	std storage disk	Bay 5	3.5"	1" high	external	std storage disk	Bay 6	3.5"	1" high	external	std storage disk	Bay 7	3.5"	1" high	external	std storage disk	Bay 8	3.5"	1" high	external	std storage disk	Bay 9	3.5"	1" high	external	std storage disk	Bay 10	3.5"	1" high	external	std storage disk	Bay 11	3.5"	1" high	external	std storage disk	Bay 12	3.5"	1" high	external	std storage disk	Bay 13	3.5"	1" high	external	std storage disk	Bay 14	3.5"	1" high	external	std storage disk
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Implementation	Processor uses FC-LGA package, two LGA771 socket																																																																							
Memory	2GB std, 32GB max, PC2-5300 667MHz DDR2, ECC , fully buffered, eight 240-pin DIMM sockets; std memory in two sockets, six sockets available**, ** DIMMs must be installed in matched pairs																																																																							
Graphics	ATI™ ES1000, integrated, 16MB, one VGA DB-15 connector; <i>Maximum resolution: 1600x1200@52Hz</i>																																																																							
Disk bays	Two 2.5" internal disk bays for boot drives (non hot-swap) twelve hot-swap (HS) 3.5" external disk bays for storage drives																																																																							
Disk Controller	Intel SRCATAWB RAID card, LSI Logic® 1078 SAS ROC I/O processor integrated, PCI Express® bus, SATA 3Gb/s																																																																							
SATA disk(s)	<i>Boot drive:</i> 120GB , 5400 rpm, 2.5" <i>Storage drive:</i> 500GB, 750GB, or 1000GB , 7200 rpm, 3.5"																																																																							
Chipset	Intel 5000P Chipset , Intel ESB2-E I/O Controller Hub, National Semiconductor PC87427 Super I/O																																																																							
Ethernet	Six Gigabit Ethernet ports via three ethernet controllers, with two ports per ethernet controller (one ethernet controller integrated, two ethernet controllers on two add-in cards), Intel I/O Acceleration Technology, <i>Integrated:</i> Intel 82563EB dual gigabit ports PHY, Low pin count, high speed interface to Intel ESB2-E, <i>Add-in card:</i> Intel 82571GB dual gigabit ports controller																																																																							
Expansion slots	(See Right) Two PCI Express 2.0 x8 slots, two PCI Express 2.0 x4 slots, one 64-bit 100MHz PCI-X slot, one 64-bit 133MHz PCI-X slot; low-profile add-in cards only																																																																							
Front panel	One 5-pin Mini USB, Power button, Reset button, ID button																																																																							
Rear panel	Four USB 2.0 connectors, external monitor (VGA DB-15), serial (9-pin), six ethernet (RJ-45), keyboard (PS2), mouse(PS2), ID LED																																																																							
Diagnostics	Fault LED, disk LED, fan LED																																																																							
Power supply(s)	One or two power supplies, two maximum, variable speed fan, hot-swap, auto-sensing, redundant with two power supplies <i>11U/12U/13U:</i> One 850-watt Power supply, <i>14U/15U/16U:</i> Two 850-watt Power supplies																																																																							
Cooling	Ten system fans std for cooling disk drives, baseboard and disk controller, ten maximum, variable speed, hot-swap																																																																							
Limited warranty ¹	3-years limited onsite service ³ , 8 am - 5 pm, Mon - Fri coverage excluding holidays, service upgrades available																																																																							
RoHS-compliant																																																																								
Max storage capacity	12TB with twelve 1000GB SATA disks																																																																							
Supportable Client Desktop PCs	Lenovo ThinkCentre® M58p with Intel vPro™ Technology, all form factors Lenovo ThinkCentre M57p with Intel vPro Technology, Eco Ultra Small form factor only																																																																							
Power-On Hotkey	<ul style="list-style-type: none"> • Setup Utility: F2 at startup • Diagnostic: ESC at startup • Network Boot: F12 at startup 																																																																							
Security	<ul style="list-style-type: none"> • Power-on password • Administrator password • Boot without keyboard, mouse, diskette • Serial port I/O control • USB port disablement (front or all) 																																																																							

See footnotes for important warranty information
US models announced May 26, 2009
SMC-SAN 8332-12U, 13U, 14U, 15U, 16U models withdrawn effective January 2010

Software Offerings - Required Software**SMC Workgroup Client**

- User/Image Provisioning and Management
- Executive Dashboard
- Intel® vPro Management
- Storage Array Configuration and Management
- Optional Windows PC Management Functions
- One Licence per SMC Client

SMC Workgroup Professional Client

- All SMC Workgroup Client features **PLUS**
- Patch Management
- One Licence per SMC Client

SMC Enterprise Client

- All SMC Workgroup Professional Client features **PLUS**
- Port and Media Device Control
- Application white/blacklist
- Application blocking
- Spyware removal
- Network access control
- One Licence per SMC Client

Software Offerings - Add-on Software**Lenovo Analytics Manager**

- Measure application performance and end-user response times on a company level
- The product is free to use on SMC and Lenovo PC clients
- Requires separate download and registration at www.serden.com/lenovo

Lenovo Power Analyzer

- Delivers central reports on overall power consumption of the ThinkCentre, ThinkPad or SMC device based
- Capture battery status for all users using a Lenovo ThinkPad.
- Free to use on SMC and Lenovo PC clients
- Requires a separate download and registration at www.serden.com/lenovo

InteractES® for ThinkVantage® Technologies Module

- Effective analysis of IT environment
- End-to-end including the client, server and the network
- Dynamic trend information
- Compatible with Lenovo and non-Lenovo products.
- One license per client

More information at www.serden.com/lenovo

StorTrends® - iTX Snapshot Assisted Replication Module

- Enable asynchronously replicate two or more Lenovo SMC Storage Array appliances over a Local Area Network or Wide Area Network
- One licence per storage array appliance

StorTrends - iTX Sync Replication Module

- Enable synchronous replication between two Lenovo Storage Arrays over a Local Area Network
- One licence is required per storage array appliance.

StorTrends - Kiosk/Pristine Boot Module

- Enable pristine image capability as well as a single image
- Help eliminate contamination of an IT managed images
- Resetting the users image to a pristine state everytime the SMC client is rebooted
- One licence per storage array appliance

LANDesk® Application Virtualization Module

- Minimize the need for application patching
- Compatible with Lenovo and non-Lenovo products

More information at www.landesk.com/lenovo

For more information on Lenovo's alternative client computing, please visit: <http://www.lenovo.com/acc>

For more information see:
<http://www.lenovo.com/acc>

PMA = Purchase Maintenance Agreement

SMC Workgroup Client

SMC Workgroup Client Subscription

SMC Workgroup Client 10-999	8336A00
SMC Workgroup Client 1000-4999	8336A01
SMC Workgroup Client 5000-19999	8336A02
SMC Workgroup Client 20000+	8336A03

SMC Workgroup Client Purchase*

SMC Workgroup Client 10-999	43N0511
SMC Workgroup Client 10-999 PMA	8336A12
SMC Workgroup Client 1000-4999	43N0513
SMC Workgroup Client 1000-4999 PMA	8336A13
SMC Workgroup Client 5000-19999	43N0515
SMC Workgroup Client 5000-19999 PMA	8336A14
SMC Workgroup Client 20000+	43N0517
SMC Workgroup Client 20000+ PMA	8336A15

SMC Workgroup Professional Client

SMC Workgroup Professional Client Subscription

SMC Workgroup Professional Client 10-999	8336A25
SMC Workgroup Professional Client 1000-4999	8336A26
SMC Workgroup Professional Client 5000-19999	8336A27
SMC Workgroup Professional Client 20000+	8336A28

SMC Workgroup Professional Client Purchase*

SMC Workgroup Professional Client 10-999	55Y2714
SMC Workgroup Professional Client 10-999 PMA	8336A29
SMC Workgroup Professional Client 1000-4999	55Y2715
SMC Workgroup Professional Client 1000-4999 PMA	8336A30
SMC Workgroup Professional Client 5000-19999	55Y2716
SMC Workgroup Professional Client 5000-19999 PMA	8336A31
SMC Workgroup Professional Client 20000+	55Y2717
SMC Workgroup Professional Client 20000+ PMA	8336A32

SMC Enterprise Client

SMC Enterprise Client Subscription

SMC Enterprise Client 10-999	8336A04
SMC Enterprise Client 1000-4999	8336A05
SMC Enterprise Client 5000-19999	8336A06
SMC Enterprise Client 20000+	8336A07

SMC Enterprise Client Purchase*

SMC Enterprise Client 10-999	43N0519
SMC Enterprise Client 10-999 PMA	8336A16
SMC Enterprise Client 1000-4999	43N0521
SMC Enterprise Client 1000-4999 PMA	8336A17
SMC Enterprise Client 5000-19999	43N0523
SMC Enterprise Client 5000-19999 PMA	8336A18
SMC Enterprise Client 20000+	43N0525
SMC Enterprise Client 20000+ PMA	8336A19

Upgrade: SMC Workgroup Client to SMC Enterprise Client

SMC Enterprise Client Subscription

SMC Enterprise Client 10-999	43N0507
SMC Enterprise Client 1000-4999	43N0508
SMC Enterprise Client 5000-19999	43N0509
SMC Enterprise Client 20000+	43N0510

SMC Enterprise Client Purchase*

SMC Enterprise Client 10-999	43N0527
SMC Enterprise Client 10-999 PMA	43N0528
SMC Enterprise Client 1000-4999	43N0529
SMC Enterprise Client 1000-4999 PMA	43N0530
SMC Enterprise Client 5000-19999	43N0531
SMC Enterprise Client 5000-19999 PMA	43N0532
SMC Enterprise Client 20000+	43N0533
SMC Enterprise Client 20000+ PMA	43N0534

Add-on SMC Software Applications

Plug-in Purchase

StorTrends® - iTX Async/Pristine Bundle	8336A33
StorTrends - iTX Snapshot Assisted Replication Module	8336A34
StorTrends - iTX Sync Replication Module	8336A36
StorTrends - Kiosk/Pristine Boot	8336A37

* If Purchase is selected, the corresponding Purchase Maintenance Agreement (PMA) part number must also be selected

Partial list of Lenovo ThinkPlus Services for Lenovo SMC Storage Array

For more information see:

http://www.lenovo.com/services_warranty/us/en/index.html

ThinkPlus service upgrade options⁷

LOR = Lenovo Onsite Repair

Lenovo SMC Storage Array with 3-year warranty

3-year LOR 24x7 4-hour response	55Y3321
4-year LOR 9x5 Next Business Day	55Y3319
4-year LOR 24x7 4-hour response	55Y3322
5-year LOR 9x5 Next Business Day	55Y3320
5-year LOR 24x7 4-hour response	55Y3323

ThinkPlus Priority Support for SMC customers

- 9x5 Next Business Day response Lenovo Onsite Repair
- 24x7 support with priority routing and advanced level technicians

Lenovo SMC Storage Array with 3-year warranty

3-year Priority Support	55Y3324
4-year Priority Support	55Y3325
5-year Priority Support	55Y3326

ThinkPlus Priority 4 Support for SMC customers

- 24x7 4-hour response Lenovo Onsite Repair
- 24x7 support with priority routing and advanced level technicians

Lenovo SMC Storage Array with 3-year warranty

3-year Priority 4 Support	55Y3327
4-year Priority 4 Support	55Y3328
5-year Priority 4 Support	55Y3329



Availability: All offers subject to availability. Lenovo reserves the right to alter product offerings and specifications at any time, without notice. Lenovo is not responsible for photographic or typographic errors.

Warranty: For a copy of applicable product warranties, write to: Warranty Information, 500 Park Offices Drive, RTP, NC, 27709, Attn: Dept ZPYA/B600. Lenovo makes no representation or warranty regarding third party products or services.

- 1 Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges.
- 2 Hard drive:** GB = billion bytes, TB = trillion bytes. Accessible capacity is less.
- 3 Systems with limited onsite service** are designed to be repaired during the applicable warranty period primarily with customer-replaceable parts provided by Lenovo. Lenovo will only send a technician onsite to perform a repair if (a) remote telephone diagnosis and/or customer part replacement are unable to resolve the problem, or (b) the part is one of the few designated by Lenovo for onsite replacement. For a list of onsite replaceable parts, contact Lenovo. In the United States call 1-800-426-7378. Support unrelated to a warranty issue may be subject to additional charges.
- 4 SATA/SAS:** The system configuration supports the installation of either SATA or SAS disks. A configuration including both SATA and SAS disks is not supported.
- 7 ThinkPlus Services:** These services are available for machines normally used for business, professional, or trade purposes, rather than personal, family, or household purposes. Not all machine types and models are covered. Service period begins with the equipment date of purchase. Service must be purchased during the original limited product warranty period. Service levels are response time objectives and are not guarantees. If the machine problem turns out to be a Customer Replaceable Unit (CRU), a part will be express shipped to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. P&L means parts and labor. P/U means pick-up. See ThinkPlus terms and conditions for complete details and restrictions.

8 RAID: Supported RAID levels for a system will vary from the stated capabilities of the RAID controller due to dependencies on the number and capacity of physical disks in the system and on customer requirements for performance, fault tolerance, or data redundancy.

RAID levels and requirements:

- **RAID 0 (striping)** provides increased performance by writing data across multiple drives.
- **RAID 1 (mirroring)** provides fault tolerance by writing the data on two drives.
- **RAID 5 (striping with parity)** uses distributed parity data to provide fault tolerance more efficiently than RAID 1. Requires three or more drives.
- **RAID 6 (striped set with dual distributed parity)** provides fault tolerance from two drive failures; array continues to operate with up to two failed drives. Requires four drives.
- **RAID 10 (or RAID 1+0)** combines RAID 1 and RAID 0 to create a stripe of mirrors that is fault tolerant while offering increased performance. Requires four drives.
- **RAID 50 (or RAID 5+0)** combines RAID 5 and RAID 0 to create block-level striping with distributed parity improving performance over RAID 5. Requires six drives.
- **RAID 60 (or RAID 6+0)** combines RAID 6 and RAID 0 to create block-level striping with distributed double parity improving performance over RAID 6. Requires eight drives.

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April 2010
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