Lenovo Server Positioning

Rack-Optimized Servers

Attribute	ThinkServer® RS140	System x® x3250 M5	System x3530 M4	System x3630 M4	ThinkServer RD350	ThinkServer RD450	System x3650 M4 BD	System x3650 M4 HD	ThinkServer RD550	System x3550 M5	ThinkServer RD650	System x3650 M5
Positioning	**Entry** Infrastructure Server Optimized for Value	**Mainstream** Infrastructure Server Optimized for Value	**Mainstream** Server Optimized for Compute Density	**Mainstream** Server Optimized for Storage	**Mainstream** Server Optimized for Compute Density	**Mainstream** Server Optimized for Storage	**Performance** Server Optimized for Big Data	**Performance** Server Optimized for Storage	**Performance** Server Optimized for Compute and Network Density	**Performance** Server Optimized for Compute Density	**Performance** Server Optimized for Storage and Virtualization	**Performance** Server Optimized for Cloud and Big Data/Analytics
Form Factor	**1U** Rack	**1U** Rack	**1U** Rack	2U Rack	**1U** Rack	2U Rack	2U Rack	2U Rack	**1U** Rack	**1U** Rack	2U Rack	2U Rack
Processor Type (maximum cores)	Xeon E3-1200 **v3** Series (4c); Pentium (2c); Core i3 (2c)	Xeon E3-1200 **v3** Series (4c); Pentium (2c); Core i3 (2c)	Xeon E5-2400 **v2** Series (10-core)	Xeon E5-2400 **v2** Series (10-core)	Xeon E5-2600 **v3** Series (12-core)	Xeon E5-2600 **v3** Series (12-core)	Xeon E5-2600 **v2** Series (12-core)	Xeon E5-2600 **v2** Series (12-core)	Xeon E5-2600 **v3** Series (18-core)	Xeon E5-2600 **v3** Series (18-core)	Xeon E5-2600 **v3** Series (18-core)	Xeon E5-2600 **v3** Series (18-core)
Processor Sockets / Maximum Cores	1 / 4	1 / 4	2 / 20	2 / 20	2 / 24	2 / 24	2 / 24	2 / 24	2 / 36	2 / 36	2 / 36	2 / 36
Maximum Memory	DDR3 4 UDIMMs / 32GB	DDR3 4 UDIMMs / 32GB	DDR3 **12** LRDIMMs / 384GB; **12** RDIMMs / 192GB; **12** UDIMMs / 96GB	DDR3 **12** LRDIMMs / 384GB; **12** RDIMMs / 192GB; **12** UDIMMs / 96GB;	DDR4-2133 **16** LRDIMMs / 512GB; **16** RDIMMs / 256GB	DDR4-2133 **16** LRDIMMs / 512GB; **16** RDIMMs / 256GB	DDR3 **24** LRDIMMs / 512GB; **24** RDIMMs / 256GB; **16** UDIMMs / 128GB	DDR3 **24** LRDIMMs / 768GB; **24** RDIMMs / 384GB; **16** UDIMMs / 128GB	DDR4-2133 **24** LRDIMMs / 768GB; **24**RDIMMs / 384GB	TruDDR4-2133 **24** LRDIMMs / 768GB; **24** RDIMMs / 384GB	DDR4-2133 **24** LRDIMMs / 1.5TB; **24**RDIMMs / 384GB	TruDDR4-2133 **24** LRDIMMs / 1.5TB; **24**RDIMMs / 384GB
Drive Type	SAS / SATA / SSD (Fixed)	SAS / SATA (Simple Swap / Hot Swap)	SAS / SATA (HS); SATA (SS)	SAS or SATA (HS); or SATA (SS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (HS)	SAS / SATA (HS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (SS / HS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (SS / HS)
Maximum # HDDs / SSDs / eXFlash DIMMs (See ServerProven List link on p. 2 for supported drives)	(2) 3.5"; or (4) 2.5"	(4) 3.5"; (8) 2.5"	(4) 3.5"; (8) 2.5"	(14) 3.5"	(4) 3.5"; or (8) 2.5"	(8) 3.5"; or (24) 2.5"	(14) 3.5"	(26) 2.5" SS / HS; (16) 2.5" SS / HS + (16) 1.8" HS SSD	(4) 3.5" + (2) 2.5"; or (12) 2.5"	(4) 3.5" SS / HS; or (12) 2.5" HS	(12) 3.5" + (2) 2.5"; or (8) 2.5" + (9) 3.5"; or (24) 2.5" + (2) 2.5" HS	(14) 3.5" SS / HS + (2) 2.5"; or (24) 2.5" + (2) 2.5" SS / HS
Maximum I/O Expansion	**1** PCIe **3.0**; onboard **RAID**	**2** PCIe 2.0 (**1** of them dedicated to RAID)	**2** PCIe 2.0; slotless **RAID**	**2** PCIe 2.0 upgradeable to **4** PCIe 2.0 (except for 14-HDD model), slotless RAID	**2** PCIe 3.0; **2** slotless **NICs**	**6** PCIe 3.0; **2** slotless **NICs**; slotless **RAID** (in 2.5" models)	Up to **5** PCIe 2.0; **2** slotless **NICs**; optional PCI-X	Up to **6** PCIe 2.0; **2** slotless NICs; **12Gb** RoMB; optional PCI-X	**3** PCIe 3.0; **2** slotless **NICs**; **12Gb** slotless **RAID**	**3** PCIe 3.0; **2** slotless **NICs**; **12Gb** slotless **RAID**	**8** PCIe 3.0 ; slotless **NIC**; **12Gb** slotless **RAID**	Up to **8** PCIe 3.0; slotless **NIC**; **12Gb** slotless **RAID**
Systems Management	Basic (AMT)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (TSM)	Advanced (TSM)	Advanced (IMM2)	Advanced (IMM2)	Advanced (TSM)	Advanced (IMM2)	Advanced (TSM)	Advanced (IMM2)

Lenovo Server Positioning

Blade Servers / Compute Nodes

Attribute	BladeCenter® HS23E	Flex System™ x220	Flex System x222	BladeCenter HS23	Flex System x240 M5	Flex System x440	Flex System x280 X6	Flex System x480 X6	Flex System x880 X6
Positioning	2-Socket **Entry** Blade Server	2-Socket **Entry** Compute Node	2-Socket **Entry** Compute Node Optimized for Compute Density	2-Socket **Mainstream** Blade Server	2-Socket **Mainstream** Compute Node Optimized for Virtualization	4-Socket **Performance** Compute Node Optimized for Virtualization and Database	2-socket **Performance** Compute Node Optimized for Mission-Critical Workloads	**Scalable** 2-to-4-Socket **Performance** Compute Node Optimized for Mission-Critical Workloads	**Scalable** 2-to-8-Socket **Performance** Compute Node Optimized for Mission-Critical Workloads
Form Factor	BladeCenter single-wide node	Flex System single-height, standard-wide node	Flex System single-height, standard-wide twin nodes (two servers)	BladeCenter single-wide node	Flex System single-height, standard-wide node	Flex System single-height, double-wide node	Flex System single-height, double-wide node	Flex System single-height, double-wide node, scalable to 2 nodes / 4 sockets	Flex System single-height, double-wide node, scalable to 4 nodes / 8 sockets
Processor Type (Maximum Cores)	Xeon E5-2400 Series (8-core)	Xeon E5-2400 Series (8-core)	Xeon E5-2400 Series (8-core)	Xeon E5-2600 **v2** Series (12-core)	Xeon E5-2600 **v3** Series (18-core)	Xeon E5-4600 **v2** Series (12-core)	Xeon E7-2800 **v2** Series (15-core)	Xeon E7-4800 **v2** Series (15-core)	Xeon E7-8800 **v2** Series (15-core)
Processor Sockets / Maximum Cores	2 / 16	2 / 16	2 / 16 per twin (4 / 32 per node)	2 / 24	2 / 36	4 / 48	2 / 30	4 / 45	8 / 120
Maximum Memory	**DDR3** 12 RDIMMs / 192GB	**DDR3** **12** LRDIMMs 384GB; **12** RDIMMs / 192GB; **12** UDIMMs / 48GB	**DDR3** **12** LRDIMMs 384GB; **12** RDIMMs / 192GB; **12** UDIMMs / 48GB per twin	**DDR3** 16 RDIMMs / 512GB	**DDR4-2133** **24** LRDIMMs / 1.5TB; **24** RDIMMs / 768GB	**DDR3** **48** LRDIMMs / 1.5TB; **48** RDIMMs / 768GB	**DDR3** **24** LRDIMMs / 3TB; **24** RDIMMs / 768GB	**DDR3** **96** LRDIMMs / 6TB; **96** RDIMMs / 1.5B	**DDR3** **192** LRDIMMs / 12TB; **192** RDIMMs / 3TB
Drive Type	SAS / SATA / SSD (HS)	SAS / SATA / SSD (HS)	SATA / SSD (HS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (HS)	SAS, SATA, (HS and embedded)	SAS, SATA, (HS and embedded)	SAS, SATA, (HS and embedded)
Maximum # HDDs / SSDs / eXFlash DIMMs (See ServerProven List link on p. 2 for supported drives)	(2) 2.5"	(2) 2.5" HDDs; (8) 1.8" SSDs	(1) 2.5" HDD; (2) 1.8" SSDs per twin	(2) 2.5"	(2) 2.5" HDDs; (4) 1.8" SSDs	(2) 2.5" HDDs; (8) 1.8" SSDs	(4) 2.5" HDDs/SSDs; or (8) 1.8" SSDs; **and** (16) eXFlash DIMMs	(8) 2.5" HDDs/SSDs; or (16) 1.8" SSDs; **and** (32) eXFlash DIMMs	(16) 2.5" HDDs/SSDs; or (32) 1.8" SSDs; **and** (32) eXFlash DIMMs
Maximum I/O Expansion	**2**	**2**	**2** per twin	**2**	**2**	**4**	**4** PCIe	**8** PCIe	**16** PCIe
Systems Management	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)

Lenovo Server Positioning

Attribute	Enterprise Rack Servers			Hyperscale/Superdense Srvrs		Tower Servers						
	System x3750 M4	System x3850 X6	System x3950 X6	iDataPlex® dx360 M4	NeXtScale® System nx360 M5	ThinkServer TS140	ThinkServer TS440	System x3100 M5	System x3300 M4	ThinkServer TD340	ThinkServer TD350	System x3500 M5
Positioning	Scalable 2-to-4-Socket **Mainstream** Server Optimized for Compute Density	Scalable 2-to-4-Socket **Performance** Server Optimized for High Availability	Scalable 4-to-8-Socket **Maximum Performance** Server Optimized for High Availability	**Performance** Node Optimized for Compute Density	**Performance** Node Optimized for Compute Density	**Entry** Infrastructure Server Optimized for Value	**Entry** Infrastructure Tower Server	**Mainstream** Small-to-Medium Business / Retail Server	**Mainstream** Tower Server	**Mainstream** Tower Server	**Performance** Tower or Rack Server	**Performance** Tower or Rack Server
Form Factor	2U Rack	4U Rack	8U Rack	1U Tray in a 2U Chassis	1U Half-wide Tray in a 6U chassis	Tower (rackable 4U)	Tower (rackable 4U)	Tower (rackable 4U fixed PSU / 5U Redundant PSU)	Tower (rackable 4U)	Tower (rackable 4U)	Tower (rackable 5U)	Tower (rackable 5U)
Processor Type (Maximum Cores)	Xeon E5-4600 **v2** Series (12-core)	Xeon E7-4800/8800 **v2** Series (15-core)	Xeon E7-8800 **v2** Series (15-core)	Intel® Xeon® E5-2600 **v2** Series (12-core)	Xeon E5-2600 **v3** Series (18-core)	Xeon E3-1200 **v3** Series (4c), Core i3 (2c) / Pentium (2c); Celeron (2c)	Xeon E3-1200 **v3** Series (4c), Core i3 (2c) / Pentium (2c); Celeron (2c)	Xeon E3-1200 **v3** Series (4c), Core i3 (2c) / Pentium (2c); Celeron (2c)	Xeon E5-2400 Series (8-core)	Xeon E5-2400 Series (10-core)	Xeon E5-2400 **v2** Series (16-core)	Xeon E5-2600 **v3** Series (18-core)
Processor Sockets / Maximum Cores	2 / 24 or 4 / 48	4 / 60 (4 Compute Books)	8 / 120 (8 Compute Books)	2 / 24	2 / 36	1 / 4	1 / 4	1 / 4	2 / 16	2 / 20	2 / 32	2 / 36
Maximum Memory	DDR3 48 LRDIMMs / 1.5TB; 48 RDIMMs / 768GB	DDR3 96 LRDIMMs / 6TB; 96 RDIMMs / 1.5TB; **or** 64 RDIMMs / 1TB + 32 eXFlash DIMMs	DDR3 192 LRDIMMs / 12TB; 192 RDIMMs / 3GB; **or** 160 RDIMMs / 2.5TB + 32 eXFlash DIMMs	DDR3 16 LRDIMMs / 512GB; 16 RDIMMs / 256GB; 12 UDIMMs / 48GB	DDR4-2133 16 LRDIMMs / 512GB; 16 RDIMMs / 256GB	DDR3 4 UDIMMs / 32GB	DDR3 4 UDIMMs / 32GB	DDR3 4 UDIMMs / 32GB	DDR3 12 RDIMMs / 192GB; 12 UDIMMs / 48GB	DDR3 12 RDIMMs / 192GB; 12 UDIMMs / 48GB	DDR4-2133 16 LRDIMMs / 512GB; 16 RDIMMs / 256GB	TruDDR4-2133 24 LRDIMMs / 1.5TB; 24 RDIMMs / 384GB
Drive Type	SAS / SATA / SSD (HS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (HS)	SAS / SATA / SSD (SS)	SAS / SATA / SSD (SS / HS)	SATA (Fixed)	SAS / SATA / SSD (Fixed, HS)	SAS (HS); SATA (SS & HS)	SAS / SATA (SS & HS)	SAS / SATA / SSD (Fixed & HS)	SAS / SATA / SSD (Easy Swap & HS)	SAS / SATA (SS & HS)
Maximum # HDDs / SSDs / eXFlash DIMMs (See ServerProven List link on p. 2 for supported drives)	(16) 2.5"; (32) 1.8"	(8) 2.5" SAS/SATA HDDs; (16) 1.8" SSD; 32 eXFlash DIMMs	(16) 2.5" SAS/SATA HDDs; (32) 1.8" SSD; 32 eXFlash DIMMs	(1) 3.5"; or (2) 2.5"; or (4) 1.8"	(1) 3.5"; or (4) 2.5"; or (4) 1.8"	(4) 3.5"; or (4) 2.5"	(4) 3.5" fixed; or (8) 3.5" HS; or (8) 2.5" HS	(4) 3.5" SS / HS HDD; (8) 3.5" SS / HS HDD / SSD	(8) 3.5" SS / HS HDDs; (16) 2.5" HS HDDs or SSDs	(4) 3.5" Fixed/HS; (8) 3.5" HS; (16) 2.5" HS	(15) 3.5"; (16) 2.5"; (32) 2.5" (March 2015)	(12) 3.5" HS HDDs; (16) 2.5" HS HDDs / SSDs + (6) 3.5" HS HDDs; or (32) 2.5" HS HDDs / SSDs; or (6) SS 3.5" HDDs
Maximum I/O Expansion	**5** PCIe 3.0 (**2S**) or **8** PCIe 3.0 (**4S**), and slotless RAID	Up to **11** PCIe (3 I/O Books)	Up to **22** PCIe (6 I/O Books)	**2** PCIe 2.0; **1** slotless IB or 10GbE	**2** PCIe 2.0; **1** slotless coprocessor	**1** PCIe 3.0; **2** PCIe 2.0; **1** PCI	**1** PCIe 3.0; **2** PCIe 2.0; **1** PCI	**2** PCIe 3.0; **2** PCIe 2.0	**5** PCIe 2.0 std; plus **1** PCIe with second processor; **1** optional PCI-X	**5** PCIe 3.0 ; **1** PCI; slotless **NIC**	Up to **7** PCIe 3.0	Up to **7** PCIe 3.0
Systems Management	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Advanced (IMM2)	Basic (AMT)	Basic (AMT)	Advanced (IMM2)	Advanced (IMM2)	Advanced (TMM)	Advanced (TSM)	Advanced (IMM2)

Lenovo Server Recommendations by Workload

● Best   ◐ Better   ○ Good

This chart is intended to be read horizontally, comparing servers by workload. For example, the best servers for Analytics all have solid circles.

Key Workloads	TS140	TS440	x3100 M5	x3300 M4	TD340	TD350	x3500 M5	dx360 M4	nx360 M5	RS140	x3250 M5	x3530 M4	x3630 M4	RD350	RD450	x3650 M4 BD	x3650 M4 HD	x3650 M5	RD550	x3550 M5	RD650	x3650 M5	x3750 M4	x3850 X6	x3950 X6	HS23E	x220	x222	HS23	x240 M5	x440	x280 X6	x480 X6	x880 X6
Public Cloud						○	○	◐	●	●	●	●	●	●	●	●	●	●	●	●	●	●	○			○	◐		◐		○	○		
Virtualization (Consolidation)	○	○	○	◐	◐	●	●	○	○	○	○	○	○	●	●	◐	●	●	●	●	●	●	●	●	●	○	○	○	●	●	●	●	●	●
Virtual Desktop (VDI)	○	○	○	○	○	◐	◐	◐	◐	○	○	◐	●	◐	◐	◐	◐	●	●	●	●	◐	◐	○	○	○	○	○	◐	◐	●	◐	○	○
HPC / Grid						○	○	●	●			○	○	◐	◐	○	●	●	◐	◐	◐	◐	●	○	○	○	○	○	○	◐	◐	◐	◐	◐
Analytics				○	○	◐	◐					○	○	◐	◐	●	●	●	●	●	●	●	●	●	●	○	○	○	○	●	●	●	●	●
Hadoop (Big Data)				○	○	●	●	◐	◐			○	○	◐	◐	●	●	●	●	●	●	●	●	○	○				○	◐	◐	◐	◐	◐
Database		○	○	◐	◐	●	●	○	○	○	○	○	○	●	●	◐	◐	●	●	●	●	●	●	●	●	○	○	○	◐	●	●	●	●	●
Retail	●	●	●	●	●	◐	◐			●	●	◐	◐	○	○	○	○	○	○	○	○	○												
Email, File & Print	◐	◐	◐	◐	◐	●	●	○	○	◐	◐	◐	◐	◐	◐	◐	●	◐	◐	●	●	◐	◐	○	○	◐	○	○	●	○	○	○	○	
Web Serving	○	○	◐	◐	◐	●	●	◐	◐	◐	◐	◐	●	●	●	◐	◐	●	◐	◐	◐	◐	○			◐	●	●	◐	◐				

Tower Servers: TS140, TS440, x3100 M5, x3300 M4, TD340, TD350, x3500 M5
Hyperscale: dx360 M4, nx360 M5
Rack-Optimized Servers: RS140, x3250 M5, x3530 M4, x3630 M4, RD350, RD450, x3650 M4 BD, x3650 M4 HD, x3650 M5, RD550, x3550 M5, RD650, x3650 M5
Enterprise Servers: x3750 M4, x3850 X6, x3950 X6
Blade Servers / Compute Nodes: HS23E, x220, x222, HS23, x240 M5, x440, x280 X6, x480 X6, x880 X6

For the ServerProven Compatibility List, go to http://ibm.com/systems/info/x86servers/serverproven/compat/us/.

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