

# ThinkServer RD650 Platform Specifications

Product Specifications Reference (PSREF)

Components	Specification																																								
Dimensions	2U rack. Height: 87 mm (3.4 in), width: 482 mm (19 in), depth: 764 mm (30 in)																																								
Weight	Minimum configuration: 16 kg (35.3 lb), maximum: 32 kg (70.5 lb)																																								
Processor	Up to two <b>145W Intel Xeon E5-2600 v3</b> family (code name: Haswell) processors with 18 cores up to 2.3GHz, 16 cores up to 2.3GHz, 14 cores up to 2.6GHz, 12 cores up to 2.6GHz, 10 cores up to 2.6GHz, 8 cores up to 3.2GHz, 6 cores up to 3.4GHz, 4 cores up to 3.5GHz. Two QPI link up to 9.6 GT/s. Up to 2133MHz memory speed. Up to 45MB cache																																								
Chipset	Intel C612 Platform Controller Hub (PCH)																																								
Memory DIMMs	24 DIMM sockets (12 DIMMs per processor), 8-channel capable (4-channel per processor). RDIMM and LRDIMM (cannot be intermixed), DDR4, 2133MHz																																								
Memory capacity	384GB (RDIMM, 16GB x 24)/768GB (LRDIMM, 32GB x 24)																																								
Memory protection	ECC, memory mirroring, lockstep, and memory sparing																																								
AnyRAID support	RAID 0, 1, 10 with AnyRAID 110i 6Gb/s SATA, optional key for RAID 5. RAID 0, 1, 10 with AnyRAID 510i, 6Gb/s SAS/SATA, optional key for RAID 5/50. RAID 0, 1, 10, 5, 50, 6, 60 with AnyRAID 720i/720ix. 12Gb/s SAS/SATA. 720i needs cache for RAID 6/60 support. 720ix must have cache. Optional cache for 720i/720ix: 1GB read-only memory. 1GB/2GB/4GB flash with super capacitor. Flash options include CacheVault, CacheCade Pro, and FastPath																																								
Disk drive bays	Up to 12 3.5", 24 2.5", or 6 2.5" plus 9 3.5" hot-swap disk bays on front. Up to 4 2.5" bays on 24 2.5" or 2.5" + 3.5" models can support easy-swap PCIe SSD via optional Anybay kit (consumes two PCIe slots). Up to 2 2.5" rear mounted hot-swap disk bays, optional. Up to 2 M.2 SSD drives via optional M.2 module. Up to one internal LTO-6 SAS tape drive on 8 x 2.5" and 720ix model, or external RDX tape drive via USB.																																								
	<table border="1"> <thead> <tr> <th>Disk bay configuration</th> <th colspan="4">AnyRAID requirements and optional drives supported</th> </tr> <tr> <th></th> <th>RAID110i</th> <th>RAID510i</th> <th>RAID720i</th> <th>RAID720ix</th> </tr> </thead> <tbody> <tr> <td>6x3.5"</td> <td>•</td> <td>•</td> <td>•</td> <td></td> </tr> <tr> <td>12x3.5"</td> <td></td> <td></td> <td></td> <td>• (optional rear bay/M.2)</td> </tr> <tr> <td>8x2.5"</td> <td></td> <td>•</td> <td>•</td> <td>• (optional tape/rear bay/M.2)</td> </tr> <tr> <td>16x2.5"</td> <td></td> <td></td> <td></td> <td>• (optional rear bay/M.2)</td> </tr> <tr> <td>24x2.5"</td> <td></td> <td></td> <td></td> <td>• (optional Anybay/rear bay/M.2)</td> </tr> <tr> <td>6x2.5"+9x3.5"</td> <td></td> <td></td> <td></td> <td>• (optional Anybay/rear bay/M.2)</td> </tr> </tbody> </table>	Disk bay configuration	AnyRAID requirements and optional drives supported					RAID110i	RAID510i	RAID720i	RAID720ix	6x3.5"	•	•	•		12x3.5"				• (optional rear bay/M.2)	8x2.5"		•	•	• (optional tape/rear bay/M.2)	16x2.5"				• (optional rear bay/M.2)	24x2.5"				• (optional Anybay/rear bay/M.2)	6x2.5"+9x3.5"				• (optional Anybay/rear bay/M.2)
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Internal disk drive	3.5" HDD up to 8TB (SATA/SAS). 2.5" HDD up to 1.8TB (SAS)/2TB (SATA). 2.5" SSD up to 1.6TB (SATA/SAS). Easy-swap PCIe SSD up to 1.6TB. PCIe SSD adapter up to 3.2TB. M.2 SSD up to 120GB. 2.5" SSD and HDD are compatible with 3.5" bay																																								
SD module	Up to 2 SDHC flash cards via optional SD module, 8GB or 32GB each																																								
Optical drive	Optional one 9.5mm optical drive on 8 or 16 x 2.5" model, DVD-ROM or DVD±RW																																								
Network interfaces	One dedicated management port, one AnyFabric slot for customized LOM. Discrete network options is also available via PCIe slots																																								
Security features	Power-on and administrator password. Optional TPM (TCG 1.2-compliant)																																								
Systems management	Supports ThinkServer System Manager (TSM), optional TSM Premium. UEFI. Onboard Aspeed AST2400 graphics/management processor, IPMI 2.0-compliant baseboard management controller (BMC). Control Panel LEDs shows the status of power, ID, network, system. Supports ThinkServer management software: Diagnostics, Deployment Manager, Energy Manager, System Manager, Partner Pack for VMware vCenter and Microsoft System Center Operations Manager, Power Planner																																								

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Operating systems supported	Microsoft Windows Server 2012 R2/2012/2008 R2, Windows Small Business Server 2011. Red Hat Enterprise Linux 6.5/6.6/7. SUSE Linux Enterprise Server 11. VMware vSphere (ESXi) 5.1 P5/5.5 U2/6.0																																								
Base warranty	3-year limited onsite service with 9x5/NBD.																																								
Power supply	<p>Up to two redundant hot-swap 550W/750W/1100W/1600W power supplies. 550W, 1100W, and 1600W are 80 PLUS Platinum qualified. 750W is 80 PLUS Platinum or Titanium qualified.</p> <table border="1"> <thead> <tr> <th>Disk bay configuration</th> <th colspan="4">PSU requirements</th> </tr> <tr> <th></th> <th>550W</th> <th>750W</th> <th>1100W</th> <th>1600W</th> </tr> </thead> <tbody> <tr> <td>6x3.5"</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>12x3.5"</td> <td>• (up to 135W CPU)</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>8x2.5"</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>16x2.5"</td> <td>• (up to 105W CPU+24 DIMMs or 135W+16 DIMMs)</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>24x2.5"</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>2.5"+3.5"</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> </tbody> </table> <p>Note: 1. 750W Titanium is 200V - 240V, others are 110V - 240V. 2. 1600W will automatically operate in 1100W if the system line input is 100-127V.</p>	Disk bay configuration	PSU requirements					550W	750W	1100W	1600W	6x3.5"	•	•	•	•	12x3.5"	• (up to 135W CPU)	•	•	•	8x2.5"	•	•	•	•	16x2.5"	• (up to 105W CPU+24 DIMMs or 135W+16 DIMMs)	•	•	•	24x2.5"	•	•	•	•	2.5"+3.5"	•	•	•	•
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Graphics	Onboard Aspeed AST2400 with 16MB memory, one DisplayPort on rear																																								
Front ports	(Only 2.5" bay models) Two USB 2.0, one DisplayPort																																								
Rear ports	One DisplayPort, two USB 3.0, one RJ-45 (dedicate mgmt), one serial (9-pin)																																								
Cooling	Six (5+1, dual processors) or four (3+1, single processor), hot-swap																																								
Noise emissions	Operating: < 6.5 Bels. Idle: < 6 Bels (Maximum configuration)																																								
Environmental specification	<table border="1"> <tbody> <tr> <td>Temperature - operating</td> <td>41 °F to 113 °F (5 °C to 45 °C)</td> </tr> <tr> <td>Temperature - non operating (no package)</td> <td>-10 °C to 60 °C</td> </tr> <tr> <td>Temperature - non operating (with package)</td> <td>-40 °C to 60 °C</td> </tr> <tr> <td>Altitude - operating</td> <td>(Unpressurized): 0-10000ft (0-3048m)</td> </tr> <tr> <td>Humidity - operating</td> <td>8%-90%, non-condensing</td> </tr> <tr> <td>Humidity - storage (with package)</td> <td>8%-90%, non-condensing</td> </tr> </tbody> </table> <p>Note: 45 °C continuous operation configuration limitation: no 135W or 145W CPU/no GPU card/redundant PSU/no FLFH card/no PCIe SSD adapter.</p>	Temperature - operating	41 °F to 113 °F (5 °C to 45 °C)	Temperature - non operating (no package)	-10 °C to 60 °C	Temperature - non operating (with package)	-40 °C to 60 °C	Altitude - operating	(Unpressurized): 0-10000ft (0-3048m)	Humidity - operating	8%-90%, non-condensing	Humidity - storage (with package)	8%-90%, non-condensing																												
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Expansion slots	
PSU1	8 7
PSU2	5 6
	4
	1
	2
	3
	AnyFabric slot
Optional rear bay	
Slot 1 (riser card 1)	PCIe 3.0 x 16, half length, full height
Slot 2 (riser card 1)	PCIe 3.0 x 16, half length, full height
Slot 3 (riser card 1)	PCIe 3.0 x 16, half length, full height
Slot 4 (onboard)	PCIe 3.0 x 16, low-profile, half length, requires 2nd CPU
Slot 5 (riser card 2)	PCIe 3.0 x 16, half length, full height, requires 2nd riser card and 2nd CPU
Slot 6 (riser card 2)	PCIe 3.0 x 16, half length, full height, requires 2nd riser card and 2nd CPU
Slot 7 (onboard)	PCIe 3.0 x 16, low-profile, half length, requires 2nd CPU
Slot 8 (onboard)	PCIe 3.0 x 16, low-profile, half length, requires 2nd CPU

**Notes:**  
On 2.5" disk bay models, slots 1 and 2 can be replaced with one PCIe 3.0 x16 slot, double wide, full length, full height. Slots 5 and 6 can be replaced with one PCIe 3.0 x16 slot, double wide, full length, full height.

<b>Model</b>		<b>70D00020EA</b>
Product		RD650
Region		EMEA
Machine type		70D0
TopSeller		Yes
Processor		1xE5-2609 v3 6C/1.9GHz/15MB/85W/1600MHz
2nd CPU		4XG0F28820
Memory		1x8GB 2133MHz RDIMM
AnyRAID		110i + RAID5
Disk bays		6x3.5" HS
Internal disk drive		Open
Slots		3xFH HL
Optical		None
AnyFabric		GbEx4 RJ-45
TPM		No
System mgmt		TSM
Preloaded OS		No
Base warranty		3-year
Power supply		750Wx1 Platinum
Ann date (mm/yy)		09/14





