

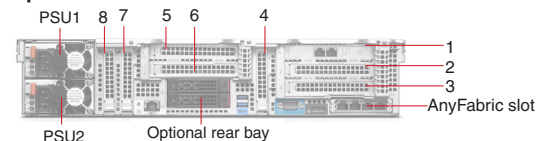
ThinkServer RD650 Platform Specifications

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 145W Intel Xeon E5-2600 v3 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><tr><th rowspan="2">Disk bay configuration</th><th colspan="4">AnyRAID requirements and optional drives supported</th></tr><tr><th>RAID110i</th><th>RAID510i</th><th>RAID720i</th><th>RAID720ix</th></tr><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></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)
Disk bay configuration	AnyRAID requirements and optional drives supported																																							
	RAID110i	RAID510i	RAID720i	RAID720ix																																				
6x3.5"	•	•	•																																					
12x3.5"				• (optional 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																																							

Components	Specification				
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	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.				
	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"		•	•	•	
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.					
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	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			
Note: 45 °C continuous operation configuration limitation: no 135W or 145W CPU/no GPU card/redundant PSU/no FLFH card/no PCIe SSD adapter.					

Expansion slots



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.

Model	70D00020EA
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

