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ThinkStation C20, C20x Top Options

Turning Workstations into Solutions
Options and Accessories

April 2011



ThinkStation C20, C20x Top Options

Top Option - ThinkStation C20, C20x	Part Number	C20	C20X
NVIDIA NVS 295 Dual DisplayPort	43R1765	Yes	Yes
NVIDIA NVS 300 Dual DVI, Dual VGA	0A36528	Yes	Yes
NVIDIA NVS 450 Quad DisplayPort, Quad-DVI-D	57Y4398	Yes	Yes
NVIDIA Quadro FX 380 Dual DVI-I	45K1670	Yes	Yes
NVIDIA Quadro 600 DVI-I, Dual DisplayPort	0A36183	Yes	Yes
NVIDIA Quadro 2000 DVI-I, Dual DisplayPort	57Y4479	Yes	Yes
NVIDIA Quadro 4000 DVI-I, Dual DisplayPort, Stereo	57Y4480	Yes	Yes
NVIDIA Quadro 5000 DVI-I, Dual DisplayPort, Stereo	57Y4481	Yes	Yes
NVIDIA SLI Connector	55Y8963	Yes	Yes
PC3-10600 DDR3-1333 ECC UDIMM Memory – 2GB, 4GB	43R2033, 57Y4138	Yes	Yes
PC3-10600 DDR3-1333 ECC RDIMM Memory – 2GB, 4GB, 8GB	57Y4425, 57Y4426, 57Y4427	Yes	Yes
Serial ATA 7200 rpm Hard Drive – 250GB, 500GB, 1TB	41N3015, 43R1990, 45J7918	Yes	Yes
Serial ATA 10k rpm Hard Drive – 300GB	43R2031	Yes	Yes
SAS 15k rpm Hard Drive 450GB	43N3424	No	Yes
Blu-ray Burner, SATA Optical Drive	43R1675	Yes	Yes
ThinkVision Soundbar / ThinkVision USB Soundbar	45K1263*, 40Y7616	Yes	Yes
ThinkCentre Extend Arm	57Y4352	Yes	Yes
Lenovo Laser Mouse	41U3074	Yes	Yes
Kensington Security Cable Lock by Lenovo	73P2582	Yes	Yes
Kensington Twin Head Cable Lock from Lenovo	45K1620	Yes	Yes
DisplayPort to Single-Link DVI-D Monitor Cable	45J7915	Yes	Yes
DisplayPort to VGA Monitor Cable	57Y4393 - FX 580 and FX 1800 only	Yes	Yes
ThinkStation C-Series, D-Series Rail Kit	57Y4482	Yes	Yes
Second Processor	Varies By Model	Yes	Yes

Lenovo ThinkVision Monitors



Product	L2440p Wide	L2321x Wide	L2251x Wide	L2251p Wide	L2250p Wide	L1951p Wide	L1900p
Model	4420-HB2	4014-HB6	2578-HB6	2572-HD6	2572-HB6	2248-HB6 or HC6	4431-HE1
Monitor Size	24.0-inch, 610mm	23.0-inch, 584mm	22.0-inch, 559mm	22.0-inch, 559mm	22.0-inch, 559mm	19.0-inch 481mm	19.0-inch 483mm
Resolution	1920 x 1200	1920 x 1080	1680 x 1050	1680 x 1050	1680 x 1050	1440 x 900	1280 x 1024
Video Input	Analog, DVI-D	Analog, DisplayPort	Analog, DisplayPort	Analog, DisplayPort	Analog, DVI-D	Analog, DVI-D	Analog, DVI-D
Camera / Mic	----	----	Yes	----	----	----	----
Power	36.6 Watts/hr(1)	28 Watts/hr	21 Watts/hr	21 Watts/hr	21 Watts/hr	19 Watts/hr	19 Watts/hr(1)
USB Hub	4 powered ports	????	1-up, 3-down	None	None	None	None
Soundbar	45K1263**	45K1263**	45K1263**	45K1263**	45K1263**	45K1263**	45K1263**
Stand Function	Tilt, Swivel, Pivot, Lift		Tilt, Swivel, Pivot, Lift	Tilt, Swivel, Pivot, Lift	80-mm Lift, Tilt	80-mm or 100-mm Lift, Tilt	Tilt, Swivel, Pivot, Lift
Environmental Attributes	TCO'03	TCO Certified Edge	TCO Certified Edge	TCO'05	TCO'05	TCO Displays 5.0	TCO'03
	EPEAT Gold (2)	EPEAT Gold (2)	EPEAT Gold (2)	EPEAT Gold (2)	EPEAT Gold (2)	EPEAT Gold (2)	EPEAT Gold (2)
	ENERGY STAR 5.0	ENERGY STAR 5.0	ENERGY STAR 5.0	ENERGY STAR 5.0	ENERGY STAR 5.0	ENERGY STAR 5.0	ENERGY STAR 5.0
			65% post consumer recycled plastic	65% post consumer recycled plastic	65% post consumer recycled plastic	65% post consumer recycled plastic	
			20% post industry recycled plastic				
			Mercury-Free (WLED)				
			Low Halogen				
		Arsenic Free Glass	Arsenic Free Glass	Arsenic Free Glass	Arsenic Free Glass	Arsenic Free Glass	Arsenic Free Glass

Notes: ** Indicates U.S. part number for ThinkVision Soundbar
 (1) Under ENERGY STAR 5.0 test condition
 (2) EPEAT registrations vary by country, go to www.epeat.net

NVIDIA Quadro 2D Multiple Monitor Graphic Adapters



NVS 295



NVS 300



NVS 450

	NVS 295 Dual DisplayPort	NVS 300 Dual DVI, Dual VGA	NVS 450 Quad-DisplayPort, Quad-DVI
Option Part Number	45K1669	0A36528	57Y4398
Memory Configuration	256MB GDDR3 64-bit	512MB DDR3	512MB 128-bit
Memory Bandwidth	11.2 GB/sec	12.6 GB/sec	11.2GB/sec
Connectors	Two DisplayPort	DSM59 for Dual DVI or Dual VGA analog	Four DisplayPort
Monitor adapters / cables	-----	DMS59 to Dual DVI Digital DMS59 to Dual VGA Analog	Four DisplayPort to Single-Link DVI-D (45J7915)
Maximum Resolution	2560 x 1600	1920 x 1200 (DVI) 2048 x 1536 (VGA)	2560 x 1600
DisplayPort to VGA Analog Monitor Cable (57Y4393) compatible	Recommend NVS 300 (0A36528)	Not Applicable	Yes
DisplayPort to DVI Digital Monitor Cable (45J7915) compatible			NVS 450 (57Y4398) includes four cables
Shader Model	4.0	4.1	4.0
Open GL	3.0	3.3	2.1
Microsoft DirectX	10	10.1	10
NVIDIA CUDA Architecture	Yes		
NVIDIA NVIEW Display Software	Yes		
Cards per C20	Two (attach 4 monitors)		Two (attach 8 monitors)

Notes:

- DVI digital or VGA analog monitors attach to DisplayPort via “DisplayPort Monitor Cable”; maximum resolution is 1920 x 1200

NVIDIA Quadro 3D CAD, DCC Graphic Cards



	Quadro FX 380 Dual DVI, Dual VGA	Quadro 600 DVI, Dual DisplayPort	Quadro 2000 DVI, Dual DisplayPort	Quadro 4000 DVI, Dual DisplayPort, Stereo	Quadro 5000 DVI, Dual DisplayPort, Stereo
Option Part Number	45K1670	0A36183	57Y4479	57Y4480	57Y4481
CAD, DCC Segment	Entry-level	Entry-level	Mid-Range	High-End	Ultra High-End
CUDA Parallel Processor	16-core	96-core	192-core	256-core	320-core
Memory Frame Size	256MB GDDR3	1GB DDR3	1GB DDR3	2GB GDDR5	2.5GB GDDR5
Memory Bandwidth	22.4 GB/sec	25.6 GB/sec	41.6 GB/sec	89.6 GB/sec	120.0 GB/sec
Connectors	Two Dual Link DVI-I	One Dual Link DVI-I, Two DisplayPort (only 2 of 3 monitor ports are active)		One Dual Link DVI-I, Two DisplayPort, 3-pin stereo (only 2 of 3 monitor ports are active)	
DisplayPort to VGA Analog Monitor Cable (57Y4393) compatible	Not applicable	Compatibility testing is in process	Compatibility testing is in process	Compatibility testing is in process	Compatibility testing is in process
DisplayPort to DVI Digital Monitor Cable (45J7915) compatible	Not applicable	Yes	Yes	Yes	Yes
NVIDIA SLI Connector (55Y8963)	-----				Yes (C20, C20x, D20 models)
DVI-to-VGA Monitor Adapters	Two included	One included			
Maximum Resolution	2560 x 1600 for DisplayPort or Dual Link DVI				
Cards per C20, C20x, S20, D20	Two (attach 4 monitors)				

Notes:

- DVI or VGA monitors can attach to DisplayPort using a DisplayPort Monitor Cable; maximum resolution is 1920 x 1200
- VGA analog monitors can attach to Dual Link DVI-I ports using the DVI-to-VGA Monitor Adapter, maximum resolution is 1920 x 1200

Lenovo DDR3 ECC RDIMM Memory



- Enhance multi-tasking usability
- Extend system useful life
- Ensure systems compatibility
- Maximize memory capacity to 96GB (Twelve 8GB modules)
- Buffer address, control, and clock signals, reducing system loading.
- ECC (Error Correcting Code) memory provides greater data accuracy and system uptime by protecting against errors in memory

Notes:

- When using 4 or more 8GB RDIMM DDR3-1066 Memory modules, per processor, ThinkStation C20 operates at DDR3-800 speed
- For newer Intel family of 56xx CPU (W36xx, X56xx, E56xx- Westmere):
 - When using all 1333 memory modules, all operate at 1333.
- For older Intel family of 55xx CPU (W35xx, E55xx, X55xx, W55xx - Nehalem):
 - When using four or more 1333 memory modules per processor, ThinkStation C20 operates at DDR3-1066 memory speed.
- When using 7 or more memory modules, ThinkStation C20 requires a second processor
- 4GB and 8GB RDIMM memory modules includes a memory fan cooler. ThinkStation C20 supports a maximum of two fan coolers
- **ThinkStation C20, C20x supports UDIMM or RDIMM**
 - Mixing UDIMM and RDIMM is not supported.
 - Refer to UDIMM Memory page for product information.

2GB PC3-10600 DDR3-1333 ECC RDIMM Memory	(57Y4425)
4GB PC3-10600 DDR3-1333 ECC RDIMM Memory	(57Y4426)
8GB PC3-10600 DDR3-1333 ECC RDIMM Memory	(57Y4427)

ThinkStation C20 has 6 memory slots
ThinkStation C20X has 12 memory slots

Lenovo DDR3 ECC UDIMM Memory



- Enhance multi-tasking usability
- Extend system useful life
- Ensure systems compatibility
- Higher bandwidth made possible by 8-bit prefetch buffer (4-bit on DDR2)
 - Buffer address, control, and clock signals, reducing system loading.
- ECC (Error Correcting Code) memory provides greater data accuracy and system uptime by protecting against errors in memory.

Notes:

- Mixing memory speeds; 1066 with 1333; causes system to operate at the lowest installed speed.
- For newer Intel family of 56xx CPU (W36xx, X56xx, E56xx - Westmere):
 - When using all 1333 memory modules, all operate at 1333.
- For older Intel family of 55xx CPU (W35xx, E55xx, X55xx, and W55xx - Nehalem):
 - When using four or more 1333 memory modules per processor, ThinkStation C20 operates at DDR3-1066 memory speed.
- When using 7 or more memory modules, ThinkStation C20 requires a second processor.
- Memory speed operation is dependent on processor memory bus speed.
 - For optimal performance, memory speed should match processor memory bus speed.
- **ThinkStation C20, C20x supports UDIMM or RDIMM Memory**
 - Mixing UDIMM and RDIMM is not supported
 - RDIMM offers 8GB memory capacity, for a maximum of 96GB system memory
 - Refer to RDIMM Memory page for product information

2GB PC3-10600 DDR3-1333 ECC UDIMM Memory (43R2033)

4GB PC3-10600 DDR3-1333 ECC UDIMM Memory (57Y4138)

ThinkStation C20 has 6 memory slots

ThinkStation C20X has 12 memory slots

Serial ATA and SAS Hard Drives

- Expand hard drive system capacity – store more data
 - For primary system upgrade or as an additional Hard Drive
- Large capacity 7200 rpm and 10K rpm SATA drives
- High speed 15K rpm SAS hard drives
- Notes:
 - C20 is SATA-based. SAS hard drives require the Lenovo-installed SAS controller adapter on C20
 - C20x is SAS-based supporting both SATA and SAS Hard Drive using the integrated SAS controller adapter
 - Mixing of SAS and SATA Hard Drives is supported



Lenovo 250GB 7200 rpm Serial ATA Hard Drive	(41N3015)
Lenovo 500GB 7200 rpm Serial ATA Hard Drive	(43R1990)
Lenovo 1TB 7200 rpm Serial ATA Hard Drive	(45J7918)
Lenovo 300GB 10K rpm Serial ATA Hard Drive	(43R2031)
ThinkStation 450GB 15K rpm SAS Hard Drive	(43R3424)

Lenovo Blu-ray Burner SATA Optical Drive

- Up to 50GB removable storage with high-definition video playback
- Next revolution in optical storage solutions
- Huge read/write storage capacity using Blu-ray media:
 - 25GB: single layer
 - 50GB: double layer
- Blu-ray high definition (HD) video playback support
- Backward compatible reading and writing to CD & DVD media



Lenovo Blu-ray Burner

(45K1675)

ThinkVision Soundbar

- ThinkVision Soundbar
 - Compatible with: L2440p Wide, L2440x Wide, L2251x Wide, L2251p Wide, L2250p Wide, L1951p Wide, L1900p, L1711p, L215p Wide, L215 Wide, D185 Wide
 - Dual Speaker support with 3+3 total watts of output
 - Integrated headphone, microphone jacks
 - Integrated cable lock slot
 - External AC power adapter (varies by country, region)



- ThinkVision USB Soundbar
 - Compatible with: L151, L151p, L171, L171p, L172, L174, L1700p, L190x, L191, L192p, L193p, L194 Wide, L197 Wide, L1900, L1940 Wide, L1940p Wide, L201p, L220x Wide, L200p Wide, L2240p Wide
 - Dual speakers provides full range business audio sound
 - Two integrated headphone jacks for private and dual listening
 - USB delivered audio and power; No external power adapters or audio cords



ThinkVision Soundbar

(45K1263)

ThinkVision USB Soundbar

(40Y7616)

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ThinkCentre Extend Arm

- Helps free up valuable desk space and position the display for greater comfort
 - Sleek design allows you to extend, retract, tilt and rotate your LCD to an ideal viewing angle and position
 - Easy to install and use on the desk
 - Attaches to (75 x 75 and 100 x 100 mm) VESA compliant displays
 - Supports :
 - ThinkVision Monitors up to 24"
 - ThinkCentre A70z All-in-One System
 - ThinkCentre M90z All-in-One System



ThinkCentre Extend Arm

(57Y4352)

Lenovo Laser Mouse

- High-definition, extraordinary accurate laser mouse with 2000 dpi resolution (user selectable to 1600, 800, or 400 dpi)
- Laser technology delivers extraordinary accuracy and more responsiveness than traditional optical mice, resulting in smoother tracking on virtually any surface
- Fully programmable tilt wheel and buttons
- Tilting scroll-wheel for more efficient scroll horizontally (left/right) and vertically (up/down) through documents and webpages.
- Ambidextrous design for both right and left-handed usage
- Full-featured Lenovo Mouse Suite
- Soft-to-the-touch metallic black finish



Lenovo Laser Mouse

(41U3074)

Kensington Security Cable Locks by Lenovo

- Secure your ThinkCentre and ThinkVision monitor
- Easy to install and use for office environments
- Strong, steel composite cable with carbon tempered steel core:
 - MicroSaver: 6.0-feet, 5.5 mm thick cable
 - Twin Head: 7.0-feet, 5.5 mm thick cable
- Patented T-bar lock provides superior lock strength in the security slot and theft protection
- Sleek styling and design using a rotating head and pivoting cable allows you to easily connect and position the lock
- Attached rubber cable tie for cable management
- Twin Head Cable Lock to secure two devices
 - 2nd lock “floats”, “moves” along the cable for user preference
- Attaching the cable lock to any ThinkCentre form factor not only secures the machine to the work area, but it also prevents users from opening the chassis itself!



Kensington Microsaver Security Cable Lock by Lenovo	(73P2582)
Kensington Twin Head Cable Lock from Lenovo	(45K1620)

DisplayPort Monitor Cables

- **DisplayPort to Single-Link DVI-D Monitor Cable (45J7915)**

- Attach a DVI digital monitor to a DisplayPort



- **DisplayPort to Single-Link DVI-D Monitor Cable Notes:**
 - Does not support attachment of a DVI-to-VGA monitor adapter.



- **DisplayPort to VGA Monitor Cable (57Y4393)**

- Attach a VGA analog monitor to DisplayPort



DisplayPort to Single-Link DVI-D Monitor Cable	(45J7915)
DisplayPort to VGA Monitor Cable	(57Y4393)

ThinkStation C-Series, D-Series Rail Kit

- Easily install the ThinkStation C20/C20x/D20 into a rack for data center environments
- Fits most 19-inch 4-post cabinet style racks with EIA square or round holes.
- About 10-minute, 2-person installation
- Slides easily snap-in to rack, allows quick installation
- No special bezels required
- Handles allow persons to slide system into and out of rack



D20 occupies 5U rack space



C20, C20x occupies 3U rack space

ThinkStation C-Series, D-Series Rail Kit

(57Y4482)

Intel Xeon Processors



- Add a 2nd processor to ThinkStation C20, C20x, and D20
- Transform complex and visually intensive data into actionable information enabled by up to eight computational cores of pure performance
- Enjoy optimized visualization by balancing processing, memory and bandwidth resources to deliver rich visual experiences
- Note:
 - If a 2nd processor is installed, the 2nd processor must match (“matched pairs”) existing installed processor

Intel® Xeon® E5507 Processor (2.26GHz 800MHz 4MB)	(0A36177)
Intel® Xeon® E5620 Processor (2.40GHz 1066 MHz 12MB Turbo SMT)	(0A36179)
Intel® Xeon® E5640 Processor (2.66GHz 1066 MHz 12MB Turbo SMT)	(0A36178)
Intel® Xeon® E5650 Processor (2.66GHz 1333 MHz 12MB Turbo SMT)	(0A36180)
Intel® Xeon® X5660 Processor (2.80GHz 1333 MHz 12MB Turbo SMT)	(0A36182)
Intel® Xeon® X5670 Processor (2.93GHz 1333 MHz 12MB Turbo SMT)	(0A36181)

thank you grazie **merci** danke **grazias** 謝謝 СПАСИБО
gracias **obrigado** ありがとう **dank** takk **bedankt** dakujem

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