

# ThinkStation P520 Platform Specifications - I of II

Product Specifications Reference (PSREF)

|                            |                                                          |                                                           |                        |                     |                    |         |              |
|----------------------------|----------------------------------------------------------|-----------------------------------------------------------|------------------------|---------------------|--------------------|---------|--------------|
| Form factor                | 33L Tower                                                |                                                           |                        |                     |                    |         |              |
| Dimensions                 | 165mm/6.5" W x 460mm/18.1" D x 440mm/17.3" H (with feet) |                                                           |                        |                     |                    |         |              |
| Weight                     | Maximum configuration: 52.91 lb (24kg)                   |                                                           |                        |                     |                    |         |              |
| Processor Support          | Processor                                                | # of Cores                                                | # of Threads           | Base Frequency      | Cache              | TDP     | Memory Types |
|                            | Xeon W-2295                                              | 18                                                        | 36                     | 3.0GHz              | 24.75MB            | 165W    | DDR4-2933    |
|                            | Xeon W-2275                                              | 14                                                        | 28                     | 3.3GHz              | 19.25MB            | 165W    | DDR4-2933    |
|                            | Xeon W-2265                                              | 12                                                        | 24                     | 3.5GHz              | 19.25MB            | 165W    | DDR4-2933    |
|                            | Xeon W-2255                                              | 10                                                        | 20                     | 3.7GHz              | 19.25MB            | 165W    | DDR4-2933    |
|                            | Xeon W-2245                                              | 8                                                         | 16                     | 3.9GHz              | 16.5MB             | 155W    | DDR4-2933    |
|                            | Xeon W-2235                                              | 6                                                         | 12                     | 3.8GHz              | 8.25MB             | 130W    | DDR4-2933    |
|                            | Xeon W-2225                                              | 4                                                         | 8                      | 4.1GHz              | 8.25MB             | 105W    | DDR4-2933    |
|                            | Xeon W-2223                                              | 4                                                         | 8                      | 3.6GHz              | 8.25MB             | 120W    | DDR4-2666    |
|                            | Xeon W-2195                                              | 18                                                        | 36                     | 2.3GHz              | 24.75MB            | 140W    | DDR4-2666    |
|                            | Xeon W-2175                                              | 14                                                        | 28                     | 2.5GHz              | 19MB               | 140W    | DDR4-2666    |
|                            | Xeon W-2155                                              | 10                                                        | 20                     | 3.3GHz              | 13.75MB            | 140W    | DDR4-2666    |
|                            | Xeon W-2145                                              | 8                                                         | 16                     | 3.7GHz              | 11MB               | 140W    | DDR4-2666    |
|                            | Xeon W-2135                                              | 6                                                         | 12                     | 3.7GHz              | 8.25MB             | 140W    | DDR4-2666    |
|                            | Xeon W-2133                                              | 6                                                         | 12                     | 3.6GHz              | 8.25MB             | 140W    | DDR4-2666    |
|                            | Xeon W-2125                                              | 4                                                         | 8                      | 4.0GHz              | 8.25MB             | 120W    | DDR4-2666    |
|                            | Xeon W-2123                                              | 4                                                         | 8                      | 3.6GHz              | 8.25MB             | 120W    | DDR4-2666    |
|                            | Xeon W-2104                                              | 4                                                         | 4                      | 3.2GHz              | 8.25MB             | 120W    | DDR4-2400    |
|                            | Xeon W-2102                                              | 4                                                         | 4                      | 2.9GHz              | 8.25MB             | 120W    | DDR4-2400    |
| Processor Sockets          | 1x FCLGA2066                                             |                                                           |                        |                     |                    |         |              |
| Chipset                    | Intel C422 Chipset                                       |                                                           |                        |                     |                    |         |              |
| Memory Sockets             | 8 DIMM sockets with 4 channels                           |                                                           |                        |                     |                    |         |              |
| Memory Types               | DDR4-2666 RDIMM or DDR4-2933 RDIMM                       |                                                           |                        |                     |                    |         |              |
| Memory Capacity            | 512GB with 8 x 64GB DDR4-2933 RDIMMs                     |                                                           |                        |                     |                    |         |              |
| Memory Protection          | ECC                                                      |                                                           |                        |                     |                    |         |              |
| Expansion slots            | Slot 1 (CPU)                                             | PCIe 3.0 x8, full height, full length, 25W, open ended    |                        |                     |                    |         |              |
|                            | Slot 2 (CPU)                                             | PCIe 3.0 x16, full height, full length, 75W, double-width |                        |                     |                    |         |              |
|                            | Slot 3 (PCH)                                             | PCIe 3.0 x4, full height, half length, 25W, open ended    |                        |                     |                    |         |              |
|                            | Slot 4 (CPU)                                             | PCIe 3.0 x16, full height, full length, 75W, double-width |                        |                     |                    |         |              |
|                            | Slot 5                                                   | PCI, full height, full length, 25W                        |                        |                     |                    |         |              |
|                            | Slot 6 (PCH)                                             | PCIe 3.0 x4, full height, half length, 25W, open ended    |                        |                     |                    |         |              |
| Discrete Graphics Offering | Graphics                                                 | Memory                                                    | Power                  | Connector           | SLI / NVLink       | Max Qty |              |
|                            | NVS 810                                                  | 4GB DDR3                                                  | 68W                    | 8xmini DP           |                    | 2       |              |
|                            | Quadro P400                                              | 2GB GDDR5                                                 | 30W                    | 3xminiDP            |                    | 2       |              |
|                            | Quadro P600                                              | 2GB GDDR5                                                 | 45W                    | 4xminiDP            |                    | 2       |              |
|                            | Quadro P620                                              | 2GB GDDR5                                                 | 40W                    | 4xminiDP            |                    | 2       |              |
|                            | Quadro P1000                                             | 4GB GDDR5                                                 | 50W                    | 4xminiDP            |                    | 2       |              |
|                            | Quadro P2000                                             | 5GB GDDR5                                                 | 75W                    | 4xDP                |                    | 2       |              |
|                            | Quadro P4000                                             | 8GB GDDR5                                                 | 120W                   | 4xDP                |                    | 2       |              |
|                            | Quadro P5000                                             | 16GB GDDR5X                                               | 180W                   | DVI-D DL+4xDP       | SLI                | 2       |              |
|                            | Quadro P6000                                             | 24GB GDDR5X                                               | 250W                   | DVI-D DL+4xDP       |                    | 1       |              |
|                            | Quadro RTX 4000                                          | 8GB GDDR6                                                 | 160W                   | 3xDP, 1xVirtualLink |                    | 2       |              |
|                            | Quadro RTX 5000                                          | 16GB GDDR6                                                | 265W                   | 4xDP, 1xVirtualLink | NVLink             | 2       |              |
|                            | Quadro RTX 6000                                          | 24GB GDDR6                                                | 295W                   | 4xDP, 1xVirtualLink | NVLink             | 2       |              |
|                            | Quadro RTX 8000                                          | 48GB GDDR6                                                | 295W                   | 4xDP, 1xVirtualLink |                    | 1       |              |
|                            | Quadro GP100                                             | 16GB HBM2                                                 | 235W                   | 1xDVI-D DL, 4xDP    | NVLink             | 2       |              |
|                            | Quadro GV100                                             | 32GB HBM2                                                 | 250W                   | 4xDP                |                    | 1       |              |
| Storage Controller         | Storage Controller                                       | Type                                                      | Interface              | RAID                | Cache              |         |              |
|                            | Onboard Intel RSTe                                       | Std                                                       | SATA 6Gb/s             | 0/1/10/5            |                    |         |              |
|                            | 9440-8i PCIe                                             | Opt                                                       | SAS 12Gb/s, SATA 6Gb/s | 0/1/10/5            |                    |         |              |
|                            | 9460-16i PCIe                                            | Opt                                                       | SAS 12Gb/s, SATA 6Gb/s | 0/1/10/5/6          | 4GB DDR4, SuperCap |         |              |
|                            | NVMe Basic                                               | Opt                                                       | PCIe NVMe              | 0/1/10              |                    |         |              |
|                            | NVMe Premium                                             | Opt                                                       | PCIe NVMe              | 0/1/10/5            |                    |         |              |
|                            | NVMe for Intel SSD                                       | Opt                                                       | PCIe NVMe              | 0/1/10/5            |                    |         |              |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
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| Storage Support    | Disk Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RPM  | Offering            | Max Qty                          |
|                    | 3.5" SATA HDD                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SATA 6Gb/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7.2K | 1TB/2TB/4TB/6TB     | 6                                |
|                    | 2.5" SATA HDD                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SATA 6Gb/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7.2K | 500GB/500GB FIPS    | 6                                |
|                    | 2.5" SATA SSD                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SATA 6Gb/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      | 256GB/512GB/1TB/2TB | 6                                |
|                    | M.2 PCIe SSD                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PCIe NVMe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      | 256GB/512GB/1TB/2TB | 9                                |
|                    | PCIe AIC SSD                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PCIe NVMe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      | 480GB               | 2 (1 when quad M.2 adapter used) |
| Storage Bays       | Bay Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Maximum Drives Qty                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |                     |                                  |
|                    | M.2 slot                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9x M.2 SSD (2 onboard, 7 via PCIe to M.2 adapter)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |                     |                                  |
|                    | Flex Bay                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 flex bays. Supports the following: <ul style="list-style-type: none"><li>• 2x half-height optical drives</li><li>• 2x 5.25" 9.0mm optical drives</li><li>• 1x 5.25" 9.0mm optical drive + 2x 3.5"/2.5" SATA SSD/HDD</li><li>• 1x 3.5"/2.5" SATA SSD/HDD with Front Access Storage Enclosure</li></ul> 1x flex module for the following options: <ul style="list-style-type: none"><li>• Tray 1: 9.0mm optical</li><li>• Tray 2: 15-in-1 USB 3.1 Gen 1 reader, 2x Thunderbolt, or 4-digit diagnostic display</li><li>• Port 1 and 2: Front USB 3.1 Gen 1 Type-C or eSATA</li><li>• 2x M.2 SSD with 2x Front Removable Drive Enclosures</li></ul> |      |                     |                                  |
|                    | Disk bay                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Up to 4x 3.5" or 2.5" disks with 4 disk bays (2 bays standard, 2 bays optional)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Max Storage        | Supports up to 9x M.2 SSD + 6x 3.5" HDD/6x 2.5" SATA disks/4x 2.5" SAS HDD + 1x PCIe AIC SSD.<br>All HDD: 36TB using 6x 3.5" HDD<br>All SSD: 30.48TB using 6x 2.5" SATA SSD, 9x M.2 SSD, and 1x PCIe AIC SSD                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Power supply       | Supports one of the following: <ul style="list-style-type: none"><li>• One fixed 690W, autosensing, 92%, 80 PLUS Platinum qualified</li><li>• One fixed 900W, autosensing, 92%, 80 PLUS Platinum qualified</li><li>• One fixed 1000W, autosensing, 92%, 80 PLUS Platinum qualified</li></ul>                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Media reader       | USB 2.0 9-in-1 card reader on most models. Optional UHS-II 15-in-1 USB 3.1 Gen 1 reader on flex module                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Network interfaces | Integrated one gigabit ethernet (Intel i219LM), supports Wake-on-LAN. Optional PCIe ethernet or wireless adapters are available                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| WLAN + Bluetooth   | Optional Intel Wireless-AC 8265, 2x2, 2.4GHz/5GHz, 802.11ac, Bluetooth 4.2, up to 867Mbps                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Security features  | Power-on and admin password. Trusted Platform Module, TCG 2.0 compliant, switch to 1.2 via UEFI setting. Optional access panel lock, Kensington lock, and pad lock                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Intel vPro         | Intel vPro technology supported. vPro requires Wireless-AC 8265 if Wi-Fi is needed                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Intel AMT          | Intel Active Management Technology 11                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Diagnostic         | Front panel warning LED. ThinkStation Diagnostics for Windows. Photo-audio transfer with Lenovo PC Diag-nostics for Android and iOS. Optional front 4-digit diagnostic display on flex module                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Base warranty      | 1 or 3-year limited onsite service with 9x5/NBD                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| HD Audio           | Realtek ALC662 codec                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Front ports        | 4x USB 3.1 Gen 1 (includes one 11W charging), 1x combo audio/microphone jack (3.5mm)                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Rear ports         | 2x USB 2.0, 4x USB 3.1 Gen 1, 1x RJ-45, 3x analog audio ports (line-in, line-out, mic-in), 2x PS/2                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |
| Optional ports     | Front: <ul style="list-style-type: none"><li>• 2x Thunderbolt ports (USB Type-C) on flex module, one of two ports supports video-out</li><li>• 1x eSATA on flex module</li><li>• 1x USB Type-C on flex module, USB 3.1 Gen 1</li></ul> Rear: <ul style="list-style-type: none"><li>• 1x COM port</li><li>• 2x USB Type-C ports via PCIe adapter, USB 3.1 gen 2. One 15W, one 5W</li></ul> Internal: <ul style="list-style-type: none"><li>• 1x internal USB 3.1 Gen 1 port</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |                     |                                  |

|                              |                                                                                                                               |                                               |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Environmental specification  | Temperature - operating                                                                                                       | 50 °F to 95 °F (10 °C to 35 °C)               |
|                              | Temperature - storage (no package)                                                                                            | 14 °F to 140 °F (-10 °C to 60 °C)             |
|                              | Temperature - storage (with package)                                                                                          | -40 °F to 140 °F (-40 °C to 60 °C)            |
|                              | Altitude - operating                                                                                                          | (Unpressurized): -50ft-10000ft (-15.2m-3048m) |
|                              | Humidity - operating                                                                                                          | 10%~80%, non-condensing                       |
|                              | Humidity - storage (with package)                                                                                             | 10%~90%, non-condensing                       |
| Environmental Certifications | RoHS-compliant. GREENGUARD. EPEAT Silver rating. ENERGY STAR 6.1 qualified on model 30BE0008US and 30BE0009US                 |                                               |
| ISV certifications           | Please visit <a href="http://www.thinkworkstations.com/isv-certifications/">www.thinkworkstations.com/isv-certifications/</a> |                                               |

Note:

1. Depending on many factors, actual data transfer speed mentioned on this page may be lower than theoretical speed.

2. To support the maximum expandability, 900W power supply may be needed.

3. Any questions or advice on ThinkStation PSREF, please contact [ThinkStation PSREF developer](#)