## Lenovo ThinkSystem ST250 V2 Server Product Guide

The ThinkSystem ST250 V2 is a mainstream 1-socket tower server that also be rack mounted as a rack server. It is ideal for small-to-medium businesses, remote offices, branch offices, banking and public sector. The server supports one Intel Xeon E-2300 Series processor (formerly codenamed "Rocket Lake") or Intel Pentium ("Comet Lake Refresh") and up to 128 GB of 3200 MHz TruDDR4 ECC memory.
Figure 1 shows the ThinkSystem ST250 V2.


Figure 1. Lenovo ThinkSystem ST250 V2

## Did you know?

The ThinkSystem ST250 V2 is an entry-level server with enterprise-grade management features and support for hot-swap power supplies and drives. It offers full support of Lenovo XClarity Administrator for comprehensive systems management and includes the next generation UEFI-based Lenovo XClarity Provisioning Manager for system setup and diagnosis, and the Lenovo XClarity Controller management processor for ongoing systems management and alerting. These tools make the ST250 V2 easy to deploy, integrate, service, and manage.

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## Key features

The ThinkSystem ST250 V2 is a office-friendly tower server that has been optimized to provide enterpriseclass features to small businesses, retail, educational institutions and branch offices.

## Scalability and performance

The ST250 V2 offers the following features to boost performance, improve scalability, and reduce costs:

- Improved single-socket processor performance:
- Intel Xeon E-2300 Series processors ("Rocket Lake-E") up to to 8 cores and core speeds up to 3.7 GHz
- Intel Pentium G6405, G6505 and G6605 processors ("Comet Lake Refresh") with 2 cores and core speeds up to 4.3 GHz
- Up to four 3200 MHz DDR4 ECC UDIMMs provide speed and capacity of up to 128 GB
- Four PCle slots for I/O expansion, one of which has the new PCle Gen4 interface to maximize I/O performance.
- Flexible storage configurations support either 2.5-inch or 3.5-inch hot-swap drive bays or a combination of the two (hybrid configuration). Drive bays support SAS and SATA HDDs and SSDs.
- Up to 16x 2.5-inch hot-swap drive bays
- Up to $8 x 3.5$-inch hot-swap drive bays
- Up to $4 \times 3.5$-inch $+8 \times 2.5$-inch drive bays
- The server also supports simple-swap drives, include $1 \times$ NVMe drive:
- Up to $8 x 3.5$-inch SATA drive bays
- Up to $7 \times 3.5$-inch SATA drive bays + 1x 3.5-inch NVMe drive bay
- The use of solid-state drives (SSDs) instead of, or along with, traditional hard disk drives (HDDs) can significantly improve I/O performance. An SSD can support up to 100 times more I/O operations per second (IOPS) than a typical HDD
- New high-speed RAID controllers from Lenovo and Broadcom provide 12 Gb SAS connectivity to the drive backplanes
- Offers two 5.25-inch media bays with support for optical drives or backup drives
- Supports two M. 2 drives for OS boot support with VROC RAID redundancy
- The server has two integrated Gigabit Ethernet ports
- The server offers one PCle 4.0 slot plus three PCle 3.0 I/O expansion slots
- Support for a NVIDIA GPU for enhanced workload performance


## Availability and serviceability

The ST250 V2 provides the following features to simplify serviceability and increase system uptime:

- Designed to run 24 hours a day, 7 days a week
- The ST250 V2 supports UDIMM memory with ECC protection which provides error correction not available in PC-class "servers" that use parity memory. Avoiding system crashes (and data loss) due to soft memory errors means greater system uptime.
- The server offers hot-swap (HS) SSDs and HDDs, and supports RAID redundancy for data protection and greater system uptime.
- Much like hot-swap drives, simple-swap drives are mounted on an easy-to-remove tray and work with the same RAID options. Simple-swap require a system power-down before adding or replacing, however simple-swap drives are less expensive than hot-swap drives.
- The server supports hot-swap power supplies; with two installed, they form a redundant pair to provide availability for business-critical applications.
- Tool-less cover removal provides easy access to upgrades and serviceable parts, such as memory
and adapter cards.
- A choice of affordable onboard SATA RAID or advanced hardware RAID redundancy offers data protection and greater system uptime.
- The use of SSDs can provide better reliability than the use of traditional HDDs, for greater uptime.
- The built-in XClarity Controller continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Allows preventive actions in advance of possible failure, thereby increasing server uptime and application availability with Proactive Platform Alerts (including PFA and SMART alerts) for memory, internal storage (SAS/SATA HDDs and SSDs, NVMe SSDs, M. 2 SSDs), RAID controllers, and server ambient and sub-component temperatures.
- Built-in diagnostics in UEFI, using Lenovo XClarity Provisioning Manager, speed up troubleshooting tasks to reduce service time.
- Lenovo XClarity Provisioning Manager supports diagnostics and can save service data to a USB key drive or remote CIFS share folder for troubleshooting and reduce service time.
- Support for the XClarity Administrator Mobile app running on a supported smartphone and connected to the server through the service-enabled USB port, enables additional local systems management functions.
- Auto restart in the event of a momentary loss of AC power (based on power policy setting in the XClarity Controller service processor)
- One-year or three-year customer-replaceable unit (CRU) and onsite limited warranty with next business day response. Optional service upgrades are available.


## Manageability and security

The following systems management features simplify local and remote management of the ST250 V2:

- The server includes an XClarity Controller (XCC) to monitor server availability. Optional upgrade to XCC Advanced to provide remote control (keyboard video mouse) functions. Optional upgrade to XCC Enterprise enables the additional support for the mounting of remote media files (ISO and IMG image files), boot capture, and power capping.
- Lenovo XClarity Administrator offers comprehensive hardware management tools that help to increase uptime, reduce costs and improve productivity through advanced server management capabilities.
- New UEFI-based Lenovo XClarity Provisioning Manager, accessible from F1 during boot, provides system inventory information, graphical UEFI Setup, platform update function, RAID Setup wizard, operating system installation function, and diagnostic functions.
- Support for Lenovo XClarity Energy Manager which captures real-time power and temperature data from the server and provides automated controls to lower energy costs.
- Integrated Trusted Platform Module (TPM) 2.0 support enables advanced cryptographic functionality, such as digital signatures and remote attestation.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.
- Intel Execute Disable Bit functionality can prevent certain classes of malicious buffer overflow attacks when combined with a supported operating system.
- Intel Trusted Execution Technology (Intel Xeon E processors only) provides enhanced security through hardware-based resistance to malicious software attacks, allowing an application to run in its own isolated space, protected from all other software running on a system.
- Helps prevent unauthorized software from running on the server by protecting against boot blocklevel malicious software with Intel Boot Guard technology.
- Protects application code and data from disclosure or modification with Intel Software Guard Extensions (SGX), enabling high-assurance security use cases, such as blockchain, identity and records privacy, secure browsing, and digital rights management (DRM).
- Physical security measures to prevent unauthorized access: Loop for a padlock to prevent the side panel from being opened and a slot at the rear of the server for a Kensington Cable Lock. Optional additional physical security features are a lockable front security door and a chassis intrusion switch (included in some models).


## Energy efficiency

The ST250 V2 offers the following energy saving features to save energy, reduce operational costs, increase energy availability, and contribute to the green environment:

- Energy-efficient planar components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Platinum certifications. Energy Star certified.
- Intel Intelligent Power Capability powers individual processor elements on and off as needed to reduce power draw.
- Low-voltage 1.2 V DDR4 memory DIMMs use up to $20 \%$ less energy compared to 1.35 V DDR3 DIMMs.
- SSDs use as much as $80 \%$ less power than traditional spinning HDDs.
- The server uses hexagonal ventilation holes, which can be grouped more densely than round holes, providing more efficient airflow through the system.
- Optional Lenovo XClarity Energy Manager provides advanced data center power notification, analysis, and policy-based management to help achieve lower heat output and reduced cooling needs.


## Comparing the ST250 V2 to the ST250

The ThinkSystem ST250 V2 improves on the previous generation ST250, as summarized in the following table.

Table 1. Comparing the ST250 V2 to the ST250

| Feature | ST250 | ST250 V2 | Benefits |
| :---: | :---: | :---: | :---: |
| Form Factor | - 1-Socket (1S) Tower <br> - Convertible to a 5 U tower configuration | - 1-Socket (1S) Tower <br> - Convertible to a 5 U tower configuration | - Versatile server design |
| Processor | - Supports single Xeon E2200 Series "Coffee Lake-S" processor up to 6C / 95W <br> - Also supports Pentium, Core i3 and Celeron processors <br> - Uses Intel C246 "Cannon Lake" Platform Controller Hub (PCH) | - Support single Xeon E2300 Series "Rocket Lake" processor up to 8C / 95W <br> - Also supports Pentium processors <br> - Intel C256 "Tiger Lake" Platform Controller Hub (PCH) | - Supports the latest generation Intel Xeon E processors |
| GPU | - NVIDIA Quadro P620 2GB PCle Active GPU | - NVIDIA Quadro T1000 PCle Active GPU | - GPU for advanced graphics processing |


| Feature | ST250 | ST250 V2 | Benefits |
| :---: | :---: | :---: | :---: |
| Memory | - $4 x$ UDIMM slots, up to 64GB, 2666MHz <br> - TruDDR4 ECC memory (in China, also support for nonECC memory) | - 4x UDIMM slots, up to 128GB, 3200MHz with Xeon E-2300 processors <br> - 4x UDIMM slots, up to 128GB, 2666MHz with Pentium processors <br> - TruDDR4 ECC memory | - Enterprise-grade memory sufficient for most SMB and retail applications <br> - Faster memory with Xeon processors <br> - Larger memory capacity means greater performance with larger applications |
| Storage | - Up to $8 \times 3.5$-inch hot-swap SAS/SATA drive bays or <br> - Up to 16x 2.5-inch hot-swap SAS/SATA drive bays, or <br> - Up to 8x 3.5-inch simpleswap SATA drive bays, or <br> - $2 x$ media bays supporting optical or backup drives <br> - 1x M. 2 SATA SSD, installs on the system board | - Up to $8 x$ 3.5-inch hot-swap SAS/SATA drive bays or <br> - Up to 16x 2.5-inch hot-swap SAS/SATA drive bays, or <br> - Up to $8 \times 3.5$-inch simpleswap SATA drive bays, or <br> - Up to 7x 3.5-inch simpleswap SATA drive bays + 1x NVMe drive bay <br> - $2 x$ media bays supporting optical or backup drives <br> - 2x M. 2 SATA SSD supporting RAID 0 and RAID 1 using VROC, installs in an adapter in a PCle slot | - Support for both HDDs for capacity and SSDs for performance <br> - Simple-swap configurations support an NVMe drive for tiered storage <br> - Optical drive support for ease of software installation <br> - M. 2 drive support to separate the OS from the applications and data <br> - RAID support for M. 2 to maximize uptime |
| RAID | - Supports a SAS HBA or RAID adapter for hardware RAID functionality <br> - 12Gb SAS/SATA/RAID support <br> - PCle 3.0 adapters <br> - Intel RSTe SW RAID | - Supports a SAS HBA or RAID adapter for hardware RAID functionality <br> - 12Gb SAS/SATA/RAID support <br> - PCle 3.0 and PCle 4.0 adapters <br> - Intel VROC 6.x SW RAID | - Featuring industry's latest PCle Gen4 based RAID adapters <br> - RAID capability maximizes reliability and uptime |
| Cooling | - 4 system fans: 2 front for drive bays, 1 rear system fan, 1 x CPU fan | - 4 system fans: 2 front for drive bays, 1 rear system fan, $1 \times$ CPU fan | - Ensures all components are sufficiently cooled |
| Networking | - 2x 1GbE Onboard Ethernet ports (Broadcom BCM5720) <br> - Port 1 allows remote connectivity to the XCC management controller | - 2x 1GbE Onboard Ethernet ports (Broadcom BCM5720) <br> - Port 1 allows remote connectivity to the XCC management controller | - Easy built-in networking |
| PCle Slots | - 4 x PCle slots ( $\mathrm{x} 1, \mathrm{x} 16, \mathrm{x} 4$, x4) <br> - Includes a PCle Gen3 x16 slot | - 4 x PCle slots $(\mathrm{x} 4, \mathrm{x} 16, \mathrm{x} 4$, x4) <br> - Includes a PCle Gen4 x16 slot (requires Xeon E-2300 processor) | - Support the latest PCle Gen4 slot technology <br> - Support for a highperformance PCle x16 adapter |


| Feature | ST250 | ST250 V2 | Benefits |
| :---: | :---: | :---: | :---: |
| Front 1/O | - Power button \& LED <br> - Thermal sensor <br> - One USB 3.2 G1 (5 Gb/s) port <br> - One USB 2.0 port (also supports XClarity Mobile connectivity for local systems management) | - Power button \& LED <br> - Thermal sensor <br> - One USB 3.2 G1 ( $5 \mathrm{~Gb} / \mathrm{s}$ ) port <br> - One USB 2.0 port (also supports XClarity Mobile connectivity for local systems management) | - Expansive USB support <br> - Thermal sensor ensures the server does not overheat if the ambient temperature rises |
| Rear I/O | - 2x USB 3.2 G1 (5 Gb/s) ports <br> - $2 x$ USB 3.2 G2 (10 Gb/s) ports <br> - 1x VGA video <br> - 1x RJ-45 systems management <br> - $2 x$ RJ-45 GbE network ports <br> - 1x serial port | - $4 x$ USB 3.2 G2 (10 Gb/s) ports <br> - $1 \times$ VGA video <br> - 1x RJ-45 systems management <br> - $2 x$ RJ-45 GbE network ports <br> - 1x serial port | - Expansive USB support <br> - Integrated Gigabit networking <br> - Serial port for applications that require it |
| Management and Security | - XClarity Controller with upgrades <br> - Full XClarity software suite including XClarity Administrator <br> - Dedicated Ethernet port for remote management <br> - Optional intrusion switch and lockable door | - XClarity Controller with upgrades <br> - Full XClarity software suite including XClarity Administrator <br> - Dedicated Ethernet port for remote management <br> - Optional intrusion switch and lockable door <br> - Platform Firmware Resiliency (PFR) hardware Root of Trust | - Common management tools with prior generation <br> - The server offers electronic and physical security features <br> - Platform Firmware Resiliency is an advanced security solution with a siliconbased to guard against corruption and unauthorized firmware updates |
| Power Supply | - Choice of 1 x fixed power supply or $2 x$ hot-swap power supplies <br> - 250 W fixed power supply or 550W hot-swap power supply | - Choice of 1 x fixed power supply or $2 x$ hot-swap power supplies <br> - 250W or 300W fixed power supplies, or 550W hot-swap power supply | - Select the power supply that best suits the configuration to maximize efficiency |

## Components and connectors

The following figure shows the front of the server.


Figure 2. Front view of the ThinkSystem ST250 V2 server

The following figure shows the rear of the server.


Figure 3. Rear view of the ThinkSystem ST250 V2 server

The following figure shows the locations of key components inside the server.


Figure 4. Internal view of the ThinkSystem ST250 V2 server

## System architecture

The following figure shows the architectural block diagram of the ST250 V2, showing the major components and their connections.


Figure 5. ST250 V2 system architectural block diagram

## Standard specifications

The following table lists the standard specifications.
Table 2. Standard specifications

| Components | Specification |
| :--- | :--- |
| Machine type | 7D8G - 1 year warranty <br> 7D8F - 3 year warranty |
| Form factor | Tower (can be installed in a rack with the available Rack Mount Kit) |
| Processor | One Intel processor. Choose from: <br> $\quad$Intel Xeon E-2300 Series processors ("Rocket Lake-E") up to to 8 cores, with core <br> speeds up to 3.7 GHz <br> cores, with core speeds up to 4.3 GHz <br> Chipset <br> Memory <br> Memory <br> maximum <br> Memory <br> protectionFour DIMM sockets supporting Lenovo TruDDR4 DIMMs at 3200 MHz (Xeon processors) or <br> 2666 MHz (Pentium processors). Support ECC UDIMMs. |


| Components | Specification |
| :---: | :---: |
| Disk drive bays | Available configurations: <br> - $8 x$ or $16 x 2.5$-inch SAS/SATA hot-swap drive bays <br> - 4 x or $8 \times 3.5$-inch SAS/SATA hot-swap drive bays <br> - Both $4 \times 3.5$-inch and 8 x 2.5 -inch SAS/SATA hot-swap drive bays <br> - Up to $8 \times 3.5$-inch simple-swap SATA drive bays <br> - 7x 3.5-inch simple-swap SATA drive bays $+1 \times 3.5$-inch simple-swap NVMe drive bay <br> In addition, the ST250 V2 supports two M. 2 drives installed in an M. 2 adapter which is installed in PCle slot. |
| Maximum internal storage | - 2.5-inch drives: <br> - 122.88TB using $16 \times 7.68$ TB 2.5 -inch SAS/SATA SSDs <br> - 28.8TB using $16 \times 1.8$ TB 2.5 -inch HDDs <br> - 3.5-inch drives: <br> - 144TB using $8 \times 18$ TB 3.5 -inch HDDs <br> - 7.68TB using 8x 960GB 3.5-inch SAS/SATA SSDs <br> - Intermix of SAS and SATA is supported. |
| Storage controller | - Onboard 6 Gb SATA for simple-swap drive configurations, using embedded Intel RSTe software RAID, supporting RAID $0,1,10,5,50$ <br> - 12 Gb SAS/SATA RAID adapters <br> - 12 Gb SAS/SATA host bus adapters |
| Optical drive bays | Two half-height 5.25 -inch bays for optical or tape drives. Supports SATA DVD-ROM or DVDRW (multiburner). Note: If the onboard SATA controller is used to connect the drive bays, then only 6 drives can be installed if an optical drive is installed. |
| Tape drive bays | Two half-height 5.25-inch bays for optical or tape drives. Support for one RDX drive. |
| Network interfaces | Two integrated Gigabit Ethernet 1000BASE-T ports (RJ-45) based on Broadcom BCM5720 embedded controller, one can be shared with XCC for systems management. Third dedicated Gigabit Ethernet port for XCC systems management. |
| PCI Expansion slots | Four PCle slots ( $1 \times$ PCle $4.0,3 \times$ PCle 3.0) as follows: <br> - Slot 1: PCle G3 $\times 4$ ( $\times 4$ slot, open-ended) 25 W full-height half-length <br> - Slot 2: PCle G4 x16 ( $\times 16$ slot, closed-ended) 75 W full-height half-length <br> - Slot 3: PCle G3 x4 (x4 slot, open-ended) 25W full-height half-length <br> - Slot 4: PCle G3 $\times 4$ ( $\times 8$ slot, closed-ended) 25 W full-height half-length <br> Note: Slot 2 is PCle Gen 4 with a Xeon processor, and PCle Gen 3 with a Pentium processor |
| Ports | - Front: <br> - One USB 3.2 G1 ( $5 \mathrm{~Gb} / \mathrm{s}$ ) port <br> - One USB 2.0 port (also for XClarity Mobile connectivity for local systems management) <br> - Rear: <br> - Four USB 3.2 G2 (10Gb/s) ports <br> - One VGA video <br> - One RJ-45 systems management <br> - Two RJ-45 GbE network ports <br> - One serial port <br> - Internal: <br> - One internal USB 3.0 port for RDX drive |


| Components | Specification |
| :---: | :---: |
| Cooling | Supports ASHRAE A2 environments. Certain configurations support ASHRAE A3. Two or three fixed system fans depending on the drive bay configuration. Additional fans attached to the processor heat sink and in the power supplies. |
| Power supply | Model dependent choices <br> - One fixed 250W power supply: 80 PLUS Platinum certified, ErP Lot 9 compliant <br> - One fixed 300W power supply: 80 PLUS Gold certified <br> - Two hot-swap 550W redundant power supplies, 80 PLUS Platinum certified, Energy Star and ErP Lot 9 compliant. |
| Hot-swap parts | Hard drives and 550W power supplies |
| Systems management | Operator panel with status LEDs. XClarity Controller embedded management, XClarity Administrator centralized infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. Optional XClarity Controller Advanced to enable remote control functions. |
| Security features | Power-on password, administrator's password, Trusted Platform Module, supporting TPM 2.0. Optional chassis intrusion switch. Padlock loop and Kensington cable slot and optional lockable front door for physical security. |
| Video | G200 graphics with 16 MB memory, integrated into the XClarity Controller. For use with local Administrator functions (not designed for workstation use). Maximum resolution is $1920 \times 1200$ 32 bpp at 60 Hz . |
| Operating systems supported | Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi. See the Operating systems section for specifics. |
| Limited warranty | Three-year or one-year (model dependent) customer-replaceable unit and onsite limited warranty with $9 \times 5$ next business day (NBD). |
| Service and support | Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications. |
| Dimensions | Width: 176 mm ( 6.9 in .), height: 444 mm (17.5 in.), depth: 578 mm (22.8 in.). SeePhysical and electrical specifications for details. |
| Weight | Fully configured: 23.6 kg ( 52 lb ) |

The ST250 V2 server is shipped with the following items:

- Documentation flyer
- Power cords (model and region dependent)
- Mouse \& keyboard (model dependent)


## Models

ThinkSystem ST250 V2 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Configure-to-order (CTO) models are used to create models with factory-integrated server customizations. For CTO models, two base CTO models are available for the ST250 V2 as listed in the following table, CTO1WW and CTOLWW:

- The CTO1WW base CTO model is for general business and is selectable by choosing General Purpose mode in DCSC.
- The CTOLWW base model is intended for High Performance Computing (HPC) and Artificial Intelligence (AI) configurations and solutions, including configurations for Lenovo Scalable

Infrastructure (LeSI), and is enabled using either the HPC \& AI LeSI Solutions mode or HPC \& AI Hardware mode in DCSC. CTOLWW configurations can also be built using System $x$ and Cluster Solutions Configurator (x-config).

Preconfigured server models may also be available for the ST250 V2, however these are region-specific; that is, each region may define their own server models, and not all server models are available in every region.

The following table lists the base CTO models of the ThinkSystem ST250 V2 server.
Table 3. Base CTO models

| Machine Type/Model <br> General purpose | Machine Type/Model <br> for HPC and AI | Description |
| :--- | :--- | :--- |
| 7D8FCTO1WW | 7D8FCTOLWW | ThinkSystem ST250 V2 - 3-year Warranty |
| 7D8GCTO1WW | 7D8GCTOLWW | ThinkSystem ST250 V2 - 1-year Warranty |

Models of the ST250 V2 are defined based on whether the server has 2.5 -inch drive bays at the front (called the 2.5 -inch chassis) or whether it has 3.5 -inch drive bays at the front (called the 3.5 -inch chassis). For models, the feature codes for these chassis bases are as listed in the following table.

Table 4. Chassis base feature codes

| Feature code | Description |
| :--- | :--- |
| B3YZ | ThinkSystem ST250 3.5" Chassis Base |
| B3Z0 | ThinkSystem ST250 2.5" Chassis Base |

The following tables list the available models, grouped by region.

- Models for Asia Pacific region
- Models for Australia and New Zealand
- Models for Brazil
- Models for EMEA countries
- Models for Hong Kong, Taiwan, Korea (HTK)
- Models for India
- Models for Japan
- Models for Latin American countries (except Brazil)
- Models for USA and Canada

Refer to the Specifications section for information about standard features of the server.

## Models for Asia Pacific region

The following table lists the models for the Asia Pacific region: Australia, Bangladesh, Brunei, Hong Kong, India, Japan, Korea, Sri Lanka, Malaysia, New Zealand, Philippines, Singapore, Thailand, Taiwan, Vietnam

Table 5. Models for Asia Pacific markets

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Standard models with a 3-year warranty (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8FA00YAP | Xeon E-2324G 4C 65W 3.1G | 1x 8GB | SATA | $4 \times 3.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | 1x DVD- RW | $\begin{aligned} & 300 \mathrm{~W} \\ & \text { fixed } \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA011AP | Xeon E-2324G 4C 65W 3.1G | 1x 8GB | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { RW } \end{array}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA00XAP | Xeon E-2356G <br> 6C 80W 3.2G | 1x 8GB | SATA | $\begin{aligned} & \hline 4 \times 3.5-\text { in HS / } \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{array}{\|l\|} \hline 1 \times \text { DVD- } \\ \text { RW } \\ \hline \end{array}$ | $\begin{aligned} & \hline 300 \mathrm{~W} \\ & \text { fixed } \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA010AP | $\begin{aligned} & \text { Xeon E-2356G } \\ & \text { 6C 80W 3.2G } \end{aligned}$ | 1x 8GB | SATA | $\begin{aligned} & \hline 8 \times 2.5-\text { in } \mathrm{HS} / \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{array}{\|l\|} \hline 1 \times \text { DVD- } \\ \text { RW } \\ \hline \end{array}$ | $\begin{array}{\|l} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | No | Std | Opt | Opt |
| 7D8FA00UAP | Xeon E-2386G 6C 95W 3.5G | 1x 8GB | SATA | 4x 3.5-in HS / Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { RW } \end{array}$ | $\begin{aligned} & 300 \mathrm{~W} \\ & \text { fixed } \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA00ZAP | Xeon E-2386G 6C 95W 3.5G | 1x 8GB | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { RW } \end{array}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | No | Std | Opt | Opt |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for Australia and New Zealand

AP models: Customers in Australia and New Zealand also have access to the Asia Pacific region models.

Table 6. Models for Australia and New Zealand

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I <br> Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TopSeller models with a 3-year model (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8FA028AU | Xeon E-2324G 4C 65W 3.1GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $4 \times 3.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{array}{\|l} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Opt | Opt |
| 7D8FA00PAU | Xeon E-2324G 4C 65 W 3.1 GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Ent | Yes | Yes |
| 7D8FA00RAU | Xeon E-2356G 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Yes | Yes |
| 7D8FA00AAU | Xeon E-2378G 8C 80W 2.8 GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Yes | Yes |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for Brazil

Table 7. Models for Brazil

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TopSeller models with 3-year warranty (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8FA02BBR | $\begin{aligned} & \text { Xeon E-2336 } \\ & 6 \mathrm{C} 65 \mathrm{~W} \\ & 2.9 \mathrm{GHz} \end{aligned}$ | 2 x 8GB | SATA | $\begin{aligned} & \hline 4 \times 3.5-\mathrm{in} \mathrm{HS} / \\ & 2 \times 2 \text { TB SATA } \\ & \text { HDD } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 2 \times 1 \mathrm{~Gb} \\ 5720 \end{array}$ | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \text { 2x 550W } \\ & \text { HS / } 2 \text { PT } \end{aligned}$ | Yes | Ent | Opt | Opt |
| 7D8FA02CBR | $\begin{aligned} & \hline \text { Xeon E-2336 } \\ & \text { 6C 65W } \\ & 2.9 G H z \end{aligned}$ | 2 x 8 GB | SATA | $\begin{aligned} & \text { 4x } 3.5 \text {-in HS / } \\ & 2 \times 2 T B \text { SATA } \\ & \text { HDD } \end{aligned}$ | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 2 \times 1 \mathrm{~Gb} \\ & 5720 \end{aligned}$ | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 2 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Opt |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for EMEA countries

Table 8. Models for EMEA countries

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Standard models with 3-year warranty (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8FA00CEA | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{GHz} \end{aligned}$ | 1x 8GB | SATA | $4 \times 3.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline \begin{array}{l} 250 \mathrm{~W} \\ \text { fixed } \end{array} \\ & \hline \end{aligned}$ | Yes | Std | Opt | Yes |
| 7D8FA00DEA | $\begin{aligned} & \hline \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{GHz} \end{aligned}$ | 1x 8GB | SATA | $4 \times 3.5-$ in SS / Open bay | Opt | Open | $\begin{aligned} & \text { 250W } \\ & \text { fixed } \end{aligned}$ | Yes | Std | Opt | Yes |
| 7D8FA00EEA | $\begin{aligned} & \hline \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $4 \times 3.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Yes |
| 7D8FA00LEA | $\begin{aligned} & \hline \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00FEA | $\begin{aligned} & \text { Xeon E-2324G } \\ & 4 \mathrm{C} 65 \mathrm{~W} 3.1 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $4 \times 3.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Yes |
| 7D8FA007EA | $\begin{aligned} & \hline \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | 4x 3.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Yes |
| 7D8FA008EA | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 4x 3.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Yes |
| 7D8FA009EA | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $4 \times 3.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \text { 250W } \\ & \text { fixed } \end{aligned}$ | Yes | Std | Opt | Yes |
| 7D8FA00NEA | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ \text { 16GB } \end{array}$ | SATA | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01KEA | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & \text { 65W 3.4G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | SATA | $\begin{aligned} & 8 \times 2.5-\text { in HS } / 2 x \\ & \text { 960GB } 5400 \\ & \text { PRO } \end{aligned}$ | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01SEA | Xeon E-2334 4C <br> 65W 3.4G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ \text { 16GB } \end{array}$ | SATA | 8x 2.5-in HS / Open bay | Opt | Open | $500 \mathrm{~W}$ fixed | Yes | Ent | Opt | Yes |
| 7D8FA01UEA | Xeon E-2334 4C $65 \mathrm{~W} 3.4 \mathrm{G}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ \text { 16GB } \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01VEA | Xeon E-2334 4C 65W 3.4G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | 4x 3.5-in HS / Open bay | Opt | Open | $500 \mathrm{~W}$ fixed | Yes | Ent | Opt | Yes |
| 7D8FA01WEA | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ \text { 16GB } \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01GEA | $\begin{aligned} & \text { Xeon E-2336 6C } \\ & \text { 65W 2.9G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & 9350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{aligned} & 8 \times 2.5 \text {-in HS / 1x } \\ & 1.2 \mathrm{~TB} 10 \mathrm{~K} \end{aligned}$ | Opt | Open | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \text { HS / } 2 \mathrm{PT} \end{array}$ | Yes | Ent | Opt | Yes |


| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 7D8F100AEA | Xeon E-2356G <br> 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS}$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00BEA | Xeon E-2356G <br> 6C 80W 3.2GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{array}{\|l} \hline 9350- \\ 8 \mathrm{i} \end{array}$ | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00QEA | Xeon E-2356G 6C 80W 3.2 GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00SEA | Xeon E-2356G 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 2 x \\ 16 G B \end{array}$ | $\begin{aligned} & \text { 5350- } \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} / 2 x$ 960GB MV SSD | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00TEA | Xeon E-2356G 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01LEA | Xeon E-2356G <br> 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01PEA | Xeon E-2356G <br> 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 G B \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01TEA | Xeon E-2356G 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{array}{\|l\|l\|} \hline 1 \times 750 \mathrm{~W} \\ \text { HS / } 2 \mathrm{TT} \end{array}$ | Yes | Ent | Opt | Yes |
| 7D8FA01XEA | Xeon E-2356G 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA026EA | Xeon E-2356G <br> 6 C 80 W 3.2 GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $\begin{aligned} & 8 \times 2.5-\text { in HS / } 2 x \\ & \text { 480GB } 5400 \\ & \text { PRO } \end{aligned}$ | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA027EA | Xeon E-2356G 6C 80W 3.2GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 G B \end{array}$ | SATA | $\begin{aligned} & 8 \times 2.5-\text { in HS / } 2 x \\ & 960 G B 5400 \\ & \text { PRO } \end{aligned}$ | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00HEA | $\begin{aligned} & \hline \text { Xeon E-2378 8C } \\ & 65 \mathrm{~W} 2.6 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 i \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01JEA | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & \text { 65W 2.6G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{aligned} & 8 \times 2.5-\mathrm{in} \mathrm{HS} / 2 x \\ & 960 \mathrm{~GB} 5400 \\ & \text { PRO } \end{aligned}$ | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01QEA | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & \text { 65W 2.6G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 G B \end{array}$ | SATA | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01REA | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & \text { 65W 2.6G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | 8x 2.5-in HS <br> Open bay | Opt | Open | $\begin{array}{\|l\|l\|} \hline 1 \times 750 \mathrm{~W} \\ \text { HS / } 2 \mathrm{TT} \end{array}$ | Yes | Ent | Opt | Yes |
| 7D8FA01YEA | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & \text { 65W 2.6G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01ZEA | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & \text { 65W 2.6G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA024EA | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & \text { 65W 2.6G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \text { 5350- } \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00JEA | Xeon E-2378G 8C 80 W 2.8 GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS}$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8F100BEA | Xeon E-2388G <br> 8C 95W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline \begin{array}{l} 5350- \\ 8 i \end{array} \\ & \hline \end{aligned}$ | $\begin{aligned} & 8 \times 2.5-\mathrm{in} \mathrm{HS} / 2 \mathrm{x} \\ & 960 \mathrm{~GB} 5400 \\ & \text { MAX } \end{aligned}$ | Opt | Open | $\begin{aligned} & \hline 2 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8F100CEA | Xeon E-2388G <br> 8C 95W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 i \end{aligned}$ | $\begin{aligned} & 8 \times 2.5-\text { in HS } / 2 x \\ & 960 G B 5400 \\ & \text { MAX } \end{aligned}$ | Opt | Open | $\begin{aligned} & \hline 2 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA00KEA | Xeon E-2388G <br> 8C 95W 3.2GHz | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS}$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01MEA | Xeon E-2388G 8C 95W 3.2G | $\begin{array}{\|l\|} \hline 1 x \\ 32 G B \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |
| 7D8FA01NEA | Xeon E-2388G <br> 8C 95W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 750 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{TT} \end{aligned}$ | Yes | Ent | Opt | Yes |


| Model | Intel <br> processors $\dagger$ | Memory | Drive <br> Contr | Drive bays <br> Drives | Add'I <br> Cards | DVD | Power <br> supply | Pwr <br> cord | Xcc | Sec. <br> door | Intru. <br> sw. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 7D8GA013EA | Xeon E-2388G <br> 8 C 95 W 3.2 GHz | 2 x <br> 32 GB | $5350-$ <br> 8 i | $8 \times 2.5-\mathrm{in} \mathrm{HS} \mathrm{/} \mathrm{2x}$ <br> 960 GB 5400 <br> PRO | Opt | Open | $1 \times 750 \mathrm{~W}$ | No | Ent | Opt | Opt |
| $\mathrm{HS} / 2 \mathrm{TT}$ |  |  |  |  |  |  |  |  |  |  |  |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for Hong Kong, Taiwan, Korea (HTK)

AP models: Customers in Hong Kong, Taiwan, and Korea also have access to the Asia Pacific region models.

Table 9. Models for Hong Kong, Taiwan, Korea (HTK)

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Standard models with 3-year warranty (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8FA025CN | $\begin{aligned} & \text { Xeon E-2314 } \\ & 4 \mathrm{C} \mathrm{65W} \\ & 2.8 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & \hline 9350- \\ & 8 \mathrm{i} \end{aligned}$ | 4x 3.5-in HS / $2 x$ 6TB HDD, $2 x$ 480GB 5300 | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 4 \times 1 \mathrm{~Gb} \\ 5719 \end{array}$ | Open | 2x 550W HS / 2 PT | Yes | Ent | Opt | Opt |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for India

AP models: Customers in India also have access to the Asia Pacific region models.

Table 10. Models for India

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| TopSeller models with 3-year warranty (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8FA01ASG | Xeon E-2324G <br> 4C 65W 3.1G | 1x 8GB | SATA | 4x 3.5-in HS / 1x 2TB SATA HDD | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA01BSG | Xeon E-2324G <br> 4C 65W 3.1G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | 4x 3.5-in HS / 1x 2TB SATA HDD | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA019SG | $\begin{aligned} & \text { Xeon E-2336 6C } \\ & 65 \mathrm{~W} 2.9 \mathrm{G} \end{aligned}$ | 1x 8GB | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA01CSG | Xeon E-2356G <br> 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Std | Opt | Opt |
| 7D8FA01DSG | Xeon E-2356G 6C 80W 3.2G | 1x 8GB | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Std | Opt | Opt |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for Japan

AP models: Customers in Japan also have access to the Asia Pacific region models.
Included with all Japan models:

- ThinkSystem Optical Wheel Mouse - USB
- ThinkSystem Preferred Pro II USB Keyboard - Japanese

Table 11. Models for Japan

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Standard models with 1-year warranty (machine type 7D8G) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8GA00AJP | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 9350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{aligned} & 8 \times 2.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00JJP | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{aligned} & \hline 4 \times 3.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ & \text { Open bay } \\ & \hline \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{array}{\|l\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \text { HS / } 2 \text { PT } \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00KJP | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $\begin{array}{\|l\|} \hline 8 \times 2.5-\text { in HS / } \\ \text { Open bay } \end{array}$ | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00PJP | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $\begin{aligned} & 4 \times 3.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & 1 \times 550 \mathrm{~W} \\ & \text { HS / } 2 \text { PT } \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00SJP | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 9350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{array}{\|l} \hline 4 \times 3.5-\text { in HS / } \\ \text { Open bay } \end{array}$ | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \\ \hline \end{array}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \text { HS / } 2 \text { PT } \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00XJP | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & \text { 65W 2.8G } \\ & \hline \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \\ & \hline \end{aligned}$ | $\begin{array}{\|l\|} \hline 8 \times 2.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ \text { Open bay } \\ \hline \end{array}$ | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00BJP | Xeon E-2324G 4C 65W 3.1G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & 9350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{aligned} & 8 \times 2.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ & \text { Openbay } \end{aligned}$ | Opt | $\begin{array}{\|l} \text { 1x DVD- } \\ \text { ROM } \end{array}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \text { HS / } 2 \text { PT } \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00EJP | $\begin{aligned} & \text { Xeon E-2324G } \\ & \text { 4C 65W 3.1G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 9350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{array}{\|l} \hline 4 \times 3.5-\text { in HS / } \\ \text { Open bay } \end{array}$ | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \\ \hline \end{array}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00LJP | $\begin{aligned} & \hline \text { Xeon E-2324G } \\ & 4 \mathrm{C} 65 \mathrm{~W} 3.1 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $\begin{aligned} & \hline 8 \times 2.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ & \text { Open bay } \\ & \hline \end{aligned}$ | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \\ \hline \end{array}$ | $\begin{array}{\|l} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00QJP | $\begin{aligned} & \hline \text { Xeon E-2324G } \\ & 4 \mathrm{C} 65 \mathrm{~W} 3.1 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $\begin{aligned} & \text { 4x 3.5-in HS / } \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00TJP | Xeon E-2324G 4 C 65 W 3.1 GHz | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | 8i | $\begin{aligned} & 4 \times 3.5-\text { in HS / } \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00YJ | $\begin{aligned} & \text { Xeon E-2324G } \\ & \text { 4C 65W 3.1G } \end{aligned}$ | $\begin{aligned} & 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{array}{\|l\|} \hline 8 \times 2.5-\text { in HS / } \\ \text { Open bay } \end{array}$ | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8G1003JP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & \text { 65W 3.4G } \end{aligned}$ | 1x 8GB | $\begin{array}{\|l} \hline 9350- \\ 8 i \end{array}$ | $\begin{aligned} & \hline 8 \times 2.5-\mathrm{in} \mathrm{HS} / \\ & 3 \times 600 \mathrm{~GB} 10 \mathrm{~K} \end{aligned}$ | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & 2 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8G1004JP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & \text { 65W 3.4G } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \begin{array}{l} 9350- \\ 8 i \end{array} \\ & \hline \end{aligned}$ | $\begin{aligned} & 8 \times 2.5-\text { in HS / } \\ & 3 \times 600 \mathrm{~GB} 10 \mathrm{~K} \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{array}{\|l} \hline 2 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA006JP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} \mathrm{3.4GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $\begin{aligned} & 4 \times 3.5-\text { in HS / } \\ & \text { Openbay } \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA008JP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 9350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{array}{\|l\|} \hline 8 \times 2.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ \text { Open bay } \\ \hline \end{array}$ | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \\ \hline \end{array}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00CJP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & \text { 65W 3.4G } \\ & \hline \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 9350- \\ & 8 \mathrm{i} \\ & \hline \end{aligned}$ | $\begin{array}{\|l\|} \hline 4 \times 3.5-\mathrm{in} \mathrm{HS} \mathrm{/} \\ \text { Open bay } \\ \hline \end{array}$ | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \\ \hline \end{array}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \text { HS } / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00GJP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{GHz} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $\begin{aligned} & \hline 8 \times 2.5-\mathrm{in} \mathrm{HS} / \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \text { HS / } 2 \text { PT } \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00UJP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ \text { 16GB } \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $\begin{array}{\|l} \hline 4 \times 3.5-\text { in HS / } \\ \text { Open bay } \end{array}$ | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \\ \hline \end{array}$ | $\begin{array}{\|l\|} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Adv | Yes | Opt |
| 7D8GA00VJP | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline \begin{array}{l} 5350- \\ 8 i \end{array} \\ & \hline \end{aligned}$ | $\begin{aligned} & 8 \times 2.5-\text { in } \mathrm{HS} / \\ & \text { Open bay } \end{aligned}$ | Opt | $\begin{aligned} & \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |


| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add' Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 7D8GA007JP | Xeon E-2374G 4C 80 W 3.7 GHz | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $\begin{array}{\|l\|} \hline 4 \times 3.5-\text { in HS / } \\ \text { Open bay } \\ \hline \end{array}$ | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA009JP | Xeon E-2374G 4C 80W 3.7G | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & 9350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00FJP | Xeon E-2374G 4C 80W 3.7G | $\begin{aligned} & 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & 9350- \\ & 8 i \end{aligned}$ | $\begin{array}{\|l\|} \hline 4 \times 3.5-\text { in HS / } \\ \text { Open bay } \end{array}$ | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \end{array}$ | $\begin{aligned} & \text { 1× } 550 \mathrm{~W} \\ & \text { HS / } 2 \text { PT } \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00HJP | $\begin{aligned} & \text { Xeon E-2374G } \\ & 4 \mathrm{C} 80 \mathrm{~W} 3.7 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \\ \hline \end{array}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00RJP | Xeon E-2374G <br> 4C 80W 3.7G | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & \begin{array}{l} 5350- \\ 8 i \end{array} \end{aligned}$ | $4 \times 3.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | $\begin{aligned} & \hline \text { 1x DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00WJP | $\begin{array}{\|l} \text { Xeon E-2374G } \\ \text { 4C 80W 3.7G } \end{array}$ | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \end{array}$ | $\begin{aligned} & \text { 1x 550W } \\ & \text { HS / } 2 \text { PT } \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00DJP | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & 65 \mathrm{~W} 2.6 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | 1x DVD- ROM | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00MJP | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & 65 \mathrm{~W} 2.6 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $4 \times 3.5 \text {-in HS / }$ Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \end{array}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00ZJP | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & 65 \mathrm{~W} 2.6 \mathrm{GHz} \end{aligned}$ | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ <br> Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \end{array}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA00NJP | Xeon E-2388G 8C 95W 3.2GHz | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $4 \times 3.5 \text {-in HS / }$ <br> Open bay | Opt | $\begin{aligned} & \hline 1 \times \text { DVD- } \\ & \text { ROM } \end{aligned}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |
| 7D8GA010JP | Xeon E-2388G <br> 8C 95W 3.2G | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { ROM } \end{array}$ | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Adv | Yes | Opt |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for Latin American countries (except Brazil)

Table 12. Models for the Latin America market (excludes Brazil)

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Additional Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru. sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Standard models with 3-year warranty (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8F1006LA | $\begin{aligned} & \text { Xeon E-2314 4C } \\ & 65 \mathrm{~W} 2.8 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 4x 3.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Opt |
| 7D8F1002LA | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | 4x 3.5-in HS / Open bay | $\begin{array}{\|l\|} \hline 1 \times 2 \times 1 \mathrm{~Gb} \\ 5720 \\ \hline \end{array}$ | Open | $\begin{array}{\|l} \hline 1 \times 550 \mathrm{~W} \\ \mathrm{HS} / 2 \mathrm{PT} \end{array}$ | Yes | Ent | Opt | Opt |
| 7D8F1001LA | $\begin{aligned} & \text { Xeon E-2336 6C } \\ & 65 \mathrm{~W} 2.9 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $4 \times 3.5-i n \mathrm{HS} /$ Open bay | $\begin{aligned} & \hline 1 \times 2 \times 1 \mathrm{~Gb} \\ & 5720 \end{aligned}$ | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Opt |
| 7D8F1005LA | Xeon E-2356G <br> 6C 80W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{array}{\|l} \hline 5350- \\ 8 \mathrm{i} \end{array}$ | 8x 3.5-in HS / Open bay | $\begin{array}{\|l\|} \hline 1 \times 2 \times 1 \mathrm{~Gb} \\ 5720 \end{array}$ | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Adv | Opt | Opt |
| 7D8F1007LA | Xeon E-2386G 6C 95W 3.5G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | $8 \times 3.5-$ in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Opt |
| 7D8F1000LA | Xeon E-2388G 8C 95W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 32 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 8x 3.5-in HS / Open bay | $\begin{array}{\|l\|} \hline 1 \times 2 \times 1 \mathrm{~Gb} \\ 5720 \end{array}$ | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Opt |
| 7D8F1004LA | Xeon E-2388G 8C 95W 3.2G | $\begin{aligned} & \hline 1 \mathrm{x} \\ & 16 \mathrm{~GB} \end{aligned}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 8x 3.5-in HS / Open bay | $\begin{array}{\|l} \hline 1 \times 2 \times 1 \mathrm{~Gb} \\ 5720 \end{array}$ | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | No | Adv | Opt | Opt |
| 7D8F1008LA | Xeon E-2388G 8C 95W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ \text { 16GB } \end{array}$ | $\begin{aligned} & 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 8x 3.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Opt |
| 7D8F1009LA | Xeon E-2388G <br> 8C 95W 3.2G | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | $\begin{aligned} & \hline 5350- \\ & 8 \mathrm{i} \end{aligned}$ | 8x 2.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Std | Opt | Opt |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Models for USA and Canada

Table 13. Models for USA and Canada

| Model | Intel processors $\dagger$ | Memory | Drive Contr | Drive bays Drives | Add'I Cards | DVD | Power supply | Pwr cord | XCC | Sec. door | Intru sw. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Standard models with 3-year warranty (machine type 7D8F) |  |  |  |  |  |  |  |  |  |  |  |
| 7D8FA00WNA | $\begin{aligned} & \text { Xeon E-2334 4C } \\ & 65 \mathrm{~W} 3.4 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | $4 \times 3.5-i n \mathrm{HS} /$ Open bay | Opt | Open | 300W fixed | Yes | Ent | Opt | Opt |
| 7D8FA012NA | $\begin{aligned} & \text { Xeon E-2336 6C } \\ & 65 \mathrm{~W} 2.9 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ 16 \mathrm{~GB} \end{array}$ | SATA | 4x 3.5-in HS / Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Opt |
| 7D8FA01HNA | $\begin{aligned} & \text { Xeon E-2336 6C } \\ & \text { 65W 2.9G } \end{aligned}$ | 1x 8GB | SATA | 4x 3.5-in HS / Open bay | Opt | $\begin{array}{\|l\|} \hline \text { 1x DVD- } \\ \text { RW } \end{array}$ | $\begin{array}{\|l} \hline \text { x 5 50W } \\ \text { HS / } 2 \text { PT } \end{array}$ | Yes | Ent | Opt | Opt |
| 7D8FA013NA | $\begin{aligned} & \text { Xeon E-2378 8C } \\ & 65 \mathrm{~W} 2.6 \mathrm{G} \end{aligned}$ | $\begin{array}{\|l\|} \hline 1 \mathrm{x} \\ \text { 16GB } \end{array}$ | SATA | $8 \times 2.5-\mathrm{in} \mathrm{HS} /$ Open bay | Opt | Open | $\begin{aligned} & \hline 1 \times 550 \mathrm{~W} \\ & \mathrm{HS} / 2 \mathrm{PT} \end{aligned}$ | Yes | Ent | Opt | Opt |

$\dagger$ Processor detail: Model, number of cores, TDP, core frequency

* A maximum of 6 drives can be installed in configurations that have the onboard SATA controller and have an internal optical drive installed.


## Processors

The ST250 V2 supports one processor from the following Intel product families:

- Intel Xeon E-2300 Series processors ("Rocket Lake-E")
- Intel Pentium G6405, G6505 and G6605 processors ("Comet Lake Refresh")

All supported processors have the following characteristics:

- LGA 1200 socket (Socket H5)
- 14 nm semiconductor process technology
- Direct Media Interface (DMI) 3.0 connection to PCH
- Xeon E-2300: DMI $3.0 \times 8$ connection
- Pentium: DMI $3.0 \times 4$ connection
- Two DDR4 memory channels
- Support for ECC memory
- Xeon E-2300: Up to 3200 MHz memory speed
- Pentium: Up to 2666 MHz memory speed
- PCle lanes:
- Xeon E-2300: 20x PCle 4.0 I/O lanes
- Pentium: 16x PCle 3.0 I/O lanes

The following table lists the supported processors.
Integrated graphics and management: Xeon processors with a G suffix include integrated graphics, however, this functionality is not used in the ST250 V2. Instead, graphics support is provided by XClarity Controller (XCC), or by an GPU add-in card. Similarly system management of the ST250 V2 is handled by XCC and as a result, the AMT management processor is disabled.

Table 14. Supported processors

| Feature code | Intel model | TDP | Cores / threads | HT | Core speed / Max TB | Cache | Max memory speed | VT | Intel SGX / <br> Enclave† |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Intel Pentium processors |  |  |  |  |  |  |  |  |  |
| BMDN | G6405 | 58W | $2 / 4$ | Yes | 4.1 GHz / No TB | 4 MB | 2666 MHz | Yes | No |
| BMDQ | G6405T | 35W | $2 / 4$ | Yes | $3.5 \mathrm{GHz} / \mathrm{No}$ TB | 4 MB | 2666 MHz | Yes | No |
| BMDM | G6505 | 58W | $2 / 4$ | Yes | $4.2 \mathrm{GHz} / \mathrm{No}$ TB | 4 MB | 2666 MHz | Yes | No |
| BMDP | G6505T | 35W | $2 / 4$ | Yes | $3.6 \mathrm{GHz} / \mathrm{No} \mathrm{TB}$ | 4 MB | 2666 MHz | Yes | No |
| BMDL | G6605 | 58W | $2 / 4$ | Yes | 4.3 GHz / No TB | 4 MB | 2666 MHz | Yes | No |
| Intel Xeon E processors |  |  |  |  |  |  |  |  |  |
| BMDD | E-2314 | 65W | $4 / 4$ | No | 2.8 GHz / 4.5 GHz | 8 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDK | E-2324G | 65W | $4 / 4$ | No | $3.1 \mathrm{GHz} / 4.6 \mathrm{GHz}$ | 8 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDC | E-2334 | 65W | 4 / 8 | Yes | $3.4 \mathrm{GHz} / 4.8 \mathrm{GHz}$ | 8 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDB | E-2336 | 65W | $6 / 12$ | Yes | $2.9 \mathrm{GHz} / 4.8 \mathrm{GHz}$ | 12 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDH | E-2356G | 80W | $6 / 12$ | Yes | $3.2 \mathrm{GHz} / 5.0 \mathrm{GHz}$ | 12 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDJ | E-2374G | 80W | 4 / 8 | Yes | $3.7 \mathrm{GHz} / 5.0 \mathrm{GHz}$ | 8 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDA | E-2378 | 65W | 8/16 | Yes | $2.6 \mathrm{GHz} / 4.8 \mathrm{GHz}$ | 16 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDF | E-2378G | 80W | $8 / 16$ | Yes | $2.8 \mathrm{GHz} / 5.1 \mathrm{GHz}$ | 16 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDG | E-2386G | 95W | $6 / 12$ | Yes | $3.5 \mathrm{GHz} / 5.1 \mathrm{GHz}$ | 12 MB | 3200 MHz | Yes | Yes / 512 MB |
| BMDE | E-2388G | 95W | 8/16 | Yes | 3.2 GHz / 5.1 GHz | 16 MB | 3200 MHz | Yes | Yes / 512 MB |

$\dagger$ Intel SGX with Intel SPS / Intel SGX Enclave Page Cache size.

## UEFI operating modes

The ST250 V2 offers preset operating modes that affect energy consumption and performance. These modes are a collection of predefined low-level UEFI settings that simplify the task of tuning the server to suit your business and workload requirements.

The following table lists the feature codes that allow you to specify the mode you wish to preset in the factory for CTO orders.

Table 15. UEFI operating mode presets in DCSC

| Feature code | Description |
| :--- | :--- |
| BFYB | Operating mode selection for: "Maximum Performance Mode" |
| BFYE | Operating mode selection for: "Efficiency - Favoring Performance Mode" |

The preset modes for the ST250 V2 are as follows:

- Maximum Performance Mode (feature BFYB): Achieves maximum performance but with higher power consumption and lower energy efficiency.
- Efficiency Favoring Performance Mode (feature BFYE): Maximize the performance/watt efficiency with a bias towards performance. This is the favored mode for Energy Star certification, for example.


## Memory options

The ST250 V2 supports Lenovo TruDDR4 memory. TruDDR4 memory uses the highest-quality components sourced from Tier 1 DRAM suppliers and only memory that meets strict requirements is selected. It is compatibility-tested and tuned to maximize performance and reliability.

TruDDR4 memory has a unique signature programmed into the DIMM, which enables ThinkSystem servers to verify whether the memory installed is qualified and supported. From a service and support standpoint, TruDDR4 memory automatically assumes the system's warranty, and service and support provided worldwide.

The processors have 2 memory channels and support 2 DIMMs per channel. The ST250 V2 supports 1, 2 or 4 DIMMs. 3 installed DIMMs is not supported. All DIMMs installed must be identical.

DIMMs installed in the ST250 V2 operate at a speed based on the processor installed, the number of DIMMs installed, and whether the DIMMs are single-rank or dual-rank:

- When connected to a Xeon processor:
- 1 or 2 DIMMs: 3200 MHz
- 4 single-rank (1R) DIMMs: 3200 MHz
- 4 dual-rank (2R) DIMMs: 2933 MHz
- When connected to a Pentium processor:
- 1 or 2 DIMMs (1 DPC): 2666 MHz
- 4 single-rank (1R) DIMMs: 2666 MHz
- 4 dual-rank (2R) DIMMs: 2400 MHz

The following table lists the memory options that are available for the ST250 V2 server.
Table 16. Tatlow memory section

| Part number | Feature code | Description | Maximum <br> supported |
| :--- | :--- | :--- | :--- |
| 4X77A77494 | BMDV | ThinkSystem 8GB TruDDR4 3200 MHz (1Rx8, 1.2V) ECC UDIMM | 4 |
| 4X77A77495 | BMDW | ThinkSystem 16GB TruDDR4 3200 MHz (2Rx8, 1.2V) ECC <br> UDIMM | 4 |
| 4X77A77496 | BMT4 | ThinkSystem 32GB TruDDR4 3200MHz (2Rx8, 1.2V) ECC UDIMM | 4 |

The following rules apply when selecting the memory configuration:

- The server only supports UDIMMs
- Quantities of 1,2 or 4 DIMMs are supported. 3 DIMMs is not supported.
- All DIMMs must be identical (same part number)
- When installing two DIMMs, install one in each memory channel (DIMM slots 1 and 3 )
- Memory mirroring and memory rank sparing are not supported


## Internal storage

The ST250 V2 supports 2.5-inch hot-swap, 3.5-inch hot-swap, and 3.5-inch simple-swap drives in a variety of drive bay configurations.

In this section:

- Drive bays and backplanes
- Storage configurations
- Field upgrades
- RAID flash power module (supercap) support
- M. 2 drives
- SED encryption key management with ISKLM


## Drive bays and backplanes

The server supports up to 16 drive bays:

- Up to $16 x$ 2.5-inch hot-swap drives
- Up to $8 \times 3.5$-inch drives hot-swap drives
- Up to $8 x 3.5$-inch simple-swap drives
- A combination of 8 x 2.5 " hot-swap and 4 x 3.5 " hot-swap drives.

Drive bays required: It is not supported to configure the ST250 V2 server without drive bays.
Hot-swap configurations SAS and SATA drives depending on the controller used (the onboard SATA controller supports SATA drives only). Simple-swap drive configurations support SATA drives only, or SATA drives plus a single NVMe drive.

NVMe support: NVMe support is limited to the 3.5-inch simple swap drive configuration and requires an Intel Xeon processor. Pentium processors installed in the ST250 V2 do not have enough lanes to support an NVMe drive.

The different drive bay configurations supported are shown in the following figure. The server also supports two M. 2 drives, installed in a PCle slot as shown in the internal view of the server.


Figure 6. Internal drive bay configurations
The following table lists the available hot-swap and simple-swap backplanes for configure-to-order builds. See the Field upgrades section for option part numbers.

Table 17. Backplanes for CTO orders

| Feature <br> code | Description | Maximum <br> supported | Purpose |
| :--- | :--- | :--- | :--- | B41E | ThinkSystem ST250 V2 2.5" SATA/SAS 8-Bay <br> Backplane Kit | 2 | 2.5 -inch hot-swap backplane |  |
| :--- | :--- | :--- | :--- |
| B41D | ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay <br> Backplane Kit | 2 | 3.5 -inch hot-swap backplane |
| BN14 | ThinkSystem ST250 3.5" SS Bracket Plate Kit for <br> HDD No. 0-3 v2 | 1 | Lower simple-swap backplane with 4 <br> drives |
| BMPZ | ThinkSystem ST250 4x3.5" SS Bracket Plate Kit for <br> HDD No. 4-5 v2 | 1 | Upper simple-swap backplane with 2 <br> drives (use with optical drives installed) |
| BN15 | ThinkSystem ST250 4x3.5" SS Bracket Plate Kit for <br> HDD No. 4-7 v2 | 1 | Upper simple-swap backplane with 4 <br> drives |
| BMT8 | ThinkSystem ST250 V2 3.5" 3xSATA/1xNVMe 4- <br> Bay Simple Swap Top Bracket Plate Kit | 1 | Upper simple-swap backplane with 4 <br> drives (3x SATA, 1x NVMe) |

Configuration notes regarding drive bays with the use of the onboard SATA controller:

- The onboard SATA controller has 8 SATA ports, which means that up to 8 SATA drives can be connected provided no optical drive is installed.
- If the onboard SATA controller is used and an optical drive is installed, then at most 6 drives can be installed. The other 2 onboard SATA ports are reserved for optical drives, even if only 1 optical drive is installed.
- The ST250 V2 also supports the use of a RAID adapter or SAS host bus adapter to support the use of SAS drives plus offering higher performance features and RAID functionality. Configurations guidance is as follows:
- For 8-bay configurations, use one of the supported 8-port RAID adapters or HBA
- For 12-bay or 16-bay configurations, use one of the supported 16-port RAID adapters
- It is supported to add 1 or 2 optical drives to a RAID adapter/HBA configuration


## Storage configurations

The following table lists the supported combinations of drives, optical drives, drive backplanes and storage controllers.

## Table 18. Storage configurations

| Cfg | Description | Base | Drive tray | Drive support | ODD suppt | Backplanes (features) | Controller | Extra cables (derived feature or option kit) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | $\begin{aligned} & 4 \times 3.5 " \text { SS SATA to OB } \\ & \text { SATA } \end{aligned}$ | $\begin{aligned} & 3.5- \\ & \text { inch } \end{aligned}$ | Simpleswap | SATA | Yes | 4x SATA SS to Onboard (BN14) | Onboard SATA | None |
| 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | $\begin{array}{\|l\|} \hline 3.5- \\ \text { inch } \end{array}$ | Simpleswap | SATA | No | $\begin{aligned} & \text { 4+4x SATA SS to } \\ & \text { Onboard (BN14, BN15) } \end{aligned}$ | Onboard SATA | None |
| 3 | $7 \times 3.5 \text { " SS SATA + 1x }$ NVMe to OB SATA | $\begin{aligned} & 3.5- \\ & \text { inch } \end{aligned}$ | Simpleswap | SATA + NVMe | No | 7x SATA + 1x NVMe SS to OB (BN14, BMT8) | Onboard SATA+NVMe | None |
| 4 | 6x 3.5" SS to OB SATA with ODD | $\begin{aligned} & 3.5- \\ & \text { inch } \end{aligned}$ | Simpleswap | SATA | Yes | 4+2x SATA SS to Onboard (BN14, BMPZ) | Onboard SATA | None |
| 5 | $4 \times 3.5$ " HS to OB SATA | $\begin{array}{\|l\|} \hline 3.5- \\ \text { inch } \end{array}$ | Hotswap | SATA | Yes | 4x 3.5-inch SAS/SATA <br> HS (B41D) | Onboard SATA | Onboard SATA to BP (B41U) |
| 6-1 | 4x 3.5 " HS to HW RAID X350 | $\begin{array}{\|l\|} 3.5- \\ \text { inch } \end{array}$ | Hotswap | SAS, SATA | Yes | $\begin{aligned} & \text { 4x } 3.5 \text {-inch SAS/SATA } \\ & \text { HS (B41D) } \end{aligned}$ | $\begin{aligned} & \text { RAID/HBA } \\ & \text { X350-8i } \end{aligned}$ | Gen3 RAID to BP (B41Y) |
| 7 | $8 \times 3.5$ " HS to OB SATA | $\begin{aligned} & 3.5- \\ & \text { inch } \end{aligned}$ | Hotswap | SATA | No | 4+4x 3.5-inch SAS/SATA HS (B41D, B41D) | Onboard SATA | Onboard SATA multi to BP (BPR3) |
| 8-1 | $\begin{aligned} & 8 \times 3.5 \text { " HS to HW RAID } \\ & \text { X350 } \end{aligned}$ | $\begin{aligned} & 3.5- \\ & \text { inch } \end{aligned}$ | Hotswap | SAS, SATA | Yes | $\begin{aligned} & \text { 4+4x 3.5-inch } \\ & \text { SAS/SATA HS (B41D, } \\ & \text { B41D) } \end{aligned}$ | $\begin{aligned} & \text { RAID 9350-8i } \\ & \text { 2GB } \end{aligned}$ | 2x Gen3 RAID to BP (B41Y, B41X) |
| 9-1 | $8 \times 2.5 \mathrm{HS}$ to OB SATA without ODD | $\begin{aligned} & 2.5- \\ & \text { inch } \end{aligned}$ | Hotswap | SATA | No | $\begin{aligned} & 8 \times 2.5 \text {-inch SAS/SATA } \\ & \text { HS (B41E) } \end{aligned}$ | Onboard SATA | Onboard SATA multi to BP (BPR3) |
| 9-2 | 8x 2.5" HS to OB SATA with ODD | $\begin{aligned} & 2.5- \\ & \text { inch } \end{aligned}$ | Hotswap | SATA | Yes | 8x 2.5-inch SAS/SATA HS (2 bays unused) (B41E) | Onboard SATA | Onboard SATA multi to BP (BPR3) |
| 10-1 | $\begin{aligned} & 8 \times 2.5 " \text { HS to HW RAID } \\ & \text { X } 350 \end{aligned}$ | $\begin{aligned} & 2.5- \\ & \text { inch } \end{aligned}$ | Hotswap | SAS, SATA | Yes | $\begin{aligned} & 8 \times 2.5 \text {-inch SAS/SATA } \\ & \text { HS (B41E) } \end{aligned}$ | $\begin{aligned} & \text { RAID/HBA } \\ & \text { X350-8i } \end{aligned}$ | 2x Gen3 RAID to BP (B41Y, B41Z) |
| 11-1 | $\begin{aligned} & 16 \times 2.5 " \mathrm{HS} \text { to HW } \\ & \text { RAID } \times 350-16 \mathrm{i} \end{aligned}$ | $\begin{aligned} & 2.5- \\ & \text { inch } \end{aligned}$ | Hotswap | $\begin{aligned} & \text { SAS, } \\ & \text { SATA } \end{aligned}$ | Yes | 8+8x 2.5-inch SAS/SATA HS (B41E, B41E) | $\begin{aligned} & \text { RAID/HBA } \\ & \text { X350-16i } \end{aligned}$ | 4x Gen3 RAID to BP (B41Y, B41Z, B41X, B4LK) |
| 11-2 | 16x 2.5" HS to HW RAID $2 x$ X350-8i | $\begin{array}{\|l\|} \hline 2.5- \\ \text { inch } \end{array}$ | Hotswap | SAS, SATA | Yes | $\begin{aligned} & \text { 8+8x 2.5-inch } \\ & \text { SAS/SATA HS (B41E, } \\ & \text { B41E) } \end{aligned}$ | $\begin{array}{\|l\|} \hline 2 x \\ \text { RAID/HBA } \\ \text { X350-8i } \end{array}$ | 4x Gen3 RAID to BP (B41Y, B41Z, B41X, B4LK) |
| 12-1 | $8 \times 2.5$ " HS + 4x $3.5^{\prime \prime}$ HS to HW RAID X3508i | $\begin{aligned} & 2.5- \\ & \text { inch } \end{aligned}$ | Hotswap | SAS, SATA | Yes | $4 \times 3.5$-inch $+8 \times 2.5-$ inch SAS/SATA HS (B41D, B41E) | $\begin{aligned} & \hline \text { RAID X350- } \\ & 16 \mathrm{i} \end{aligned}$ | 3x Gen3 RAID to BP (B41Y, B41X, B4LK) |
| 12-2 | $8 \times 2.5 " H S+4 \times 3.5 "$ <br> HS to HW RAID 2x <br> X350-8i | $\begin{aligned} & 2.5- \\ & \text { inch } \end{aligned}$ | Hotswap | SAS, SATA | Yes | $4 \times 3.5$-inch $+8 \times 2.5-$ inch SAS/SATA HS (B41D, B41E) | $\begin{array}{\|l\|} \hline 2 x \\ \text { RAID/HBA } \\ \text { X350-8i } \end{array}$ | 3x Gen3 RAID to BP (B41Y, B41X, B4LK) |

## Field upgrades

The following table lists the supported field upgrades. The table refers to configurations which are described in the Storage configurations section.

Note: If upgrading to a configuration with a RAID adapter or HBA, you will need to order the adapter in addition to the backplanes and cables listed.

Table 19. Field upgrades

| Starting configuration |  | Target configuration |  | Options needed (Backplanes and cables) |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $4 \times 3.5$ " SS SATA to OB SATA | 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | - 4XF7A81459, ThinkSystem ST250 V2 3.5" SATA 8-Bay X30/X40 Simple Swap Bracket Kit |
| 1 | $\begin{aligned} & \hline 4 \times 3.5 " \text { SS SATA to } \\ & \text { OB SATA } \end{aligned}$ | 3 | $\begin{aligned} & 7 \times 3.5 " \text { SS SATA }+1 x \\ & \text { NVMe to OB SATA } \end{aligned}$ | - 4XF7A81460, ThinkSystem ST250 V2 7x3.5" Simple Swap SATA + 1x 3.5" Simple Swap NVMe Backplane Kit |
| 1 | $4 \times 3.5$ " SS SATA to OB SATA | 4 | $\begin{aligned} & \hline 6 \times 3.5 " \mathrm{SS} \text { to OB } \\ & \text { SATA with ODD } \end{aligned}$ | - 4XF7A81459, ThinkSystem ST250 V2 3.5" SATA 8-Bay X30/X40 Simple Swap Bracket Kit |
| 1 | $\begin{aligned} & \hline 4 \times 3.5 " \text { SS SATA to } \\ & \text { OB SATA } \end{aligned}$ | 5 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 1 | $4 \times 3.5$ " SS SATA to OB SATA | 6 | $4 \times 3.5 " \mathrm{HS}$ to HW RAID | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 1 | $4 \times 3.5$ " SS SATA to OB SATA | 7 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - 2x 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |
| 1 | $\begin{aligned} & \text { 4x 3.5" SS SATA to } \\ & \text { OB SATA } \end{aligned}$ | 8 | $\begin{array}{\|l} 8 \times 3.5 " \mathrm{HS} \text { to HW } \\ \text { RAID } \end{array}$ | - 2x 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |
| 1 | $\begin{aligned} & \text { 4x } 3.5 \text { " SS SATA to } \\ & \text { OB SATA } \end{aligned}$ | 12 | $\begin{aligned} & 8 \times 2.5^{\prime \prime} \text { HS }+4 \times 3.5^{\prime \prime} \\ & \text { HS to HW RAID } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit <br> - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | 3 | $\begin{aligned} & 7 \times 3.5 " \text { SS SATA + } 1 x \\ & \text { NVMe to OB SATA } \end{aligned}$ | - 4XF7A81460, ThinkSystem ST250 V2 7x3.5" Simple Swap SATA + 1x $3.5^{\prime \prime}$ Simple Swap NVMe Backplane Kit |
| 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | 4 | $6 \times 3.5$ " SS to OB SATA with ODD | - 4XF7A81459, ThinkSystem ST250 V2 3.5" SATA 8-Bay X30/X40 Simple Swap Bracket Kit |
| 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | 5 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | 6 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 2 | $8 \times 3.5$ " SS SATA to OB SATA without ODD | 7 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - $2 \times 4$ XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |
| 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | 8 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - $2 x$ 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |
| 2 | $8 \times 3.5 "$ SS SATA to OB SATA without ODD | 12 | $8 \times 2.5^{\prime \prime} \mathrm{HS}+4 \times 3.5^{\prime \prime}$ <br> HS to HW RAID | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit <br> - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 3 | $7 \times 3.5 \text { " SS SATA + 1x }$ <br> NVMe to OB SATA | 4 | 6x 3.5 " SS to OB SATA with ODD | - 4XF7A81459, ThinkSystem ST250 V2 3.5" SATA 8-Bay X30/X40 Simple Swap Bracket Kit |
| 3 | $7 \times 3.5 \text { " SS SATA + 1x }$ <br> NVMe to OB SATA | 5 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 3 | $7 \times 3.5$ SS SATA + 1x NVMe to OB SATA | 6 | $\begin{aligned} & 4 \times 3.5 \mathrm{~F} \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 3 | $7 \times 3.5$ SS SATA + 1x NVMe to OB SATA | 7 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - 2x 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |
| 3 | $7 \times 3.5$ SS SATA + 1x NVMe to OB SATA | 8 | $\begin{aligned} & 8 \times 3.5^{\prime \prime} \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 2x 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |


|  | ing configuration | Target configuration |  | Options needed (Backplanes and cables) |
| :---: | :---: | :---: | :---: | :---: |
| 3 | $7 \times 3.5 \text { " SS SATA + 1x }$ <br> NVMe to OB SATA | 12 | $8 \times 2.5 \text { " HS + 4x 3.5" }$ <br> HS to HW RAID | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit <br> - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 4 | $6 \times 3.5 " \mathrm{SS}$ to OB SATA with ODD | 5 | 4x 3.5 " HS to OB SATA | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 4 | $6 \times 3.5$ " SS to OB SATA with ODD | 6 | $\begin{aligned} & \hline 4 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 4 | $6 \times 3.5$ " SS to OB SATA with ODD | 7 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - 2x 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |
| 4 | $6 \times 3.5$ " SS to OB SATA with ODD | 8 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 2x 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4Bay X30/X40 Backplane Kit |
| 4 | $6 \times 3.5$ " SS to OB SATA with ODD | 12 | $8 \times 2.5 \mathrm{HS}+4 \times 3.5 \mathrm{~F}$ <br> HS to HW RAID | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit <br> - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 5 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 6 | $\begin{aligned} & \hline 4 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4X97A81466, ThinkSystem ST250 V2 X30/X40 RAID Cable Kit |
| 5 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 7 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 5 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 8 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 5 | $\begin{aligned} & 4 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 12 | $8 \times 2.5 \mathrm{HS}+4 \times 3.5 \mathrm{~F}$ <br> HS to HW RAID | - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 6 | 4x 3.5 " HS to HW RAID | 8 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4XF7A81457, ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit |
| 6 | $\begin{aligned} & 4 \times 3.5 \text { " HS to HW } \\ & \text { RAID } \end{aligned}$ | 12 | $8 \times 2.5 \mathrm{HS}+4 \times 3.5 \mathrm{\prime} \mathrm{\prime}$ <br> HS to HW RAID | - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 7 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 8 | $\begin{aligned} & \hline 8 \times 3.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4X97A81466, ThinkSystem ST250 V2 X30/X40 RAID Cable Kit |
| 7 | $\begin{aligned} & 8 \times 3.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 12 | $8 \times 2.5^{\mathrm{n}} \mathrm{HS}+4 \times 3.5 \mathrm{c}$ <br> HS to HW RAID | - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 8 | 8x 3.5" HS to HW RAID | 12 | $8 \times 2.5 \mathrm{HS}+4 \times 3.5 \mathrm{~F}$ <br> HS to HW RAID | - 4XF7A84197, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) |
| 9 | $\begin{aligned} & 8 \times 2.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 10 | $\begin{aligned} & \hline 8 \times 2.5 " \mathrm{HS} \text { to } \mathrm{HW} \\ & \text { RAID } \end{aligned}$ | - 4X97A81466, ThinkSystem ST250 V2 X30/X40 RAID Cable Kit |
| 9 | $\begin{aligned} & 8 \times 2.5 " \mathrm{HS} \text { to OB } \\ & \text { SATA } \end{aligned}$ | 11 | $\begin{aligned} & 16 \times 2.5 \mathrm{HS} \text { to HW } \\ & \text { RAID } \end{aligned}$ | - 4XF7A81461, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 8-15) |
| 10 | 8x 2.5" HS to HW RAID | 11 | $16 \times 2.5 \mathrm{HS} \text { to } \mathrm{HW}$ RAID | - 4XF7A81461, ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 8-15) |

The following table lists the contents of the option part numbers for field upgrades.

Table 20. Upgrade options table

| Part number | Description |
| :---: | :---: |
| Backplane kits |  |
| 4XF7A81461 | ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 8-15) <br> - 1x 8x2.5" SATA/SAS hot-swap backplane <br> - $1 x$ cage assembly <br> - $10 x$ signal and power cables <br> - $8 x 2.5$ " drive bay fillers <br> - $1 x$ front fan and cable <br> - $2 x$ supercap holders (adapter-specific) |
| 4XF7A84197 | ThinkSystem ST250 V2 8x2.5" Hot Swap SAS/SATA Backplane Kit for X350/X40 RAID/HBA (Drive Bay 4-11) (for hybrid 2.5" $+3.5^{\prime \prime}$ configuration) <br> - $1 \times 8 \times 2.5$ " SATA/SAS hot-swap backplane <br> - $1 \times 8 \times 2.5^{\prime \prime}$ cage assembly for a hybrid 2.5 " $+3.5^{\prime \prime}$ configuration <br> - $10 x$ signal and power cables <br> - $8 x 2.5$ drive bay fillers <br> - 1x front fan and cable <br> - $2 x$ supercap holders (adapter-specific) |
| 4XF7A81457 | ThinkSystem ST250 V2 3.5" SATA/SAS 4-Bay X30/X40 Backplane Kit <br> - $1 \times 4 \times 3.5$ " SATA/SAS hot-swap backplane <br> - $1 x$ cage assembly <br> - $8 x$ signal and power cables <br> - $4 \times 3.5$ " drive bay fillers <br> - $1 x$ front fan and cable <br> - $2 x$ supercap holders (adapter-specific) |
| 4XF7A81459 | ThinkSystem ST250 V2 3.5" SATA 8-Bay X30/X40 Simple Swap Bracket Kit <br> - Upper simple-swap backplane + cable with 2 SATA connections (use with optical drive) <br> - Upper simple-swap backplane + cable with 4 SATA connections <br> - $1 \times$ cage assembly for $8 \times 3.5$ drive bays <br> - $8 \times 3.5$ drive bay fillers <br> - $1 x$ front fan and cable <br> - $2 x$ supercap holders (adapter-specific) |
| 4XF7A81460 | ThinkSystem ST250 V2 7x3.5" Simple Swap SATA + 1x 3.5" Simple Swap NVMe Backplane Kit <br> - Upper simple-swap backplane + cable with 3 SATA + 1 NVMe connections <br> - 1 x cage assembly for $8 \times 3.5$ drive bays <br> - $8 \times 3.5$ " drive bay fillers <br> - 1x front fan and cable |
| Cable kits |  |
| 4X97A81466 | ThinkSystem ST250 V2 X30/X40 RAID Cable Kit <br> - $6 x$ signal cables for upper \& lower cage connections (adapter-specific cables) <br> - $2 x$ supercap holders (adapter-specific) |

## RAID flash power module (supercap) support

Some high-performance RAID adapters include a RAID flash power module (supercap). The adapters that include a supercap are listed in the table in the Controllers for internal storage section.

The supercap is installed in the supercap holder than is located inside the server as shown in Components and connectors section.

For CTO orders, the required supercap holder is derived by the configurator. For field upgrades that add a RAID card with supercap, you will need to order the RAID Cable Kit, as listed in the following table. The cable kit includes two supercap holders, one for use with RAID 940 adapters, and one for use with RAID 9350 adapters.

Table 21. Cable option kit

| Part number | Description |
| :--- | :--- |
| 4X97A81466 | ThinkSystem ST250 V2 X30/X40 RAID Cable Kit |

## M. 2 drives

The ST250 V2 server supports two M. 2 form-factor SATA drives installed in an M. 2 adapter attached to a dummy PCle adapter. The PCle adapter is in turn installed in a PCle slot. The M. 2 adapter is connected via cables to the system board; the edge connector of the PCle adapter only provides physical support and does not provide PCle signals or power.

The following figure shows the M. 2 adapter for the ST250 V2.


Figure 7. M. 2 adapter with two M. 2 drives installed in a PCle slot
The following table lists the ordering information. For field upgrades, in addition to the ThinkSystem M. 2 SATA/NVMe 2-Bay Enablement Adapter, you will also need to order the M. 2 Signal \& Power Cable Kit.

Supported drives are listed in the Internal drive options section.

Table 22. M. 2 adapter for ST250 V2

| Part <br> number | Feature <br> code | Description | Maximum <br> supported | Slots <br> supported |
| :--- | :--- | :--- | :--- | :--- |
| 4C57A85377 | B5XJ + <br> BMTU | ThinkSystem M.2 SATA/NVMe 2-Bay Enablement Adapter <br> - ThinkSystem M.2 SATA/NVMe 2-Bay Enablement Kit, <br> B5XJ <br> - ThinkSystem ST250 V2 Dummy PCle Card, BMTU | 1 | 4 |
| 4X97A82303 | BMTD | ThinkSystem SR250 V2/ST250 V2 M.2 Signal \& Power <br> Cable Kit | 1 | Not <br> applicable |

No NVMe support: The ST250 V2 does not currently support NVMe M. 2 drives.

## Configuration rules:

- The M. 2 PCle adapter is only supported in slot 4
- M. 2 is mutually exclusive with the use of optical drives (ODDs) as they share the same connector.

The M. 2 SATA/NVMe 2-Bay Enablement Kit has the following features when installed in the ST250 V2:

- Supports one or two M. 2 SATA drives
- Support $42 \mathrm{~mm}, 60 \mathrm{~mm}, 80 \mathrm{~mm}$ and 110 mm drive form factors (2242, 2260, 2280 and 22110)
- JBOD native support; no built-in RAID support (RAID can be enabled via Intel VROC SATA RAID)
- Supports monitoring and reporting of events and temperature through I2C
- Firmware update via Lenovo firmware update tools

For details about M. 2 components, see the ThinkSystem M. 2 Drives and M. 2 Adapters product guide:
https://lenovopress.com/Ip0769-thinksystem-m2-drives-adapters

## SED encryption key management with ISKLM

The server supports self-encrypting drives (SEDs) as listed in the Internal drive options section. To effectively manage a large deployment of these drives in Lenovo servers, IBM Security Key Lifecycle Manager (SKLM) offers a centralized key management solution. A Lenovo Feature on Demand (FoD) upgrade is used to enable this SKLM support in the management processor of the server.

The following table lists the part numbers and feature codes for the upgrades.
Table 23. FoD upgrades for SKLM support

| Part number | Feature code | Description |
| :--- | :--- | :--- |
| Security Key Lifecycle Manager - FoD (United States, Canada, Asia Pacific, and Japan) |  |  |
| 00D9998 | A5U1 | SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 1 year S\&S |
| 00D9999 | AS6C | SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 3 year S\&S |
| Security Key Lifecycle Manager - FoD (Latin America, Europe, Middle East, and Africa) |  |  |
| 00FP648 | A5U1 | SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 1 year S\&S |
| 00FP649 | AS6C | SKLM for System x/ThinkSystem w/SEDs - FoD per Install with 3 year S\&S |

The IBM Security Key Lifecycle Manager software is available from Lenovo using the ordering information listed in the following table.

Table 24. IBM Security Key Lifecycle Manager licenses

| Part number | Description |
| :--- | :--- |
| 7S0A007FWW | IBM Security Key Lifecycle Manager Basic Edition Install License + SW Subscription \& Support <br> 12 Months |
| 7S0A007HWW | IBM Security Key Lifecycle Manager For Raw Decimal Terabyte Storage Resource Value Unit <br> License + SW Subscription \& Support 12 Months |
| 7S0A007KWW | IBM Security Key Lifecycle Manager For Raw Decimal Petabyte Storage Resource Value Unit <br> License + SW Subscription \& Support 12 Months |
| 7S0A007MWW | IBM Security Key Lifecycle Manager For Usable Decimal Terabyte Storage Resource Value Unit <br> License + SW Subscription \& Support 12 Months |
| 7S0A007PWW | IBM Security Key Lifecycle Manager For Usable Decimal Petabyte Storage Resource Value Unit <br> License + SW Subscription \& Support 12 Months |

## Controllers for internal storage

The ST250 V2 supports the use of the onboard 6Gb SATA ports to connect SATA drives. Hot-swap and simple-swap SATA drives are supported. These onboard SATA ports support RSTe mode for RAID functionality or AHCI mode for JBOD support.

In addition to the onboard SATA controller, the ST250 V2 with hot-swap drives supports the use of an internal RAID adapter or HBA. The following table lists the supported adapters.

Table 25. Controllers for internal storage

| Part number | Feature code | Description | Slots supported | Maximum supported | Supercap included |
| :---: | :---: | :---: | :---: | :---: | :---: |
| SAS/SATA HBA |  |  |  |  |  |
| 4Y37A72480 | BJHH | ThinkSystem 4350-8i SAS/SATA 12Gb HBA | 2, 3, 4 | 2 | No |
| RAID adapters -8 ports |  |  |  |  |  |
| 4Y37A72482 | BJHK | ThinkSystem RAID 5350-8i PCle 12Gb Adapter | 2, 3, 4 | 2 | No |
| 4Y37A72483 | BJHL | ThinkSystem RAID 9350-8i 2GB Flash PCle 12Gb Adapter | 2, 3, 4 | 1 | Yes |
| RAID adapters - 16 ports |  |  |  |  |  |
| 4Y37A72485 | BJHN | ThinkSystem RAID 9350-16i 4GB Flash PCle 12Gb Adapter | 2, 3, 4 | 1 | Yes |

For a comparison of the functions of the supported storage adapters, see the ThinkSystem RAID Adapter and HBA Reference:
https://lenovopress.com/lp1288-thinksystem-raid-adapter-and-hba-reference\#st250-v2-support= ST250\%2520V2

## Configuration notes:

- Virtualization support: The onboard SATA ports can be used with virtualization hypervisors, including VMware ESXi, Linux KVM, Xen, and Microsoft Hyper-V, however support is limited to AHCI (non-RAID) mode. RSTe mode is not supported with virtualization hypervisors.
- Windows support: Windows only supports a RSTe-based RAID array of no more than 6 drives.
- E810 Ethernet and X350 RAID/HBAs: The use of both an Intel E810 network adapter and an X350 HBA/RAID adapter (9350, 5350 and 4350) is currently not supported in ThinkSystem servers. For details see Support Tip HT513226. Planned support for this combination of adapters is 4Q/2023 (SI 23-2).


## Internal drive options

The following tables list the drive options for internal storage of the server.
2.5-inch hot-swap drives:

- 2.5-inch hot-swap 12 Gb SAS HDDs
- 2.5-inch hot-swap 6 Gb SATA SSDs
3.5-inch hot-swap drives:
- 3.5-inch hot-swap 12 Gb SAS HDDs
- 3.5-inch hot-swap 6 Gb SATA HDDs
- 3.5-inch hot-swap 6 Gb SATA SSDs

Simple-swap drives:

- 3.5-inch simple-swap 6 Gb SATA HDDs
- 3.5-inch simple-swap 6 Gb SATA SSDs
- 3.5-inch simple-swap PCle 4.0 NVMe SSDs
M. 2 drives:
- M. 2 SATA drives
M. 2 drive support: The use of M. 2 drives requires an additional adapter as described in the M. 2 drives subsection.

SED support: The tables include a column to indicate which drives support SED encryption. The encryption functionality can be disabled if needed. Note: Not all SED-enabled drives have "SED" in the description.

Table 26. 2.5-inch hot-swap 12 Gb SAS HDDs

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 2.5-inch hot-swap HDDs - 12 Gb SAS 10K | No | 16 |  |  |
| 7XB7A00025 | AULZ | ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD | No | 16 |
| 7XB7A00027 | AUM1 | ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD | No | 16 |
| 7XB7A00028 | AUM2 | ThinkSystem 2.5" 1.8TB 10K SAS 12Gb Hot Swap 512e HDD | No | 16 |
| 4XB7A83970 | BRG7 | ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD v2 |  |  |
| 2.5-inch hot-swap SED HDDs - 12 Gb SAS 10K | Support | 16 |  |  |
| 7XB7A00031 | AUM5 | ThinkSystem 2.5" 600GB 10K SAS 12Gb Hot Swap 512n HDD SED |  |  |

Table 27. 2.5-inch hot-swap 6 Gb SATA SSDs

| Part number | Feature code | Description | SED <br> support | $\operatorname{Max}$ Qty |
| :---: | :---: | :---: | :---: | :---: |
| 2.5-inch hot-swap SSDs -6 Gb SATA - Mixed Use/Mainstream (3-5 DWPD) |  |  |  |  |
| 4XB7A82289 | BQ21 | ThinkSystem 2.5" 5400 MAX 480GB Mixed Use SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82290 | BQ24 | ThinkSystem 2.5" 5400 MAX 960GB Mixed Use SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82291 | BQ22 | ThinkSystem 2.5" 5400 MAX 1.92TB Mixed Use SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82292 | BQ23 | ThinkSystem 2.5" 5400 MAX 3.84TB Mixed Use SATA 6Gb HS SSD | Support | 16 |
| 4XB7A17125 | BA7Q | ThinkSystem 2.5" S4620 480GB Mixed Use SATA 6Gb HS SSD | No | 16 |
| 4XB7A17126 | BA4T | ThinkSystem 2.5" S4620 960GB Mixed Use SATA 6Gb HS SSD | No | 16 |
| 4XB7A17089 | B8J6 | ThinkSystem 2.5" 5300 960GB Mainstream SATA 6Gb Hot Swap SSD | No | 16 |
| 2.5-inch hot-swap SSDs -6 Gb SATA - Read Intensive/Entry (<3 DWPD) |  |  |  |  |
| 4XB7A89423 | BXDY | ThinkSystem 2.5" CM893a 1.92TB Read Intensive SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82258 | BQ1Q | ThinkSystem 2.5" 5400 PRO 240GB Read Intensive SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82259 | BQ1P | ThinkSystem 2.5" 5400 PRO 480GB Read Intensive SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82260 | BQ1R | ThinkSystem 2.5" 5400 PRO 960GB Read Intensive SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82261 | BQ1X | ThinkSystem 2.5" 5400 PRO 1.92TB Read Intensive SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82262 | BQ1S | ThinkSystem 2.5" 5400 PRO 3.84TB Read Intensive SATA 6Gb HS SSD | Support | 16 |
| 4XB7A82263 | BQ1T | ThinkSystem 2.5" 5400 PRO 7.68TB Read Intensive SATA 6Gb HS SSD | Support | 16 |
| 4XB7A17072 | B99D | ThinkSystem 2.5" S4520 240GB Read Intensive SATA 6Gb HS SSD | No | 16 |
| 4XB7A17101 | BA7G | ThinkSystem 2.5" S4520 480GB Read Intensive SATA 6Gb HS SSD | No | 16 |
| 4XB7A17102 | BA7H | ThinkSystem 2.5" S4520 960GB Read Intensive SATA 6Gb HS SSD | No | 16 |
| 4XB7A38273 | BCTE | ThinkSystem 2.5" Multi Vendor 960GB Entry SATA 6Gb Hot Swap SSD | No | 16 |
| 4XB7A38185 | B9AC | ThinkSystem 2.5" 5210 960GB Entry SATA 6Gb Hot Swap QLC SSD | No | 16 |

Table 28. 3.5-inch hot-swap 12 Gb SAS HDDs

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 3.5-inch hot-swap HDDs - 12 Gb NL SAS | No | 8 |  |  |
| 7XB7A00042 | AUU5 | ThinkSystem 3.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD | No | 8 |
| 7XB7A00043 | AUU6 | ThinkSystem 3.5" 4TB 7.2K SAS 12Gb Hot Swap 512n HDD | No | 8 |
| 7XB7A00044 | AUU7 | ThinkSystem 3.5" 6TB 7.2K SAS 12Gb Hot Swap 512e HDD | No | 8 |
| 7XB7A00045 | B0YR | ThinkSystem 3.5" 8TB 7.2K SAS 12Gb Hot Swap 512e HDD | No | 8 |
| 7XB7A00046 | AUUG | ThinkSystem 3.5" 10TB 7.2K SAS 12Gb Hot Swap 512e HDD | No | 8 |
| 7XB7A00067 | B117 | ThinkSystem 3.5" 12TB 7.2K SAS 12Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A13906 | B496 | ThinkSystem 3.5" 14TB 7.2K SAS 12Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A13911 | B7EZ | ThinkSystem 3.5" 16TB 7.2K SAS 12Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A38266 | BCFP | ThinkSystem 3.5" 18TB 7.2K SAS 12Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A80353 | BPKU | ThinkSystem 3.5" 20TB 7.2K SAS 12Gb Hot Swap 512e HDD |  |  |

Table 29. 3.5-inch hot-swap 6 Gb SATA HDDs

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 3.5-inch hot-swap HDDs - 6 Gb NL SATA | No | 8 |  |  |
| 7XB7A00049 | AUUF | ThinkSystem 3.5" 1TB 7.2K SATA 6Gb Hot Swap 512n HDD | No | 8 |
| 7XB7A00050 | AUUD | ThinkSystem 3.5" 2TB 7.2K SATA 6Gb Hot Swap 512n HDD | No | 8 |
| 7XB7A00051 | AUU8 | ThinkSystem 3.5" 4TB 7.2K SATA 6Gb Hot Swap 512n HDD | No | 8 |
| 7XB7A00052 | AUUA | ThinkSystem 3.5" 6TB 7.2K SATA 6Gb Hot Swap 512e HDD | No | 8 |
| 7XB7A00053 | AUU9 | ThinkSystem 3.5" 8TB 7.2K SATA 6Gb Hot Swap 512e HDD | No | 8 |
| 7XB7A00054 | AUUB | ThinkSystem 3.5" 10TB 7.2K SATA 6Gb Hot Swap 512e HDD | No | 8 |
| 7XB7A00068 | B118 | ThinkSystem 3.5" 12TB 7.2K SATA 6Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A13907 | B497 | ThinkSystem 3.5" 14TB 7.2K SATA 6Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A13914 | B7F0 | ThinkSystem 3.5" 16TB 7.2K SATA 6Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A38130 | BCFH | ThinkSystem 3.5" 18TB 7.2K SATA 6Gb Hot Swap 512e HDD | No | 8 |
| 4XB7A80354 | BPKV | ThinkSystem 3.5" 20TB 7.2K SATA 6Gb Hot Swap 512e HDD | 8 |  |

Table 30. 3.5-inch hot-swap 6 Gb SATA SSDs

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 3.5-inch hot-swap SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD) |  |  |  |  |
| 4XB7A17118 | BA7K | ThinkSystem 3.5" S4520 240GB Read Intensive SATA 6Gb HS SSD | No | 8 |
| 4XB7A17119 | BA7L | ThinkSystem 3.5" S4520 480GB Read Intensive SATA 6Gb HS SSD | No | 8 |
| 4XB7A17120 | BA7M | ThinkSystem 3.5" S4520 960GB Read Intensive SATA 6Gb HS SSD | No | 8 |
| 4XB7A38278 | BCTK | ThinkSystem 3.5" Multi Vendor 960GB Entry SATA 6Gb Hot Swap SSD | No | 8 |

Table 31. 3.5-inch simple-swap 6 Gb SATA HDDs

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 3.5-inch simple-swap HDDs - 6 Gb NL SATA |  |  |  |  |
| 7XB7A00055 | AUZS | ThinkSystem 1TB 7.2K 6Gbps SATA 3.5" Simple Swap 512n HDD | No | 8 |
| 7XB7A00056 | AUZT | ThinkSystem 2TB 7.2K 6Gbps SATA 3.5" Simple Swap 512n HDD | No | 8 |

Table 32. 3.5-inch simple-swap 6 Gb SATA SSDs

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 3.5-inch simple-swap SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD) |  |  |  |  |
| 4XB7A17109 | BK7C | ThinkSystem 3.5" S4520 240GB Read Intensive SATA 6Gb SS SSD | No | 8 |
| 4XB7A17110 | BK7D | ThinkSystem 3.5" S4520 480GB Read Intensive SATA 6Gb SS SSD | No | 8 |
| 4XB7A17111 | BK7E | ThinkSystem 3.5" S4520 960GB Read Intensive SATA 6Gb SS SSD | No | 8 |

Table 33. 3.5-inch simple-swap PCle 4.0 NVMe SSDs

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 3.5-inch SSDs - U.2 PCle 4.0 NVMe - Read Intensive/Entry (<3 DWPD) |  |  |  |  |
| 4XB7A79664 | BNHZ | ThinkSystem 3.5" U.2 P5520 1.92TB Read Intensive NVMe PCle 4.0 x4 <br> SS SSD | Support | 1 |
| 4XB7A82993 | BQ1G | ThinkSystem 3.5" U.2 P5500 1.92TB Read Intensive NVMe PCle $4.0 \times 4$ <br> SS SSD | No | 1 |

Table 34. M. 2 SATA drives

| Part number | Feature <br> code | Description | SED <br> support | Max <br> Qty |
| :--- | :--- | :--- | :--- | :--- | :--- |
| M.2 SSDs - 6 Gb SATA - Read Intensive/Entry (<3 DWPD) | Support | 2 |  |  |
| 4XB7A82286 | BQ1Z | ThinkSystem M.2 5400 PRO 240GB Read Intensive SATA 6Gb NHS <br> SSD | Support | 2 |
| 4XB7A82287 | BQ1Y | ThinkSystem M.2 5400 PRO 480GB Read Intensive SATA 6Gb NHS <br> SSD | No | 2 |
| 7N47A00130 | AUUV | ThinkSystem M.2 128GB SATA 6Gbps Non-Hot Swap SSD | No | 2 |
| 4XB7A17074 | B8JJ | ThinkSystem M.2 5300 960GB SATA 6Gbps Non-Hot Swap SSD |  |  |

## USB memory key

For general portable storage needs, the server also supports the USB memory key option that is listed in the following table.

Table 35. USB memory key

| Part number | Feature | Description |
| :--- | :--- | :--- |
| 4X77A08621 | B8NV | ThinkSystem 32GB USB Flash Drive |

## Internal backup units

The ST250 V2 supports the internal backup unit options that are listed in the following table.
The RDX dock is attached via the internal USB 3.0 port on the system board. The USB cable ships with the dock. The RDX dock is supported only in the lower media bay (Bay 0).

Table 36. Internal backup units

| Part number | Feature code | Description | Maximum supported |
| :--- | :--- | :--- | :--- |
| RDX dock |  |  |  |
| 4T27A80485 | AVF6 | ThinkSystem Internal RDX USB 3.0 Dock v2 | 1 |
| RDX media | ThinkSystem RDX 500GB Cartridge | Not applicable |  |
| 7TP7A01601 | AVF8 | ThinkSystem RDX 1TB Cartridge | Not applicable |
| 7TP7A01602 | AVF1 | ThinkSystem RDX 2TB Cartridge | Not applicable |
| 7TP7A01603 | AVF0 | ThinkSystem RDX 4TB Cartridge | Not applicable |
| 7TP7A04318 | AXD1 |  |  |

For more information about the RDX dock, see the Backup Units page on the Lenovo Press site:
https://lenovopress.com/servers/options/backup
For field upgrades to add an RDX dock, you will need to also order the cable kit listed in the following table for the required power cable. This kit is not needed for factory (CTO) orders.

Tip: If your server already has the power cable (SC17B01164, feature BMQU) installed, you do not need to order this cable kit when adding an RDX dock.

Table 37. Cable kit for field upgrades

| Part number | Description |
| :--- | :--- |
| 4X97A81465 | ThinkSystem ST250 V2 ODD/Tape Cable Kit |
|  | • 1x ODD data cable (SC17B01163, feature BMQT) -- not required for RDX dock <br> $\quad$ 1x ODD/tape power cable (SC17B01164, feature BMQU) |

## Optical drives

The ST250 V2 supports the internal optical drive options listed in the following table. The internal optical are installed in the 5.25 -inch media drive bays.

Table 38. Optical drives

| Part number | Feature code | Description | Maximum <br> supported |
| :--- | :--- | :--- | :--- |
| Internal optical drives |  |  |  |
| 4XA7A80482 | AVEZ | ThinkSystem Half High SATA DVD-ROM Optical Disk Drive v2 | 2 |
| 4XA7A80481 | AVEY | ThinkSystem Half High SATA DVD-RW Optical Disk Drive v2 | 2 |

Configuration rules:

- For configurations using the onboard SATA controller, if 1 or 2 optical drives are installed, only 6 HDDs or SSDs can be installed.
- For field upgrades to add an optical drive, you will need to also order the cable kit listed in the following table. This kit is not needed for factory (CTO) orders.
- M. 2 is mutually exclusive with the use of optical drives as they share the same connector.

Table 39. Cable kit for field upgrades

| Part number | Description | Maximum <br> supported |
| :--- | :--- | :--- |
| 4X97A81465 | ThinkSystem ST250 V2 ODD/Tape Cable Kit <br>  <br>  <br>  <br> • 1x ODD data cable (SC17B01163, feature BMQT) <br> 1x ODD/tape power cable (SC17B01164, feature BMQU) | 2 |

The Half High SATA DVD-ROM drive supports the following media and speeds for reading:

- CD-ROM 48X
- CD-DA (DAE) 48 X
- CD-R 48X
- CD-RW 40X
- DVD-ROM (single layer) 16X
- DVD-ROM (dual layer) 12 X
- DVD-R (4.7 GB) 16X
- DVD-R DL 8X
- DVD+R 16X
- DVD+R DL 8X
- DVD-RW (4.7 GB) 8 X
- DVD+RW 8X

The Half High SATA DVD-RW drive supports the same media and speeds for reading as HH DVD-ROM. In addition, this drive supports the following media and speeds for writing:

- CD-R 24X
- CD-RW 4X
- High Speed CD-RW 10X
- Ultra Speed CD-RW 16X
- DVD-R 8 X
- DVD-R DL 8X
- DVD+R 8X
- DVD+R DL 8X
- DVD-RW 6X
- DVD+RW 8 X

The server supports the external USB optical drive listed in the following table.
Table 40. External optical drive

| Part number | Feature code | Description |
| :--- | :--- | :--- |
| 7XA7A05926 | AVV8 | ThinkSystem External USB DVD RW Optical Disk Drive |

The drive is based on the Lenovo Slim DVD Burner DB65 drive and supports the following formats: DVDRAM, DVD-RW, DVD+RW, DVD+R, DVD-R, DVD-ROM, DVD-R DL, CD-RW, CD-R, CD-ROM.

## I/O expansion options

The ST250 V2 server has one PCle 4.0 slot and three PCle 3.0 slots, as follows:

- Slot 1: PCle $3.0 \times 4$ full-height, half-length (x1 physical slot, open ended), supports 25 W adapters
- Slot 2: PCle $4.0 \times 16$ full-height, half-length (x16 physical slot, closed ended), supports 75 W adapters
- Slot 3: PCle $3.0 \times 4$ full-height, half-length (x4 physical slot, open ended), supports 25 W adapters
- Slot 4: PCle 3.0 x4 full-height, half-length (x8 physical slot, closed ended), supports 25W adapters

Slot 1 and slot 3 in the ST250 V2 are an open-end design, which means that it can accept adapters with a longer edge connector than the physical length of the slot connector. For example, if a x8 adapter is installed in the $x 4$ slot 3 of the server, half of the edge connector will not be connected to the slot. The adapter will still function, however performance will be impacted.

The following figure shows the locations of the PCle slots.


Figure 8. ThinkSystem ST250 V2 PCle slots

## Network adapters

The ST250 V2 has two onboard Gigabit Ethernet ports, connected to a Broadcom BCM5720 embedded controller.

The BCM5720 embedded controller has the following features:

- Two $10 / 100 / 1000 \mathrm{Mb}$ Ethernet RJ-45 ports
- NIC Teaming (load balancing and failover)
- IEEE 802.3ad Link Aggregation
- I/O Virtualization (IOV) for VMWare NetQueue and Microsoft VMQ
- IEEE 802.1Q Virtual Local Area Networks (VLANs)
- IEEE 802.3x flow control
- TCP, IP, and UDP checksum offload
- Large Send Offload (LSO) and TCP Segmentation Offload (TSO)
- Receive Side Scaling (RSS) and Transmit Side Scaling (TSS)
- Jumbo frames up to 9600 bytes
- IEEE 802.3az-2010 Energy Efficient Ethernet (EEE) compliant
- Hardware assist for IEEE 1588 and IEEE 802.1AS time synchronization implementations
- Preboot eXecution Environment (PXE) remote boot

The following table lists other supported network adapters. The maximum supported column indicates which slots each adapter is supported in. For slot locations see the I/O expansion options section.

Table 41. Network adapters

| Part number | Feature code | Description | Slots supported | Maximum supported |
| :---: | :---: | :---: | :---: | :---: |
| Gigabit Ethernet |  |  |  |  |
| 7ZT7A00484 | AUZV | ThinkSystem Broadcom 5719 1GbE RJ45 4-Port PCle Ethernet Adapter | 1, 2, 3, 4 | 2 |
| 7ZT7A00482 | AUZX | ThinkSystem Broadcom 5720 1GbE RJ45 2-Port PCle Ethernet Adapter | 1, 2, 3, 4 | 2 |
| 7ZT7A00534 | AUZY | ThinkSystem I350-T2 PCle 1Gb 2-Port RJ45 Ethernet Adapter | 1, 2, 3, 4 | 2 |
| 7ZT7A00535 | AUZW | ThinkSystem I350-T4 PCle 1Gb 4-Port RJ45 Ethernet Adapter | 1, 2, 3, 4 | 2 |
| 10 Gb Ethernet - 10GBASE-T |  |  |  |  |
| 7ZT7A00496 | AUKP | ThinkSystem Broadcom 57416 10GBASE-T 2-Port PCle Ethernet Adapter | 2* | 1 |
| 00MM860 | ATPX | Intel X550-T2 Dual Port 10GBase-T Adapter | 1, 2, 3, 4 | 2 |
| 4XC7A79699 | BMXB | ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCle Ethernet Adapter | 1, 2, 3, 4 | 2 |
| 10 Gb Ethernet - SFP+ |  |  |  |  |
| 7XC7A05525 | BOYL | Intel X710-DA4 4x10Gb SFP+ Adapter | 1, 2, 3, 4 | 2 |
| 25 Gb Ethernet |  |  |  |  |
| 4XC7A08238 | B5T0 | ThinkSystem Broadcom 57414 10/25GbE SFP28 2-port PCle Ethernet Adapter | 1, 4 | 2 |
| 4XC7A08295 | BCD6 | ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCle Ethernet Adapter | 1, 2, 3, 4 | 2 |

[^0]
## Configuration notes:

- For more information, including the transceivers and cables that each adapter supports, see the list of Lenovo Press Product Guides in the Ethernet adapters category:
http://lenovopress.com/servers/options/ethernet\#rt=product-guide
- E810 Ethernet and X350 RAID/HBAs: The use of both an Intel E810 network adapter and an X350 HBA/RAID adapter (9350, 5350 and 4350) is currently not supported in ThinkSystem servers. For details see Support Tip HT513226. Planned support for this combination of adapters is 4Q/2023 (SI 23-2).


## SAS adapters for external storage

The following table lists the adapters suitable for connectivity to external SAS storage.
Table 42. Supported external storage adapters

| Part <br> number | Feature <br> code | Description | Slots <br> supported | Maximum <br> supported |
| :--- | :--- | :--- | :--- | :--- |
| 12 Gb SAS HBA |  |  |  |  |
| 7Y37A01090 | AUNR | ThinkSystem 430-8e SAS/SATA 12Gb HBA | $1,2,3,4$ | 2 |
| 4Y37A78837 | BNWK | ThinkSystem 440-8e SAS/SATA PCIe Gen4 12Gb HBA | $1,2,3,4$ | 2 |

For a comparison of the functions of the supported external storage adapters, see the ThinkSystem RAID Adapter and HBA Reference:
https://lenovopress.com/lp1288\#st250-v2-support=ST250\ V2\&internal-or-external-ports=External
Mixing storage adapter families: The following HBA/RAID adapter combinations are supported:

- X30 external adapters with other X30 adapters (internal or external)
- X40 external adapters with other X40 adapters (internal or external)
- X40 external adapters with X350 internal adapters

The following HBA/RAID adapter combinations are not supported:

- X30 adapters (internal or external) with X40 adapters (internal or external)
- X30 adapters (internal or external) with X350 internal adapters


## Fibre Channel host bus adapters

The ST250 V2 does not currently support Fibre Channel host bus adapters.

## Flash Storage adapters

The ST250 V2 does not currently support Flash Storage adapters.

## GPU adapters

The ST250 V2 server supports the graphics processing units (GPUs) listed in the following table.
Table 43. GPU adapters

| Part <br> number | Feature <br> code | Description | Slots <br> supported | Maximum <br> supported |
| :--- | :--- | :--- | :--- | :--- |
| 4X67A79777 | BMXD | ThinkSystem NVIDIA T1000 8GB PCIe Active GPU | 2 | 1 |
| 4X67A79778 | BMXE | ThinkSystem NVIDIA T400 4GB PCle Active GPU | 2 | 1 |

The following rule applies:

- The use of a GPU requires 550W hot-swap power supplies

For information about GPUs, see the ThinkSystem GPU Summary:
https://lenovopress.com/lp0768-thinksystem-gpu-summary

## Fans and cooling

The ST250 V2 has the following variable-speed fans. All fans are fixed (non-hot-swap).

- One or two system fans at the front of the server, mounted on the drive cages. If the server has one drive cage, only one front fan is included.
- One system fan at the rear of the server
- Fan mounted on the heatsink of the processor
- One fan in each power supply

See the Inside view in the Components and connectors section for locations.

## Power supplies

The server supports either a single fixed power supply or one or two hot-swap power supplies. When two hot-swap power supplies are installed, they form a redundant pair. The following table lists the supported power supplies.

Table 44. Power supplies

| Part number | Feature code | Description | Maximum quantity | 80 PLUS certification | ErP Lot 9 compliant | $\begin{aligned} & 110 \mathrm{~V} \\ & \mathrm{AC} \end{aligned}$ | $\begin{aligned} & \text { 220V } \\ & \text { AC } \end{aligned}$ | 240V <br> DC <br> China <br> only |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Fixed power supplies |  |  |  |  |  |  |  |  |
| CTO only | B41Q | ThinkSystem ST250 250W Fixed PSU | 1 | Platinum (94\%) | Yes | Yes | Yes | No |
| CTO only | BMFL | ATX-300W Power Supply | 1 | Gold (90\%) | No | Yes | Yes | No |
| CTO only | BMTC | ThinkSystem 500W Platinum ATX Power Supply | 1 | Platinum (94\%) | Yes | Yes | Yes | No |
| Hot-swap redundant power supplies |  |  |  |  |  |  |  |  |
| 7N67A00882 | BMTA | ThinkSystem ST250 V2 550W Platinum Redundant Power Supply | 2 | Platinum | No | Yes | Yes | No |
| 4P57A82020 | BR1Y | ThinkSystem V1 750W (230Vac) Titanium Hot Swap Power Supply | 2 | Titanium | Yes | No | Yes | No |

Power supply options do not include a line cord.
For server configurations, the inclusion of a power supply is model dependent. Configure-to-order models can be configured without a power cord if desired.

The following table lists the maximum configuration for the 250 W and 300 W power supplies.
Table 45. Maximum configuration for the 300W power supply

| Subsystem | 250W fixed power supply | 300W fixed power supply |
| :---: | :---: | :---: |
| Processor | Up to 80W TDP (6 cores) | Up to 80W TDP (6 cores) |
| Memory | No restriction | No restriction |
| Drives | - Single drive backplane only <br> - $4 x 3.5$-inch SAS/SATA drives only <br> - $8 \times 2.5$-inch drives not supported <br> - Dual backplanes ( $8 \times 3.5$ " or $16 \times 2.5$ " or mix) not supported <br> - NVMe drive configuration not supported | - Single drive backplane only <br> - Up to $4 \times 3.5$-inch SAS/SATA drives or $8 \times 2.5-$ inch drives (HDD or SSD) <br> - Dual backplanes ( $8 \times 3.5$ " or $16 \times 2.5$ " or mix) not supported <br> - NVMe drive configuration not supported |
| Media bays | 1x optical drive or 1x RDX drive $2 x$ drives not supported | 1x optical drive or $1 \times$ RDX drive $2 x$ drives not supported |
| M. 2 | No restriction | No restriction |
| Adapters (except GPU) | 1 or 2 adapters up to PCle x8 | 1 or 2 adapters up to PCle x8 |
| GPU | Not supported | Not supported |

To ensures that the properly sized power supply is chosen for optimal performance, it is highly recommended to validate system configuration for specific power requirements by using the latest version of the Lenovo Capacity Planner:
https://datacentersupport.lenovo.com/us/en/products/solutions-and-software/software/lenovo-capacityplanner/solutions/ht504651

## Power cords

Line cords and rack power cables with C13 connectors can be ordered as listed in the following table.
Table 46. Power cords

| Part number | Feature code | Description |
| :---: | :---: | :---: |
| Rack cables - C13 to C14 |  |  |
| SL67B08593 | BPHZ | 0.5m, 10A/100-250V, C13 to C14 Jumper Cord |
| 00Y3043 | A4VP | 1.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable |
| 4L67A08367 | B0N5 | 1.0m, 13A/100-250V, C13 to C14 Jumper Cord |
| $39 Y 7937$ | 6201 | 1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable |
| 4L67A08368 | B0N6 | 1.5m, 13A/100-250V, C13 to C14 Jumper Cord |
| 4L67A08365 | B0N4 | $2.0 \mathrm{~m}, 10 \mathrm{~A} / 100-250 \mathrm{~V}, \mathrm{C} 13$ to IEC 320-C14 Rack Power Cable |
| 4L67A08369 | 6570 | $2.0 \mathrm{~m}, 13 \mathrm{~A} / 100-250 \mathrm{~V}, \mathrm{C} 13$ to C14 Jumper Cord |
| 4L67A08366 | 6311 | 2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable |
| 4L67A08370 | 6400 | $2.8 \mathrm{~m}, 13 \mathrm{~A} / 100-250 \mathrm{~V}, \mathrm{C} 13$ to C14 Jumper Cord |
| 39Y7932 | 6263 | 4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable |
| 4L67A08371 | 6583 | 4.3m, 13A/100-250V, C13 to C14 Rack Power Cable |
| Rack cables - C13 to C14 (Y-cable) |  |  |
| 00Y3046 | A4VQ | 1.345m, 2X C13 to C14 Jumper Cord, Rack Power Cable |
| $00 Y 3047$ | A4VR | 2.054m, 2X C13 to C14 Jumper Cord, Rack Power Cable |
| Rack cables - C13 to C20 |  |  |
| 39Y7938 | 6204 | 2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable |
| Rack cables - C13 to C20 (Y-cable) |  |  |
| 47C2491 | A3SW | 1.2m, 16A/100-250V, 2 Short C13s to Short C20 Rack Power Cable |
| 47 C 2492 | A3SX | 2.5m, 16A/100-250V, 2 Long C13s to Short C20 Rack Power Cable |
| 47 C 2493 | A3SY | 2.8m, 16A/100-250V, 2 Short C13s to Long C20 Rack Power Cable |
| 47C2494 | A3SZ | 4.1m, 16A/100-250V, 2 Long C13s to Long C20 Rack Power Cable |
| Line cords |  |  |
| 39Y7930 | 6222 | 2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord |
| 81Y2384 | 6492 | 4.3 m 10A/220V, C13 to IRAM 2073 (Argentina) Line Cord |
| 39Y7924 | 6211 | 2.8m, 10A/250V, C13 to AS/NZ 3112 (Australia/NZ) Line Cord |
| 81Y2383 | 6574 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 230 \mathrm{~V}, \mathrm{C} 13$ to AS/NZS 3112 (Aus/NZ) Line Cord |
| 69Y1988 | 6532 | $2.8 \mathrm{~m}, 10 \mathrm{~A} / 250 \mathrm{~V}, \mathrm{C} 13$ to NBR 14136 (Brazil) Line Cord |
| 81Y2387 | 6404 | 4.3m, 10A/250V, C13-2P+Gnd (Brazil) Line Cord |
| 39Y7928 | 6210 | 2.8m, 220-240V, C13 to GB 2099.1 (China) Line Cord |
| 81 Y 2378 | 6580 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 220 \mathrm{~V}, \mathrm{C} 13$ to GB 2099.1 (China) Line Cord |
| $39 Y 7918$ | 6213 | 2.8m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord |
| 81Y2382 | 6575 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 230 \mathrm{~V}, \mathrm{C} 13$ to DK2-5a (Denmark) Line Cord |
| $39 Y 7917$ | 6212 | 2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord |
| 81 Y 2376 | 6572 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 230 \mathrm{~V}, \mathrm{C} 13$ to CEE7-VII (Europe) Line Cord |
| $39 Y 7927$ | 6269 | 2.8m, 10A/250V, C13(2P+Gnd) (India) Line Cord |


| Part number | Feature code | Description |
| :---: | :---: | :---: |
| 81Y2386 | 6567 | 4.3m, 10A/240V, C13 to IS 6538 (India) Line Cord |
| 39 Y 7920 | 6218 | 2.8m, 10A/250V, C13 to SI 32 (Israel) Line Cord |
| 81Y2381 | 6579 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 230 \mathrm{~V}, \mathrm{C} 13$ to SI 32 (Israel) Line Cord |
| 39 Y 7921 | 6217 | 2.8m, 220-240V, C13 to CEI 23-16 (Italy/Chile) Line Cord |
| 81 Y 2380 | 6493 | 4.3m, 10A/230V, C13 to CEl 23-16 (Italy/Chile) Line Cord |
| 46M2593 | A1RE | $2.8 \mathrm{~m}, 12 \mathrm{~A} / 125 \mathrm{~V}, \mathrm{C} 13$ to JIS C-8303 (Japan) Line Cord |
| 4L67A08362 | 6495 | $4.3 \mathrm{~m}, 12 \mathrm{~A} / 200 \mathrm{~V}, \mathrm{C} 13$ to JIS C-8303 (Japan) Line Cord |
| 39Y7926 | 6335 | $4.3 \mathrm{~m}, 12 \mathrm{~A} / 100 \mathrm{~V}, \mathrm{C} 13$ to JIS C-8303 (Japan) Line Cord |
| 39 Y 7922 | 6214 | 2.8m, 10A/250V, C13 to SABS 164 (S Africa) Line Cord |
| 81Y2379 | 6576 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 230 \mathrm{~V}, \mathrm{C} 13$ to SABS 164 (South Africa) Line Cord |
| 39 Y 7925 | 6219 | 2.8m, 220-240V, C13 to KETI (S Korea) Line Cord |
| 81Y2385 | 6494 | $4.3 \mathrm{~m}, 12 \mathrm{~A} / 220 \mathrm{~V}, \mathrm{C} 13$ to KSC 8305 (S. Korea) Line Cord |
| 39 Y 7919 | 6216 | 2.8m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord |
| 81Y2390 | 6578 | 4.3m, 10A/230V, C13 to SEV 1011-S24507 (Sws) Line Cord |
| 23R7158 | 6386 | 2.8m, 10A/125V, C13 to CNS 10917-3 (Taiwan) Line Cord |
| 81 Y2375 | 6317 | 2.8m, 10A/240V, C13 to CNS 10917-3 (Taiwan) Line Cord |
| 81Y2374 | 6402 | $2.8 \mathrm{~m}, 13 \mathrm{~A} / 125 \mathrm{~V}, \mathrm{C} 13$ to CNS 60799 (Taiwan) Line Cord |
| 4L67A08363 | AX8B | $4.3 \mathrm{~m}, 10 \mathrm{~A} 125 \mathrm{~V}, \mathrm{C} 13$ to CNS 10917 (Taiwan) Line Cord |
| 81Y2389 | 6531 | 4.3m, 10A/250V, C13 to 76 CNS 10917-3 (Taiwan) Line Cord |
| 81Y2388 | 6530 | $4.3 \mathrm{~m}, 13 \mathrm{~A} / 125 \mathrm{~V}, \mathrm{C} 13$ to CNS 10917 (Taiwan) Line Cord |
| 39 Y 7923 | 6215 | 2.8m, 10A/250V, C13 to BS 1363/A (UK) Line Cord |
| 81 Y 2377 | 6577 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 230 \mathrm{~V}, \mathrm{C} 13$ to BS 1363/A (UK) Line Cord |
| $90 Y 3016$ | 6313 | $2.8 \mathrm{~m}, 10 \mathrm{~A} / 120 \mathrm{~V}, \mathrm{C} 13$ to NEMA 5-15P (US) Line Cord |
| 46M2592 | A1RF | $2.8 \mathrm{~m}, 10 \mathrm{~A} / 250 \mathrm{~V}, \mathrm{C} 13$ to NEMA 6-15P Line Cord |
| 00WH545 | 6401 | $2.8 \mathrm{~m}, 13 \mathrm{~A} / 120 \mathrm{~V}, \mathrm{C} 13$ to NEMA 5-15P (US) Line Cord |
| 4L67A08359 | 6370 | $4.3 \mathrm{~m}, 10 \mathrm{~A} / 125 \mathrm{~V}, \mathrm{C} 13$ to NEMA 5-15P (US) Line Cord |
| 4L67A08361 | 6373 | 4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord |
| 4L67A08360 | AX8A | 4.3m, 13A/120V, C13 to NEMA 5-15P (US) Line Cord |

## Systems management

The ST250 V2 contains an integrated service processor, XClarity Controller (XCC), which provides advanced service-processor control, monitoring, and alerting functions. The XCC is based on the Pilot4 XE401 baseboard management controller (BMC) using a dual-core ARM Cortex A9 service processor.

- Front operator panel
- System status with XClarity Mobile
- Remote management
- Lenovo XClarity Provisioning Manager
- Lenovo XClarity Administrator
- Lenovo XClarity Integrators
- Lenovo XClarity Essentials
- Lenovo XClarity Energy Manager


## Front operator panel

The ST250 V2 offers a front operator panel showing key LED status indicators, as shown in the following figure.


Figure 9. Front operator panel

## System status with XClarity Mobile

The XClarity Mobile app includes a tethering function where you can connect your Android or iOS device to the server via USB to see the status of the server.

The steps to connect the mobile device are as follows:

1. Enable USB Management on the server, by holding down the ID button for 3 seconds (or pressing the dedicated USB management button if one is present)
2. Connect the mobile device via a USB cable to the server's USB port with the management symbol $\xrightarrow{\stackrel{C}{\square}}$
3. In iOS or Android settings, enable Personal Hotspot or USB Tethering
4. Launch the Lenovo XClarity Mobile app

Once connected you can see the following information:

- Server status including error logs (read only, no login required)
- Server management functions (XClarity login credentials required)


## Remote management

The server offers a dedicated RJ45 port at the rear of the server for remote management via the XClarity Controller management processor. The port supports 10/100/1000 Mbps speeds.

Remote server management is provided through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3 (no SET commands; no SNMP v1)
- Common Information Model (CIM-XML)
- Representational State Transfer (REST) support
- Redfish support (DMTF compliant)
- Web browser - HTML 5-based browser interface (Java and ActiveX not required) using a responsive design (content optimized for device being used - laptop, tablet, phone) with NLS support

IPMI via the Ethernet port (IPMI over LAN) is supported, however it is disabled by default. For CTO orders you can specify whether you want to the feature enabled or disabled in the factory, using the feature codes listed in the following table.

Table 47. IPMI-over-LAN settings

| Part number | Feature code | Description |
| :--- | :--- | :--- |
| CTO only | B7XZ | Disable IPMI-over-LAN (default) |
| CTO only | B7Y0 | Enable IPMI-over-LAN |

There are two XClarity Controller upgrades available for the server, Advanced and Enterprise.
Lenovo XClarity Controller Advanced adds the following remote control functions:

- Remotely viewing video with graphics resolutions up to $1600 \times 1200$ at 75 Hz with up to 23 bits per pixel, regardless of the system state
- Remotely accessing the server using the keyboard and mouse from a remote client
- Capturing blue-screen errors
- International keyboard mapping support
- LDAP-based authentication

Lenovo XClarity Controller Enterprise enables the following additional features:

- Boot Capture
- Remote mounting of CD-ROM (ISO) and diskette (IMG) files as virtual drives
- Virtual console collaboration - Ability for up to 6 remote users to be log into the remote session simultaneously
- Power capping
- License for XClarity Energy Manager

Preconfigured models come with either XClarity Controller Standard, Advanced or Enterprise, depending on the model. See the Models section for details. The following table shows the field upgrades available for preconfigured models.

Table 48. XClarity Controller field upgrades

| Part number | Feature code | Description |
| :--- | :--- | :--- |
| 4L47A09132 | AVUT | ThinkSystem XClarity Controller Standard to Advanced Upgrade <br> (for servers that have XCC Standard) |
| 4L47A09133 | AVUU | ThinkSystem XClarity Controller Advanced to Enterprise Upgrade <br> (for servers that have XCC Advanced) |

For configure-to-order (CTO) models, you can elect to have one of the following XCC functionality by selecting the appropriate XCC feature codes as listed in the following table:

- XCC Standard - select neither feature listed in the table
- XCC Advanced - select feature AVUT
- XCC Enterprise - select feature AUPW

Table 49. XClarity Controller Upgrades for configure-to-order

| Feature code | Description |
| :--- | :--- |
| AVUT | ThinkSystem XClarity Controller Standard to Advanced Upgrade |
| AUPW | ThinkSystem XClarity Controller Standard to Enterprise Upgrade |

## Lenovo XClarity Provisioning Manager

Lenovo XClarity Provisioning Manager (LXPM) is a UEFI-based application embedded in ThinkSystem servers and accessible via the F1 key during system boot.

LXPM provides the following functions:

- Graphical UEFI Setup
- System inventory information and VPD update
- System firmware updates (UEFI and XCC)
- RAID setup wizard
- OS installation wizard (including unattended OS installation)
- Diagnostics functions


## Lenovo XClarity Administrator

Lenovo XClarity Administrator is a centralized resource management solution designed to reduce complexity, speed response, and enhance the availability of Lenovo systems and solutions. It provides agent-free hardware management for ThinkSystem servers, in addition to ThinkServer, System x, and Flex System servers. The administration dashboard is based on HTML 5 and allows fast location of resources so tasks can be run quickly.
Because Lenovo XClarity Administrator does not require any agent software to be installed on the managed endpoints, there are no CPU cycles spent on agent execution, and no memory is used, which means that up to 1GB of RAM and 1-2\% CPU usage is saved, compared to a typical managed system where an agent is required.

Lenovo XClarity Administrator is an optional software component for the ST250 V2. The software can be downloaded and used at no charge to discover and monitor the ST250 V2 and to manage firmware upgrades.

If software support is required for Lenovo XClarity Administrator, or premium features such as configuration management and operating system deployment are required, Lenovo XClarity Pro software subscription should be ordered. Lenovo XClarity Pro is licensed on a per managed system basis, that is, each managed Lenovo system requires a license.

The following table lists the Lenovo XClarity software license options.
Table 50. Lenovo XClarity Pro ordering information

| Part number | Feature code | Description |
| :--- | :--- | :--- |
| 00MT201 | 1339 | Lenovo XClarity Pro, per Managed Endpoint w/1 Yr SW S\&S |
| 00MT202 | 1340 | Lenovo XClarity Pro, per Managed Endpoint w/3 Yr SW S\&S |
| 00MT203 | 1341 | Lenovo XClarity Pro, per Managed Endpoint w/5 Yr SW S\&S |
| 7S0X000HWW | SAYV | Lenovo XClarity Pro, per Managed Endpoint w/6 Yr SW S\&S |
| 7S0X000JWW | SAYW | Lenovo XClarity Pro, per Managed Endpoint w/7 Yr SW S\&S |

Lenovo XClarity Administrator offers the following standard features that are available at no charge:

- Auto-discovery and monitoring of Lenovo systems
- Firmware updates and compliance enforcement
- External alerts and notifications via SNMP traps, syslog remote logging, and e-mail
- Secure connections to managed endpoints
- NIST 800-131A or FIPS 140-2 compliant cryptographic standards between the management solution and managed endpoints
- Integration into existing higher-level management systems such as cloud automation and orchestration tools through REST APIs, providing extensive external visibility and control over hardware resources
- An intuitive, easy-to-use GUI
- Scripting with Windows PowerShell, providing command-line visibility and control over hardware resources

Lenovo XClarity Administrator offers the following premium features that require an optional Pro license:

- Pattern-based configuration management that allows to define configurations once and apply repeatedly without errors when deploying new servers or redeploying existing servers without disrupting the fabric
- Bare-metal deployment of operating systems and hypervisors to streamline infrastructure provisioning

For more information, refer to the Lenovo XClarity Administrator Product Guide:
http://lenovopress.com/tips1200

## Lenovo XClarity Integrators

Lenovo also offers software plug-in modules, Lenovo XClarity Integrators, to manage physical infrastructure from leading external virtualization management software tools including those from Microsoft and VMware.

These integrators are offered at no charge, however if software support is required, a Lenovo XClarity Pro software subscription license should be ordered.

Lenovo XClarity Integrators offer the following additional features:

- Ability to discover, manage, and monitor Lenovo server hardware from VMware vCenter or Microsoft System Center
- Deployment of firmware updates and configuration patterns to Lenovo x86 rack servers and Flex System from the virtualization management tool
- Non-disruptive server maintenance in clustered environments that reduces workload downtime by dynamically migrating workloads from affected hosts during rolling server updates or reboots
- Greater service level uptime and assurance in clustered environments during unplanned hardware events by dynamically triggering workload migration from impacted hosts when impending hardware failures are predicted

For more information about all the available Lenovo XClarity Integrators, see the Lenovo XClarity Administrator Product Guide: https://lenovopress.com/tips1200-lenovo-xclarity-administrator

## Lenovo XClarity Essentials

Lenovo offers the following XClarity Essentials software tools that can help you set up, use, and maintain the server at no additional cost:

- Lenovo Essentials OneCLI

OneCLI is a collection of server management tools that uses a command line interface program to manage firmware, hardware, and operating systems. It provides functions to collect full system health information (including health status), configure system settings, and update system firmware and drivers.

- Lenovo Essentials UpdateXpress

The UpdateXpress tool is a standalone GUI application for firmware and device driver updates that enables you to maintain your server firmware and device drivers up-to-date and help you avoid unnecessary server outages. The tool acquires and deploys individual updates and UpdateXpress System Packs (UXSPs) which are integration-tested bundles.

- Lenovo Essentials Bootable Media Creator

The Bootable Media Creator (BOMC) tool is used to create bootable media for offline firmware update.

For more information and downloads, visit the Lenovo XClarity Essentials web page:
http://support.lenovo.com/us/en/documents/LNVO-center

## Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager (LXEM) is a power and temperature management solution for data centers. It is an agent-free, web-based console that enables you to monitor and manage power consumption and temperature in your data center through the management console. It enables server density and data center capacity to be increased through the use of power capping.
LXEM is a licensed product. A single-node LXEM license is included with the XClarity Controller Enterprise upgrade as described in the Remote Management section. If your server does not have the XCC Enterprise upgrade, Energy Manager licenses can be ordered as shown in the following table.

Table 51. Lenovo XClarity Energy Manager

| Part number | Description |
| :--- | :--- |
| 4L40E51621 | Lenovo XClarity Energy Manager Node License (1 license needed per server) |

For more information about XClarity Energy Manager, see the following resources:

- Lenovo Support page:
https://datacentersupport.lenovo.com/us/en/solutions/Invo-lxem
- Lenovo Information Center:
https://sysmgt.lenovofiles.com/help/topic/LXEM/Ixem_overview.html?cp=4


## Security

Topics in this section:

- Security features
- Platform Firmware Resiliency - Lenovo ThinkShield
- Intel Transparent Supply Chain


## Security features

The ST250 V2 offers the following security features:

- Electronic security measures:
- Administrator and power-on passwords
- Secure firmware updates
- Trusted Platform Module (TPM) supporting TPM 2.0
- For China customers, the Nationz TPM plug-in module
- Self-encrypting drives with support for IBM Security Key Lifecycle Manager
- Mechanical security measures
- Loop for a padlock to prevent the side panel from being opened
- Slot at the rear of the server for a Kensington Cable Lock
- Optional lockable front door
- Optional chassis intrusion switch

The server is NIST SP 800-147B compliant.
The Nationz TPM module is installed in a dedicated socket on the system board. See the Components and connectors section for locations of physical components.

The following table lists the security options for the server.
Table 52. Security

| Part number | Feature code | Description |
| :--- | :--- | :--- |
| 4XF7A81463 | B41K | ThinkSystem ST250 V2 4U Security Door |
| 4Z57A14086 | B4LS | ThinkSystem ST250 Intrusion Cable Kit |
| CTO only | B8LE | ThinkSystem NationZ TPM 2.0 for PRC (China customers only) |

For self-encrypting drives (SEDs) with support for enterprise key managers, see the SED encryption key management section.

## Platform Firmware Resiliency - Lenovo ThinkShield

Lenovo's ThinkShield Security is a transparent and comprehensive approach to security that extends to all dimensions of our data center products: from development, to supply chain, and through the entire product lifecycle.

The ThinkSystem ST250 V2 includes Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) which enables the system to be NIST SP800-193 compliant. This offering further enhances key platform subsystem protections against unauthorized firmware updates and corruption, to restore firmware to an integral state, and to closely monitor firmware for possible compromise from cyber attacks.

PFR operates upon the following server components:

- UEFI image - the low-level server firmware that connects the operating system to the server hardware
- XCC image - the management "engine" software that controls and reports on the server status separate from the server operating system
- FPGA image - the code that runs the server's lowest level hardware controller on the motherboard

The Lenovo Platform Root of Trust Hardware performs the following three main functions:

- Detection - Measures the firmware and updates for authenticity
- Recovery - Recovers a corrupted image to a known-safe image
- Protection - Monitors the system to ensure the known-good firmware is not maliciously written

These enhanced protection capabilities are implemented using a dedicated, discrete security processor whose implementation has been rigorously validated by leading third-party security firms. Security evaluation results and design details are available for customer review - providing unprecedented transparency and assurance.

The ST250 V2 includes support for Secure Boot, a UEFI firmware security feature developed by the UEFI Consortium that ensures only immutable and signed software are loaded during the boot time. The use of Secure Boot helps prevent malicious code from being loaded and helps prevent attacks, such as the installation of rootkits. Lenovo offers the capability to enable secure boot in the factory, to ensure end-to-end protection. Alternatively, Secure Boot can be left disabled in the factory, allowing the customer to enable it themselves at a later point, if desired.

The following table lists the relevant feature code(s).
Table 53. Secure Boot options

| Part number | Feature code | Description | Purpose |
| :--- | :--- | :--- | :--- |

Tip: If Secure Boot is not enabled in the factory, it can be enabled later by the customer. However once Secure Boot is enabled, it cannot be disabled.

## Intel Transparent Supply Chain

Add a layer of protection in your data center and have peace of mind that the server hardware you bring into it is safe authentic and with documented, testable, and provable origin.

Lenovo has one of the world's best supply chains, as ranked by Gartner Group, backed by extensive and mature supply chain security programs that exceed industry norms and US Government standards. Now we are the first Tier 1 manufacturer to offer Intel® Transparent Supply Chain in partnership with Intel, offering you an unprecedented degree of supply chain transparency and assurance.

To enable Intel Transparent Supply Chain for the Intel-based servers in your order, add the following feature code in the DCSC configurator, under the Security tab.

Table 54. Intel Transparent Supply Chain ordering information

| Feature code | Description |
| :--- | :--- |
| BBOP | Intel Transparent Supply Chain |

For more information on this offering, see the paper Introduction to Intel Transparent Supply Chain on Lenovo ThinkSystem Servers, available from https://lenovopress.com/lp1434-introduction-to-intel-transparent-supply-chain-on-thinksystem-servers.

## Keyboards and Mice

The following table lists the supported full-sized USB keyboards and mice available for Lenovo ThinkSystem servers.

The keyboards have the following features:

- Full-sized 104-key keyboard with 3 special Windows keys
- 3 LEDs for caps lock, scroll lock and num lock
- Wired USB connection with 1.8 m cable
- Adjustable feet at the rear of the keyboard

Tip: For keyboards that fit in the rack-mounted console kit, see the KVM console options section, or the ThinkSystem 18.5-inch LCD Console product guide

Table 55. Lenovo Preferred Pro USB Full-sized keyboards - ThinkSystem

| Part number | Feature code | Description |
| :---: | :---: | :---: |
| Mice |  |  |
| 7M57A04698 | BOLN | ThinkSystem Optical Wheel Mouse - USB |
| Keyboards |  |  |
| 7ZB7A05521 | AXTM | ThinkSystem Pref. Pro II USB Keyboard - Arabic |
| 7ZB7A05520 | AXTN | ThinkSystem Pref. Pro II USB Keyboard - Arabic/French |
| 7ZB7A05519 | AXTP | ThinkSystem Pref. Pro II USB Keyboard - Belgium/French |
| 7ZB7A05518 | AXTQ | ThinkSystem Pref. Pro II USB Keyboard - Belgium/UK |
| 7ZB7A05517 | AXTR | ThinkSystem Pref. Pro II USB Keyboard - Brazil/Portuguese |
| 7ZB7A05515 | AXTS | ThinkSystem Pref. Pro II USB Keyboard - Bulgarian |
| 7ZB7A05511 | AXTU | ThinkSystem Pref. Pro II USB Keyboard - Czech |
| 7ZB7A05509 | AXTV | ThinkSystem Pref. Pro II USB Keyboard - Danish |
| 7ZB7A05508 | AXTW | ThinkSystem Pref. Pro II USB Keyboard - Dutch |
| 7ZB7A05506 | AXTX | ThinkSystem Pref. Pro II USB Keyboard - French |
| 7ZB7A05496 | AXTZ | ThinkSystem Pref. Pro II USB Keyboard - French Canadian French |
| 7ZB7A05504 | AXTY | ThinkSystem Pref. Pro II USB Keyboard - French Canadian Multilingual |
| 7ZB7A05495 | AXU0 | ThinkSystem Pref. Pro II USB Keyboard - German |
| 7ZB7A05494 | AXU1 | ThinkSystem Pref. Pro II USB Keyboard - Greek |
| 7ZB7A05493 | AXU2 | ThinkSystem Pref. Pro II USB Keyboard - Hebrew |
| 7ZB7A05492 | AXU3 | ThinkSystem Pref. Pro II USB Keyboard - Hungarian |
| 7ZB7A05491 | AXU4 | ThinkSystem Pref. Pro II USB Keyboard - Iceland |
| 7ZB7A05490 | AXU5 | ThinkSystem Pref. Pro II USB Keyboard - Italy |
| 7ZB7A05489 | AXU6 | ThinkSystem Pref. Pro II USB Keyboard -Japanese |
| 7ZB7A05488 | AXU7 | ThinkSystem Pref. Pro II USB Keyboard - Korean |
| 7ZB7A05487 | AXU8 | ThinkSystem Pref. Pro II USB Keyboard - LA Spanish |
| 7ZB7A05486 | AXU9 | ThinkSystem Pref. Pro II USB Keyboard - Norwegian |
| 7ZB7A05485 | AXUA | ThinkSystem Pref. Pro II USB Keyboard - Polish |
| 7ZB7A05484 | AXUB | ThinkSystem Pref. Pro II USB Keyboard- Portugese |
| 7ZB7A05483 | AXUC | ThinkSystem Pref. Pro II USB Keyboard - Romanian |
| 7ZB7A05482 | AXUD | ThinkSystem Pref. Pro II USB Keyboard - Russian/Cy |


| Part number | Feature code | Description |
| :--- | :--- | :--- |
| 7ZB7A05481 | AXUE | ThinkSystem Pref. Pro II USB Keyboard - Serbian/Cyrilic |
| 7ZB7A05480 | AXUF | ThinkSystem Pref. Pro II USB Keyboard - Slovak |
| 7ZB7A05471 | AXUQ | ThinkSystem Pref. Pro II USB Keyboard - Slovenian |
| 7ZB7A05479 | AXUG | ThinkSystem Pref. Pro II USB Keyboard - Spanish |
| 7ZB7A05478 | AXUH | ThinkSystem Pref. Pro II USB Keyboard- Swedish/Finn |
| 7ZB7A05477 | AXUJ | ThinkSystem Pref. Pro II USB Keyboard - Swiss, F/G |
| 7ZB7A05476 | AXUK | ThinkSystem Pref. Pro II USB Keyboard - Thailand |
| 7ZB7A05513 | AXTT | ThinkSystem Pref. Pro II USB Keyboard - Trad Chinese/US |
| 7ZB7A05474 | AXUM | ThinkSystem Pref. Pro II USB Keyboard - Turkish 179 |
| 7ZB7A05475 | AXUL | ThinkSystem Pref. Pro II USB Keyboard - Turkish 440 |
| 7ZB7A05473 | AXUN | ThinkSystem Pref. Pro II USB Keyboard - UK English |
| 7ZB7A05522 | AXTL | ThinkSystem Pref. Pro II USB Keyboard - US English |
| 7ZB7A05472 | AXUP | ThinkSystem Pref. Pro II USB Keyboard - US Euro |

## Rack installation

The ST250 V2 can be installed in the rack with the Rack Mount Kit, which converts the server to a rackmountable server.

Note: The server is a 4 U rack mount server, however the rack mount kit adds 1 U to the vertical space occupied by the server. The total rack space occupied is 5 U .

Part number information is listed in the following table. The kit can only be ordered as an option part number, not in a CTO order.

Table 56. Rack installation options

| Part number | Description |
| :--- | :--- |
| 4XF7A78620 | ThinkSystem ST50 V2/ST250 V2 Rack Mount Kit |

The rack mount kit includes the following items:

- 1 U tray to hold the server horizontally
- Left and right slide rails
- Cable management arm
- Brackets and other hardware
- Installation instructions

The following table summarizes the rail kit features and specifications.

Table 57. Rail kit features and specifications summary

| Feature | ThinkSystem ST50 V2/ST250 V2 Rack Mount Kit |
| :--- | :--- |
| Option part number | 4XF7A78620 |
| Rail type | Full-out slide rail (ball bearing) |
| Toolless installation | Yes |
| CMA support | Included |
| Supported rack type | Four-post IBM and Lenovo standard rack, complying with the <br> IEC standard |
| In-rack server maintenance | No |
| 1U PDU support | Yes |
| 0U PDU support | Limited support** |
| Supported mounting holes | Square or round |
| Thickness of mounting flanges | 2.0 to 3.3 mm (0.08 to 0.13 inches) |
| Supported distance between front and rear <br> mounting flanges $\ddagger$ | 665 to $900 \mathrm{~mm}(26.2$ to 35.4 inches) |
| Rail length $\dagger$ | $792 \mathrm{~mm} \mathrm{(31.2} \mathrm{inches)}$ |

** If you want to install the rails and a OU PDU into the same rack, the rack must meet the height and depth requirements as described in ThinkSystem Rail Support Matrix.
$\ddagger$ For best performance, it is recommended that you install the rails to the racks with a 719-mm distance (28.3-inch, Lenovo rack default distance) between the front and rear mounting flanges.
$\dagger$ Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail. Rail is in closed position.

The following figure shows the ST250 V2 installed in the Rack Mount Kit.


Figure 10. ST250 V2 installed in the Rack Mount Kit

## Operating systems

The server supports the following operating systems:

- Microsoft Windows Server 2019
- Microsoft Windows Server 2022
- Red Hat Enterprise Linux 8.4
- Red Hat Enterprise Linux 8.7
- Red Hat Enterprise Linux 8.8
- Red Hat Enterprise Linux 9.0
- Red Hat Enterprise Linux 9.1
- Red Hat Enterprise Linux 9.2
- SUSE Linux Enterprise Server 15 SP3
- SUSE Linux Enterprise Server 15 SP4
- SUSE Linux Enterprise Server 15 Xen SP3
- SUSE Linux Enterprise Server 15 Xen SP4
- VMware ESXi 7.0 U3
- VMware ESXi 8.0
- VMware ESXi 8.0 U1

For a complete list of supported, certified and tested operating systems, plus additional details and links to relevant web sites, see the Operating System Interoperability Guide: https://lenovopress.com/osig

Virtualization support: The onboard SATA ports of the server can be used with virtualization hypervisors, including VMware ESXi, Linux KVM, Xen, and Microsoft Hyper-V, however support is limited to AHCI (nonRAID) mode. RSTe mode is not supported with virtualization hypervisors.

For configure-to-order (CTO) configurations, the server can be preloaded with VMware ESXi installed on an M. 2 drive. Ordering information is listed in the following table.

Table 58. VMware ESXi preload

| Part number | Feature code | Description |
| :--- | :--- | :--- |
| CTO only | BMT5 | VMware ESXi 8.0 (Factory Installed) |
| CTO only | BQ8S | VMware ESXi 8.0 U1 (Factory Installed) |

## Physical and electrical specifications

The ST250 V2 has the following overall physical dimensions, including tower feet, excluding components that extend outside the standard chassis, such as power supply handles:

- Width: 176 mm (6.9 inches)
- Height: 444 mm (17.5 inches)
- Depth: 578 mm (22.8 inches)

The following table lists the detailed dimensions. See the figure below for the definition of each dimension.
Table 59. Detailed dimensions

| Dimension | Description |
| :--- | :--- |
| 176 mm | $X_{a}=$ Width, using widest features (not including feet) |
| 155 mm | $\mathrm{X}_{\mathrm{b}}=$ Width, with chassis feet extended |
| 444 mm | $\mathrm{Y}_{\mathrm{a}}=$ Height, from bottom of feet to top of chassis body |
| 430 mm | $\mathrm{Y}_{\mathrm{b}}=$ Height, from bottom of chassis body to top of chassis body |
| 544 mm | $\mathrm{Z}_{\mathrm{a}}=$ Depth, from front door to most rearward I/O port surface |
| 578 mm | $\mathrm{Z}_{\mathrm{b}}=$ Depth, from front door to deepest feature of the chassis body feature |
| 595 mm | $\mathrm{Z}_{\mathrm{c}}=$ Depth, from front door to deepest feature such as power supply handle |
| 23 mm | $\mathrm{Z}_{\mathrm{e}}=$ Depth, front door to front plate of chassis body |



Figure 11. Server dimension
The shipping dimensions (cardboard packaging) of the ST250 V2 are as follows:

- Width: 579 mm (22.8 inches)
- Height: 298 mm (11.7 inches)
- Depth: 763 mm ( 30.0 inches)

The server has the following weight:

- Weight, fully configured: 23.6 kg (52 lb)

Electrical requirements are as follows:

- Models with a 250 W AC fixed power supply:
- 100-127 (nominal) $V$ ac; 50 Hz or $60 \mathrm{~Hz}, 2.93 \mathrm{~A}$
- 200-240 (nominal) V ac; 50 Hz or $60 \mathrm{~Hz}, 1.28 \mathrm{~A}$
- Models with a 300 W AC fixed power supply:
- 100-127 (nominal) $V$ ac; 50 Hz or $60 \mathrm{~Hz}, 3.56 \mathrm{~A}$
- 200-240 (nominal) V ac; 50 Hz or $60 \mathrm{~Hz}, 1.55 \mathrm{~A}$
- Models with 550 W AC hot-swap power supplies:
- 100-127 (nominal) V ac; 50 Hz or $60 \mathrm{~Hz} ; 6.35 \mathrm{~A}$
- 200-240 (nominal) V ac; 50 Hz or $60 \mathrm{~Hz} ; 2.75 \mathrm{~A}$

Note for customers in China: 240V DC is not supported.

## Operating environment

The server is designed to operate in ASHRAE A2 environments $\left(10-35^{\circ} \mathrm{C}\right)$. With certain configurations, the server can also operate within ASHRAE Class A3 and A4 specifications. System performance may be impacted when operating temperature is outside ASHRAE A2 specification.

The server can be configured to operate in ASHRAE A3 environments $\left(5-40^{\circ} \mathrm{C}\right)$ or ASHRAE A4 environments $\left(5-45^{\circ} \mathrm{C}\right)$, provided the following restrictions are met:

- Processor with a maximum TDP as follows:
- ASHRAE A3: 80W TDP maximum
- ASHRAE A4: 70W TDP maximum
- Maximum of $8 \times 2.5^{\prime \prime}$ drives or $4 \times 3.5$-inch drives (one backplane)
- No support for GPUs
- No support for M. 2 drives
- No support for NVMe drives
- No support for 10 Gb or 25 Gb Ethernet adapters
- No support for hot-swap power supplies

Configuration-specific requirements:

- When 480GB M. 2 drives are installed, the ambient temperature cannot exceed $30^{\circ} \mathrm{C}$


## Temperature and humidity

The server is supported operating in the following environments:

- ASHRAE A2:
- Temperature: $10^{\circ} \mathrm{C}$ to $35^{\circ} \mathrm{C}$
- Humidity: $8 \%$ to $80 \%$
- Altitude 0-3000 m (10,000 ft), derated $1^{\circ} \mathrm{C}$ per 300 m above 950 m
- ASHRAE A3:
- Temperature: $5^{\circ} \mathrm{C}$ to $40^{\circ} \mathrm{C}$
- Humidity: 8\% to $85 \%$
- Altitude 0-3000 m (10,000 ft), derated $1^{\circ} \mathrm{C}$ per 175 m above 950 m
- ASHRAE A4:
- Temperature: $5^{\circ} \mathrm{C}$ to $45^{\circ} \mathrm{C}$
- Humidity: $8 \%$ to $90 \%$
- Altitude 0-3000 m (10,000 ft), derated $1^{\circ} \mathrm{C}$ per 175 m above 950 m

Non-operating environment support:

- Without packaging:
- Temperature: $-10^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}$
- Humidity: 8 to $90 \%$
- Storage with packaging:
- Temperature: $-40^{\circ} \mathrm{C}$ to $70^{\circ} \mathrm{C}$
- Humidity: 8 to $90 \%$


## Heat output

Thermal (heat) output:

- Minimum configuration: 358.05 BTU per hour (105 watts)
- Maximum configuration: 1029.82 BTU per hour (302 watts)


## Acoustical noise emissions

The server has the following acoustic noise emissions declaration:

- Sound power level (L wad):
- Idling: 4.3 Bel (Typical), 4.4 Bel (Max)
- Operating: 4.3 Bel (Typical), 4.5 Bel (Max)
- Sound pressure level ( $\mathrm{L}_{\text {pAm }}$ ):
- Idling: 27.4 dBA (Typical), 28.6 dBA (Max)
- Operating: 27.6 dBA (Typical), 29.0 dBA (Max)


## Note:

- These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296, SPL is measured by bystander position (1m).
- The declared acoustic sound levels are based on the following configurations, which may change depending on configuration/conditions, for example M. 2 drive, Broadcom 57414 25Gb NIC, Broadcom 57416 10Gb NIC, T1000, etc.
- Typical: 1x 80W CPU, 4x 32GB DIMM, 2x HDD or SSD, RAID 5350-8i, 1x 300W PSU
- Max: 1x 95W CPU, 4x 32GB DIMM, $2 x$ HDD or SSD, $2 x$ 550W PSU


## Shock and vibration

The server has the following vibration and shock limits:

- Vibration:
- Operating: 0.21 Grms at 5 Hz to 500 Hz for 15 minutes across 3 axes
- Non-operating: 1.04 Grms at 2 Hz to 200 Hz for 15 minutes across 6 surfaces
- Shock:
- Operating: 15 G for 3 milliseconds in each direction (positive and negative $\mathrm{X}, \mathrm{Y}$, and Z axes)
- Non-operating:
- $4 \mathrm{~kg}-11 \mathrm{~kg}: 50 \mathrm{G}$ for $167 \mathrm{in} . / \mathrm{sec}$ velocity change across 6 surfaces
- $12 \mathrm{~kg}-22 \mathrm{~kg}: 50 \mathrm{G}$ for $152 \mathrm{in} . / \mathrm{sec}$ velocity change across 6 surfaces
- $23 \mathrm{~kg}-31 \mathrm{~kg}: 35 \mathrm{G}$ for $152 \mathrm{in} . / \mathrm{sec}$ velocity change across 6 surfaces


## Particulate contamination

Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might damage the system that might cause the system to malfunction or stop working altogether.

The following specifications indicate the limits of particulates that the system can tolerate:

- Reactive gases:
- The reactivity rate of copper coupons shall be less than 200 Angstroms per month ( $\AA /$ /month $)$
- The reactivity rate of silver coupons shall be less than $200 \AA /$ month
- Airborne particulates:
- The room air should be continuously filtered with MERV 8 filters.
- Air entering a data center should be filtered with MERV 11 or preferably MERV 13 filters.
- The deliquescent relative humidity of the particulate contamination should be more than $60 \%$ RH
- Data centers must be free of zinc whiskers

For additional information, see the Specifications section of the Setup Guide for the server, available from the Lenovo Documents site, https://pubs.lenovo.com/

## Warranty and Support

The ST250 V2 has a 1-year or 3-year warranty, based on the machine type of the system:

- 7D8G - 1 year warranty
- 7D8F - 3 year warranty

The standard warranty terms are customer-replaceable unit (CRU) and onsite (for field-replaceable units FRUs only) with standard call center support during normal business hours and $9 \times 5$ Next Business Day Parts Delivered.

Lenovo's additional support services provide a sophisticated, unified support structure for your data center, with an experience consistently ranked number one in customer satisfaction worldwide. Available offerings include:

## - Premier Support

Premier Support provides a Lenovo-owned customer experience and delivers direct access to technicians skilled in hardware, software, and advanced troubleshooting, in addition to the following:

- Direct technician-to-technician access through a dedicated phone line
- 24x7x365 remote support
- Single point of contact service
- End to end case management
- Third-party collaborative software support
- Online case tools and live chat support
- On-demand remote system analysis


## - Warranty Upgrade (Preconfigured Support)

Services are available to meet the on-site response time targets that match the criticality of your systems.

- 3,4, or 5 years of service coverage
- 1-year or 2-year post-warranty extensions
- Foundation Service: $9 \times 5$ service coverage with next business day onsite response. YourDrive YourData is an optional extra (see below).
- Essential Service: $24 \times 7$ service coverage with 4 -hour onsite response or 24 -hour committed repair (available only in select markets). Bundled with YourDrive YourData.
- Advanced Service: $24 \times 7$ service coverage with 2-hour onsite response or 6-hour committed repair (available only in select markets). Bundled with YourDrive YourData.


## - Managed Services

Lenovo Managed Services provides continuous $24 \times 7$ remote monitoring (plus $24 \times 7$ call center availability) and proactive management of your data center using state-of-the-art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

Quarterly reviews check error logs, verify firmware \& OS device driver levels, and software as needed. We'll also maintain records of latest patches, critical updates, and firmware levels, to ensure you systems are providing business value through optimized performance.

## - Technical Account Management (TAM)

A Lenovo Technical Account Manager helps you optimize the operation of your data center based on a deep understanding of your business. You gain direct access to your Lenovo TAM, who serves as your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. In addition, your TAM will help proactively make service recommendations and manage your service relationship with Lenovo to make certain your needs are met.

- Enterprise Server Software Support

Enterprise Software Support is an additional support service providing customers with software support on Microsoft, Red Hat, SUSE, and VMware applications and systems. Around the clock availability for critical problems plus unlimited calls and incidents helps customers address challenges fast, without incremental costs. Support staff can answer troubleshooting and diagnostic questions, address product comparability and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

## - YourDrive YourData

Lenovo's YourDrive YourData is a multi-drive retention offering that ensures your data is always under your control, regardless of the number of drives that are installed in your Lenovo server. In the unlikely event of a drive failure, you retain possession of your drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The YourDrive YourData service can be purchased in convenient bundles and is optional with Foundation Service. It is bundled with Essential Service and Advanced Service.

## - Health Check

Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that your systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovosupported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spare parts.
Lenovo Service offerings are region-specific. Not all preconfigured support and upgrade options are available in every region. For information about Lenovo service upgrade offerings that are available in your region, refer to the following resources:

- Service part numbers in Lenovo Data Center Solution Configurator (DCSC):


## http://dcsc.lenovo.com/\#/services

- Lenovo Services Availability Locator
http://lenovolocator.com/
For service definitions, region-specific details, and service limitations, please refer to the following documents:
- Lenovo Statement of Limited Warranty for Infrastructure Solutions Group (ISG) Servers and System Storage
http://pcsupport.lenovo.com/us/en/solutions/ht503310
- Lenovo Data Center Services Agreement
http://support.lenovo.com/us/en/solutions/ht116628


## Services

Lenovo Services is a dedicated partner to your success. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

Note: Some service options may not be available in all markets or regions. For more information, go to https://www.lenovo.com/services. For information about Lenovo service upgrade offerings that are available in your region, contact your local Lenovo sales representative or business partner.

Here's a more in-depth look at what we can do for you:

## - Asset Recovery Services

Asset Recovery Services (ARS) helps customers recover the maximum value from their end-of-life equipment in a cost-effective and secure way. On top of simplifying the transition from old to new equipment, ARS mitigates environmental and data security risks associated with data center equipment disposal. Lenovo ARS is a cash-back solution for equipment based on its remaining market value, yielding maximum value from aging assets and lowering total cost of ownership for your customers. For more information, see the ARS page, https://lenovopress.com/lp1266-reduce-e-waste-and-grow-your-bottom-line-with-lenovo-ars.

## - Assessment Services

An Assessment helps solve your IT challenges through an onsite, multi-day session with a Lenovo technology expert. We perform a tools-based assessment which provides a comprehensive and thorough review of a company's environment and technology systems. In addition to the technology based functional requirements, the consultant also discusses and records the non-functional business requirements, challenges, and constraints. Assessments help organizations like yours, no matter how large or small, get a better return on your IT investment and overcome challenges in the ever-changing technology landscape.

## - Design Services

Professional Services consultants perform infrastructure design and implementation planning to support your strategy. The high-level architectures provided by the assessment service are turned into low level designs and wiring diagrams, which are reviewed and approved prior to implementation. The implementation plan will demonstrate an outcome-based proposal to provide business capabilities through infrastructure with a risk-mitigated project plan.

## - Basic Hardware Installation

Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing your team to focus on other priorities.

## - Deployment Services

When investing in new IT infrastructures, you need to ensure your business will see quick time to value with little to no disruption. Lenovo deployments are designed by development and engineering teams who know our Products \& Solutions better than anyone else, and our technicians own the process from delivery to completion. Lenovo will conduct remote preparation and planning, configure \& integrate systems, validate systems, verify and update appliance firmware, train on administrative tasks, and provide post-deployment documentation. Customer's IT teams leverage our skills to enable IT staff to transform with higher level roles and tasks.

- Integration, Migration, and Expansion Services

Move existing physical \& virtual workloads easily, or determine technical requirements to support increased workloads while maximizing performance. Includes tuning, validation, and documenting ongoing run processes. Leverage migration assessment planning documents to perform necessary migrations.

## Regulatory compliance

The ST250 V2 conforms to the following standards:

- ANSI/UL 62368-1
- IEC 62368-1 (CB Certificate and CB Test Report)
- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 7, Class A
- CSA C22.2 No. 62368-1
- CISPR 32, Class A, CISPR 35
- Argentina IEC 60950-1
- Japan VCCI, Class A
- Taiwan BSMI CNS13438, Class A; CNS14336-1; Section 5 of CNS15663
- CE, UKCA Mark (EN55032 Class A, EN62368-1, EN55024, EN55035, EN61000-3-2, EN61000-3-3, (EU) 2019/424, and EN50581-1 (RoHS))
- Korea KN32, Class A, KN35
- Russia, Belorussia and Kazakhstan, TP EAC 037/2016 (for RoHS)
- Russia, Belorussia and Kazakhstan, EAC: TP TC 004/2011 (for Safety); TP TC 020/2011 (for EMC)
- Australia/New Zealand AS/NZS CISPR 32, Class A; AS/NZS 62368.1
- UL Green Guard, UL2819
- Energy Star 3.0
- EPEAT (NSF/ ANSI 426) Bronze
- China CCC certificate, GB17625.1; GB4943.1; GB/T9254
- China CECP certificate, CQC3135
- China CELP certificate, HJ 2507-2011
- Japanese Energy-Saving Act
- Mexico NOM-019
- TUV-GS (EN62368-1, and EK1-ITB2000)
- India BIS 13252 (Part 1)
- Germany GS
- Brazil INMETRO
- South Africa NRCS LOA
- Ukraine UkrCEPRO
- Morocco CMIM Certification (CM)
- EU2019/424 Energy Related Product (ErP Lot9)


## External drive enclosures

The server supports attachment to external drive enclosures using a RAID controller with external ports or a SAS host bus adapter. Adapters supported by the server are listed in the SAS adapters for external storage section.

Note: Information provided in this section is for ordering reference purposes only. For the operating system and adapter support details, refer to the interoperability matrix for a particular storage enclosure that can be found on the Lenovo Data Center Support web site:
http://datacentersupport.lenovo.com
Table 60. External drive enclosures

| Model | Description |
| :--- | :--- |
| 4587 HC 1 | Lenovo Storage D1212 Disk Expansion Enclosure (2U enclosure wth 12x LFF drive bays) |
| 4587 HC 2 | Lenovo Storage D1224 Disk Expansion Enclosure (2U enclosure wth $24 \times$ SFF drive bays) |
| 6413 HC 1 | Lenovo Storage D3284 High Density Expansion Enclosure (5U enclosure wth 84x LFF drive <br> bays) |
| 7DAHCTO1WW | Lenovo ThinkSystem D4390 Direct Attached Storage (4U enclosure wth 90x LFF drive bays) |

For details about supported drives, adapters, and cables, see the following Lenovo Press Product Guides:

- Lenovo Storage D1212 and D1224
http://lenovopress.lenovo.com/lp0512
- Lenovo Storage D3284
http://lenovopress.lenovo.com/lp0513
- Lenovo ThinkSystem D4390
https://lenovopress.lenovo.com/lp1681


## External storage systems

Lenovo offers the ThinkSystem DE Series and ThinkSystem DM Series external storage systems for highperformance storage. See the DE Series and DM Series product guides for specific controller models, expansion enclosures and configuration options:

- ThinkSystem DE Series Storage
https://lenovopress.com/storage/thinksystem/de-series\#rt=product-guide
- ThinkSystem DM Series Storage
https://lenovopress.com/storage/thinksystem/dm-series\#rt=product-guide


## External backup units

The following table lists the external USB backup options that are offered by Lenovo.
Table 61. External USB backup options

| Part number |  |
| :--- | :--- |
| Description |  |
| 4T27A10725 | ThinkSystem RDX External USB 3.0 Dock |
| External RDX cartridges |  |
| 7TP7A01601 | ThinkSystem RDX 500GB Cartridge |
| 7TP7A01602 | ThinkSystem RDX 1TB Cartridge |
| 7TP7A01603 | ThinkSystem RDX 2TB Cartridge |
| 7TP7A04318 | ThinkSystem RDX 4TB Cartridge |

For more information, see the list of Product Guides in the Backup units category:
https://lenovopress.com/servers/options/backup
The following table lists the available external SAS tape backup options.
Tip: Verify the end-to-end support of an IBM tape backup solution through the IBM System Storage Interoperation Center (SSIC): http://www.ibm.com/systems/support/storage/ssic

Table 62. External SAS backup options

| Part number | Description |
| :--- | :--- |
| External SAS tape backup drives |  |
| 6160S7E | IBM TS2270 Tape Drive Model H7S |
| 6160S8E | IBM TS2280 Tape Drive Model H8S |
| 6160 S9E | IBM TS2290 Tape Drive Model H9S |
| External SAS tape backup autoloaders |  |
| 6171S7R | IBM TS2900 Tape Autoloader w/LTO7 HH SAS |
| 6171S8R | IBM TS2900 Tape Autoloader w/LTO8 HH SAS |
| 6171S9R | IBM TS2900 Tape Autoloader w/LTO9 HH SAS |
| External tape backup libraries |  |
| 6741A1F | IBM TS4300 3U Tape Library-Base Unit |
| SAS backup drives for TS4300 Tape Library |  |
| 01 KP937 | LTO 7 HH SAS Drive |
| $01 K P 953$ | LTO 8 HH SAS Drive |
| 02JH836 | LTO 9 HH SAS Drive |

For more information, see the list of Product Guides in the Backup units category:
https://lenovopress.com/servers/options/backup

## Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo.
Table 63. Uninterruptible power supply units

| Part number | Description |
| :---: | :---: |
| Tower UPS units |  |
| 55951AX | T1kVA Tower UPS (100-125VAC) |
| 55951KX | T1kVA Tower UPS (200-240VAC) |
| 55952AX | T1.5kVA Tower UPS (100-125VAC) |
| 55952KX | T1.5kVA Tower UPS (200-240VAC) |
| Rack-mounted or tower UPS units |  |
| 55941AX | RT1.5kVA 2U Rack or Tower UPS (100-125VAC) |
| 55941KX | RT1.5kVA 2U Rack or Tower UPS (200-240VAC) |
| 55942AX | RT2.2kVA 2U Rack or Tower UPS (100-125VAC) |
| 55942KX | RT2.2kVA 2U Rack or Tower UPS (200-240VAC) |
| 55943AX | RT3kVA 2U Rack or Tower UPS (100-125VAC) |
| 55943KX | RT3kVA 2U Rack or Tower UPS (200-240VAC) |
| 55945KX | RT5kVA 3U Rack or Tower UPS (200-240VAC) |
| 55946KX | RT6kVA 3U Rack or Tower UPS (200-240VAC) |
| 55948KX | RT8kVA 6U Rack or Tower UPS (200-240VAC) |
| 55949KX | RT11kVA 6U Rack or Tower UPS (200-240VAC) |
| 55948PX | RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) |
| 55949PX | RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) |
| Rack-mounted UPS units |  |
| 55943KT $\dagger$ | ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets) |
| 55943LT $\dagger$ | ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets) |
| 55946KT $\dagger$ | ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output) |
| 5594XKT $\dagger$ | ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output) |

$\dagger$ Only available in China and the Asia Pacific market.
For more information, see the list of Product Guides in the UPS category:
https://lenovopress.com/servers/options/ups

## Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo.
Table 64. Power distribution units

| Part number | Feature code | Description | $\underset{<}{N}$ | $\begin{aligned} & \mathbf{z} \\ & \stackrel{\rightharpoonup}{\mathbf{u}} \\ & \mathbf{w} \end{aligned}$ |  |  |  |  | - |  |  |  | $\stackrel{\substack{\text { ¢ }}}{\underline{2}}$ | 2 | $\checkmark$ | を |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| OU Basic PDUs |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 00YJ776 | ATZY | 0U 36 C13/6 C19 24A 1 Phase PDU | N | Y | Y | N |  | N | N |  |  |  | N | Y | Y | Y | N |


| Part number | Feature code | Description | $\underset{<}{N}$ | 忘 | ¢ | 山 | 勉 | ¢ | W | \|노조 |  | 2 | ¢ | ¢ | O |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 00YJ777 | ATZZ | OU 36 C13／6 C19 32A 1 Phase PDU | Y | Y | N | Y | Y | Y | Y | Y | Y | N | N | Y | Y |
| 00YJ778 | AU00 | OU 21 C13／12 C19 32A 3 Phase PDU | Y | Y | N | Y | Y | Y | Y | Y | Y | N | N | Y | Y |
| OU Switched and Monitored PDUs |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 00YJ783 | AU04 | OU 12 C13／12 C19 Switched and Monitored 48A 3 Phase PDU | N | N | Y | N | N | N | Y | N | N | Y | Y | Y | N |
| 00YJ781 | AU03 | OU 20 C13／4 C19 Switched and Monitored 24A 1 Phase PDU | N | N | Y | N | Y | N | Y | N | N | Y | Y | Y | N |
| 00YJ782 | AU02 | OU 18 C13／6 C19 Switched and Monitored 32A 3 Phase PDU | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | N | Y |
| 00YJ780 | AU01 | OU 20 C13／4 C19 Switched and Monitored 32A 1 Phase PDU | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | N | Y |
| 1U Switched and Monitored PDUs |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4PU7A81117 | BNDV | 1U 18 C19／C13 switched and monitored 48A 3P WYE PDU－ETL | N | N | N | N | N | N | N | N | N | N | N | Y | N |
| 4PU7A77467 | BLC4 | 1U 18 C19／C13 Switched and Monitored 80A 3P Delta PDU | N | N | N | N | N | N | N | N | N | Y | N | Y | N |
| 4PU7A77469 | BLC6 | 1U 12 C19／C13 switched and monitored 60A 3P Delta PDU | N | N | N | N | N | N | N | N | N | N | N | Y | N |
| 4PU7A77468 | BLC5 | 1U 12 C19／C13 switched and monitored 32A 3P WYE PDU | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y |
| 4PU7A81118 | BNDW | 1U 18 C19／C13 switched and monitored 48A 3P WYE PDU－CE | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | N | Y |
| 1 U Ultra Density Enterprise PDUs（9x IEC 320 C13＋3x IEC 320 C19 outlets） |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 71763NU | 6051 | Ultra Density Enterprise C19／C13 PDU 60A／208V／3PH | N | N | Y | N | N | N | N | N | N | Y | Y | Y | N |
| 71762NX | 6091 | Ultra Density Enterprise C19／C13 PDU Module | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 1U C13 Enterprise PDUs（12x IEC 320 C13 outlets） |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39M2816 | 6030 | DPI C13 Enterprise PDU Plus Module（WW） | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 39 Y 8941 | 6010 | DPI C13 Enterprise PDU Module（WW） | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 1U C19 Enterprise PDUs（6x IEC 320 C19 outlets） |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39 Y 8948 | 6060 | DPI C19 Enterprise PDU Module（WW） | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 1U Front－end PDUs（3x IEC 320 C19 outlets） |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39Y8938 | 6002 | DPI Single－phase 30A／120V Front－end PDU （US） | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 39Y8939 | 6003 | DPI Single－phase 30A／208V Front－end PDU （US） | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 39Y8934 | 6005 | DPI Single－phase 32A／230V Front－end PDU （International） | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| $39 Y 8940$ | 6004 | DPI Single－phase 60A／208V Front－end PDU （US） | Y | N | Y | Y | Y | Y | Y | N | N | Y | Y | Y | N |
| $39 Y 8935$ | 6006 | DPI Single－phase 63A／230V Front－end PDU （International） | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 1U NEMA PDUs（6x NEMA 5－15R outlets） |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


| Part number | Feature code | Description | $\underset{\substack{N \\<\\ \hline}}{ }$ | 足 | $\begin{aligned} & \bar{N} \\ & \mathbb{N} \end{aligned}$ |  |  | $\underset{\Sigma}{\underset{\Sigma}{\underset{~}{~}}}$ | ¢ | 山 | $\underline{Y}$ | 【 | 2 | $\checkmark$ | Z | O |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 39Y8905 | 5900 | DPI 100－127V NEMA PDU | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Line cords for 1U PDUs that ship without a line cord |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40K9611 | 6504 | $4.3 \mathrm{~m}, 32 \mathrm{~A} / 380-415 \mathrm{~V}$, EPDU／IEC 309 3P＋N＋G 3ph wye（non－US）Line Cord | Y | Y | Y |  | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9612 | 6502 | $4.3 \mathrm{~m}, 32 \mathrm{~A} / 230 \mathrm{~V}$ ，EPDU to IEC $309 \mathrm{P}+\mathrm{N}+\mathrm{G}$ （non－US）Line Cord | Y | Y | Y |  | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9613 | 6503 | 4．3m，63A／230V，EPDU to IEC 309 P＋N＋G （non－US）Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9614 | 6500 | 4．3m，30A／208V，EPDU to NEMA L6－30P（US） Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9615 | 6501 | $4.3 \mathrm{~m}, 60 \mathrm{~A} / 208 \mathrm{~V}$ ，EPDU to IEC 309 2P＋G（US） Line Cord | N | N | Y |  | N | N | N | Y | N | N | Y | Y | Y | N |
| 40K9617 | 6505 | 4．3m，32A／230V，Souriau UTG Female to AS／NZ 3112 （Aus／NZ）Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9618 | 6506 | 4．3m，32A／250V，Souriau UTG Female to KSC 8305 （S．Korea）Line Cord | Y | Y | Y |  | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |

For more information，see the Lenovo Press documents in the PDU category：
https：／／lenovopress．com／servers／options／pdu

## Rack cabinets

The ST250 V2 server can be installed horizontally in a rack cabinet using the Rack Mount Kit, as described in the Rack installation section.

The following table lists the supported rack cabinets.
Table 65. Rack cabinets

| Part number | Description |
| :--- | :--- |
| 93072RX | 25U Standard Rack (1000mm) |
| 93072PX | 25U Static S2 Standard Rack (1000mm) |
| 7D6DA007WW | ThinkSystem 42U Onyx Primary Heavy Duty Rack Cabinet (1200mm) |
| 7D6DA008WW | ThinkSystem 42U Pearl Primary Heavy Duty Rack Cabinet (1200mm) |
| 93604PX | 42U 1200mm Deep Dynamic Rack |
| 93614PX | 42U 1200mm Deep Static Rack |
| 93634PX | 42U 1100mm Dynamic Rack |
| 93634EX | 42U 1100mm Dynamic Expansion Rack |
| 93074RX | 42U Standard Rack (1000mm) |
| 7D6EA009WW | ThinkSystem 48U Onyx Primary Heavy Duty Rack Cabinet (1200mm) |
| 7D6EA00AWW | ThinkSystem 48U Pearl Primary Heavy Duty Rack Cabinet (1200mm) |

For specifications about these racks, see the Lenovo Rack Cabinet Reference, available from: https://lenovopress.com/lp1287-lenovo-rack-cabinet-reference

For more information, see the list of Product Guides in the Rack cabinets category:
https://lenovopress.com/servers/options/racks

## KVM console options

The following table lists the supported KVM consoles.
Table 66. KVM console

| Part number | Description |
| :--- | :--- |
| 4XF7A84188 | ThinkSystem 18.5" LCD Console (with English keyboard) |

The following table lists the available KVM switches and the options that are supported with them.
Table 68. KVM switches and options

| Part number | Description |
| :--- | :--- |
| KVM Console switches |  |
| 1754D2X | Global 4x2x32 Console Manager (GCM32) |
| 1754D1X | Global 2x2x16 Console Manager (GCM16) |
| 1754A2X | Local 2x16 Console Manager (LCM16) |
| 1754A1X | Local 1x8 Console Manager (LCM8) |
| Cables for GCM and LCM Console switches |  |
| 46M5383 | Virtual Media Conversion Option Gen2 (VCO2) |
| 46M5382 | Serial Conversion Option (SCO) |

For more information, see the list of Product Guides in the KVM Switches and Consoles category: http://lenovopress.com/servers/options/kvm

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## Related publications and links

For more information, see these resources:

- ThinkSystem ST250 V2 product page
https://www.lenovo.com/us/en/data-center/servers/towers/ThinkSystem-ST250/p/77XX7TRST25
- ThinkSystem ST250 V2 interactive 3D tour
https://lenovopress.com/lp1569-3d-tour-document-3d-tour-thinksystem-st250-v2
- ThinkSystem ST250 V2 drivers and support http://datacentersupport.lenovo.com/products/servers/thinksystem/st250v2/7d8f/downloads
- Lenovo ThinkSystem ST250 V2 product publications:
http://thinksystem.lenovofiles.com/help/index.jsp
- Quick Start
- Tower-to-Rack Conversion Kit Installation Instructions
- Setup Guide
- Maintenance Manual
- Lenovo XClarity Provisioning Manager User Guide
- ServerProven hardware compatibility:
http://www.lenovo.com/us/en/serverproven


## Related product families

Product families related to this document are the following:

- 1-Socket Tower Servers
- ThinkSystem ST250 V2 Server


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