PowerEdge T640 – Workhorse server for demanding workloads

Tech Note by:
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Powerful, efficient and versatile

The Dell PowerEdge T640 delivers peak 2-socket performance, efficiency and versatility for a wide range of workloads in enterprise data centers, remote/branch offices, and medium businesses.

• Drive peak performance across a wide range of workloads with the latest Intel processors, DDR4 memory, and PCIe 3.0.

• Deliver greater performance and faster data analytics with support for up to 4 optional double wide GPUs or up to 8 optional single wide GPUs.

• Accelerate time to production and drive better ROI with Dell OpenManage tools that streamline and automate deployment.

• Save time and free up IT Admin energies with intuitive, automatable tools for monitoring and update.

• Ensure fast response times as you grow by expanding memory footprint up to 24 DDR4 DIMMs.

• Harness data explosion with massive internal storage capacity - up to 18 x 3.5" or 32 x 2.5" drives.

Customers of all sizes consulted with Dell EMC, stating their requirements for a powerful and versatile rackable tower server that provides peak two-processor performance, huge internal storage capacity, and extensive configuration flexibility to adapt to a wide range of demanding workloads. The PowerEdge T640 is the fulfillment of those requirements. Its high performance and large memory footprint, combined with extensive internal storage capacity, broad I/O bandwidth and support for up to four graphics processing units (GPUs), make it an excellent platform for key workloads including medical imaging, data analytics and business intelligence, and server and desktop virtualization.

Whether installed in enterprise data centers, medium businesses, or remote offices/branch offices (ROBO), the T640 brings new levels of performance, efficiency and versatility that help drive business and organizational success.

Expanded capacity, unprecedented capability

Foundational to boosting application performance, the PowerEdge T640 supports up to two powerful, multicore processors from the Intel Xeon Scalable Processor family. These processors deliver a range of performance-enhancing, energy-efficient features, resulting in increased processing efficiency and higher overall performance for demanding workloads. In addition, the new Intel processors help to enable optimal load balancing in virtualized environments, improving scheduling and migration.

Figure 1: The PowerEdge T640 in rack (left) and tower (right) orientation

The T640 boasts 24 DIMM slots supporting extensive memory capacity using the latest DDR4 memory technology. Being able to hold large amounts of data in memory, close to the processor where it will be used, reduces data transfer time and results in faster response times, helping to enhance end-user productivity and customer satisfaction.

The PowerEdge T640 also accelerates I/O performance, with eight PCIe 3.0 slots, which increase data throughput by up to two times over PCIe 2.0.

The combination of these more powerful processors, larger memory capacity, and greater I/O bandwidth drives higher performance and faster response times. This is true for all workloads that run on the PowerEdge T640, whether they be traditional collaboration and productivity applications, or online transaction processing in the retail industry, video streaming and student records management in education, or applications such as medical imaging and medical records management in healthcare. Each of these application areas benefits from the high, balanced performance of the PowerEdge T640.

Fast storage, fast insights
Of course, applications and workloads like these typically spawn a lot of data and images to store, and this is another area in which the PowerEdge T640 shines. The T640 server has internal storage capacity for up to 18 x 3.5-inch hard drives or up to 32 x 2.5-inch drives. What this means is that the T640 has massive internal capacity for storage today, and room for expansion as businesses and organizations grow into the future, without the need to cable, power and manage an external storage device.

Moreover, the PowerEdge T640 supports up to eight optional Express Flash NVMe PCIe SSDs, which provide extremely high Input/Output Operations per Second (IOPS) compared to standard rotating hard drives, overcoming I/O bottlenecks for demanding, business-critical applications, and driving peak application performance. All drives supported in the T640 are hot-pluggable and swappable for easy serviceability, and there are a choice of RAID options for data protection and optimized performance.

The PowerEdge T640 is virtualization-ready. It supports server virtualization technologies including Microsoft Hyper-V, VMware vSphere and Citrix XenServer, and these virtualized environments can be protected with optional, redundant, internal SD cards implementing DellEMC's innovative Failsafe Hypervisor. Failsafe Hypervisor gives the T640 redundancy, and therefore greater high-availability protection, even at the hypervisor level, compared to the single point of failure (SPOF) that characterizes non-protected implementations.

Powerful GPU acceleration
With support for up to four double-wide, or eight single-wide graphics processing units (GPUs), which can be used to offload the central processing units, the T640 is also an outstanding platform for desktop virtualization (VDI). In this role, the T640 offers and excellent combination of GPUs and NVMe. Alternatively, many users use the GPUs for graphics rendering for, say, medical imaging, or chemical and pharmaceutical development, or for structural design by engineering, automotive and aerospace firms. The GPU's are also used by other users for the rapidly growing arena of Artificial Intelligence (AI).

The PowerEdge T640 is Fresh Air 2.0 capable, meaning that it can operate confidently at extended temperatures without the need for chilled air.   Fresh Air 2.0 enables continuous operation up to 40 degrees Celsius (104 degrees Fahrenheit) and excursions up to 45C, 113F, helping the T640 and other PowerEdge servers to comfortably ride through heat waves, while controlling energy costs.

The T640 also features installation flexibility; it can be installed horizontally, in a rack in a data center or an IT closet in a medium business or organization, or installed vertically as a tower server on an office floor.

Innovative systems management with intelligent automation
Managing the PowerEdge T640 is straightforward and intuitive with Dell OpenManage systems management solutions. OpenManage solutions, which include the OpenManage Essentials console, simplify systems management throughout the server life cycle, from a rapid and confident deployment to easier ongoing administration. OpenManage tools are unified into comprehensive solutions, helping to reduce complexity and potential for error. In addition, the embedded, agent-free management used on the T640 and other PowerEdge servers helps reduce the number of steps taken to perform tasks, which in turn saves time and saves money. And, with the optional integrated Dell Remote Access Controller 9 (iDRAC9), the T640 can be managed remotely, even from a smartphone or smart device.

For more information about the PowerEdge T640, visit dell.com at http://www.dell.com/en-us/work/shop/povw/poweredge-t640

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