

# Dell™ PowerEdge™ Servers Powered by AMD Opteron™ Processors Product Guide

## Delivering the performance to drive demanding workloads and help maximize efficiency

The Dell™ PowerEdge™ server family offers a full line of powerful AMD processor-based servers that can help simplify and lower the cost of managing your IT environment. Utilizing the latest generation of Quad-Core and Six-Core AMD Opteron™ processors, Dell PowerEdge servers excel in virtualization performance, power and cooling and embedded systems management with a user-inspired, award-winning design.

Dell PowerEdge servers based on AMD Opteron processors cover the complete gamut, from blades and racks to towers. Whether you need systems for your small business or to help run an enterprise-class data center, the Dell PowerEdge server family has a solution to meet your data center needs. Both the Six-Core AMD Opteron processor and the Quad-Core AMD Opteron processor deliver outstanding power efficiency and scalability.

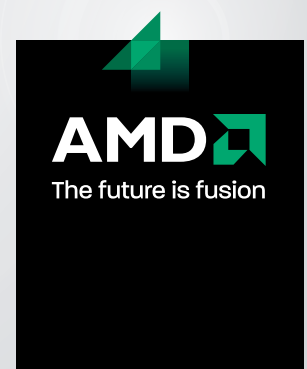
Select a Six-Core AMD Opteron processor-based PowerEdge server solution for:

- **Virtualization:** AMD Virtualization™ (AMD-V™) technology driving near-native application performance
- **Database:** Performance to manage and analyze your most data-intensive applications
- **HPC:** Varied needs by workload, memory bandwidth, and compute power and density

Select the Quad-Core AMD Opteron processor-based PowerEdge server solution for:

- **Infrastructure:** Cost- and energy-efficient platform for utility virtualization, file and print, and network services
- **Email:** I/O and CPU power to reliably handle growing numbers of messages
- **Web/Cloud:** Large, dense deployments that are power sensitive

*Explore the AMD Opteron processor-based Dell PowerEdge server portfolio to find a solution that suits your needs.*



# PowerEdge™ Rack Servers

## Maximize Performance and Availability

Ideal for customers with multiple servers or with limited storage space, AMD Opteron™ processor-based PowerEdge rack servers feature excellent performance functionality and outstanding reliability.



### PowerEdge R905

High-performance rack-dense server, optimized for virtualization

**Form Factor:** 4U Rack

**Benefits:** An ideal platform for virtualization and high-availability, high-performance database applications

**Processor(s):** Up to four Six-Core AMD Opteron Processors or up to four Quad-Core AMD Opteron Processors

**RAM (Min/Max):** 2GB – 256GB DDR2 SDRAM

**PCI Slots:** Seven available: PCIe (2 x8 and 5 x4), RAID and DRAC have dedicated internal slots

**Drive Controllers:** SAS 6/IR or PERC 6/i

**RAID Controller:** PERC 6/i, SAS 6/IR, PERC 6/E, SAS 5/E

**Integrated NIC:** Quad-embedded Broadcom Gigabit\* NICs – TOE and iSCSI offload enabled. Upgradeable to: Dual-embedded Broadcom Gigabit\* NICs – TOE and iSCSI offload enabled plus dual-embedded Broadcom 10 Gigabit NICs

**Max Internal Storage:** 5 x 1TB = 5TB 3.5", 7.2K Near Line SAS or 5 x 450GB = 2.25TB, 3.5" 15K SAS or 8 x 300GB = 2.4TB, 2.5" 10K SAS

**External Storage:** SAS and Fibre Channel storage systems; all available external storage:

Dell/EqualLogic PS5000 Series, PowerVault RD1000 disk-based backup system, PowerVault MD3000 Modular Disk Storage Array, PowerVault MD3000i iSCSI Disk Storage Array, PowerVault MD1000 SAS external storage system

**Availability Features:** ECC memory, SDDC, Memory Sparring; hot-plug SAS hard drives; hot-plug redundant power; hot-plug redundant cooling; optional PCI Express-based RAID with PERC 6/i; tool-less chassis; optional PCI Express-based Fibre Channel HBA; Baseboard Management Controller with IPMI 2.0



### PowerEdge R805

Designed from the ground up for balanced virtualization performance

**Form Factor:** 2U Rack

**Benefits:** Fine-tuned to provide virtualization performance with a carefully selected formula of processor technology, memory capacity, and I/O scalability; featuring up to 2X the memory and I/O scalability of previous generation standard 2U 2-socket servers, the PowerEdge R805 helps remove the barriers to running memory and I/O dependent applications such as VMware's ESX server™

**Processor(s):** Up to two Six-Core AMD Opteron Processors or up to two Quad-Core AMD Opteron Processors

**RAM (Min/Max):** 2GB – 128GB DDR2 SDRAM

**PCI Slots:** Four PCIe 3 x8,\* 1 x4

\*Full x8 performance of one slot is application dependent

**Drive Controllers:** PERC 6/i, SAS 6/IR RAID (SAS or SATA support)

**RAID Controller:** PERC 6/i, SAS 6/IR, PERC 6/E, PERC 5/E (not factory installed)

**Integrated NIC:** Four embedded Broadcom Gigabit\* NICs – TOE and iSCSI offload enabled. Upgradeable to: Dual-embedded Broadcom Gigabit\* NICs – TOE and iSCSI offload enabled plus dual-embedded Broadcom 10 Gigabit NICs

**Max Internal Storage:** 2 x 300GB 2.5" SAS = 600GB

**External Storage:** SAS, SCSI, and Fibre Channel storage systems

**Availability Features:** Hot-plug hard drives, Hot-plug redundant power, Hot-plug redundant cooling, ECC memory, Spare Row, Single Device Data Correction (SDDC), DRAC 5, Support for external tape device, Tool-less chassis, Cluster support



### PowerEdge 2970

Performance and availability with configuration flexibility

**Form Factor:** 2U Rack

**Benefits:** High performance and availability in a rack-dense 2U form factor

**Processor(s):** Up to two Six-Core AMD Opteron Processors or up to two Quad-Core AMD Opteron Processors

**RAM (Min/Max):** 1GB – 64GB DDR2 SDRAM

**PCI Slots:** Three PCIe, 2 x8, 1 x4

**Drive Controllers:** PERC 6/i, PERC 5/i, SAS 6/IR RAID or SAS 5/i

**RAID Controller:** Optional PERC 5/E or PERC 6/E; SAS 5/E; Optional integrated PERC 5/i or 6/i

**Integrated NIC:** Dual-embedded Broadcom Gigabit\* NICs – TOE enabled

**Max Internal Storage:** Up to 6TB

**External Storage:** SAS, SCSI, and Fibre Channel storage systems, PowerVault MD3000i iSCSI SAN Array, EqualLogic PS5000E, EqualLogic PS5000X, EqualLogic PS5000XV, PowerVault RD1000 disk-based backup system, PowerVault NX1950 Unified Storage Solution, PowerVault MD3000 Modular Disk Storage Array, PowerVault MD1000 SAS external storage system

**Availability Features:** Hot-plug hard drives, Hot-plug redundant power, Hot-plug redundant cooling, ECC memory, Spare Row, Single Device Data Correction (SDDC), RAID controller w/ battery-backed cache, High availability failover cluster support, DRAC 5, Support for internal tape device or internal disk drive backup unit, Tool-less chassis, Cluster support

# PowerEdge™ Blade Servers

## Invest in Total Business-Class Solutions

Built for high-density computing with the latest high-performance technologies, AMD Opteron™ processor-based Dell™ PowerEdge™ M-Series blade servers address the challenges of an evolving IT environment by delivering leading enterprise-class features and functionality. The Dell PowerEdge M1000e Modular Blade Enclosure is a breakthrough in enterprise server architecture. Flexible and scalable, the M1000e is designed to support future generations of blade servers regardless of processor/chipset architecture and I/O needs. This future support includes enabling multiple generations of servers in the same chassis. Below are the AMD Opteron processor based blade servers that fit into the M1000e Modular Blade Enclosure.



### PowerEdge M905

Virtualization optimized  
4-socket blade server

**Form Factor:** Full-height blade; Up to 8 fit into an M1000e enclosure

**Benefits:** Full-height blade doubles I/O throughput while offering physical consolidation benefits over rack-mount servers

**Processor(s):** Up to four Six-Core AMD Opteron Processors or up to four Quad-Core AMD Opteron Processors

**RAM (Min/Max):** 2GB – 192GB 667MHz DDR2

**Mezzanine Slots:** 4 mezzanine card slots for up to 2 fully redundant, highly available, high-speed mezzanine card I/O fabrics

**Drive Controllers:** SAS 6/iR or CERC 6/i

**RAID Controller:** SAS 6/iR (no RAID, RAID 0/1), CERC 6/i (RAID 0/1), PERC 6i Modular (RAID 0/1 with battery-backed cache), PERC 6.2 Firmware

**Integrated NIC:** Four embedded Broadcom® Gigabit\* NICs with TOE and iSCSI Firmware Boot

**Max Internal Storage:** 2 x 300GB = 600GB SAS

**External Storage:** iSCSI and Fibre Channel storage; PowerVault™ Unified Storage Solution

**Availability Features:** Three USB 2.0 bootable ports on front panel for floppy, CD/DVD, memory key, keyboard/mouse; embedded ATI RN50 video controller with 32MB memory; Integrated Dell Remote Access Controller (iDRAC); flexible I/O options include 1/10 Gigabit Ethernet, 4/8Gb Fibre Channel, and DDR or QDR Infiniband; Integrated Persistent Storage for Virtualization



### PowerEdge M805

Virtualization optimized  
2-socket blade server

**Form Factor:** Full-height blade; Up to 8 fit into an M1000e enclosure

**Benefits:** Full-height blade doubles I/O throughput while offering physical consolidation benefits over rack-mount servers

**Processor(s):** Up to two Six-Core AMD Opteron Processors or up to two Quad-Core AMD Opteron Processors

**RAM (Min/Max):** 1GB – 128GB 667MHz DDR2

**Mezzanine Slots:** 4 mezzanine card slots for up to 2 fully redundant, highly available, high-speed mezzanine card I/O fabrics

**Drive Controllers:** SAS 6/iR, CERC 6/i

**RAID Controller:** SAS 6/iR (no RAID, RAID 0/1), CERC 6/i (RAID 0/1), PERC 6i Modular (RAID 0/1 with battery-backed cache), PERC 6.2 Firmware

**Integrated NIC:** Four embedded Broadcom Gigabit\* NICs with TOE and iSCSI Firmware Boot

**Max Internal Storage:** 2 x 300GB = 600GB SAS

**External Storage:** iSCSI and Fibre Channel storage; PowerVault Unified Storage Solution

**Availability Features:** Three USB 2.0 bootable ports on front panel for floppy, CD/DVD, memory key, keyboard/mouse; embedded ATI RN50 video controller with 32MB memory; Integrated Dell Remote Access Controller (iDRAC); flexible I/O options include 1/10 Gigabit Ethernet, 4/8Gb Fibre Channel, and DDR or QDR Infiniband; Integrated Persistent Storage for Virtualization



### PowerEdge M605

High-performance blade server with unrivaled power efficiency

**Form Factor:** Half-height blade; Up to 16 fit into an M1000e enclosure

**Benefits:** Complete server-class features combined with increased density and power efficiency over traditional 1U rack servers

**Processor(s):** Up to two Six-Core AMD Opteron Processors or up to two Quad-Core AMD Opteron Processors

**RAM (Min/Max):** 512MB – 64GB 667MHz DDR2

**Mezzanine Slots:** 2 mezzanine card slots for flexible I/O options

**Drive Controllers:** SATA Repeater, SAS 6/iR, CERC 6/i

**RAID Controller:** SAS 6/iR (no RAID, RAID 0/1), CERC 6/i (RAID 0/1)

**Integrated NIC:** Two embedded Broadcom Gigabit\* NICs with TOE and iSCSI Firmware Boot

**Max Internal Storage:** 2 x 300GB = 600GB SAS, 2 x 500GB = 1.0TB SATA, SSD options also available

**External Storage:** iSCSI and Fibre Channel storage; PowerVault Unified Storage Solution

**Availability Features:** Two USB 2.0 bootable ports on front panel for floppy, CD/DVD, memory key, keyboard/mouse; embedded ATI RN50 video controller with 32MB memory; Integrated Dell Remote Access Controller (iDRAC); flexible I/O options include 1/10 Gigabit Ethernet, 4/8Gb Fibre Channel, and DDR Infiniband

# PowerEdge™ Tower Servers

## Achieve Incredible Value

Highly flexible with a range of value and performance, AMD Opteron™ processor-based PowerEdge Tower servers are designed to deliver high quality and reliability and a consistently low acquisition cost.



**PowerEdge T105**  
Basic 1S tower server

**Form Factor:** Tower

**Benefits:** Provides the latest performance features at aggressive prices, affordable and quiet first server for file/print, e-mail, or dedicated application server

**Processor(s):** Quad-core AMD Opteron Processor, Dual-Core AMD Opteron Processor or AMD Sempron™ Processor

**RAM (Min/Max):** 512MB – 8GB ECC DDR2 667/800 SDRAM

**PCI Slots:** Four total: Three PCI Express (2 x8, and x1), One PCI 32-bit/33MHz, 3.3v

**Drive Controllers:** Embedded SATA controller, optional SAS

**RAID Controller:** Optional SAS 6i/R for SAS or SATA RAID

**Integrated NIC:** Single Embedded Broadcom Gigabit\* NIC

**Max Internal Storage:** 2 x 1TB = 2TB SAS, 2 x 1TB = 2TB SATA

**External Storage:** PowerVault® RD1000

**Availability Features:** Highly serviceable chassis, ECC memory, optional H/W RAID controller (SAS 6i/R), Quad-pack LED Panel

## Quick Features

### AMD64 Technology

- HyperTransport™ technology Assist (HT Assist)
- AMD Wide Floating Point Accelerator

### Direct Connect Architecture

- Integrated memory controller
- HyperTransport 3.0 technology (HT3) (Except M605)

### AMD Virtualization™ (AMD-V™) Technology

- AMD-V technology with Rapid Virtualization Indexing
- Tagged TLB
- AMD-V technology Extended Migration

### End-User Benefits

- **Optimal balance of price/performance, energy efficiency and time to benefit**
  - *Energy Efficient* – technology that enables new levels of power efficiency to help reduce energy consumption
  - *Price/Performance* – performance that matters to efficiently drive business critical applications at a reasonable cost
  - *Time to Benefit* – common socket approach allows fast path to productivity with minimized disruption to IT infrastructure
- **Virtualization innovation gives users superior value from their computing resources**
  - *Architectural features* that support optimized virtualized workloads like email, web serving and database
  - *Flexibility* – to manage, load, balance and support life migration of virtual machines across five generations of AMD Opteron processor-based systems
  - *Price/Performance* – delivers the performance you need to run cost-effective virtual machines

### Product Features

- **HyperTransport Technology Assist (HT Assist)** – increases HyperTransport technology efficiency by reducing probe traffic and resolving probe issues more quickly
- **AMD-V Technology with Rapid Virtualization Indexing** – silicon-based feature that improves virtualization performance, enabling more virtual machines to run per server
- **AMD Wide Floating Point Accelerator** for advanced performance on HPC, scientific and workstation applications

### AMD-P Power-Saving Features:

- Enhanced AMD PowerNow!™ Technology
- Dual Dynamic Power Management™
- AMD CoolCore™ Technology
- AMD Smart Fetch Technology
- AMD Memory Optimizer Technology
- AMD Balanced Smart Cache

### AMD-P PowerSaving Features

- **Enhanced AMD PowerNow! technology** works with the operating system to provide performance-on-demand capabilities for precise power management, processor power savings and low TCO
- **Independent dynamic core technology** can vary clock frequency per core based on workloads to help reduce power consumption and thermal output
- **AMD CoolCore technology** automatically turns off parts of the processor core when they are not in use, offering reduced processor power consumption
- **AMD Smart Fetch technology** allows unused cores to enter a deeper sleep state and draw less power, reducing CPU power consumption
- **AMD Powercap Manager** allows the user to lock in p-states to cap off power consumption for added power efficiency
- **AMD Balanced Smart Cache** offers better support for multi-threaded environments with a highly efficient cache structure that helps reduce the latency of accessing main memory
- **AMD Memory Optimizer technology** increases memory throughput\* and supports memory-intensive applications
- **Dual Dynamic Power Management** separately powered memory controller and processor core allows for greater application performance while providing more opportunities to save system power with AMD PowerNow! technology

\*Compared to Second-Generation AMD Opteron processors