# PowerEdge Servers and Solutions for Business Applications

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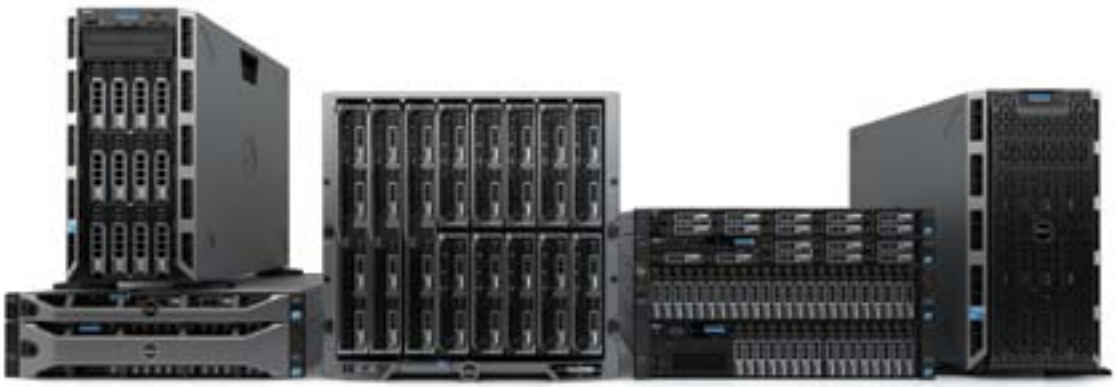


At Dell, we listen to you every day, and what you have been telling us is that your infrastructures are being pushed to the limits of capacity and your ability to manage them. The increasing complexity of new technologies, the escalating demands of business applications, and the huge surge in the volume of data that you need to process have your IT organizations struggling to keep up.

Dell's consultant-led workshops, data center assessments and IT architecture designs can help you define a plan for integrating new technologies and optimizing your existing infrastructure to support your organization's strategy. We have strategic partnerships with industry leading application providers, like Microsoft, Oracle, and VMware that allow us to work together to tune these applications for your environment, along with meeting requirements for Microsoft's hardware compatibility list and other vendor certifications. And the innovations that we are introducing with the Dell™ PowerEdge™ 12th generation servers will let you get more out of any of these applications or usage environments like virtualization and high-performance computing (HPC).

## Innovations on Dell PowerEdge servers:

SharePoint More memory and processing power permit greater consolidation of SharePoint roles

Exchange Up to 38TB of local drive storage and RAID options provide faster, safer collaboration environments

Lync Modular network options and increased I/O flexibility reduce communications latency

HPC Increased processor core count and memory density drive increased computational performance

Virtualization More processor cores and denser memory enables further server consolidation through more virtual machines (VMs) per server

### Achieve more

Improve the performance of IT for business success

### Improve efficiency

Use IT to boost productivity and get the most out of your investment

### Ensure business continuity

Secure continuous access to services that power your business

### Virtualize and automate IT

Customer-inspired, intelligent infrastructure engineered to run your business faster and more efficiently

# Why Dell for your solutions?

Dell understands that applications are the lifeblood of your organization's operations. For those applications to deliver at the levels of efficiency that today's data centers require, you need an IT infrastructure that is flexible and scalable to respond to a changing landscape driven by the pressures like demand, growth, security, and compliance.

Dell has experienced industry and technology consultants in networking, storage and a comprehensive portfolio of services who can help transform your IT landscape to ensure alignment with your organizational needs and objectives.

Our solutions team uses a unique consulting methodology developed from proof-of-concept testing in our solution centers and backed by real-world experience in supporting a wide range of customer environments. Our proven approach helps you:

- Understand the implications of new technologies through workshops
- Assess your infrastructure to identify opportunities for improvement
- Design a customized plan to address your organization's specific needs
- Implement market-leading solutions that help you grow and thrive
- Manage the complete functionality of the entire engagement

The following pages provide guidance for using PowerEdge servers in key solution areas.

## Dell provides

- Single point of contact for complex solutions
- End-to-end solutions that are open, affordable, and capable
- Reference architectures and configuration aids to quickly identify the best fit
- Deployment, sizing, and support expertise to improve time-to-business result
- Services to provide expert guidance for every phase of the solution
- Strategic alliances with industry leading partners

# Collaboration | SharePoint

The combination of economic pressure and skyrocketing fuel costs has led to a significant drop in business travel over the last few years. In its place, conferencing and collaboration tools are used to bring mobile or remote workers together electronically.

In Microsoft® SharePoint® environments where the key functions are data and web serving, lots of memory and I/O flexibility are most important. The PowerEdge portfolio provides superb choices for SharePoint because of the scalable memory and PCIe slot density.

## Better collaboration and improved productivity

- Share documents in real-time with live-meeting, no matter where you and your team are
- Find colleagues faster
- Leverage existing application knowledge

## Improved messaging

- Single storage repository for all messages
- Common interface for all messaging devices
- The right communication at the right time with the right resources

## Reduced travel and conferencing costs

- Live meeting with remote access
- Video conferencing
- Single interface and reduced PBX costs

R720

M915

T420

"Thanks to our unified communications solution from Dell, our agents can direct a customer call to the appropriate person in less than a minute."

Neil Jones, Head of Information Systems, Newport City Homes

| SharePoint | | |
|---|---|---|
| Roles | | Database Server Role, Web Server Role, Application Server Role |
| Server guidance | Racks | R520 / R720 / R815 |
| | Modular | M915 / M620 |
| | Tower | T620 / T420 |
| Application characteristics | | The nature of SharePoint roles is to either have them on a single server or to group them in a server farm depending on the number of users |
| Server attributes supporting applications | | **R520** Solid performance with versatile storage that includes 3.5" drives for large storage capacity or 2.5" for improved performance when combined with memory and I/O |
| | | **R720** Performance, memory density, I/O flexibility, easily scales to support any of the SharePoint server roles |
| | | **R815** 4-socket, memory density, I/O flexibility to address database or consolidation of server roles |
| | | **M915** Full-height, 4-socket, performance, memory density, and scalability address database or consolidation of server roles |
| | | **M620** Higher density with half-height, performance, memory density, Express Flash PCIe SSD option for lower latency |
| | | **T420** Mainstream performance 2-socket tower with large local storage capacity for file sharing along with I/O and memory scalability for departmental or branch offices |
| | | **T620** Large local storage to support database scalability, performance, and networking that is perfect for departmental workgroups |

These represent examples. Please see your Dell representative for details.

# Messaging | Exchange

In almost all organizations, email is the lifeblood that allows day-to-day business to take place. Today, users send and receive more email than before, taxing infrastructures to their limits. This is placing new demands on the network that carries the messages and on storage systems, as the Exchange database grows to accommodate these messages and associated files.

Organizations using Exchange Server can select between different form factors of PowerEdge servers to effectively manage their email and integrate with other collaboration tools such as Unified Communications. Microsoft Exchange operates best with local storage—"the more the better"—so the high-density storage in PowerEdge servers are ideal collaboration solutions.

Dell provides innovative server and storage hardware that enables Exchange 2010 high availability to be cost effective and simple, whether deploying on internal storage or simplified SAN (PS Series). PowerEdge servers provide increased memory, processing, and storage capabilities to optimize Exchange 2010 features for compliance and security.

## Better email performance for larger mailboxes

- Email archiving and more powerful retention policies
- Automated rights management protection of email
- Powerful multi-mailbox search UI for eDiscovery

M620

T620

## More resiliency of data centers

- Single platform for high availability and disaster recovery
- Role-based administration and user self-service

## TCO and ROI performance

- Faster ROI from defined architecture models and extensive mailbox migration experience
- Lower TCO due to low energy consumption, virtualization and centralized management

"With Dell Unified Communications, employees can [communicate] from almost anywhere using their PC, [with] a single interface and contact number that they can take when they work from home or travel abroad . . ."

Geriant Davies, Basingstroke and Dean Borough Council

| Exchange | | |
|---|---|---|
| Roles | | Edge Transport, Hub Transport, client access, unified messaging, mailbox, client access/hub transport |
| Server guidance | Racks | R515-12 hard drive / R720xd |
| | Modular | M620 |
| | Tower | T420 / T620 |
| Application characteristics | | Exchange prefers robust local storage. Also, main requirements focus on 2-socket platforms for a majority of the server roles listed above. |
| Server attributes supporting applications | | **R515-12HD** Performance with storage versatility for improved performance along with memory density and full availability options |
| | | **R720xd** Massive local storage, performance processors, I/O flexibility for future scalability, RAID options, and network flexibility |
| | | **M620** Performance processors, high DIMM density, flexible I/O, and networking options |
| | | **T420** Solid performance, 2-socket tower for departmental and branch offices where dense local drive capacity and availability features are ideal for email |
| | | **T620** Massive local storage with 32 drives, flexible I/O, RAID options, performance processors, Express Flash PCIe drives support lower latency along with RAS features to support business-critical email |

These represent examples. Please see your Dell representative for details.

# Communication | Lync Server

Today's changing workplace often includes a distributed global workforce that can make it difficult to connect effectively. Organizations need integrated productivity tools to allow employees to work from anywhere and collaborate in real-time in a secure and cost-effective way.

Microsoft Lync™ Server delivers a fresh, intuitive user experience that brings together the different ways people communicate in a single interface. This unified experience facilitates rapid user adoption, while the ability to support a full range of communications from a single platform reduces both capital and operational costs.

For organizations using Microsoft's Lync unified communications offering to integrate multiple business support services, such as audio/visual, phones, IM, and email, the PowerEdge portfolio has the range of servers needed to fit the various roles in a unified communication environment. For example, the PowerEdge 4-socket servers are an excellent choice for database roles where high availability is crucial—like phone and messaging databases. PowerEdge 2-socket server is suited for audio and video conferencing—because of its high memory and bandwidth capacities.

## Cost savings

- Cost savings from reduced travel, communications, and IT expenses
- By unifying formerly disparate types of communications into one integrated solution, IT resources and security are maximized

## Improved productivity and communication

- By improving individual productivity and team collaboration, business objectives can be met faster than ever before
- Communication is seamless and robust with a unified user experience

## Optimized resource utilization

- Automatically locate the best resource to answer a question, approve a request, or perform a task
- The resource finder tool can reduce the time it takes to answer a question by 70%

"By adopting Unified communications, Dell anticipates significant savings on communications hardware acquisitions, long-distance calls, and employee travel expenses . . ."

Demetrio Gauna, Dell

R720

R820

| Lync 2-socket | | |
|---|---|---|
| Roles | | Other Lync Roles (Mediation, Director, A/V conferencing) |
| Server guidance | Racks | R715 / R720 |
| | Modular | M620 |
| | Tower | T620 |
| Application characteristics | | Microsoft recommends flexible, general-purpose servers with the ability to scale |
| Server attributes supporting applications | | **R715/R720** Provide the greatest flexibility features to support multiple Lync roles along with high performance processors that can scale to address unpredictable peaks |
| | | **M620** High performance processors, memory density, flexible I/O and networking options deliver scalability |
| | | **T620** Offers varying chassis to support scalability and performance for A/V conferencing and many other Lync roles |

| Lync 4-socket | | |
|---|---|---|
| Roles | | Edge Database |
| Server guidance | Racks | R910 / R815 / R820 |
| | Modular | M820 / M915 |
| Application characteristics | | 4-socket offers virtualization of roles, higher levels of availability, and greater performance |
| Server attributes supporting applications | | **R910** Offers long lifecycle stability with the highest levels of availability, memory density, I/O |
| | | **R815/R820** Offers memory density, I/O, and performance to support high-availablity usage scenarios and scalability to support high transactions/peaks |
| | | **M820 / M915** Offer a modular option 4-socket platform; both offer the highest levels of reliability along with I/O options and scalability to address growing database architectures |

These represent examples. Please see your Dell representative for details.

# High-performance computing (HPC)

Enable your organization to maximize technology's full potential through a modular, standards-based, high-performance computing cluster (HPCC) solution. Dell can help you address the most complex IT problems and meet your organization's demands for computing power and storage.

HPC and research computing have an insatiable appetite for increased performance, and the Dell PowerEdge 12th generation servers deliver outstanding performance in compute-intensive environments. With the latest generation of Intel® Xeon® processors, more graphics processing units (GPU) options on more servers, more internal solid-state storage options, and ultra-dense designs, these servers readily support demanding workloads like computational chemistry, weather forecasting, financial modeling, and academic research.

PowerEdge servers running HPC applications help you do more—whether it's delivering research results faster, accelerating the response time for huge financial calculations, or developing game-changing products.

When you need more capacity to scale your environment and accommodate ongoing growth, the portfolio of solutions from Dell can provide your total compute requirements. If you need pure performance, Dell can design solutions geared to absolute performance. If capacity and scale are top priorities in your environment, Dell can design solutions that can carry you through the next set of challenges. And if you just need systems sized to help your organization get ahead of your competitor, we have production-ready systems for all sizes, missions and charters.

| HPC | |
|---|---|
| Roles | Head Nodes |
| Racks | R720 / R815 / R820 |
| Application characteristics | HPC head node servers require I/O flexibility for external storage options, security hardening to connect to multiple networks (private, enterprise, and application networks), and manage the compute nodes in the cluster |
| Server attributes supporting applications | **R720** 2-socket 2U form factor with highly flexible I/O, (7 PCIe slots) and modular networking that enables choice of vendor, fabric, and technology |
| | **R815/ R820** 4-socket 2U form factor with high processor core counts , I/O, and memory density |

These represent examples. Please see your Dell representative for details.


| HPC | | |
|---|---|---|
| Roles | | Compute Nodes |
| Server guidance | Racks | R620 / C6145 / C6220 / C410x |
| | Modular | M420/ M620 / M915 |
| Application characteristics | | HPC compute nodes require high I/O for storage, memory density to support caching and minimize I/O, performance processors and RAS features |
| Server attributes supporting applications | | **R620** 2-socket, 1U includes GPU, I/O flexibility, memory density, full complement of RAS features, and Express Flash PCIe drives support FLOP intensive HPC workloads |
| | | **C6145** Two 4-socket servers in 2U, high memory density, 72 lanes of PCI Express expansion per node, high direct attach storage capability |
| | | **C6220** High density, high efficiency, 2-socket performance, high TDP processor support. 4-node configs for maximum density, 2-node configurations for additional I/O and storage |
| | | **M420** Quarter-height blade offers true hyperscale density with power efficiency, 10GbE I/O, and 2-socket performance |
| | | **M620** Density, solid 2-socket performance, memory density, Express Flash PCIe drive support, flexible fabric and energy efficiency to support data center density and scalability of nodes |
| | | **M915** 4-socket, high core count for GFLOPS, memory density, I/O, and energy efficiency address HPC workloads requiring cache and are FLOP intensive |

# Virtualization

Whether it is a few virtual machines running on a single physical computer or a whole server farm across multiple root servers, virtualization optimizes investments in hardware and network infrastructure by reducing server sprawl. Virtualizing workloads is just the beginning for realizing large-scale benefits such as improved utilization, reduced floor space, and reduced power costs along with providing a robust infrastructure that can deliver high availability and quick disaster recovery.

The PowerEdge 12th generation portfolio lets you pack more virtualization into a server, whether you are consolidating operations from several legacy servers or are looking to implement a large virtual desktop infrastructure. Get more out of the resources you have, enable better usage rates, and run your data center with greater efficiency using the Dell PowerEdge 12th generation servers.

## More memory, more virtual machines, more results

- Run more VMs using the maximum memory densities available
- Boost virtual application throughput with faster, balanced I/O option, like more PCIe slots and 10GbE speed
- Flexibly allocate resources among VMs with switch independent partitioning technology

## Greater reliability for virtual applications

- Maximize application uptime with automatic failover of redundant hypervisors

## Deployment options

Whether you are adding new equipment to a data center or migrating end users to the newest laptops, upgrading to new systems is a daunting task. A slight misstep in integrating hardware and software into your environment can cause major disruptions, unnecessary expenses and longer-than-expected installation times.

Adopt a pain-free process that enables your organization to integrate new IT systems quickly. With careful, in-factory preparation of custom images, applications and hardware, Dell provides you with preconfigured systems that are ready for use, straight out of the box—so you can spend less time calibrating your infrastructure and more time doing business as usual.

During deployment, our certified technicians follow a proven methodology and apply expert knowledge to lower costs, avoid downtime, and reduce installation.

| Virtualization | | |
|---|---|---|
| Roles | | Primary Positioning - High Performance & Density |
| Server guidance | Racks | R820 / R815 / R720 / R620 / R320 |
| | Modular | M620 |
| | Tower | T620 |
| Usage case characteristics | | Server host resources for virtual machines to operate determine the number of virtual instances that can be consolidated on one server. Chassis density, number of processor cores, memory density, I/O scalability, and energy efficiency are essential points to consider. |
| Server attributes supporting applications | | **R820 / R815** 4-socket servers provide higher processor core counts along with much higher memory capacities and I/O to support even larger numbers of virtual instances |
| | | **R720** Offers up to a maximum of 32 processor cores, 24 DIMM slots, flexible I/O to support workload consolidation and large numbers of VMs or more virtual cores to assign to complex workloads |
| | | **R620** 1U density with 24 DIMMs of memory, up to 10 drives and flexible I/O, and optional Express Flash PCIe drives to support virtualizing complex workloads |
| | | **R320** An ideal 1-socket server with enterprise class processors supporting essential memory RAS features along with scalable I/O, memory and storage capacity for smaller scale virtualization |
| | | **M620** A half-height, 2-socket blade with 24 DIMMs, Express Flash PCIe drives, flexible I/O, modular networking options, and performance-based processors that when combined deliver a solid virtualization density value proposition |
| | | **T620** A perfect choice with up to 32 drives, 24 DIMMs, flexible I/O, and performance processors with up to 16 cores to support VMs |

These represent examples. Please see your Dell representative for details.

# Dell meets your solution needs

## Powerful alliances

Long-term relationships with leading technology partners and jointly engineered solutions for Microsoft Exchange, SharePoint and Lync Server.

## Reduce risk, cost, time

Dell has invested in defining architectures and repeatable consulting services that combine to reduce the risk, cost and time to successful implementation.

## Efficient product supply

Our direct supply model delivers product-supply efficiencies within your SharePoint projects.

## Solution engineering

Tools to get you started such as tested configurations, reference architectures, and best practice guides.

## Single point of contact

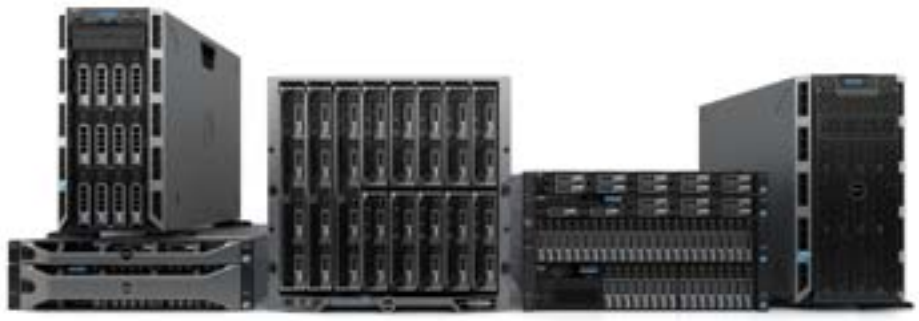
A single point of contact for the entire solution covering Consulting & Systems integration around business process, application architecture, infrastructure architecture, operations, and management.

## Flexible delivery model

Dell Services operate a flexible global delivery model that enables optimized skill and resource distribution, blended between locations in-country and off-shore and tailored to customer needs.

## Innovation

Used as the foundation of a Unified Infrastructure, Dell products deliver new and innovative ways for information workers to find each other, connect and collaborate, while at the same time realizing cost efficiencies.



# Have the power to do more with Dell.

**Simplify your servers at Dell.com/PowerEdge**



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