Dell Whitepaper

Extending your datacenter affordably

Empowering the remote or branch office with simplicity

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Executive summary

The ideas of "Datacenter in a box" or "mini datacenter" aren't new. But solutions like this have always been watered down versions of more complex enterprise solutions. Many organizations have remote locations, such as offices and stores that require the power and storage that an on-site datacenter can provide, but without the need for on-site IT. This white paper outlines a new, smaller and more affordable solution that provides the performance, connectivity and storage that remote and branch offices need, but in a package that is easy to manage and fits under a desk.

Extending the datacenter is a challenge

For today's organizations, the challenges of running a datacenter are many. Nearly every organization feels the impact of limited budgets and staff coupled with the explosion of data, applications and demands for on-demand IT. Even small remote offices and locations are now requiring the functionality usually found in modern datacenters. But actually delivering this kind of power can be overwhelming. Even the most mature organizations struggle to balance the acquisition, deployment, application integration, management and on-going support of their infrastructure while still delivering IT innovation.

As organizations add remote or branch offices or add more stores, the IT challenges become magnified. These remote locations are now requiring more processing power for local high-end applications. They are also requiring more local storage and reliability, easier connectivity,

greater security, and simpler management. As IT organizations are required to support an ever-growing number of regional, remote and branch offices the challenges compound. By design, these offices are often connected to the central office and to other remote facilities through a common network. In theory, they're governed and managed by a central IT function. What complicates the issue are offices that work and operate autonomously. Acquiring technology and implementing it without a focus on standardization just adds to the challenge of controlling costs.

The remote office paradigm presents a number of unique challenges:

- Complexity caused by disparate, non-standard hardware
- Complexity caused by multiple systems management tools and consoles
- Lack of platform scalability and overall space for growth, so that IT can't grow to support business growth
- Limited on-site or remote IT staff and expertise
- Securely protecting the remote data pool

A few years ago the idea of "datacenter in a box" was introduced based on a simple concept: bundle servers, storage, and networking into a high powered, pre-configured solution. While that idea sounded simple, it was actually very complex. Most solutions were comprised of a rack that was very costly, difficult to manage and were never meant to be used in an office or store setting.

IT at the crossroads

Do you add a datacenter to a remote office (expensive) or add datacenter-like functionality but control it centrally?

The remote office view

The proliferation of remote and branch offices or stores intensifies the need for an "Office IT" solution today, but in something smaller, easier to control and secure, and more affordable. Today's offices support a number of IT functions that provide not only support for that office, but host core applications that connect to a centrally-managed datacenter as well. We see these often in businesses, large global entities, medical providers, educational systems, and in state, local and federal government agencies. While some organizations maintain tight controls to ensure consistency of their infrastructure and applications across each location, most do not and end up supporting disparate hardware and software.

This disparate hardware and software is comprised of:

- Various makes and models of servers
- Desktop computers being used as servers due to cost or space limitations
- Various brands of storage and backup software
- Unique applications and multiple versions of the same applications

The challenge expanded

Let's explore some of these challenges in greater detail.

Lack of standardization and control

Many organizations don't have the controls in place or the capability to centrally manage the solutions that are deployed in remote offices. This lack of standardization makes it virtually impossible for a centralized IT organization to provide effective support. IT can be relegated to providing one-off troubleshooting and support which can consume a large amount of time and resources.

What is needed is to standardize on a common set of solutions across all remote locations that fit within the core IT solution set and strategy.

Limited IT staff and expertise

Many remote offices in global organizations use a large number of servers and storage at each location – a mini-datacenter - and must provide on-site staff to support and manage it. On the flip side, other remote offices are small locations that cannot financially justify on-site IT staff. Both provide challenges. Deployment of new hardware and software is normally above the expertise of workers in the remote office. Therefore the organization is required to send an IT expert to the location to do the integration or hire a local resource to assist.

Solutions are needed that can be placed in the desired location, plugged in and configured remotely by central IT.

How to protect and secure the remote data pool

Data is the lifeblood of most organizations. While some data from centralized applications like email reside in the centralized data center, most information is often

stored locally at each site. Examples of local storage include things like retail sales and inventory data from a retailer or restaurant and patient data from a medical office. Since this data is critical to the organization as a whole it therefore must be protected and in most cases transmitted to the centralized data center securely and in a timely fashion.

Where and how you back up your data is another key consideration. Organizations must decide whether to back up locally to removable media in addition to replicating. Also they must determine how to protect against an interruption in operations - from accidentally deleting critical data to mass natural disasters.

What is needed are solutions that meet your data protection requirements whether for a single server or a SAN, that are simple to use and can be managed remotely.

Lack of dedicated datacenter space for enterprise hardware

Remote offices come in all shapes, sizes and locations, from office buildings to warehouses to a remote workers home. In the vast majority of cases these locations don't have the type of infrastructure required to support today's enterprise hardware. Servers, storage, network switches and other infrastructure to support enterprise applications usually require special power, cooling and ventilation. Because of this, many remote offices use desktop computers and small store-bought storage devices to meet their needs. While these home grown solutions meet the size requirements for a remote office, they don't have redundancy, performance or security needed to deliver the availability required by most organizations.

Solutions shouldn't require a true datacenter-type room or facility, but rather should be made to use in a regular office.

Myriad of management tools based on hardware in place

Managing devices in IT environments currently consumes 60% of IT budgets or more. These management costs include not only ongoing maintenance, but also the required patching and monitoring of the hardware. When remote offices are allowed to purchase one-off (non-standard) solutions, even greater complexity is introduced that drives costs up further by adding new tools and hardware that doesn't work with others in the environment.

What is needed are solutions that work within the core IT management framework and can be monitored and managed by central IT staff simply and securely with little interaction from staff in a remote location.

How can you solve remote office challenges?

Any solution that extends the datacenter must allow for centralized management, so the remote office or store can connect to the datacenter in real-time, for always-connected security, control and uptime. But it still must be manageable as part of an efficient homogenous ecosystem. Plus any viable solution has to be designed to fit and operate in a regular office, with no special set up, power or cooling needed. In short, the "datacenter-in-a-box" idea needs to be made real for the office, although nothing like this has existed on the market up until now.

Affordably empowering the remote office with control

One thing Dell has always been known for is "factoryizing" technology. Simply put, it means Dell learns from customers, the industry, and its own experience. Then they pack as much power, simplicity and value into each solution as possible. Dell's new PowerEdge VTRX is a great example of this. VRTX takes the complexity, hassles and price out of the old datacenter-in-a-box idea and makes it real. The strategy is simple: Deliver technology solutions that enable people everywhere to grow and thrive. This means making technology that works in service of customers to make the complex simple, make the powerful easy to use, drive out inefficiency and deliver superior long-term value.

PowerEdge VRTX shows this strategy in action, and it's the only solution of its kind. Here are just some of the features:

- **EVERYTHING INCLUDED:** High-performance PowerEdge server nodes, up to 48 TB of integrated storage, simplified integrated networking and enterprise-class manageability
- **PRE-INTEGRATED AND TESTED:** Comes right from the factory ready to go
- **POWERFUL AND RELIABLE**: High performing and virtualization ready, incorporating the best ideas and efficiencies from large datacenters
- **FAST, VERSATILE & SCALABLE:** Easy to buy, deploy, manage and grow. If you need another server or storage module, you can ship it to the site and a local non-technical worker can simply plug it in

- **SMALL SPACE-SAVING DESIGN:** At only 12"W X 19"H, VRTX is optimized, secure and sized with acoustics for use in a regular office without special power or cooling. And at about 175lbs/79kg it can be shipped and moved just about anywhere.
- **AFFORDABLE:** Extends the datacenter with servers, storage and management, in a solution that is pre-tested and ready to go.
- **EASY TO MANAGE**: Simple built-in monitoring and management including integrated console with full enterprise-class tools for onsite or remote management

How can PowerEdge VRTX empower your remote office?

Part of the VRTX story is about its features and benefits. Mostly though, it is an example of how Dell uses a fundamentally different strategy to deliver technology that helps customers meet their objectives. This goal is achieved by making the complex simple and the powerful easy to use. Here are just a few features of PowerEdge VRTX that help you meet your objectives for a remote, branch or mobile office.

Drive standardization and improve control

Dell was founded on standards and building standardized, easy-to-manage solutions customers require. Solutions like VRTX use industry standards as the foundation which is then enhanced by Dell's specialized tools and support to help make the lives of central IT more fluid and less chaotic. Another aspect is Dell's built-to-order model, which enables customers to acquire solutions built to their exacting specifications at the factory, including a pre-loaded operating system. This process is easily repeatable so that the same configurations can be used in all remote locations with little to no interaction from central IT. Customers can order base systems and have the units delivered to the central IT facility. There they can assemble, configure, and add operating systems and applications and ship to the remote location. Or customers can have Dell do the integration and ship the systems directly to the remote location.

Simplify management and deliver results

As discussed earlier, when remote offices choose to buy one-off solutions for their IT needs, central IT absorbs the burden of having to use new or multiple management tools and processes to support them. This diverts precious IT staff away from innovation. PowerEdge VRTX uses the same Dell 12th Generation OpenManage systems management capabilities that are used in the central datacenter and fits seamlessly into the management framework. More importantly for remote deployments, VRTX uses

Dell's exclusive iDRAC with Lifecycle controller which allows for deployment, updating, monitoring and maintenance of the system without the need for an agent. In addition, with the new geographic view capability you get rapid, at-a-glance identification of remote system locations and health status.

OpenManage Essentials (OME) Console

- Monitor and manage distributed PowerEdge systems wherever they are on the network
- Easy to install; Simple to use;
- Modern user interface with faster responsiveness
- GeoView, the first geographic visual tool to accelerate troubleshooting for remote systems

iDRAC with Lifecycle Controller

- Save time performing systems tasks with agent-free lifecycle management of PowerEdge 12G servers – deploy, monitor, update, maintain
- Integration with VMware VCenter and Microsoft Systems Center for streamlined management in virtual environments

More options to locate remote office IT

Because they come in all shapes and sizes, most remote offices locate IT in a closet or store room. Due to these restraints, office IT is usually limited in how many hardware resources it can deploy to support the environment. Some larger offices may even have the need for enterprise-class hardware such as powerful tower or blade servers, but don't have the ability to meet the strict environmental requirements of those platforms. PowerEdge VRTX removes this challenge because it can be located just about anywhere in the office while still delivering enterprise-level hardware and availability. This flexibility gives central IT more options when choosing not only which office can have on-site resources, but also where in the office these resources can be located.

Reduce the need for on-site staff and expertise

PowerEdge VRTX virtually eliminates the need to integrate and cable the servers to the networking switches and then to the external storage. Everything is contained in a 5U tower or rackable chassis to deliver the redundancy and reliability required to meet the demands of today's always-on environments.

Dell VRTX includes everything you need

- Flexible installation with both rack and standalone options
- Designed for the office: dimensions and acoustics
- Up to four PowerEdge 2-socket servers, (M520 or M620) for performance and density without compromise
- 8 external PCIe slots
- 8 NIC ports
- Virtualization-ready
- Up to 48TB of integrated shared storage: twelve 3.5" hard drives or twenty five 2.5" hard drives
- Simplified, GUI-based management including industry-leading OpenManage system management, and GeoView, a geographic visual tool to accelerate troubleshooting for remote systems
- High-performance built-in networking with room to grow
- Highly available and easy to service
- 100V – 240V AC power

The lack of on-site staff or expertise is no longer a challenge with PowerEdge VRTX. Just place it in the desired location, connect three cables and centralized IT can take over to configure and manage it using Dell's award winning systems management tools.

Ensure your data is protected and available

Dell PowerEdge VRTX provides up to four servers and 48 Terabytes of internal storage for data that must be protected. There are many events which can jeopardize critical data, from simple human error and accidentally deleting data to data corruption by viruses or catastrophic events. Dell solutions can provide local protection options based on your requirements and needs.

With virtualization technologies like VMware and Microsoft Hyper-V becoming commonplace in today's remote offices in addition to the physical infrastructure, PowerEdge VRTX coupled with AppAssure, Dell vRanger or Dell NetVault can provide a simplified solution across a number of operating systems and applications. These solutions can protect both physical and virtual servers and be managed remotely. This flexibility further extends the capabilities of central IT.

For those environments that require external storage beyond PowerEdge VRTX or those that need to replicate data back to the core datacenter, Dell offers a complete portfolio of enterprise-class storage solutions including Dell EqualLogic and Dell Compellent.

WHERE COULD YOU USE AN INTEGRATED REMOTE OFFICE SOLUTION?

The best use cases for an office IT solution are more a function of WHERE it will be used, rather than WHAT it will be used for. There are several use cases where PowerEdge VRTX can provide the greatest value:

Type of organization	Best use case	Why?
Larger, multi-store retailers or services organizations	A centrally-managed link to the home office or central data center	• Purchase centrally, deploy and manage remotely • High-performance and secure solution that can handle high transaction volumes and compile and send data in real time • Extension of the datacenter in a small box that fits under a desk or in a closet
Multi-location healthcare providers, clinics and related services	To secure and manage all onsite programs and records, and to connect to healthcare systems, insurance companies, benefits providers and hospitals	• High performance for medical applications • Security for HIPAA compliance • Simple and secure high-speed connectivity • Highly scalable for growing data
Multi-location businesses	To run high-end on-site business and technical applications with local storage with centralized management	• Easy for IT management to buy, customize & ship • Can be installed without local expert technical support • Can be managed locally or remotely • Extension of datacenter in a small box that fits under a desk or in a closet
Multi-campus colleges, universities and schools	A standalone on-site extension of the datacenter for all student, school and governing applications and reporting	• High performance and storage for on-site apps and data • Security and performance that can be centrally controlled and managed • Purchased and supported centrally and deployed remotely without the need for local expert IT services

Summary

The pace of technology today requires that many organizations have the power of a datacenter but the cost, size and manageability of a desktop. With Dell PowerEdge VRTX, standardizing, deploying, simplifying, optimizing and managing remote office IT has never been simpler. Let us show you how you make the challenges of remote office IT a thing of the past and allow you to focus on the things that will make your organization grow and thrive in today's fast paced environment. Call us or click on the link below for more information:

For more information go to www.dell.com/VRTX

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