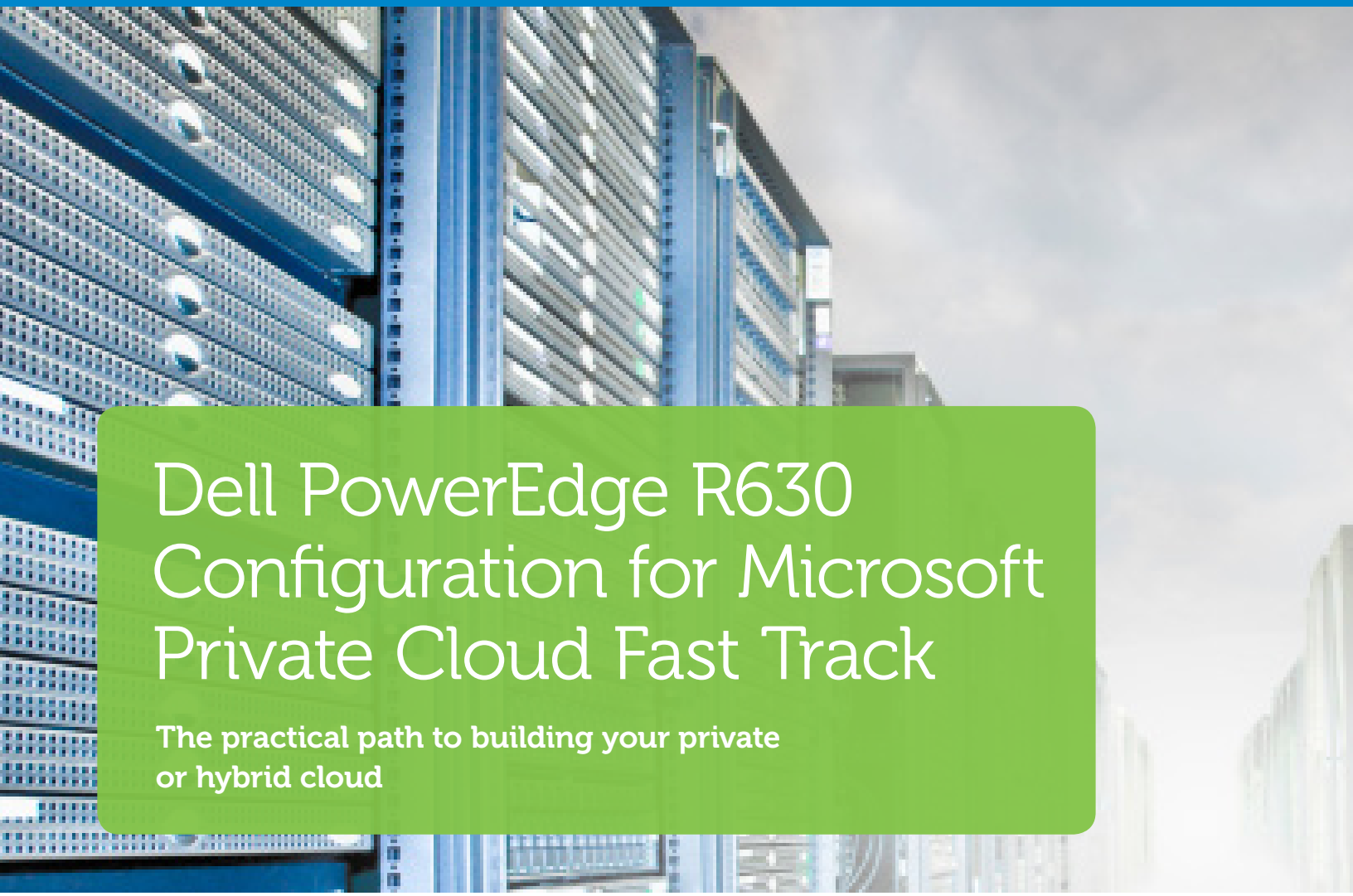


Dell PowerEdge R630 Configuration for Microsoft Private Cloud Fast Track

The practical path to building your private or hybrid cloud

There's no doubt about it: The future state of IT is hybrid clouds. Leveraging both external public and on-premises private clouds enables organizations to get the best of both worlds—the efficient scalability and elasticity of the public cloud for rapidly changing business requirements and the visibility and security of a private cloud for sensitive or regulated data. IT organizations know that this is their destination, but they often don't know how to get there. How do you build a private cloud that seamlessly integrates with external clouds without compromising systems and applications, performance insight and cross-cloud interoperability?

Many solution providers deliver turnkey, locked-down private cloud architectures, but this is contrary to what today's IT organizations need and to the very concept of a hybrid cloud. To ensure seamless integration with external clouds, private clouds must be built with flexible, modular approaches and heterogeneous software platforms. Furthermore, considering the state of IT budgets today, IT organizations must be able to leverage existing investments, add capabilities incrementally and simplify cloud management without tearing down the house.

That is exactly what IT organizations achieve when they build a private cloud with Dell PowerEdge R630 Configuration for Microsoft Private Cloud Fast Track. This paper explains how Dell enables IT organizations to deploy a private cloud on their own terms to achieve a flexible hybrid cloud.

The Challenges of Building a Private Cloud

There are challenges, both business and technical, that IT organizations must overcome when building a private cloud, and the risk of failure can be high if they're not properly addressed. To begin with, many IT organizations lack the knowledge required for building a private cloud—but not because they lack technology insight. The role of IT in the cloud era is evolving, and teams must take a business-oriented approach to IT service delivery. Implementing a cloud is more than just solving a technology problem.

What's the state of the data center? A virtualized data center does not, in and of itself, make a private cloud. In fact, a robust, highly virtualized environment can be the foundation of a private cloud, but it is not a requirement. Recent surveys show that many customers implementing private clouds are often not even 50 percent virtualized. Consolidation and the use of software-defined technologies are critical, but optimizing the data center is just the beginning. A virtualized data center serves as the foundation for a private cloud when technology functions such as virtualization, software-defined storage, automation and orchestration are combined with business logic to give the environment purpose. Capabilities must be added that align the infrastructure with systems management tools and business requirements, thereby enabling IT organizations to accelerate application and service delivery in accordance with business needs. These capabilities include self-service, automated resource provisioning, and capacity on demand, at authorized levels.

For an organization to truly benefit from a hybrid cloud, the infrastructure should be flexible and public cloud services should be chosen based on business need, not technical constraints.

As IT leaders begin evaluating private cloud solutions, they quickly find that many solution providers offer limited options that often lock them into a specific architecture. This lack of choice and flexibility defeats the purpose of cloud computing. Without integration or multicloud capabilities, IT organizations are limited in the internal or external cloud services they can provide or utilize. For an organization to truly benefit from a hybrid cloud, the infrastructure should be flexible and public cloud services should be chosen based on business need, not technical constraints. To ensure seamless integration with external clouds—community clouds, vertical clouds or SaaS solutions—the private cloud environment should be built with industry standards, flexible and modular components and heterogeneous management tools.

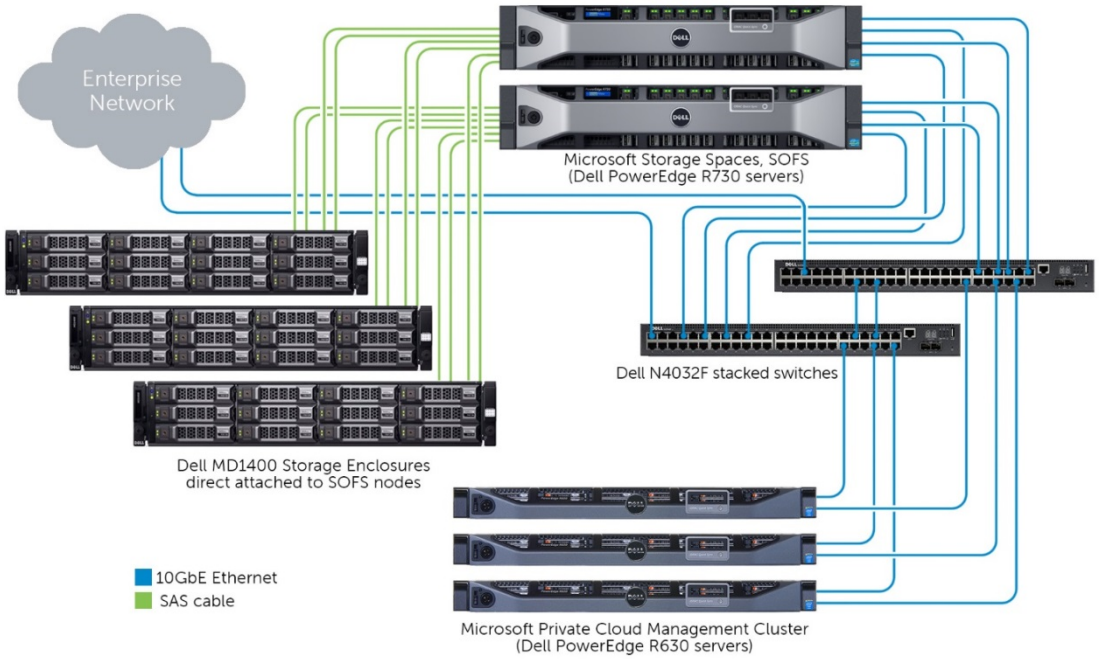
Finally, building a successful cloud platform involves much more than deploying infrastructure. IT organizations must drive adoption of their cloud within the organization and business units. This can be particularly challenging when users are circumventing IT to get their needs met by public cloud providers. IT must "sell" its cloud to users, demonstrate the benefits, and maintain the access and speed advantages that meet and exceed those of the public cloud. Bad processes drive users underground, which can be detrimental to an organization if business and application teams are leveraging public cloud platforms without the proper controls in place. Ungoverned use of the public cloud not only results in IT fragmentation, compliance violations and data exposure but also reduces the return on investment for the existing IT teams and infrastructure. A hybrid cloud solves this problem, by bringing a portfolio of cloud services to an organization so IT doesn't have to build it all but can benefit from better TCO along with a unified management and governance strategy.

Introduction to Microsoft Private Cloud Fast Track Program

IT organizations can reduce the time, complexity and risk of implementing a private cloud by using a tried-and-true reference architecture from a trusted solution provider. The Microsoft Private Cloud Fast Track Program is a joint effort between Microsoft and its solution partners. The program combines Microsoft software, best practices and validated configurations. The latest reference architecture framework

(Version 4) is built on the Windows Server 2012 R2, Hyper-V and Microsoft System Center 2012 R2 technologies and includes the Windows Azure Pack for easy integration with Azure cloud services.

The Microsoft Private Cloud Fast Track Program provides customers and service providers with a streamlined approach for delivering scalable, preconfigured and validated infrastructure platforms for private and hybrid cloud implementations. With local control over data and operations, IT is able to dynamically pool, allocate, secure and manage resources. While business users can leverage self-service to request and deploy or decommission line of business applications efficiently and consistently.



The Dell PowerEdge R630 Configuration for Microsoft Private Cloud Fast Track includes R630 and R730 servers, Powervault MD1400 configured for Microsoft Storage Spaces, plus Dell Networking N4032-F and management software.

Dell Microsoft Private Cloud

The Dell PowerEdge R630 configuration for Microsoft Private Cloud Fast Track uses the Microsoft Version 4 Fast Track framework to combine servers, storage, networking and management into a blueprint for building a Microsoft private and hybrid cloud. Integration with Microsoft Hyper-V and System Center provides full cloud capability that helps IT rapidly respond to dynamic business demands, maximize efficiency and strengthen IT service quality.

There are several advantages to implementing a Dell/Microsoft private cloud. For starters, Dell is embracing software-defined storage, which decouples storage-related tasks from the physical storage hardware, in this case via Microsoft Storage Spaces. Storage Spaces enables pooled storage resources to be automatically and efficiently allocated to match application needs. This capability, new to the v4 Fast Track framework, enables IT organizations to reduce the cost of highly available storage while providing high resilience and operational simplicity.

Dell's offering also supports flexible, open networking. The Dell Networking solution scales easily and is not oversubscribed like traditional network architectures. The solution is based on 10-gigabit Ethernet with 40-gigabit uplinks and full-line-speed capability per port. IT organizations can deploy the solution within the main data center or on the edge and have a tremendous amount of bandwidth to support the application SLAs. Because switches are optimized and the solution easily integrates with the existing core, there's no need to rip and replace existing switches to run apps and services at the "speed of cloud."

Dell's deep and long-standing integration with Microsoft technologies is also an advantage. Integrations range from granular, component-level optimizations you may never see to software integrations across server storage and networking platforms that enable IT to manage the private cloud with ease and efficiency. Dell works with Microsoft to integrate with key features and tools in Windows Server and System Center to support critical functions such as Hyper-V replicas, high-availability/disaster-recovery capabilities and key performance and management functions. Furthermore, Dell's integration with Windows Server 2012 R2 and System Center 2012 R2 means that IT organizations can continue to use the tools they are already familiar with to manage their cloud, from infrastructure to applications and business workflows.

When building a private cloud on Hyper-V, IT organizations often want to know what additional tools are available to help them effectively manage the environment. To enhance those offered via the System Center suite, Dell offers a variety of heterogeneous tools to enable the most-efficient private or hybrid cloud as well as multicloud management. This helps prevent cloud management silos.

The Dell PowerEdge R630 Configuration for Microsoft Private Cloud Fast Track includes PowerEdge R630 servers for the compute cluster, PE R730 servers with PowerVault

MD1400's configured to support Storage Spaces, Dell Networking N4032-F, and Dell's OpenManage management software. Software components include Microsoft Hyper-V, Microsoft System Center, Microsoft Storage Spaces and Windows Azure Pack (WAP). The solution is also Azure-ready, in case a customer wants to use WAP to create a service portal for backup, disaster recovery, capacity extension and more.

Dell also offers additional software options that complement the tools System Center provides.

- **Dell's Foglight suite** provides software tools for management, utilization reporting and performance monitoring, for infrastructure and apps, in physical and virtual systems in a unified dashboard. Foglight Suite provides visibility from the end user through to underlying hardware layers, supporting cross-domain collaboration and reducing problem-solving time.
- **Dell's Active System Manager (ASM)** is a tool that supports heterogeneous physical infrastructure and multiple hypervisors for simplified resource pooling, workload templating and provisioning. ASM can apply business logic to private cloud systems management and offers a centralized approach to workload-specific configuration to automate IT service delivery. By capturing best practices into service templates, ASM ensures reliable and repeatable infrastructure and workload deployments.
- **Dell Cloud Manager (DCM)** helps IT organizations maintain compliance and governance in multicloud environments. DCM is the ultimate heterogeneous, hybrid cloud tool that provides insight into applications, whether they are provisioned on-premises from a private cloud resource pool or off-premises from a public cloud. It also enables access and cost controls, so IT organizations can select cloud services based on business need and still control and manage them in a unified way.

Benefits of a Dell/Microsoft Private Cloud

The Dell PowerEdge R630 Configuration for Microsoft Private Cloud Fast Track enables IT organizations to build a private cloud their way. Companies of any size can enjoy the benefits of a Dell/Microsoft private cloud without significant investments. Capabilities can be added incrementally, enabling midsize companies to enjoy the features and benefits relevant to the size of their organization while enabling larger companies to scale the solution to achieve additional capacity.

Dell's Microsoft Private Cloud Fast Track empowers IT organizations by offering an easy path to an effective hybrid cloud, simplified cloud management and the flexibility that can be realized only with heterogeneous tools. IT organizations can put more control into the hands of business units to choose the cloud services that meet their needs without the risk of creating shadow IT or cloud silos that must be separately managed. The multicloud environment can be centrally managed, reducing operational overhead and enabling efficient delivery of IT as a service.

Dell's R630 configuration for Microsoft Private Cloud Fast Track is just one of many solutions Dell offers in its Microsoft cloud portfolio, and like the others, this solution offers IT organizations the confidence that comes with Dell's broad portfolio and technology integrations combined with a Microsoft framework for cloud reference architectures. IT organizations get the strength of Dell's portfolio; deep technology integrations due to Dell's long-standing relationship with Microsoft; and the Microsoft Fast Track framework, which is tried and true. As a result, IT organizations effectively reduce the risk involved in building a private or hybrid cloud architecture.

Finally, IT organizations can enjoy the peace of mind that comes with access to professional services from a trusted partner. Dell's cloud consulting services can assist IT organizations in visualizing a cloud strategy as well as planning, designing and implementing an efficient cloud solution. Dell's consulting services team helps IT organizations navigate critical IT service delivery elements, such as application management, self-service portals, business workflows and automation, to ensure that the private cloud implementation is aligned with the desired IT and business outcomes. If a customer is looking for options such as managed services for its cloud, Dell Services can provide that, so that the customer can keep its IT team focused on critical projects rather than day-to-day operational activity.

Conclusion

In the very near future, hybrid clouds will be the norm. Today IT organizations have a journey to take to get there, and although every journey is different, one thing is certain: IT organizations must implement a private cloud solution that is flexible and modular while keeping in mind that it's not just about the technology stack: It's also about how the technology enables IT teams, business users and customers to work together better. In short, business needs must be aligned with technology, and that relationship is more symbiotic than ever. Dell is keenly focused on this critical point in technology and business evolution, and Dell cloud solutions enable IT organizations to make the journey uniquely their own, with flexibility today that enables them to adapt to changing requirements in the future.

To learn more about the Dell PowerEdge R630 Configuration for Microsoft Private Cloud Fast Track, visit **www.dell.com/privatecloud**.