Hyper-V and SCVMM, ensuring you obtain the agility, of hardware, software, and services support for Microsoft Virtualization offers a broad spectrum of Hyper-V. EMC's Information Infrastructure Solutions leverage EMC's extensive experience with Microsoft practices of projects, their competence with Hyper-V and services providers based on their experience in all planning and deployment, and train your staff for situations can bring in the expertise you need for success. Mel Beckman is a senior technical editor for Penton Media. He has built two regional Internet service providers and is currently president of Beckman Software, a technical consultancy specializing in large-scale, high-bandwidth networks. His past clients include Apple Computer, the City and County of Santa Barbara, Dupont Displays, IBM, Local Federal Systems, United Airlines, the U.S. Department of Agriculture, and the U.S. Department of Energy. Mel has presented seminars on computer programming and networking throughout the United States, Europe, and Asia.

With the viability of your entire virtualization department hanging on correct engineering, training, and ongoing operational management, EMC professional services are one of the most cost-effective means of ensuring a successful project.

Risks and Rewards

Consolidating multiple physical servers onto a single Hyper-V host immediately introduces challenges for the organization, such as migration of potentially reduced storage space, performance and higher impact of catastrophic physical server failure; an unpredictable, subtle, concentration of risk. These risks can be mitigated—by using high Availability (HA) techniques to address single server failures, and delivering robust storage solutions in the case of addressing performance concerns. Hyper-V has built-in features, such as virtual machine snapshots, Cluster Shared Volumes, and Data Protection Manager that directly addresses virtualization risks. Managing risk should be high on your infrastructure requirements planning checklist. New governance rules add items to that list, by requiring explicit data encryption in more places than ever, with stricter data retention rules and new data discovery requirements to achieve governance compliance. All of these increases the need for backup data tracking and auditing. Risk management thus becomes one of the services IT offers, along with a reliable computing infrastructure. By supplying backup, disaster recovery, and management processes to mission managers within the enterprise, IT truly becomes a private cloud provider. The key to managing risks while delivering effective private cloud services is tight control over resources such as CPU, storage, and networking. EMC products such as PowerPath Virtual Edition let you deploy encryption at critical security checkpoints to meet governance objectives, and enhance Hyper-V HA through improved storage management to provide business continuity. EMC NetWorker and Replication Protection Manager work with Hyper-V's Volume Shadow Copy Service (VSS) as a reaptor service within VMs to streamline backups and application restoration.

Identifying the Mission-Critical Mission

In order to start consolidating servers with Hyper-V, you must assess the applications and infrastructure, you need to know about the risks any form of virtualization can bring: reduced reliability, runaway server growth, and slower application performance. Fortunately, you can mitigate these risks and make your virtualized infrastructure more agile by giving you the tools and expertise you need to roll out a reliable and secure Hyper-V infrastructure from the start. The Essential Guide to Microsoft Virtualization

The Journey

THE JOURNEY

EMC² where information lives

By Mel Beckman

SPECIAL ADVERTISING SUPPLEMENT TO WINDOWS IT PRO

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he modern enterprise has many missions: customer relationship management, enterprise resource planning, business intelligence, governance compliance, information security, to name just a few. All of these missions are critical. Not surprisingly, in the multi-mission enterprise, demand for IT services—particularly mission-specific application servers—is rapidly increasing. And the one key component underlying the entire virtual enterprise is centrally managed storage, which provides the substrate upon which virtual machines are built and operated. In fact, EMC’s information infrastructures have a new multi-mission orientation. Where once IT supplied both technical and application expertise to enterprise departments, today IT delivers services to mission managers that maintain application expertise within their own organizations. IT, in essence, delivers a set of consistent services from which mission managers may draw in support of their applications. That set of services is very similar to the portfolio of modern public cloud infrastructures: server hosting, secure networking, application backup and restoral, business continuity, and disaster recovery. A private, rather than public, cloud. Fortunately, server consolidation through virtualization gives enterprise IT powerful tools for meeting this demand, supporting more applications with fewer resources. Virtualization brings economies of scale through better CPU utilization, and by sharing storage across cost-effective arrays interconnected via a Storage Area Network (SAN), effectively virtualization storage. Storage virtualization, in turn, improves ROI on one of the largest cost components in many data centers. Ultimately the combination of virtualized servers and storage enable the ability to deliver services through a private enterprise cloud diversely located in widespread geographic regions across thousands of miles. Microsoft’s Hyper-V virtualization can dramatically improve IT cost containment while enabling new capabilities and improving agility as the enterprise proceeds on its journey to the private cloud. Microsoft’s cohesive computing infrastructure lets IT professionals smoothly scale up its infrastructure to support more, and larger, enterprise needs. Hyper-V virtualization lowers costs by letting exploit faster processors, networking, and storage, while simultaneously lowering labor expenses. Implemented correctly, virtualization simplifies IT service delivery. Implemented incorrectly, virtualization leads to reduced reliability and a higher probability of catastrophic failure, ultimately neutralizing virtualization’s cost advantages. To successfully deploy a new Hyper-V-centric infrastructure, you need to understand the risks any form of virtualization can bring: reduced reliability, runaway server growth, and slower application performance. Fortunately, you can mitigate these risks and make your virtualized infrastructure more agile by giving you the tools and expertise you need to roll out a reliable and secure Hyper-V infrastructure from the start.
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EMC offers a range of data protection and highly available information infrastructure for 2008 R2 Hyper-V and help provide a scalable, forms fully support Microsoft Windows Server 2008 R2 Hyper-V.

EMC's expertise in aligning virtualization technologies with the needs of business and its integration with Microsoft virtualization technologies are so simple and efficient that EMC can mirror data across campus, metropolitan or even global sites, protecting those workloads against the highly of centralized backup and data protection solutions.

EMC's VPLEX is an enterprise SAN federation platform that goes beyond typical mirroring solutions, with features such as advanced deduplication to minimize latency and distributed cache coherence to extend synchronous distances. VPLEX technology provides non-disruptive storage virtualization across networks stretching hundreds of kilometers, enabling extremely resilient application architectures and making the promise of private enterprise service clouds feasible today (Figure 1).

For SMBs, EMCLearning MobileView is an example of a highly available storage mirroring solution that replicates SANs across a datacenter or campus environment, maintaining byte-for-byte consistency, other uni- or bi-directionally, with EMC CLARiiON SANs. EMC's Symmetrix VPLEX management tool provides an intuitive user interface and advanced selection of storage replication capabilities at the high end, via Symmetra Remote Data Facility (SRDF), which can manage data across campuses, metropolitan or even continental geographic separations. Tight integration for both CLARiiON and Symmetrix VPLEX distributed solutions and Windows Failover clustering is provided by EMC Cluster Enabler. For heterogeneous storage environments, where different arrays are utilized in multiple locations, integration with Microsoft Failover Clusters is provided through EMC Cluster Enabler, combined with EMC RecoverPoint or RecoverPoint/SE. These solutions can also provide support for hybrid and remote replication between cluster nodes, which can be geographically dispersed for seamless application recovery in Hyper-V environments. EMC also supports the traditional backup management with its NetWorker and Symmetry Management families of centralized backup and data protection solutions. NetWorker automates backups and streamline data recoveries through a common management platform that supports disk-to-disk backup, deduplication, continuous data protection, and replication across both physical and virtual machines.

Getting the Right Help
Storage system design and deployment requires more advanced skills than managing
Top 10 Reasons to Use EMC for Microsoft Hyper-V Virtualization

1. You want to accelerate the benefits and TCO of virtualization in your environment.
   You can leverage EMC virtualization technologies with confidence, knowing that EMC is committed to providing high-quality, cost-effective solutions that can help you achieve your business goals.

2. You need rapid recovery options for virtualized environments.
   EMC’s Hyper-V recovery solutions are designed to help you quickly get your workloads back online after a disaster, ensuring minimal downtime and business continuity.

3. You need highly available information infrastructure for 2008 R2 Hyper-V and you want to deliver responsive—yet predictable—results to your users.
   With EMC’s Hyper-V Manager and System Center Virtual Machine Manager (SCVMM), you can manage your hyper-converged infrastructure (HCI) and virtual machines with ease.

4. You want to deploy virtualization quickly and get it right the first time.
   EMC’s virtual solution architect services can help you optimize your infrastructure and get it right the first time.

5. You need network storage platforms that fully support Microsoft Windows Server 2008 R2 Hyper-V.
   EMC’s VPLEX platform supports Microsoft Windows Server 2008 R2 Hyper-V and provides a scalable, flexible, and efficient solution for network storage.

6. You want to work with an industry leader to ensure a successful deployment.
   EMC’s consulting and support services can help you plan, implement, and optimize your virtualization environment.

7. You need assurance that your virtualized workloads will be protected.
   EMC’s deduplication and storage virtualization solutions can help you protect your data and ensure business continuity.

8. You want to deploy virtualization quickly and effectively.
   EMC’s virtualization solutions are designed to help you deploy virtualization quickly and effectively.

9. You want to work with a vendor with the scale to handle the entire lifecycle of your Hyper-V solution.
   EMC’s Global Services has the scale and expertise to help you plan, deploy, and manage your Hyper-V solution.

10. You are concerned about data protection and rapid recovery in virtualized environments.
    With EMC’s data protection and recovery solutions, you can ensure that your data is safe and accessible.

Figure 1: EMC VPLEX enables live migration to remote sites as well as synchronous replication for simplified High Availability.
Top 10 Reasons to Use EMC for Microsoft Hyper-V Virtualization

1. You want to accelerate the benefits of and TCO of virtualization using Microsoft Hyper-V and you want to deliver responsive—yet predictable—results.

2. You need network storage platforms that can support Microsoft Windows Server 2008 R2 virtualization.

3. You need to cost-effectively manage service levels for your virtualized environments.

4. You are concerned about data protection and rapid recovery options for virtualized Microsoft environments.

5. You want to provide a broad portfolio of storage services for Microsoft Hyper-V environments.

6. You want to work with an industry leader that offers comprehensive solutions—EMC Consulting’s deep knowledge and experience providing planning, designing, and managing Microsoft virtualization technologies. In fact, EMC won the 2008 Microsoft Partner of the Year for Business Process and Integration Solutions using Microsoft virtualization technologies.

7. You need assurance that your virtualized environments will scale and perform as expected. Deep integration testing through the EMC Lab and a standing engineering relationship with Microsoft enables EMC to provide ongoing product support for Microsoft Hyper-V.

8. You want to deploy virtualization quickly and get it right the first time.

9. You need to lower costs and enhance efficiency of your business applications.

10. You need network storage platforms that can support Microsoft Windows Server 2008 R2 virtualization.

Figure 1: EMC VPLEX enables live migration to remote sites as well as synchronous replication for simplified High Availability.

Another common management process that often requires additional data collection is a backup. Data collected is then used to mitigate I/O contention before SLA performance and I/O budget thresholds are exceeded. EMC has already developed tools to identify trends in I/O behavior. This is strategic in nature, but essential to ensuring the private cloud without impacting future mission requirements.

EMC also supplies powerful MMC-compatible management components, such as Virtual Storage Integration (VSI) for Hyper-V Manager. A common management pattern for the future will be virtual storage (SAN) as a service. In this environment, you can reallocate resources from one virtual machine to another as needed. This allows virtual machines to share storage resources.

For more information visit our website at emc.com or contact your local professional services representatives or authorized value-added resellers.
operations, in the same way that engineering an aircraft requires more advanced skills than piloting one. Consultants and engineering services organizations that specialize in the expertise you need for reorganization and planning, and train your staff for efficient operations. You should evaluate potential service providers based on their experience in all sizes of projects, their competence with Hyper-V and other Microsoft products, and their library of best practices.

EMC offers both design and implementation services, as well as pre-packaged solutions that leverage EMC’s extensive experience with Microsoft Hyper-V. EMC’s Information Infrastructure Solutions for Microsoft Virtualization offers a broad spectrum of hardware, software, and services support for Hyper-V and SCVMM, ensuring you obtain the agility, performance, and cost advantages virtualization can bring in the expertise you need for success at a reasonable cost. A single Hyper-V host immediately introduces challenges for the organization, such as mitigating of potentially reduced storage performance and higher impact of catastrophic physical server failure: an unavoidable, subtle, concentration of risk. These risks can be mitigated—by using high Availability (HA) techniques to address single server failure, and delivering robust storage solutions in the case of addressing performance concerns. Hyper-V has built-in features, such as virtual machine snapshots, Cluster Shared Volumes, and Data Protection Manager that directly addresses virtualization risks.

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