Best Practices for Virtualizing Distributed Environments.

Enterprise-Class Virtualization for Remote Office and Branch Office Infrastructures
Introduction

Addressing efficiency and business continuity for environments in remote offices / branch offices (ROBO) is a challenge for infrastructure planning, to say the least. Specialized technical staff is neither practical nor affordable for this environment therefore many choose to avoid virtualizing their infrastructures altogether. Without a cost effective alternative, head office IT managers look for the cheapest “good enough” solution to maintain operations and have therefore become accustomed to dealing with outdated hardware, suboptimal utilization, and unplanned downtime. If systems, applications and data aren’t current or are unavailable, the unavoidable reality is that they will suffer from reduced productivity, lost sales and most importantly, decreased customer confidence/satisfaction. Delivering excellent IT service for ROBO isn’t easy however it is becoming a competitive imperative.

With the rapid proliferation of virtualization, and the staggering adoption curve exhibited by data centers worldwide, it has yet to become cost effective or easy to roll-out to the ROBO markets. This whitepaper provides the 4 best practices that IT leaders of ROBO organizations need to consider when virtualizing their businesses, providing ROI tips and establishing a roadmap for reducing the Total Cost of Ownership for virtualizing the distributed ROBO environment.
The Evolution Of Virtualization

Over the last decade, virtualization has transformed the data centers around the world to provide flexibility through rapid provisioning, easier data protection and recovery, and business continuity and availability. As x86 servers proliferated through the datacenter in the 90’s, and as Windows (and to a lesser extent Linux) became the de facto server operating systems, many new challenges arose in the data center. As each server typically was dedicated to a single application, typical deployments ran at extremely low utilization rates (only 10% to 15%). Coupled with the rise in hardware costs and the associated infrastructure requirements (power, cooling, real estate, etc) the data center became plagued with inefficiencies and provided a fantastic opportunity for cost reductions.

Virtualization evolved as the solution to many of the problems facing the data center. Organizations began to adopt virtualization in their test and development operations as it was the most logical starting point. This was because virtualization enabled the set-up and tear-down of environments which made it easy to configure and provision new test environments for software developers, a task which previously took far too long and required disproportionate manual effort.

By 2005, virtualization finally became mainstream after proving itself in test and development. The ability to maximize server utilization allowed many organizations to delay hardware purchasing, dramatically affecting the bottom line. What many organization didn’t expect was the additional complexity it added to their infrastructures, not to mention trying to reign in server sprawl, and the lack of integrated management tools. Also, organizations found that they needed to train (or hire) specialized skill-sets in order to install, configure and run the virtualized environment. These skilled resources were not easy to find and were costly to train - and to retain. Because of these costs, complexities and administrative overhead, virtualization was rarely considered for smaller and distributed environments.
Challenges In Virtualizing Distributed Environments

The benefits of virtualization are widely advertised and well known. As with any new and transformation technology, virtualization is not without its challenges.

High cost of availability: Using virtualization for high availability is costly as it requires a SAN, as well as expensive and skilled experts to manage it. Other than the large enterprise data centers, most companies cannot afford to use virtualization for business continuity, not to mention the complexity it introduces into their environments.

Navigating the vendor landscape: There are hundreds of virtualization software vendors offering a variety of different solutions. All come with benefits and challenges and finding the right solution often requires a different vendor or application for high availability, another one for replication, another one for desktop virtualization, and so on. The result is a “rat’s nest” of software solutions from multiple 3rd party vendors to get virtualization work to your specifications.

Specialized skill sets: Using a portfolio of software vendors often requires a specialized skill set for each. These resources are difficult to find and costly to acquire. Training is also an option however it requires time and investment into a resource that will be difficult to retain once they have become established.

Complexity: Managing multiple solutions from different vendors introduced unneeded complexity into the organization. Virtualization requires the architecting and administration of 3 separate infrastructures: Virtualization, Management and Storage which further compounds the problem. Each solution requires a specialized skill-set to install, configure and run. The administrative overhead around planning and managing such an infrastructure has become a headache for many data centers, and could do the same for distributed environments if they choose to go the same route. IT leaders in ROBO have been forced to make the trade-off between customer retention and IT investment. If virtualization were simple, affordable and effective, they would have implemented it already. However it has yet to reach the ease of use and affordability for the distributed ROBO environment – until now.

The IT Infrastructure of the future needs to be scalable and integrated to provide the benefits of enterprise-class virtualization without the associated cost and complexity.
No one can argue the fact that many organizations have seen the benefits of virtualization, however there is still a long way to go. Virtualization is still new, and it can be costly. Considering that transformational nature of virtualization, organizations have had to change technologies, staff, behaviors and processes to accommodate. Now we are seeing the commoditization and simplification of virtualization, meaning that ease-of-use will increase, process will decrease, and proliferation will continue. Virtualization 2.0 focuses on eliminating the complexities with virtual shared storage, advanced clustering (HA), federated desktop virtualization, and integrated management and monitoring – making now the ideal time for ROBO organizations to consider virtualizing.
Best Practices For Virtualizing Distributed Environments

Considering budgets and capabilities available to the ROBO environments, as well as the rapid commoditization of virtualization, the time has arrived to consider a solution. The following 4 best practices will eliminate the barriers and extend the benefits of virtualization to everyone.

Best Practice 1: Avoid solutions that require you to have a costly Storage Area Network (SAN).
Virtualized environments require access to shared storage which traditionally meant an expensive SAN. Now, a software solution exists that allows you to leverage the existing server hardware that you have on-site to create a Virtual SAN, which not only eliminates the capital expenditure but also takes advantage of the existing storage you have already invested in.

Best Practice 2: Make sure that you are protected during any type of failure.
No matter how fault tolerant your servers and storage subsystems may be, if you only have a single copy of the most current data, you are at risk of data loss. Catastrophic failures of your storage subsystem due to hardware failure can bring your IT environment to its knees. Find a solution that addresses the risk of data lost by providing continuous real-time replication. Advanced clustering in a virtualized environment means getting all of the benefits and availability of traditional solutions without the associated cost of complex hardware and software resource requirements.

Best Practice 3: Extend the benefits to every user with Desktop virtualization.
The desktop of the future needs to be accessible from a combination of different devices on multiple platforms, and it must provide access to legacy applications and end user’s data and settings. The most suitable solution is for it to be virtualized and hosted in a cloud, however this hasn’t been possible for the ROBO environments because of bandwidth and latency limitations. For the business world to reach that level of virtualization and embrace the benefits of the virtual desktop, VDI solution designers need to develop products and solutions that provide a strong business case and take into consideration the infrastructure limitations.

Best Practice 4: Manage your infrastructure with a single solution.
Avoid building a parallel management infrastructure that will bring added complexity. By implementing an integrated management and monitoring console that will allow you to manage your shared storage, H/A, Virtual servers and desktops, all from one console (remotely accessible). This will benefit your organization by reducing the operational costs of managing your infrastructure while gaining insight into a consolidated view of operations.

“Before virtual machines and virtual desktops can freely move between different hardware platforms, they must have common access to shared storage.”

IDC Viewpoint (July 2009): Removing Storage-Related Barriers to Server and Desktop Virtualization
Virtualizing The ROBO: How Much Can I Really Save?

When compared to traditional virtualization, the reductions in capital and operational expenses of an optimized model bring the total cost of ownership in line with ROBO budgets, capabilities and expectations. In the following example, to deliver the same level of service and capabilities using traditional virtualization solutions versus the 4 best practices introduced in this paper, the organization could reduce the TCO by 70% thereby making it possible to get all of the advantages of virtualization without the costs and complexities. By eliminating virtual and physical servers typically required, leveraging the hardware already on site, and minimizing the required skilled IT staff, companies are able to dramatically reduce their capital and operational expenses. Also, by sourcing a single software solution that addressed each of the 4 best practices to success, companies now have access to enterprise class virtualization for a fraction of the cost, plus they only have to deal with one vendor.

### Traditional Virtualization

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**TCO: $58,000 / Year (Over 3 Years)**

### ROBO Optimized

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**TCO: $18,000 / Year (Over 3 Years)**

70% Lower Than Alternative Solutions
How VM6 Is Enabling The Virtualization Of Distributed ROBO Environments

VM6 VMex is an affordable virtualization software solution that brings enterprise-class virtualization to distributed IT environment and ROBO in one easy to use solution. Designed for multi-site organizations, VM6 VMex leverages Microsoft Windows 2008 R2 and Hyper-V to create an internal cloud to provision, consolidate, monitor, manage and protect all of the ROBO workloads without the need for expensive hardware or storage area networks (SANs). Easy to install, configure and manage, VM6 VMex does not require any specialized skill sets other than the MSCEs customers typically already have on staff. Companies across the globe use VM6 VMex to deliver, protect and maintain service levels across their remote offices and branch locations to provide superior service with dramatically lower costs.

Multiple tools, one ROBO budget-friendly package, only 2 servers required
VM6 VMex provides the functionality to fully comply with the 4 best practices in this white paper to successfully virtualizing the ROBO. Get all of the benefits of virtualization from virtual shared storage, centralized management and provisioning to advanced clustering and federated desktop virtualization in one affordable software package installing on only 2 standard servers, nothing else.

Virtual Shared Storage
- VM6 VMex leverages the unused storage in server hosts to create a virtual shared storage (Virtual SAN)
- From the virtual SAN enclosure you can create virtual partitions that will be seen by all the cluster nodes
- Should you already have invested in a SAN, don’t worry, VM6 VMex can simply add the SAN capacity to it’s Virtual SAN and create 1 larger pool of storage
- VM6 VMex works independently from and with no dependencies related to applications being protected
- VM6 VMex have a built-in quota management system that allow administrators to do storage thin-provisioning

Enterprise-class high availability without an expensive SAN
- Advanced clustering provides a full H/A solution running at remote offices but managed from a centralized location
- VM6 VMex can be installed on any server hardware compatible with Windows 2008
- VM6 VMex will create an on-premise cloud that will ease the install and management of the cluster
- No single point of failure so ROBO remain operational even if isolated from corporate offices
- No SAN required, capitalizes on the virtual SAN created by VM6 VMex
- Eliminates prohibitive capex and opex investments.
Integrated Management and Monitoring
- VM6 VMex provides a single console for managing both consolidated and distributed IT infrastructures
- Integrated dashboard provides real-time status and performance metrics
- One integrated console for monitoring, alerting, and orchestration supports a dynamic IT environment
- Manage thousands of sites from a single console with remote access (even via low bandwidth connections) to all locations
- Supports very low bandwidth making it optimal for distributed environments
- Event-based e-mail triggering or run external commands for each event
- Avoid the installation and maintenance of a parallel infrastructure for monitoring and management

Federated Desktop Virtualization
- The federated VDI feature removes the dependency on low latency and high bandwidth network by offering an infrastructure at “the edge”, close to the users, while providing simple, remotely accessible management.
- It eliminates printing issues that are usually associated with traditional VDI solutions
- No single point of failure so branch offices remain operational even if isolated from corporate offices
- Rapidly create virtual desktops from a master image and push updates and patches out to any number of virtual desktops in minutes without affecting user settings, data or preferences.

VM6 is leading “Virtualization 2.0” by providing a scalable and integrated solution that extends the benefits of enterprise-class virtualization to the distributed ROBO without the associated cost and complexity.
About VM6

VM6 provides software solutions to extend the benefits of enterprise-class virtualization to remote locations and smaller distributed IT environments without the associated cost and complexities. Designed for remote office budgets and capabilities, VM6 VMex harnesses the power of virtualization to provide server and desktop consolidation, management, shared storage and high availability without the need for costly professional services, training or specialized skill sets other than the MSCEs our customers already have on staff.

Lower Costs
Why shouldn’t the smaller and distributed remote offices expect the same level of performance and availability as large corporate IT environment? What do the customers expect? Until now, virtualization for smaller environment and remote locations was complex and unaffordable, requiring specialized skill sets to become a reality, therefore ROBO relied on outdated hardware and systems and frequently experienced lower performance and outages that cost the company time and money. Traditional virtualization solutions rely upon expensive hardware, SANs, and specialized skill sets to install, configure and manage. VM6 VMex delivers greater flexibility and lowered risk by offering virtualization to ROBO locations at a fraction of the cost. By leveraging Microsoft Windows 2008 R2 and Hyper-V combined with virtual SAN functionality, VM6 VMex delivers enterprise-class virtualization functionality at a ROBO-friendly price.

Improve Service And Uptime
The cost of downtime is often misunderstood. Unplanned downtime during business operations costs revenue. Even worse, it affects the perception the customer has about you being able to deliver reliable and consistent services. Whether you have defined and formal SLA’s or not, customer’s today demand the highest level of service else they can easily switch to your competition. VM6 VMex allows for the consolidation of the servers in your ROBO locations, and the ability to use them for high availability, so even if there is a disruption you can maintain service levels until the outage has been corrected.

Centralize Control
Provisioning new servers or upgrading existing systems at ROBO locations is a huge undertaking and requires manually intensive, specialized skills. VM6 VMex enables the centralized control over these tasks therefore IT administrators can perform upgrades across the distributed infrastructure with a few mouse clicks rather than shipping out cds or visiting each site one at a time. Administrators can also provision new servers to remote locations on-demand so that efficiency is maximized while costs are kept to a minimum.

Do More With Less
In this economic climate, cutting budgets or doing more with what you have is more imperative than ever. With VM6 VMex you can eliminate many of the Capital and Operating expenses that you currently carry at your ROBO locations and provide better service levels.

Contact VM6

VM6 Inc.
303 - 759 Square Victoria
Montreal, Canada H2Y 2J7
Toll Free: 1 (866) 990-1221
info@vm6software.com
www.vm6software.com