Reducing the Cost and Complexity of Business Continuity and Disaster Recovery for Email

Harnessing the Power of Virtualization with an Integrated Solution Based on VMware vSphere and VMware Zimbra

WHITE PAPER
The Disaster Recovery Burden of Email

Extraordinary events over the course of the last decade, from September 11, 2001, to the 2011 earthquake and tsunami in Japan, serve as dramatic reminders of the importance of business continuity and disaster recovery (BCDR) planning for IT infrastructure in organizations today. Global email virus attacks, power failures, IT system crashes, supply chain problems and other more common causes of unplanned downtime can have devastating effects on an organization's ability to maintain business operations. Without a business continuity plan, a significant number of businesses that experience a disaster are forced to close their doors forever.

For IT administrators, managing email servers and performing related archiving, backup and other tasks related to disaster recovery are among the most time-consuming and burdensome of their responsibilities. Messaging and collaboration applications are typically classified as business-critical or tier 1 applications. With business-critical communication occurring almost exclusively in email, even a short disruption to an email server can severely impact a company's ability to conduct business, and can affect its reputation, customer and supplier interactions, and ultimately the bottom line. But traditional solutions make it difficult to ensure fast and reliable recovery of email servers. With traditional solutions, IT must maintain software matrices and fully duplicate production infrastructure—and its costs—to avoid failures due to hardware dependencies. In addition, testing disaster recovery plans requires setting aside planned windows of downtime that limit testing time and hinder productivity. These requirements drive up the cost of business continuity and result in a proliferation of underutilized servers.

To address these challenges and help improve disaster recovery solutions for email and other mission-critical applications, industry-leading organizations rely on virtualization.

Lower Cost, Less Complexity in Business Continuity Planning

Most organizations have already virtualized their IT production workloads as well as workloads for development, testing and staging environments, consolidating servers to increase efficiency and reduce hardware costs. As companies expand their virtualization initiatives, the next phase must include business-critical applications such as email. Virtualization reduces downtime from planned and unplanned outages, simplifies the infrastructure, and reduces hardware requirements and processes for disaster recovery implementation and testing. Virtualization also lowers the overall cost of business continuity planning.

Too often, designing and deploying an email messaging solution means choosing the right combination of hardware and storage, and then hoping it will last for several years without requiring major upgrades. The truth is that as users' needs and requirements evolve, so must the systems providing email and collaboration services. Virtualization removes the need for duplicating hardware because virtual machines' CPU, network, storage and RAM resources can be increased to meet the needs of the organization. A virtualized email messaging environment can help organizations avoid costly overprovisioning of valuable CPU and RAM resources for more realistic designs.

For more than a decade, VMware vSphere® has set the standard for the most robust and reliable virtualization platform. vSphere enables companies to implement better business continuity at a lower cost by eliminating the need to maintain duplicate physical systems for disaster recovery. vSphere helps customers prevent common causes of planned and unplanned downtime and minimize downtime when outages do occur. It also streamlines and automates much of the recovery process. Table 1 shows how virtualization reduces the cost and complexity of business continuity solutions.
vSphere includes powerful tools for working with virtual machines:

- Templates enable IT administrators to keep an inventory of all server images and deploy a new virtual machine OS in minutes.
- Live snapshots of vSphere virtual machines are great tools for testing and troubleshooting.
- Using a cloned virtual machine in an isolated test environment means that email administrators and developers can use an exact copy of the production environment to fix bugs, test migration scenarios, or even provide administrative training—all without affecting production users.

By provisioning virtual servers using templates and clones, administrators can set up servers in minutes instead of hours or even days. Using existing virtual infrastructure reduces the need to “rack and stack” (assemble) and install operating systems on physical hardware. In just a few minutes, IT staff can install VMware ESX® or VMware ESXi™ on physical hardware to unlock all of the benefits of virtualization.

**VMware Zimbra on vSphere**

VMware Zimbra® is a next-generation email and collaboration solution that delivers on VMware’s end-user computing vision, connecting users to critical data on any device or platform. Zimbra delivers a feature-rich experience, without storage limits, that dramatically accelerates user productivity. It offers administrators a Web-based application that reduces support costs and streamlines email deployment, management and provisioning with greater reliability and easier administration. For organizations of all kinds and sizes, these capabilities add up to a lower total cost of ownership.

Zimbra’s open-source architecture is optimized for virtualized infrastructure, so it is simpler to manage and less costly to scale. Administrators easily gain visibility into application usage and activity. Moreover, the application’s built-in integration with vSphere makes it easier to virtualize than Microsoft Exchange. In contrast to other messaging and collaboration solutions, Zimbra enables messaging architects to exercise flexibility in their choice of storage.

When virtualized, Zimbra supports the use of NFS for all of its components, which can decrease the management overhead associated with storage provisioning in messaging environments. vSphere optimizes the underlying infrastructure and provides tools for monitoring and running email, improving scalability and performance, so IT staff can focus on strategic business initiatives rather than the day-to-day tasks of monitoring and troubleshooting.

Zimbra includes VMware vSphere High Availability (HA) heartbeat monitor, which ensures that critical Zimbra services are running. If a service or virtual machine become unresponsive, VMware HA and application monitoring will restart the virtual machine. While vSphere improves the flexibility and resource utilization of email management, vCenter Site Recovery Manager simplifies disaster recovery implementation and testing.
More Efficient Disaster Recovery
An integrated solution that includes Zimbra, vCenter Site Recovery Manager and EMC RecoverPoint makes disaster recovery easier, less costly and more reliable. Zimbra running on vSphere offers a more efficient platform for disaster recovery implementation and testing, reducing unplanned downtime and time to recover (recovery time objective or RTO).

With physical machines, maintaining a complete, isolated duplicate of a production environment for testing is expensive and difficult. For example, ensuring that the offline environment patch levels and operating system (OS) version are compatible with the production environment can be a nightmare. With vSphere, a virtual VMware Zimbra Collaboration Server™ infrastructure can be cloned to an isolated, “fenced-off” network for testing and development. By employing redundant hardware such as network and storage adapters to increase availability, vSphere prevents a single point of failure.

With VMware virtualization, organizations can easily create additional virtual servers without additional hardware purchases by provisioning virtual machines to existing underutilized servers. Virtual machines can run on any VMware enabled server, eliminating the need for driver and hardware compatibility between primary and recovery sites. Before going live in production, organizations can test disaster recovery plans, designs, and patches exactly as they will be deployed with an off-network duplicate of Zimbra. Because VMware tools such as vCenter Site Recovery Manager help make disaster recovery plans repeatable and automated, testing can be performed at any time.

High Availability Made Simple
Traditionally, high availability is provided by a third-party clustering solution. But this kind of clustering can be complex and fragile, and is generally suited only to mailbox servers that protect the most critical component of a messaging solution. Supporting servers must also be protected, or the messaging environment will not function at all. Traditional clustering also requires complex operational procedures and specialized training. In contrast, vSphere provides simple, reliable, out-of-the-box high availability for all Zimbra servers.

Other important messaging infrastructure servers, which are typically deployed as standalone systems, are subject to outages caused by server hardware failure and cannot be protected through clustering. With VMware virtualization, if a server fails, vSphere HA can automatically restart all virtual machines on another available ESX host within a vSphere cluster. vSphere HA offers OS and application-independent high availability for every server running in a virtual machine, including tier 1 email servers.

The virtual machine and built-in application monitoring capabilities of vSphere increase availability for Zimbra virtual machines. If a Zimbra service or Zimbra virtual machine becomes unresponsive, HA restarts the Zimbra virtual machine. Other applications require third-party add-ins.

vSphere also includes vMotion®, enabling virtual machines to be moved to more powerful hardware at any time to provide more resources or to facilitate host maintenance. There is no need to announce application outages.
Zimbra on vSphere Offers Superior Performance for Disaster Recovery

In a recent VMware study, vCenter Site Recovery Manager was successfully implemented with EMC RecoverPoint replication technology to perform failover of Zimbra Collaboration Server to a datacenter 900 miles away. Researchers configured the setup and implementation of the vSphere, Zimbra Collaboration Server, EMC RecoverPoint, and vCenter Site Recovery Manager components to support the real-world disaster recovery scenario for a Zimbra messaging and collaboration implementation.

Figure 1 shows how the study tested a sample heavy user enterprise workload while replicating to a remote datacenter. (This lab-oriented study is intended only as a reference point in the design of disaster recovery plans.)

VMware vCenter provided the unified central management interface needed for this test. vCenter Site Recovery Manager and EMC RecoverPoint enabled the team to manage site-to-site replication and successful failover of the virtualized Zimbra messaging application from the primary datacenter to the remote recovery datacenter. vCenter Site Recovery Manager also enabled testers to create and test multiple recovery plans before attempting an actual failover, ensuring that there would be no mistakes or incorrect configurations during the failover.
Results showed that failover could be accomplished in less than 10 minutes, without incident. To verify the presence and integrity of all data, researchers performed checks on the messaging databases and other critical components of the messaging environment. Post-failover, the team conducted a Zimbra Soapgen test harness (see Figure 2) to ensure that performance was acceptable while the server was running from the recovery site. Testing showed that max(SendMsgRequest) or sendmail latency was well under 1000ms. In the two-hour test period, the two mailbox servers delivered about 140,000 messages and performed more than 467,500 read message requests while executing from the recovery site.

Host zc7vmmbx01.labzimbra.local: SOAP: Invocation Count: Summary (Top 10 max)

max(GetTagRequest) = 2119.00  max(GetMsgRequest) = 1948.00  max(GetFolderRequest) = 360.00
max(SearchRequest) = 2120.00  max(SendMsgRequest) = 583.00  max(GetInfoRequest) = 2116.00
max(DelegateAuthRequest) = 4.00  max(MsgActionRequest.move) = 268.00  max(AuthRequest) = 2120.00
max(GetDomainInfoRequest) = 16.00

Figure 2. SOAP Invocation Count

Conclusion

An integrated solution that includes Zimbra, vCenter Site Recovery Manager and EMC RecoverPoint makes disaster recovery easier, less costly and more reliable. Zimbra running on vSphere offers a more efficient platform for disaster recovery implementation and testing, reducing unplanned downtime and time to recover. For a more in-depth technical analysis of the test discussed in this paper, see the upcoming white paper “Providing Business Continuity and Disaster Recovery for VMware Zimbra Using VMware vCenter Site Recovery Manager and EMC RecoverPoint.”

Next Steps

For more information, see the product pages and documentation:

• vSphere product overview
• vSphere documentation
• Zimbra product overview
VMware Contact Information

For additional information or to purchase VMware vSphere™, VMware’s global network of solution providers is ready to assist. If you would like to contact VMware directly, you can reach a sales representative at 1-877-4VMWARE (650-475-5000 outside North America) or email sales@vmware.com. When emailing, please include your state, country and company name.

Providing Feedback

VMware appreciates your feedback on the material included in this paper and would be grateful for any guidance on the following topics:

• How useful was the information in this paper?
• What other specific topics would you like to see covered?

Please send your feedback to tmfeedback@vmware.com, with “Reducing the Cost and Complexity of Business Continuity and Disaster Recovery for Email” in the subject line. Thank you for your help in making this paper a valuable resource.