Fast and Easy SnapManager SharePoint Server 2007 Deployments Using VMware Virtualization and NetApp Storage

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SHAREPOINT LAB SOLUTION

This paper discusses how to build a quick test lab environment using SnapManager® for SharePoint® on VMware® machines with NetApp® as the backend storage and how to build a test and training environment for field SEs to learn Microsoft® Office SharePoint Server 2007, as well as learn to use the new SnapManager to SharePoint backup and recovery tool.

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1 INTRODUCTION

Microsoft Office SharePoint Server 2007 is quickly becoming the method of choice within organizations for centralized document and information sharing, project management and tracking, portal services, and much more. For many organizations Microsoft Office SharePoint Server 2007 quickly becomes a mission-critical application and must be designed, implemented, and supported in a way that can provide optimal performance and high availability.

There are a number of important considerations that must be taken into account before deploying SharePoint into production. IT administrators must be familiar with Microsoft Office SharePoint Server 2007 server design concepts and how the servers will be supported. IT support staff must learn how Microsoft Office SharePoint Server 2007 works and how to support users. The storage back end must be designed to provide proper performance and redundancy as well as scalability as the content in the Microsoft Office SharePoint Server 2007 environment grows. One particularly important challenge with Microsoft Office SharePoint Server 2007 is designing an effective backup and restore strategy. There are very few backup solutions on the market today that can properly address all the challenges of Microsoft Office SharePoint Server 2007 backup/restore. In many cases it becomes a combination of several methods to protect the entire Microsoft Office SharePoint Server 2007 environment. Replication to a disaster recovery site and being able to bring up Microsoft Office SharePoint Server 2007 at a DR site are another set of challenges that must be carefully considered.

From the standpoint of the users, many are learning to work with SharePoint for the first time. SharePoint 2007 contains many new features and functions and integrates with other Office 2007 applications in new ways. Users must learn all the new features and how to configure SharePoint to meet their needs.

All of these complexities mean that companies need a way to quickly and easily build test environments. These test environments can be used for application testing and to train IT administrators and end users on Microsoft Office SharePoint Server 2007. However, building test environments can be a very time-consuming process. Configuring the hardware and loading the OS, patches, and applications for just one server can easily take many hours for an IT administrator. Once testing has begun, if a server needs to be reimaged for any reason, the process must be repeated. This cannot possibly scale well in large organizations. Many companies do not have enough spare server hardware to build test systems, and those that do often do not have much time to devote to properly setting up test servers.

Using VMware virtual machines is the best way to overcome these challenges. As an example, let us look at how NetApp recently used VMware virtual machines connected to a NetApp storage array to quickly and easily build a complete test environment. The test environment was used to train field SEs on Microsoft Office SharePoint Server 2007 and how to use their new SnapManager for SharePoint backup and recovery tool.

2 ARCHITECTURE AND COMPONENTS

The NetApp item-level backup and restore product SnapManager for Microsoft Office SharePoint Server 2007 addresses all of the shortcomings inherent in the native backup and restore functionality in Microsoft Office SharePoint Server 2007 and further extends the administrator's ability to properly manage the SharePoint environment. SnapManager for Microsoft Office SharePoint Server 2007 expands from a backup and recovery tool to a full management platform. This is because SnapManager for Microsoft Office SharePoint Server 2007 utilizes a scalable client-server deployment strategy that allows for deployment across multiple SharePoint instances, while enabling management and control from a single centralized browser-based interface. This architecture is depicted in Figure 1.

The SharePoint environment consists of three tiers: the Web tier, the application tier, and the database tier.

2.1 SHAREPOINT ARCHITECTURE

WEB TIER

The Web tier consists of one or more stateless Web server nodes, referred to as Web front-end servers, or WFEs. These nodes can be load-balanced based on the scalability requirements; additional Web server nodes can be added.

The WFE servers handle incoming requests and route them to the correct application-level or SharePoint Servers.
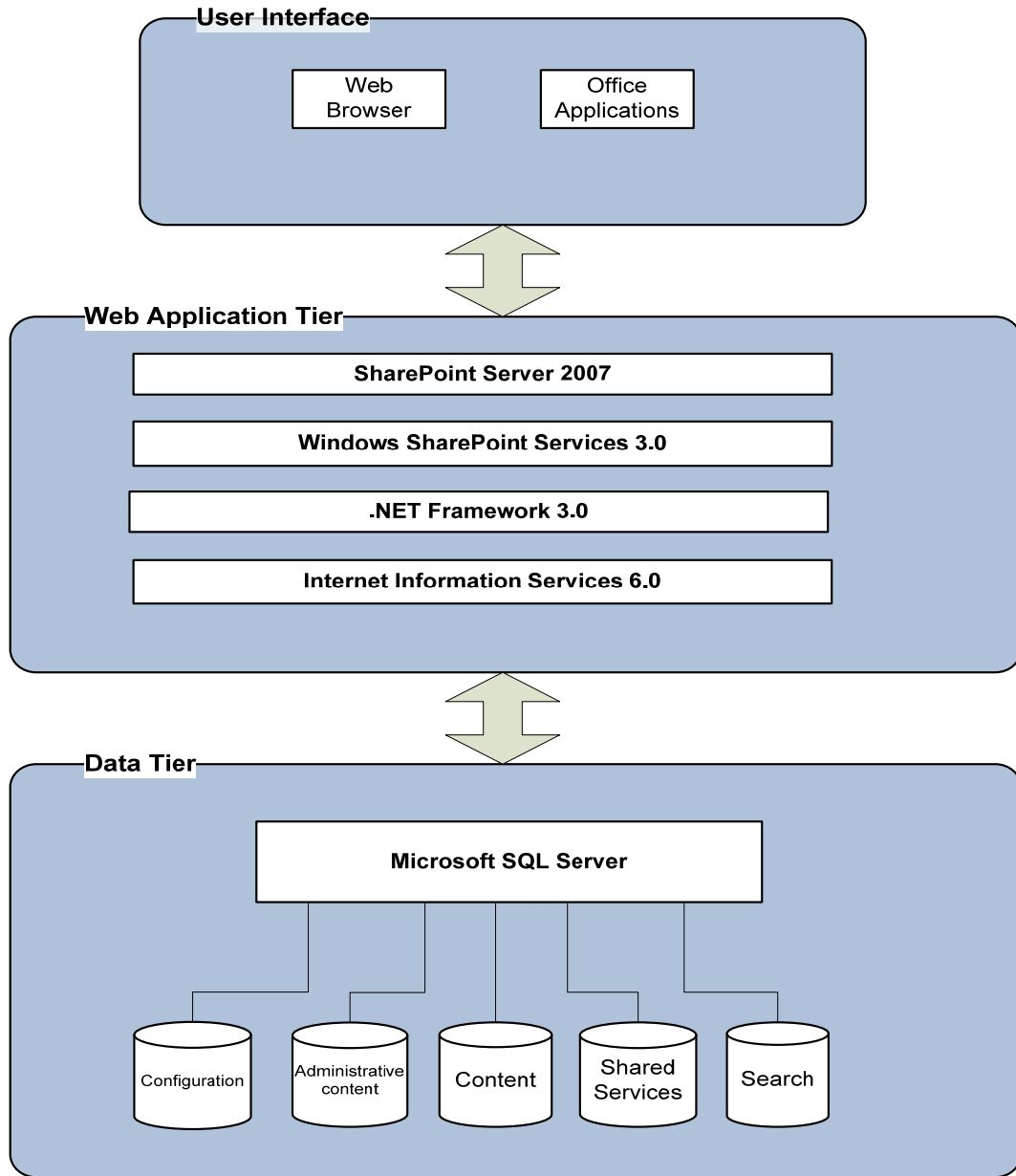
APPLICATION TIER

The application tier runs the SharePoint administration Web sites, end-user Web sites, and shared service providers. (SharePoint Web sites and shared service providers can be run on separate physical servers.) Administrative sites are special SharePoint sites that allow administrators to set up and configure sites for end users.

Many of these services can be distributed among nodes to improve the throughput as well as provide redundancy. The other benefit of adding more than one node to the application is to build redundancy into the system.

DATABASE TIER

SharePoint Server 2007 and Windows SharePoint Services 3.0 rely on SQL Server™ databases to store configuration, administrative, site content, and search data. A SharePoint installation will have a configuration database that contains information such as global configuration data such as information on the Web servers in the installation and server settings. SharePoint also maintains all site content in SQL Server databases—for example, documents managed in SharePoint document libraries are stored in databases instead of the Windows® file system. Other databases store information used by SharePoint search services (indexes, for instance) and for features that are unique to SharePoint Server, such as shared service providers, a set of centralized, shared services that are not specific to any one SharePoint Server site.
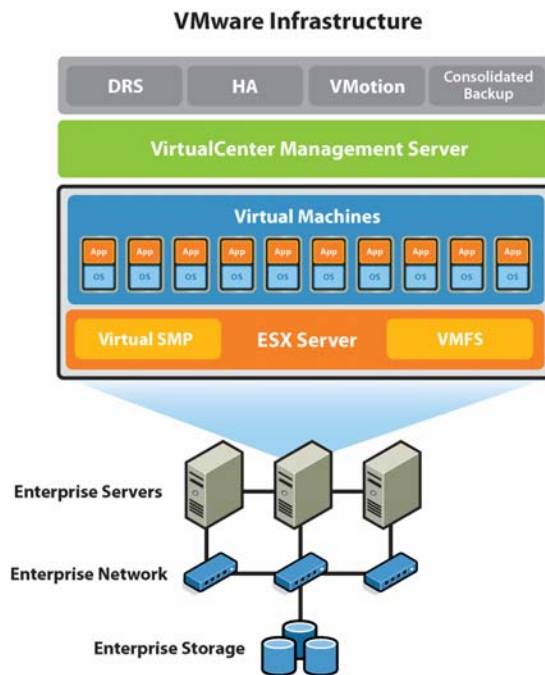
User Interface

| Web Browser | Office Applications |

Web Application Tier

| SharePoint Server 2007 |

| Windows SharePoint Services 3.0 |

| .NET Framework 3.0 |

| Internet Information Services 6.0 |

Data Tier

| Microsoft SQL Server |

Configuration | Administrative content | Content | Shared Services | Search

SHAREPOINT ARCHITECTURE 1

2.2 VMWARE INFRASTRUCTURE 3

VMware Infrastructure simplifies IT environments so that you can leverage your storage, network, and computing resources to control costs and respond quickly to changing business needs. The VMware Infrastructure approach to IT management creates virtual services out of the physical infrastructure, enabling administrators to allocate these virtual resources quickly to the business units that need them most.

Figure: VMware Infrastructure.

VMware Infrastructure 3 is the next generation of industry-leading infrastructure virtualization software that virtualizes servers, storage, and networking, allowing multiple unmodified operating systems and their applications to run independently in virtual machines while sharing physical resources. VMware Infrastructure 3 software components include VMware ESX Server and VMware VirtualCenter.

2.3 NETAPP FAS STORAGE

Learn About NetApp Storage Systems

3   PROBLEM

Microsoft Office SharePoint Server 2007 is quickly becoming the platform of choice for content management, project management and tracking, portal services, and collaboration. For many organizations, Microsoft Office SharePoint Server is a business-critical application that must be designed, implemented, and supported in a way that can provide optimal performance and high availability.

To address the challenges of providing an enterprise-class backup and recovery solution for Microsoft Office SharePoint Server 2007, NetApp recently added SnapManager for Microsoft Office SharePoint Server 2007 to its suite of application data management solutions. SnapManager provides customers with enterprise-class backup; recovery, deployment, and management to help them dramatically reduce costs associated with data management.

The challenge at NetApp was helping field sales engineers become familiar with this product and be able to effectively design and implement SharePoint solutions for NetApp customers. Many NetApp field SEs had limited experience with SharePoint Server 2007 and with the new NetApp SnapManager for SharePoint application. The NetApp SEs in the field needed hands-on experience with these products; however, with hundreds of SEs in the field, deploying a SharePoint Server environment for each SE was not practical. There was only one physical server to work with, and each SE would need a separate test system.

To solve this challenge, NetApp needed to get multiple SharePoint 2007 environments up and running very quickly that could be used for training multiple SEs simultaneously with minimal hardware. Each SE needed a separate test environment, and at the end of each training session, the entire lab environment would need to be reset to a clean state so the next group of SEs could be trained.

"Most of our SEs are learning to work with SharePoint 2007 and our SnapManager for SharePoint product for the first time," said Jai Desai. "Our SEs needed hands-on training with these products so that they could understand the features and functionality and be able to communicate the product's value proposition with their customers who were looking to implement SharePoint environments on NetApp storage products."

However, test environments can be difficult and time-consuming to create. Configuring the hardware, loading the OS, and providing patches and applications for even just one server can take many hours to complete. "We needed a solution that would allow training of up to 10 individuals at a time, each with their own unique SharePoint environment. Once the training sessions were complete, we would need to be able to rapidly reset the entire environment to a clean state to train the next 10 individuals."

4 WHAT IS SNAPMANAGER FOR MICROSOFT OFFICE SHAREPOINT SERVER 2007?

Microsoft Office SharePoint Server 2007 includes content management, information search, portal services, and other capabilities in a single software package. SharePoint Server 2007 combines the features of SharePoint Portal Server 2003 and Content Management Server with new capabilities, extending the functionality of the Microsoft Office suite to centralize storage of documents and other content for simplified management and improved Web-based collaboration.

SharePoint Server 2007 offers many advantages over SharePoint 2003, and usage is accelerating rapidly. IT teams are deploying it to centralize important content from remote locations and to get important documents off of individual desktops and laptops for improved accessibility as well as better data protection and security. SharePoint Server 2007 search capabilities make it easier to locate data, including specific versions of stored files. Microsoft, in fact, is actively encouraging customers to move away from Exchange public folders for sharing Office documents and other files.

Naturally, the more corporate documents you pull together in a single location, the more business critical the repository becomes. As customers use SharePoint for business-critical collaboration and content management, storage availability, accessibility, and performance are becoming critical, as is data protection—a particular pain point for SharePoint Server 2007.

With the newly released SnapManager for Microsoft Office SharePoint Server, NetApp helps streamline data management in SharePoint Server 2007 environments through:

- Fast backup of the SharePoint content database, including metadata
- Granular recovery of content, from a single item to the entire content database
- A user interface focused around SharePoint that simplifies data management tasks for a SharePoint admin

5 SOLUTION

Using VMware virtualization technology, NetApp was able to quickly and efficiently deploy a SnapManager for Sharepoint Server training environment. The solution involved using a single IBM xSeries server (quad core with 48GB RAM). The server was loaded with VMware ESX Server 3.0.1 and connected to a NetApp FAS2020 storage array. A single Windows 2003 virtual machine was created with all appropriate patches and software and was used as a template for all future virtual machine deployments. Using virtual machine templates allowed each additional virtual machine OS to be deployed in a matter of minutes.

A total of 10 Windows 2003 virtual machines were deployed from the template. Each virtual machine was allocated one virtual CPU and 2GB RAM and was dedicated to a single SE for training purposes. This allowed 10 SEs to take part in each training session simultaneously with a unique SharePoint Server environment. Each SE came in with a laptop and used the Microsoft Remote Desktop Protocol to remotely connect to a dedicated SharePoint Server.

The SEs were trained on SharePoint 2007 concepts and how to use NetApp's SnapManager for SharePoint product for SharePoint backup and recovery. At the end of each training session, the entire environment was reset using a combination of virtual machine Snapshot™ technology combined with NetApp SnapDrive® technology. The entire environment could be reconfigured in minutes, and the next 10 SEs could take part in the training.

"Using virtual machines for this environment saved hundreds of hours in server provisioning time and allowed us to train all our SEs using only a single server" – Jai Desai
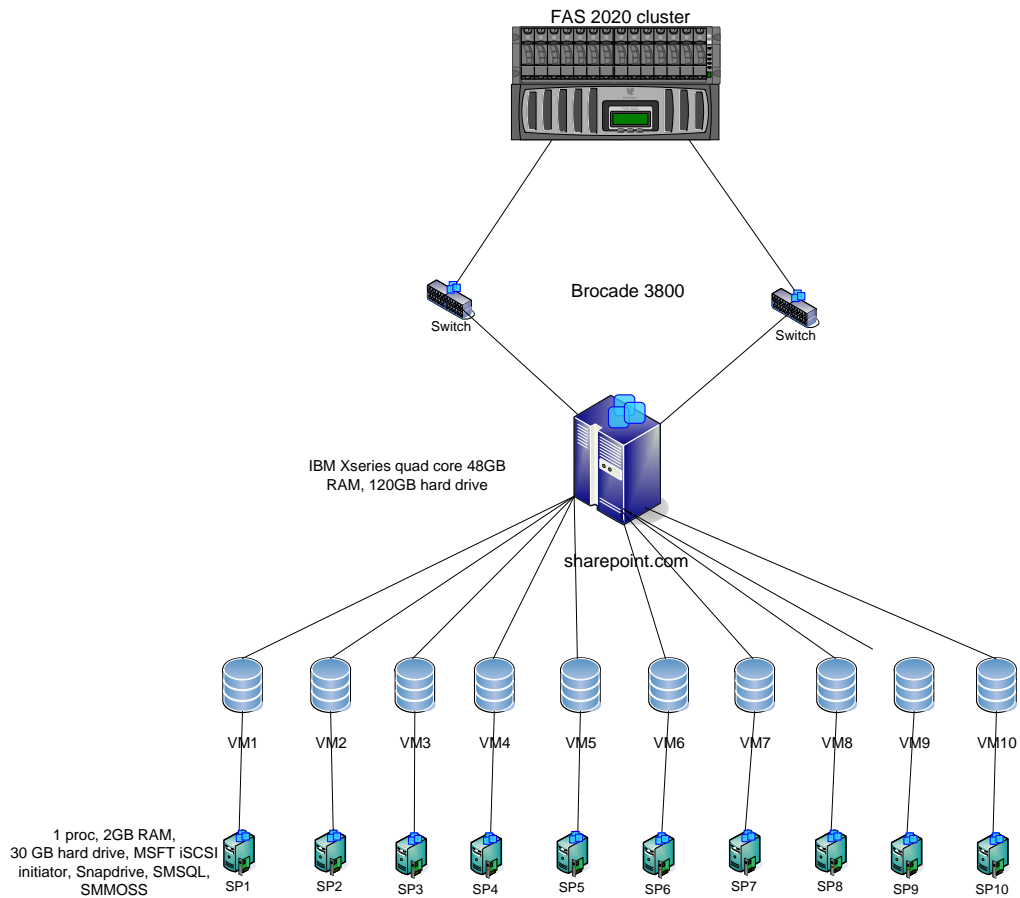
RESULT

➢ Deployed Microsoft Office SharePoint Server 2007 test and training environment in less than 2 days.

➢ Provided training for 25 field SEs in 3 days , with hands on lab for each section

➢ Minimized cost and labor involved with configuring a test environment for Microsoft Office SharePoint Server.

➢ Simplified configuration of test environment with easy-to-duplicate server images.

DEPLOYED ENVIRONMENT

- FAS2020 server cluster

- Two Brocade 3800 switches

- IBM xSeries quad core with 48GB RAM and 120GB hard drive

- 10 VMware virtual machines

6   CONFIGURATION AND SETUP

FAS 2020 cluster

Brocade 3800

Switch   Switch

IBM Xseries quad core 48GB
RAM, 120GB hard drive

sharepoint.com

VM1   VM2   VM3   VM4   VM5   VM6   VM7   VM8   VM9   VM10

1 proc, 2GB RAM,
30 GB hard drive, MSFT iSCSI
initiator, Snapdrive, SMSQL,
SMMOSS

SP1   SP2   SP3   SP4   SP5   SP6   SP7   SP8   SP9   SP10

Lab Setup 1

CONFIGURATION AND SETUP

Figure 2 shows the architecture diagram for the SnapManager for Microsoft Office SharePoint Server 2007 training environment. The reason for choosing the VMware server edition for this training environment is to keep the administration and the infrastructure cost low. The flexibility of using the VMware technology is that we can easily create Snapshot copies and revert back to the original state once the class is completed.

In this particular environment 10 virtual machines were hosted on an IBM xSeries quad core 48GB RAM with minimum hard drive space. The VMware server was installed on a Windows 2003 server and on the back end was connected to a FAS2020 cluster.

Each VM instance had a dedicated LUN and was mapped to the Windows system, as seen in Figure 2, using Fibre Channel. In this environment the following software was installed on a single VM:
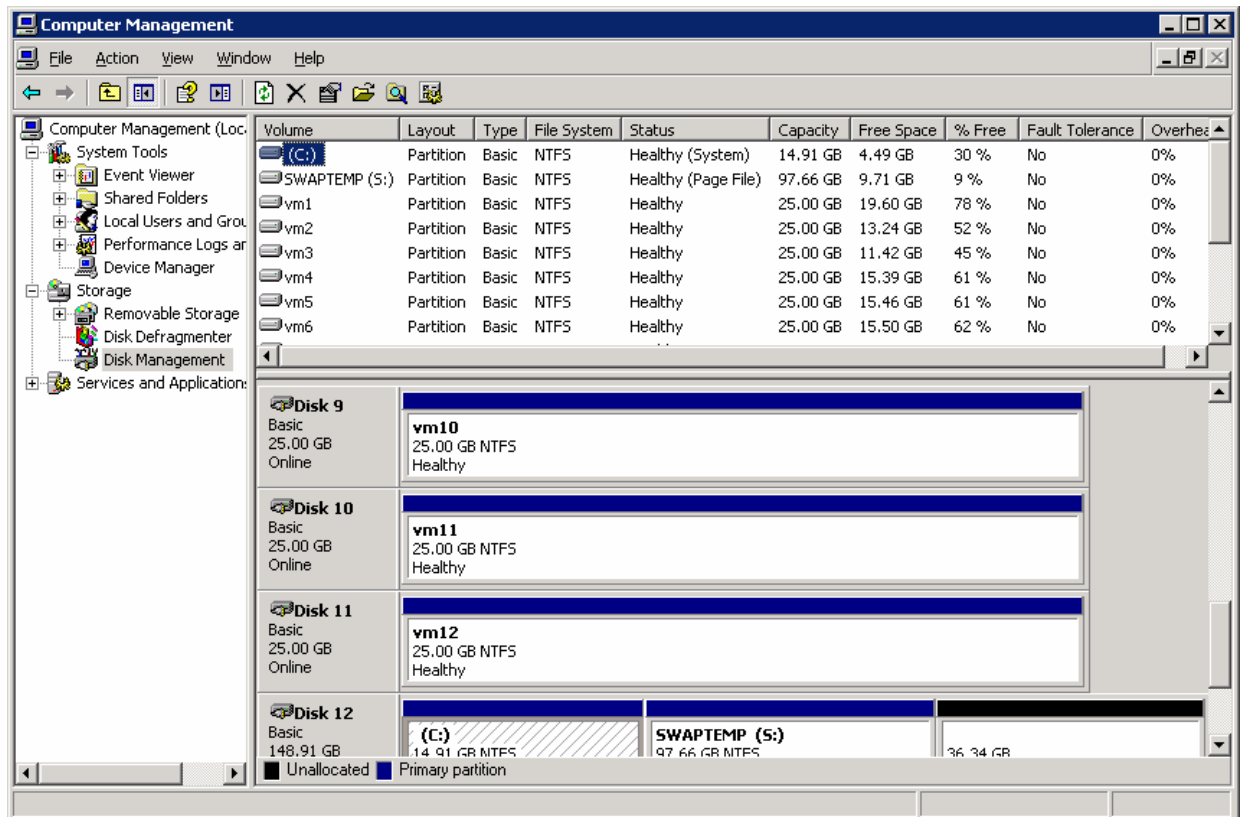
Microsoft SQL
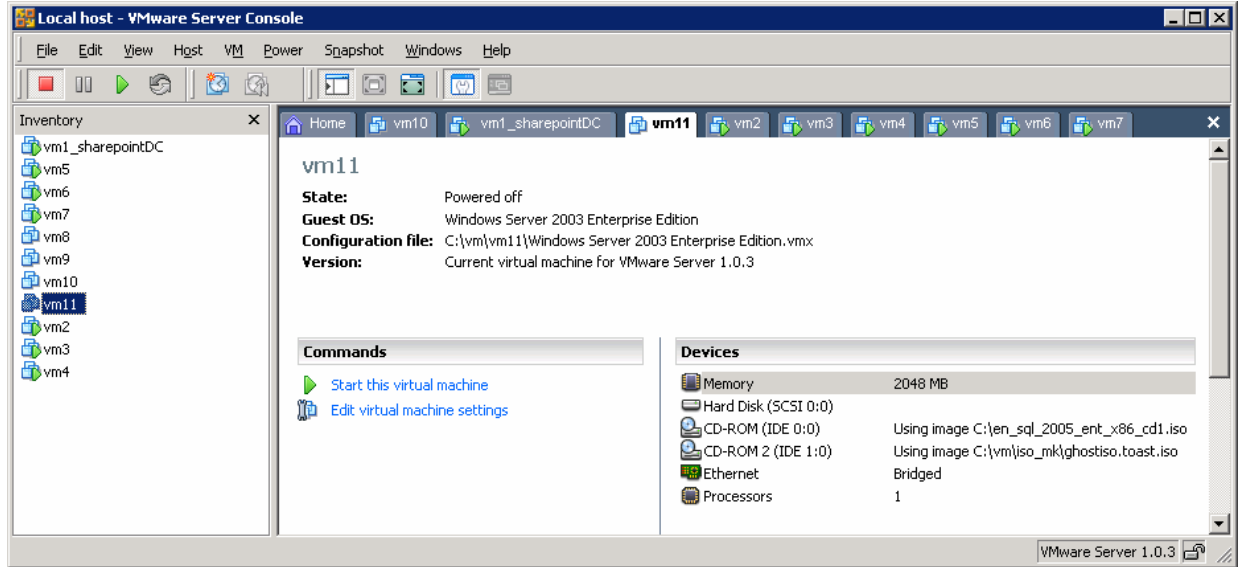
SnapManager for SQL

Microsoft Office SharePoint Server

SnapManager for Microsoft Office SharePoint Server 2007

Once the above software had been installed, allowing Microsoft SQL Server 2005 software to access NetApp storage via iSCSI was simple. SnapDrive software transparently facilitates access to network storage through the creation of LUNs, making network access transparent to Microsoft SQL Server.

All existing SQL Server databases were migrated from local disks to storage on a NetApp system with the following steps:

1. Configure the iSCSI LUN using the SnapDrive interface.

2. Detach the existing database from Microsoft SQL.

3. Migrate the database from the local disk to the newly created LUN using SnapManager for SQL.

4. Reattach the database to Microsoft SQL Server. (The location of the database doesn't matter as long as the software thinks it's local.)

7 CONCLUSION

"Using VMware virtualization technology, we were able to quickly and easily set up the SharePoint testing environment and begin training our SEs using minimal server hardware and minimal IT resources. The ease of configuration and deployment that VMware allows lightened the burden on our IT department, freed up IT resources, and helped us keep testing costs down."

—Jai Desai, Technical Marketing Engineer, NetApp SnapManager Solutions for Microsoft