

Business Solutions Group - Information Technology

Building a VM Server

Server Support

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Building a virtual machine server follows a standard procedure at Texas Capital Bank. This document follows this procedure and illustrates where a VM engineer would make changes to produce a nonstandard VM.

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Document Conventions

Text Style	Description	Example
Menu > Menu Item > Dialog Tab	Shorthand notation for a menu, menu item, optional cascading menu, and possibly a dialog tab selected. Used also for GUI objects.	Select the Tools > Options > Edit Dialog Tab
Bold, Dark Blue Fixed-width Text	Specific user input text typed in a text field, on a command line, or selections made from a list. User input is never underlined.	Technical Services
Underlined Blue	Underlined blue text denotes hypertext link to a web site, bookmark in this document, or an external file stored on a network server.	www.texascapitalbank.com
Fixed-width Text	Text denotes names of servers, files, commands, scripts, pathnames, or databases referenced within the document.	Run the tables.sql script for the jcpBasketB database.
italics	Italics denote a word with emphasis or the title of a document.	Infrastructure Support and Self-medicating Guide
[Brackets]	Shortcut keys pressed simultaneously.	Press [Ctrl] + [A] to select document.

Note: Information to help the reader perform more efficiently or conceptual background. This information *is not required* to successfully complete the procedure.

Caution: Insert text to warn the reader about potential data loss, misconfiguration, a situation that would require work to be repeated, or cause potential future problems with this software.

Document Revisions

Revision	Date	Author	Revisions Made
1.0	09/23/2011	Steve Smith	Initial Draft

Technical Corrections: Email Steve Smith at steve.smith@texascapitalbank.com or contact 8-60-6678.

Table of Contents

Introduction	
Initial Requirements Gathering and Determination6	
Creating the basic VM (from template or customize)	
Creating a VM from an existing VM inventory template	
Basic VM build procedure14	
Installing Guest Operating System 14	
Install VMware Tools	
Configuring the Network Settings	
Undate Windows with all security and maintenance patches	
Install McAfee Antivirus	
Install SNMP monitoring17	
Add the server to the Domain	
Configure to use TCB Windows Server Update Services server	
Microsoft ISCSI Initiator	
Install SnapDrive	
NetBackup Agent	
MS iSCSI Initiator Configuration	
Final Steps for Server Delivery23	
Prepare specific items for this server23	
Database Server Configuration23	
Installing Internet Information Services23	
Installing Internet Information Server 23	
Miscellaneous Final Items25	
Set administrative groups as requested on form	
McAfee Antivirus should be updated by EPO	
I NIRG-PARTY SUPPORTING SOFTWARE CONFIGURATIONS COMPLETED	
Add Server to Solarwinds notifications	
Add Server to NetBackup policy27	
Add Server to Correct Organizational Unit (OU) in Active Directory	
Requestor Sign-offf	

Introduction

Building a virtual machine server follows a standard procedure at Texas Capital Bank. This document follows this procedure and illustrates where a VM engineer would make changes to produce a nonstandard VM.

It deviates from the main procedure when a TCB user needs:

- Custom Virtual Machine (nonstandard number of CPUs or amount of memory)
- A database store attached
- Internet Web Server
- Customizations to the Guest operating system

Mounting an ISO Image file/CD-ROM procedure

Several steps during the building of a VM server require you to mount an ISO image on the virtual machine $D: \$ drive or CD-ROM.

To mount an ISO Image file on a VM machine:

- 1. On the VM Toolbar, select the VM > Edit Settings command from the menu.
- 2. When the <servername> Virtual Machine Properties window displays, select the CD/DVD Drive 1 from the Hardware list.
- 3. Select the Datastore ISO file option and click Browse.

Figure 1: Select Hardware with the ISO Image File

🚰 vmonenotedoc01 - Virtual Mac	hine Properties	
Hardware Options Resources		Virtual Machine Version: 4
Hardware Memory CPUs Floppy Drive 1 CD/DVD Drive 1 (edited) SCSI Controller 0 Hard Disk 1	Summary 2048 MB 2 Client Device [ISO's] WindowsSer 103-TCB-SERVER-MGMT LSI Logic Virtual Disk	Device Status Connected Connect at power on Device Type Client Device Note: To connect this device, you must power on the virtual machine and then click the Connect CD/DVD button in the toolbar. Host Device Datastore ISO file [ISO's] WindowsServer2003R2Stand Browse Virtual Device Node
Add Remove		C IDE (0:0) CD/DVD Drive 1

4. Navigate the *iso's* folder in the **Browse Datastores** window. Expand the Name column to see the appropriate ISO file name.

Figure 2: Select ISO Image File from the Datastore.

ame		File Size	
Wir	ndowsServer2003R2Enterprise_withSP2_disc1.iso	596 MB	
Wir	ndowsServer2003R2Enterprise_withSP2_disc2.iso	121 MB	
Wir	ndowsServer2003R2Enterprise_x64_withSP2_disc1.iso	624 MB	-
Wir	ndowsServer2003R2Enterprise_x64_withSP2_disc2.iso	167 MB	
Wir	ndowsServer2003R2Standard_withSP2_disc1.iso	594 MB	
Wir	ndowsServer2003R2Standard_withSP2_disc2.iso	122 MB	
Wir	ndowsServer2003R2Standard_x64_with_SP2_disk1.iso	622 MB	
Wir	ndowsServer2003R2Standard_x64_with_SP2_disk2.iso	167 MB	
Mi/	rocoft Office ShareDoint Server 2007ico	617 MR	Ŀ
			- 1

- 5. Once you locate the file, select it and click OK.
- 6. On the <servername> Virtual Machine Properties window, choose the Connect check box.
- 7. Click the Radio Button for "Connected"
- 8. Click OK to mount the ISO image file.

Initial Requirements Gathering and Determination

The VM Server build starts with a request form from a user that describes the server hardware and software characteristics needed for their business purposes.

The requirements and initial determination includes:

- 1. Obtain *completed* VM Server Request form from the TCB User requesting the new Server.
- 2. Open a Site Helpdesk Ticket to track the VM building assigned to Server Support.
- 3. Save the server request form electronically in this folder: G:\\$ Information Technology\Private\Server Inventory and Documentation\VM Order Forms
- 4. Reassign the Site Helpdesk Ticket to Network Support so they can create the vLAN, provide the IP Address for the new VM, and document the addition.

Creating the basic VM (from template or customize)

If the user requests a nonstandard you would use the first procedure to create the virtual machine. Texas Capital Bank standardizes its VMs and follows the second procedure to create the basic VM. Stephen Meilinger has developed excellent templates to create VMs for application servers, Internet web servers, SQL Database servers (2003 and 2008), and BizTalk servers.

Creating custom VM with a template

To create a custom VM, not defined by a current TCB VM template:

- 1. Log in using the Virtual Infrastructure Client.
- 2. Navigate to Inventory Virtual Machines and Templates view. Right-click the Templates folder and choose the New Virtual Machine command. The New Virtual Machine Wizard guides you during the remaining steps.
- 3. Use the default Typical selection for the Virtual Machine Configuration and click Next.

4. Name the template according server and CPU type and designate it with the word *"template."* Click **Next**.

Example: The template: _Template _2003_Standard_32_Bit would be used to build standard TCB application servers.

- Select a Host / Cluster name in the desire TCB environment (Figure 12 on page 12) where the Template is stored in its VM format. VMware validates the compatibility of the VM with its host. Click Next.
- 6. Select a host datastore name (Figure 13 on page 13) for the template.
- 7. Select the Guest Operating System (Figure 3) the VM template.
- 8. Select the Number of virtual processors (Figure 4) for the template.
- 9. Adjust the Virtual Memory size (Figure 5) allocated to the VM created with this template.
- Select the number of NICs (network interface cards, <u>Figure 6</u>) and which network Label (vLAN Port Group) to connect those adapters. Telecom Support defines firewall rules for the vLAN Port Groups.
- 11. Set the size on the Virtual Disk Capacity (Figure 7) for the template.
- 12. Validate VM template options (Figure 8). For changes, select the Edit the virtual machine settings... check box. Click Finish.

Figure 3: Select VM Guest Operating System

nt: ws rver 2003, Standard Edition (32-bit) This page allows the wizard to provide defaults for various virtual machine or the guest OS you intend to install. Your selection is also recorded as part of the guration to allow hosts to optimize scheduling and other handling of the virtual ted guest OS. This wizard does not install any guest OS for you.
g Syster t Windo etWare ows Se ction or itable fo e's confi e target

Figure 4: Select Number of Virtual Processors

Virtual CPUs Configure the number of virtual p	processors in the virtual machine.	Virtual Machine Version: 4
<u>Wizard Type</u> <u>Name and Location</u> <u>Host / Cluster</u> <u>Datastore</u> <u>Guest Operating System</u> <u>CPUs</u> Memory Network Virtual Disk Capacity Ready to Complete	- Number of virtual processors:	2
Help	< Back Nex	t > Cancel

Figure 5: Configure Virtual Machine Memory

Configure the virtual ma	chine's memory size.
<u>Wizard Type</u> <u>Name and Location</u> <u>Host / Cluster</u> <u>Datastore</u> <u>Guest Operating System</u> <u>CPUs</u> Memory Network Virtual Disk Capacity Ready to Complete	Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4MB. Memory for this virtual machine: Image: Comparison of the side and the side

Figure 6: VM Network Connections for Management and Data NICs

<u>Wizard Type</u> Name and Location <u>Host / Cluster</u>	Create N How ma	etwork Connections	2 💌	
Datastore Guest Operating System CPUs Memory Network Virtual Disk Capacity Ready to Complete	NIC 1: NIC 2: Adapte compa choosi system	Network 103-TCB-SERVER-MGMT 106-TCB-NETAPP-ISCSI r choice can affect both networking ibility. Consult the <u>VMware Knowle</u> ng among thenetwork adapters su s and hosts.	Adapter Flexible Flexible g performance and edgeBase for more pported for various	Connect at Power On

Figure 7: Virtual Disk Size Selection

Define Virtual Disk Capac What size do you want the	ity his virtual disk to be?	Virtual Machine Version:
Wizard Type Name and Location	Set the maximum size for t	he virtual disk.
Host / Cluster Datastore	Datastore:	vmsystem07
Guest Operating System CPUs	Available Space (GB):	120.4
Memory Network	Disk Size:	3¢ 🛨 GB 💌
Virtual Disk Capacity Ready to Complete		
Help	< Back	Next > Cancel

Figure 8: Check VM Specifications before Creating Template

<u>Nizard Type</u> <u>Name and Location</u> Host / Cluster	When you click Fir The virtual machin	nish, a task will be started that will create the new virtual machine. ne will be created with the following options:
Datastore Suest Operating System (PUS Memory Metwork (intual Disk Capacity Ready to Complete	Name: Folder: Host/Cluster: Resource Pool: Datastore: Guest OS: Virtual CPUs: Memory NICs: NIC 1 Network: NIC 2 Network: Virtual Disk Size:	_Template _2003_Standard_32_Bit Templates DRS Resources vmsystem07 Microsoft Windows Server 2003, Standard Edition (32-bit) 2 2048 MB 2 103-TCB-SERVER-MGMT 106-TCB-NETAPP-ISCSI 10 GB
	 Edit the virtua Creation of the guest operation of the guest operation of the guest operation operat	I machine settings before submitting ne virtual machine does not include any automatic installation of the ng system. to install the guest OS just as you would on a new physical compute

Creating a VM from an existing VM inventory template

Texas Capital Bank has templates for its standard application, firewall, user, and data base servers. Additionally, you can customize the VM just prior to deployment.

Create a VM from a previously designed server VM template:

- Log in to Virtual Infrastructure for the environment (Test/Production) where you want to build the server. Click Inventory toolbar button and select the Virtual Machines and Templates command (Figure 9).
- 2. Select the desired template (Figure 10). Right-click and choose the **Deploy Virtual Machine from this Template** command from the shortcut menu.
- Name the server in accordance to the TCB naming scheme established by the Server Operations based on its Location and Functionality. Select the inventory folder (<u>Figure 11</u>) where you can reference the VM configuration. Click Next.
- 4. Select the Host or Cluster (Figure 12) where the VM runs. Click Next.
- 5. Select the Datastore (Figure 13) that contains the VM operational files. Click Next.
- 6. Select the customize using an existing customization specification option and select the desired specification (Figure 14). Click Next.

Note: This is a SYSPREP answer file. Select the **Use the Customization Wizard to temporarily...** checkbox to display or perform a temporary specification edit.

 You can choose to *power on* the VM after VMware builds the software. Powering on permits the SYSPREP customization to run (<u>Figure 15: Deployment Options Prior to VM</u> <u>Creation</u>). Click Finish to create VM.

Caution: You may edit the Virtual hardware at this step, but Server Support recommends that you wait until *after* the VM is created..

 VMware creates the VM software (<u>Figure 16</u>). Select the new VM, right-click and choose the Open a Console from the shortcut menu. You may get a McAfee generated error (<u>Figure 17</u>) because its service has no network connection.

Figure 9: Access Virtual Inventory

Inventory	Scheduled Tasks	Events
✓ Hosts And	d Clusters	Ctrl+Shift+H
Virtual Ma	chines And Templates	Ctrl+Shift+V
Networks		Ctrl+Shift+N
Datastore	es	Ctrl+Shift+D
 Show Virt 	ual Machines	

Figure 10: Select VM Template



Figure 11: Define Name and Location to Deploy VM

🛃 Deploy Template Wiza	rd	_ 🗆 X
Select a Name and Loc What do you want to	cali this virtual Machine call this virtual machine and where do you want it located?	
Name and Location Host / Cluster Resource Pool Datastore	Provide a name for the new virtual machine and select its location in the inventory panel below. Virtual machine names can contain up to 80 characters, but they must be unique within each inventory folder. Name:	
Ready to Complete	vmonenotedoc01 Inventory Location: Production RSA SCOM Server Management Share Point Share Point Share Point Test Templates	-
Help	< Back Next >	Cancel

Figure 12: Select Host

Name and Location Host / Cluster Datastore Guest Customization Ready to Complete	Stage and Test DMZ Darwin DRS Cluster DRS DRS
	Compatibility:
	Validation succeeded

Figure 13: Use This Datastore to Store VM

Name and Location Host / Cluster Datastore Guest Customization Ready to Complete	Select a datastore in It is advisable to choo disk files, so that the	which to store t ose a datastore y may all reside	he files for the v that is large eno in the same place	irtual machine ugh to accom e.	e. odate the virtual machine and	all its virtua
ready to comprete	Name /	Capacity	Free	Туре	Access	
	[ISO's]	49.75 GB	15.01 GB	VMFS	Multiple hosts	
	[vmdatadrive01]	498.75 GB	109.19 GB	VMFS	Multiple hosts	
	[vmdatadrive02]	498.75 GB	143.20 GB	VMFS	Multiple hosts	
	[VMdatadrive03s]	248.75 GB	228.20 GB	VMFS	Multiple hosts	
	[vmsystem01]	118.75 GB	6.17 GB	VMFS	Multiple hosts	
	[vmsystem06]	219.00 GB	30.42 GB	VMFS	Multiple hosts	
	[VMsystem07]	219.00 GB	150.44 GB	VMFS	Multiple hosts	
	[Volume1 (1)]	1.91 TB	304.59 GB	VMFS	Multiple hosts	1
Help					< Back Next >	ranced >> Cancel

Figure 14: Customize the Guest OS with A Specifications File

Name and Location Host / Cluster Datastore Guest Customization User Settings Ready to Complete	Select the option to use in customizing the guest operating system of the new virtual machine. C Do not customize C Customize using the Customization Wizard C Customize using an existing customization specification				
	Name	Guest OS	Description		
	_DMZ_Template_2003R2SP2_standard_x86 _Template_2003R2_Enterprise_x64 Template_2003R2_Standard_x64	Windows Windows Windows	Windows 2003 R2 SP2 standar		
	_Template_2003R2_Standard_x86	Windows			
	_template_vmsysadmin_Win_2k3 _Template_Windows_2008_x64 Template_Windows_2008_x64_Server	Windows Windows Windows			
	Template_Windows_Enterprise_2003_RC2_SP2 Template_Windows2003_R2_x64_Standard template_XP_Pro_SP2 VMSPDRD 1	Windows Windows Windows	May 9, 2008		
	MATCRIDEDD CO1	Mindowe	1 1		

Figure 15: Deployment Options Prior to VM Creation

🛃 Deploy Template Wiza	rd 💶 🔍
Ready to Complete Ne Are these the options	w Virtual Machine you want to use?
Name and Location Host / Cluster Datastore	When you click Finish, a task will be started that will create the new virtual machine. The virtual machine will be created with the following options:
■ Guest Customization Ready to Complete	Template to Deploy _Template_2003_R2_Standard_x86 Name: vmonenotedoc01 Folder: Server Management Host/Cluster: DRS Datastore: vmsystem07 Guest OS Customization Specification: _Template_2003R2_Standard_x86
	 Power on this virtual machine after creation. Creation of the virtual machine does not include any automatic installation of the guest operating system. You will need to install the guest OS just as you would on a new physical computer.
Help	< Back Finish Cancel

Figure 16: VM Build in Progress

and the second se	The second second second second second			have a second to the second to the second to the second seco	
Name	Target	Status	Initiated by	Time Time	Start Time
ecent Tasks					
VMDREP02 Vmdrepstage() vmdrepstage() vmdrepstage() vmevault01 vmevault02 vmevault02 vmonenotedo vmrdi VMWEBSENSE VMWEBSE	2				

Figure 17: McAfree Warning Message - Ignore



Basic VM build procedure

Once you have the "bare-bones" VM, you install all the administration and OS software necessary to integrate the server into TCB's secure network.

Installing Guest Operating System

Each VM requires a guest operating system that is compatible with host server that runs it. This example describes installing the Windows 2003 Standard 32-bit Edition OS for a VM.

Installing the guest OS (Windows 2003 Server R2):

- 1. Mount an ISO image file for the desired OS using the Templates CD-ROM drive.
- 2. Whether a template or VM, power on the VM. Select the device name, right-click, and select the **Power On** [**Ctrl**] + [**B**] command.
- 3. Open a Run console.
- 4. Start the Windows installation by formatting the single disk partition (default size 10 GB). Select the Format the partition using the NTFS file system option.
- 5. Once Windows formats the disk partition, it examines the disk, and copies installation files from the ISO image file.
- 6. The Windows installation proceeds. Click **Next** on the **Regional and Language Options**.
- 7. Supply TCB for the Name and Texas Capital Bank for the Organization. Click Next.
- 8. Supply the Product Key. Click Next.
- 9. For the Licensing Mode, choose the Per Device or Per User Option. Click Next.
- 10. For the virtual machine (template), supply the Administrator password. Click Next.
- 11. Provide Date and Time Settings. Click Next. Wait until Windows installs network drivers.
- 12. For Network Settings take the Typical Settings Option. Click Next.
- 13. Select default **WORKGROUP** for **Workgroup** or **Computer Domain**. Click **Next**. Windows completes its installation.
- 14. Log in as local administrator to complete installation.
- 15. Mount Disk 2 ISO image to continue the guest OS installation.
- 16. Follow onscreen instructions for OS. Accept End-user License Agreement.
- 17. Windows copies files for Windows Server 2003 R2. Click Finish.

Install VMware Tools

To install the VMware Tools:

- 1. Log in as local administrator using the password set during the guest OS installation: Username: administrator
 - Password: ********** (use default for Colo or Operations environment)
- 2. Using the VM Console toolbar, select the VM > Install/Upgrade VMware Tools command.
- 3. Click OK after reading the Install VMware Tools information message.
- 4. The VMware Tools wizard displays. Click Next.
- 5. Use the default Typical option for Setup Type. Click Next.
- 6. Click Yes in response to enabling the hardware acceleration.
- 7. Follow the HWAccel.txt instructions to configure the hardware acceleration.
- 8. Click **Finish** when the wizard completes.
- 9. Restart the server by clicking Yes.

Configuring the Network Settings

Telecom Support provides Server Support with (1) Server IP address, (2) Default Gateway address, and (3) Primary and secondary TCB DNS server addresses.

Configuring Network Settings

- 1. Double-click the NIC desktop tray con to display the Local Area Connection Status window and configure the network settings.
- 2. Click Properties.
- 3. Double-click Internet Protocol (TCP/IP) choice listed. Its Properties window displays.
- 4. Select the Use the following IP address option and insert the IP Address, Subnet mask, and Default gateway provided.

- 5. Select the Use the following DNS Server addresses option and insert the Preferred DNS server and Alternate DNS server.
- 6. Click OK twice. Click Close on the Local Area Connection Status window.

Enable Remote Desktop administration on this server

Enable the Remote Desktop protocol:

- 1. Click Start. Right-click the desktop My Computer icon and select Properties from the menu.
- 2. Click the **Remote** tab when the **System Properties** window displays.
- 3. Select the Enable Remote Desktop on this Computer Checkbox. Click OK.
- 4. Click **OK** for the Remote Sessions information message.

Update Windows with all security and maintenance patches

The next step is to bring the guest OS up-to-date with security and maintenance patches.

To update the Windows OS:

- 1. Select the desktop Start icon and select Windows Update.
- 2. On the Browser Welcome page of Windows Update, click Custom button.
- 3. Install all High-priority updates available for this server (Figure 18).
- 4. Once Windows installs all updates, click Restart Now to reboot server.
- 5. Once the VM restarts, return to the **Windows Update** page and verify *no additional* highpriority updates exist for this server.

Figure 18: Windows Update—High-priority Updates

		Quick Links Home Worldwid	de
💐 Windows		Search Microsoft.com for:	GO
Windows Update			
Windows Family Windows Ma	rketplace Office Family Microsoft Update		
Windows Update Home	Customize your res	sults	-
🔁 Install Updates (50)	Select High-Priority Updates To help protect your computer against security threats and pe	formance problems, we strongly recommend you install all high-priority updates.	
Select by Type			
High Priority (50)	Review and install updates	Total: 50 updates , 73.1 MB , 1 h	hour 2 minutes 🚽
Software, Optional (4) Hardware, Optional (0)	High-priority updates Clear All Select All		
Options	Microsoft Windows Server 2003		
Review your update history	Security Update for Windows Server 2003 (F	(8961373)	
Restore hidden updates Change settings	E Security Update for Windows Server 2003 (H	:8956572)	
FAQ	Security Update for Windows Server 2003 (#	(8952004)	
Get help and support	Security Update for Windows Server 2003 (H	(8960803)	
Use administrator options	Security Update for Windows Server 2003 (F	8959426)	
	Cumulative Security Update for Internet Exp	lorer 6 for Windows Server 2003 (KB963027)	
	Vindows Malicious Software Removal Tool -	April 2009 (KB890830)	

Install McAfee Antivirus

Texas Capital Bank deploys the McAfee VirusScan Enterprise software on its servers.

To install the MacAfee VirusScan software:

- 1. Mount the ISO image file with McAfee software to install.
- 2. Use Explorer to navigate to the D:\McAfee folder. Double-click the filename SetupVSE.EXE to start the installation program.
- 3. At the initial dialog, click **Next**.

- 4. For the License expiry type drop-down list, choose Perpetual. Select I accept the terms in the license agreement option and click OK.
- 5. For the Select Setup Type, take default (Typical) and click Next.
- 6. For Select Access Protection Level, take default (Standard Protection) and click Next.
- 7. Click Install on Ready to Install dialog. Wait for completion.
- On the McAfee VirusScan Enterprise setup has completed successfully dialog, take these defaults and click Finish:

 —Update Now check box
 - -Run On-Demand Scan check box
- 9. Click **OK** to restart the server. All McAfee VirusScan features are active.

Install SNMP monitoring

To install Windows network monitoring components:

- 1. Mount the ISO image file with Windows Server Installation software to the CD-ROM.
- 2. Click Install optional Windows Components selection.
- 3. On the Windows Components dialog, select the Management and Monitoring Tools check box and click Details.
- 4. Select the simple Network Management Protocol check box on the Management and Monitoring Tools dialog. Click OK.
- 5. Click Next on Windows Components dialog.
- 6. Once the **Configuring Components** progress indicator completes click **Finish** on the wizard.

Add the server to the Domain

To add the server to the TCB network domain:

- 1. Click the desktop Start icon. Right-click My Computer and choose the Properties command.
- 2. On the System Properties window, select the computer Name dialog tab.
- 3. To join the domain, click **Change** and display the **Computer Name** tab.
- 4. Select the Domain option under Member of and type tcbna.net. Click OK (Figure 19).
- 5. When asked on the **Computer Name Changes** window (Figure 19), supply the credentials that permit you to add servers to the network.
- 6. Click OK three times in succession to join the domain.
- 7. When asked to restart the computer, click Yes to reboot.

You can now login to the server using domain credentials.

Figure 19: Join Server to Domain with your Credentials

Computer Name Changes	
You can change the name and the membership of this computer. Changes may affect access to network resources.	
Computer name:	
vmonenotedoc01	Computer Name Changes
Full computer name: vmonenotedoc01. <u>M</u> ore	R
Member of © Domain: tobna.net	Enter the name and password of an account with permission to join the domain.
C Workgroup: WORKGROUP	User name:
OK Cancel	OK Cancel

Configure to use TCB Windows Server Update Services server

Windows servers need to get their updates directly from the TCB Windows Server Update Services (WSUS) implementation. To set this up properly do this procedure.

Configure new VM server to get Windows updates from the TCB WSUS implementation:

- 1. Ensure that the VM server has joined the domain (see previous procedure).
- 2. Log in as a local administrator on the VM and update the server's registry entries.
- 3. Update the server registry by running these commands at the command prompt.

Example command line syntax

```
> REG DELETE "\HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\WindowsUpdate" /v
SusClientId /f
> net stop wuauserv
> net start wuauserv
> wuauclt.exe /resetauthorization /detectnow
```

Microsoft iSCSI Initiator

Installing the iSCSI initiator is necessary to use the TCB SAN filer LUNS to store information.

To install the Microsoft iSCSI Initiator software:

- 1. Mount the ISO image file with iSCSI software for several different operating systems.
- 2. Navigate to the appropriate folder containing the operating system needed for this VM.
- 3. The folder contains the most recent Microsoft OS HotFixes needed to work with this version of the iSCSI Initiator. Double-click and install all the HotFixes (Figure 20).
- Once HotFixes complete, double-click on the executable (<u>Figure 20</u>) for the Microsoft Initiator.
- 5. Click Next on the installation wizard initial window.
- 6. Select the Microsoft MPIO Multipathing Support for iSCSI Check box. Click Next.
- 7. Select I Agree option on the License Agreement. Click Next.
- 8. After installation completes, do not restart the server. Click Finish.

Figure 20: iSCSI Initiator Software for VM Operating System

	1	
🔾 - 🧊 🔑 Search 🌔 Folders 🛛 🕼 💓 🗙 🗳		
D:\Software for 32 Bit Server 2003		
Size	Type Date Mod	fied
3_x86.exe 51,534 KB	Application 3/8/2009	10:39 PM
35.exe 237,054 KB	Application 3/6/2009	7:32 PM
2.08-build3825-x86.exe 2,334 KB	Application 1/21/2009	3:25 PM
ve6.0.2_x86.exe 30,818 KB	Application 2/20/2009	1:02 PM
sServer2003_KB931300_x86_ENU.exe 742 KB	Application 5/9/2008	3:38 PM
Server2003-KB919117-x86-ENU.exe 1,281 KB	Application 2/16/2009	10:49 PM
Server2003-KB932755-x86-ENU.exe 537 KB	Application 5/9/2008	2:46 PM
:Server2003-KB937382-x86-ENU.exe 579 KB	Application 2/18/2009	8:56 PM
Server2003-KB940467-v2-x86-ENU.exe 536 KB	Application 2/16/2009	10:49 PM
iServer2003-KB940467-v2-x86-ENU.exe 536 KB	Application 2/18/2009 Application 2/16/2009	

Ensure all software packages and updates are installed prior to SnapDrive

There are several software packages and updates you must installed prior to installing SnapDrive on the server. They include:

- 1. Windows Update KB931300
- 2. Windows Update KB919117
- 3. Windows Update KB932755
- 4. Windows Update KB937382
- 5. Windows Update KB940467_v2
- 6. Windows Update KB891957
- 7. Windows Update KB898790
- 8. Windows Update KB945119
- 9. Microsoft DotNet 3.0
- 10. Microsoft DotNet 3.5

These software packages are at: \\cl1cifs02.tcbna.net\ tcbshare\NetApp\Software\TCB 3.0\Microsoft SnapDrive Updates

To install all the prerequisite software updates and packages

- 1. Install each update in the proper sequence, but do not restart (reboot) the server.\
- 2. Install Microsoft DotNet 3.0 using defaults. Do not restart the server after install.
- 3. Install Microsoft DotNet 3.5 w/SP1, taking all screen defaults.
- 4. Restart the server after successfully installing all packages.

Install SnapDrive

For Snapshot backups, we must add a local administrator's credentials so that nightly jobs run correctly.

To add SnapDrive software to the VM server:

- 1. Add s snapdrive as a local administrator on the server.
- 2. Navigate to the folder used to install the iSCSI Initiator (Figure 20) and its Hotfixes.
- 3. Double-click on the SnapDrive executable (Figure 21: Start SnapDrive Installation) to start the Installation.

Figure 21: Start SnapDrive Installation

Ele Edit Yew Favorites Iools Help			
🔾 Back 🔹 🕤 🔸 🍞 🔎 Search 🌔 Folders	• > × 4		
Address 🛅 D:\Software for 32 Bit Server 2003			
Name -	Size	Туре	Date Modified
dotnetfx3_x86.exe	51,534 KB	Application	3/8/2009 10:39 PM
dotnetfx35.exe	237,054 KB	Application	3/6/2009 7:32 PM
Tinitiator-2.08-build3825-x86.exe	2,334 KB	Application	1/21/2009 3:25 PM
SnapDrive6.0.2_x86.exe	30,818 KB	Application	2/20/2009 1:02 PM
WindowsServer2003_KB931300_x86_ENU.exe	742 KB	Application	5/9/2008 3:38 PM
WindowsServer2003-K8919117-x86-ENU.exe	1,281 KB	Application	2/16/2009 10:49 PM
WindowsServer2003-KB932755-x86-ENU.exe	537 KB	Application	5/9/2008 2:46 PM
WindowsServer2003-K8937382-x86-ENU.exe	579 KB	Application	2/18/2009 8:56 PM
WindowsServer2003-KB940467-v2-x86-ENU.exe	536 KB	Application	2/16/2009 10:49 PM

- 4. Click **Next** at the welcome screen.
- 5. Type the License Key in the Select SnapDrive to Install dialog. Click Next.
- 6. Type TCB for User Name and Texas Capital Bank for Organization. Click Next.
- 7. Accept default Destination Folder and click Next.
- 8. Do not select the Enable VirtualCenter or ESX Server Settings check box. Click Next.
- 9. Provide domainName \a_snapdrive for Account and supply Password. Click Add to define the credentials (Figure 22) and click Next.

Figure 22: SnapDrive Service Credentials

SnapDrive® - Installation Wizard	
SnapDrive Service Credentials	
Specify account information for the installed services.	
Ensure that the specified account is a member of the Store administrators group as well as the local administrators See the SnapDrive Installation and Administration Guide about service account requirements. Note: NetApp VSS hardware provider registration also requires us Account:	orage System's local group of this system. for more details er account information.
ONCALLD120(s_snapdrive	<u>A</u> dd
Password:	

Confirm Password:	
[*******	
staffstield	

 For the SnapDrive Web Service Configuration, specify web service endpoints (Figure 23): TCP/IP Endpoint: 808 HTTP Endpoint: 4094 HTTPS Endpoint: 4095 Click Next. Figure 23: SnapDrive Web Service Endpoint Configuration

Specify SnapDrive Web Service Configuration		
SnapDrive Web Service Tcp/Ip Endpoint (Port)	808	
SnapDrive Web Service HTTP Endpoint (Port)	4094	
SnapDrive Web Service HTTPS Endpoint (Port)	4095	
talSheld		

- 11. Select the Enable Transport Protocol Settings check box and choose the RPC option. Click Next.
- 12. Leave the Enable Protection Manager Integration check box unselected. Click Next.
- 13. Click Install to begin SnapDrive installation.
- 14. Click **Finish** upon completion.
- Right-click on My Computer > Select Manage. Navigate the tree view: Storage, <Server Name> and iSCSI Management. You should see both iSCSI Targets (Figure 24) that you previously set up in any MS Initiator Configuration process.

Figure 24: iSCSI Targets

Computer Management (Local) Storage SnapDrive Storage System Management CLIINTMTGWHDB01 (Local) Disks CSCU Management CSCU Management	Overview	iSCSI Targets connected to the server CL1INT Expand the target view to display the iSCSI se pet List	MTGWHDB01 are shown below. assion information.
ign.1992-08.com.netapp:sn.10117	Name		No. of LUNs
E I I Event Viewer		ign.1992-08.com.netapp:sn.101176699 ign.1992-08.com.netapp:sn.101177296	2
	ė.	Sessions	
	>	····먣 Session 1 ····ም Session 2	
		Session 3	

16. Click Disks. Any provisioned LUNs setup by the Storage Support team, display (Figure 25).

Figure 25: Provisioned LUNs on Allocated Disks

Computer Management (Local) Storage SnapDrive CLINITMTGWHDB01 (Local) Disks	Overview LUNs mapped to the Expand the disk view Disk List	server CL1INTMT to display the list	GWHDB01 are listed below. of Snapshot copies.	
	Disk Identification	Storage System	Path	LUN Size 🛛
□ @ iSCSI Management	Ģ- 📋 LUN[2,0,3,2] (D:\)	cl1na02	cl1na02:/vol/SQL_DATA_01/cl1intmtgwhd	30.004 GB
iqn.1992-08.com.netapp:sn.10117	> Snapshot Copies			
iqn.1992-08.com.netapp:sn.10117	📄 💼 📋 LUN[2,0,3,3] (D:\Pr	cl1na02	cl1na02:/vol/SQL_LOG_01/cl1intmtgwhdb	20.000 GB
Event Viewer	i 🐻 Snapshot Copies			

NetBackup Agent

Install the NetBackup Agents for saving server contents to tape during weekly jobs.

To install the NetBackup Agent:

- 1. Mount the ISO image file that contains the NetBackUp Agents.
- 2. Navigate to the installation folder (Figure 26) for the appropriate guest OS and double-click the Launch.exe executable to perform the NetBackup installation.

Figure 26: NetBackup Agent Folder for Desired Server Type

Elle Edit View Favorites	Lools Help		
🔾 Back 🔹 🕥 🕘 🍠 🔎 Sear	ch 😥 Folders 🛛	🌢 🌶 🗙 🍤 🗔 ·	
Address 🛅 D:\NetBackUp_Agents	NetBackUp 32bit Ag	ent	
Name -	Size	Туре	Date Modified
Addons		File Folder	2/12/2009 10:11 AM
Bin		File Folder	2/12/2009 10:11 AM
PC_Cint		File Folder	2/12/2009 10:11 AM
🚞 X86		File Folder	2/12/2009 10:12 AM
🕑 autorun.inf	1 KB	Setup Information	2/12/2009 10:18 AM
Launch.bat	1 KB	Windows Batch File	1/1/1980 12:01 AM
Launch.exe	124 KB	Application	1/1/1980 12:01 AM
	1 KB	Configuration Settings	1/1/1980 12:01 AM
Readme_Client.txt	5 KB	Text Document	1/1/1980 12:01 AM
Readme_Server.txt	4 KB	Text Document	1/1/1980 12:01 AM

- 3. Click the NetBackup Installation link.
- 4. Select Install Client Software link.
- 5. Accept the license agreement and click Next.
- 6. Select the Install to this computer only option. Select Typical installation option. Click Next.
- For the NetBackup System Names, supply names for the Client and Master Server Name (Figure 27). Select Install LiveUpdate Agent check box and choose LAN Server Type option. Click Next.

Figure 27: NetBackup System Names and LiveUpdate Configuration

NetBackup Syste	m Names				• amanta
Enter the name	s of the systems that will	be allowed to acces	s this system.		Symantee
Welcome	Client Name:	template32std			
License	Master Server Name:	cl1bk01.tcbna.net	E		_
Install Choice	Addisonal Company				102
System Names	Additional Servers.				_
Install					
					-
	2	LiveUpdate			
		Install Live	Update Agent		
		Location of Li	veUpdate Serv	er .	
		Location of Li	veUpdate Serv me.lu.com\Liv	er eUpdate	
Technical Support		Location of Li \\computerna Server Type	veUpdate Serv me.lu.com\Liv ILAN	eUpdate C HTTP	C HTTPS

- 8. Click Install. Installation completes. Click Finish.
- 9. Click Exit on final screen.

MS iSCSI Initiator Configuration

\\OPSCIFS1.tcbna.net\Group\\$ Information Technology\Private\Infrastructure Support\Storage Support\Storage Support\NetApp\OneNote\Installation Guides.one

Check with Jamey Hines.

Final Steps for Server Delivery

Once you have completed these major procedures, you need to review your work to detect if any procedures are missing (**Note: These things happen in the best of families!**)

 Review the Server request Form and insure you have satisfied the Specifications for Hardware and Software.VM. Use the Control Panel > Add/Removes Programs: SNMP

```
DOT.NET 2.0, DOT.NET 3.0, and DOT.NET 3.5 with Service Pack 1.
Microsoft iSCSI Initiator
NetApp Snapdrive Utility
McAfee antivirus Software
NetBackup agent
```

Prepare specific items for this server

If customer is asking for MDAC 2.8 or Microsoft WSE 3.0:

- Copy these utilities from \\OPSCIFS1.tcbna.net\Group\\$ Information Technology\Private\Server Inventory and Documentation\Misc Utilities to the server desktop.
- Copy WSE 3.0 to $C: \setminus$ drive root.

Tell customer that you copied WSE 3.0 to the root of $C: \setminus$ drive, but did not install the software. The user needs to install the software.

Database Server Configuration

Prior to beginning the SQL Server software installation, you must ensure you have installed the backup and HSA drivers.

Ensure that you installed this software:

- Install SnapDrive
- Microsoft ISCSI and
- Windows Utilities
- Send VM to Database Support once remaining software installations complete.

Installing Internet Information Services

- Ensure Network Support has provided the website application IP and port numbers that must be opened in the firewalls.
- Communicate website IP to Application Support
- Ensure that MS II is installed

Installing Internet Information Server

If the VM is to support Internet web applications, you must install the Microsoft Internet Information (IIS) service (Windows Components).

To install IIS services on the VM:

- 1. Open a Run console with the **Start > Run** commands.
- 2. Display the Add/Remove Programs section of the Control Panel by typing the command: appwiz.cpl and click OK.
- 3. Click Add/Remove Windows Components.

Figure 28: Install a Windows Component using a Control Panel

Add or Re	move Programs		
5	Currently installed programs: Show updates Sort by	Name	~
Change or Remove Programs	AJC Grep v1.3.2 Use to add	Size	2.25MB
	Camtasia Studio 7 IIS Services	Size	239.00MB
*	Cisco Clean Access Agent	Size	7.20MB
Add New	Cisco Systems VPN Client 5.0.06.0160	Size	13.14MB
Frograms	Sconexant 20672 SmartAudio HD	Size	2.68MB
64	TameWare Mini Remote Control 7.5	Size	56.51MB
dd/Remove	DM Required 8.0 Runtime	Size	4.00MB
<u>wi</u> ndows Components	DPlot Graph Software version 2.1,4.9	Size	5.25MB
	EC Software TNT Screen Capture 2.1	Size	6.76MB

- 4. Select the Application Server and click Details.
- 5. Select the Internet Information Services (IIS) check box and click **OK**. Windows prompts you for a CD-ROM.

Figure 29: Select IIS Services to Install

Application S	ierver			×
To add or rer of the compo	nove a compon ment will be inst	ent, click the check alled. To see what's	box. A shaded box included in a comp	means that only part onent, click Details.
Subcompone	ents of Applicati	on Server:		
🗆 📸 Appli	cation Server C	onsole		0.0 MB 📐
🗆 🍓 ASP.	NET			0.0 MB
🗹 🙆 Enat	le network COM	I+ access		0.0 MB
🗆 📸 Enat	le network DT(Caccess		0.0 MB
M 😫 Inter	net Information	Services (IIS)		27.4 MB
🗌 🚅 Mess	age Queuing			7.0 MB
				v
Description:	IIS Includes \ for FrontPage	Veb, FTP, SMTP, a Server Extensions	nd NNTP support, a and Active Server P	long with support ages (ASP).
Total disk sp.	ace required:	14.7 MB		Details
Space availa	ble on disk:	13910.7 MB		
			OK	Cancel

- You need to mount the ISO image file for the desired Operating System running the IIS service. See <u>Mounting an ISO Image file/CD-ROM procedure on page 5</u>.
- 7. Once you have mounted the ISO image file, click OK.

Figure 30: Mount CD-ROM with IIS Services for Desired OS

Files Need	led in the second s	×
.0	Some files on Service Pack 2 CD-ROM are needed.	ОК
	Insert Service Pack 2 CD-ROM into the drive selected below, and then click OK.	Cancel
	Copy files from:	
	D:\i386	Browse

- 8. Navigate to the desired directory (see prompt) by clicking **Browse**.
- 9. Once you find the IIS installation file, click Open. The IIS service installs.

Locate File						? ×
Look jr	x 🔁 1386		•	00	•	
My Recent Documents Desktop	ADMT COMPDATA DRW LANG SYSTEM32 WIN9XUPG WINNTMIG WINNTUPG CONVLOG.E	×_				
My Documents	File pame:	CONVLOG.EX_			•	<u>O</u> pen
	Files of type:	convlog exe;convlog ex_			¥	Cancel

Figure 31: Find IIS Installation File

10. Click Finish upon completion.

Miscellaneous Final Items

Set administrative groups as requested on form

Add the Following Domain Security Groups to Administrators group on the server:

- BSG.SERVER.ADMIN
- BSG.SERVER.OPERATIONS
- BSG.APPLICATION.SUPPORT

McAfee Antivirus should be updated by EPO

Third-party supporting software configurations completed

Add Server to Server Inventory List

Once you have completed the VM server, you need to add it to the Inventory.

To add a server to the TCB VM Inventory:

1. Browse the original datastore where you stored the VM *.vmx file (Figure 32)

Figure 32: Find VM in the Original Datastore

General		Resource	5		
Manufacturer: Model:	Dell Inc. PowerEdge 2950	CPU usag	e: 4895 M	Hz 8 x 2.659	GHz
Processor Type: Hyperthreading:	Intel(R) Xeon(R) CPU Inactive X5355 @ 2.660	Hz Memory u	sage: 18.96 G	32.00 GB	
Number of NICs:	8	Datastor		Capacity	Free
State:	connected	Br Br	owse Datastore	219.00 GB	4.45 GB
/irtual Machines: /Motion Enabled: Active Tasks:	25 yes		ename operties emove	498.75 GB 219.00 GB 1.99 TB 498.75 GB	143.20 GB 34.43 GB 111.17 GB 109.19 GE
		R	efresh	219.00 GB	32.43 GB
Network		U VM	system07	219.00 GB	150.44 GB
127-TCB-D	ATA-REP	Vo	lume3	1.10 TB	239.11 GB
185-TCB-A	PP DEV-	Vm	system01	118.75 GB	6.17 GE
0 106-TCB-N	ETAPP-IS	🚺 vm	system04	219.00 GB	8.43 GE
112-TCB-5	OL-INTER	VM	datadrive03s	248.75 GB	228.20 GE
561-TCB-I	SENDER	1 ISC)'s	49.75 GB	15.01 GE
131-TCB-D	ATA-INT	🚺 vm	system03	219.00 GB	19.44 G

2. Right click the VM * . vmx file and select the Add to Inventory command (Figure 33). The Add to Inventory Wizard displays.

Figure 33: Adding VM to Inventory

the first	[Values 2]			
olders Search	Name /	Size	Type	Modified
vmintmtgwhdb01 vmintws01	vm6060dc03.nvram	8.48 KB 20,971,520.00 KB	Non-volatile memory file Virtual Disk	8/5/2008 10:28:03 Al 8/5/2008 10:49:35 Al
- 🕖 vmevault02	🗂 vm6060dc03.vmx	0.00 KB	Virtual Machine	8/5/2008 10:28:02 AI
- Vmshavlik01 - Vmcormq01	vmware.log	Add to Inventory .57 KB Go to Folder .04 KB	Virtual Machine log file Virtual Machine log file	8/5/2008 10:28:03 AM 8/5/2008 10:28:03 AM
vmcli vmacs01 vmbb01 vmb6060dc03	vmware-2.log	Cut 44 KB Copy Paste	Virtual Machine log file	8/5/2008 10:28:03 AI
vmrsaam01 vmrsaam02 vmdevbi201 vmdevbi201_1		Download Move to Rename		
vmrestore01		New Folder Delete from Disk		

- 3. Type the VM Name and select the Inventory Location folder corresponding to the TCB organization to which this server belongs. Click Next.
- 4. Select the appropriate Host or Cluster (Figure 34). Click Next.

Figure 34: Assign VM to Specific Host/Cluster

Name and Location Host / Cluster Resource Pool Ready to Complete	Stage and Test DMZ Darwin DRS Cluster DRS
	Compatibility:

- 5. Select a Resource Pool to use when you run this virtual machine. Click Next.
- 6. Verify the summary of the VM Inventory information and click Finish.

Figure 35: Registering the VM in the VirtualCenter Inventory

Name and Location Host / Cluster Resource Real	When you click Finish, a task will be started that will register this virtual machine.
Ready to Complete	Name: vm6060dc04 Folder: 6060 Test Domain Host/Cluster: DRS Specific Host: Resource Pool: Resources
	▲ Creation of the virtual machine does not include any automatic installation of the guest operating

Add Server to Solarwinds notifications

Undocumented procedure, check with Stephen Meilinger.

Add Server to NetBackup policy

Add Server to Correct Organizational Unit (OU) in Active Directory

To add the server to the organizational unit within the Active Directory:

- 1. Create Computer Account in Active Directory.
- 2. Place in Proper Organizational Unit—colo or ops, etc...

```
3. Add Correct Security Group to the Computer Account:
Template_Servers = All Templates
Production_Servers = All Production servers regardless of location
Test_Servers = All Test servers regardless of location
GPO.Local.Administrator - Prod = All Prod Servers
GPO.Local.Administrator - Test = All Test Servers
```

Requestor Sign-offf

Have User requesting server check over the server and sign-off on the Built as Requested section of the form.