



A CommVault White Paper: VMware Consolidated Backup (VCB) Certification Information Kit

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Back up a VMware ESX Server 3.x Virtual Machine

Choose from the following topics:

- [Overview](#)
 - [Backups from a VCB Proxy Server on a SAN using VMware Consolidated Backup](#)
 - [Backups from the ESX Server Service Console](#)
 - [Backups from the Virtual Machine](#)
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Related Topics

- [Backup - Unix and Macintosh File Systems](#)
 - [Restore VMware Virtual Machines](#)
-

Overview

The data that resides on the virtual machines for VMware ESX Server can be backed up using an appropriate *iDataAgent*, in a variety of ways; this data can be for different platforms (e.g., Unix, Windows, NetWare, etc.) and can be backed up either using VMware Consolidated Backup and the Windows File System *iDataAgent* or ProxyHost *iDataAgent* on a VCB Proxy Server, or from the Service Console using the Linux File System *iDataAgent*. Backing up VMware virtual machines requires that the appropriate *iDataAgent*(s) be installed and that you follow the instructions provided, to create and apply the Pre-Scan and Post-Backup scripts needed to snapshot the virtual machines. Detailed information on system and environment requirements for VMware Consolidated Backup can be obtained from the Virtual Machine Backup Guide at the [VMware web site](#).

VMware ESX Server Virtual Machine data can be backed up in the following ways:

- From a VCB Proxy Server on a SAN using VMware Consolidated Backup:
 - File Backup using the ProxyHost *iDataAgent*
 - File Backup using the Windows File System *iDataAgent*
 - Full Image Backup using the Windows File System *iDataAgent*
- From the ESX Server Service Console:
 - Full Image Backup using the Linux File System *iDataAgent*

Backups from a VCB Proxy Server on a SAN using VMware Consolidated Backup

VMware Consolidated Backup (VCB) provides a set of drivers and scripts that enable LAN-free backup of Virtual Machines. A File backup can be performed for Virtual Machines running Windows, while a Full Image backup can be performed for Virtual Machines running any operating system. These backups are performed from a VCB Proxy Server running Microsoft Windows 2003, using pre-scan and post-backup scripts to perform a Virtual Machine snapshot and facilitate the backup from the VCB Proxy Server directly on the SAN. The backup client then backs up the contents of the Virtual Machine. Finally, the post-backup script unmounts the snapshot and takes the virtual disk out of snapshot mode.

When performing a **File backup** from the VCB Proxy Server, the following occurs:

- The PreScan batch file triggers `vcbMounter` to:
 - quiesce NTFS on the Virtual Machine
 - create a snapshot of the Virtual Machine
 - mount the Virtual Machine disk image from the SAN to the VCB Proxy Server
- The *iDataAgent* on the VCB Proxy Server backs up the files in the disk image
- The PostBackup batch file triggers `vcbMounter` to:
 - unmount and delete the disk image
 - delete the snapshot of the Virtual Machine

When performing a **Full Image backup** from the VCB Proxy Server, the following occurs:

- The PreScan batch file triggers `vcbMounter` to:
 - create a snapshot of the Virtual Machine
 - copy a disk image of the Virtual Machine across the SAN to the VCB Proxy Server
 - delete the snapshot of the Virtual Machine
- The *iDataAgent* on the VCB Proxy Server backs up the full disk image file(s)
- An optional PostBackup batch file can be used to delete the disk image(s)

Benefits

- Backups are performed on the VCB Proxy Server, eliminating the load on the ESX Server computer.
- No need to power down Virtual Machines as a snapshot-based backup is performed.
- Can be used in conjunction with ProxyHost *iDataAgent* (file backup only) for enhanced browse and restore functionality, showing original drive letter and path on the Virtual Machine, when browsing data for a restore.
- Full Image backup saves all the configuration files necessary for rapid disaster recovery of a Virtual Machine in case of catastrophic failure, and is supported for any Virtual Machine operating system.
- Full Image backups can be performed for all guest operating systems.
- For virtual machines running Microsoft Windows operating systems, full, incremental, and differential file backups allow recovery of individual files and folders.
- Eliminates LAN traffic through Fibre Channel SAN (Storage Area Network) usage.
- For file backups, when Windows is the guest operating system, enhanced operability for browse and restore is available by optionally installing the Window File System and ProxyHost *iDataAgents* on the Virtual Machine, since ProxyHost preserves the original mapping of files, folders, volumes letters, etc., in the backup.

Considerations

- Requires additional computer(s) for VCB proxy server(s).
- Requires a SAN.
- File backup supported only for Virtual Machines running Windows as the guest operating system.
- Full Image backup files are not remotely mounted via the SAN, rather are created on the VCB proxy server, which can be time consuming and requires adequate disk space to hold the full image backup file.

Backups from the ESX Server Service Console

For installations that do not use a SAN, and other environments where Consolidated Backup will not be used, it is still possible to perform full image backups from the Service Console, with appropriate scripts to utilize the VMware command line interface.

When performing a **Full Image backup using vcbMounter** from the ESX Service Console, the following occurs:

- The PreScan batch file triggers `vcbMounter` to:
 - create a snapshot of the Virtual Machine
 - copy a disk image of the Virtual Machine to the VCB Proxy Server
 - delete the snapshot of the Virtual Machine
- The Linux File System *iDataAgent* on the ESX Server backs up the full disk image file(s)
- An optional PostBackup batch file can be used to delete the disk image(s)

When performing a **Full Image backup using vcbSnapshot** from the ESX Service Console, the following occurs:

- The PreScan batch file triggers `vcbSnapshot` to:
 - create a snapshot of the Virtual Machine
 - mount the snapshot directly to the ESX Server
- The Linux File System *iDataAgent* on the ESX Server backs up the full disk image
- The PostBackup batch file triggers `vcbSnapshot` to unmount and delete the snapshot of the Virtual Machine

Benefits

- Does not require a SAN. Any Virtual Machine residing on a VMFS datastore can be backed up.
- No VCB Proxy Server(s) required.
- Full Image backups are performed using standard VMware command line utilities with the Linux File System *iDataAgent* installed on the Service Console.
- Full Image backups can be performed for all guest operating systems.
- Alternate method of Full Image backup using `vcbSnapshot` directly backs up the snapshot of the Virtual Machine's VMFS disk image on the datastore. Total backup time is greatly reduced as no new image file set is created, and no additional disk space is needed except what is required to maintain the snapshot file.
- File backups are performed using the appropriate *iDataAgent*(s) installed directly on the Virtual Machine. Refer to the documentation appropriate for the guest operating system and data to be protected.

Considerations

- Backups are performed on the ESX Server computer, increasing its processor load.
- Full Image backup using `vcbMounter` requires adequate disk space to hold the backup image created by VMware `vcbMounter` command on the ESX server.

- ESX Server contains a built-in firewall, which is on by default. Although the Security Configuration has exceptions for the installed *iDataAgent(s)*, if you choose to use the firewall, it will still be necessary to configure the firewall options on the VMware Service Console as well as the CommServe and MediaAgent(s) with which the *iDataAgent* on the Service Console will communicate. Note that backup and restore performance will be degraded by the firewall.
- The alternate method of Full Image backup using `vcbSnapshot` is not compatible with `vcbRestore`; it simply backs up the Virtual Machine as a flat file.

Backups from the Virtual Machine

Data can be backed up directly from a Virtual Machine by installing the appropriate *iDataAgent(s)* directly on the Virtual Machine in the usual manner; follow the standard procedures for installing and using each particular supported *iDataAgent*. For more information about which *iDataAgents* are supported for installation in a Virtual Machine, see [System Requirements](#).

How To

Choose from the following available procedures:

- [Back up a VMware ESX Server 3.x Virtual Machine's Files using Consolidated Backup and the ProxyHost *iDataAgent*](#)
- [Back up a VMware ESX Server 3.x Virtual Machine's Files using Consolidated Backup and the Windows File System *iDataAgent*](#)
- [Back up a VMware ESX Server 3.x Virtual Machine's Disk Image using Consolidated Backup and the Windows File System *iDataAgent*](#)
- [Back up a VMware ESX Server 3.x Virtual Machine's Disk Image from the Service Console with the Linux File System *iDataAgent*](#)

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Back up a VMware ESX Server 3.x Virtual Machine's Files using Consolidated Backup and the ProxyHost iDataAgent

Choose from the following topics:

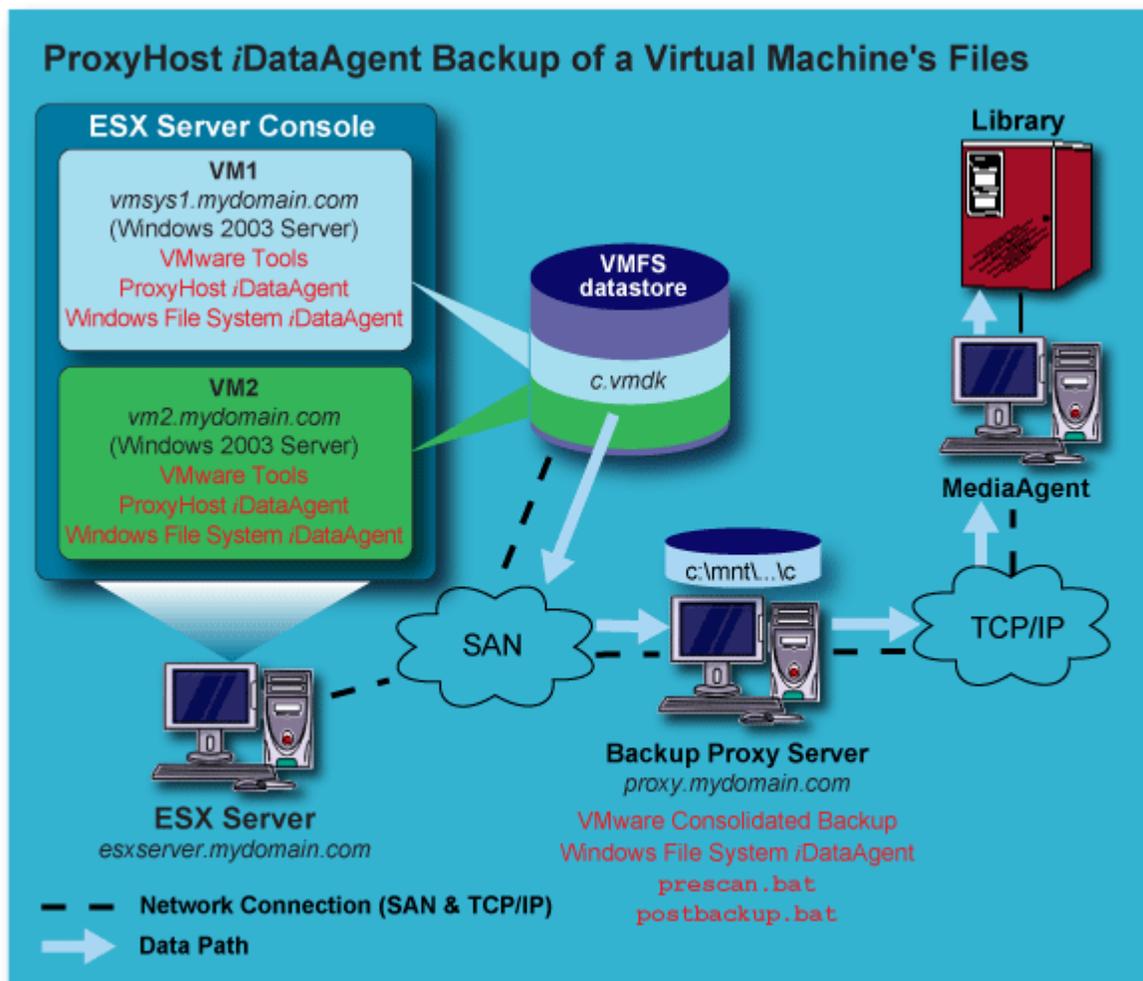
- [Overview](#)
- [Before You Begin](#)
- [Configure the Environment](#)
- [Create the PreScan and PostBackup Batch Files](#)
- [ProxyHost iDataAgent Backup of a Virtual Machine - File Backup](#)

Related Topics

- [Back up a VMware ESX Server 3.x Virtual Machine](#)

Overview

The illustration below shows an example of how the ESX Server, Virtual Machine(s), and VCB Proxy Server are configured when using the ProxyHost and Windows File System iDataAgents to back up the files for a VMware Virtual Machine running Windows 2003 Server:



Before You Begin

- You must already be familiar with the information in [Back up a VMware ESX Server 3.x Virtual Machine](#) before

beginning the procedures below.

- You must already be familiar with VMware ESX Server software.
 - These procedures are based on a stand-alone VMware ESX Server version 3.x or later.
 - When entering data in the CommCell Console screens (e.g., when configuring a subclient) all paths which contain a space must be in quotes, as shown in the examples.
 - The following conventions are used in all of the examples; for each example, substitute the correct names for your environment instead of using these:
 - ESX server = `esxserver.mydomain.com`
 - VCB Proxy Server = `proxy.mydomain.com`
 - Virtual Machine = `vmssl.mydomain.com`
-

Configure the Environment

ESX Server

- For backups performed from the VCB Proxy Server, the ESX Server installation must support a SAN and the Consolidated Backup software features. Contact VMware for proper installation and licensing requirements. No other software or modifications are necessary on the Service Console in order to run Consolidated Backup.

Virtual Machines

- All Virtual Machines to be backed up from a VCB Proxy Server must reside in a SAN. The SAN disks must be accessible by any VCB Proxy Servers to be used.
- Install the Window File System and ProxyHost *iDataAgents* on the Virtual Machine; since ProxyHost preserves the original mapping of files, folders, volumes letters, etc., in the backup, this provides enhanced operability for browse and restore (only when Windows is the guest operating system.)

VCB Proxy Server

- Windows 2003 Server with Service Pack 1 must be installed.
- Must have access to the SAN disks where the Virtual Machines reside, and be able to mount them with read-only access.
- Consolidated Backup software must be obtained from VMware and installed on each VCB Proxy Server to be used.
- Once the Consolidated Backup software is installed, the following changes/additions must be made on each VCB Proxy Server:
 - Create the directory `C:\mnt` if it does not already exist.
 - The default installation directory for Consolidated Backup is:
`C:\Program Files\VMware\VMware Consolidated Backup Framework`
which has two subdirectories:
 - `..\config`
 - `..\generic`
 - In the `..\config` subdirectory, modify the `config.js` file as follows:
 - Set the `HOST` variable to the `FQDN` of the ESX Server where the virtual machines reside. Example:
`HOST="esxserver.mydomain.com";`
 - Set the `USERNAME/PASSWORD` variables for the ESX Server where the virtual machines reside. Example:
`USERNAME="root";`
`PASSWORD="password";`
 - In the `..\generic` subdirectory, one or more batch files will need to be created. Do not modify any existing files in this directory. These batch files will be used by the Window File System *iDataAgent*.

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Create the PreScan and PostBackup Batch Files

The PreScan and PostBackup batch files are executed during the backup, to trigger the VMware utilities to create a snapshot of the Virtual Machine's VMFS disk image, and do the following:

- Analyze, discover, and mount the disk image to the VCB Proxy Server as a volume ready for backup (file

backup.)

For a file backup of a Virtual Machine from the VCB Proxy Server, two batch files are required; the PreScan batch file and PostBackup batch file.

PreScan Batch File – File Backup

For file backups of Virtual Machines with Windows 2003 Server as the guest operating system, create the file `prescan.bat` in the `..\generic` subdirectory referenced above. This batch file will need the following contents:

```
cd <location of Consolidated Backup installation>\generic
cscript pre-command.wsf <location of Consolidated Backup installation <FQDN of VM to
backup> [<backup type>]
```

where `<backup type>` is either `fullvm` or `file`. Default is `file`.

Example for file backup:

```
cd "C:\Program Files\VMware\VMware Consolidated Backup Framework\generic"
cscript pre-command.wsf "C:\Program Files\VMware\VMware Consolidated Backup
Framework" "vmsys1.mydomain.com" file
```

The `cscript pre-command.wsf` accesses part of the installed Consolidated Backup package and performs the following when `prescan.bat` is executed:

- The mount point on the VCB Proxy Server is determined. In this case it will be `C:\mnt` which was created previously. (This value can be changed by editing the `config.js` file, also discussed previously.)
- The entire Virtual Machine File System, in this example `vmsys1.mydomain.com`, will now be mounted under `C:\mnt` using the following convention:

```
C:\mnt\<VM name>\letters\C
C:\mnt\<VM name>\letters\D
.
.
.
```

and so on. Assuming `vmsys1.mydomain.com` has a single `c:` drive, it would mount to the VCB Proxy Server as follows:

```
C:\mnt\vmsys1.mydomain.com\letters\C
```

Post Backup Batch File – File Backup

For file backups of Virtual Machines with Windows 2003 Server as the guest operating system, once the backup is completed, the files will need to be unmounted from the VCB Proxy Server. Create the file `postbackup.bat` in the `..\generic` subdirectory referenced above. This batch file will need the following contents:

```
cd <location of Consolidated Backup installation>\generic
cscript post-command.wsf <location of Consolidated Backup installation> <FQDN of
mounted Virtual Machine>
```

Example:

```
cd "C:\Program Files\VMware\VMware Consolidated Backup Framework\generic"
cscript post-command.wsf "C:\Program Files\VMware\VMware Consolidated Backup
Framework" "vmsys1.mydomain.com"
```

The `cscript post-command.wsf` accesses part of the installed Consolidated Backup package and performs the following when `postbackup.bat` is executed:

- The mount is removed from the VCB Proxy Server, leaving only the `C:\mnt` directory.

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ProxyHost iDataAgent Backup of a Virtual Machine - File Backup

To perform a file backup of a Virtual Machine with Windows 2003 Server as the guest operating system, perform these steps:

1. Install both the ProxyHost and the Windows File System iDataAgents on the Virtual Machine; install the Windows File System iDataAgent on the designated VCB Proxy Server running the Consolidated Backup software. For instructions, see [Installation](#).
2. Create the PreScan and PostBackup batch files if you have not already done so. See [Create the PreScan and PostBackup Batch Files](#).
3. Create a subclient for the ProxyHost iDataAgent on the Virtual Machine. See [Create a New Subclient](#) for instructions and use the following information:

General Tab:

- Enter a subclient name

Content Tab:

- Backup Host: Select the name of the designated VCB Proxy Server. In our example, this would be **proxy.mydomain.com**.
- Content: **C:**
This is what will be backed up from the VM
- Backup Host BCV Path: **C:\mnt\vmssys1.mydomain.com\letters\C**
This is the path where the Virtual Machine will be mounted on the VCB Proxy Server once `prescan.bat` executes.

Pre/Post Process Tab:

- PreScan: **"C:\Program Files\VMware\VMware Consolidated Backup Framework\generic\prescan.bat"**
- PostBackup: **"C:\Program Files\VMware\VMware Consolidated Backup Framework\generic\postbackup.bat"**
- Select **On BackupHost**.
This specifies that these scripts will run on the VCB Proxy Server, not on the Virtual Machine.
- Select **Run Post Backup process for all attempts**.

Storage Device Tab:

- Select the appropriate Storage Policy.

The following occurs when a backup is performed using the ProxyHost subclient you created.

1. The PreScan batch file, `prescan.bat`, will execute on the VCB Proxy Server, `proxy.mydomain.com`, invoking the VMware `vcbMounter` utility, which creates a snapshot of the Virtual Machine, then mounts the root file system (`C:\`) of `vmssys1.mydomain.com` to `C:\mnt\vmssys1.mydomain.com\letters\C` on `proxy.mydomain.com`. The Virtual Machine continues to function normally.
2. The backup runs on the VCB Proxy Server, `proxy.mydomain.com`. Note that it does not run on the Virtual Machine, even though the subclient was configured there.
3. After the backup completes, `postbackup.bat` executes on the VCB Proxy Server, removing the mount `C:\mnt\vmssys1.mydomain.com\letters\C` on `proxy.mydomain.com`, and deleting the snapshot.

NOTES

- Full, Incremental, Differential, and Synthetic Full Backups are supported.
- When performing file system restores, the ProxyHost iDataAgent will provide mapping of the mount `c:\mnt\vmssys1.mydomain.com` to `c:\`, greatly simplifying the process.

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Back up a VMware ESX Server 3.x Virtual Machine's Files using Consolidated Backup and the Windows File System iDataAgent

Choose from the following topics:

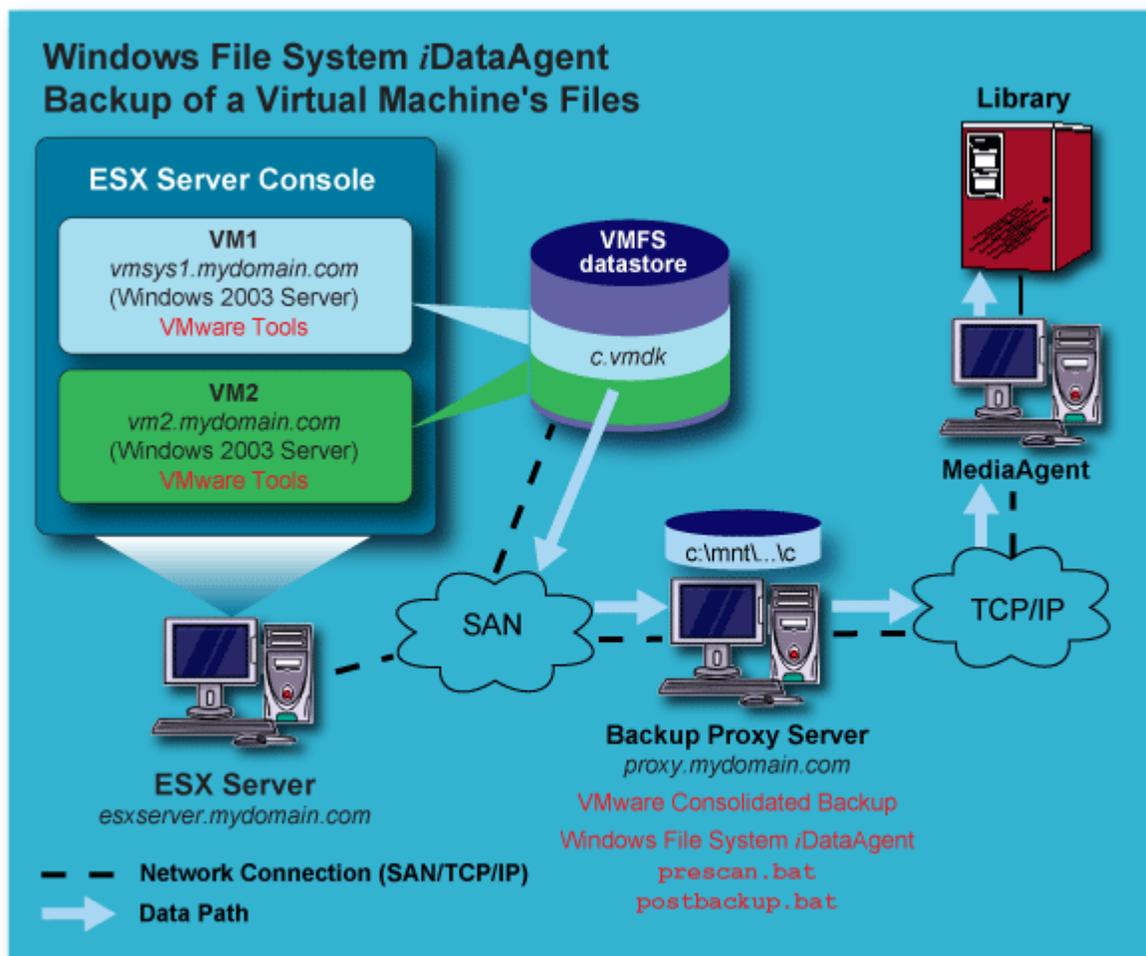
- [Overview](#)
- [Before You Begin](#)
- [Configure the Environment](#)
- [Create the PreScan and PostBackup Batch Files](#)
- [Windows File System iDataAgent Backup of a Virtual Machine - File Backup](#)

Related Topics

- [Back up a VMware ESX Server 3.x Virtual Machine](#)

Overview

The illustration below shows an example of how the ESX Server, Virtual Machine(s), and VCB Proxy Server are configured when using the Windows File System iDataAgent to back up the files for a VMware Virtual Machine running Windows 2003 Server:



Before You Begin

- You must already be familiar with the information in [Back up a VMware ESX Server 3.x Virtual Machine](#) before beginning the procedures below.

- You must already be familiar with VMware ESX Server software.
 - These procedures are based on a stand-alone VMware ESX Server version 3.x or later.
 - When entering data in the CommCell Console screens (e.g., when configuring a subclient) all paths which contain a space must be in quotes, as shown in the examples.
 - The following conventions are used in all of the examples; for each example, substitute the correct names for your environment instead of using these:
 - ESX server = `esxserver.mydomain.com`
 - VCB Proxy Server = `proxy.mydomain.com`
 - Virtual Machine = `vmsys1.mydomain.com`
-

Configure the Environment

ESX Server

- For backups performed from the VCB Proxy Server, the ESX Server installation must support a SAN and the Consolidated Backup software features. Contact VMware for proper installation and licensing requirements. No other software or modifications are necessary on the Service Console in order to run Consolidated Backup.

Virtual Machines

- All Virtual Machines to be backed up from a VCB Proxy Server must reside in a SAN. The SAN disks must be accessible by any VCB Proxy Servers to be used.

VCB Proxy Server

- Windows 2003 Server with Service Pack 1 must be installed.
- Must have access to the SAN disks where the Virtual Machines reside, and be able to mount them with read-only access.
- Consolidated Backup software must be obtained from VMware and installed on each VCB Proxy Server to be used.
- Once the Consolidated Backup software is installed, the following changes/additions must be made on each VCB Proxy Server:
 - Create the directory `c:\mnt` if it does not already exist.
 - The default installation directory for Consolidated Backup is:

```
C:\Program Files\VMware\VMware Consolidated Backup Framework
```

which has two subdirectories:
 - `..\config`
 - `..\generic`
 - In the `..\config` subdirectory, modify the `config.js` file as follows:
 - Set the `HOST` variable to the `FQDN` of the ESX Server where the virtual machines reside. Example:

```
HOST="esxserver.mydomain.com";
```
 - Set the `USERNAME/PASSWORD` variables for the ESX Server where the virtual machines reside. Example:

```
USERNAME="root";  
PASSWORD="password";
```
 - In the `..\generic` subdirectory, one or more batch files will need to be created. Do not modify any existing files in this directory. These batch files will be used by the Window File System `iDataAgent`.

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Create the PreScan and PostBackup Batch Files

The PreScan and PostBackup batch files are executed during the backup, to trigger the VMware utilities to create a snapshot of the Virtual Machine's VMFS disk image, and do the following:

- Analyze, discover, and mount the VMFS disk image to the VCB Proxy Server as a volume ready for backup (file backup.)

For a file backup of a Virtual Machine from the VCB Proxy Server, two batch files are required; the PreScan batch file and PostBackup batch file.

PreScan Batch File – File Backup

For file backups of Virtual Machines with Windows 2003 Server as the guest operating system, create the file `prescan.bat` in the `..\generic` subdirectory referenced above. This batch file will need the following contents:

```
cd <location of Consolidated Backup installation>\generic
cscript pre-command.wsf <location of Consolidated Backup installation <FQDN of VM to
backup> [<backup type>]
```

where `<backup type>` is either `fullvm` or `file`. Default is `file`.

Example for file backup:

```
cd "C:\Program Files\VMware\VMware Consolidated Backup Framework\generic"
cscript pre-command.wsf "C:\Program Files\VMware\VMware Consolidated Backup
Framework" "vmsys1.mydomain.com" file
```

The `cscript pre-command.wsf` accesses part of the installed Consolidated Backup package and performs the following when `prescan.bat` is executed:

- The mount point on the VCB Proxy Server is determined. In this case it will be `C:\mnt` which was created previously. (This value can be changed by editing the `config.js` file, also discussed previously.)
- The entire Virtual Machine File System, in this example `vmsys1.mydomain.com`, will now be mounted under `C:\mnt` using the following convention:

```
C:\mnt\<VM name>\letters\C
C:\mnt\<VM name>\letters\D
.
.
.
```

and so on. Assuming `vmsys1.mydomain.com` has a single `C:` drive, it would mount to the VCB Proxy Server as follows:

```
C:\mnt\vmsys1.mydomain.com\letters\C
```

Post Backup Batch File – File Backup

For file backups of Virtual Machines with Windows 2003 Server as the guest operating system, once the backup is completed, the files will need to be unmounted from the VCB Proxy Server. Create the file `postbackup.bat` in the `..\generic` subdirectory referenced above. This batch file will need the following contents:

```
cd <location of Consolidated Backup installation>\generic
cscript post-command.wsf <location of Consolidated Backup installation> <FQDN of
mounted Virtual Machine>
```

Example:

```
cd "C:\Program Files\VMware\VMware Consolidated Backup Framework\generic"
cscript post-command.wsf "C:\Program Files\VMware\VMware Consolidated Backup
Framework" "vmsys1.mydomain.com"
```

The `cscript post-command.wsf` accesses part of the installed Consolidated Backup package and performs the following when `postbackup.bat` is executed:

- The mount is removed from the VCB Proxy Server, leaving only the `C:\mnt` directory.

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Windows File System iDataAgent Backup of a Virtual Machine - File Backup

To perform a file backup of a Virtual Machine with Windows 2003 Server as the guest operating system, perform

these steps:

1. Install the Windows File System *iDataAgent* on the designated VCB Proxy Server running the Consolidated Backup software. For instructions, see [Deployment - Windows File System *iDataAgent*](#). It is not necessary to install software on the Virtual Machine.
2. Create the PreScan and PostBackup batch files if you have not already done so. See [Create the PreScan and PostBackup Batch Files](#).
3. Create a subclient for the Windows File System *iDataAgent* on the VCB Proxy Server. See [Create a New Subclient](#) for instructions and use the following information:

General Tab:

- Enter a subclient name

Content Tab:

- Content: `C:\mnt\vmssl.mydomain.com\letters\C`

Pre/Post Process Tab:

- PreScan: `"C:\Program Files\VMware\VMware Consolidated Backup Framework\generic\prescan.bat"`
- PostBackup: `"C:\Program Files\VMware\VMware Consolidated Backup Framework\generic\postbackup.bat"`
- Select **Run Post Backup process for all attempts**.

Storage Device Tab:

- Select the appropriate Storage Policy.

The following occurs when a backup is performed using the Windows File System subclient you created.

1. The PreScan batch file, `prescan.bat`, will execute on the VCB Proxy Server, `proxy.mydomain.com`, invoking the VMware `vcbMounter` utility, which creates a snapshot of the Virtual Machine, then mounts the root file system (`C:\`) of `vmssl.mydomain.com` to `C:\mnt\vmssl.mydomain.com\letters\C` on `proxy.mydomain.com`. The Virtual Machine continues to function normally.
2. The backup runs on the VCB Proxy Server, `proxy.mydomain.com`.
3. After the backup completes, `postbackup.bat` executes on the VCB Proxy Server, removing the mount `C:\mnt\vmssl.mydomain.com\letters\C` on `proxy.mydomain.com`, and deleting the snapshot.

NOTES

- Full, Incremental, Differential, and Synthetic Full Backups are supported.
- When performing file system restores, unlike the ProxyHost *iDataAgent*, the Windows File System *iDataAgent* will *not* provide mapping of the mount `c:\mnt\vmssl.mydomain.com` to `c:\`.

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Back up a VMware ESX Server 3.x Virtual Machine's Disk Image using Consolidated Backup and the Windows File System iDataAgent

Choose from the following topics:

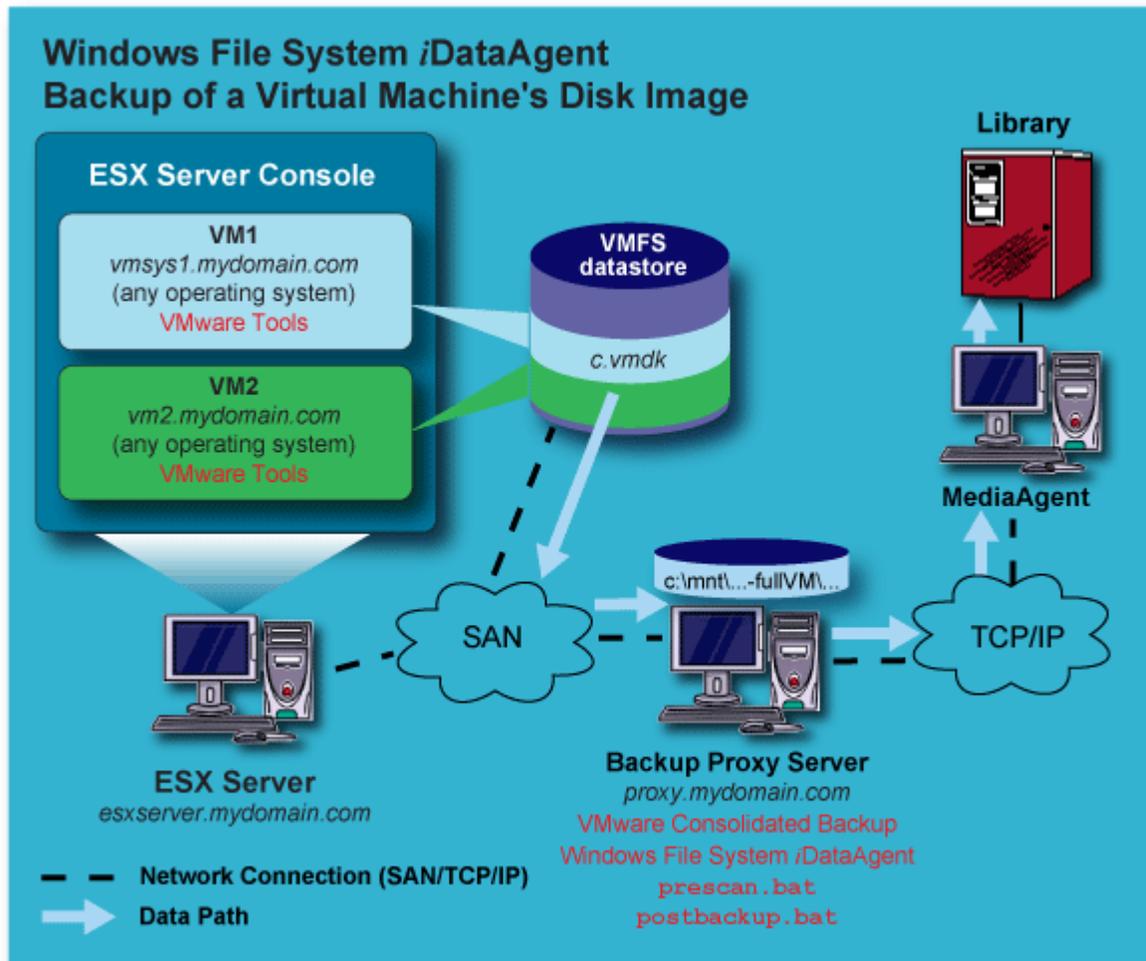
- [Overview](#)
- [Before You Begin](#)
- [Configure the Environment](#)
- [Create the PreScan and PostBackup Batch Files](#)
- [Windows File System iDataAgent Backup of a Virtual Machine - Full Image Backup](#)

Related Topics

- [Back up a VMware ESX Server 3.x Virtual Machine](#)

Overview

The illustration below shows an example of how the ESX Server, Virtual Machine(s), and VCB Proxy Server are configured when using the Windows File System iDataAgent to back up the full disk image for a VMware Virtual Machine running any operating system:



Before You Begin

- You must already be familiar with the information in [Back up a VMware ESX Server 3.x Virtual Machine](#) before

beginning the procedures below.

- You must already be familiar with VMware ESX Server software.
 - These procedures are based on a stand-alone VMware ESX Server version 3.x or later.
 - When entering data in the CommCell Console screens (e.g., when configuring a subclient) all paths which contain a space must be in quotes, as shown in the examples.
 - The following conventions are used in all of the examples; for each example, substitute the correct names for your environment instead of using these:
 - ESX server = `esxserver.mydomain.com`
 - VCB Proxy Server = `proxy.mydomain.com`
 - Virtual Machine = `vmssl.mydomain.com`
-

Configure the Environment

ESX Server

- For backups performed from the VCB Proxy Server, the ESX Server installation must support a SAN and the Consolidated Backup software features. Contact VMware for proper installation and licensing requirements. No other software or modifications are necessary on the Service Console in order to run Consolidated Backup.

Virtual Machines

- All Virtual Machines to be backed up from a VCB Proxy Server must reside in a SAN. The SAN disks must be accessible by any VCB Proxy Servers to be used.
- Full image backup (supported for all Virtual Machine guest operating systems) does not require any additional software installation on the Virtual Machine.

VCB Proxy Server

- Windows 2003 Server with Service Pack 1 must be installed.
- Must have access to the SAN disks where the Virtual Machines reside, and be able to mount them with read-only access.
- Consolidated Backup software must be obtained from VMware and installed on each VCB Proxy Server to be used.
- Once the Consolidated Backup software is installed, the following changes/additions must be made on each VCB Proxy Server:
 - Create the directory `C:\mnt` if it does not already exist.
 - The default installation directory for Consolidated Backup is:

```
C:\Program Files\VMware\VMware Consolidated Backup Framework
```

which has two subdirectories:
 - `..\config`
 - `..\generic`
 - In the `..\config` subdirectory, modify the `config.js` file as follows:
 - Set the `HOST` variable to the `FQDN` of the ESX Server where the virtual machines reside. Example:

```
HOST="esxserver.mydomain.com";
```
 - Set the `USERNAME/PASSWORD` variables for the ESX Server where the virtual machines reside. Example:

```
USERNAME="root";  
PASSWORD="password";
```
 - In the `..\generic` subdirectory, one or more batch files will need to be created. Do not modify any existing files in this directory. These batch files will be used by the Window File System `iDataAgent`.

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Create the PreScan and PostBackup Batch Files

For a Full Image backup of a Virtual Machine from the VCB Proxy Server, only one batch files is required; the PreScan batch file. You may optionally choose to create a PostBackup batch file as well, if that would be helpful in your environment.

PreScan Batch File – Full Image Backup

For Full Image backups of Virtual Machines with any guest operating system, create the file `prescan.bat` in the `..\generic` subdirectory referenced above. This batch file will need the following contents:

```
cd <location of Consolidated Backup installation>\generic
cscript pre-command.wsf <location of Consolidated Backup installation <FQDN of VM to backup> [<backup type>]
```

where `<backup type>` is either `fullvm` or `file`. Default is `file`.

Example for Full Image backup:

```
cd "C:\Program Files\VMware\VMware Consolidated Backup Framework\generic"
cscript pre-command.wsf "C:\Program Files\VMware\VMware Consolidated Backup Framework" "vmsys1.mydomain.com" fullvm
```

The `cscript pre-command.wsf` accesses part of the installed Consolidated Backup package and performs the following when `prescan.bat` is executed:

- The save point (as opposed to a mount point for file backups) will be created as follows:

```
C:\mnt\<VM name>-fullVM\
```

In this example the directory will be:

```
C:\mnt\vmsys1.mydomain.com-fullVM\
```

- Initially, a snapshot of the Virtual Machine is created. This allows the Virtual Machine image to be quiesced. No files are remote mounted.
- The VMware `vcbMounter` utility is invoked. By default, a Full Image backup of the actual Virtual Machine, broken up into 2GB files, will be placed under the `C:\mnt\vmsys1.mydomain.com-fullVM\` directory, with a limited number of files needed to run `vcbRestore` successfully. (The `vcbRestore` utility is used to restore Full Image backups created by `vcbMounter`.) Since these Full Image backups are created directly on the VCB Proxy Server, care must be taken to insure that it has adequate disk space.

NOTE

Creating the Full Image backup on the VCB Proxy Server can be time intensive, depending upon the size of the Virtual Machine.

- Once the Full Image backup is created on the VCB Proxy Server by `vcbMounter`, any transactions in the snapshot file are merged back into the Virtual Machine, and the snapshot file is deleted.

Post Backup Batch File – Full Image Backup

Unlike the file backup, a Full Image backup does not require any additional actions to be taken once `vcbMounter` completes a backup of the Virtual Machine. However, you may choose to use a Post Backup script to delete the Full Image backup files from the VCB Proxy Server after the backup has completed, or for some other purpose which meets the needs of your environment.

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Windows File System iDataAgent Backup of a Virtual Machine - Full Image Backup

To perform a Full Image backup of a Virtual Machine with any guest operating system, perform these steps:

1. Install the Windows File System iDataAgent on the designated VCB Proxy Server running the Consolidated Backup software. For instructions, see [Deployment - Windows File System iDataAgent](#). It is not necessary to install software on the Virtual Machine.
2. Create the PreScan and optional PostBackup batch files if you have not already done so. See [Create the PreScan and PostBackup Batch Files](#).
3. Create a subclient for the Windows File System iDataAgent on the ESX Server. See [Create a New Subclient](#) for instructions and use the following information:

General Tab:

- Enter a subclient name

Content Tab:

- Content: `C:\mnt\vmssys1.mydomain.com-fullVM\`

Pre/Post Process Tab:

- PreScan: `"C:\Program Files\VMware\VMware Consolidated Backup Framework\generic\prescan.bat"`
- PostBackup: Not required, but can be utilized as a means to remove the `C:\mnt\vmssys1.mydomain.com-fullVM\` directory and its contents after backup completes.
- Select **Run Post Backup process for all attempts**.

Storage Device Tab:

- Select the appropriate Storage Policy.

The following occurs when a backup is performed using the Windows File System subclient you created.

1. The PreScan batch file, `prescan.bat`, will execute on the VCB Proxy Server, `proxy.mydomain.com`, invoking the VMware `vcbMounter` utility, which creates a snapshot of the Virtual Machine, and exports the Virtual Machine disk images to the `C:\mnt\vmssys1.mydomain.com-fullVM\` directory on `proxy.mydomain.com`, along with a limited number of configuration files. (These configuration files are needed by the `vcbRestore` utility, which is used to restore Full Image backups created by `vcbMounter`.)
2. Once `vcbMounter` has completed exporting the Full Image backup files to the VCB Proxy Server, the contents of the snapshot file are merged back into the Virtual Machine, and the snapshot file is deleted.
3. The Windows File System `iDataAgent` backup of the `C:\mnt\vmssys1.mydomain.com-fullVM\` directory runs on the VCB Proxy Server, `proxy.mydomain.com`.
4. After the backup completes, the `C:\mnt\vmssys1.mydomain.com-fullVM\` directory and its contents will remain unless removed manually or via a PostBackup script. A PostBackup script is not required, but if one has been specified, it is executed.

NOTES

- The Virtual Machine continues to function normally during this process.
- Exporting the disk image from the Virtual Machine and creating the Full Image backup file(s) on the VCB Proxy Server can be very time consuming, particularly for large VMFS disk images.
- The VCB Proxy Server (`proxy.mydomain.com`) must have enough disk space to hold the Full Image backup file(s) and supporting configuration files.
- The Full Image backup is created on the VCB Proxy Server in files that are a maximum of 2GB in size; thus a 6GB VMFS disk image would result in having three files on the VCB Proxy Server that are 2GB each, along with any supporting files.

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Back up a VMware ESX Server 3.x Virtual Machine's Disk Image from the Service Console with the Linux File System iDataAgent

Choose from the following topics:

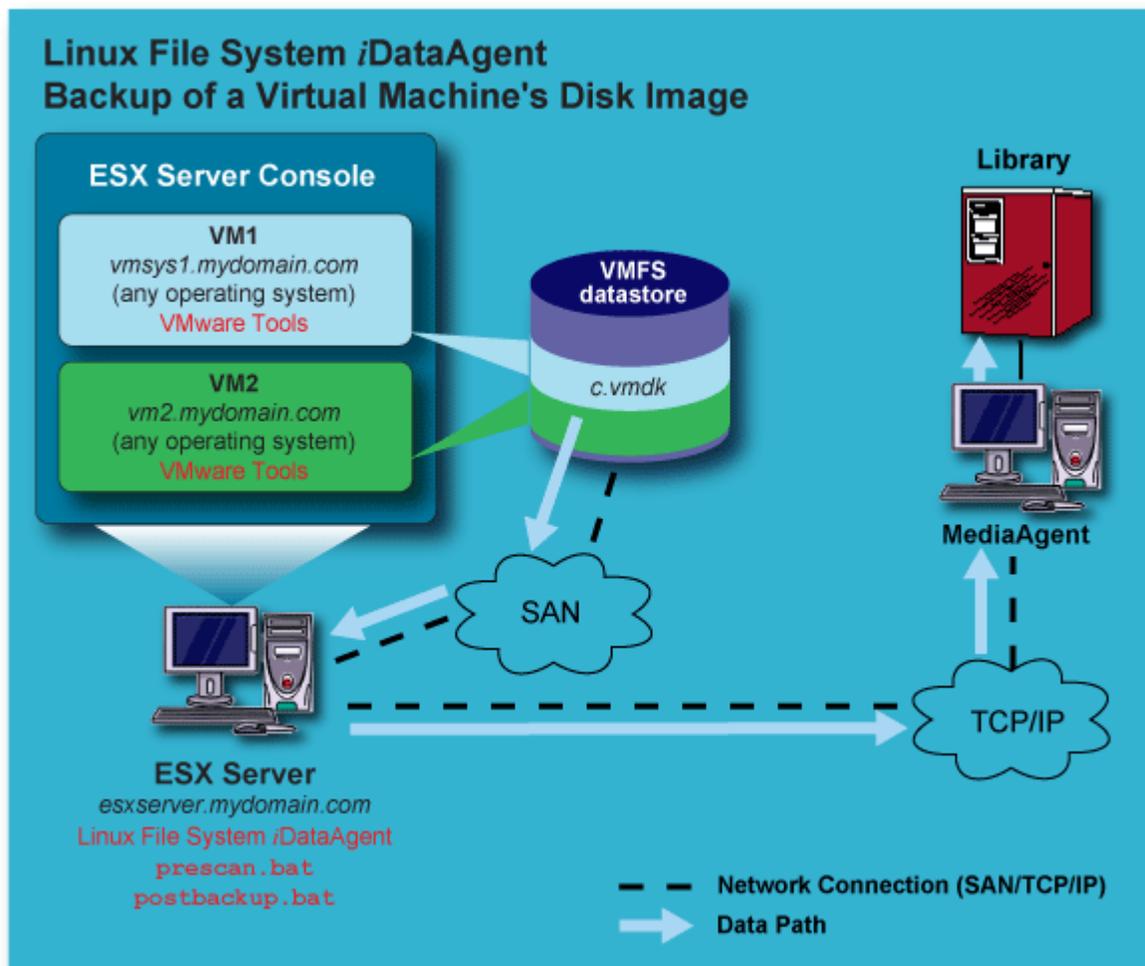
- [Overview](#)
- [Before You Begin](#)
- [Configure the Environment](#)
- [Create the PreScan and PostBackup Script Files](#)
 - [Script Files for Full Image Backup from the Service Console using vcbMounter](#)
 - [Script Files for Full Image Backup from the Service Console using vcbSnapshot](#)
- [Backup of a Virtual Machine from the Service Console - Full Image Backup](#)

Related Topics

- [Back up a VMware ESX Server 3.x Virtual Machine](#)

Overview

The illustration below shows an example of how the ESX Server and Virtual Machine(s) are configured when using the Linux File System iDataAgent from the Service Console to back up the full disk image for a VMware Virtual Machine running any operating system:



Before You Begin

- You must already be familiar with the information in [Back up a VMware ESX Server 3.x Virtual Machine](#) before beginning the procedures below.
 - You must already be familiar with VMware ESX Server software.
 - These procedures are based on a stand-alone VMware ESX Server version 3.x or later.
 - When entering data in the CommCell Console screens (e.g., when configuring a subclient) all paths which contain a space must be in quotes, as shown in the examples.
 - The following conventions are used in all of the examples; for each example, substitute the correct names for your environment instead of using these:
 - ESX server = esxserver.mydomain.com
 - VCB Proxy Server = proxy.mydomain.com
 - Virtual Machine = vmsys1.mydomain.com
-

Configure the Environment

ESX Server

- For backups performed from the Service Console:
 - The ESX Server installation does not need to support a SAN. Contact VMware for proper installation and licensing requirements.
 - ESX Server comes with a built in firewall. One of two methods can be used to insure proper communications between the ESX Server, the CommServe, and the MediaAgent:
 - Method 1:

Disable the firewall on the ESX Server by executing the following command:

```
/etc/init.d/firewall stop
```

Executing the above will disable the firewall until the next reboot or until it is explicitly restarted. It is left to administrators to disable the firewall permanently if so desired.
 - Method 2:
 1. Run the VMware Virtual Infrastructure Client for the ESX Server.
 2. Select the ESX Server in the Inventory Window, and then select the **Configuration** tab.
 3. In the Software Window, select the Security Profile.
 4. Select **Properties** in the upper right of the Security Profile.
 5. In the **Fire Wall Properties** window, scroll and select both the **CommVault Dynamic** and **CommVault Static** entries.
 6. Select OK.

The above will now allow the successful installation of the Linux File System *iDataAgent* on the Service Console. However, to ensure proper backup and restore operation, it will be necessary to configure the firewall when installing the Linux File System *iDataAgent* on the Service Console, to match the settings for the CommServe and any MediaAgents that will be used to back up and restore data from the Service Console. Failure to configure the firewall properly will cause backups to fail. For more information, see [Firewall Requirements](#).

Virtual Machines

- Full image backup (supported for all Virtual Machine guest operating systems) does not require any additional software installation on the Virtual Machine.

VCB Proxy Server

- This method of backing up the full disk image of the Virtual Machine does not utilize a VCB Proxy Server.

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Create the PreScan and PostBackup Script Files

Create PreScan and PostBackup script files, based on which VMware utility you will be using -- vcbMounter or vcbSnapshot; select one of the following:

- [Script Files for Full Image Backup from the Service Console using vcbMounter](#)

- [Script Files for Full Image Backup from the Service Console using vcbSnapshot](#)

Script Files for Full Image Backup from the Service Console using vcbMounter

For a Full Image backup of a Virtual Machine from the Service Console, only one script is required; the PreScan script. You may optionally choose to create a PostBackup script as well, if that would be helpful in your environment.

PreScan Script – Full Image Backup from the Service Console using vcbMounter

This example `prescan.sh` script will be used to invoke the `vcbMounter` utility to perform the Full Image backup:

```
#!/bin/bash
vcbMounter -h esxserver.mydomain.com -u root -p password -a
ipaddr:vmsys1.mydomain.com -r /vmfs/volumes/SanBackup1/vmsys1-imageBackup -t fullvm -
M 0 -F 0
```

The `vcbMounter` command in the sample script has these components:

<code>-h esxserver.mydomain.com</code>	FQDN of ESX Server
<code>-u root</code>	Login for ESX Server
<code>-p password</code>	Password for ESX Server
<code>-a ipaddr:vmsys1.mydomain.com</code>	The Virtual Machine to back up
<code>-r /vmfs/volumes/SanBackup1/vmsys1-imageBackup</code>	The destination directory for the Full Image backup (This directory must <i>not</i> already exist.)
<code>-t fullvm</code>	Type of backup to be performed
<code>-M 0</code>	Break up Full Image backup into 2GB files
<code>-F 0</code>	Optimize the Full Image backup file

There is more than one method to specify the Virtual Machine to be backed up. For more information, refer to the VMware Virtual Machine Backup Guide. The above method used the FQDN of the Virtual Machine and requires the Virtual Machine to be active to work. The Virtual Machine's VMFS disk image in this example is located in a datastore on a non-SAN local SCSI disk.

The following information is intended to show how this information is derived, so that you can create a script for your environment. More detailed information on the `vcbMounter` utility can be obtained from VMware.

- Execute the following command to discover the datastores that exist on `esxserver.mydomain.com`; this will produce output similar to the example shown:

```
# vdf
Filesystem      1K-blocks    Used    Available  Use%  Mounted on
/dev/sda2        5036316    1430076    3350408    30%   /
/dev/sda1        101089      33737      62133      36%   /boot
none             134156      0          134156     0%   /dev/shm
/dev/sda8        1462604    55972     1332336     5%   /var/log
/vmfs/devices    454740210  0          454740210  0%   /vmfs/devices
/vmfs/volumes/238c5ef3-9be4ed7b
  92033536    53295336    38738200    57%   /vmfs/volumes/nfsDataStore1
/vmfs/volumes/3204d433-533283f0
  58603260    16842748    41760512    28%   /vmfs/volumes/nfsDataStore2
/vmfs/volumes/444e6f5d-ac750886-4f6d-0011435b35d5
  63438848    53569536    9869312     84%   /vmfs/volumes/Vmfs3Vol1
/vmfs/volumes/44bd0297-a0d76b9c-5d85-0011435b35d5
  35389440    14519296    20870144    41%   /vmfs/volumes/SanTarget0
/vmfs/volumes/44c529af-b8365ad6-7307-0011435b35d5
  35389440    641024      34748416    1%   /vmfs/volumes/SanBackup1
#
```

- For a given datastore, in this case `/vmfs/volumes/Vmfs3Vol1` from the previous output, execute the following

command to discover the Virtual Machines in the datastore; this will produce output similar to the example shown:

```
# pwd
/vmfs/volumes/Vmfs3Vol1
# ls -l
total 384
drwxr-xr-x 1 root root 2240 Jul 18 11:07 vmsys1
drwxr-xr-x 1 root root 2240 Jul 6 11:08 vmsys2
drwxr-xr-x 1 root root 1260 Jun 23 09:22 vmsys3
drwxr-xr-x 1 root root 2520 Jul 18 11:07 vmsys4
drwxr-xr-x 1 root root 2240 Jul 21 15:37 vmsys4
drwxr-xr-x 1 root root 2240 Jul 21 13:19 vmsys5
#
```

- For a given Virtual Machine, in this case vmsys1 from the previous output, you can execute the following command to discover the files in the /vmfs/volumes/Vmfs3Vol1/vmsys1 directory; this will produce output similar to the example shown:

```
# ls -l vmsys1
total 6931200
-rw----- 1 root root 805306368 Jul 20 08:41 vmsys1-79672131.vswp
-rw----- 1 root root 6291456000 Jul 25 10:31 vmsys1-flat.vmdk
-rw----- 1 root root 8664 Jul 20 08:41 vmsys1.nvram
-rw----- 1 root root 343 Jul 21 15:37 vmsys1.vmdk
-rw----- 1 root root 471 Jul 21 15:37 vmsys1.vmsd
-rwx----- 1 root root 1400 Jul 21 15:37 vmsys1.vmx
-rw----- 1 root root 255 Jul 20 08:29 vmsys1.vmx
-rw----- 1 root root 43774 Jul 20 08:12 vmware-4.log
-rw----- 1 root root 26219 Jul 20 08:12 vmware-5.log
-rw----- 1 root root 19355 Jul 20 08:12 vmware-6.log
-rw----- 1 root root 27734 Jul 20 08:12 vmware-7.log
-rw----- 1 root root 42141 Jul 20 08:12 vmware-8.log
-rw-r--r-- 1 root root 19033 Jul 20 08:35 vmware-9.log
-rw-r--r-- 1 root root 62039 Jul 24 13:34 vmware.log
#
```

PostBackup Script – Full Image Backup from the Service Console using vcbMounter

A Full Image backup of a Virtual Machine from the Service Console does not require any additional actions to be taken once vcbMounter completes a backup of the Virtual Machine. However, you may choose to use a Post Backup script to delete the Full Image backup files from the ESX Server after the backup has completed, or for some other purpose which meets the needs of your environment.

The following postbackup.sh script will be used in our example to remove the image files once the Linux File System iDataAgent has completed the backup:

```
#!/bin/bash
rm -rf /vmfs/volumes/SanBackup1/vmsys1-imageBackup
```

Script Files for Full Image Backup from the Service Console using vcbSnapshot

For a Full Image backup of a Virtual Machine from the Service Console using vcbSnapshot, two scripts are required; the PreScan script and PostBackup script.

PreScan Script – Full Image Backup from the Service Console using vcbSnapshot

This example prescan.sh script will be used to invoke the vcbSnapshot utility to perform the Full Image backup:

```
vcbSnapshot -h esxserver.mydomain.com -u root -p password -c moref:64 vmsys1snap
```

The vcbSnapshot command in the sample script has these components:

-h esxserver.mydomain.com	FQDN of ESX Server
-u root	Login for ESX Server
-p password	Password for ESX Server
-c moref:64 vmsys1snap	Creates snapshot for Virtual Machine vmsys1 with moref:64 and names the snapshot vmsys1snap.

The following command example can be used to determine the moref value:

```
vcbVmName -h esxserver.mydomain.com -u root -p password -s name:vmsys1
# vcbVmName -h esxserver.mydomain.com -u root -p password -s name:vmsys1 [2006-07-27
11:29:31.503 'App' 3076452480 info] Current working directory: /root/scripts [2006-
07-27 11:29:31.547 'BaseLibs' 8653744 warning] [Vmdb_Unset] Unsetting unknown
path: /vmomi/

Found VM: moref:64 name:vmsys1 uuid:564df2c7-51a8-bac7-4b7e-3a4a0eddcfaa
ipaddr:192.168.1.5 #
```

PreScan Script – Full Image Backup from the Service Console using vcbSnapshot

This example postbackup.sh script will be used to remove the snapshot file:

The first command returns the SSID of the snapshot given its moref and snapshot name. The SSID is needed when issuing the second command to remove the snapshot.

```
#!/bin/bash
# get the SSID of the snapshot
SSID=$(vcbSnapshot -h esxserver.mydomain.com -u root -p password -f moref:64
vmsys1snap | grep SsId )
# remove the snapshot
vcbSnapshot -h esxserver.mydomain.com -u root -p password -d moref:64 $SSID
The actual remove command issued would look as follows
vcbSnapshot -h esxserver.mydomain.com -u root -p password -d moref:64
ssid:/vmfs/volumes/444e6f5d-ac750886-4f6d-0011435b35d5/vmsys1/vmsys1.vmx-snapshot-1
```

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Backup of a Virtual Machine from the Service Console - Full Image Backup

To perform a Full Image backup, from the Service Console, of a Virtual Machine with any guest operating system, perform these steps:

1. Install the Linux File System *iDataAgent* on the VMware ESX Service Console, esxserver.mydomain.com. For instructions, see [Deployment - Windows File System iDataAgent](#). It is not necessary to install software on the Virtual Machine.
2. Configure the firewall on the ESX Server using one of the two methods described in [Configure the Environment](#).
3. Create the PreScan and optional PostBackup scripts if you have not already done so. See [Create the PreScan and PostBackup Script Files](#).
4. Create a subclient for the Linux File System *iDataAgent* on the VMware ESX Service Console. See [Create a New Subclient](#) for instructions and use the following information:

General Tab:

- Enter a subclient name

Content Tab:

- Content: `/vmfs/volumes/SanBackup1/vmsys1-imageBackup`

Pre/Post Process Tab:

- PreScan: `/root/scripts/PreScan.sh`
- PostBackup (not required): `/root/scripts/PostBackup.sh`

- Select **Run Post Backup process for all attempts**.

Storage Device Tab:

- Select the appropriate Storage Policy.

Backups using vcbMounter

The following occurs when a backup is performed using the Linux File System subclient you created:

1. The `prescan.sh` script will execute on the ESX Server, `esxserver.mydomain.com`, invoking the VMware `vcbMounter` utility, which quiesces the Virtual Machine and creates a snapshot of its VMFS disk image in the datastore. The actual snapshot file is highlighted below:

```
# ls -ltr
total 6948672
-rw----- 1 root root      42141 Jul 20 08:12 vmware-8.log
-rw----- 1 root root      27734 Jul 20 08:12 vmware-7.log
-rw----- 1 root root      19355 Jul 20 08:12 vmware-6.log
-rw----- 1 root root      26219 Jul 20 08:12 vmware-5.log
-rw----- 1 root root      43774 Jul 20 08:12 vmware-4.log
-rw----- 1 root root         255 Jul 20 08:29 vmsys1.vmx
-rw-r--r-- 1 root root      19033 Jul 20 08:35 vmware-9.log
-rw----- 1 root root    805306368 Jul 20 08:41 vmsys1-79672131.vswp
-rw----- 1 root root       8664 Jul 20 08:41 vmsys1.nvram
-rw----- 1 root root        343 Jul 21 15:37 vmsys1.vmdk
-rw----- 1 root root    6291456000 Jul 25 14:16 vmsys1-flat.vmdk
-rwx----- 1 root root        1407 Jul 25 14:16 vmsys1.vmx
-rw----- 1 root root      18380 Jul 25 14:16 vmsys1-Snapshot5.vmsn
-rw----- 1 root root         530 Jul 25 14:16 vmsys1.vmsd
-rw----- 1 root root         231 Jul 25 14:16 vmsys1-000001.vmdk
-rw-r--r-- 1 root root      65750 Jul 25 14:16 vmware.log
-rw----- 1 root root    16777216 Jul 25 14:16 vmsys1-000001-delta.vmdk
# pwd
# /vmfs/volumes/Vmfs3Vol1/vmsys1
```

2. The backup directory `/vmfs/volumes/SanBackup1/vmsys1-imageBackup` is shown below. The Virtual Machines VMFS disk image has been split into four files and they are currently being populated by `vcbMounter`:

```
# ls -l vmsys1-imageBackup
total 850560
-rw----- 1 root galaxy      8664 Jul 25 14:16 vmsys1.nvram
-rw----- 1 root galaxy      1407 Jul 25 14:16 vmsys1.vmx
-rw-r--r-- 1 root galaxy       909 Jul 25 14:16 catalog
-rw----- 1 root galaxy    866713600 Jul 25 14:24 scsi0-0-0-vmsys1-s001.vmdk
-rw----- 1 root galaxy    327680 Jul 25 14:16 scsi0-0-0-vmsys1-s002.vmdk
-rw----- 1 root galaxy    262144 Jul 25 14:16 scsi0-0-0-vmsys1-s003.vmdk
-rw----- 1 root galaxy       474 Jul 25 14:16 scsi0-0-0-vmsys1.vmdk
-rw----- 1 root galaxy      43774 Jul 25 14:16 vmware-4.log
-rw----- 1 root galaxy      26219 Jul 25 14:16 vmware-5.log
-rw----- 1 root galaxy      19355 Jul 25 14:16 vmware-6.log
-rw----- 1 root galaxy      27734 Jul 25 14:16 vmware-7.log
-rw----- 1 root galaxy      42141 Jul 25 14:16 vmware-8.log
-rw----- 1 root galaxy      19033 Jul 25 14:16 vmware-9.log
-rw----- 1 root galaxy      65750 Jul 25 14:16 vmware.log
# /vmfs/volumes/SanBackup1'
```

3. Once `vcbMounter` has completed creating the Full Image backup files, the contents of the snapshot file are merged back into the Virtual Machine, and the snapshot file is deleted.
4. The Linux File System `iDataAgent` backup runs on the ESX Server, `esxserver.mydomain.com` to back up the image files.
5. After the backup completes, the `/vmfs/volumes/SanBackup1/vmsys1-imageBackup` directory and its contents will remain unless removed manually or via a `PostBackup` script. A `PostBackup` script is not required, but if one has been specified, it is executed. In the case of our example, the script runs and removes the four image files, as well as the directory `/vmfs/volumes/SanBackup1/vmyss1-imageBackup`.

Backups using vcbSnapshot

The following occurs when a backup is performed using the Linux File System subclient you created:

1. The `prescan.sh` script will execute on the ESX Server, `esxserver.mydomain.com`, invoking the VMware

`vcbSnapshot` utility, which quiesces the Virtual Machine and creates a snapshot of its datastore.

2. The Linux File System `iDataAgent` backup runs on the ESX Server, `esxserver.mydomain.com` to back up the contents of the Virtual Machine's VMFS disk image as a flat file.
3. After the backup completes, the `postbackup.sh` script will run, merging the changes back into the Virtual Machine's VMFS disk image and deleting the snapshot.

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