



How to backup VMWare Virtual Machines using VMWare VCB and CRM's eBackup for Servers client.

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Introduction

This whitepaper will document how Chicago Records Management uses their eBackup for Servers client, along with VMWare Consolidated Backup 1.1 (VCB), to backup their own VMWare virtual machine (VM) images.

To implement a similar strategy in your own environment, you should already be familiar with:

- VMWare Infrastructure 3 Components and Security
- Chicago Records Management's eBackup for Servers Client
- Security and Zoning of your SAN Environment

Disclaimer

This whitepaper is a reference only and to be used "as-is" at your own risk and is subject to change. It is strongly recommended that you review these procedures in a lab/test environment before production.

The backup procedure in this whitepaper is designed to backup *snapshots* of individual Virtual Machines. It cannot be used to restore individual data files on a virtual machine. You should continue to install the eBackup client directly on the VM for file-level protection. Also, this procedure does not backup the ESX Server.

VMWare, and all references to VMWare products in this document, are properties of VMWare, Inc. This document does not imply a certification, partnership, relationship, or endorsement of any kind.

Environment

Below is a list of software and hardware used to create this whitepaper:

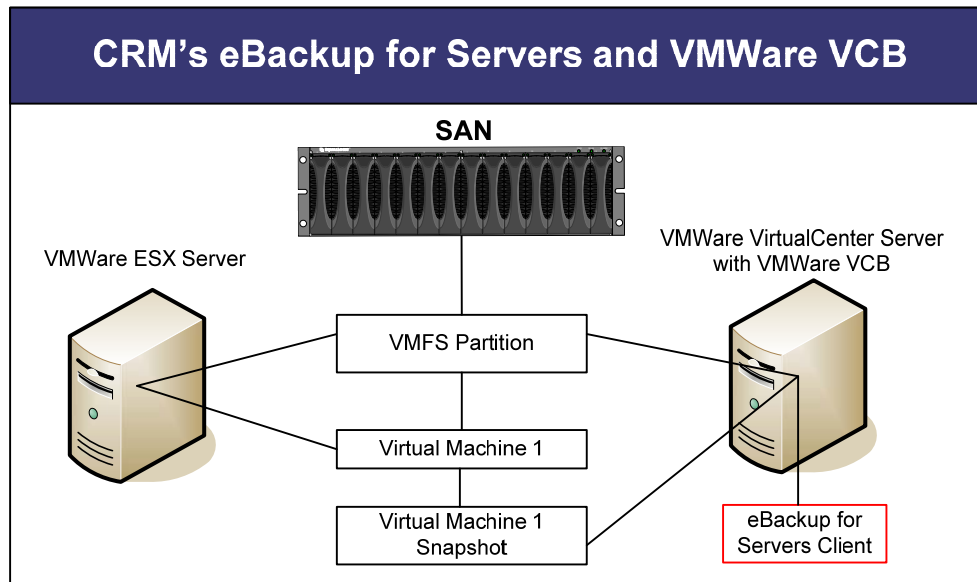
- VMWare Infrastructure 3
 - ESX Server 3.5
 - VirtualCenter 2.5
- VMWare Consolidated Backup 1.1 (VCB)
- Windows Server 2003 Standard SP2
- Equallogic PS300 SAN
- CRM eBackup for Server 5.2.4.0 Client

All Virtual Servers are running on datastores presented to the ESX servers via an Equallogic SAN.

All servers and hardware components were running the latest/greatest service packs, patches, firmware, etc. at the time this paper was written.

In this example, VirtualCenter and the eBackup Client are running together on a dedicated server. This server's SAN connectivity is zoned to access the ESX server's datastores.

Environment Continued



Backup Process

In brief, here is what needs to be done:

1. Execute a BAT file to create a snapshot of a Virtual Machine (VM) and mount the snapshot at the beginning of an eBackup backupset (i.e. execute a pre-backup command).
2. Backup the mounted snapshot via eBackup for Servers client
3. Execute a second BAT file, after the backup in step 2 completes, to unmount the snapshot (i.e. execute a post-backup command).

Creating the Backup

STEP 1 – Create a login ID dedicated to backing up the VM's

Create a login ID on the machine running eBackup for Servers to be used by the eBackup for Servers client to login and execute the BAT files we will create in the next steps of this exercise. This login ID should have the following rights:

- Login as a service
- Local Administrator

NOTE: Login as this user to continue with the rest of this exercise. This will create the user profiles on the system necessary for eBackup for Servers to run under this ID.

STEP 2 – Write the BAT file to create the VM snapshot and mount the snap

The first thing we need to do is create a BAT file to (1) snap the VM and (2) mount the snap. We will use VCB's vcbmounter.exe to accomplish this. Here are the command line options for vcbmounter:

```
vcbmounter -h <virtualcenterserver> -u <username> -p <password> -a ipaddr:<ip or name of vm> -r <snapshot mount point local to the eBackup client> -t fullvm -m san
```

For our example, here are the variables:

VirtualCenter Server: vcserver Login ID: snapadmin Snapshot Mount location on the VC Server: f:\vm_images\vm1
VM to backup: vm1.company.com Password: password

Here is what our BAT file will look like:

```
@echo on  
vcbmounter -h vcserver -u snapadmin -p password -a ipaddr:vm1.company.com -r f:\vm_images\vm1 -t fullvm -m san
```

NOTE: Including the “@echo on” statement in the BAT file will log all of the vcbmounter activities in the eBackup backup log for the backupset.

SECURITY NOTE: The password for user authorized to create snapshots via VirtualCenter will be stored in clear text in the BAT file. Plan your security and permissions to this system accordingly!

We will save this file as **MOUNT.BAT** into the same directory the VCB files are stored: **c:\VMWare\VMWare Consolidated Backup Framework**

STEP 3 – Write the BAT file to dismount the snapshot

Now we need to write a BAT file to dismount the snap. This BAT file will be executed as a post-backup command after the eBackup client backs up the VM image. Once again, we will use VCB’s vcbmounter.exe application. Using the variables from the MOUNT.BAT sample above:

```
@echo on  
vcbmounter -h vcserver -u snapadmin -p password -U f:\vm_images\vm1
```

We will save this file as **UNMOUNT.BAT** into the same directory the VCB files are stored: **c:\VMWare\VMWare Consolidated Backup Framework**

STEP 4 – Build the backupset in eBackup for Servers

1. In the eBackup client, click “Backup Set”, “New”, and choose “File Backup Set”
2. Name your backupset
3. Remove the checkmarks automatically present for the “Standard” backupset and select the VM Snap mount point configured when we wrote the BAT files above. In our example, this mount point is F:\vm_images. *NOTE: The mount point is F:\vm_images, not F:\vm_images\vm1. The vm1 subdirectory will be automatically created and deleted as the snapshot is mounted and unmounted.*
4. Select/Configure your backup schedule
5. Configure your encryption key
6. Highlight the newly created backup set in the left pane, and expand the options under it by clicking the “+” sign.
7. Select the Command Line Tool
8. Under the “pre-backup” settings, click the Add button.
 - a. Name the Task: **VM1 Mount**
 - b. Enter name of the 1st BAT created: **MOUNT.BAT**
 - c. Select the working directory: **c:\VMWare\VMWare Consolidated Backup Framework**
9. Under the “post-backup” settings, click the Add button.
 - a. Name the Task: **VM1 Unmount**
 - b. Enter name of the 2st BAT created: **UNMOUNT.BAT**
 - c. Select the working directory: **c:\VMWare\VMWare Consolidated Backup Framework**
10. Configure the backupset to run under the user ID you created in Step 1
 - a. Highlight the name of the backupset in the left pane of the eBackup for Servers client window

- b. Click "Properties"
 - c. Enter the necessary Domain, Login, and Password information and click "OK"
11. Test the backup set by clicking the "Start Backup" icon on the eBackup toolbar.

You should repeat these procedures and create separate BAT files and backupsets for every VM you wish to backup!

Optional and Alternate Configuration Settings and Recommendations

Local Copy Option of eBackup for Server Client

Here at Chicago Records Management, we use the Local Copy option of the eBackup client when backing up Virtual Machines. This allows us to create a second copy of the VM's we backup directly onto our VirtualCenter server. We do this because should we need to restore an entire VM image, we'll need to write the restore to our VirtualCenter server anyway, so this will eliminate a step during a downtime situation. We continue to backup to the eBackup Server for DR purposes. *For additional information about Local Copy, [please click here](#) and refer to page 31.*

How to backup VM's using the above example when not using a SAN

Very simple. Simply substitute "nbd" for "san" in the BAT file examples given earlier:

```
@echo on
vcbmounter -h vcserver -u snapadmin -p password -a ipaddr:vm1.company.com -r f:\vm_images\vm1 -t fullvm -m nbd
```

NOTE: This will move data across the LAN instead of the SAN. If you have a SAN, mounting the data via the "san" option will be *much* faster!

Our own "Best Practices" when backing up CRM's VM's using our eBackup for Servers service

What we found to work well in backing up our own VM's is to:

1. Backup the VM using the "snap" procedure documented in this paper automatically once per month. Manually kick off a backup job after a configuration change. Only backup one VM at a time and allow time for each VM backupset to finish before kicking off the next one.
2. Install and configure an eBackup client *directly* on the VM to protect the daily-changing data.
3. In a disaster, restore the snap image *first*, and then restore the data via the eBackup client running on the VM.

This will allow us to (1) restore entire Virtual Machines and (2) restore individual files.

Additional Resources

Chicago Records Management eBackup for Servers Client

For additional information, including user manuals and downloads, please visit:

<http://www.chicagorecords.com/estorage.htm>

VMWare Consolidated Backup

For additional information about VCB, including additional command line options not detailed in this paper, please visit:

http://www.vmware.com/products/vi/consolidated_backup.html