CA ARCserve® Central Host-Based VM Backup

User Guide

r16.5

technologies

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CA Technologies Product References

This document references the following CA Technologies products:

- CA ARCserve® Backup
- CA ARCserve® D2D
- CA ARCserve® Replication and High Availability
- CA ARCserve® Central Host-Based VM Backup
- CA ARCserve® Central Protection Manager
- CA ARCserve® Central Reporting
- CA ARCserve® Central Virtual Standby

Contact CA

Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information that you need for your Home Office, Small Business, and Enterprise CA Technologies products. At http://ca.com/support, you can access the following resources:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

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To provide feedback about CA Technologies product documentation, complete our short customer survey which is available on the CA Support website at http://ca.com/docs.

Support Links for CA ARCserve Central Applications:

CA Support Online offers a rich set of resources for resolving your technical issues and provides easy access to important product information. With CA Support, you have easy access to trusted advice that is always available. The following links let you access the various CA Support sites that are available:

- **Understanding your Support--**The following link provides information about maintenance programs and support offerings, including terms and conditions, claims, service-level objectives (SLO), and service hours.

  https://support.ca.com/prodinfo/centappssupportofferings

- **Registering for Support--**The following link takes you to the CA Support Online registration form which is used to activate your product support.

  https://support.ca.com/prodinfo/supportregistration

- **Accessing Technical Support--**The following link takes you to the One-Stop Product Support page for CA ARCserve Central Applications.

  https://support.ca.com/prodinfo/arccentapps

Documentation Changes

The following documentation updates have been made since the last release of CA ARCserve Central Host-Based VM Backup:

- Updated to include user feedback, enhancements, corrections, and other minor changes to help improve the usability and understanding of the product or the documentation itself.
- Updated Create Backup Policies (see page 70). This topic now includes two new options on the Backup Settings/Advanced tab: Reserve Space on Destination and Catalogs, and the Preferences/Email Alerts tab: two new Merge job alerts are added and Merge failure removed.
- Updated Edit or Copy Backup Policies (see page 74). This topic now includes two new options on the Backup Settings/Advanced tab: Reserve Space on Destination and Catalogs.
- Updated View CA ARCserve Central Host-Based VM Backup Logs (see page 81). This topic now includes two new options in the Module drop-down: Update Multiple Nodes and CA ARCserve D2D Merge Job.
- Updated Recover an Entire Virtual Machine (see page 94). This topic is now updated to reflect the latest design of the dialog.
- Updated Access Denied Errors Occur When Updating Nodes (see page 120). This topic now includes two solutions for disabling User Account Control (UAC).
- Updated Perform Bare Metal Recovery (see page 149). This topic is now updated to include the new utility (Create Boot Kit for Bare Metal Recovery) to create WinPE ISO to perform BMR. ISO files are no longer provided. In addition, this topic also includes support for BMR from a backup taken on a UEFI machine to a BIOS machine and from a BIOS machine to a UEFI machine.
- Added How to Create a Boot Kit (see page 166). This topic is added to include the new features and functions of the new utility to create WinPE ISO images to perform BMR.

  Note: Create a Boot Kit was removed and replaced with this topic.
- Updated Application Restore - Microsoft Exchange Server with new scenario topics on How to Restore a Microsoft Exchange Application. This topic now includes Exchange 2013 support, see Review the Restore Prerequisites and Considerations.
- Added CA ARCserve Central Host-Based VM Backup Does Not Recognize the Volumes on the Dynamic Disks When Recovering the Virtual Machine to an Alternate ESX Server or Hyper-V Server (see page 147). This topic describes the solution to retrieve the volumes on the dynamic disks.
- Added Exclude Files From Antivirus Scanning (see page 186). This topic describes the files, folders, and processes to exclude before antivirus scanning.

- Updated the following topics to provide built-in or domain administrator credentials to log in to the virtual machine guest operating system.
  - Prerequisite Installation Tasks (see page 17)
  - Solutions for Preflight Check Items (see page 57)
  - Access Denied Errors Occur when Updating Nodes (see page 120)

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Chapter 1: Introducing CA ARCserve Central Host-Based VM Backup

This section contains the following topics:

Introduction

CA ARCserve Central Applications combine core data protection and management technologies with an ecosystem of targeted applications that work in unison to facilitate on- and off-premises protection, copy, movement, and transformation of data across global environments.

CA ARCserve Central Applications are easy to use, manage, and install. It provides organizations with automated control of their information to make educated decisions about the access, availability, and security of their data, based on the overall business value.

About CA ARCserve Central Host-Based VM Backup

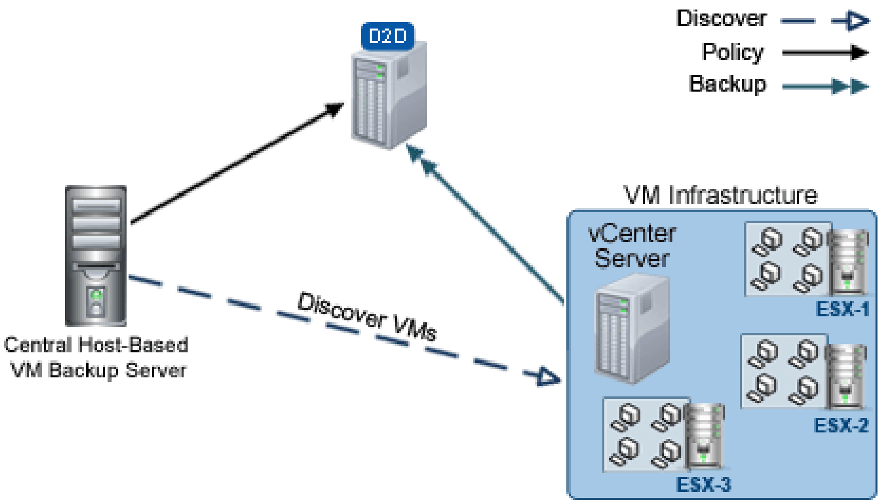
One of the CA ARCserve Central Applications is the CA ARCserve Central Host-Based VM Backup application. This application works with CA ARCserve D2D, which is a light-weight backup solution, and lets you protect multiple virtual machines without having to install the software or an agent on each individual virtual machine. This capability minimizes the adverse effects of running multiple backup operations on the same physical server and lets you perform file-level, application-level, or Bare Metal Recovery (BMR) from your virtual machine backups.

CA ARCserve Central Host-Based VM Backup scales easily so you can add virtual machines, as needed, without having to purchase additional licenses or install software on every virtual machine in your production environment.

How CA ARCserve Central Host-Based VM Backup Works

CA ARCserve Central Host-Based VM Backup lets you protect virtual machines running on an ESX or vCenter Server in a single pass using one instance of CA ARCserve D2D installed on a proxy. Use the following checklist to get started:

1. Install CA ARCserve D2D on one machine (physical or virtual) that acts as a backup proxy in your environment. For installation instructions, refer to the topic, Install CA ARCserve D2D, excerpted from the CA ARCserve D2D User Guide. Verify that the proxy is correctly configured.
2. Add nodes to manage. Specify an ESX server and the application detects the virtual machines running on it that meet requirements.
3. Create backup policies. In each policy, specify the backup proxy where you installed CA ARCserve D2D.
4. Assign backup policies to each VM so you can protect all VMs with the single CA ARCserve D2D instance running on the backup proxy.
5. Create node groups to better manage your virtual machine environment. For example, you can group nodes by business function or by installed application and then assign a policy configured to protect the nodes associated with a specific function or which are running a certain application.



CA ARCserve Central Applications Bookshelf

The topics contained in the CA ARCserve Central Applications Help system are also available as a User Guide in PDF format. The latest PDF version of this guide and Help System can be accessed from the CA ARCserve Central Applications Bookshelf.

The CA ARCserve Central Applications Release Notes files contain information relating to system requirements, operating system support, application recovery support, and other information you may need to know before installing this product. In addition, the Release Notes files contain a list of known issues that you should be aware of before you use CA ARCserve Central Applications. The latest version of the Release Notes can be accessed from the CA ARCserve Central Applications Bookshelf.

Chapter 2: Installing and Configuring CA ARCserve Central Host-Based VM Backup

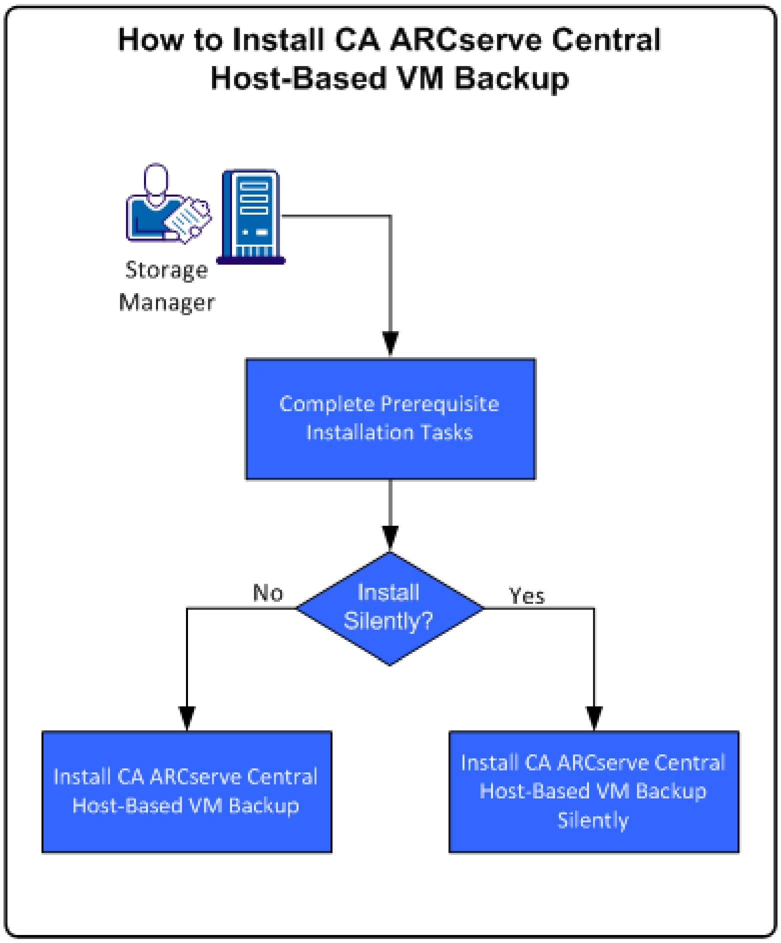
This section contains the following topics:

How to Install CA ARCserve Central Host-Based VM Backup

This scenario describes how Storage Managers can install CA ARCserve Central Host-Based VM Backup using the following methods:

- Standard installation--This method uses Installation Wizard to install the application.
- Silent installation--This method lets you perform an unattended installation using Windows Command Line.

The following diagram illustrates how to install the application:


How to Install CA ARCserve Central Host-Based VM Backup
Storage Manager
Complete Prerequisite Installation Tasks
Install Silently?
No
Yes
Install CA ARCserve Central Host-Based VM Backup
Install CA ARCserve Central Host-Based VM Backup Silently

The following table lists the topics that describe the tasks for installing CA ARCserve Central Host-Based VM Backup:

Task	See Topic
Perform prerequisite installation tasks and review installation considerations before you install the application.	Prerequisite Installation Tasks (see page 17)
Perform a standard installation using the Installation Wizard.	Install CA ARCserve Central Host-Based VM Backup (see page 19)
Perform a silent installation using the Windows Command Line.	Install CA ARCserve Central Host-Based VM Backup Silently (see page 21)

For information on updating various Windows Operating System Components after installing the application, see the Applying Best Practices section in the CA ARCserve Central Host-Based VM Backup User Guide.

Prerequisite Installation Tasks

Before you install the application, complete the following prerequisite tasks and review the installation considerations:

Prerequisite Tasks

- Review the Release Notes. The Release Notes contain a description of system requirements, supported operating systems, and a list of issues that are known to exist with this release of the application.
- Verify that your system meets the software and hardware requirements that are required to install the application.
- Verify that changed block tracking can be enabled and is enabled on the virtual machines that you are protecting.

  Note: For more information about the changed block tracking, see the following Knowledge Base document on the VMware website:

  http://kb.vmware.com/kb/1020128
- Verify that your Windows account has administrator privileges or any other equal privileges to install software on the computers where you plan to install CA ARCserve Central Host-Based VM Backup.
- Verify that your vCenter Server or ESX Server account has VMware and Windows administrative privileges. Assign the account to the Global License role on the vCenter Server system or ESX Server system to allow VDDK operations to complete successfully.

- Verify that you have the user names and passwords of the computers where you are installing the application in your possession.
- Verify that CA ARCserve D2D is installed on the backup proxy system that protects the virtual machines in your production environment.
- If you want granular restore capability from your VM backup, verify that the built-in or domain administrator credentials from any user with administrative privileges are provided to log in to the virtual machine guest operating system.
- CA ARCserve Central Applications lets you install CA ARCserve D2D and upgrade the previous version to the latest version on remote nodes using the Deploy utility. To back up data on the remote nodes using the latest version of CA ARCserve D2D, you must obtain the latest version of CA ARCserve D2D licenses and apply the licenses on the nodes. If you do not apply the licenses within 31 days of the date that you installed or upgraded on the nodes, CA ARCserve D2D stops working.

Installation Considerations

Before you install CA ARCserve Central Host-Based VM Backup, review the following installation considerations:

- The CA ARCserve Central Applications installation package installs a module named CA ARCserve Central Applications Server. The server is a module that is common to all applications. The module contains the web service, binaries, and configurations that let the application communicate with each other.

  When you install the application, the installation package installs the CA ARCserve Central Applications Server module before installing the product components. If it becomes necessary to apply a patch to the application, the patch updates the module before updating the product components.
- After CA ARCserve Central Host-Based VM Backup is installed, download and install VMware VIX API version 1.11 on the backup proxy system and on the computer that is used to perform preflight checks. VMware VIX is used to perform file-level and application level restores from backup.

  Note: For VIX API 1.11, it is required that all virtual machines are updated with the most recent VMware tools.
- CA ARCserve D2D installs VMware Virtual Disk Development Kit (VDDK) on all computers where you install CA ARCserve D2D. You do not need to download and install VDDK on your backup proxy systems.

  If you want to use a different version of VDDK, download and install VDDK and then modify the value of the VDDKDirectory registry located at HKEY_LOCAL_MACHINE\SOFTWARE\CA\CA ARCSERVE D2D to the installation folder where the new VDDK is installed.

  The default location for VDDK is as follows:

  - **x64 Operating System**

    ```
    c:\Program Files (x86)\VMware\VMware Virtual Disk Development Kit
    ```

Note: Unzip the VDDK64.zip file from the VDDK installation directory to the VDDK64 folder.

For example, c:\Program Files (x86)\VMware\VMware Virtual Disk Development Kit\VDDK64

- **x86 Operating System**

  ```
  c:\Program Files\VMware\VMware Virtual Disk Development Kit
  ```

- A local installation of CA ARCserve D2D is required to perform certain restore operations. For more information, see the topic, Restore Considerations (see page 100). Licenses for CA ARCserve D2D are included with CA ARCserve Central Host-Based VM Backup. To obtain the product installation files, visit CA support.
- Virtual compatibility for raw device mapping is supported but physical compatibility is not supported.

Install CA ARCserve Central Host-Based VM Backup

The installation wizard helps guide you through the process of installing one or more CA ARCserve Central Applications.

Note: Before you install an application, review the Release Notes file and verify that all of the tasks described in Prerequisite Tasks are complete.

To install CA ARCserve Central Host-Based VM Backup

1. Download the CA ARCserve Central Applications installation package to the computer where you want to install the application, and then double-click the Setup file.

   The installation package extracts its contents to your computer and then the Prerequisite Components dialog opens.

2. Click Install on the Prerequisites Components dialog.

   Note: The Prerequisite Components dialog opens only if Setup does not detect that the required prerequisite components are installed on your computer.

   After Setup installs the prerequisite components, the License Agreement dialog opens.

3. Complete the required options on the License Agreement dialog and click Next.

   The Configuration dialog opens.

4. On the Configuration dialog, complete the following:

   - **Components--**Specify the applications that you want to install.

     Note: If you are installing this application using the suite installation package, you can install multiple applications.

   - **Location--**Accept the default installation location or click Browse to specify an alternative installation location. The default location is as follows:

     ```
     C:\Program Files\CA\ARCserve Central Applications
     ```

   - **Disk Information--** Verify that your hard drive has sufficient free disk space to install the applications.

   - **Windows Administrator Name--**Specify the user name of the Windows Administrator account using the following syntax:

     ```
     Domain\User Name
     ```

   - **Password--**Specify the password for the user account.

   - **Specify Port Number--**Specify the port number that you want to use to communicate with the web-based user interface. As a best practice, you should accept the default port number. The default port number is as follows:

     ```
     8015
     ```

     Note: If you want to specify an alternative port number, the available port numbers are from 1024 through 65535. Before you specify an alternative port number, verify that the specified port number is free and available for use. Setup prevents you from installing the application using a port that is not available for use.

   - **Use HTTPS for web communication--**Specify to use HTTPS communication for data transmission. By default, this is not selected.

     Note: HTTPS (secure) communication provides a higher level of security than HTTP communication. HTTPS is recommended communication protocol if you transmit confidential information in your network.

   - **Allow Setup to register CA ARCserve Central Applications services and programs to the Windows Firewall as exceptions--**Verify that the check box next to this option is selected. Firewall exceptions are required if you want to configure and manage CA ARCserve Central Applications from remote computers.

     Note: For local users, you do not need to register firewall exceptions.

   Click Next.

   After the installation process is complete, the Installation Report opens.

5. The Installation Report dialog summarizes the installation. If you want to check for updates to the application now, click Check for updates and then click Finish.

The application is installed.

Install CA ARCserve Central Host-Based VM Backup Silently

CA ARCserve Central Applications lets you install CA ARCserve Central Host-Based VM Backup silently. A silent installation eliminates the need for user interaction. The following steps describe how to install the application using Windows Command Line.

To install CA ARCserve Central Host-Based VM Backup silently

1. Open the Windows Command Line on the computer where you want to start the silent installation process.
2. Download the CA ARCserve Central Applications self-extracting installation package to your computer.

   Start the silent installation process using the following Command Line syntax:

   ```
   "CA ARCserve Central Applications Setup.exe" /s /v"/q -Path:<INSTALLDIR>
   -Port:<PORT> -U:<UserName> -P:<Password> -Products:<ProductList>"
   ```

   Usage:

   s

   Lets you run the executable file package in silent mode.

   v

   Lets you specify additional command line options.

   q

   Lets you install the application in silent mode.

   -Path:<INSTALLDIR>

   (Optional) Lets you specify the target installation path.

   Example:

   ```
   -Path:\"C:\Program Files\CA\ARCserve Central Applications\"
   ```

   Note: If the value for INSTALLDIR contains a space, enclose the path with backslashes and quotation marks. Additionally, the path cannot end with a backslash character.

   -Port:<PORT>

   (Optional) Lets you specify the port number for communication.

   Example:

   ```
   -Port:8015
   ```

   -U:<UserName>

   Lets you specify the user name to use to install and run the application.

   Note: The user name must be an administrative account or an account with administrative privileges.

-P:<Password>

Lets you specify the password for UserName.

-Products:<ProductList>

(Optional) Lets you specify CA ARCserve Central Applications to install silently. If you do not specify a value for this argument, the silent installation process installs all components of CA ARCserve Central Applications.

CA ARCserve Central Host-Based VM Backup

VSPHEREX64

CA ARCserve Central Protection Manager

CMX64

CA ARCserve Central Reporting

REPORTINGX64

CA ARCserve Central Virtual Standby

VCMX64

All CA ARCserve Central Applications

ALL

Note: The following examples describe the syntax that is required to install one, two, three, or all CA ARCserve Central Applications silently:

```
-Products:CMX64
-Products:CMX64,VCMX64
-Products:CMX64,VCMX64,REPORTINGX64
-Products:ALL
```

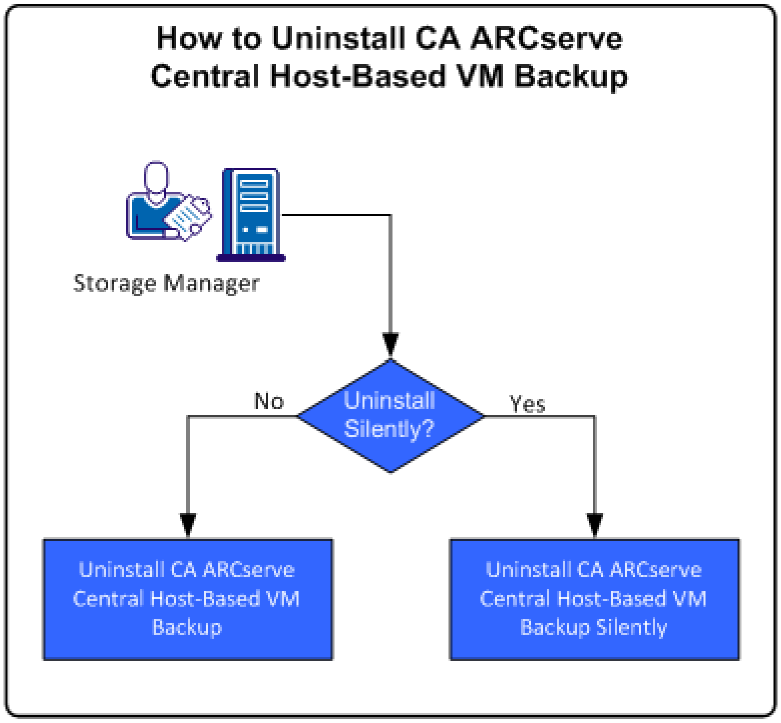
The application is installed silently.

How to Uninstall CA ARCserve Central Host-Based VM Backup

You can uninstall CA ARCserve Central Host-Based VM Backup using the following methods:

- Standard uninstallation--This method uses Windows Control Panel to uninstall the application.
- Silent uninstallation--This method lets you perform an unattended uninstallation using Windows Command Line.

The following diagram illustrates how to uninstall the application:


How to Uninstall CA ARCserve Central Host-Based VM Backup
Storage Manager
Uninstall Silently?
No
Yes
Uninstall CA ARCserve Central Host-Based VM Backup
Uninstall CA ARCserve Central Host-Based VM Backup Silently

Task	See Topic
Perform a standard uninstallation using Windows Control Panel.	Uninstall CA ARCserve Central Host-Based VM Backup (see page 24)
Perform a silent uninstallation using the Windows Command Line.	Uninstall CA ARCserve Central Host-Based VM Backup Silently (see page 24)

For information on updating various Windows Operating System Components after uninstalling the application, see the Applying Best Practices section in the CA ARCserve Central Host-Based VM Backup User Guide.

Uninstall CA ARCserve Central Host-Based VM Backup

You can uninstall the application using Programs and Features located in Windows Control Panel.

To uninstall CA ARCserve Central Host-Based VM Backup

1. From the Windows Start menu, click Start and click Control Panel.

   Windows Control Panel opens.

2. From Windows Control Panel, click the drop-down list next to View by and then click Large icons or Small icons.

   The icons for the Windows Control Panel applications appear in a grid layout.

3. Click Programs and Features.

   The Uninstall or change a program window opens.

4. Locate and click the application that you want to uninstall.

   Right-click the application and click Uninstall on the pop-up menu.

   Follow the on-screen instructions to uninstall the application.

The application is uninstalled.

Uninstall CA ARCserve Central Host-Based VM Backup Silently

CA ARCserve Central Applications lets you uninstall CA ARCserve Central Host-Based VM Backup silently. A silent uninstallation eliminates the need for user interaction. The following steps describe how to uninstall the application using Windows Command Line.

To uninstall CA ARCserve Central Host-Based VM Backup silently

1. Log in to the computer where you want to uninstall the application.

   Note: You must log in using an administrative account or an account with administrative privileges.

2. Open the Windows Command Line and execute the following command to start the silent uninstallation process:

   ```
   <INSTALLDIR>%\Setup\uninstall.exe /q /p <ProductCode>
   ```

   Or,

   ```
   <INSTALLDIR>%\Setup\uninstall.exe /q /ALL
   ```

   Example: The following syntax lets you uninstall CA ARCserve Central Host-Based VM Backup silently.

   ```
   "%ProgramFiles%\CA\ARCserve Central Applications\Setup\uninstall.exe" /q /p
   {CAED49D3-0D3C-4C59-9D99-33AFAF0C7126}
   ```

Usage:

<INSTALLDIR>

Lets you specify the directory where the application is installed.

Note: Execute the syntax that corresponds with the architecture of the operating system on the computer.

<ProductCode>

Lets you specify the application to uninstall silently.

Note: The silent uninstallation process lets you install one or more CA ARCserve Central Applications. Use the following product codes to uninstall CA ARCserve Central Applications silently:

CA ARCserve Central Host-Based VM Backup

{CAED49D3-0D3C-4C59-9D99-33AFAF0C7126}

CA ARCserve Central Protection Manager

{CAED05FE-D895-4FD5-B964-001928BD2D62}

CA ARCserve Central Reporting

{CAED8DA9-D9A8-4F63-8689-B34DEEEEC542}

CA ARCserve Central Virtual Standby

{CAED4835-964B-484B-A395-E2DF12E6F73D}

The application is uninstalled silently.

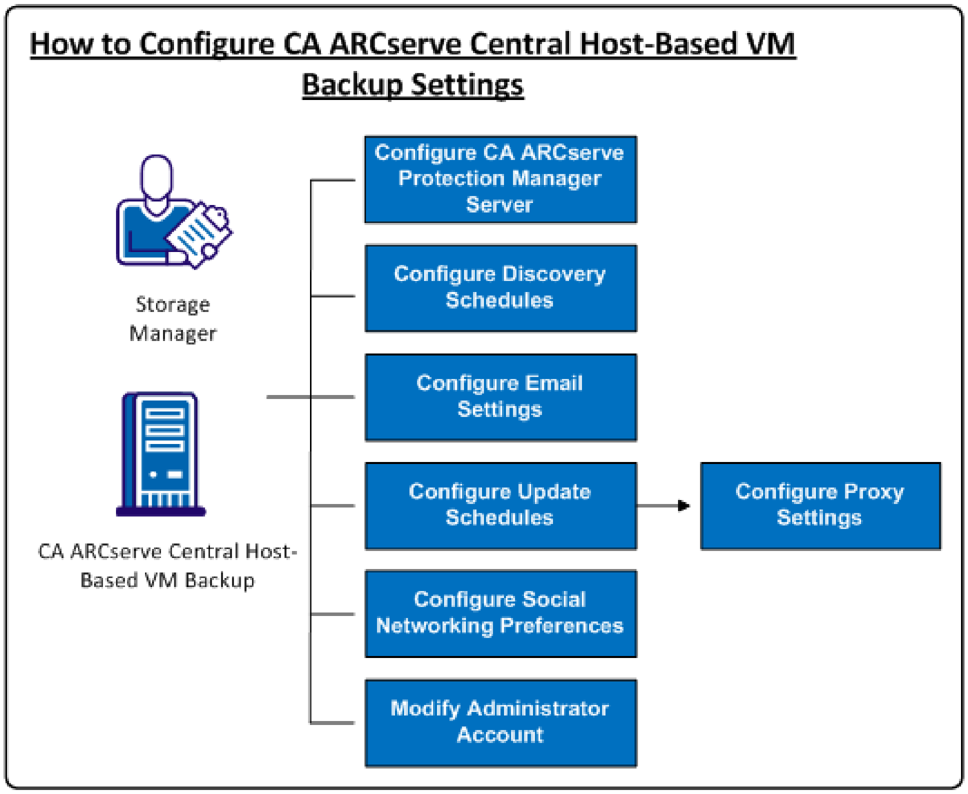
How to Configure CA ARCserve Central Host-Based VM Backup to Protect CA ARCserve D2D Nodes

The application lets you specify configuration settings for email alerts and schedules and how to update your CA ARCserve Central Host-Based VM Backup installation.

Before you start specifying your configuration settings, it is required that you first install CA ARCserve D2D on the server that performs your backup jobs. This peer, or proxy server, can be a single computer or multiple computers, depending on your needs. For instructions, refer to the topic, Install CA ARCserve D2D, excerpted from the CA ARCserve D2D User Guide.

You can install CA ARCserve Central Host-Based VM Backup on the same or a separate computer. The Installation procedure is wizard-based to make the setup easy. For more information, see Install CA ARCserve Central Host-Based VM Backup.

The following illustration describes the types of configurations you can set for your application:



How to Configure CA ARCserve Central Host-Based VM Backup Settings

Storage Manager
CA ARCserve Central Host-Based VM Backup
Configure CA ARCserve Protection Manager Server
Configure Discovery Schedules
Configure Email Settings
Configure Update Schedules
Configure Proxy Settings
Configure Social Networking Preferences
Modify Administrator Account

This scenario describes the following topics:

- Configure CA ARCserve Central Protection Manager Server (see page 27)
- Configure Discovery Schedules (see page 29)

- Configure Email Settings (see page 29)
- Configure Update Schedules (see page 30)
  - Configure Proxy Settings (see page 31)
- Configure Social Networking Preferences (see page 33)
- Modify Administrator Account (see page 34)

Configure the CA ARCserve Central Protection Manager Server

Configuring the CA ARCserve Central Protection Manager server lets you change the current settings in CA ARCserve Central Host-Based VM Backup to CA ARCserve Central Protection Manager server settings. When the settings are configured, you can view the Host-Based VM Backup discovered nodes email alert information from CA ARCserve Central Reporting.

Follow these steps:

1. Log in to the CA ARCserve Central Host-Based VM Backup server and click Configuration on the Navigation bar.

   The Configuration screen displays.

2. From the Configuration panel, click CA ARCserve Central Protection Manager Configuration.

3. Complete the following fields:

   - **CA ARCserve Central Protection Manager Server**

     Note: With CA ARCserve Central Protection Manager and CA ARCserve Central Host-Based VM Backup installed, the following fields default to the local CA ARCserve Central Protection Manager server. If CA ARCserve Central Protection Manager is not installed, the fields remain blank and it requires you to configure it manually. You can view the discovered nodes alert information from CA ARCserve Central Reporting.

    - **Machine Name**--The Host Name of the computer where CA ARCserve Central Protection Manager is installed.
    - **User Name**--The User Name that is required to log in to the computer where CA ARCserve Central Protection Manager is installed.
    - **Password**--The password for the user.
    - **Port**--The port number that you must use to communicate with the CA ARCserve Central Protection Manager Web Service.
    - **HTTPS**--This option is selected or unselected based on the connection configured in the CA ARCserve Central Protection Manager server.
  - **Detect Port and Protocol Automatically**--Lets you obtain the CA ARCserve Central Protection Manager Port and Protocol of the Protection Manager database and populates the previous fields.

    Note: This option is enabled only if the remote registry access of the CA ARCserve Central Protection Manager server is allowed.

    To verify if the remote registry is allowed or not, perform the following steps:

    1. Go to the CA ARCserve Central Protection Manager server where CA ARCserve Central Protection Manager is installed.

    2. Navigate to services.msc and verify that the 'Remote Registry' service has started.

    3. Set to 'Automatic'.
  - **Test--**Lets you verify that the access information for the CA ARCserve Central Protection Manager is correct.

4. Click Save.

Configure Discovery Schedules

You can configure the Discovery schedule for nodes on a repeating basis and on a scheduled time. By default, Discovery Configuration is disabled. To enable the configuration, click the Enable option to specify the type of repeating method that you want and a scheduled time for the node discovery to begin. You can specify the following parameters to configure your Discovery schedule:

- **Every number of days--**Lets you repeat this method on the number of days that are specified. (Default)
- **Every selected day of the week--**Lets you repeat this method on the days that are specified. Monday, Tuesday, Wednesday, Thursday, and Friday are the default days of the week.
- **Every selected day of the month--**Lets you repeat this method on the specified day of the month. 1 is the default option for the day of the month.

A vCenter/ESX Host list is displayed for you to view when setting up a schedule to discover nodes.

Configure the Email and Alert Settings

You can configure email and alert settings for use with your application to send alerts automatically under conditions you specify.

Follow these steps:

1. Log in to the application.

   From the Navigation bar on the home page, click Configuration to open the Configuration screen.

2. From the Configuration panel, click Email and Alert Configuration to open the Email and Alert Configuration options.

3. Complete the following fields:

   - **Service**--Specify the type of email service from the drop-down. (Google Mail, Yahoo Mail, Live Mail or Other).
   - **Mail Server**--Specify the host name of the SMTP server that you want CA ARCserve Central Applications to use to send email.
   - **Requires Authentication**--Select this option when the mail server that you specified requires authentication. The Account Name and Password are required.
   - **Subject**--Specify a default email subject.
   - **From**--Specify the email address the email is being sent from.
   - **Recipients**--Specify one or more email addresses, separated by a semicolon(;), the email is being sent to.
   - **Use SSL**--Select this option if the mail server you specified requires secure connection (SSL).
   - **Send STARTTLS**--Select this option if the mail server you specified requires STARTTLS command.
   - **Use HTML format**--Lets you send the email messages in HTML format. (selected by default)
   - **Enable Proxy Settings**--Select this option if there is a proxy server and then specify the proxy server settings.

4. Click Test Email to verify that the mail configuration settings are correct.
5. (Optional) From the Send Email Alerts section, click Discovered nodes to let the application send email alert messages when new nodes are discovered.
6. Click Save.

   Note: You can click Reset to revert to the previously saved values or click Delete to delete your saved settings. Deleting your email and alert settings prevents you from receiving email alert messages.

The email configuration is applied.

Configure Update Schedules

The application lets you set up a schedule that automatically downloads product updates from a CA Server or a local software staging server.

Follow these steps:

1. Log in to the application.
2. Click Configuration on the Navigation bar to open the Configuration screen.

3. From the Configuration panel, click Update Configuration.

   The update configuration options appear.

4. Select a Download Server.

   - **CA Server**--Click Proxy Settings for the following options:

     - **Use browser proxy settings--**Lets you use the credentials that provided for the browser proxy settings.

       Note: The Use browser proxy settings option affects Internet Explorer and Chrome.

     - **Configure proxy settings**--Specify the IP Address or Host Name of the proxy server and the port number. If the server you specified requires authentication, click Proxy server requires authentication and provide the credentials.

       Click OK to return to Update configuration.

   - **Staging Server--**If you select this option, click Add Server to add a staging server to the list. Enter its host name and Port number and click OK.

     If you specify multiple staging servers, the application tries to use the first server listed. If connection succeeds, the remaining servers listed are not used for staging.

5. (Optional) Click Test Connection to verify the server connection and wait until the test completes.

6. (Optional) Click Automatically check for updates, and then specify the day and time. You can specify a daily or weekly schedule.

Click Save to apply the Update configuration.

Configure Proxy Settings

CA ARCserve Central Applications let you specify a proxy server to communicate with CA Support to check for and download available updates. To enable this capability, you specify the proxy server that you want to communicate in behalf of the CA ARCserve Central Applications server.

Follow these steps:

1. Log in to the application and click Configuration on the Navigation bar.

   The Configuration options appear.

2. Click Update Configuration.

   The update configuration options display.

3. Click Proxy Settings.

   The Proxy Settings dialog opens.

4. Click one of the following options:

   - **Use browser proxy settings--**Lets the application detect and use the same proxy settings that are applied to the browser to connect to the CA Technologies server for update information.

     Note: This behavior applies to only Internet Explorer and Chrome browsers.

   - **Configure proxy settings--**Lets you define an alternative server that the application will use to communicate with CA Support to check for updates. The alternative server (proxy) can help ensure security, increased performance, and administrative control.

     Complete the following fields:

     - **Proxy Server--**Specify the host name or IP address of the proxy server.
     - **Port--**Specify the port number that the proxy server will use to communicate with the CA Support website.
     - **(Optional) Proxy server requires authentication--**If the login credentials for the proxy server are not the same as the credentials for the CA ARCserve Central Applications server, click the check box next to Proxy server requires authentication and specify the User Name and Password that is required to log in to the proxy server.

       Note: Use the following format to specify the user name: <domain name>/<user name>.

   Click OK.

The proxy settings are configured

Note: To help ensure that CA ARCserve Central Host-Based VM Backup can deploy policies to nodes and can protect CA ARCserve D2D nodes, verify that the Host-Based VM Backup server and the proxy server can communicate with each other using their host names. Perform the following steps:

1. From the CA ARCserve Central Host-Based VM Backup server, ping the proxy server using the host names of the server.
2. From the proxy server, ping the CA ARCserve Central Host-Based VM Backup server using the host name of the server.

Configure Social Networking Preferences

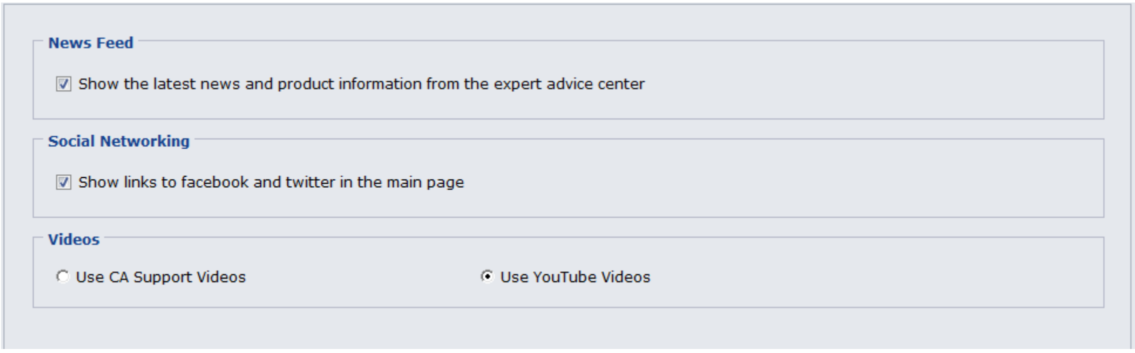
CA ARCserve Central Applications let you manage the social networking tools that can help you manage each application. You can generate news feeds, specify links to popular social networking websites, and select video source websites.

Follow these steps:

1. Log in to the application.

   From the Navigation bar on the home page, click Configuration to open the Configuration screen.

2. From the Configuration panel, click Preferences Configuration to open the Preferences options.



News Feed

☑ Show the latest news and product information from the expert advice center

Social Networking

☑ Show links to facebook and twitter in the main page

Videos

○ Use CA Support Videos ● Use YouTube Videos

3. Specify the options that you require:

   - **News Feed--**Lets the application display RSS feeds about CA ARCserve Central Applications and CA ARCserve D2D related news and product information (from the Expert Advice Center). The feeds appear on the home page.
   - **Social Networking--**Lets the application display icons on the home page for access to Twitter and Facebook for CA ARCserve Central Applications and CA ARCserve D2D related social networking websites.
   - **Videos**--Lets you select the type of video to view your CA ARCserve Central Applications and CA ARCserve D2D products. (Use YouTube Videos is the default video.)

   Click Save.

   The Social Networking options are applied

4. From the Navigation bar, click Home.

   The Home Page displays.

5. Refresh your browser window.

   The Social Networking options are applied.

Modify the Administrator Account

CA ARCserve Central Applications let you modify the user name, password, or both for the administrator account after you install the application. This administrator account is used only for the default display user name on the login screen.

Note: The user name specified must be a Windows administrative account or an account that has Windows administrative privileges.

Follow these steps:

1. Log in to the application and click Configuration in the Navigation bar.

   The configuration options appear.

2. Click Administrator Account

3. The Administrator account settings appear.

4. Update the following fields, as required:

   - User Name
   - Password

   Click Save

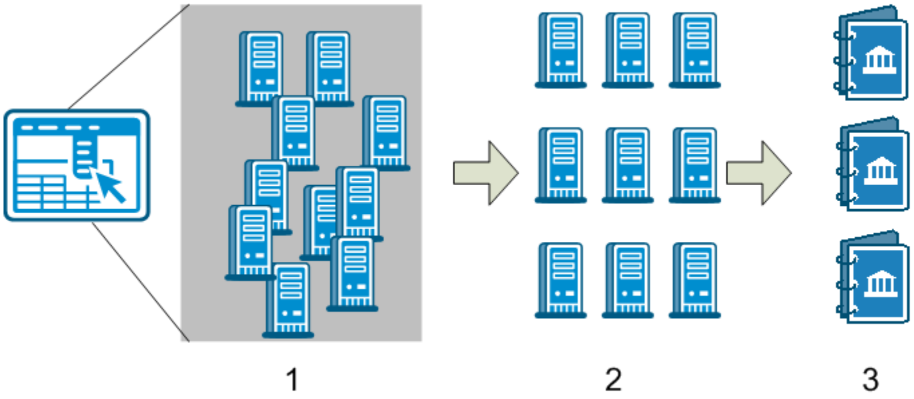
The administrator account is modified.

Chapter 3: Using CA ARCserve Central Host-Based VM Backup

This section contains the following topics:

How You Set Up Your Production Environment

Protecting your virtual machine environment requires a few basic activities:



1. Add the nodes to CA ARCserve Central Host-Based VM Backup. You can import all virtual machines hosted by an ESX or vCenter Server.
2. Group the nodes to make them easier to manage. For example, you can group nodes by business function, or by installed applications.
3. Create back up policies and assign a policy to a node. All nodes are backed up according to the policy you set.

How to Use the CA ARCserve Central Host-Based VM Backup Home Page

Launching the CA ARCserve Central Host-Based VM Backup opens a home page in your web browser. From the home page, you can perform the following tasks:

- **Left-side Navigation**:
  - **Node**--Node screen lets you view your virtual machine environment according to node groups, installed applications and vSphere Policy assigned.
  - **Policies**--vSphere Policies screen lets you create, edit, and assign backup policies to all nodes in your environment.
  - **Configuration**--Configuration screen lets you specify the email alerts and auto-update schedule for the application.
  - **View Logs**--View Logs screen lets you find specific issues: Information, Errors, or Warnings.
  - **Add New tab**--You can manually add the name and URL of any website you want to monitor.
  - **CA Support**--Lets you get access to various support and social network sites including Facebook and Twitter.

Log In to CA ARCserve D2D Nodes

From the Host-Based VM Backup home page, you can log in to CA ARCserve D2D nodes.

To log in to CA ARCserve D2D nodes

1. Open the application and click Nodes in the Navigation Bar.

   The Node screen displays.

2. From the Groups list, click All Nodes, or click the group that contains the CA ARCserve D2D node that you want to log in to.

   The nodes list displays all nodes associated with the specified group.

3. Browse to and click the node that you want to log in to and then click Login D2D from the pop-up menu.

   A CA ARCserve Central Host-Based VM Backup version of CA ARCserve D2D opens.

   Note: If a new browser window does not open, verify that the pop-up options for your browser allow all pop-ups or pop-ups only for this website.

You are logged in to the CA ARCserve D2D node.

Note: The first time that you log in to the CA ARCserve D2D node, an HTML page may open and display a warning message. This behavior can occur when using Internet Explorer. To correct this behavior, close Internet Explorer and repeat Step 3. You should then be able to log in to the CA ARCserve D2D node successfully.

How to Manage Node Tasks for CA ARCserve Central Host-Based VM Backup

This scenario explains how Storage Managers can manage nodes. For example, adding or discovering nodes, assigning nodes to node groups, and updating or deleting nodes from the Node screen.

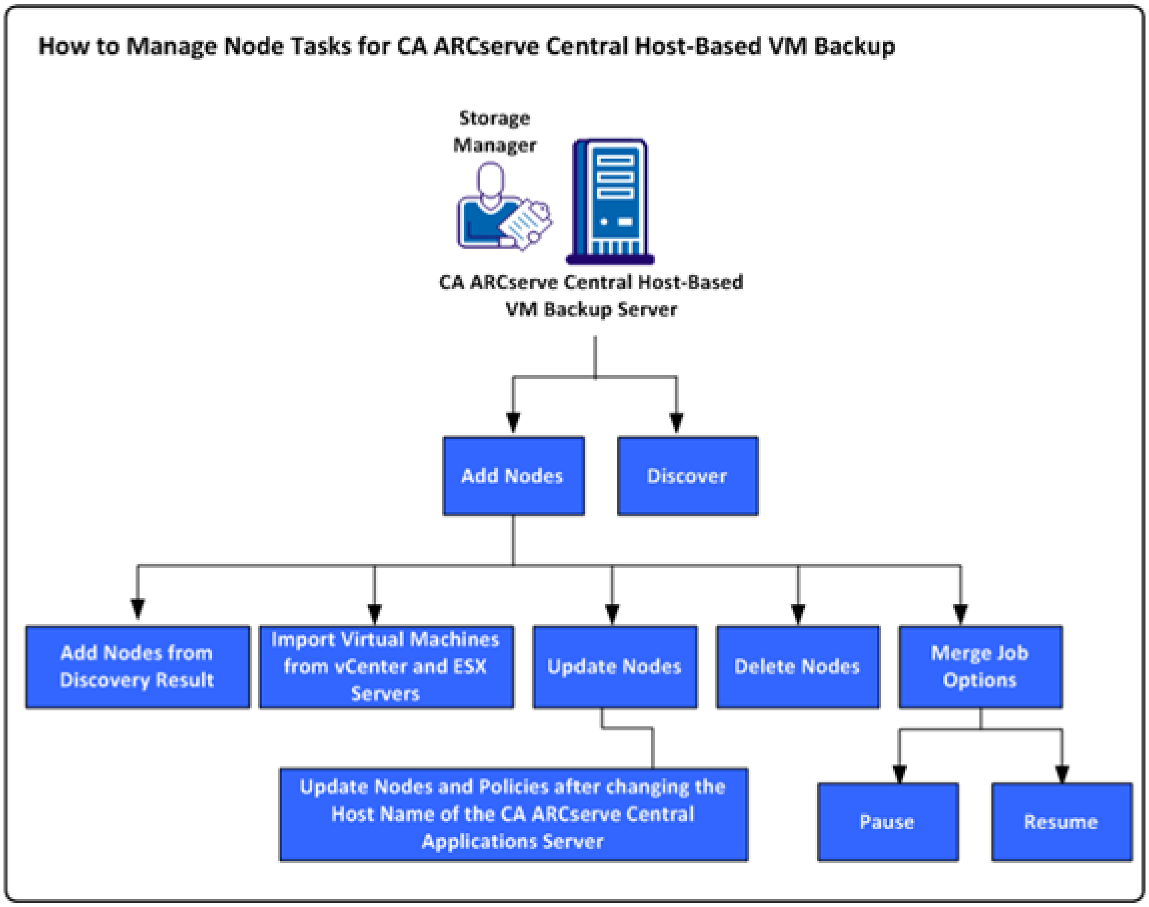
The following table describes the items that are displayed on the Node screen:

Column Name	Description
Node Name	Displays the name of the node. **Note**: Some nodes that are listed may not be enabled for you to select. The reason is because the node cannot be detected by the server. For example, the node can be deleted from the server.
Policy	Displays the name of the policy and the policy deployment status.
Virtual Machine Name	Displays the name of the virtual machine.

Column Name	Description
vCenter/ESX	Displays the server details that helps detect virtual machines.
Job (see page 67)	Displays the status of the backup job and links you to the Backup Status Monitor (see page 68) for more details.
Status	Displays the status of the node: ■ ❌ = Error/Failed ■ ❗ = Warning ■ ✅ = Successful If you hover your mouse over the icon, a Node Status Summary pop-up table appears with results for the following categories: ■ Last Backup - Displays the type, the date and time, and the status of the backup. ■ Recovery Points - Displays the number of recovery points for your monitored server. ■ Destination Capacity - Displays the amount of free space available at your backup destination.
Last Backup Result	Displays the status of the last backup job.
Last Backup Time	Displays the date and time of the last backup job.

Column Name	Description
PFC Status	Displays the status of the preflight check for your backup jobs: ■ ✖ = Error/Failed ■ ❗ = Warning ■ ✓ = Successful The icon determines whether a backup job can run or not for the specific node. If you hover your mouse over the icon, a Verification pop-up table appears with results for the following categories: ■ Changed Block Tracking (CBT) - Displays the CBT result for the backup. ■ VMware Tools - Displays whether the VMware tool is installed or not. ■ Disk - Displays the status of the disk. ■ Power State - Displays whether the virtual machine is powered on or off. ■ Credentials - Displays the status of the user credentials. ■ Applications - Displays the installation status of the application on the node. For more details, see topic Perform Preflight Checks for Your Backup Jobs (see page 56).
Applications	Displays what application the node is associated with.
OS	Displays what operating system the node is associated with.
Description	Displays a description of the node.

The following diagram illustrates the tasks that you can perform on Nodes.


How to Manage Node Tasks for CA ARCserve Central Host-Based VM Backup
Storage Manager
CA ARCserve Central Host-Based VM Backup Server
Add Nodes
Discover
Add Nodes from Discovery Result
Import Virtual Machines from vCenter and ESX Servers
Update Nodes
Delete Nodes
Merge Job Options
Update Nodes and Policies after changing the Host Name of the CA ARCserve Central Applications Server
Pause
Resume

This scenario describes the options that you can use when adding or updating nodes:

- Discover (see page 41)
- Add Nodes (see page 42)
  - Add Nodes from Auto Discovery Result Automatically (see page 43)
  - Import Virtual Machines from vCenter and ESX Servers (see page 44)
- Update Nodes (see page 45)
  - Update Nodes and Policies after changing the Host Name of the CA ARCserve Central Applications Server (see page 46)
- Delete Nodes (see page 46)
- Merge Job Options (see page 47)
  - Pause a Merge Job on a Node (see page 47)
  - Resume a Merge Job on a Node (see page 48)

Discover Nodes from CA ARCserve Central Host-Based VM Backup

CA ARCserve Central Host-Based VM Backup lets you discover nodes automatically by adding vCenter Server and ESX Server systems to your environment. By adding them, the application can detect virtual machines that they host automatically.

Important! The process of discovering nodes requires you to specify the host name or IP address of the vCenter Server or ESX Server system. This information lets the discovery process discover virtual machines attached to vCenter Server and ESX Server systems. When you find it necessary to modify the host name or IP address of a vCenter Server or ESX Server system, repeat the steps in this topic and then redeploy the backup policy to create a new backup set with the updated host name or IP address.

Follow these steps:

1. Log in to the application and click Node on the Navigation bar to open the Node screen.
2. Click Discover on the toolbar to open Discover Nodes by vCenter/ESX server dialog.
3. On the Discover Nodes by vCenter/ESX server dialog, complete the following fields:
   - vCenter/ESX Host
   - User Name

     Note: The account that you specify must be an account with administrative privileges on the ESX Server or vCenter Server system.
   - Password
   - Port

   Click Add.

   Note: Repeat this step to add more vCenter/ESX Server systems.
4. Click Discover to start the discovery process.

   The Discovery Monitor opens, showing the discovery progress.
5. When the discovery process completes, a confirmation message appears: Do you want to continue to add nodes from Discovery Result?

   Click Yes and the Add nodes from the Discovery Result screen is displayed or click No if you have more hypervisors to add.

   Note: To detect the nodes automatically and add them to the Node Name list, see the topic Configure Discovery Schedules for more details.
6. From the Nodes Discovered list, click the nodes that you want to add and then click the right arrow. The nodes are added to the Nodes to Protect list.
7. Click Next to open the Node Credentials screen.

8. Provide a user name and password for each node you want to add or specify the appropriate global credentials.

   Click Finish.

   The nodes that you selected are added to the Node Names list on the Node screen for the Node Group selected.

9. (Optional) Click Refresh. The server that you added is now listed in the Groups list on the Node screen.

10. (Optional) Click Discover and repeat the previous steps until all servers are added.

Add Nodes

As your environment grows, you can use the Node screen to add nodes and then assign nodes to groups that you want to manage within the application. The application adds only virtual machines where:

- Guest OS is Windows
- VMware hardware version is 7 or greater.

You can add nodes using the following processes:

- Add nodes from Discovery Result (see page 43)--Discovery permits you to enter ESX and vCenter Server details, detect the virtual machines running on each server and then manually or automatically add the detected nodes to the application where they can be managed and protected.

  Servers added to the Discover list are scanned according to the schedule you specify on the Configuration screen until you remove them. You do not need to enter server details again. The Discover list displays only new virtual machines added to a server since the last scan. It does not show the VMs already managed in the application. You can also run Discover without waiting for the next scheduled scan.

- Import virtual machines from vCenter/ESX (see page 44)

  This option is a manual process. The process requires that you specify ESX or vCenter server details each time you launch it. You can add servers to the discovery list when you want to avoid re-entering server details. This option lists all the virtual machines that are detected on the specified server, even if they are already managed in the application.

Add Nodes from Discovery Result

This option lets you select the nodes that are automatically detected based on the settings you specified in the Discovery Configuration panel.

Follow these steps:

1. Log in to the application.

   Click Nodes on the Navigation bar to open the Nodes screen.

2. From the Node category, click Add and then click Add nodes from Discovery result on the pop-up menu.

   The Add nodes from Discovery result screen opens displaying a list of the discovered nodes.

3. From the Nodes Discovered list, select the nodes that you want to add and click the arrow to add them to the Nodes to Protect list. Click Next when you are finished.

   Note: You can filter the list by Node Name or Domain to minimize the list.

4. (Optional) Select one or more nodes and click Hide Selected Nodes to hide nodes you do not want to back up.

5. (Optional) Check the Show hidden nodes option to display any hidden nodes back on to the Nodes Discovered list. To hide the nodes again, uncheck the option.

6. On the Node Credentials screen, provide a User Name and Password for the node you want to add. You can specify global credentials or can apply credentials to the selected nodes.

7. Click Finish.

The nodes are added.

Import Virtual Machines from vCenter/ESX

You can add nodes using the Import virtual machines from the vCenter/ESX Server option. This task lets the application discover all of the virtual machines running on the specified host, but does not perform periodic automatic scans. If you add virtual machines later, repeat this procedure or the new virtual machines are not recognized.

Consider the following distinctions between this option and the Discover task:

- Specify ESX Server and vCenter Server details each time you launch this option.
- You have the option of adding any servers you specify to the Discover list so you do not have to enter credentials each time.
- All available virtual machines are listed every time that you use this option. Even the virtual machines that are managed by the application are listed.

Follow these steps:

1. Log in to the application.

   Click Node on the Navigation bar to open the Node screen.

2. Click Add on the toolbar and then click Import virtual machines from vCenter/ESX on the pop-up menu.

   The Discover Nodes dialog opens.

3. Complete the following fields on the Discover Nodes dialog:

   - vCenter/ESX Host

     Note: As a best practice, specify the host name or IP address of the vCenter Server system while importing virtual machines when you are running VMware Distributed Resource Scheduling (DRS) in your environment. This approach ensures that CA ARCserve Central Host-Based VM Backup can detect the virtual machines running in your environment and backups of DRS enabled virtual machines complete successfully. To prevent backup failure when virtual machines move across the ESX servers, it is recommended that you do not specify the host name or IP address of the ESX server while importing virtual machines.

     For more information about Distributed Resource Scheduling, see the VMware website.

   - User Name
   - Password
   - Port
   - Protocol

   Click Connect and wait until the scanning is complete.

4. (Optional) Enable the option Add vCenter/ESX server to Discovery list automatically.

5. Click Next to open the Node Credentials dialog.
6. On the Node Credentials screen, provide a global User Name and Password for all virtual machines that are detected and click the Apply to selected option. Or, click a VM to enter specific credentials.
7. Click Finish.

The virtual machines that you selected are added to the Node Group that you specified.

Note: CA ARCserve Central Host-Based VM Backup is unable to detect the host names of virtual machines that are in a powered off state or VMware Tools is not installed. Under these conditions, Unknown displays in the Host Name field on the Node screen after you import the nodes. In addition, the Node Name filter (on the Node screen) cannot filter nodes that are named using Unknown.

Update Nodes

CA ARCserve Central Host-Based VM Backup lets you update information about nodes that were added previously.

Follow these steps:

1. Log in to the application.

   From the Navigation Bar on the home page, select Node.

   The Node screen displays.
2. From the Groups bar, click the All Nodes group or click the group name containing the nodes that you want to update.

   The nodes that are associated with the group appear in the nodes list.
3. Click the nodes that you want to update and then right-click and click Update Node from the pop-up menu.

   The Update Node dialog opens.

   Note: To update all nodes in the node group, right-click the Node Group name and then click Update Node from the pop-up menu.
4. Update the node details as needed.

   Note: To update multiple nodes on the Node list, select the desired nodes, right-click any node, and click Update Node from the pop-up menu. The user name and password are the same for all selected nodes. By default, the Specify new credentials option and the Take control of the node check box is selected. You can specify a new user name and password for the selected nodes and can force this server to manage the nodes. In addition, you can select Use existing credentials to apply the current user name and password. The fields become disabled.

5. Click OK.

   The Update Node dialog closes and the nodes are updated.

Update Nodes and Policies After Changing the Host Name of the CA ARCserve Central Applications Server

After you change the host name of the CA ARCserve Central Host-Based VM Backup server, you update the nodes and the policies that are applied to the nodes. You perform these tasks to maintain the relationship between the server and the nodes that the server is protecting. The following table describes the possible scenarios and the corrective action for each scenario.

Scenario	Corrective Action
The node was added after the host name of the CA ARCserve Central Host-Based VM Backup server was changed.	No corrective actions are required.
The node was added before the host name of the CA ARCserve Central Host-Based VM Backup server was changed and a policy was not applied to the node.	Update the node. For more information, see Update Nodes (see page 45).
The node was added before the host name of the CA ARCserve Central Host-Based VM Backup server was changed and a policy was applied to the node.	Reapply the policy. For more information, see Assign Policies to Virtual Machines.

Delete Nodes

You may delete nodes as needed.

Follow these steps:

1. Log in to the application.

   Click Node on the Navigation bar to open the Node screen.

2. From the Groups bar, click the All Nodes group or click the group name containing the node that you want to delete.

   The nodes that are associated with the group appear in the nodes list.

3. Check one or more nodes that you want to delete and then click Delete on the toolbar.

   A confirmation message opens.

4. Do one of the following:

   - Click Yes to delete the node.
   - Click No if you do not want to delete the node.

Merge Job Options

CA ARCserve Central Host-Based VM Backup lets you pause and resume merge jobs for each node at any time. The process of pausing and resuming merge jobs does not affect in-progress jobs.

Pause a Merge Job on a Node

CA ARCserve Central Host-Based VM Backup lets you pause a merge job on a specific node.

For example, merge jobs can consume system resources and cause backup jobs to run slowly. Use the pause option to stop an in-progress merge job so that in-progress backup jobs can complete at their highest level of efficiency. After the backups complete, you can then resume the merge job.

Follow these steps:

1. From the CA ARCserve Central Host-Based VM Backup home page, click Node on the Navigation bar to open the Node screen.
2. Select the node group that contains the nodes with merge jobs you want paused.

   A list of nodes for the selected Node Group displays.

3. Click the nodes with merge jobs you want paused. Then right-click the selected nodes and click Pause Merge Job from the pop-up menu.

   Note: By default, the Pause Merge Job option is disabled. When the node is running a merge job, as indicated in the Job column, the Pause Merge Job option becomes enabled.

The merge job of the selected node is paused and can be verified on CA ARCserve D2D home page.

Resume a Merge Job on a Node

CA ARCserve Central Host-Based VM Backup lets you resume merge jobs that were paused for a specific node.

Follow these steps:

1. From the CA ARCserve Central Host-Based VM Backup home page, click Node on the Navigation bar to open the Node screen.
2. Select the node group that contains the nodes with merge jobs you want resumed.

   A list of nodes for the selected Node Group displays.
3. Click the nodes with merge jobs that are paused which you now want resumed. Then right-click the selected nodes and click Resume Merge Job from the pop-up menu.

   Note: The Resume Merge Job option is enabled when a backup job is not running and the merge jobs are paused.

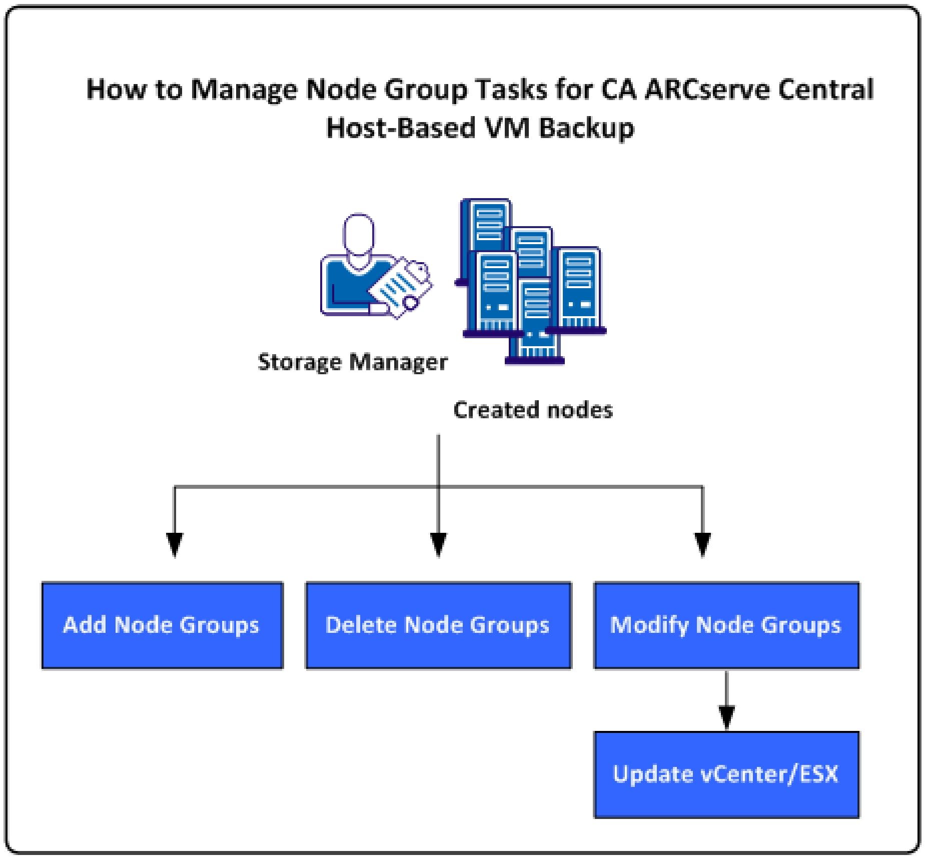
The merge job of the selected node is resumed and can be verified on CA ARCserve D2D home page.

How to Manage Node Group Tasks for CA ARCserve Central Host-Based VM Backup

With CA ARCserve Central Host-Based VM Backup, a Storage Manager can protect numerous virtual machines as easily as protecting one.

Start by adding nodes. You can group nodes by application or by their purpose. Creating node groups let you easily visualize your virtual machines environment. You can create backup policies and can assign a policy to nodes to simplify protection of your virtual environment. For more details, see How to Manage Policies for CA ARCserve Central Host-Based VM Backup (see page 69).

The following illustration describes the tasks that you can perform for Node Groups:



This scenario describes the following topics:

- Add Node Groups (see page 50)
- Delete Node Groups (see page 52)
- Modify Node Groups (see page 53)

Add Node Groups

When you first import a virtual machine from an ESX or vCenter Server host, a new node group is automatically added.

Node groups let you manage a collection of CA ARCserve D2D source computers based on common characteristics. For example, you can define node groups classified by the department they support: Accounting, Marketing, Legal, Human Resources, and so on.

The application contains the following node groups:

- **Default Groups:**
  - **All Nodes--**Contains all nodes associated with the application.
  - **Nodes without a Group**--Contains all nodes associated with the application that are not assigned to a node group.
  - **Nodes without a Policy**--Contains all nodes associated with the application that do not have a policy assigned.
  - **SQL Server--**Contains all nodes associated with the application and Microsoft SQL Server is installed on the node.
  - **Exchange--**Contains all nodes associated with the application and Microsoft Exchange Server is installed on the node.

  Note: You cannot modify or delete the default node groups.
- **Custom Groups--**Contains customized node groups.
- **vCenter/ESX Groups**--When you add a node from the "Import virtual machines from vCenter/ESX" option, the name of the vCenter/ESX server is added to this group.

Follow these steps:

1. Log in to the application.

   From the Navigation bar on the home page, click Node to open the Node screen.
2. Click Add on the Node Group toolbar.

   The Add Group dialog opens and nodes appear in the Available Nodes list.
3. Specify a Group Name for the node group.
4. Specify the following fields from the Add Group dialog:
   - **Group--**Select the group name containing the nodes that you want to assign.
   - **Node Name Filter--**Lets you filter the available nodes based on common criteria.

     Note: The Node Name filter field supports the use of wildcard characters.

     For example, Acc* lets you filter all nodes having a node name that begins with Acc. To clear the filter results, click X in the Filter field.

5. To add nodes to the node group, select the node or nodes that you want to add and click the single right arrow.

   The nodes move from the Available Node list to the Selected Nodes list, and are assigned to the node group.

   Note: To select and move all the nodes from the current group, click the double right arrow.

6. (Optional) To move nodes from the Selected Nodes list to the Available Nodes list, click the single left arrow.

   Note: To select and move all nodes in the current group, click the double left arrow.

7. Click OK.

The Node Group is added.

Delete Node Groups

You may delete a node group as needed. When you delete a group that was manually added, the virtual machines are not removed from the application. However, if you delete a group that was automatically created from an ESX or vCenter Server discovery, the group and all virtual machines are deleted from the application.

The application lets you delete the Node Groups that you created.

You cannot delete the following node groups:

- **All Nodes--**Contains all nodes associated with the application.
- **Nodes without a Group**--Contains all nodes associated with the application that are not assigned to a node group.
- **Nodes without a Policy**--Contains all nodes associated with the application that do not have a policy assigned.
- **SQL Server--**Contains all nodes associated with the application and Microsoft SQL Server is installed on the nodes.
- **Exchange--**Contains all nodes associated with the application and Microsoft Exchange Server is installed on the nodes.

Note: The process of deleting node groups does not delete individual nodes from the application.

Follow these steps:

1. Log in to the application.

   From the Navigation Bar on the home page, click Node to open the Node screen.

2. Click the node group that you want to delete and then click Delete in the Node Group toolbar.

   The Confirm message box dialog opens.

3. If you are sure that you want to delete the node group, click Yes.

   Note: Click No if you do not want to delete the node group.

The node group is deleted.

Modify Node Groups

The application lets you modify the node groups that you created. You can add and remove nodes from node groups and change the name of node groups.

Note: You cannot modify the following node groups:

- **All Nodes--**Contains all nodes associated with the application.
- **Nodes without a Group**--Contains all nodes associated with the application that are not assigned to a node group.
- **Nodes without a Policy**--Contains all nodes associated with the application that do not have a policy assigned.
- **SQL Server--**Contains all nodes associated with the application and Microsoft SQL Server is installed.
- **Exchange--**Contains all nodes associated with the application and Microsoft Exchange Server is installed.

Follow these steps:

1. Log in to the application.

   From the Navigation Bar on the home page, click Node.

   The Node screen displays.

2. Click the node group that you want to modify and then click Modify in the Node Group toolbar.

   The Modify Group dialog opens.

3. To modify the Group Name, specify a new name in the Group Name field.

4. To add nodes to the node group, select the node or nodes that you want to add to the node group and click the right arrow.

   The nodes move from the Available Node list to the Selected Nodes list, and are assigned to the node group.

   Note: To move all nodes from the Available Node list to the Selected Nodes list, click the double right arrow.

5. To remove nodes from the node group, click the left arrow or the double left arrow to remove one or all nodes respectively.

6. (Optional) To filter the available nodes based on common criteria, specify a filtering value in the Node Name Filter field.

   Note: The Filter field supports the use of wildcard characters.

   For example, Acc* lets you filter all nodes having a node name that begins with Acc. To clear the filter results, click the X in the Filter field.

7. Click OK.

The node group is modified.

Update vCenter and ESX Server Details

CA ARCserve Central Host-Based VM Backup lets you update the vCenter and ESX Server details that were added previously.

Follow these steps:

1. From the Node screen, expand the vCenter/ESX Groups from the Groups bar.
2. Select the vCenter/ESX group that you want to update the server details for and then right-click and click Update vCenter/ESX.

   The Update vCenter/ESX dialog opens.

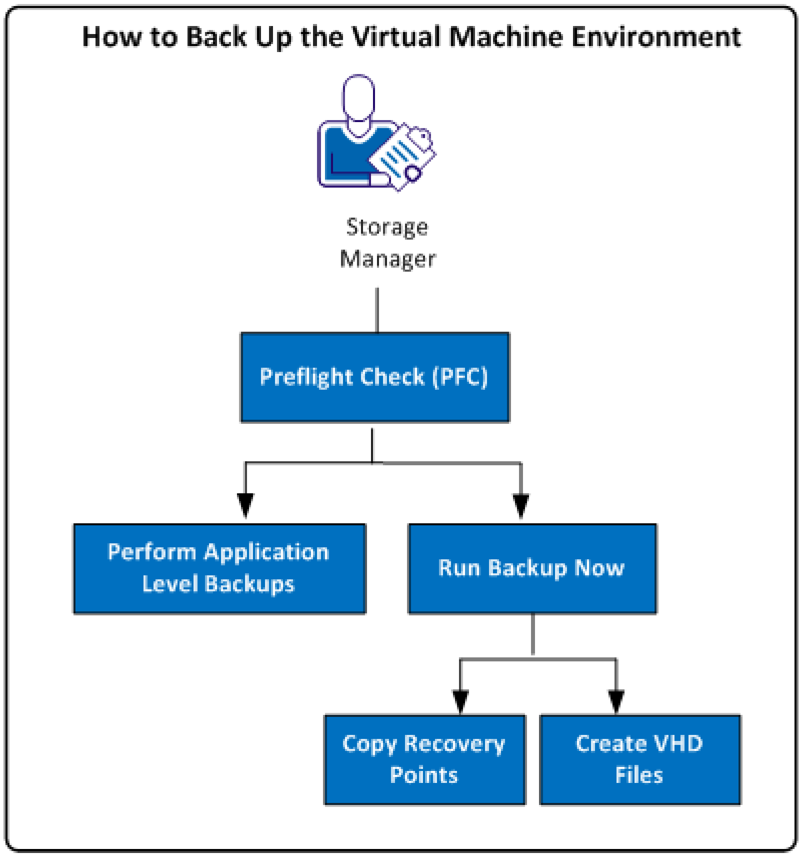
3. Update the vCenter/ESX Server details accordingly.
4. Click OK.

   The Update vCenter/ESX dialog closes and the node group is updated.

How to Back Up the Virtual Machine Environment

This scenario explains how a Storage Manager can back up and protect all virtual machines in your environment.

The following diagram illustrates how to back up the virtual machine environment.



The following list describes the processes that are illustrated in the diagram:

- Perform Preflight Checks for your Backup Jobs (see page 56)
- Run a Backup Now (see page 60)
  - Copy the Backup Recovery Points (see page 62)
  - Create VHD Files (see page 66)
- Perform Application Level Backups (see page 66)

Perform Preflight Checks for Your Backup Jobs

CA ARCserve Central Host-Based VM Backup features a utility called Preflight Check (PFC) which enables you to run vital checks on specific nodes to detect conditions that can cause backup jobs to fail. PFC runs automatically when you perform the following actions:

- Import virtual machines from a vCenter Server/ESX Server system
- Add nodes from the Discovery result
- Update a node

In addition, you can also perform a Preflight Check manually.

Follow these steps:

1. Log in to the application.

   Click Nodes on the Navigation bar to open the Nodes screen.

2. Do one of the following actions to specify the nodes that you want to run a preflight check from:

   - **Node level**: Click the group containing the nodes that you want to run a preflight check on and then click the check box next to the nodes. Then right-click the nodes and click Preflight Check from the context menu.
   - **Group level**: Right-click the group containing the nodes and click Preflight Check.

   A message is displayed, "Starting to preflight check the virtual machine."

3. Scroll to the PFC Status column and view the status of the Preflight Check.

The following table describes the checks that are performed by PFC:

Item	Description
Changed Block Tracking (CBT)	(CBT) is a feature that tracks disk sectors that are located on a virtual machine that have changed. This helps minimize the size of the backups. This item verifies that CBT is enabled.
VMware Tools	This item verifies that the VMware tools are installed on each virtual machine.
Disk	This item verifies the disks of the virtual machine.
Power State	This item verifies that the virtual machine is powered on.
Credentials	This item verifies that the user credentials are valid.

Item	Description
Applications	This item verifies whether Microsoft SQL Server and Microsoft Exchange Server are installed or not.

For more information on resolving errors and warnings for the Preflight Check results, see topic Solutions for Preflight Check Items (see page 57).

Solutions for Preflight Check Items

The following tables describe the solutions to help you resolve errors and warnings from your Preflight Check results:

Changed Block Tracking (CBT)

Status	Message	Solution
Warning	Changed Block Tracking is enabled with snapshots present. A full disk backup will be applied.	To apply the used block backup, perform the following steps: 1. Delete all the snapshots associated with the virtual machine. 2. Log in to the Host-Based VM proxy server. 3. Open the registry editor and locate the following key: HKEY_LOCAL_MACHINE\SOFTWARE\CA\CA ARCserve D2D\AFBackupDll\<VM-InstanceUUID> **Note**: Replace <VM-InstanceUUID> with the UUID value of the virtual machine where CBT is failing. The value can be found in the URL of the virtual machine that is used when connected to CA ARCserve D2D. 4. Set registry key to "full disk backupForFullBackup"=0. 5. Create/set the registry to ResetCBT=1. 6. Submit the backup job.

VMware Tools

Status	Message	Solution
Warning	Out of date.	Install the latest version of VMware Tools.
Warning	Not installed or not running.	Install the latest version of VMware Tools and ensure that the tool is running.

Disk

Status	Message	Solution
Error	VM snapshots are not supported for the VM because it has a SCSI controller configured for bus-sharing configuration.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the VM.
Warning	The physical Raw Device Mapping (RDM) disk will not be backed up.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the VM.
Warning	The virtual Raw Device Mapping (RDM) disk will back up as a full disk.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the VM.
Warning	The independent disk will not be backed up.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the VM.
Warning	The application will back up the disk on the NFS data store as a full disk.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the VM.

Power State

Status	Message	Solution
Warning	Powered off	Power on the virtual machine.
Warning	Suspended	Power on the virtual machine.

Credentials

Status	Message	Solution
Warning	Incorrect credentials.	Provide valid user credentials.
Warning	Not provided.	Provide valid user credentials.

Applications

Status	Message	Solution
Warning	Application level restore is not supported because the VM has IDE disks.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the Microsoft SQL Server and Exchange Server data.
Warning	VMware VIX is not installed on the host server.	Download VIX from the VMware website and install it on the CA ARCserve Central Applications host server.
Warning	VMware VIX on the CA ARCserve Central Host-Based VM Backup server is out-of-date.	Download VIX from the VMware website and install it on the CA ARCserve Central Applications host server.
Warning	Application level restore is not supported because there is no ESX Server support.	Upgrade ESX Server to 4.1 or higher or use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the Microsoft SQL Server and Exchange Server data.
Warning	Application level restore is not supported because there are not enough SCSI slots available.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the Microsoft SQL Server and Exchange Server data.
Warning	The source resides on a dynamic disk. Application level restore is not supported.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the Microsoft SQL Server and Exchange Server data. **Note**: VMware does not support application-level quiescing on virtual machines that are Windows Server 2008 or later with dynamic disks running on ESX Server 4.1 or later.

Status	Message	Solution
Warning	Unable to retrieve information about the application. This can prevent application level backups from completing successfully.	Provide the built-in or domain administrator credentials to log in to the virtual machine guest operating system. Due to a VMware limitation, backup is supported only on VMs running on an ESX server that has a paid license. Backup is not supported on an ESXi server with a free license.
Warning	Application level recovery is not supported on systems with storage spaces enabled. Only the entire virtual machine can be recovered.	Use CA ARCserve Central Protection Manager or CA ARCserve D2D to back up the Microsoft SQL Server and Microsoft Exchange Server data.

Run a Back Up Now

Typically, backups are performed automatically and controlled by the schedule settings. However, there may be times when you need to perform an ad-hoc backup (Full, Incremental, or Verify) immediately.

An ad-hoc backup is need-based, rather than being scheduled in advance as part of a backup plan. For example, if you have a repeat schedule for Full, Incremental, and Verify backups and you want to make major changes to your machine, you should perform an immediate ad-hoc backup without waiting for the next scheduled backup to occur.

An ad-hoc backup also allows you to add a customized (unscheduled) recovery point so that you can roll back to this previous point in time if necessary. For example, if you install a patch or service pack and then discover that it adversely affects the performance of your machine, you may want to roll back to the ad-hoc backup session that does not include the patch or service pack.

Follow these steps:

1. Log in to the application.
2. From the Navigation bar on the home page, click Node to open the Node screen.
3. Do one of the following actions to specify the nodes that you want to back up:
   - **Node level:** Click the group containing the nodes that you want to back up and then click the check box next to the nodes that you want to back up.
   - **Group level:** Click the group containing the nodes that you want to back up.

4. Then do one of the following actions to back up the node:
   - Click Backup on the toolbar.
   - Right-click the selected group or right-click the nodes and click Backup Now on the context menu.
5. On the Run a backup now dialog, specify a backup type by clicking one of the following types:
   - **Full Backup--**Initiates a Full Backup of your entire machine or the selected volumes.
   - **Incremental Backup--**Initiates an Incremental Backup of your machine. An Incremental Backup backs up only those blocks that have changed since the previous backup.

     Note: The advantages of Incremental Backups are that it is a fast backup and it produces a small backup image. This is the most optimal way to perform backups.
   - **Verify Backup--**Initiates a Verify Backup of your machine by examining the most recent backup of each individual block and comparing the content and information to the original source. This comparison verifies that the latest backed up blocks represent the corresponding information at the source. If the backup image for any block does not match the source, CA ARCserve D2D refreshes (resynchronizes) the backup of the block that does not match. Be aware of the following advantages and disadvantages to performing Verify backups:
     - Advantages--A very small backup image is produced when compared to a Full Backup because only the changed blocks (blocks that do not match the last backup) are backed up.
     - Disadvantages--The backup time is slow because all of source disk blocks are compared with the blocks of the last backup.

   Note: If you add a new volume to the backup source, the newly added volume is fully backed up regardless of the overall backup method selected.
6. (Optional) Specify the Backup Name and click OK. If you do not specify a name, by default, it is named Customized/Full/Incremental/Verify Backup.

A confirmation screen appears, and the selected type of backup is launched immediately.

Be aware of the following behavior:

- All values specified in the Policy dialogs are applied to the job.
- If a custom (ad-hoc) backup job fails, no makeup job is created. A makeup job is only created for a failed scheduled job.
- CA ARCserve Central Host-Based VM Backup applies the following backup jobs in priority order:
  - Full
  - Verify
  - Incremental

  The following conditions occur when a Backup Now is submitted and a job is waiting in the queue:

  - When a Full Backup job is submitted and a Verify Backup job is waiting in the queue, the Full Backup job overwrites the job in the queue.
  - When a Full Backup job is submitted and an Incremental Backup job is waiting in the queue, the Full Backup job overwrites the job in the queue.
  - When a Verify Backup job is submitted and an Incremental Backup job is waiting in the queue, the Verify Backup job overwrites the job in the queue.
  - When a Verify Backup job is submitted and a Full Backup job is waiting in the queue, the Verify Backup job is skipped.
  - When an Incremental Backup job is submitted and a Full Backup job is waiting in the queue, the Incremental Backup job is skipped.
  - When an Incremental Backup job is submitted and a Verify Backup job is waiting in the queue, the Incremental Backup job is skipped.

Copy Recovery Points

Each time CA ARCserve D2D performs a successful backup, a point-in-time snapshot image of your backup is also created. This collection of recovery points allows you to locate and specify a backup image to copy. You can do the following to protect your backups:

- Copy/export recovery point information to store it safely off-site when a catastrophe occurs.
- Save your recovery points to multiple locations.
- Consolidate your backups if your destination is getting full and you still want to preserve all your recovery points.

When you select a recovery point to copy, you are also capturing all previous backup blocks that are needed to recreate a full and most recent backup image.

Follow these steps:

1. Log in to the application.

   Click Node on the Navigation bar to open the Node screen.

2. From the Groups list, click All Nodes, or click the group that contains the CA ARCserve D2D node with the recovery points you want to copy.

   The nodes list displays all nodes that are associated with the specified group.

3. Browse to and click the node that you want to log in to and then click Login D2D from the pop-up menu.

   The CA ARCserve D2D opens and you are logged in to the home page for the CA ARCserve D2D node.

   Note: Help ensure that the pop-up options on your browser window are enabled.

4. From the CA ARCserve D2D home page, select Copy Recovery Point.

   The Copy Recovery Point dialog opens.

5. In the Backup Location field, specify the backup source. You can either specify a location or browse to the location where your backup images are stored. You can click the green arrow icon button to verify the connection to the specified location. If necessary, enter the User name and Password credentials to gain access to that location.

6. In the Virtual Machine field, click the drop-down list next to Select Virtual Machine to specify the virtual machine containing the recovery points that you want to copy.

   The calendar view highlights all dates during the displayed time period that contain recovery points for that backup source.

7. Specify the recovery point to copy.

   a. Select the calendar date for the backup image you want to copy.

      The corresponding recovery points for that date are displayed, with the time of the backup, the type of backup that was performed, and the name of the backup.

      Note: A clock icon with a lock symbol indicates that the recovery point contains encrypted information and requires a password for the restore.

   b. Select a recovery point that you want to copy.

      The corresponding backup content (including any applications) for that recovery point is displayed.

8. Click Next.

   The Copy Options dialog opens.

Note: Two password fields are displayed in this dialog. The Password field is for the password to decrypt the source session, and the Encryption Password field is used to encrypt the destination session.

a. If the exported recovery point was previously encrypted, a password is required.

   - If the exported recovery point is a backup session of the same machine running the copy recovery point job, the encryption password is saved and automatically populated.
   - If the exported recovery point is a backup session of another machine, an encryption password is required.

b. Select the destination.

   You can either specify a location or browse to the location where the copy of your selected recovery point is stored. You can click the green arrow icon button to verify the connection to the specified location. If necessary, enter the User name and Password.

c. Select the level of compression to perform.

   Note: The specified backup compression level has no relation with the copy compression level. For example, in backup destination the compression level can be set to Standard; however, when you submit the copy job, the compression can be changed to No Compression or Maximum Compression.

   Compression is performed to decrease your disk space usage, but also has an inverse impact on your backup speed due to the increased CPU usage.

   The available options are:

   - **No Compression -** No compression is performed. Files are pure VHD. This option has the lowest CPU usage (fastest speed), but also has the highest disk space usage for your backup image.
   - **Standard Compression -** Some compression is performed. This option provides a good balance between CPU usage and disk space usage. This option is the default setting.
   - **Maximum Compression -** Maximum compression is performed. This option provides the highest CPU usage (lowest speed), but also has the lowest disk space usage for your backup image.

   Consider the following points:

   - If your backup image contains uncompressible data (such as JPG images, ZIP files), additional storage space is used to handle such data. As a result, if you select any compression option with uncompressible data in your backup, it can actually result in an increase in your disk space usage.
   - If you change the compression level from "No Compression" to "Standard Compression" or "Maximum Compression", or from "Standard Compression" or "Maximum Compression" to "No Compression", the first backup that is performed after this change automatically becomes a Full Backup. After the Full Backup is performed, all future backups (Full, Incremental, or Verify) will be performed as scheduled.

d. If you also want the copied recovery point to be encrypted, enter the following information:

   You can change, add, or remove encryption for the copied recovery point.

   - Select the type of encryption algorithm that is used for the copy.

     The available format options are No Encryption, AES-128, AES-192, and AES-256.

   - Provide (and confirm) an encryption password.

9. Click Create a Copy.

   A status notification window appears and the copy process for the selected recovery point type is launched immediately.

   Note: CA ARCserve D2D only allows one recovery point copy job to run at the same time.

   The recovery point image is copied from the backup source to the copy destination.

Create VHD Files from CA ARCserve Central Host-Based VM Backup

This CA ARCserve D2D procedure lets you create a Virtual Hard Disk (VHD) file from the recovery point that is created after every successful backup. For more information, see the CA ARCserve D2D Appendix.

Follow these steps:

1. Perform the Copy Recovery Points (see page 62) procedure.
2. When the copy is finished, browse to the destination you specified and navigate to the CA ARCserve D2D host.
3. Open the folder, VStore\S0000000001.
4. Locate all files with a D2D extension and change each to VHD. After you rename all files, you can use them as regular VHD files.

Perform Application Level Backups

Generally, no special steps are required to protect Microsoft Exchange or SQL Server systems.

To perform a full application backup, ensure that the following points are acknowledged:

- All application writers are in a stable state. Use *vssadmin* to see writer status.
- All databases that are backed up are in a healthy state. For example, for SQL Server, make sure that the database status is not *Restoring*.

You can also truncate transaction logs for SQL and Exchange Servers separately.

Note: When you upgrade to an ESX server, then upgrade the VMware tools inside the guest operating systems before performing application-level backups to avoid "out of date" errors.

Perform Full Disk Backups Containing Only Used Block Data

Retrieving used block data after performing full disk backups helps reduce the backup window and less space requirement from the backup destination.

Note: Due to VMware limitation, used blocks cannot be retrieved from virtual machines when recovery point snapshots are present. In such cases, a full disk backup is performed on the virtual machine.

After a full disk backup is submitted, perform the following steps to retrieve the used block data:

1. Delete all the snapshots that are associated with the virtual machine.
2. Log in to the CA ARCserve Central Host-Based VM Backup virtual machine.
3. Open the registry editor and locate the following key:

   ```
   HKEY_LOCAL_MACHINE\SOFTWARE\CA\CA ARCserve D2D\AFBackupDll\VM_InstanceUUID
   ```
4. Set the registry key "full disk backupForFullBackup" to 0.
5. Create or set the registry "ResetCBT" to 1.
6. Submit the backup job.

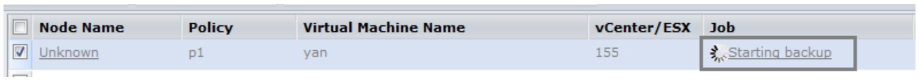
View Job Status Information

CA ARCserve Central Virtual Standby converts CA ARCserve D2D recovery points to recovery point snapshots. You can view status information about in-progress Host-Based VM Backup jobs.

When a job is running, you can view detailed information about the job. You can also stop the current job.

Follow these steps:

1. Log in to the application.
2. Click Nodes on the Navigation bar to open the Node screen.
3. If there are in-progress Host-Based VM Backup jobs, the phase of the job appears in the Job field as illustrated by the following screen:



□	Node Name	Policy	Virtual Machine Name	vCenter/ESX	Job
☑	Unknown	p1	yan	155	Starting backup

4. Click the phase to open the Backup Status Monitor dialog.

   Note: For information about the fields that appear on the Backup Status Monitor, see Backup Status Monitor (see page 68).

5. Do one of the following options:

   - Click Close to close the Backup Status Monitor dialog.
   - Click Cancel to stop the current job.

     Note: The Backup Status Monitor dialog closes shortly after you click Cancel.

More Information:

View Job Status Information (see page 67)

Host-Based VM Backup Monitoring Tasks

You can view the status of your virtual machine backups from the Node screen. Search for the node that has a job in progress from the Job field, click the link, and this dialog opens.

Virtual Machine backups are performed in two phases. First, the virtual hard disks are backed up and then, if successful, the catalog is generated. The catalog lets you restore files and folders as well as the entire virtual machine.

The monitor displays the following real-time information about the backup status job:

- **Phase--(Backup and Catalog Monitors)** Displays the current point in the process that is represented by the shaded portion of the progress bar.
- **Start Time--(Backup and Catalog Monitors)** Displays the date and time the operation was started based on policy configuration.
- **Elapsed Time--(Backup and Catalog Monitors)** Displays the difference between the Start Time and current time.
- **Estimated Time Remaining--(Backup Monitor only)** Displays the length of time that is estimated to complete the job.
- **Processing**--**(Catalog Monitor only)** Displays the volume drive letter or application for which the catalog is currently being generated.
- **Space Saved due to Compression--(Backup Monitor only)** Displays the portion of disk space that is saved if compression was specified in the backup operation policy.
- **Compression Level**--**(Backup Monitor only)** Displays the type of compression that is used for backups. The options can be No Compression, Standard Compression (default), or Maximum Compression.
- **Encryption--(Backup Monitor only)** Displays the encryption method that is selected when the backup job was configured.

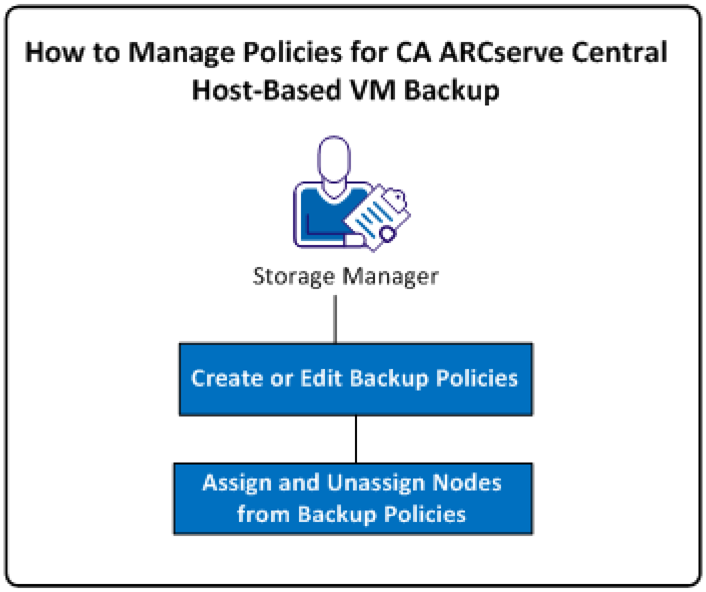
- **Write Speed Limit--(Backup Monitor only)** Displays the value if Throttle Backup was set on the Protection Settings screen of the backup policy.
- **Write Speed--(Backup Monitor only)** Displays the actual write speed in megabytes per minute.
- **Read Speed--(Backup Monitor only)** Displays the actual read speed in megabytes per minute.

How to Manage Policies for CA ARCserve Central Host-Based VM Backup

Backup policies define how and when to back up nodes that are imported from the vCenter/ESX Server. Storage Managers can create and edit backup policies and then assign and unassign them from nodes.

Note: You can assign a policy to one or more nodes. However, you cannot assign one or more policies to a node.

The following diagram illustrates the process of administering backup policies.


How to Manage Policies for CA ARCserve Central Host-Based VM Backup
Storage Manager
Create or Edit Backup Policies
Assign and Unassign Nodes from Backup Policies

The following list describes the processes that are illustrated in the diagram:

- Create Backup Policies (see page 70)
- Edit Backup Policies (see page 74)
- Assign and Unassign Nodes from Backup Policies (see page 77)

Create Backup Policies

The process of creating backup policies uses the CA ARCserve D2D interface for configuring backup settings, with a few distinctions. You can create policies that are based on similar backup needs, for example, by installed application or by schedule.

The following procedure summarizes the steps that are required for creating a simple CA ARCserve D2D backup job policy. For complete details on creating CA ARCserve D2D backup policies, see the appropriate CA ARCserve D2D topics in the Appendix.

Note: During a host-based backup operation, the following message appears if you are using hotadd as the transport mode:

```
You need to format the disk in drive <driveLetter> before you can use it. Do you want
to format it?
```

Click Cancel to ignore this message. The message occurs when the operating system detects that the virtual hard disk was added to the backup proxy server. The operating system assumes that the virtual hard disk is a new device that requires formatting. If you click Format Disk in error, no damage occurs since the virtual hard disk is read-only.

Follow these steps:

1. Log in to the application.

   Click Policies on the Navigation bar to open the Policies screen.

2. Click New on the toolbar to open the New Policy dialog.

3. Enter a Policy Name that appropriately describes the policy.

4. On the Backup Settings tab, click Protection Settings and specify the following information:

   - **Backup Destination**--Specify the local volume or remote shared folder where you want to save your backup sessions.

   - **CA ARCserve D2D VM Backup Proxy**--Specify the Hostname or IP address of the server where CA ARCserve D2D has been installed. If CA ARCserve D2D is not already installed, you can use CA ARCserve Central Protection Manager to deploy it. Provide the appropriate credentials for this server. The Port number defaults to 8014. If you changed this default during CA ARCserve D2D installation, specify the correct port number.

   - **Retention Setting**--You can set the retention policy that is based on the number of recovery points to retain (merges sessions) or based on the number of recovery sets to retain (deletes recovery sets and disables infinite incrementals). The default option is Retain Recovery Points. For more details, see Specify Protection Settings from the CA ARCserve Central Protection Manager User Guide.

   - **Compression**--Select a compression level. The default value is Standard. You can specify no compression or Maximum compression.

   - **Encryption**--Specify an encryption level. The default value is no encryption. When specifying an encryption level, provide an encryption password that is used to restore encrypted data.

   - **Throttle Backup**--Enter the rate at which backups are written to disk. Lower this rate to reduce CPU or network load but note that doing so increases backup times. This option is disabled by default.

5. Click Schedule and complete the following information:

   - **Start date and time**--Specify the date and time you want to begin your backup jobs.

   - **Incremental Backup**--Define a repeat schedule for your incremental backup jobs. The default value is to repeat Incremental Backups once a day.

   - **Full Backup**--Define a repeat schedule for your full backup jobs. By default, this value is set to Never Repeat.

   - **Verify Backup**--Define a repeat schedule for verify backup jobs. By default, this value is set to Never Repeat.

6. Click Advanced and complete the following information:

   - **Truncate log**--Enable the following options when you want to truncate application log files:

     - **SQL Server**--Specify a daily, weekly, or monthly truncation schedule.

     - **Exchange Server**--Specify a daily, weekly, or monthly truncation schedule.

   - **Reserve Space on Destination**--Specify the percentage of space to reserve to perform one backup. This amount of continuous space is then immediately reserved on the destination before the backup starts writing data and helps improve backup speed.

   - **Catalogs**--Select the Generate File System catalog for faster search after each backup option to reduce your browser search wait time.

     If this option is not selected, the restores can be performed immediately after backup without having to wait for the catalog job to finish. By default, this option is not enabled. Be aware of the following considerations:

     - When you generate a File System catalog for each backup job; it results in an increased amount of disk storage that must store the metadata files and catalog files and an increase in CPU usage. In addition, if the backup source contains many files, the process of generating a catalog could be a time consuming task.

     - When you select ReFS volumes as the backup source, catalogs cannot be generated. Warning message then display to inform you of this condition.

7. Click Pre/Post Backup Settings and specify any desired pre/post-backup commands. If needed, provide the proper credentials:

   - **Run a command before backup is started**--Enter the script command to run before starting the backup job.

   - **On exit code**--Enable this option if you want to trigger the script command on a specific exit code.

   - **Run Job**--If selected, the software continues running the job if the specified exit code is returned.

   - **Fail Job**--If selected, the software aborts the backup job if the specified exit code is returned.

   - **Run a command after snapshot is taken**--Enter the script command to run after the snapshot is taken.

   - **Run a command after backup is over**--Enter the script command to run after backup completes.

8. (Optional) Click the Preferences tab. Configure any of the following email alerts, as needed:

   - Missed Jobs
   - vCenter/ESX cannot be reached (before backup)
   - License failure
   - Backup, Catalog, Restore or Copy job failure/crash/cancel
   - Backup, Catalog, Restore or Copy job success
   - Destination free space is less than
   - Merge job stopped, skipped, failed or crashed
   - Merge job success
   - Skip/Merge job waiting in the job queue

   If you enable these options, click Email Settings to configure your email server. Provide the Service type, Mail Server, and Port. If authentication is required, enable that option and provide credentials.

   - Specify the Subject to appear in the email, for example, CA ARCserve Central Host-Based VM Backup Alert.
   - Specify a From value, for example, CA ARCserve Central Host-Based VM Backup.
   - Specify an email address for all Recipients. Separate each address with a semi-colon (;).

   You can enable the Proxy Settings by providing the Proxy Server name, Port, and the required credentials.

   Click OK.

9. Click Save.

Edit or Copy Backup Policies

CA ARCserve Central Host-Based VM Backup lets you edit or copy CA ARCserve D2D backup policies after they are created.

Follow these steps:

1. Log in to the application.

   Click Policies on the Navigation bar to open the Policies screen.

2. From the Policies screen, click the check box next to a policy and do one of the following:

   - Click Edit on the toolbar and edit the selected policy.
   - Click Copy on the toolbar to copy and create a new policy from the selected policy.

     Note: When you copy a policy, the Copy Policy dialog opens. Specify a name for the new policy and click OK.

   The Edit Policy dialog opens.

3. If you want to change the name of the policy name, specify a name in the Policy Name field.

4. On the Backup Settings tab, click Protection Settings and complete the following information:

   - **Backup Destination**--Specify a remote shared folder where you want to save your backup sessions.
   - **CA ARCserve D2D VM Backup Proxy**--Specify the host name or IP address of the server where CA ARCserve D2D has been installed. If CA ARCserve D2D is not already installed, you can use CA ARCserve Central Protection Manager to deploy it. Provide the appropriate credentials for this server. The Port number defaults to 8014. If you changed this default during CA ARCserve D2D installation, specify the correct port number.
   - **Retention Setting**--You can set the retention policy that is based on the number of recovery points to retain (merges sessions) or based on the number of recovery sets to retain (deletes recovery sets and disables infinite incrementals). The default option is Retain Recovery Points. For more details, see Specify Protection Settings from the CA ARCserve Central Protection Manager User Guide.
   - **Compression**--Select a compression level. The default value is Standard. You can specify no compression or Maximum.
   - **Encryption**--Specify an encryption level. The default value is no encryption. When specifying an encryption level, provide an encryption password that is used to restore encrypted data.
   - **Throttle Backup**--Enter the rate at which backups are written to disk. Lower this rate to reduce CPU or network load but note that doing so increases backup times. This option is disabled by default.

5. Click Schedule and complete the following information:

   - **Start date and time**--Specify the date and time you want to begin your backup jobs.
   - **Incremental Backup**--Define a repeat schedule for your incremental backup jobs. The default value is to repeat Incremental Backups once a day.
   - **Full Backup**--Define a repeat schedule for your full backup jobs. By default, this value is set to Never Repeat.
   - **Verify Backup**--Define a repeat schedule for verify backup jobs. By default, this value is set to Never Repeat.

6. Click Advanced and complete the following information:
    - **Truncate log**--Enable the following options when you want to truncate application log files:
        - **SQL Server**--Specify a daily, weekly, or monthly truncation schedule.
        - **Exchange Server**--Specify a daily, weekly, or monthly truncation schedule.
    - **Reserve Space on Destination**--Specify the percentage of space to reserve to perform one backup. This amount of continuous space is then immediately reserved on the destination before the backup starts writing data and helps improve backup speed.
    - **Catalogs**--Select the Generate File System catalog for faster search after each backup option to reduce your browser search wait time.

      If this option is not selected, the restores can be performed immediately after backup without having to wait for the catalog job to finish. By default, this option is not enabled.

      Note: When you generate a File System catalog for each backup job; it results in an increased amount of disk storage that must store the metadata files and catalog files and an increase in CPU usage. In addition, if the backup source contains many files, the process of generating a catalog could be a time consuming task.

      Note: If you selected an ReFS or deduplicated NTFS volume as the backup source, a catalog cannot be generated and a warning message is displayed to inform you of this condition.

7. Click Pre/Post Backup Settings and specify any required pre/post-backup commands. If needed, provide the proper credentials:

   - **Run a command before backup is started**--Enter the script command to run before starting the backup job.
   - **On exit code**--Enable this option if you want to trigger the script command on a specific exit code.
   - **Run Job**--If selected, the software continues running the job if the specified exit code is returned.
   - **Fail Job**--If selected, the software aborts the backup job if the specified exit code is returned.
   - **Run a command after snapshot is taken**--Enter the script command to run after the snapshot is taken.
   - **Run a command after backup is over**--Enter the script command to run after backup completes.

8. (Optional) Click the Preferences tab. Configure any desired email alerts, as needed. If you enable these options, click Email Settings to configure your email server.
9. Click Save.

The policy is edited or copied.

Assign and Unassign Nodes from Backup Policies

To protect multiple virtual machines, select the policy that you wish to use and then assign it to one or more nodes.

Follow these steps:

1. Log in to the application.

   Click Policies on the Navigation bar to open the Policies screen.

2. From the Policies screen, click the Policy Assignment tab.
3. From the Policies list, select the policy that you want to assign.

   Click Assign and Unassign to open the Assign/Unassign Policy dialog.

4. Specify the following fields from the Assign/Unassign Policy dialog:

   - **Group--**Lets you select the group name containing the nodes that you want to assign.
   - **Node Name Filter--**Lets you filter the available nodes based on common criteria.

     Note: The Node Name field lets you filter nodes using wildcard characters.

     For example, Acc* lets you filter all nodes having a node name that begins with Acc. To clear the filter results, click X in the Filter field.

5. Do one of the following actions:

   - **Assign nodes to policies--**Select the nodes that you want to add and click the single right arrow.

     The nodes move from the Available Nodes list to the Selected Nodes list.

     Note: To select and move all nodes, click the double right arrow.

   - **Unassign nodes from policies--**Select the nodes that you want to unassign and click the single left arrow.

     The nodes move from the Selected Nodes list to the Available Nodes list.

     Note: To select and move all nodes, click the double left arrow.

   Click OK.

6. If necessary, provide a global user name and password and apply them to the selected nodes.

   Click OK.

   The selected nodes are added to the Policy Assignment list with a Deploy Status of [Assigned] Pending.

   Note: You can also view the Deploy Status on the Node screen.

7. Click Deploy Now to apply the assigned policy to the specified nodes immediately. Use the Refresh button to update the status.

On the Node screen, the status for the nodes you specified on the Policy Assignment list now shows the assigned policy in the Policy column. Click the Node Name and click Login D2D to verify the status of your backup jobs.

View CA ARCserve Central Host-Based VM Backup logs

The View Log contains comprehensive information about all the operations performed by your application. The log provides an audit trail of every job that is run (with the most recent activities listed first) and can be helpful in troubleshooting any problems that may occur.

Follow these steps:

1. From the home page, click View Logs in the navigation bar.

   The View Logs screen appears.

2. From the drop-down lists, specify the log information that you want to view.

   - **Severity--**This option lets you specify the severity of the log that you want to view. You can specify the following severity options:

     - **All--**This option lets you view all logs, regardless of the severity.
     - **Information--**This option lets you view only logs that describe general information.
     - **Errors--**This option lets you view only logs that describe severe errors that occurred.
     - **Warnings--**This option lets you view only logs that describe warming errors that occurred.
     - **Errors and Warnings--**This option lets you view only severe errors and warning errors that occurred.

- **Module--**This option lets you specify the module for which you want to view logs. You can specify the following module options:
  - **All--**This option lets you view logs about all application components.
  - **Common--**This option lets you view logs about common processes.
  - **Import Nodes from Discovery**--This option lets you view logs about nodes that were imported only from Auto Discovery.
  - **Import Nodes from Hypervisor**--This option lets you view logs about nodes that were imported only from Hypervisor.
  - **Policy Management--**This option lets you view only logs about managing policies.
  - **Updates--**This option lets you view only logs about updating the application.
  - **Preflight Check**--This option lets you view only logs that ran the Preflight Check status for each node.
  - **Submit VM Backup Jobs**--This option lets you view only logs where nodes were submitted for virtual machine backup jobs.
  - **Update Multiple Nodes**--This option lets you view only logs about updating multiple nodes simultaneously.
  - **CA ARCserve D2D Merge Job**--This option lets you view only logs of CA ARCserve D2D merge jobs.
- **Node Name--**This option lets you view only logs for a specific node.

  Note: This field supports the wildcard '*' and '?'. For example, enter 'lod*' to return all activity logs for the computer name that begins with 'lod'.

Note: The Severity, Module, and Node Name options can be applied collectively. For example, you can view Errors (severity) that relate to Updates (Module) for Node X (Node Name).

The logs display based on the view options specified.

Note: The displayed Time in the log is based on the time zone of your application database server.

View Activity Log Information for a Specific Node

CA ARCserve Central Host-Based VM Backup lets you view activity log information for a specific CA ARCserve D2D node. The Activity Log provides an audit trail of every job that ran (with the most recent activities listed first) and can be helpful in troubleshooting any problems that occur.

To view Activity Log information for a specific node

1. Open the application and click Node in the Navigation bar.

   The Node screen displays.

2. From the Groups list, click All Nodes, or click the group that contains the CA ARCserve D2D node that you want to log in to.

   The nodes list displays all nodes associated with the specified group.

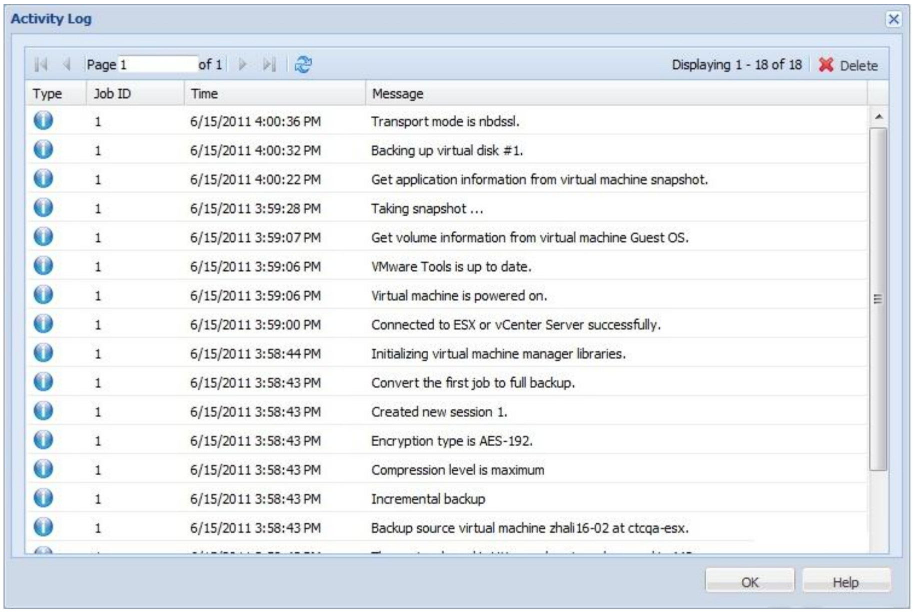
3. Browse to and click the node that you want to log in to and then click Login D2D from the pop-up menu.

   The CA ARCserve D2D opens and you are logged in to the home page for the CA ARCserve D2D node.

   Note: If a new browser window does not open, verify that the pop-up options for your browser allow all pop-ups or pop-ups only for this website.

4. Click View Logs on the Tasks list.

   The Activity Log opens as illustrated by the following:



Type	Job ID	Time	Message
ℹ	1	6/15/2011 4:00:36 PM	Transport mode is nbdssl.
ℹ	1	6/15/2011 4:00:32 PM	Backing up virtual disk #1.
ℹ	1	6/15/2011 4:00:22 PM	Get application information from virtual machine snapshot.
ℹ	1	6/15/2011 3:59:28 PM	Taking snapshot ...
ℹ	1	6/15/2011 3:59:07 PM	Get volume information from virtual machine Guest OS.
ℹ	1	6/15/2011 3:59:06 PM	VMware Tools is up to date.
ℹ	1	6/15/2011 3:59:06 PM	Virtual machine is powered on.
ℹ	1	6/15/2011 3:59:00 PM	Connected to ESX or vCenter Server successfully.
ℹ	1	6/15/2011 3:58:44 PM	Initializing virtual machine manager libraries.
ℹ	1	6/15/2011 3:58:43 PM	Convert the first job to full backup.
ℹ	1	6/15/2011 3:58:43 PM	Created new session 1.
ℹ	1	6/15/2011 3:58:43 PM	Encryption type is AES-192.
ℹ	1	6/15/2011 3:58:43 PM	Compression level is maximum
ℹ	1	6/15/2011 3:58:43 PM	Incremental backup
ℹ	1	6/15/2011 3:58:43 PM	Backup source virtual machine zhali16-02 at ctcqa-esx.

   The Activity Log provides the following information:

   - **Type--**Specifies the severity of the activity, which includes Information, Warnings, and Errors.
   - **Job ID--**Specifies the job for which the activity applies.
   - **Time--**Specifies the data and time for which the activity applies.
   - **Message--**Describes the activity.

5. Click OK to close the Activity Log.

View CA ARCserve Central Host-Based VM Backup Status in a Report

If you installed CA ARCserve Central Protection Manager and CA ARCserve Central Reporting, you can add the host-based VM backup proxy server to CA ARCserve Central Protection Manager; and then generate the Virtualization Protection Status Report to view the status of your host-based backup proxy.

For more details on the Virtualization Protection Status Report, see the CA ARCserve Central Reporting User Guide.

Add Links to the Navigation Bar

Each of the CA ARCserve Central Applications has an Add New Tab link in the Navigation bar. Use this feature to add entries in the Navigation bar for additional web-based applications you would like to manage. However, for every application that is installed, a new link is automatically added to the Navigation bar. For example, if you installed CA ARCserve Central Reporting and CA ARCserve Central Virtual Standby on "Computer A" and then launch CA ARCserve Central Reporting, CA ARCserve Central Virtual Standby is automatically added to the Navigation bar.

Note: Every application that is installed is detected only if other CA ARCserve Central Applications are on the same computer.

Follow these steps:

1. From the Navigation bar of the application, click the Add New Tab link.
2. Specify the Name and URL of the application or website you want to add. For example, www.google.com.

   Optionally, specify the location of an icon.
3. Click OK.

   The new tab is added to the bottom of the Navigation bar.

Be aware of the following considerations:

- The CA Support link is added by default for your convenience.

You can remove the new tab by highlighting the tab and click the Remove link.

Considerations for Protecting Raw Device Mappings

Consider the following behavior when protecting raw device mappings (RDM):

- The application does not support protecting physical compatibility mode raw device mappings (disks of this type are physical devices). The application omits physical compatibility mode raw device mappings from the backup source during the backup process. A solution to this behavior is to install CA ARCserve D2D inside the guest operating system and perform backups in the same manner as you would back up physical disks.

- The application supports protecting virtual compatibility mode raw device mappings. However, consider the following limitations:
  - In regard to full backups, the application lets you back up complete virtual compatibility mode RDM disks. However, if you do not use data compression, the backup datasets can be the same size as the source disk.
  - CA ARCserve Central Host-Based VM Backup restores virtual compatibility mode RDM disks as normal virtual disks. After the recovery process completes, the disk is no longer configured as or behaves as a virtual RDM.
  - An alternative approach to backing up virtual compatibility mode RDMs is to install CA ARCserve D2D inside the guest operating system and back up the RDMs in the same manner as you would back up physical machines.

Change Server Communication Protocol

By default, CA ARCserve Central Applications use the Hypertext Transfer Protocol (HTTP) for communication among all of its components. If you are concerned about the security of passwords that are communicated between these components, you can change the protocol being used to Hypertext Transfer Protocol Secure (HTTPS). When you do not need this extra level of security, you can change the protocol being used to HTTP.

Follow these steps:

1. Log in to the computer where the application is installed using an administrative account or an account with administrative privileges.

   Note: If you do not log in using an administrative account or an account with administrative privileges, configure the Command Line to run using the Run as Administrator privilege.

2. Open Windows Command Line.

3. Do one of the following:

   - **To change the protocol from HTTP to HTTPS:**

     Launch the "changeToHttps.bat" utility tool from the following default location (the location of the BIN folder can vary depending upon where you installed the application):

     ```
     C:\Program Files\CA\ARCserve Central Applications\BIN
     ```

     When the protocol has been successfully changed, the following message displays:

     ```
     The communication protocol was changed to HTTPS.
     ```

   - **To change the protocol from HTTPS to HTTP:**

     Launch the "changeToHttp.bat" utility tool from the following default location (the location of the BIN folder can vary depending upon where you installed the application):

     ```
     C:\Program Files\CA\ARCserve Central Applications\BIN
     ```

     When the protocol has been successfully changed, the following message displays:

     ```
     The communication protocol was changed to HTTP.
     ```

4. Restart the browser and reconnect to CA ARCserve Central Applications.

   Note: When you change the protocol to HTTPS, a warning displays in the web browser. This behavior occurs because of a self-signed security certificate that prompts you to ignore the warning and proceed or add that certificate to the browser to prevent the warning from coming back in future.

Define a Transport Mode for Backups

You can define a specific transport mode (transfer data) to use for D2D backup jobs that execute using Host-Based VM Backup. By default, Host-based VM backup uses a mode that lets Host-Based VM Backup to optimize the performance (increase the speed) of the backup operation. However, when you want to specify a particular transport mode for backup operations, you configure the registry key described in this topic.

Host-Based VM Backup can execute backups using the following transport modes:

- HOTADD transport mode (see page 189)
- NBD transport mode (see page 189)
- NBDSSL transport mode (see page 189)
- SAN transport mode (see page 190)

Be aware of the following considerations:

- This is an optional configuration task. By default, Host-Based VM Backup executes backups using a transport mode that optimizes the performance of the backup operation.
- When you configure this registry key to use a specific transport mode and the mode is not available, Host-Based VM Backup uses an available default transport mode for the backup operation.

Follow these steps:

1. Log in to the CA ARCserve D2D backup proxy system for the virtual machines.

   Open Windows Registry Editor and browse to the following key:

   ```
   [HKEY_LOCAL_MACHINE\SOFTWARE\CA\CA ARCSERVE
   D2D\AFBackupDll\{VM-InstanceUUID}].
   ```

2. Right-click VM-InstanceUUID and select New and click String Value on the pop-up menu.

   Name the new string value as follows:

   ```
   EnforceTransport
   ```

3. Right-click EnforceTransport and click Modify on the pop-up menu to open the Edit String dialog.

4. In the Value Data field, specify the transport mode that you want to use during the backup job. Specify one of the following values:

   hotadd

   HOTADD transport mode (see page 189)

   nbd

   NBD transport mode (see page 189)

   nbdssl

   NBDSSL transport mode (see page 189)

   san

   SAN transport mode (see page 190)

5. Click OK to apply the value and close the Edit String dialog.

The transport mode is defined and is used the next time that a job runs.

Chapter 4: Restore and Recover Virtual Machines

The restore and recovery options available depend on how your system was backed up. For example, you cannot use backup sessions that are created with CA ARCserve Central Host-Based VM Backup to perform Application Level or Microsoft Exchange granular restore operations but can do so using sessions created with CA ARCserve Central Protection Manager or CA ARCserve D2D. Certain restore options available with CA ARCserve D2D may not be available with this application. For example, Restore to Original Location is not possible with the application's backups because the location of the proxy server is different from the location of the backup source virtual machine.

For more information, see Restore Considerations (see page 100) to help you determine when to use the available Restore Methods (see page 87).

This section contains the following topics:

Restore Methods

How your backup session was created determines which restore methods can be used. For example, some restore methods are only possible if performed with a locally installed version of CA ARCserve D2D. Other methods require the virtual machine powered on at backup time.

Browse Recovery Points (see page 88)

Lets you find available recovery points (successful backups) from a calendar view. Use this method to restore files, folders, or perform the application level restore process.

Backups created with CA ARCserve D2D, CA ARCserve Central Host-Based VM Backup, or CA ARCserve Central Protection Manager can be restored with this method.

Find Files/Folders to Restore (see page 91)

Lets you find specific files or folders to restore.

Backups created with CA ARCserve D2D can be restored with this method. It is also available to restore backups created with CA ARCserve Central Host-Based VM Backup and CA ARCserve Central Protection Manager when the virtual machine was powered on at the time of backup.

Recover VM (see page 94)

Lets you browse all available virtual machine recovery points (successful backups) from a calendar view. You can then specify the virtual machine you want to recover.

This method is available to restore backups created with CA ARCserve Central Host-Based VM Backup and first provisions a virtual machine and then restores the OS, applications and data from the recovery point you specified.

Application Restore (see page 100)

To restore a Microsoft Exchange or SQL Server completely without having to rebuild it, click the Browse Recovery Points method from a locally installed version of CA ARCserve D2D.

Bare Metal Recovery (see page 149)

Bare Metal Recovery (BMR) is the process of restoring a computer from bare metal including its operating system, software applications, settings and data. BMR requires you to have a Windows image or boot kit and at least one full backup. Backups created with CA ARCserve D2D, CA ARCserve Central Host-Based VM Backup, CA ARCserve Central Virtual Standby, and CA ARCserve Central Protection Manager can be restored with this method. However, if the virtual machine was powered down during backup, BMR is not possible.

Restore from Recovery Points

The Browse Recovery Points restore method lets you find successful backups (named recovery points) from a calendar view. You can then browse for and select the backup content, including applications, you want to restore. The procedure for restoring with the Browse Recovery Points method is the same as if using CA ARCserve D2D, with one exception. To restore virtual machine recovery points, you cannot use the restore to original location option.

Follow these steps:

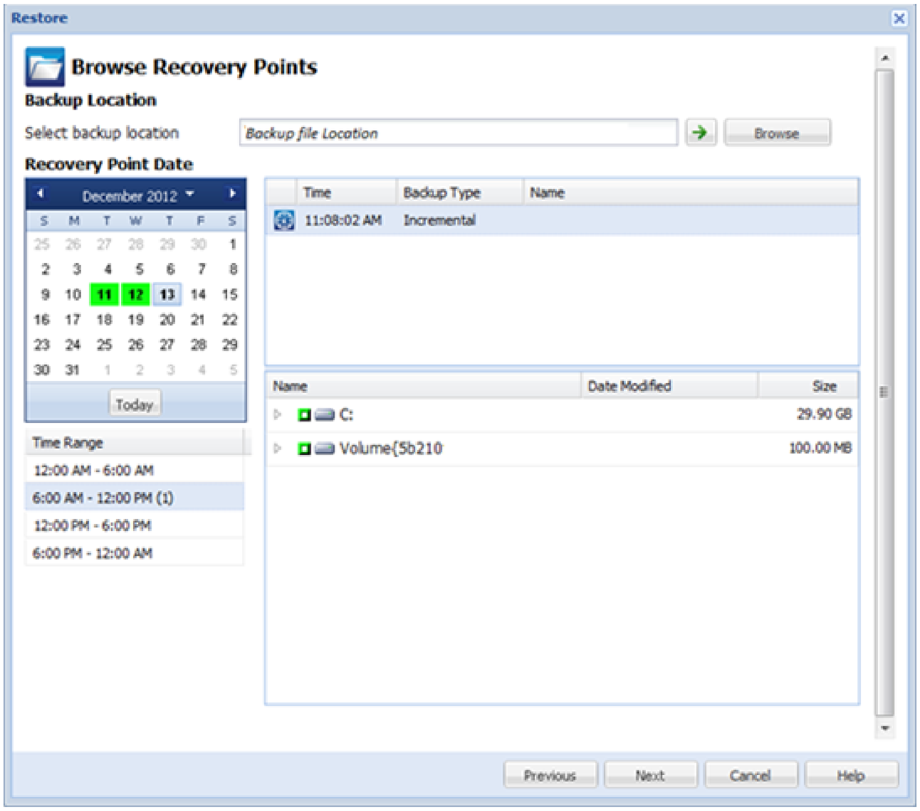
1. Log in to the application and click Node on the Navigation bar.

   From the Node screen, expand the group containing the node that you want to restore.

   Click the check box next to the node that you want to restore and then click Restore on the toolbar.

2. From the Restore dialog, click Browse Recovery Points.

   The Restore dialog opens and the Backup Location is provided for you based on the node you selected. If desired, change it to another backup destination and provide the user credentials.



Select backup location: *Backup file Location*

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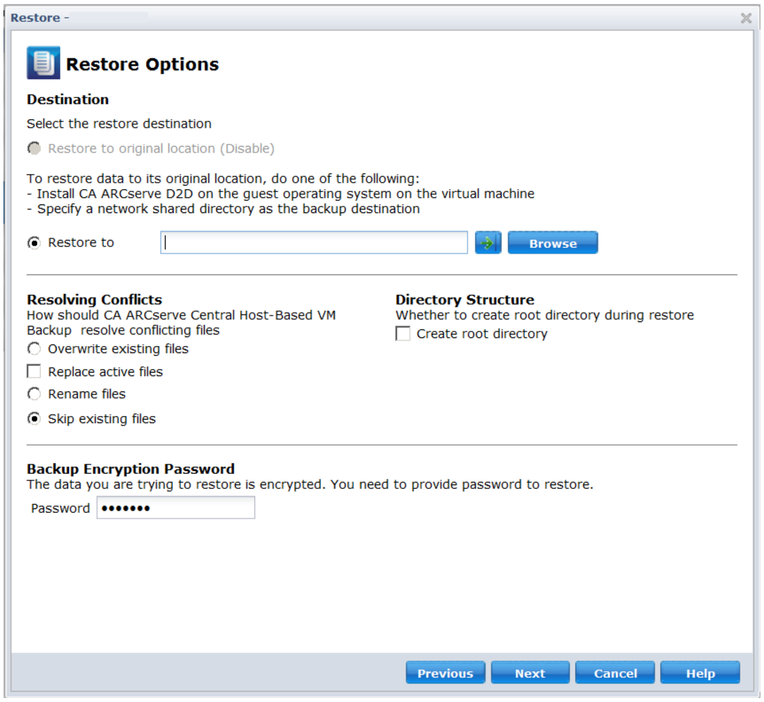
S	M	T	W	T	F	S
25	26	27	28	29	30	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

Time Range
12:00 AM - 6:00 AM
6:00 AM - 12:00 PM (1)
12:00 PM - 6:00 PM
6:00 PM - 12:00 AM

Time	Backup Type	Name
11:08:02 AM	Incremental	

Name	Date Modified	Size
C:		29.90 GB
Volume{5b210		100.00 MB

3. Click the recovery point date and then click a recovery point time. Select the content that you want to restore. Select an entire volume or a file, folder, database, or application. Solid green boxes next to a selection indicate that it is selected for restore. Click Next when done.



Restore -

Restore Options

Destination

Select the restore destination

○ Restore to original location (Disable)

To restore data to its original location, do one of the following:
- Install CA ARCserve D2D on the guest operating system on the virtual machine
- Specify a network shared directory as the backup destination

● Restore to

Resolving Conflicts

How should CA ARCserve Central Host-Based VM Backup resolve conflicting files

○ Overwrite existing files

□ Replace active files

○ Rename files

● Skip existing files

Directory Structure

Whether to create root directory during restore

□ Create root directory

Backup Encryption Password

The data you are trying to restore is encrypted. You need to provide password to restore.

Password •••••••

4. On the Restore Options dialog, specify the restore destination.

   - **Restore to original location (disable)**--for CA ARCserve Central Host-Based VM Backup sessions, you cannot restore to the original location. To restore files or folders to their original location in the Guest OS of a VM, you need to either install CA ARCserve D2D in the guest OS of the VM or restore to a network shared folder on the VM.
   - **Restore to**--specify the destination you want to restore to.
   - **Overwrite existing files--**Replaces files located at the destination.
   - **Replace active files--**Replaces files in use or being accessed at reboot time.
   - **Rename files--**Creates a new file if the file name exists. This option copies source files to the destination with the same file name but a new extension. Data is restored to the file with the new extension.
   - **Skip existing files--**Skips over and does not replace existing files that are located on the destination. This is the default setting.
   - **Create root directory--**Recreates the same root directory structure on the destination found in the backup image.

5. Click Next. On the Restore Summary screen, verify that all options are correct. If not, click Previous to go back. If yes, click Finish to launch the restore process.

Restore by Mounting a Recovery Point

The Mount Recovery Point restore method lets you mount a recovery point to the backup proxy system. To mount a recovery point, you would have to log in to the CA ARCserve D2D user interface.

Follow these steps:

1. Log in to CA ARCserve Central Host-Based VM Backup and click Node on the Navigation bar.
2. From the Node screen, expand the group containing the node that you want to restore.

   Click the check box next to the node that you want to restore and then click Restore on the toolbar.

   A CA ARCserve Central Host-Based VM Backup version of CA ARCserve D2D opens.

   Note: Verify that the pop-up options for your browser allow all pop-ups or pop-ups only for this website, so that a new browser can open.

For more details on the Mount Recovery Point dialog, click Help on the dialog screen from the CA ARCserve D2D home page.

Restore Data Using Find Files/Folders to Restore

Each time the application performs a successful backup, all backed up files or folders are included in the snapshot image of your backup. This restore method allows you to specify exactly which file or folder you want to restore.

Follow these steps:

1. Log in to the application and click Node on the Navigation bar.

   From the Node screen, expand the group containing the node that you want to restore.

   Click the check box next to the node that you want to restore and then click Restore on the toolbar.
2. From the Restore dialog, click Find Files/Folders to Restore.
3. On the Find Files/Folders to Restore dialog, specify or browse to the Backup Location. If you are restoring from a CA ARCserve Central Host-Based VM Backup session, you cannot specify a File Copy Location. File Copy restore is permitted only if you are restoring from CA ARCserve Central Protection Manager or CA ARCserve D2D backup sessions.

4. Specify the file or folder name to restore.

   Note: The File Name field supports full name searching and wildcard searching. If you do not know the complete file name, you can simplify the results of the search by specifying the wildcard characters "*" and "?" in the File Name field.

   The wildcard characters supported for the file or folder name are as follows:

   - "*"--Use the asterisk to substitute zero or more characters in a file or folder name.
   - "?"--Use the question mark to substitute a single character in a file or folder name.

   For example, if you specify *.txt, all files with a .txt file extension appear in the search results.

5. (Optional) Specify a path name to further filter your search and select whether to include or not include subdirectories or files and folders.

6. Click Find to launch the search.

   The results of the search are displayed. If the search discovers multiple occurrences (recovery points) of the same searched file, it lists all occurrences sorted by date (with the most recent listed first).

7. Select the version that you want to restore from the list and click Next.

   The Restore Options dialog is displayed. You may restore to an alternate location only. Specify or browse to the location where you want the backup image stored. Click the green arrow to verify the connection. Provide user credentials, if needed.

8. Select the conflict resolution options:

   Overwrite existing files

   Overwrites (replaces) any existing files that are located at the restore destination. All objects are restored from the backup files regardless of their current presence on your computer.

   Replace active files

   Replaces any active files upon reboot. If during the restore attempt, the software discovers that the existing file is currently in use or being accessed and it does not immediately replace that file, but instead to avoid any problems, it delays the replacement of the active files until the next time that you reboot the computer. (The restore occurs immediately, but the replacement of any active files is done during the next reboot).

   Note: If this option is not selected, then any active file is skipped from the restore.

   Rename files

   Creates a new file if the file name exists. Selecting this option copies the source file to the destination with the same filename but a different extension. Data is then restored to the new file.

   Skip existing files

   Skips over and does not overwrite (replace) any existing files that are located at the restore destination. Only objects that do not currently exist on your computer are restored from the backup files.

   By default, this option is selected.

9. (Optional) Select Create root directory from the Directory Structure.

   This option recreates the same root directory structure on the restore destination path.

   Note: If this option is not selected, the file or folder is restored directly to the destination folder.

10. Enter the backup encryption password to restore the encrypted data and then click Next.

    The Restore Summary dialog is displayed.

11. Review the displayed information to verify that all the restore options and settings are correct.

    - If the summary information is not correct, click Previous and go back to the applicable dialog to change the incorrect setting.
    - If the summary information is correct, click Finish to launch the restore process.

Recover an Entire Virtual Machine

You can recover an entire virtual machine from a CA ARCserve Central Host-Based VM Backup session.

This backup method is similar to performing BMR. With this method you can recover the Windows guest operating system, applications, and data.

Follow these steps:

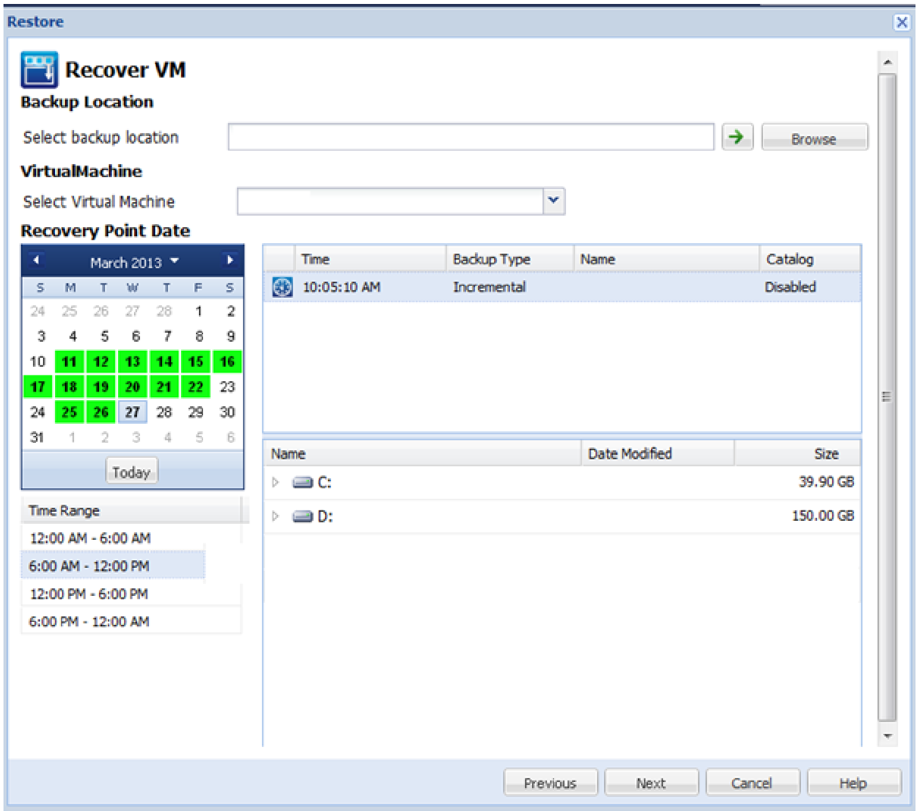
1. Log in to the application and click Node on the Navigation bar.

   From the Node screen, expand the group containing the node that you want to restore.

   Click the check box next to the node that you want to restore and then click Restore on the toolbar. The application logs you into CA ARCserve D2D.

2. From the Restore dialog, click Recover VM.

3. The Restore dialog opens. The Backup Location and Virtual Machine fields are populated based on the VM that you selected from the Node screen. If desired, change these values.



			March 2013			
S	M	T	W	T	F	S
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Time Range
12:00 AM - 6:00 AM
6:00 AM - 12:00 PM
12:00 PM - 6:00 PM
6:00 PM - 12:00 AM

Time	Backup Type	Name	Catalog
10:05:10 AM	Incremental		Disabled

Name	Date Modified	Size
C:		39.90 GB
D:		150.00 GB

Specify the source where your virtual machine backup sessions are stored. Enter user credentials if prompted.

The drop-down menu lists all the virtual machines at the location in the Backup Location field.

4. From the calendar, click the date for the virtual machine image you want to recover. From the Time Range list, click the backup image to recover. The content that corresponds with your selection is displayed for your reference. You cannot select individual volumes, folders, or files. The entire virtual machine is restored.

5. Click Next. On the Restore Options dialog, select the restore destination.

   Restore to Original Location

   Restores to the Virtual Machine to the original location from where the backup image was captured. By default, this option is selected.

   For more information, see Restore VM to Original Location (see page 96).

   Restore to an Alternative Location

   Restores to the Virtual Machine to a different location from where the backup image was captured.

   For more information, see Restore VM to an Alternative Location (see page 97).

6. Specify the conflict resolution and post recovery options. By default, these options are not selected.

   - Overwrite existing Virtual Machine--Replaces any existing virtual machine images on the vCenter/ESX server.
   - Power on Virtual Machine--Starts the virtual machine after the restore process finishes.

7. Click Next. Enter vCenter/ESX Server credentials for the backup source, if prompted and click OK.

8. On the Restore Summary dialog, verify that all options are correct. If not, click Previous to go back. If yes, click Finish to launch the recovery process.

Restore Virtual Machines to Original Locations

During the Restore VM (Virtual Machine) configuration process, you are required to select the option of where you want to restore the virtual machine to. The available selections are Restore to the Original Location and Restore to an Alternative Location.

If you select to restore your VM to the original location, perform the following steps:

Follow these steps:

1. From the Restore Options dialog, after specifying the Resolve Conflicts and Post Recovery options, select Restore to Original Location and click Next.

   Note: For more information about Resolve Conflicts and Post Recovery options, see Restore Data from Virtual Machines.

   The Set Credential for Source vCenter/ESX Server dialog is displayed.

2. Specify the credentials for accessing the Virtual Machine.

   - **vCenter/ESX Server--**Specify the host name or IP address for the destination vCenter or ESX server system.
   - **VM Name--**Specify the host name of the virtual machine that you are restoring.
   - **Protocol--**Specify the protocol that you want to use for communication with the destination server. The available selections are HTTP and HTTPS.
   - **Port Number--**Specify the port that you want to use for data transfer between the source server and the destination. By default this port number is 443.
   - **User Name--**Specify the user name that has access permission to log in to the virtual machine you are restoring.
   - **Password--**Specify the corresponding password for the User Name that is required to log in to the virtual machine you are restoring.

3. When the credentials are specified, click OK.

   The Restore Summary dialog opens.

4. Review the displayed information to verify that all the restore options and settings are correct.

   - If the summary information is not correct, click Previous and go back to the applicable dialog to change the incorrect setting.
   - If the summary information is correct, click Finish to launch the restore process.

Restore Virtual Machines to Alternative Locations

During the Restore VM (virtual machine) configuration process, you are required to select the option of where you want to restore the virtual machine to. The available selections are Restore to the Original Location and Restore to an Alternative Location.

If you want to restore the virtual machine to an alternative location, perform the following steps:

Follow these steps:

1. From the Restore Options dialog, after specifying the Resolve Conflicts and Post Recovery options, select Restore to an Alternative Location.

   Note: For more information about the Resolve Conflicts and Post Recovery options, see Recover Data to Virtual Machines.

   The Restore Options dialog expands to display additional restore to alternative options.

2. Specify the vCenter/ESX Server Information.
   - **vCenter/ESX Server--**Specify the host name or IP address for the destination vCenter or ESX server system.
   - **Username--**Specify the user name that has access privilege to log in to the virtual machine you are restoring.
   - **Password--**Specify the corresponding password for the User Name that is required to log in to the virtual machine you are restoring.
   - **Protocol--**Specify the protocol that you want to use for communication with the destination server. The available selections are HTTP and HTTPS.
   - **Port Number--**Specify the port that you want to use for data transfer between the source server and the destination. By default this port number is 44.
3. When the vCenter/ESX Server Information is specified, click the Connect to this vCenter/ESX Server button.

   If the alternative server access credential information is correct, the Other Information fields become enabled.

4. Specify the Other Information.

   - **VM Name--**Specify the host name of the virtual machine that you are restoring.

   - **ESX Server--**Specify the destination ESX server. The drop-down menu will contain a listing of all ESX servers that are associated with the specified virtual machine.

   - **Resource Pool**--Specify the Resource Pool or vApp Pool you want to use for the virtual machine recovery. Click the Browse Resource Pool button to display the Select a Resource Pool dialog. This dialog contains a listing of all Resource Pools and vApp Pools available for the destination ESX server. Select the pool to use for the virtual machine recovery. You can leave this field blank when you do not want to assign a Resource Pool or vApp Pool to this virtual machine recovery.

     Note: A Resource Pool is a configured collection of CPU and memory resources. A vApp Pool is a collection of one or more virtual machines that can be managed as a single object.

   - **VM DataStore--**Specify the destination VM DataStore for the virtual machine recovery or each virtual disk within the virtual machine.

     A virtual machine can have multiple virtual disks and you can specify a different data store for each virtual disk.

     For example:

     - Disk0 can be restored to Datastore1.

     - Disk1 can be restored to Datastore1.

     - Disk2 can be restored to Datastore2.

     Important! For VM DataStore, this field only populates if the user has full VMware system administrator permissions. If the user does not have proper administrator permissions, CA ARCserve Central Host-Based VM Backup will not continue the restore process after you connect to the vCenter/ESX Server.

5. When the Other Information are specified, click Next.

   The Restore Summary dialog opens.

6. Review the displayed information to verify that all the restore options and settings are correct.

   - If the summary information is not correct, click Previous and go back to the applicable dialog to change the incorrect setting.

   - If the summary information is correct, click Finish to launch the restore process.

Restore Considerations

Use the following table to help you determine what restore method to use under the listed conditions.

Restore Method:	When you want to:	Considerations:
Browse Recovery Points (Use this method for performing application level restores.) Find Files/Folders to Restore	Restore a file, folder, database, or application that is now corrupt.	■ **CA ARCserve Central Host-Based VM Backup**: To restore files or folders, the VM must be powered on at time of backup. Restore to original location is not possible. Map a network drive to the original location or access it as a share, restore to the mapped or shared location. Install CA ARCserve D2D in the Guest OS of a new VM and restore an application database. For more information, see the topic, Application Level Restores. ■ **CA ARCserve D2D or CA ARCserve Central Protection Manager**: See the application User Guide.
Recover VM	Provision a new VM, restore the OS, applications, and data	■ **CA ARCserve Central Host-Based VM Backup**: Recommended ■ **CA ARCserve D2D or CA ARCserve Central Protection Manager**: Not Supported

Recovery is also possible using the BMR and Application Level Restore processes. For more information, see the topic, Restore Methods (see page 87).

Application Level Restores

CA ARCserve Central Applications let you protect and recover data, but also help you get applications that use that data back up and running. Application Level Restores use the Browse Recovery Points restore method. During the application level restore process, you can recover Microsoft Exchange or SQL Servers without having to perform a full disaster recovery.

Before you begin the application level restore process, you may need to perform the following tasks:

- Provision a new virtual machine with a Windows Guest OS
- Install CA ARCserve D2D in the Guest OS.

- For Exchange Server application restore operations:
  - Verify that the account has Exchange Full Administrator role privileges for Exchange Server 2003, or Exchange Organization Administrator or Server Administrator role privileges for Exchange Server 2007/2010/2013.
  - When you are restoring Exchange Server 2007 databases to Recovery Storage Groups, create the Recovery Storage Groups on the protected server. Similarly, when you are restoring Exchange Server 2010 or 2013 databases to Recovery Databases, create the Recovery Databases on the protected server.
  - Review the complete procedure on how to perform a restore that is provided in the CA ARCserve D2D User Guide.

Restore Exchange Server Data

You can perform application level restores of Microsoft Exchange Server data with the following:

- Exchange Server 2003: Single Server Environment. Cluster Environment is not supported.
- Exchange Server 2007: Single Server Environment, Local Continuous Replication (LCR), and Cluster Continuous Replication (CCR) environment. For Exchange Server 2007 CCR, install CA ARCserve D2D locally on both the active and passive nodes. You can perform backup operations from either the active or passive node, but you can perform restore operations only on the active node. Single Copy Cluster (SCC) is not supported.
- Exchange Server 2010: Single Server Environment and Database Availability Group (DAG) environment. For a DAG environment, verify CA ARCserve D2D is installed on all servers in the DAG. You can perform backup operations from any server for both active and passive database copies, but restore operations can only be performed to an active database copy.
- Exchange Server 2013: Backup and Restore of Microsoft Volume Shadow Copy Service (VSS) is supported. Granular Recovery Technology (GRT) is not supported.

You can restore Microsoft Exchange Server data to the following levels:

- Microsoft Exchange Writer Level: Restores all Exchange Server data.
- Storage Group Level: Restores a specific Storage Group (does not apply to Microsoft Exchange Server 2010).
- Mailbox Store Level: Restores a specific mailbox store (applies only to Microsoft Exchange Server 2003).
- Mailbox Database Level: Restores a specific mailbox database (applies to Exchange Server 2007 and 2010).

Note: Before you begin, perform the necessary prerequisites in Application Level Restores (see page 100).

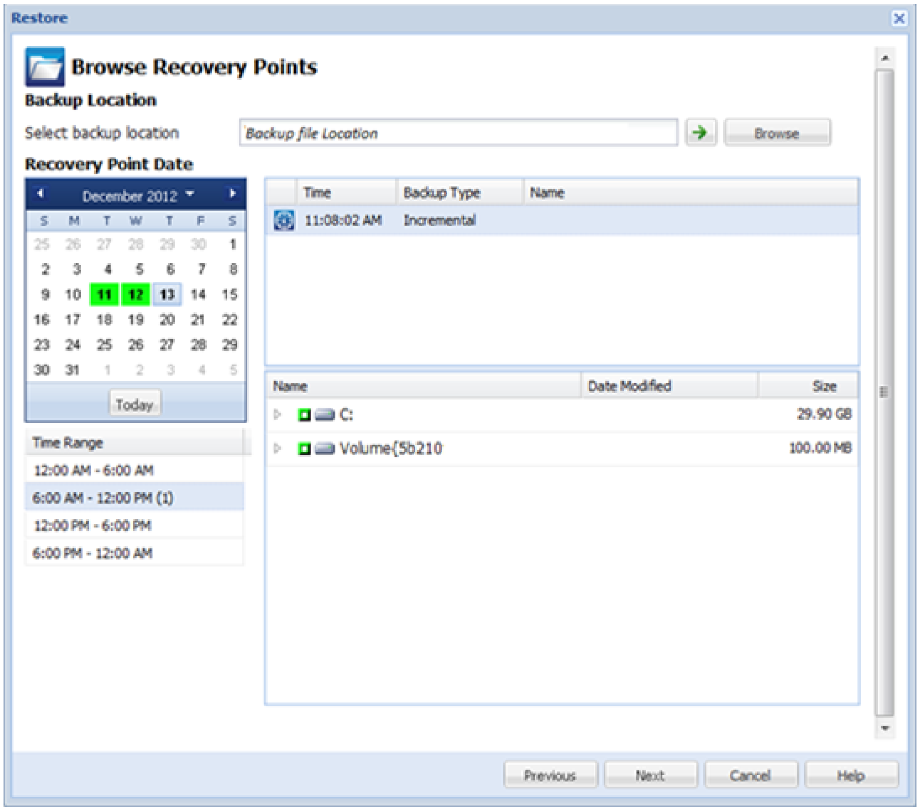
Important! Microsoft Exchange Server user mailbox items restore is not supported from the CA ARCserve Central Host-Based VM Backup sessions. To restore Microsoft Exchange Server data at a granular level, back up the Exchange Server data using CA ARCserve Central Protection Manager or CA ARCserve D2D.

To restore Exchange Server data

1. Verify that CA ARCserve D2D is installed on the guest operating system.
2. Log in to the guest operating system on the virtual machine where you want to restore Exchange Server data.
3. Start CA ARCserve D2D and then click Restore on the CA ARCserve D2D Navigation panel to open the Restore dialog.
4. Click Browse Recovery Points to open the Browse Recovery Points dialog.
5. In the Select backup location field on the Browse Recovery Points dialog, specify the path to the backup session on the Host-Based VM Backup virtual machine that you want to restore Exchange Server data from. The following path is an example of the path to the backup session on the Host-Based VM Backup virtual machine:

   ```
   https://<server name>/<share name>/vm@<host name or IP address of the ESX Server system>
   ```

6. On the calendar, click a recovery point date and time.



Time Range
12:00 AM - 6:00 AM
6:00 AM - 12:00 PM (1)
12:00 PM - 6:00 PM
6:00 PM - 12:00 AM

Time	Backup Type	Name
11:08:02 AM	Incremental	

Name	Date Modified	Size
C:		29.90 GB
Volume{5b210		100.00 MB

7. Click Next to open the Restore Options dialog.

8. Select the destination for the restore.

   The available options are to restore to the original location of the backup, restore the dump file only, or restore to a Recovery Storage Group/Recovery Mailbox Database.

   Restore to original location

   Restores to the original location from where the backup image was captured.

   Dump file only

   Restores the dump files only.

   For this option, CA ARCserve D2D will restore the Microsoft Exchange database file to a specified folder, and will not bring it online after recovery. You can then move this file to a different server and mount it to exchange server manually to view data contained in it.

   Note: When a Recovery Mailbox Database exists, restore with ‘Dump file only’ option will fail.

Replay log on database

Specifies that when the database files are dumped to the destination folder, you can replay and apply all Microsoft Exchange transaction log files and commit them to the database file. When the database next starts, and transaction log files that were not yet written to the database files are then applied before the database is again made available to you.

Note: This option is not applicable for Microsoft Exchange Server 2003

Restore to Recovery Storage Group (Exchange 2007)

Restores the database to a Recovery Storage Group (RSG).

An RSG is a storage group that can be used for recovery purposes. You can restore a Microsoft Exchange Mailbox Database from a backup in a Recovery Storage Group and then recover and extract data from it, without affecting the production database that is being accessed by end users.

- If single storage group or database (except a public folder database) from the same storage group are selected to restore, the default restore destination is "Restore to Recovery Storage Group" (or "Restore to Recovery Database").
- If multiple storage groups or databases from multiple storage groups are selected to restore, Exchange can only be restored to the original location or restore with "Dump file only" option. The default restore destination is "Restore to original location."

Before restoring an Exchange 2007 database to a Recovery Storage Group, you must create a Recovery Storage Group and Mailbox Database with the same name.

For example, if you want to restore MailboxDatabase1 from the First Storage Group to a Recovery Storage Group, you must create a Recovery Storage Group and add the database "MailboxDatabase1" to the Recovery Storage Group.

Note: This option is not applicable for Microsoft Exchange Server 2003

Dismount the database before restore and mount the database after restore

Typically before a restore, Microsoft Exchange will perform some checks to help ensure the following:

- The database to be restored is in "Dismounted" status.
- The database is not restored unexpectedly.

  To protect a Microsoft Exchange production database from being restored unexpectedly, a switch is added to allow the database to be overwritten during the restore process. Microsoft Exchange will refuse to restore a database if this switch is not set.

For CA ARCserve D2D, these two options are controlled by this "Dismount the database before restore and mount the database after restore" option. With this option, CA ARCserve D2D lets you launch the restore process automatically without any manual operations. (You can also specify to dismount/mount database manually).

- If checked, specifies that the recovery process will automatically dismount the Exchange database before the restore process and then mount the database after the restore process is completed. In addition, if checked, this option will also allow the Exchange database to be overwritten during the restore.
- If unchecked, specifies that the recovery process will not automatically dismount the Exchange database before recovery and mount the database after recovery.

  The Exchange administrator would have to perform some manual operations such as dismount the Exchange database, set the Allow Overwrite flag on the database, and mount the Exchange database. (The recovery procedure is performed by Exchange during the mounting of the database).

  In addition, if unchecked, this option does not allow the Exchange database to be overwritten during restore.

Restore to Recovery Database (Exchange 2010)

Restores the database to a Recovery Database. A Recovery Database is a database that can be used for recovery purposes. You can restore a Microsoft Exchange Mailbox Database from a backup to a Recovery Database and then recover and extract data from it, without affecting the production database that is being accessed by end users.

Before restoring an Exchange 2010 database to a Recovery Database, you must first create a Recovery Database.

Note: This option is not applicable for Microsoft Exchange Server 2003 and 2007.

9. Click Next to open the Restore Summary dialog.
10. Review the displayed information to verify that all the restore options and settings are correct.
    - If the summary information is not correct, click Previous and go back to the applicable dialog to change the incorrect setting.
    - If the summary information is correct, click Finish to launch the restore process.

Restore SQL Server Data

You can perform application level restores of Microsoft SQL Server data with the following:

- Microsoft SQL Server 2005 Express, Standard, Workgroup, and Enterprise
- Microsoft SQL Server 2008, SQL Server 2008 R2 Express, Web, Standard, Workgroup, and Enterprise

Note: Before you begin, read the prerequisites in Application Level Restores (see page 100).

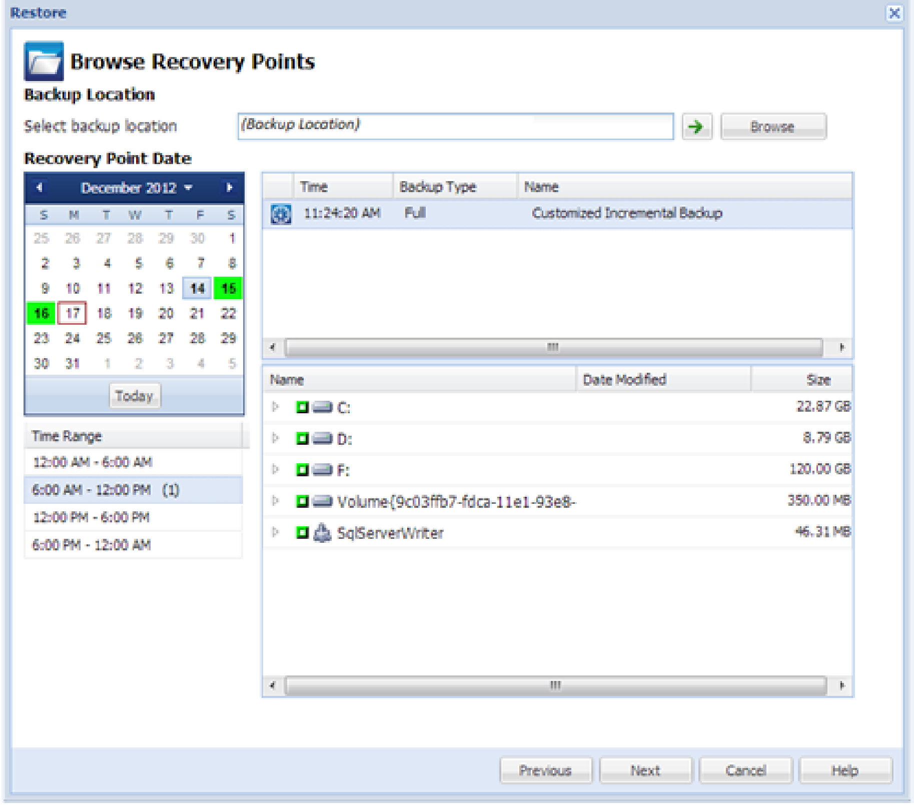
Important! Microsoft SQL Server granular restore does not work on the CA ARCserve Central Host-Based VM Backup console. To restore Microsoft SQL Server data, install CA ARCserve D2D on to the guest virtual machine.

Follow these steps:

1. Verify that CA ARCserve D2D is installed on the guest operating system.
2. Log in to the guest operating system for the virtual machine where you want to restore SQL Server data.
3. Start CA ARCserve D2D and then click Restore on the CA ARCserve D2D Navigation panel to open the Restore dialog.
4. Click Browse Recovery Points to open the Browse Recovery Points dialog.
5. In the Select backup location field on the Browse Recovery Points dialog, specify the path to the backup session on the Host-Based VM Backup virtual machine that you want to restore SQL Server data from. The following path is an example of the path to the backup session on the Host-Based VM Backup virtual machine:

   ```
   https://<server name>/<share name>/vm@<host name or IP address of the ESX Server
   system>
   ```

6. Select the recovery point (date and time) and then select the Microsoft SQL Server database to be restored.



Restore

Browse Recovery Points

Backup Location

Select backup location: (Backup Location)

Recovery Point Date

December 2012

S	M	T	W	T	F	S
25	26	27	28	29	30	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

Time Range
12:00 AM - 6:00 AM
6:00 AM - 12:00 PM (1)
12:00 PM - 6:00 PM
6:00 PM - 12:00 AM

Time	Backup Type	Name
11:24:20 AM	Full	Customized Incremental Backup

Name	Date Modified	Size
C:		22.87 GB
D:		8.79 GB
F:		120.00 GB
Volume{9c03ffb7-fdca-11e1-93e8-		350.00 MB
SqlServerWriter		46.31 MB

7. Click Next to open the Restore Options dialog.

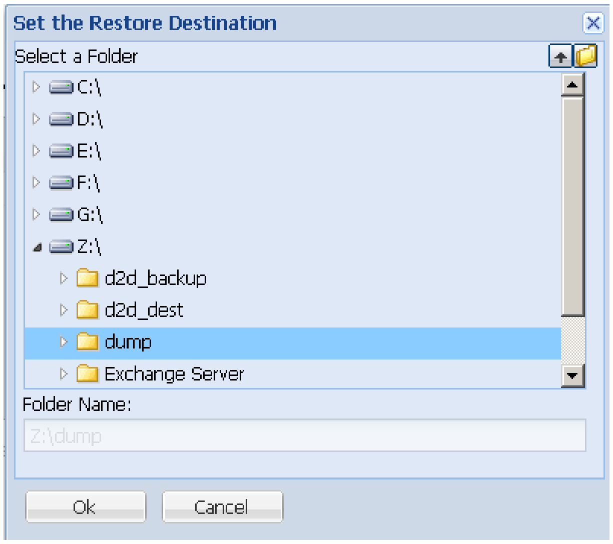
   Select the destination for the restore. The available options are to restore to the original location of the backup, restore the dump file only, or restore to an alternate location.

   Restore to original location

   > Restores to the original location from where the backup image was captured.

   Dump file only

   > Restores the dump files only.
   >
   > Dump files are created when an application crashes and contains additional (time-stamped) information that can be used to troubleshoot the cause of the problem.
   >
   > When you select this option, you can then specify or browse to the folder location where the dump file will be restored to.

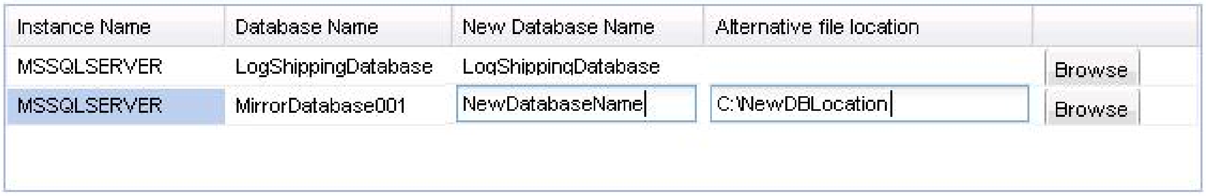


Set the Restore Destination

Folder Name: Z:\dump

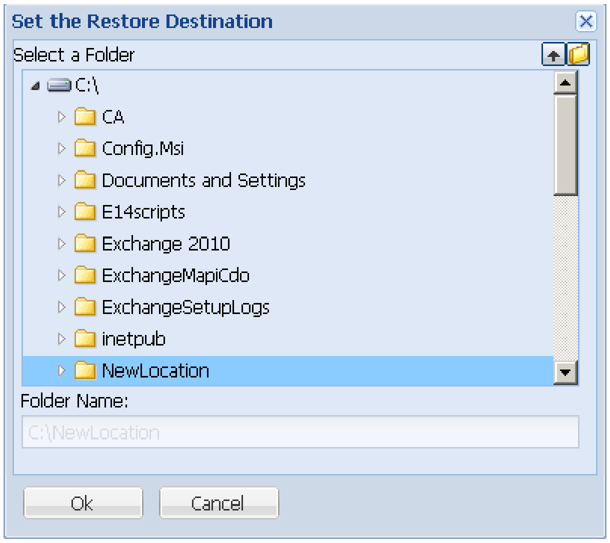
Restore to alternate location

> Restores to an alternate location (not the original location).



Instance Name	Database Name	New Database Name	Alternative file location	
MSSQLSERVER	LogShippingDatabase	LogShippingDatabase		Browse
MSSQLSERVER	MirrorDatabase001	NewDatabaseName	C:\NewDBLocation	Browse

Because backups can be copied to network locations, they can be used by multiple SQL Server instances. Multiple database restore can be performed (simultaneously) from the instance level. From this listing, you can select the database instance and specify a new database name and alternate location to restore the database to. In addition, you can also browse to the alternate location where the database will be restored to.



Folder Name: C:\NewLocation

8. Click Next to open the Restore Summary dialog.
9. Review the displayed information to verify that all the restore options and settings are correct.
    - If the summary information is not correct, click Previous and go back to the applicable dialog to change the incorrect setting.
    - If the summary information is correct, click Finish to launch the restore process.

Chapter 5: Troubleshooting CA ARCserve Central Host-Based VM Backup

This section provides troubleshooting information to help you identify and resolve problems that you can encounter when using CA ARCserve Central Host-Based VM Backup.

This section contains the following topics:

Restore Data Problems When Data is Backed up Using the HotAdd Transport Mode for Disks Larger than 2 TB in Size (see page 148)

Cannot Connect to Specified Server Messages Appear when Attempting to Add Nodes

Valid on Windows platforms.

Symptom:

The following message appears when you to try to add or connect to nodes from the Node screen.

```
Cannot connect to specified server.
```

Solution:

If the above message appears when you try to add nodes from the Node screen, the following corrective actions can help you solve the problem:

- Verify that the Windows Server service is running on the CA ARCserve Central Host-Based VM Backup server and the source virtual machine (node).
- Verify that a Windows Firewall exception is applied to the Windows File and Printer Sharing service on the CA ARCserve Central Host-Based VM Backup server and the source virtual machine (node).
- Verify that a Windows Firewall exception is applied to the Windows Netlogon service only if the node is not a member of a domain. Perform this task on the CA ARCserve Central Host-Based VM Backup server and the source virtual machine (node).
- Verify that the value applied to the Sharing and Security model for local account is Classic. To apply the Classic value, do the following:

  Note: Perform the following steps on the CA ARCserve Central Host-Based VM Backup server and the source virtual machine (node).

  1. Log in to the CA ARCserve Central Host-Based VM Backup server and open Control Panel.
  2. From the Control Panel, open Administrative Tools.
  3. Double-click Local Security Policy.

     The Local Security Policy window opens.

4. From the Local Security Policy window, expand Local Policies and expand Security Options.

   The Security Policies appear.

5. Right-click Network access: Sharing and security model for local accounts and click Properties on the pop-up menu.

   The Network access: Sharing and security model for local accounts properties dialog opens.

6. Click Local Security Setting.

   From the drop-down list, select Classic - local users authenticate as themselves.

   Click OK.

- Verify that the value applied to the Local Policies for the LAN manager authentication level is set to send LM & NTLMv2 – use NTLMv2 session security if negotiated. To apply the value, do the following:

  1. Log in to the CA ARCserve Central Host-Based VM Backup server and open the command prompt.

     Execute the following command

     ```
     secpol.msc
     ```

     The Local Security Settings dialog opens.

  2. Select local policies and click security options.

     Search for Network security: LAN manager authentication level.

     Double-click the option.

     The Properties dialog opens

  3. Select the following option and click OK.

     ```
     send LM & NTLMv2 – use NTLMv2 session security if negotiated
     ```

  4. From the command prompt, execute the following command:

     ```
     gpupdate
     ```

  The value is applied.

Blank Webpages Appear or Javascript Errors Occur

Valid on Windows Server 2008 and Windows Server 2003 operating systems.

Symptom:

When you open CA ARCserve Central Applications websites using Internet Explorer, blank web pages appear or Javascript errors occur. The problem occurs when opening Internet Explorer on Windows Server 2008 and Windows Server 2003 operating systems.

This problem occurs under the following conditions:

- You are using Internet Explorer 8 or Internet Explorer 9 to view your application, and the browser does not recognize the URL as a trusted site.
- You are using Internet Explorer 9 to view your application, and the communication protocol in use is HTTPS.

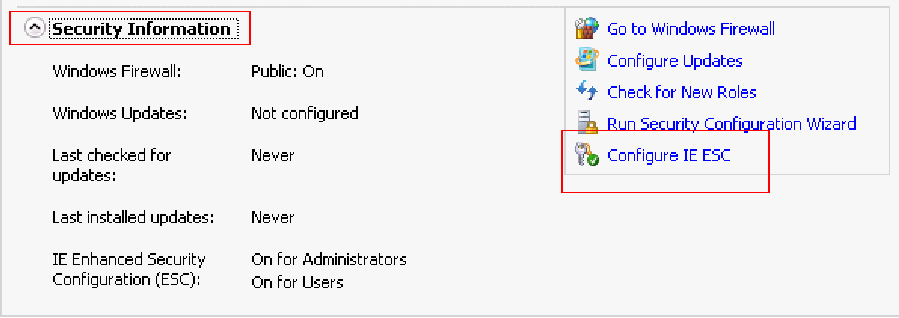
Solution:

To correct this problem, disable Internet Explorer Enhanced Security on the computers that you use to view your application.

To disable Internet Explorer Enhanced Security on Windows Server 2008 systems, do the following:

1. Log on to the Windows Server 2008 computer that you use to view reports using the Administrator account or an account that has administrative privileges.
2. Right-click Computer on the desktop and click Manage to open the Server Manager window.
3. From the Server Manager window, click Server Manager (Server Name).

   From the Server Summary section, open Security Information and click Configure IE ESC as illustrated by the following:



Windows Firewall:	Public: On
Windows Updates:	Not configured
Last checked for updates:	Never
Last installed updates:	Never
IE Enhanced Security Configuration (ESC):	On for Administrators On for Users

   The Internet Explorer Enhanced Security Configuration dialog opens.

4. On the Internet Explorer Enhanced Security Configuration dialog, do the following:

   - Administrators--Click Off
   - Users--Click Off.

   Click OK.

The Internet Explorer Enhanced Security Configuration dialog closes and Internet Explorer Enhanced Security is disabled.

To disable Internet Explorer Enhanced Security on Windows Server 2003 systems, do the following:

1. Log on to the Windows Server 2003 computer that you use to view reports using the Administrator account or an account that has administrative privileges.
2. Open Windows Control Panel and then open Add or Remove Programs.
3. From the Add or Remove Programs dialog, click the Add/Remove Windows Components option to access the Windows Components Wizard screen.

   Clear the checkmark next to Internet Explorer Enhanced Security Configuration.

   Click Next.

   Follow the on-screen instructions to complete the configuration and then click Finish.

Internet Explorer Enhanced Security is disabled.

Web Pages Do Not Load Properly When Logging in to CA ARCserve D2D Nodes

Valid on Windows platforms.

Symptom:

Web pages in browser windows do not load properly, display error messages, or both when logging in to CA ARCserve D2D nodes from the Nodes screen.

Solution:

This behavior affects mainly Internet Explorer browsers. Web pages may not load properly when Active scripting, ActiveX controls, or Java programs are disabled on your computer or blocked on your network.

You can correct the problem by refreshing your browser window. However, if refreshing your browser window does not correct the problem, do the following:

1. Open Internet Explorer.

   From the Tool menu, click Internet Options.

   The Internet Options dialog opens.

2. Click the Security tab.

   The Security options display.

3. Click Internet zone.

   The Internet Zone options display.

4. Click Custom Level.

   The Security Settings - Internet Zone dialog opens.

5. Scroll to the Scripting category.

   Locate Active scripting.

   Click the Enable or Prompt option.

6. Click OK on the Security Settings - Internet Zone dialog.

   The Security Settings - Internet Zone dialog closes.

7. Click OK on the Internet Options dialog.

   The Internet Options dialog closes and the Active scripting option is applied.

Note: If this solution does not correct the problem, consult your systems administrator to verify that other programs, such as antivirus or firewall programs, are not blocking Active scripting, ActiveX controls, or Java programs.

How to Troubleshoot Page Loading Problems

Valid on Windows platforms.

Symptom:

The following error messages appear in browser windows when you log in to CA ARCserve Central Applications, CA ARCserve D2D nodes, and monitoring servers.

Message 1:

```
Errors on this webpage might cause it to work incorrectly.
```

Message 2:

```
!
```

Solution:

Web pages do not load properly for many reasons. The following table describes common reasons and the corresponding corrective actions:

Reason	Corrective Action
There are problems with the underlying HTML source code.	Refresh the webpage and try again.
Your network blocks Active scripting, ActiveX, or Java programs.	Allow your browser to use Active scripting, ActiveX, or Java programs.
Your antivirus application is configured to scan temporary Internet files and downloaded programs.	Filter your antivirus application to allow Internet-related files associated with CA ARCserve Central Applications webpages.
The scripting engine installed on your computer is corrupt or outdated.	Update the scripting engine.
The video card drivers installed on your computer are corrupt or outdated.	Update the video card drivers.
The DirectX component installed on your computer is corrupt or outdated.	Update the DirectX component.

Garbage Characters Appear in Browser Windows When Accessing CA ARCserve Central Applications

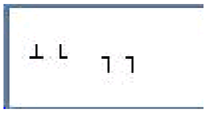
Valid on all Windows operating systems. All browsers affected.

Symptom:

When you log in to CA ARCserve Central Applications, garbage characters appear in the content area of your browser window.

Solution:

This problem occurs when you install CA ARCserve Central Applications using HTTPS communication and then try to access CA ARCserve Central Applications using HTTP communication. The underlying CA ARCserve Central Applications web services component does not support the capability to convert HTTP URLs to HTTPS URLs. As a result, garbage characters appear in your browser window. For example:



To correct this problem, access CA ARCserve Central Applications using HTTPS when you install or configure the applications to communicate using HTTPS.

Access Denied Errors Occur when Updating Nodes

Valid on all Windows operating systems that support User Account Control (UAC).

Note: Windows Vista or later versions.

Symptom 1:

When you provide a Windows user account that is not a built-in administrator or domain user account and is a member of the administrators group, the following messages displays when applying the password on the Node Credentials dialog of the Import Virtual Machines from vCenter/ESX dialog:

```
Administrator Privileges are required.
```

The result is that you cannot apply the node credentials.

Symptom 2:

When you import nodes but do not provide node credentials during the import operation, the following message displays when you try to perform the Update Node operation using a Windows user account that is not a built-in administrator or domain user account and is a member of the administrators group:

```
Access is denied. Verify user has administrator privilege and the remote registry
access is not restricted by local security policy of the added machine.
```

The result is that you cannot update the node.

Solution:

You can expect this behavior when UAC is enabled on computers running a Windows operating system that supports UAC. UAC is a Windows feature that allows only the Administrator account to log in to the computer from a remote location.

Use one of the following methods to resolve this issue:

- Provide the built-in or domain administrator credentials.
- Disable UAC:
  1. Log in to the node using the Administrator account.
  2. Open Windows Control Panel.
  3. Open User Accounts.
  4. From the Make changes to your user account screen, click Change User Account Control Settings and then do one of the following:
     - **Windows Vista and Windows Server 2008:** On the Make changes to you user account screen, click Turn User Account Control on or off. Then on the Turn on User Account Control (UAC) to make your computer more secure screen, clear the check box next to Use User Account Control (UAC) to help protect your computer, and click OK.

       Restart your computer to apply the changes to UAC.
     - **Windows Server 2008 r2 and Windows 7:** On the Choose when to be notified about changes to your computer screen, move the slider from Always notify to Never notify. Click OK, close Windows Control Panel.

       Restart your computer to apply the changes to UAC.

Certificate Error Appears When You Log In to the Application

Valid on Windows platforms.

Symptom:

The following message appears in your browser window when you log in to the application:

- Internet Explorer:

  `There is a problem with this website's security certificate.`

- Firefox:

  `This connection is untrusted.`

- Chrome:

  `This site's security certificate is not trusted!`

If you specify an option that lets you continue to the website, you can log in to the application successfully. However, you encounter this behavior every time you log in to the application.

Solution:

This behavior occurs when you specify to use HTTPS as the communication protocol. To correct this problem temporarily, click the link in your browser window that lets you continue to the website. However, the next time that you log in to the application, you will encounter the message again.

HTTPS communication protocol provides a higher level of security than HTTP communication protocol. If you want to continue to communicate using HTTPS communication protocol, you can purchase a security certificate from VeriSign and then install the certificate on the application server. Optionally, you can change the communication protocol used by the application to HTTP. To change the communication protocol to HTTP, do the following:

1. Log in to the server where you installed the application.
2. Browse to the following directory:

   `C:\Program Files\CA\ARCserve Central Applications\BIN`

3. Execute the following batch file:

   `ChangeToHttp.bat`

4. After the batch file executes, open Windows Server Manager.

   Restart the following service:

   `CA ARCserve Central Applications Service`

Backups Fail with Snapshot Creation Errors

Valid on Windows platforms.

When you submit backups of VMware based virtual machines, the following symptoms occur:

Symptom 1

Backup jobs fail and the following message appears in the Activity Log:

```
Failed to take snapshot. ESX/vCenter report error. A general system error occurred.
Protocol error from VMX.
```

Solution 1

This error is a VMware issue. To correct this problem, uninstall and then reinstall VMware Tools inside the guest operating system and then resubmit the job.

Symptom 2

Backup jobs fail and the following message appears in the Activity Log:

```
Could not take snapshot of the virtual machine. ESX Server/vCenter Server reported
the following error: Cannot create a quiesced snapshot because the create snapshot
operation exceeded the time limit for holding off I/O in the frozen virtual machine..
```

Solution 2

This error occurs when VSS encounters errors when creating snapshots. VSS can encounter errors under the following conditions:

A VSS writer is in an unstable state.

To determine the source and correct this behavior, perform the following remedial actions:

1. Run the command "vssadmin list writers" from the command line on the guest operating system on the virtual machine.
2. Verify that all VSS writers are in a healthy state.
3. For writers that are in the following states, contact Microsoft or the vendor of the writer for information about how to fix the errors.

   ```
   state=Failed
   Last Error=No Error
   ```

   Note: Restarting writers usually solves the problem.

VSS encountered errors when creating snapshots.

To determine the source and correct this behavior, perform the following remedial actions:

1. Review the Windows event log in the guest operating system. Check for errors that are related to the VSS components about the time the backup started.
2. When VSS reports errors due to insufficient disk space, free disk space on the volume that is associated with the error.
3. When VSS or the Windows Volsnap driver generates time-out errors, the applications running inside the virtual machine are in a highly active state. The highly active state prevents VSS from creating consistent snapshots. To remedy this condition, schedule backups at times when the applications perform fewer input and output operations to the volume.
4. When the Windows Event Log indicates that the VolSnap driver encountered errors, see the article Volume Snapshot Driver Integrity at the Microsoft Technet Library for information about how to correct VolSnap driver errors.

Recover VM Operations Fail with Unknown Errors

Valid on Windows operating systems.

Symptom:

Recover VM jobs fail. You can submit the Recover VM job, however, the following message appears in the Activity Log:

```
Failed to recover virtual disks.
```

In addition, VDDK reports the following error message:

```
Unknown Error.
```

Solution 1:

To correct this problem, consider the following solutions:

- Recover VM jobs can fail when there is not enough free disk space on the original datastore. VDDK returns the message because the VDDK API (currently) does not support the capability to detect the amount of free disk space on the original datastore. (The datastore is the location where you specified to recover the virtual machine.) To correct this problem, free the amount of disk space on the original datastore that is required to complete the operation and then resubmit the job.
- Network disturbance and high network traffic can cause Recover VM jobs to fail. To correct this problem, verify that the proxy server and the ESX Server system or the vCenter Server system can communicate with each other though the network, then resubmit the job.
- Multiple concurrent connections consisting of backup or recover VM jobs to the ESX Server system or the vCenter Server system, which includes vSphere SDK connections through the VMware vSphere Client, can cause the jobs to fail. To correct this problem, close all unnecessary connections and then resubmit the job. For information about the maximum quantity of concurrent connections that are allowed, see Cannot Open VMDK File (see page 140).
- Examine the Tasks and Events sections of the VMware vSphere Client log to discover internal errors for the specific virtual machine. Correct the internal errors and then resubmit the job.

  Example: Another application or operation is using the VMDK file. To correct this problem, release the file and resubmit the job.

Solution 2:

This problem can occur under the following conditions:

- VDDK did not process a snapshot properly.
- VDDK did not delete a snapshot manually or internal to the virtual machine.

To correct this problem, resubmit the job. If the job fails again, delete the recovered virtual machine and resubmit the job.

Backup and Recovery Operations Using the hotadd Transport Mode Cannot Mount Disks

Valid on Windows platforms.

Symptom:

Backup and recovery jobs that use the hotadd transport mode cannot mount disks to the proxy system.

Solution:

To correct this problem, do the following:

1. Open VMware vSphere Client.

   Log in to the ESX Server system or the vCenter Server system using administrative credentials.

2. Select the proxy virtual machine and edit the settings for the proxy virtual machine.
3. Remove the hotadd disks that are attached to the source virtual machine or the proxy virtual machine.
4. Resubmit the job.

Recovery Operations Fail When Recovering Data Using the HOTADD or SAN Transport Mode

Valid on Windows platforms.

Symptom:

Recovery operations fail when recovering data using the HOTADD or SAN transport mode. The following message appears in the Activity Log:

```
An unknown error has occurred. Contact Technical Support.
```

Solution:

Recovery operations fail using the HOTADD transport mode (see page 189) or SAN transport mode (see page 190) when the disk settings are not configured properly.

To configure the disk, perform the following steps:

1. Log in to the backup proxy system using an account with administrative privileges.
2. Open Windows Command Line.

3. From the command line, type the following command:

   ```
   diskpart
   ```

   Press Enter.

4. Type SAN and then press Enter.

   The current SAN policy displays.

5. Type the following command:

   ```
   SAN POLICY = OnlineAll
   ```

   Press Enter.

   The SAN policy is configured as do not automatically mount SAN hosted volumes.

6. To clear the read-only attribute of the specific SAN disk, select the disk from the disk list and type the following command:

   ```
   attribute disk clear readonly
   ```

   Press Enter

7. Type exit and then press Enter.

The disk is configured and you can resubmit the job.

If the job fails again, mount the HOTADD disks manually using disk management on the proxy system.

To mount the disks manually, perform the following steps:

1. Log in to the backup proxy system using an account with administrative privileges.
2. Open Windows Control Panel and double-click Administrative Tools.

   The Administrative Tools window opens.

3. From the Favorites list, double-click Computer Management.

   The Computer Management opens.

4. Expand Storage and click Disk Management.

   The disks display.

5. Right-click the disk that you want to mount and click Online.

The disk is mounted and you can resubmit the job.

Operating System Not Found Errors Occur

Valid on Windows platforms.

Symptom 1

The following message appears when you try to start the guest operating system on a virtual machine after you recovered the virtual machine using the Restore to Alternate Location option:

```
Operating System Not Found.
```

Solution 1

The above behavior can occur on virtual machines that contain SCSI and IDE devices. If this problem occurs, examine how disks are configured on your virtual machine and verify that the boot sequence of the recovered virtual machine is the same as the source virtual machine. If the boot sequence is different, you must update the BIOS on the recovered virtual machine to match that of the source.

Note: The first IDE disk should use (0:1).

Symptom 2

The following message appears when you try to start the guest operating system on a virtual machine after you recovered virtual machine:

```
Operating System Not Found.
```

Solution 2

If the above problem occurs, examine how disks are configured on the virtual machine and verify that the boot sequence on the Replica virtual machine is the same as the source virtual machine.

MAC Address Changes are Not Retained After VM Recovery

Valid on Windows platforms.

Symptom:

The MAC addresses of virtual machines are not retained after recovering virtual machines.

Solution:

MAC addresses are not retained during recovery, to prevent duplicates. To retain MAC address information, set the following registry key on the proxy server:

```
Location: SOFTWARE\CA\CA ARCSERVE D2D
Key Name: RetainMACForVDDK
Value Type: String
Key Value: 1
```

On virtual machines with two NIC cards, set the RetainMACForVDDK registry key if you wish to set one as Manual. Otherwise, all cards are set to Automatic after recovery.

CA ARCserve D2D Web Service Fails on CA ARCserve D2D Nodes

Valid on Windows platforms.

Symptom:

The web service running on CA ARCserve D2D nodes starts and fails or cannot start.

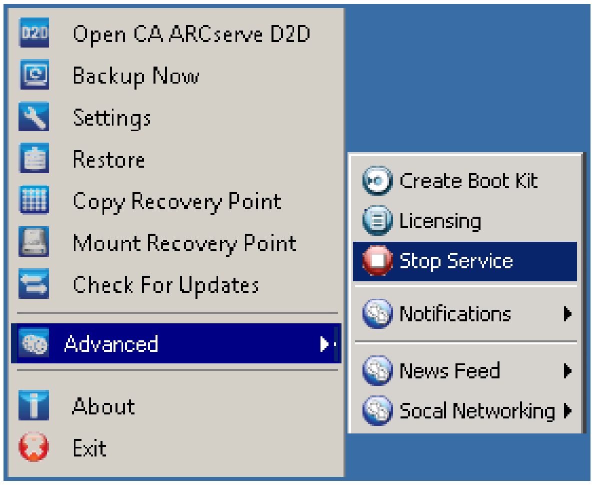
Solution:

This problem occurs when the port used by the CA ARCserve D2D web service is the same as the port used by the VMware vCenter web service (Tomcat).

The port that CA ARCserve D2D uses can conflict with the default port that Tomcat uses. This conflict causes Tomcat to fail when CA ARCserve D2D is started before it. To remedy this problem, you can change the Tomcat default port as follows:

1. Access the CA ARCserve D2D Monitor, click the Advanced option, and select Stop Service.

   The CA ARCserve D2D Web Service is stopped.

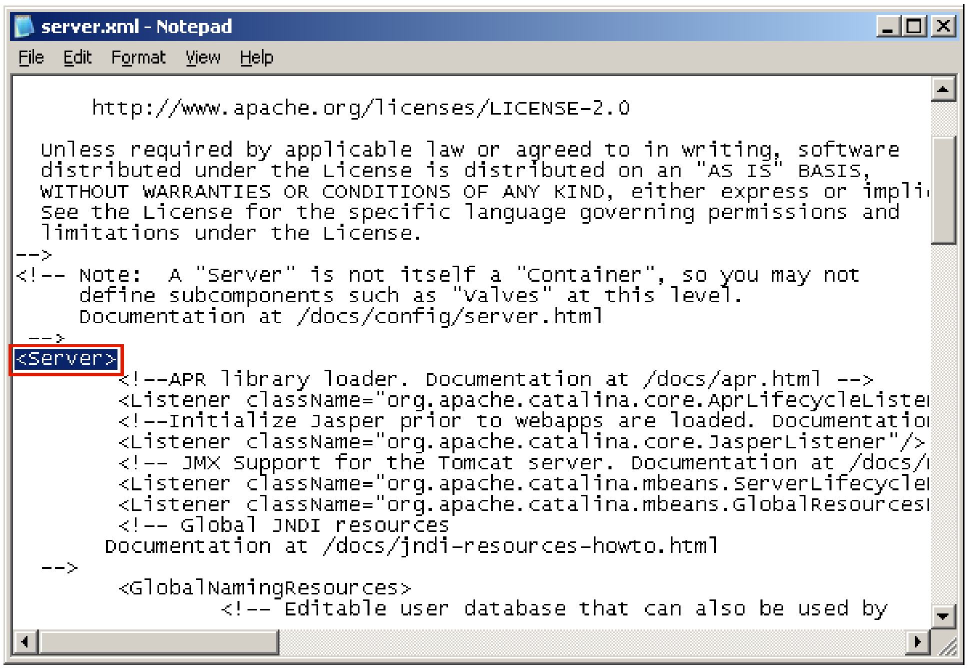


2. Access the Tomcat server.xml file to edit/configure the behavior of Tomcat.

   The Tomcat server.xml file is located in the following folder structure:

   `C:\Program Files\CA\ARCserve Central Applications\TOMCAT\conf`

3. Locate the <Server> tag inside the server.xml file.



```
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  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or impli
  See the License for the specific language governing permissions and
  limitations under the License.
-->
<!-- Note:  A "Server" is not itself a "Container", so you may not
     define subcomponents such as "Valves" at this level.
     Documentation at /docs/config/server.html
 -->
<Server>
        <!--APR library loader. Documentation at /docs/apr.html -->
        <Listener className="org.apache.catalina.core.AprLifecycleListe
        <!--Initialize Jasper prior to webapps are loaded. Documentatio
        <Listener className="org.apache.catalina.core.JasperListener"/>
        <!-- JMX Support for the Tomcat server. Documentation at /docs/
        <Listener className="org.apache.catalina.mbeans.ServerLifecycle
        <Listener className="org.apache.catalina.mbeans.GlobalResources
        <!-- Global JNDI resources
       Documentation at /docs/jndi-resources-howto.html
  -->
        <GlobalNamingResources>
                <!-- Editable user database that can also be used by
```

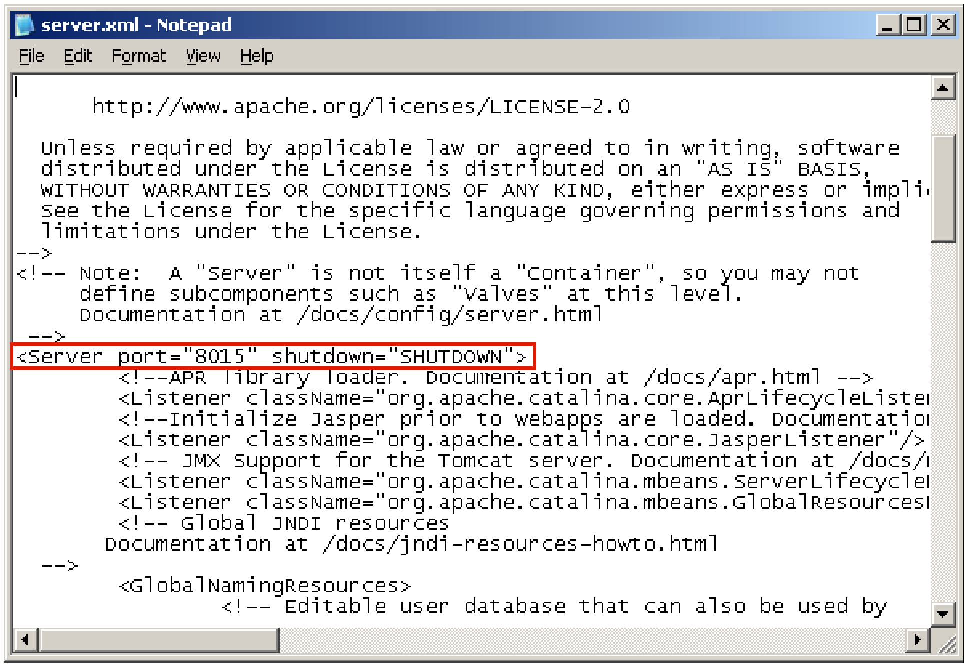
4. Edit the <Server> tag as follows:

   From:

   <Server>

   To:

   <Server port="8015" shutdown="SHUTDOWN">



```
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  distributed under the License is distributed on an "AS IS" BASIS,
  WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or impli
  See the License for the specific language governing permissions and
  limitations under the License.
-->
<!-- Note:  A "Server" is not itself a "Container", so you may not
     define subcomponents such as "Valves" at this level.
     Documentation at /docs/config/server.html
 -->
<Server port="8015" shutdown="SHUTDOWN">
        <!--APR library loader. Documentation at /docs/apr.html -->
        <Listener className="org.apache.catalina.core.AprLifecycleListe
        <!--Initialize Jasper prior to webapps are loaded. Documentatio
        <Listener className="org.apache.catalina.core.JasperListener"/>
        <!-- JMX Support for the Tomcat server. Documentation at /docs/
        <Listener className="org.apache.catalina.mbeans.ServerLifecycle
        <Listener className="org.apache.catalina.mbeans.GlobalResources
        <!-- Global JNDI resources
       Documentation at /docs/jndi-resources-howto.html
  -->
        <GlobalNamingResources>
                <!-- Editable user database that can also be used by
```

5. Save and close the server.xml file.

   The command to shut down Tomcat has now been configured so that it must be received by the server on the named port (8015).

6. Access the CA ARCserve D2D Monitor, click the Advanced option, and select Start Service.

   The CA ARCserve D2D Web Service is started.

CA ARCserve Central Host-Based VM Backup Cannot Communicate with the CA ARCserve D2D Web Service on Remote Nodes

Valid on Windows operating systems.

Symptom:

CA ARCserve Central Host-Based VM Backup cannot communicate with the CA ARCserve D2D web service on remote nodes.

Solution:

The following table describes reasons why CA ARCserve Central Host-Based VM Backup cannot communicate with the CA ARCserve D2D web service on remote nodes and the corresponding corrective action:

Cause	Corrective Action
The network was not available or not stable when applying policies.	Verify that the network is available and stable and then try again.
The CA ARCserve D2D computer could not handle the load when the application tried to communicate with the node.	Verify that the CPU on the remote CA ARCserve D2D node is in a normal state and then try again.
The CA ARCserve D2D service on the remote node was not running when applying policies.	Verify that the CA ARCserve D2D on the remote node is running and then try again.
The CA ARCserve D2D service was not communicating properly.	Restart the CA ARCserve D2D service on the remote node and then try again.

The CA ARCserve D2D Web Service Runs Slowly

Valid on Windows operating systems.

Symptom 1:

The CA ARCserve D2D web service on CA ARCserve D2D systems runs slowly. You can detect other symptoms such as:

- The CA ARCserve D2D web service stops responding or occupies 100 percent of the CPU resources.
- CA ARCserve D2D nodes perform poorly or cannot communicate with the web service.

Solution 1:

In various environmental configurations, you can discover that the CA ARCserve D2D web service occupies too much CPU time, or the response is slow. By default, Tomcat is configured to allocate a limited amount of memory to the nodes, which may not be suitable for your environment. To verify this problem, review the following log files:

```
<D2D_home>\TOMCAT\logs\casad2dwebsvc-stdout.*.log
<D2D_home>\TOMCAT\logs\casad2dwebsvc-stder.*.log
<D2D_home>\TOMCAT\logs\catalina.*.log
<D2D_home>\TOMCAT\logs\localhost.*.log
```

Search for the following message:

```
java.lang.OutOfMemoryError
```

To correct this problem, increase the amount of allocated memory.

To increase the memory, do the following:

1. Open Registry Editor and access the following key:
   - x86 Operating Systems:

     ```
     HKEY_LOCAL_MACHINE\SOFTWARE\Apache Software Foundation\Procrun
     2.0\CASAD2DWebSvc\Parameters\Java
     ```

   - x64 Operating Systems:

     ```
     HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun
     2.0\CASAD2DWebSvc\Parameters\Java
     ```

2. Do one of the following:

   - If the message in the log file is the following:

     ```
     java.lang.OutOfMemoryError: PermGen space
     ```

     Append the following to the value of Options.

     ```
     -XX:PermSize=128M -XX:MaxPermSize=128M
     ```

     Note: You may need to increase the value of -XX:MaxPermSize to suit your environment.

   - If the message in the log file is one of the following:

     ```
     java.lang.OutOfMemoryError: Java heap space
     java.lang.OutOfMemoryError: GC overhead limit exceeded
     ```

     Increase the value of the following DWORD:

     ```
     JvmMx
     ```

3. Restart the CA ARCserve D2D web service.

Symptom 2

Scheduled backups are skipped and stop running.

Solution 2

When you configure the MAX value as 20 or less than 20 for concurrent backups, do the following:

1. Increase the value of the following DWORD:

   ```
   JvmMx=256
   ```

   Note: This DWORD is referenced in Solution 1.

2. Append the following to the value of Options.

   ```
   -XX:MaxPermSize=128M
   ```

   Note: This DWORD is referenced in Solution 1.

When you configure the MAX value as more than 20 but less than 50 for concurrent backups, do the following:

1. Increase the value of the following DWORD:

   ```
   JvmMx=512
   ```

   Note: This DWORD is referenced in Solution 1.

2. Append the following to the value of Options.

   ```
   -XX:MaxPermSize=256M
   ```

   Note: This DWORD is referenced in Solution 1.

Changed Block Tracking Failures

Valid on Windows.

Symptom:

Virtual machine backups fail and changed block tracking is enabled on the virtual machines.

Solution:

The following table describes environmental conditions that can cause virtual machine backups with changed block tracking enabled to fail:

Condition	Solution
User generated snapshots are present on the virtual machines, and changed block tracking is disabled.	Enable or reset changed block tracking to allow the full backup job to continue. **Note**: The full backup job continues with used and unused blocks of data from the VMDK files.
The incorrect version of VMware hardware is installed on the virtual machine.	Verify that VMware hardware version 7.0 or later is installed on the virtual machine.
The incorrect version of ESX Server is installed on the virtual machine.	Verify that ESX Server version 4.0 or later is installed on the virtual machine.
The ESX Server system encountered a hard shutdown. Hard shut downs can cause changed block tracking backups to fail.	CA ARCserve Central Host-Based VM Backup automatically enables changed block tracking on the virtual machine.
The ESX Server system encountered a (clean) reboot while the virtual machine was in powered on state.	CA ARCserve Central Host-Based VM Backup automatically enables changed block tracking on the virtual machine.
The virtual machine was moved using Storage vMotion.	CA ARCserve Central Host-Based VM Backup automatically enables changed block tracking on the virtual machine.

Backups Fail Due to ESXi License

Valid on Windows platforms.

Symptom:

CA ARCserve D2D full, incremental, and verify backup jobs fail. The following message appears in the CA ARCserve D2D Activity Log:

```
VM server <server_name> does not have a paid ESX license
```

Solution:

Due to a VMware limitation, virtual machines running on ESXi servers with a free license cannot be backed up. To protect these VMs, apply a purchased license.

Backups Fail and Event 1530 is Logged in the Event Log on the Backup Proxy System

Valid on Windows Platforms.

Symptom:

CA ARCserve Central Host-Based VM Backup jobs fail. Event 1530 is logged in the Application Event log on the backup proxy system.

Environment/Steps to Reproduce:

- Microsoft SQL Server or Microsoft Exchange Server is installed on the virtual machine.
- The user logs in to or is already logged in to the CA ARCserve Central Host-Based VM Backup proxy server using the Administrator account or an account that is a member of the Administrators group.
- After the backup job starts, the user logs out of the proxy server.
- The backup job fails. Event 1530 is logged in the Application Event log.

  ```
  Warning ... Microsoft-Windows-User Profiles Service 1530 None Windows detected
  your registry file is still in use by other applications or services. The file
  will be unloaded now. The applications or services that hold your registry file
  may not function properly afterwards.
  ```

Cause:

Windows Server 2008 contains a User Profile Service that unloads user profiles when users log out of the computer. As a result, COM objects may not be created, which prevents Host-Based VM Backup from calling its COM modules.

Solution:

To prevent backup jobs from failing, complete the following steps:

Note: For this solution to work, all the symptoms listed above must be present.

1. Log in to the Host-Based VM Backup proxy server using the Administrator account or an account that is a member of the Administrators group.
2. Start the Local Group Policy Editor by typing gpedit.msc in the Run dialog.
3. From the Local Group Policy Editor, expand Computer Configuration, Administrative Templates, System, and User Profiles.
4. From the User Profile directory, double-click **Do not forcefully unload the user registry at user logoff** to open the **Do not forcefully unload the user registry at user logoff** dialog.
5. From the **Do not forcefully unload the user registry at user logoff** dialog, click Enabled and then click OK.

   Note: The value DisableForceUnload is now added to the Registry.
6. Restart the Host-Based VM Backup server.

Backups Complete Using the NBD Transport Mode When the hotadd Transport Mode was Specified

Valid on Windows platforms.

Symptom:

Virtual machine backups complete using the NBD transport (see page 189) mode when the hotadd transport mode (see page 189) was specified for the backup.

Solution:

CA ARCserve Central Host-Based VM Backup lets you back up virtual machines that reside on ESX Server systems. When you back up virtual machines using the hotadd transport mode, you can connect maximum 15 virtual disks to each SCSI controller on the CA ARCserve D2D virtual machine proxy server. When you submit a backup that includes more than 15 virtual disks and there is only one SCSI controller on the CA ARCserve D2D virtual machine proxy server, the single SCSI controller cannot accommodate all of the virtual machines. As a result, CA ARCserve Central Host-Based VM Backup backs up the data of the NBD transport mode.

To prevent this behavior from occurring, verify that there are a sufficient quantity of SCSI controllers on the CA ARCserve D2D virtual machine proxy server that can accommodate all the virtual machines in the backup job.

Incremental Backup Jobs Process as Verify Backup Jobs

Valid on Windows.

Symptom:

When you submit or schedule incremental backup jobs that process using the Hotadd transport mode, the following behavior occurs:

- The incremental jobs convert to verify backup jobs. The Activity Log entry for the job indicates that the incremental backup job was converted to a verify backup job.
- The Snapshot Manager in the VI Client for the virtual machine that was backed up contains a consolidated helper snapshot.
- The Edit Settings dialog in the VI Client for the affected virtual machine indicates that there are erroneous disks attached to the backup proxy system. The VMDK URLs associated with the erroneous disks are not the same as the VMDK URLs that are associated with the backup proxy system.

Solution:

To correct this behavior, remove the erroneous VMDK files (disks) from the backup proxy system using the guidelines described in VMware Knowledge Base article 1003302. In addition, VMware recommends that the amount of free space on the datastore be twice the cumulative size of the virtual machine's files.

Backup Jobs Fail Because the Blocks Cannot Be Identified

Valid on Windows.

Symptom:

For a particular virtual machine, all backup jobs fail and the following message appears in the Activity Log:

```
The application was unable to identify the blocks that were used or changed on the virtual machine. This problem can occur when the ESX Server system restarts while the virtual machine is running. The next time a backup job runs, the application will reset changed block tracking and perform a verify backup operation.
```

Solution:

To correct this behavior, perform a disk consolidation operation on the virtual machine. To perform disk consolidation, follow these steps.

1. Open the VMware VI Client.
2. Expand the ESX Server system for the affected virtual machine.
3. Right-click the affected virtual machine, select Snapshot and then click Consolidate on the pop-up menu to consolidate the disks.
4. Resubmit the backup.

Cannot Open VMDK File

Valid on Windows platforms.

Symptom:

Multiple concurrent backup jobs fail in NBD (or LAN) transport mode. The following message appears in the Activity Log:

```
Cannot open VMDK File
```

Solution:

This is a VMware connection limitation. The following Network File Copy (NFC) protocol limits apply:

- ESX 4: 9 direct connections, maximum
- ESX 4 through vCenter Server: 27 connections, maximum
- ESXi 4: 11 direct connections, maximum
- ESXi 4 through vCenter Server: 23 connections, maximum

Connections cannot be shared across disks. The maximum limits do not apply to SAN or hotadd connections. If the NFC client fails to shut down properly, connections can remain open for ten minutes.

Nodes Do Not Appear on the Node Screen After Changing the Name of the Node

Valid on Windows platforms.

Symptom:

The host name of the node was changed after it was added to the Node screen. The node no longer appears on the Node screen.

Solution:

This behavior is expected. CA ARCserve Central Host-Based VM Backup retains the name of the node as it was added from the node screen. When you rename the node, the application cannot detect the node. As such, the node does not appear on the node screen.

To display renamed nodes on the node screen, do the following:

1. Rename the node.
2. Open the Node screen and delete the node (see page 46) that was renamed.
3. Add the node using its new name.

Multiple Connections Error Occurs When Saving or Assigning a Policy to a CA ARCserve D2D Server

Valid on all Windows platforms.

Symptom:

When you try to save or assign a policy to a CA ARCserve D2D server, the following error message appears:

```
Validate backup destination failed. Multiple connections to a server or shared
resource by the same user, using more than one user name, are not allowed. Disconnect
all previous connections to the server or shared resource and try again.
```

Solution:

If the preceding message appears when you try to save or assign a policy to a CA ARCserve D2D server, the following corrective actions can help you solve the problem:

- Specify the User Name field with "machine (or domain) name\username".
- Go to the remote server where the shared folder is hosted and delete all sessions from the CA ARCserve Central Applications Server or CA ARCserve D2D Server. Do one of the following to delete the sessions:
  - Run the following command line:

    ```
    net session \\machinename /delete
    ```

  - Go to the following directory to disconnect the session:

    ```
    Compmgmt.msc > System Tools > Shared Folders > Sessions > Disconnect session
    ```

- Confirm that you are using the same user name to access the remote shared folder.
- Save and deploy the policy again.

Virtual Machine Backups Fail Because the ESX Server is Not Accessible

Valid on Windows platforms.

Symptom:

Virtual machine backups fail. The following message appears in the Activity Log:

```
Failed to create virtual machine snapshot.
```

Solution:

Virtual machine backups can fail when multiple backups run concurrently on one ESX Server system. The problem does not occur when multiple backups run concurrently on multiple ESX Server systems. To back up the virtual machines, CA ARCserve Central Host-Based VM Backup takes a snapshot of the data that resides on the virtual machines. When multiple snapshot operations run concurrently on one system, the ESX Server system can stop responding. Although the time in which the ESX Server system stops responding is temporary, the backup operation is interrupted, which causes the backup operation to fail.

To prevent backups from failing, use the solution that suits your environment:

- Reduce the quantity of virtual machines that you are backing up concurrently. For example, if you are backing up eight virtual machines concurrently, reduce the quantity to seven virtual machines, resubmit the backup, and then analyze the results. If necessary, reduce the quantity of virtual machines that are backed up until backups do not fail or the above message does not appear in the Activity Log.

  To reduce the quantity of virtual machines in a backup, you unassign virtual machines from the policy. For more information, see Unassign Policies from Virtual Machines.

- Define a limit to the quantity of concurrent backups. This approach helps you control the quantity of backup jobs that can run concurrently in your environment. For more information, see Define a Limit to the Quantity of Concurrent Backups (see page 179).

Add New Tab Link Not Launching Properly for Internet Explorer 8, 9, and Chrome

Valid on Windows

Symptom:

When I add a new tab link to the Navigation bar specifying an HTTPS URL, the following error messages appear when I click the new tab:

- Internet Explorer 8 and 9:

  ```
  Content was blocked because it was not signed by a valid security certificate.
  ```

- Chrome:

  ```
  The webpage is not available.
  ```

Solution:

To correct this problem for Internet Explorer, do the following:

- Internet Explorer 8:

  Click on the message bar and select "Display Blocked Content".

- Internet Explorer 9:

  Click the "Show content" button from the message bar at the bottom of the page. The page refreshes and the added tab link opens successfully.

To correct this problem for Chrome, perform the following steps:

Step 1 - Export Certificate:

1. Open a new tab in Chrome and enter the HTTPS URL.

   A warning message appears, "The site's security certificate is not trusted!"

2. From the address bar, click the lock with the 'X'.

   A pop-up window opens with a Certification Information link.

3. Click the Certificate Information link.

   The Certificate dialog opens.

4. Click the Details tab and then click Copy to File, to save the certificate to your local computer.

   The Certificate Export Wizard dialog opens.

5. Click Next to select the format you want to use to export the file.

   Note: DER encoded binary X.509 (.CER) is selected by default.

6. Click Next to browse to a location where you want to save the certificate.

7. Click Next to complete the Certificate Export Wizard and then click Finish.

The certificate exports successfully.

Step 2 - Import Certificate:

1. Open the Tools Options from Chrome.

   The Options screen opens.

2. Select the Under the Hood option and click Manage Certificates from HTTPS/SSL.

   The Certificates dialog opens.

3. Click Import.

   The Certificate Import Wizard dialog opens.

4. Click Next to browse for the certificate you saved on your local computer.

5. Click Next to open the Certificate Store.

   The Certificate Store dialog opens.

6. Click Browse to open the Select Certificate Store dialog.

   The Select Certificate Store dialog opens.

7. Select Trusted Root Certification Authorities from the file list and click OK.

   The Certificate Store dialog appears.

8. Click Next to complete the Certificate Import Wizard and then click Finish.

   A Security Warning dialog opens stating that you are about to install a certificate.

   Click Yes to agree on the terms.

The certificate imports successfully.

Add New Tab Link, RSS Feeds, and Social Networking Feedback Not Launching Properly on Internet Explorer 8 and 9

Valid on Windows

Symptom:

For an HTTPS CA ARCserve Central Applications URL:

When I add a new tab link to the Navigation bar specifying an HTTP URL, the following error message appears when I click the new tab and the Feedback link:

```
Navigation to the webpage was canceled.
```

In addition, the RSS Feeds are not displayed.

Note: The Feedback link also displays the error message even if you do not select the new added tab link.

Solution:

To correct this problem, do the following:

- Internet Explorer 8:

  After you log in, click No on the pop-up security warning message, "Do you want to view only the webpage content that was delivered securely?" By clicking No allows the delivery of unsecured content to your webpage.

- Internet Explorer 9:

  Click the "Show all content" button on the message bar displayed at the bottom of the page. The page refreshes and the added tab link opens successfully.

Cannot Specify an Asterisk or Underscore as a Wildcard in Filter Fields Using Japanese Keyboards

Valid on Windows

Symptom:

Because of the different keycodes between the US and Japanese keyboards, the Japanese keyboard does not allow you to enter the wildcard character "*" and other special characters, such as the underscore character "_", into the following filter fields:

- Occurs only on Firefox:
  - Node > Add Group - Node Name Filter field
  - Policies > Policy Assignment tab > Assign and Unassign Policy - Node Name Filter field
  - Restore > Node Explorer - Node Name field
  - Node > Add Node from Auto Discovery result > Nodes to Protect - Node Name field

Solution:

To prevent this from occurring, open a text editing application such as Notepad. Type the special characters, such as "*" and "_", in the text editor. Then copy the characters from the text editor into the the field.

Recovering a Virtual Machine Uses a Different Transport Mode Than Specified

Valid on Windows platforms.

Symptom:

Virtual machine recovery uses a different transport mode than what is specified in the registry key.

Solution:

This behavior affects thin disks. To correct this problem, follow these steps:

1. Log in to the CA ARCserve D2D backup proxy system for the virtual machines.
2. Open the registry editor and locate the following key:

   HKEY_LOCAL_MACHINE\SOFTWARE\CA\CA ARCserve D2D\AFRestoreDll
3. Set the registry key "EnforceTransportForRecovery" to one of the following transport modes:
   - NBD
   - NBDSSL
4. Submit the recovery for the virtual machine.

CA ARCserve Central Host-Based VM Backup Does Not Recognize the Volumes on the Dynamic Disks When Recovering the Virtual Machine to an Alternate ESX Server or Hyper-V Server

Valid on Windows platforms.

Symptom:

The application cannot recognize the volumes on the dynamic disks when recovering the virtual machine to an alternate ESX server or Hyper-V server.

Some of the disks become offline and the corresponding volumes become unavailable when the virtual machine starts.

Solution:

To retrieve the volumes, log in to the standby virtual machine and manually set the disks online from diskmgmt.msc.

Restore Data Problems When Data is Backed up Using the HotAdd Transport Mode for Disks Larger than 2 TB in Size

Symptom:

When I back up VMDK (virtual machine disk) files that are greater than 2 TB in size using the VMware HotAdd Transport mode, the backup succeeds but restored data is corrupt.

Solution:

Due to a known issue in the VMware VDDK (Virtual Disk Development Kit), the backup job succeeds but the restored data is corrupt. To resolve this issue, you can perform one of the following steps:

- Reconfigure your backup plan to let the backup job run on a different backup proxy such that it does not run using the HotAdd transport mode.
- Set the registry settings to enforce that the transport mode used during backup is not HotAdd. You can either use SAN or NBD/NBDSSL.

For more information on this VMware issue, see VMware documentation http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2068424.

Chapter 6: Applying Best Practices

This section contains the following topics:

Perform Bare Metal Recovery of a Virtual Machine

Bare Metal Recovery is supported when a virtual machine is powered on at the time the backup job is performed.

Bare Metal Recovery (BMR) is the process of restoring a computer system from "bare metal" including reinstalling the operating system and software applications, and then restoring the data and settings. The BMR process lets you restore a full computer with minimal effort, even to different hardware. BMR is possible because during the block-level backup process, CA ARCserve D2D not only captures the data, but also all information that is related to:

- Operating system
- Installed applications
- Configuration settings
- Necessary drivers

All relevant information that is necessary to perform a complete rebuild of the computer system from "bare metal" is backed up into a series of blocks and stored on the backup location.

Videos

CA Support:	How to: Perform a Bare Metal Recovery
YouTube:	How to: Perform a Bare Metal Recovery

Before you can perform BMR, you must have:

- One of the following things:
  - A created BMR ISO image burned onto a CD/DVD
  - A created BMR ISO image burned onto a portable USB stick

  Note: CA ARCserve D2D utilizes a Boot Kit Utility to combine a WinPE image and CA ARCserve D2D image to create a BMR ISO image. This ISO image is then burned onto a bootable media. You can then use either of these bootable media (CD/DVD or USB stick) to initialize the new computer system and allow the bare metal recovery process to begin. To ensure your saved image is always the most up-to-date version, it is good practice to create a new ISO image every time you update CA ARCserve D2D.
- At least one full backup available.
- At least 1-GB RAM installed on the virtual machine and the source server that you are recovering.
- To recover VMware virtual machines to VMware virtual machines that are configured to behave as physical servers, verify the VMware Tools application is installed on the destination virtual machine.

Dynamic disks are restored at the disk level only. If your data is backed up to a local volume on a dynamic disk, you cannot to restore this dynamic disk during BMR. In this scenario, to restore during BMR you must perform one of the following tasks and then perform BMR from the copied Recovery Point:

- Back up to a volume on another drive.
- Back up to a remote share.
- Copy a recovery point to another location.

Note: If you perform BMR with multiple dynamic disks, the BMR may fail because of some unexpected errors (such as fail to boot, unrecognized dynamic volumes, and so on). If this occurs, you should restore only the system disk using BMR, and then after the machine reboot you can restore the other dynamic volumes on a normal environment.

Regardless of which method you used to create the Boot Kit image, the BMR process is basically the same.

Note: The BMR process cannot create storage spaces. If the source machine had storage spaces, during BMR you cannot create storage spaces at the destination machine. You can either restore those volumes to regular disks/volumes or manually create storage spaces before performing the BMR, and then restore the data into those created storage spaces.

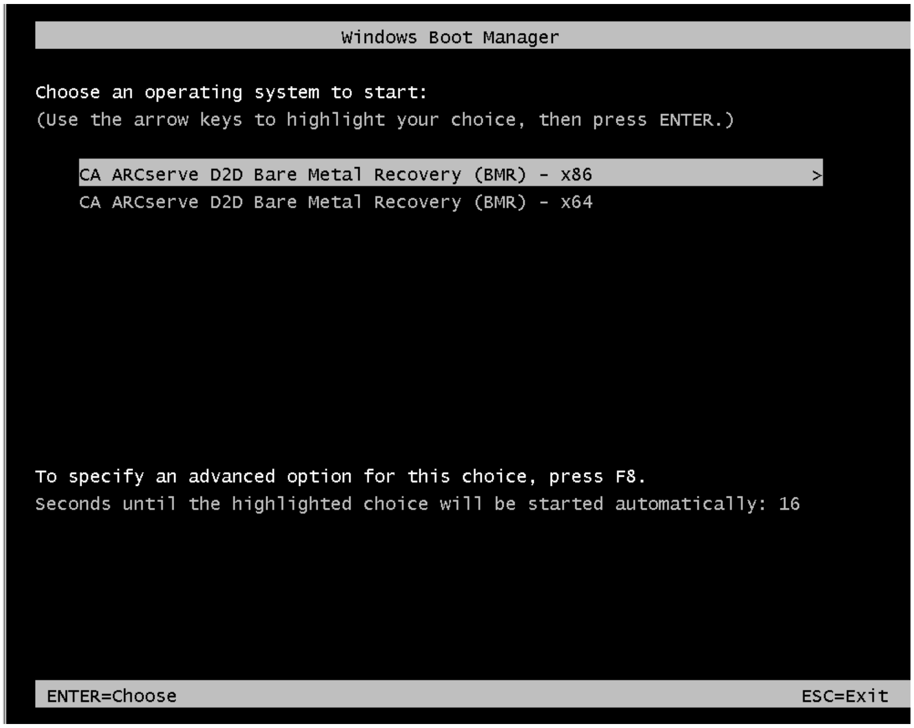
To restore data using bare metal recovery:

1. Insert the saved Boot Kit image media and boot the computer.

   - If you are using a BMR ISO image burned onto a CD/DVD, insert the saved CD/DVD.
   - If you are using a BMR ISO image burned onto a USB stick, insert the saved USB stick.

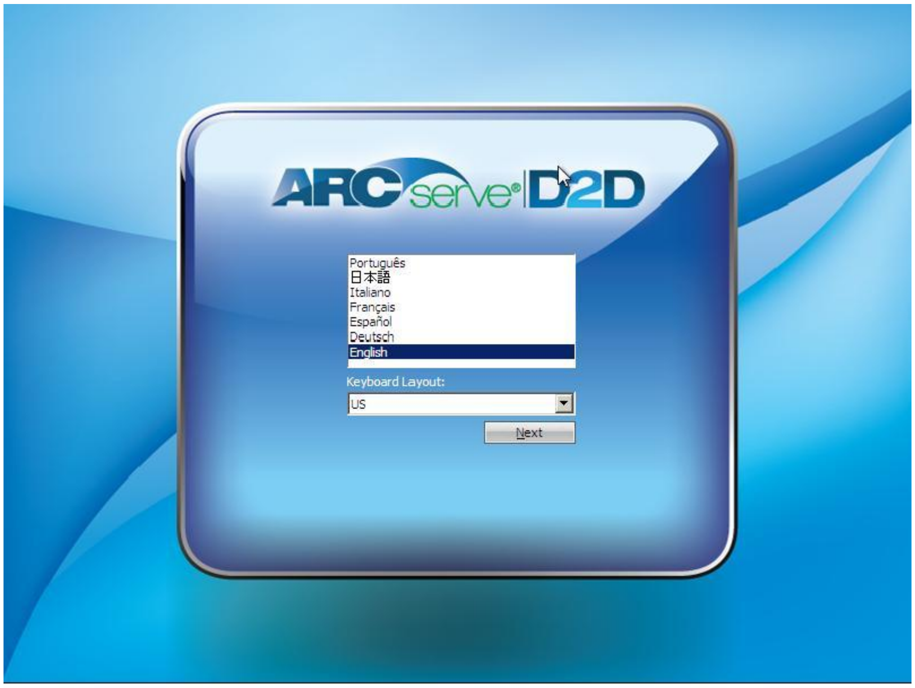
   The BIOS Setup Utility screen is displayed.

2. From the BIOS Setup Utility screen, select the CD-ROM Drive option or the USB option to launch the boot process. Select an architecture (x86/x64) and press Enter to continue.



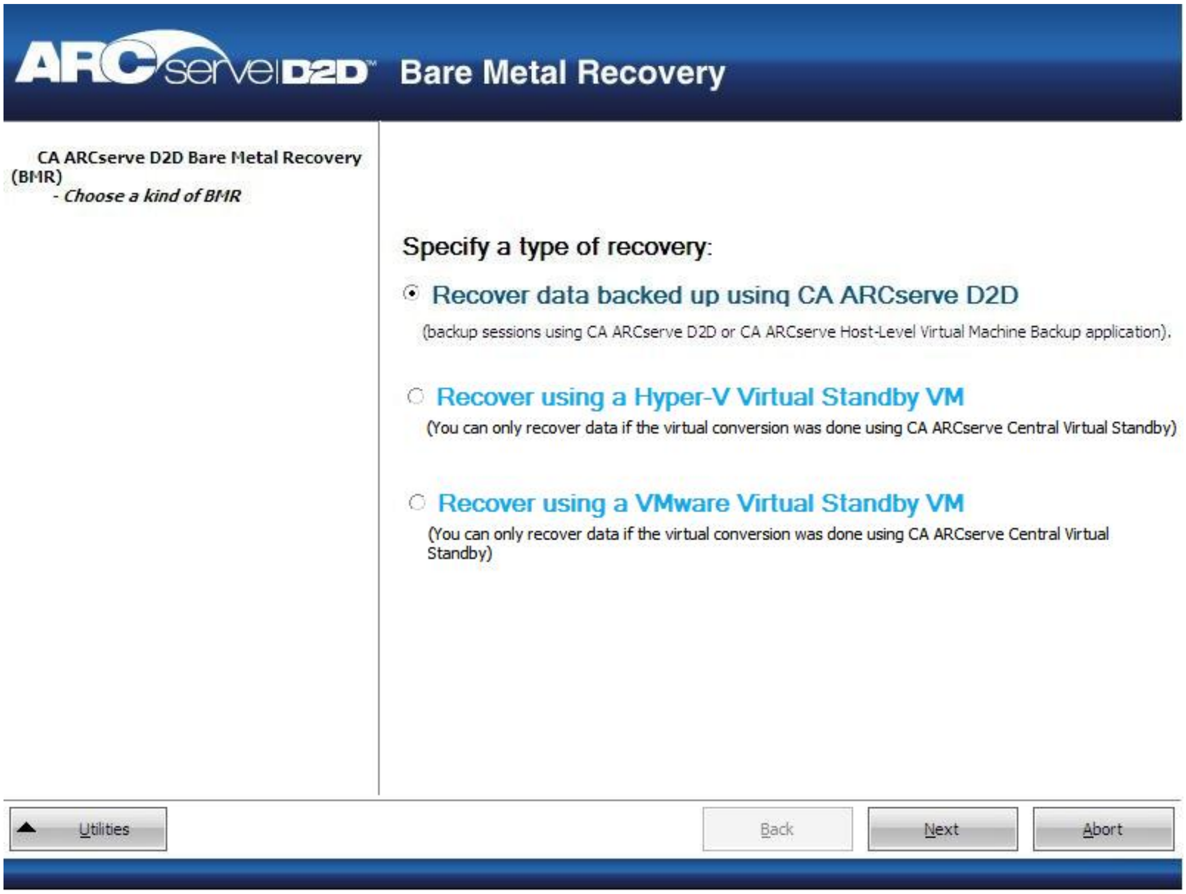
```
                          Windows Boot Manager

Choose an operating system to start:
(Use the arrow keys to highlight your choice, then press ENTER.)

    CA ARCserve D2D Bare Metal Recovery (BMR) - x86                     >
    CA ARCserve D2D Bare Metal Recovery (BMR) - x64

To specify an advanced option for this choice, press F8.
Seconds until the highlighted choice will be started automatically: 16

 ENTER=Choose                                                    ESC=Exit
```

3. The CA ARCserve D2D language select screen is displayed. Select a language and press "Next" to continue.



Keyboard Layout:
US

The Bare Metal Recovery process is initiated and the initial BMR wizard screen is displayed.



Specify a type of recovery:

● Recover data backed up using CA ARCserve D2D

(backup sessions using CA ARCserve D2D or CA ARCserve Host-Level Virtual Machine Backup application).

○ Recover using a Hyper-V Virtual Standby VM

(You can only recover data if the virtual conversion was done using CA ARCserve Central Virtual Standby)

○ Recover using a VMware Virtual Standby VM

(You can only recover data if the virtual conversion was done using CA ARCserve Central Virtual Standby)

4. From the BMR wizard screen, select the type of BMR you want to perform:

   - **Recover data backed up using CA ARCserve D2D**

     Lets you recover data that was backed up using CA ARCserve D2D. This option is used in connection with backup sessions performed with CA ARCserve D2D or with the CA ARCserve Central Host-Based VM Backup application.

     If you select this option, continue this procedure from here.

   - **Recover using a Hyper-V Virtual Standby VM**

     Lets you recover data for a machine for which virtual conversion is performed to a Hyper-V virtual machine. This option is used in connection with the CA ARCserve Central Virtual Standby application.

     Note: For this option, you can only recover data if the virtual conversion to a VHD file (for Hyper-V) was performed using CA ARCserve Central Virtual Standby.

     If you select this option, see Recover using a Hyper-V Virtual Standby VM to continue this procedure.

   - **Recover using a VMware Virtual Standby VM**

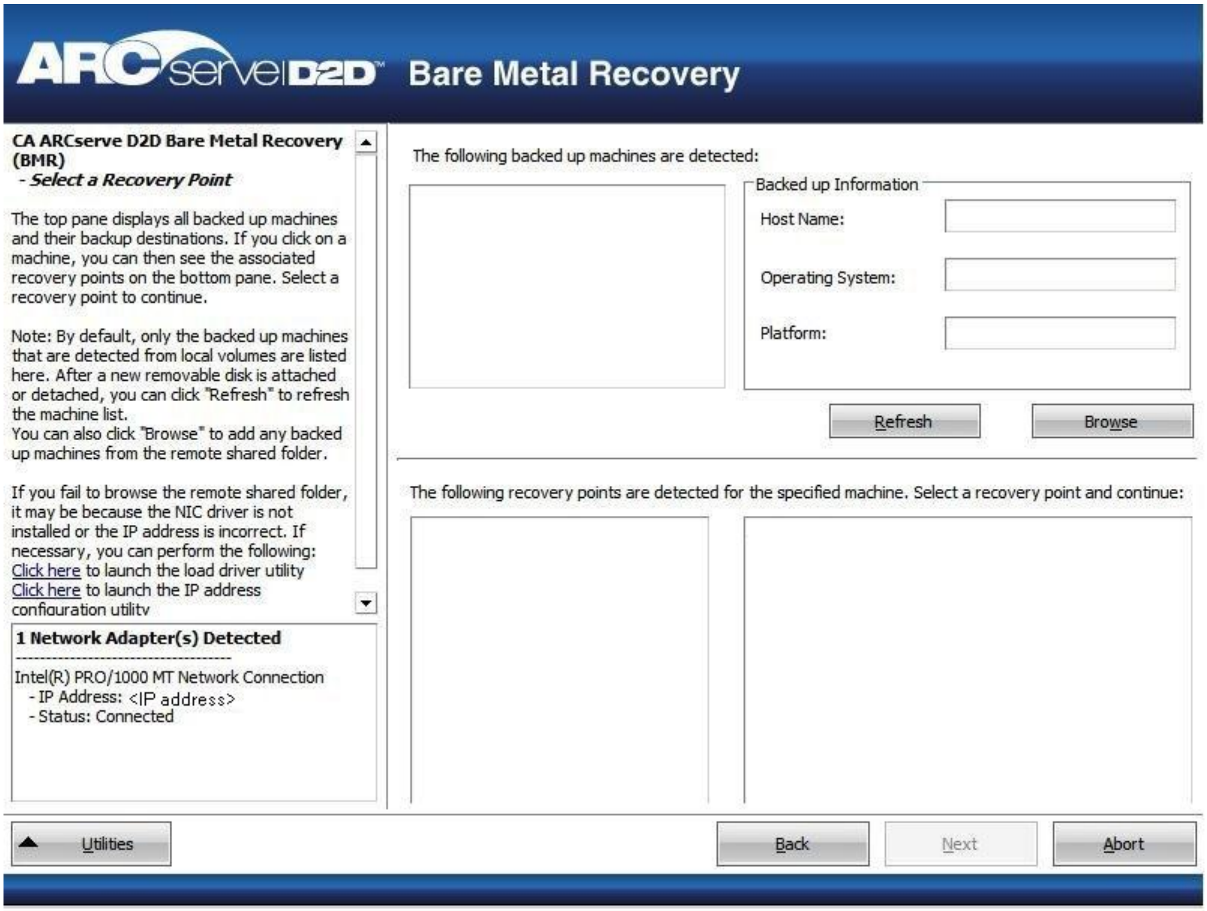
     Lets you recover data for a machine for which virtual conversion is done to a VMware virtual machine. This option is used in connection with the CA ARCserve Central Virtual Standby application.

     Note: For this option, you can only recover data if the virtual conversion to a VMDK file (for VMware) was performed using CA ARCserve Central Virtual Standby.

     If you select this option, see Recover using a VMware Virtual Standby VM to continue this procedure.

5. Click Next.

   The Select a Recovery Point wizard screen is displayed.



CA ARCserve D2D Bare Metal Recovery (BMR)
- Select a Recovery Point

The top pane displays all backed up machines and their backup destinations. If you click on a machine, you can then see the associated recovery points on the bottom pane. Select a recovery point to continue.

Note: By default, only the backed up machines that are detected from local volumes are listed here. After a new removable disk is attached or detached, you can click "Refresh" to refresh the machine list.
You can also click "Browse" to add any backed up machines from the remote shared folder.

If you fail to browse the remote shared folder, it may be because the NIC driver is not installed or the IP address is incorrect. If necessary, you can perform the following:
Click here to launch the load driver utility
Click here to launch the IP address configuration utility

1 Network Adapter(s) Detected

Intel(R) PRO/1000 MT Network Connection
- IP Address: <IP address>
- Status: Connected

The following backed up machines are detected:

Backed up Information

Host Name:

Operating System:

Platform:

The following recovery points are detected for the specified machine. Select a recovery point and continue:

6. From the Select a Recovery Point wizard screen, select the machine (or volume) which contains recovery points for your backup image.

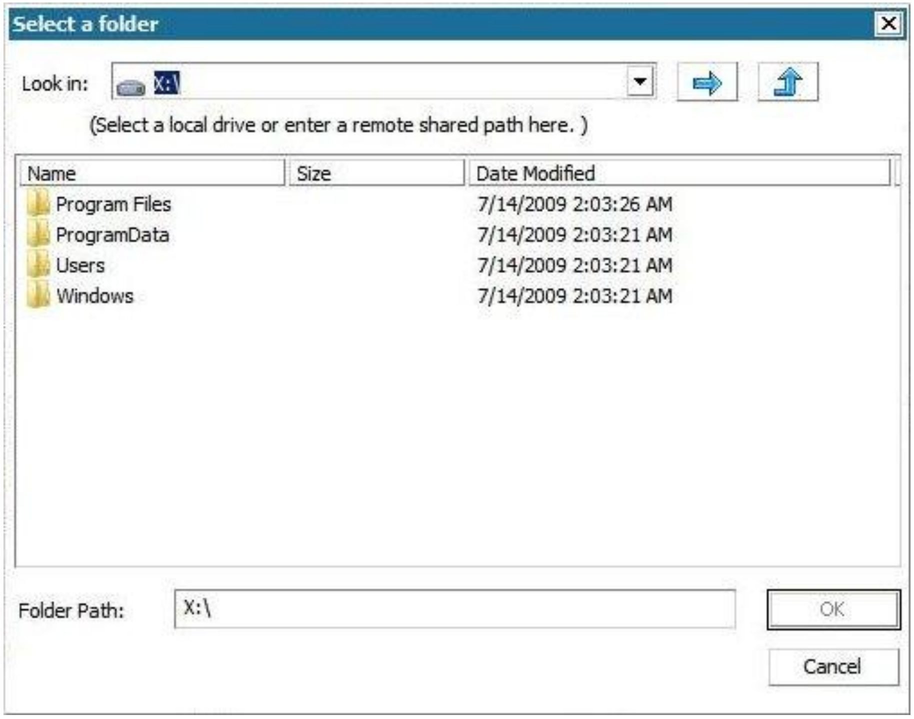
   CA ARCserve D2D lets you recover from any local drive or from a network share.

   - If you recover from a local backup, the BMR wizard automatically detects and displays all volumes containing recovery points.
   - If you recover from a remote share, browse to the remote location where the recovery points are stored. If there are multiple machines containing recovery points, all machines are displayed.

     You may also need access information (User Name and Password) for the remote machine.

     Note: The network must be up and running to browse to remote recovery points. If necessary, you can check/refresh your network configuration information or you can load any missing drivers from the Utilities menu.

7. If the BMR module cannot detect any local destination volume, the "Select a Folder" dialog automatically displays. Provide the remote share where the backups are residing.



Look in: X:\

Name	Size	Date Modified
Program Files		7/14/2009 2:03:26 AM
ProgramData		7/14/2009 2:03:21 AM
Users		7/14/2009 2:03:21 AM
Windows		7/14/2009 2:03:21 AM

Folder Path: X:\

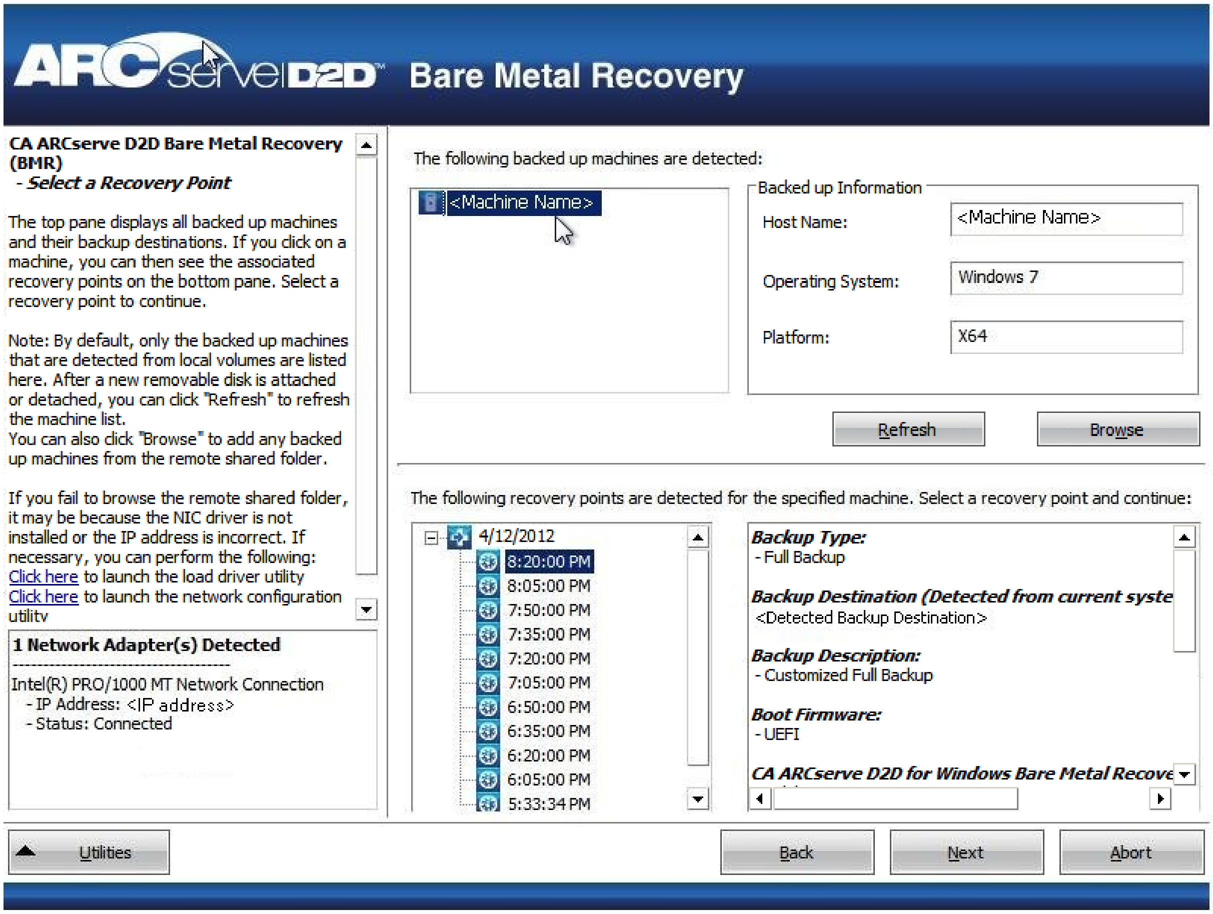
8. Select the folder where the recovery points for your backup are stored and click OK. (You can click the arrow icon to validate the connection to the selected location).

   The BMR wizard screen now displays the following information:

   - Machine name (in the upper left pane).
   - Related backup information (in the upper right pane).
   - All the corresponding recovery points (in the lower left pane).

   Note: For supported operating systems, you can perform a BMR from a backup performed on a UEFI machine to a BIOS-compatible machine and from a BIOS machine to a UEFI-compatible machine. See Operating Systems that Support UEFI/BIOS Conversion for a complete listing of firmware conversion supported systems.

     - For operating systems that do not support firmware conversion, to perform BMR for a UEFI system, you must boot the computer in UEFI mode. BMR does not support restoring a computer with different firmware. To verify that the boot firmware is UEFI and not BIOS, click Utilities, About.
     - For operating systems that do support firmware conversion, after you select a recovery point, if it is detected that the source machine is not the same firmware as your system, you will be asked if you want to convert UEFI to a BIOS-compatible system or BIOS to UEFI-compatible system.



CA ARCserve D2D Bare Metal Recovery (BMR)
- Select a Recovery Point

The top pane displays all backed up machines and their backup destinations. If you click on a machine, you can then see the associated recovery points on the bottom pane. Select a recovery point to continue.

Note: By default, only the backed up machines that are detected from local volumes are listed here. After a new removable disk is attached or detached, you can click "Refresh" to refresh the machine list.
You can also click "Browse" to add any backed up machines from the remote shared folder.

If you fail to browse the remote shared folder, it may be because the NIC driver is not installed or the IP address is incorrect. If necessary, you can perform the following:
Click here to launch the load driver utility
Click here to launch the network configuration utility

1 Network Adapter(s) Detected

Intel(R) PRO/1000 MT Network Connection
- IP Address: <IP address>
- Status: Connected

The following backed up machines are detected:

<Machine Name>

Backed up Information

Host Name: <Machine Name>

Operating System: Windows 7

Platform: X64

The following recovery points are detected for the specified machine. Select a recovery point and continue:

4/12/2012
- 8:20:00 PM
- 8:05:00 PM
- 7:50:00 PM
- 7:35:00 PM
- 7:20:00 PM
- 7:05:00 PM
- 6:50:00 PM
- 6:35:00 PM
- 6:20:00 PM
- 6:05:00 PM
- 5:33:34 PM

Backup Type:
- Full Backup

Backup Destination (Detected from current syste
<Detected Backup Destination>

Backup Description:
- Customized Full Backup

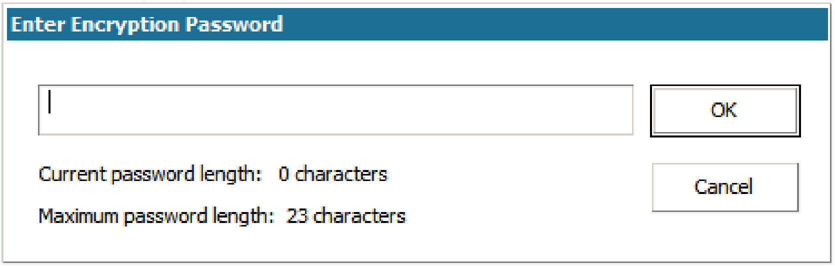
Boot Firmware:
- UEFI

CA ARCserve D2D for Windows Bare Metal Recove

9. Select which recovery point to restore.

   The related information for the selected recovery point is displayed (in the lower right pane). This display includes such information as the type of backup that was performed (and saved), the backup destination, and the volumes that were backed up.

   If the recovery point contains encrypted sessions (the recovery point clock icon includes a lock), a password required screen appears. Enter the session password and click OK.

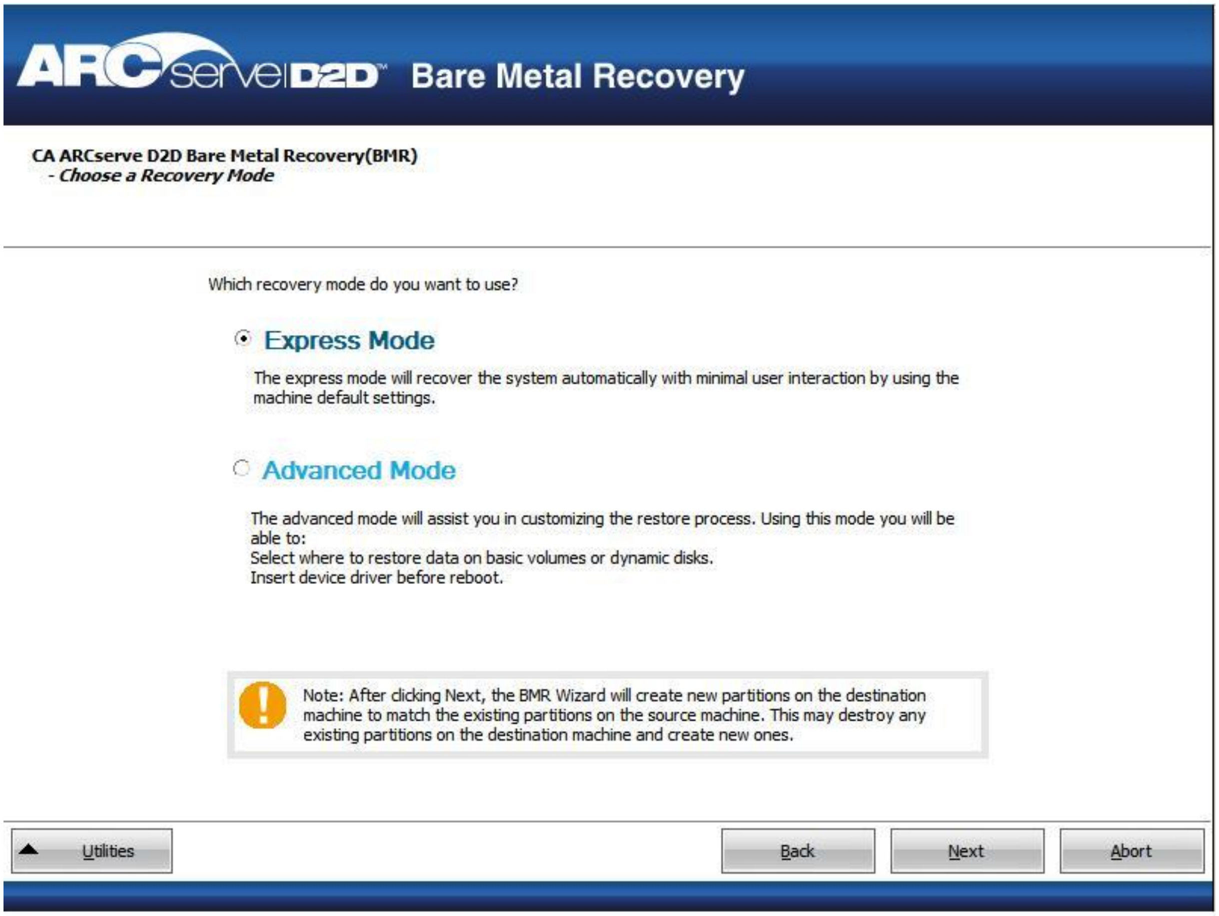
   Current password length: 0 characters

   Maximum password length: 23 characters

   Note: If your machine is a Domain Controller, CA ARCserve D2D supports a nonauthoritative restore of the active directory (AD) database file during BMR. (CA ARCserve D2D does not support restoring MSCS clusters).

10. Verify the recovery point that you want to restore and click Next.

    A BMR wizard screen is displayed with the available recovery mode options.



CA ARCserve D2D Bare Metal Recovery(BMR)
- Choose a Recovery Mode

Which recovery mode do you want to use?

● Express Mode

The express mode will recover the system automatically with minimal user interaction by using the machine default settings.

○ Advanced Mode

The advanced mode will assist you in customizing the restore process. Using this mode you will be able to:
Select where to restore data on basic volumes or dynamic disks.
Insert device driver before reboot.

Note: After clicking Next, the BMR Wizard will create new partitions on the destination machine to match the existing partitions on the source machine. This may destroy any existing partitions on the destination machine and create new ones.

11. Select the recovery mode.

    The available options are Advanced Mode and Express Mode.

    - Select Advanced Mode if you want to customize the recovery process.
    - Select Express Mode if you want minimal interaction during the recovery process.

    Default: Express Mode.

    Note: The remainder of this procedure is applicable only if you selected the Advanced Mode and the procedure provides information to guide you through the BMR process.

12. Click Next.

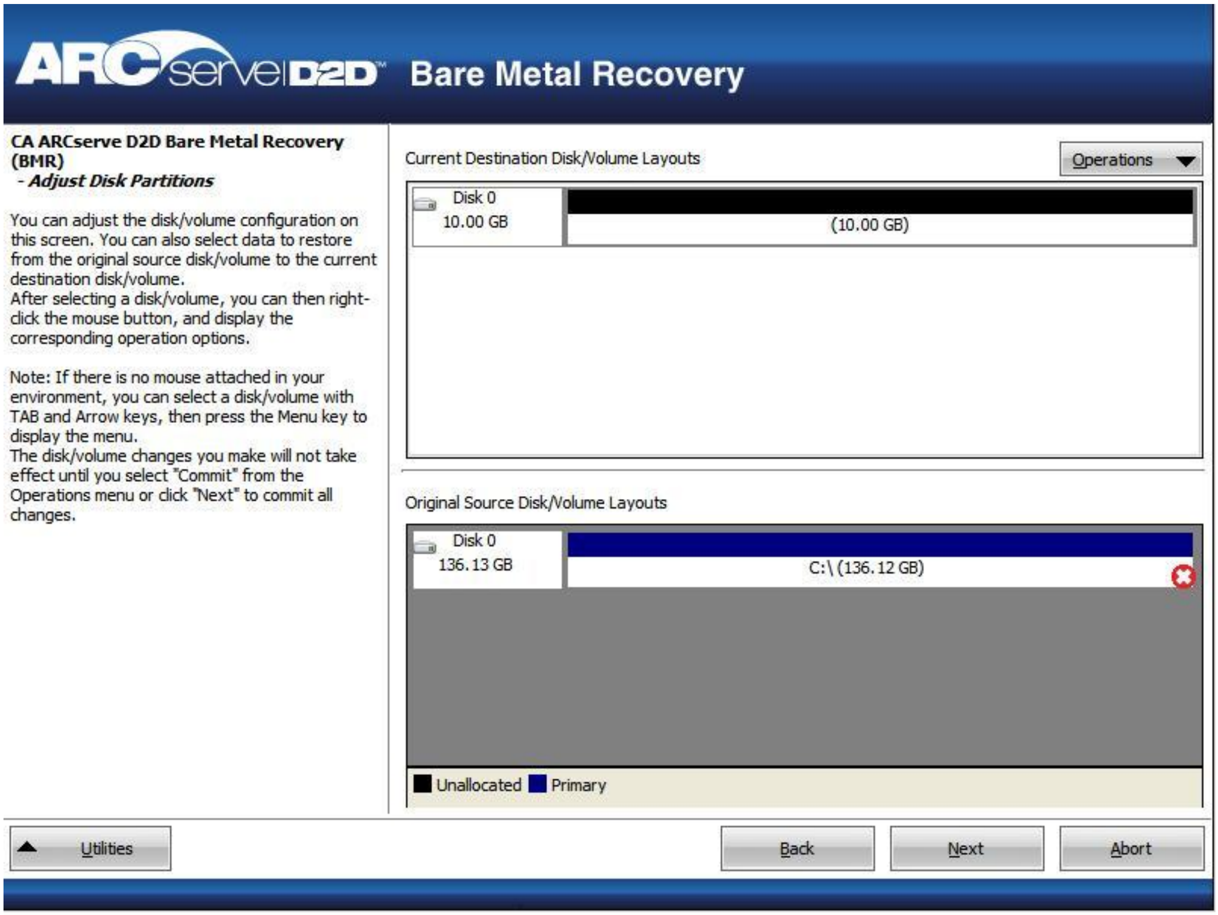
    The BMR utility starts locating the machine that is going to be recovered and displays the corresponding disk partition information.

    The upper pane shows the disk configuration that you have on the current (target) machine and the lower pane shows the disk partition information that you had on the original (source) machine.

    Important! A red X icon displaying for a source volume in the lower pane indicates that this volume contains system information and has not been assigned (mapped) to the target volume. This system information volume from the source disk must be assigned to the target disk and restored during BMR or the reboot fails.

    Note: If you perform BMR and you restore the system volume to a disk which is not configured as the boot disk, it will fail to boot the machine after BMR is completed. Ensure that you are restoring the system volume to a properly configured boot disk.

    Note: When restoring to another disk/volume, the capacity of new disk/volume must be the same size or larger than original disk/volume. In addition, disk resizing is for basic disks only, and not for dynamic disks.



Bare Metal Recovery

CA ARCserve D2D Bare Metal Recovery (BMR)
- Adjust Disk Partitions

You can adjust the disk/volume configuration on this screen. You can also select data to restore from the original source disk/volume to the current destination disk/volume.
After selecting a disk/volume, you can then right-click the mouse button, and display the corresponding operation options.

Note: If there is no mouse attached in your environment, you can select a disk/volume with TAB and Arrow keys, then press the Menu key to display the menu.
The disk/volume changes you make will not take effect until you select "Commit" from the Operations menu or click "Next" to commit all changes.

Current Destination Disk/Volume Layouts

Disk 0 10.00 GB — (10.00 GB)

Original Source Disk/Volume Layouts

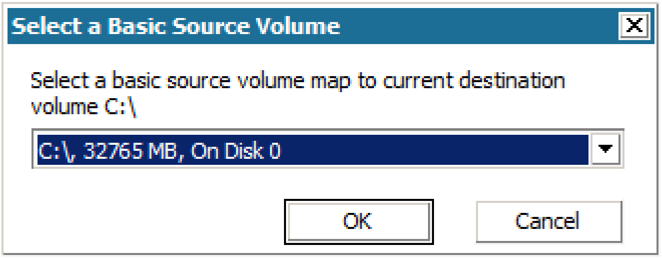
Disk 0 136.13 GB — C:\ (136.12 GB)

13. If the current disk information you are seeing does not appear correct, you can access the Utilities menu and check for missing drivers.

14. If necessary, on the target disk/volume pane you can click the Operations drop-down menu to display the available options. For more information about these options, see Managing the BMR Operations Menu.

15. Click on each target volume and from the pop-up menu, select the Map Volume From option to assign a source volume to this target volume.

    The Select a Basic Source Volume dialog opens.



Select a Basic Source Volume

Select a basic source volume map to current destination volume C:\

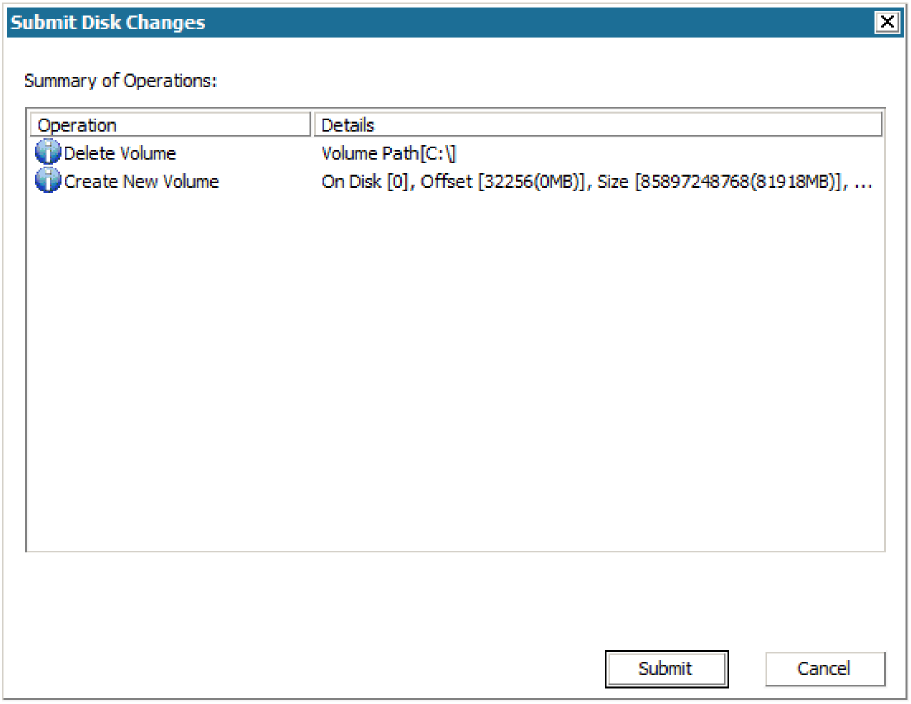
C:\, 32765 MB, On Disk 0

16. From Select a Basic Source Volume dialog, click the drop-down menu and select the available source volume to assign to the selected target volume. Click OK.

    - On the target volume, a checkmark icon is displayed, indicating that this target volume has been mapped to.
    - On the source volume, the red X icon changes to a green icon, indicating that this source volume has been assigned to a target volume.

17. When you are sure all volumes that you want to restore and all volumes containing system information are assigned to a target volume, click Next.

    The Submit Disk Changes screen opens, displaying a summary of the selected operations. For each new volume being created, the corresponding information is displayed.



Summary of Operations:

Operation	Details
Delete Volume	Volume Path[C:\]
Create New Volume	On Disk [0], Offset [32256(0MB)], Size [85897248768(81918MB)], ...

18. When you have verified the summary information is correct, click Submit. (If the information is not correct, click Cancel).

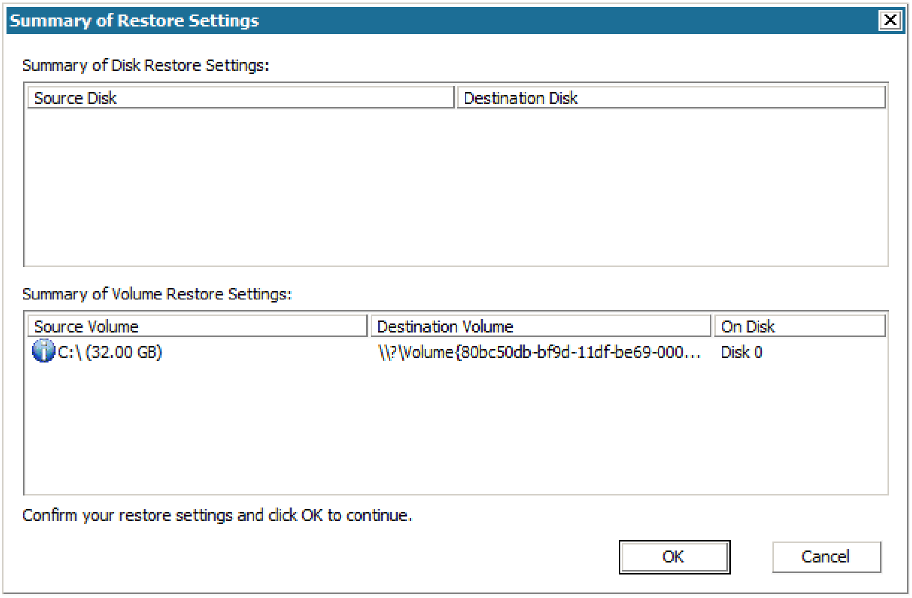
    Note: All operations to the hard drive do not take effect until you submit it.

    On the target machine, the new volumes are created and mapped to the corresponding source machine.

19. When the changes are completed, click OK.

    The Summary of Restore Settings screen opens, displaying a summary of the volumes that are going to be restored.

    Note: On the bottom of restore summary window, the drive letters listed in "Destination Volume" column are automatically generated from the Windows Preinstallation Environment (WinPE). They can be different from the drive letters listed in "Source Volume" column. However, the data is still restored to proper volume even if drive letters are different.



Summary of Restore Settings

Summary of Disk Restore Settings:

Source Disk	Destination Disk

Summary of Volume Restore Settings:

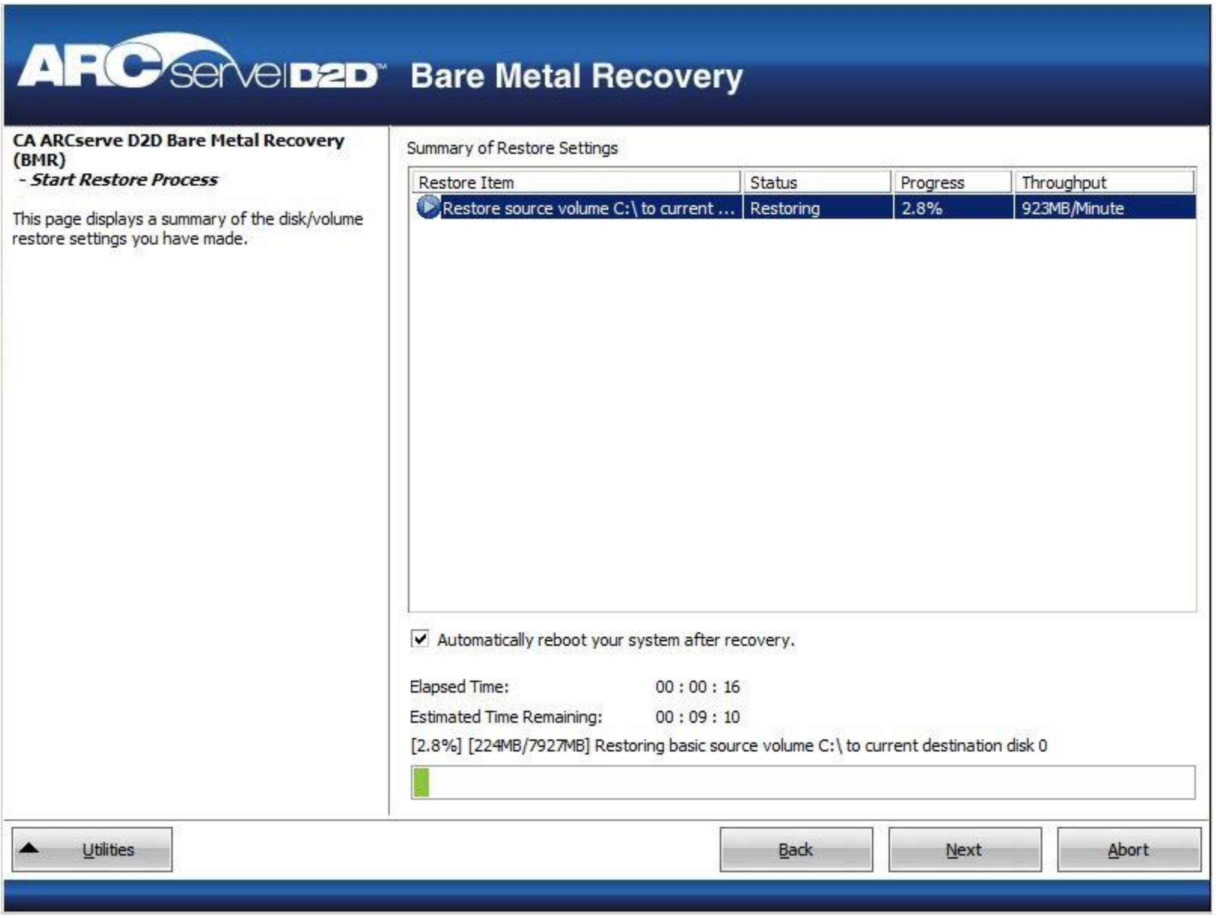
Source Volume	Destination Volume	On Disk
C:\ (32.00 GB)	\\?\Volume{80bc50db-bf9d-11df-be69-000...	Disk 0

Confirm your restore settings and click OK to continue.

20. After you have verified that the summary information is correct, click OK.

    The restore process starts. The BMR wizard screen displays the restore status for each volume.

    - Depending upon the size of the volume being restored, this operation can take some time.
    - During this process you are restoring, block-by-block whatever you had backed up for that recovery point and creating a replica of the source machine on the target machine.
    - By default, the option to reboot your system automatically after recovery is selected. If necessary, you can clear this option and you can reboot manually at a later time.
    - If necessary, you can cancel or abort the operation at any time.



CA ARCserve D2D Bare Metal Recovery (BMR)
- Start Restore Process

This page displays a summary of the disk/volume restore settings you have made.

Summary of Restore Settings

Restore Item	Status	Progress	Throughput
Restore source volume C:\ to current ...	Restoring	2.8%	923MB/Minute

☑ Automatically reboot your system after recovery.

Elapsed Time: 00 : 00 : 16
Estimated Time Remaining: 00 : 09 : 10
[2.8%] [224MB/7927MB] Restoring basic source volume C:\ to current destination disk 0

21. From the Utilities menu, you can access the BMR Activity Log and you can use the Save option to save the Activity Log.

    By default, the Activity Log is saved to the following location:

    X:\windows\system32\dr\log.

    Note: To avoid getting a Windows-generated error, do not save the Activity Log on your desktop or create a folder on your desktop using the "Save As" option from the BMR Activity Log window.

22. If you are restoring to dissimilar hardware (the SCSI/FC adapter which used to connect hard drives could have been changed) and no compatible driver is detected in your original system, a "driver injection" page is displayed to allow you to provide drivers for these devices.

    You can browse and select drivers to inject to the recovered system so that even if you are recovering to a machine with dissimilar hardware, you can still bring back the machine after BMR.

23. When the BMR process is completed, a confirmation notification is displayed.

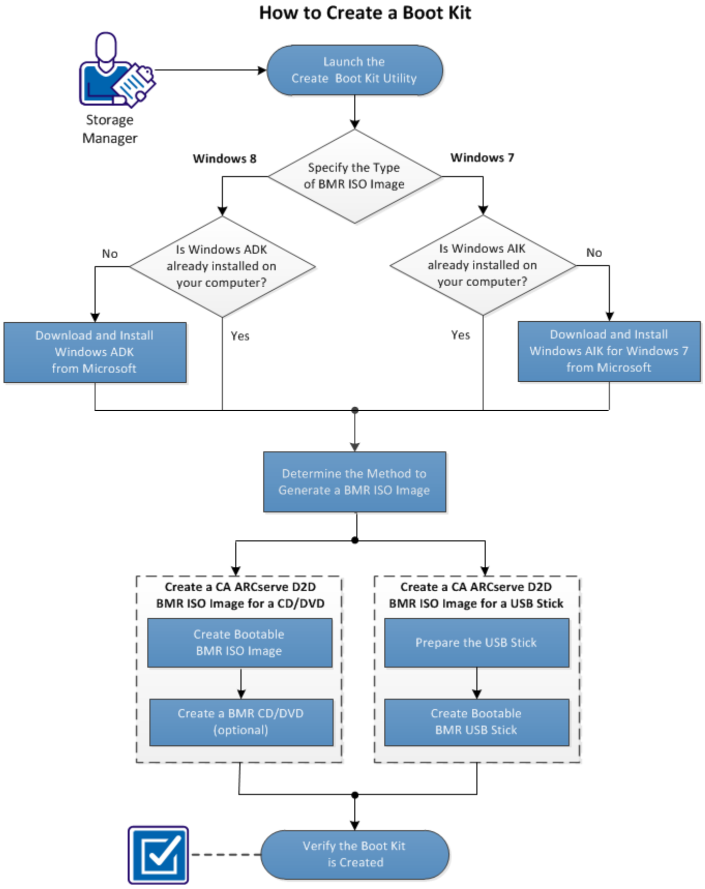
Notes: After completion of BMR:

- The first backup that is performed is a Verify Backup.
- Verify that the BIOS is configured to boot from the disk on which the boot volume was restored to.
- When the machine has been rebooted, you may need to configure the network adapters manually if you restored to dissimilar hardware.
- When the machine is rebooting, a Windows Error Recovery screen may be displayed indicating that Windows did not shut down successfully. If this occurs, you can safely ignore this warning and continue to start Windows normally.
- For dynamic disks, if the status of the disk is offline, you can manually change it to online from the disk management UI (accessed by running the Diskmgmt.msc control utility).
- For dynamic disks, if the dynamic volumes are in a failed redundancy status, you can manually resynchronize the volumes from the disk management UI (accessed by running the Diskmgmt.msc control utility).

How to Create a Boot Kit

CA ARCserve D2D utilizes a Boot Kit Utility to combine a WinPE (Windows Preinstallation Environment) image and CA ARCserve D2D image to create a BMR ISO image. This ISO image is then burned onto a bootable media. When you perform a bare metal recovery, the CA ARCserve D2D bootable media (CD/DVD or USB stick) is used to initialize the new computer system and allow the bare metal recovery process to begin.

The following diagram illustrates the process to create a boot kit:


How to Create a Boot Kit
Storage Manager
Launch the Create Boot Kit Utility
Specify the Type of BMR ISO Image
Windows 8
Windows 7
Is Windows ADK already installed on your computer?
No
Yes
Download and Install Windows ADK from Microsoft
Is Windows AIK already installed on your computer?
No
Yes
Download and Install Windows AIK for Windows 7 from Microsoft
Determine the Method to Generate a BMR ISO Image
Create a CA ARCserve D2D BMR ISO Image for a CD/DVD
Create Bootable BMR ISO Image
Create a BMR CD/DVD (optional)
Create a CA ARCserve D2D BMR ISO Image for a USB Stick
Prepare the USB Stick
Create Bootable BMR USB Stick
Verify the Boot Kit is Created

Perform the following tasks to create a boot kit:

1. Launch the Create Boot Kit Utility (see page 168)
2. Determine the Method to Generate a BMR ISO Image (see page 171)
3. Create a CA ARCserve D2D BMR ISO Image for a CD/DVD (see page 172)
   a. Create Bootable BMR ISO Image (see page 172)
   b. (optional) Create a BMR CD/DVD (see page 173)
4. Create a CA ARCserve D2D BMR ISO Image for a USB Stick (see page 174)
   a. Prepare the USB Stick (see page 175)
   b. Create Bootable BMR USB Stick (see page 177)
5. Verify the Boot Kit is Created (see page 178)

SUPPLEMENTAL VIDEO

This procedure contains a supplemental instructional video. Select either CA Support or YouTube as the source for viewing this video. The versions of the video from CA Support and YouTube are identical, and only the viewing source is different.

Videos

CA Support:	How to Create a Boot Kit
YouTube:	How to Create a Boot Kit

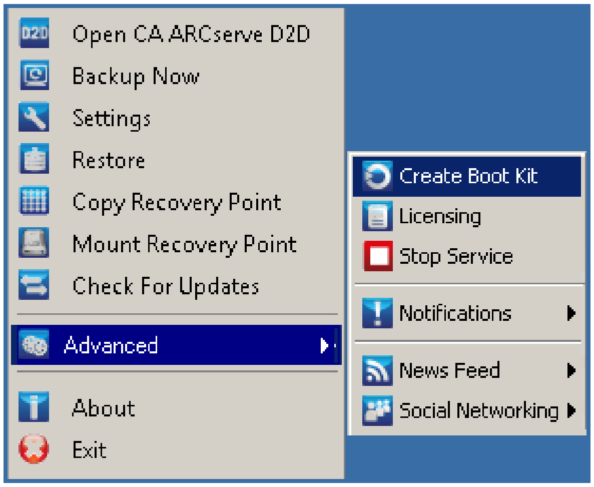
Launch the Create Boot Kit Utility

CA ARCserve D2D provides a Create Boot Kit for Bare Metal Recovery utility to help you generate a WinPE-based ISO image. This ISO image contains all the information needed to perform a bare metal recovery (BMR) if necessary.

Follow these steps:

1. You can launch the Create Boot Kit utility from the Advanced options of the System Tray Monitor or from the Start menu.

   The Create Boot Kit utility is launched and the Specify the Type of BMR ISO Image screen is displayed.

2. Specify the type of BMR ISO image to be created (Windows 8 or Windows 7) and click Next.

   Note: Windows XP, Windows Vista, and Windows Server 2003 are not supported to create a BMR ISO image. For these operating systems, you can use Windows Vista SP1, Windows 2003 SP2, or a later version of Windows to create your BMR ISO image.

   - **Windows 8**

     When launched, the utility immediately checks your computer to determine if the Windows Assessment and Deployment Kit (ADK) is already installed. Windows ADK is a Microsoft tool that lets you deploy Windows operating systems to computers.

     Note: You can install Windows ADK on computers running the following operating systems:

     - Windows 7
     - Windows Server 2008
     - Windows Server 2008 R2
     - Windows 8
     - Windows Server 2012

   - **Windows 7**

When launched, the utility immediately checks your computer to determine if the Windows Automated Installation Kit (AIK) is already installed. Windows AIK is a Microsoft tool that lets you deploy Windows operating systems to computers.

Note: You can install Windows AIK for Windows 7 on computers running the following operating systems:

- Windows 2003 SP2
- Windows Vista SP1
- Windows 7
- Windows Server 2008
- Windows Server 2008 R2

3. To create the bootable ISO image, Windows ADK or Windows AIK (as applicable) must be installed on the computer.

   a. If Windows ADK (or AIK) is installed, the utility will advance to the Select the Boot Kit Method screen to let you continue creating the boot kit.

   b. If Windows ADK (or AIK) is not installed, the corresponding Windows Information screen opens. You need to download and install Windows ADK (or AIK) from the Microsoft Download Center.

   Note: For more information on installing Windows ADK (or AIK), see the following websites:

   - Installing Windows ADK
   - Installing Windows AIK for Windows 7

   You can install Windows ADK (or AIK) using either of the following methods:

   - Download the installation media directly from the Microsoft website and install Windows ADK (or AIK) on your computer.
   - Click the links on the information screen to open the Microsoft website so that you can download Windows ADK (or AIK) and install it on your computer.

     After you install Windows ADK (or AIK), click Next and the utility will advance to the Select the Boot Kit Method screen to let you continue creating the boot kit.

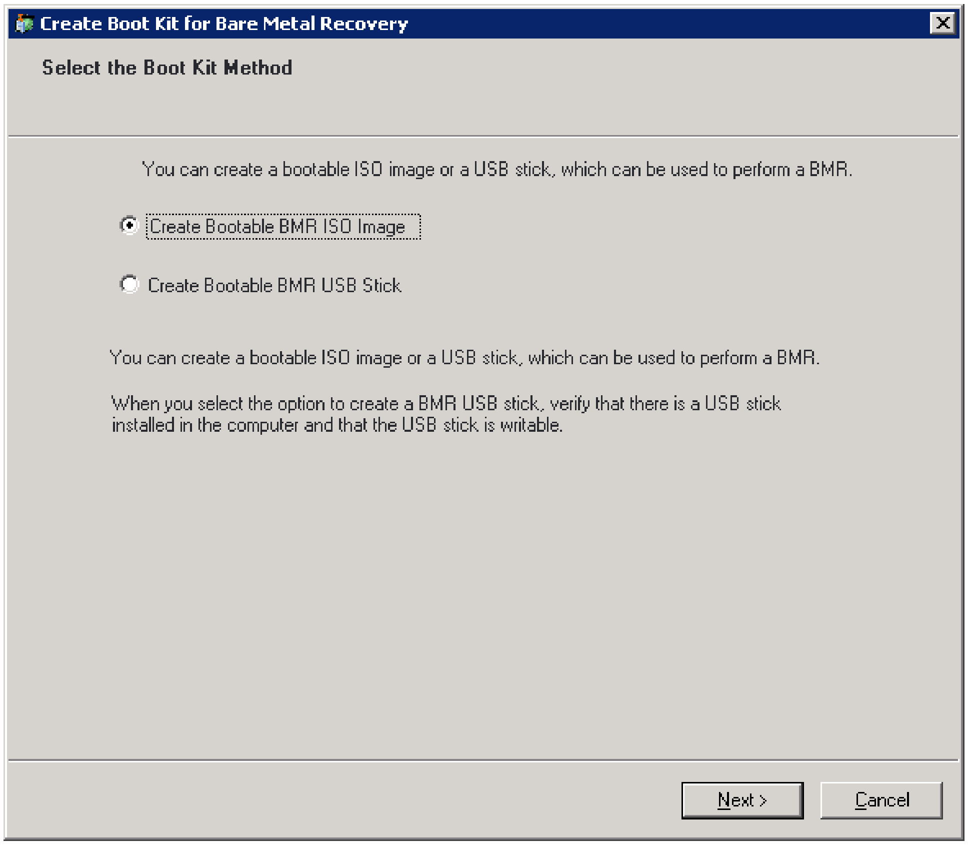
   Note: For Windows ADK installation, the following features are required to support creating the boot kit:

   - Deployment Tools
   - Windows Preinstallation Environment (Windows PE)

   Note: For Windows AIK installation, select Windows AIK Setup.

Determine the Method to Generate a BMR ISO Image

The Create Boot Kit utility provides two options for generating an ISO image:



Create Boot Kit for Bare Metal Recovery

Select the Boot Kit Method

You can create a bootable ISO image or a USB stick, which can be used to perform a BMR.

● Create Bootable BMR ISO Image

○ Create Bootable BMR USB Stick

You can create a bootable ISO image or a USB stick, which can be used to perform a BMR.

When you select the option to create a BMR USB stick, verify that there is a USB stick installed in the computer and that the USB stick is writable.

- Create Bootable BMR ISO Image (see page 172)

  This method creates an ISO image that you can then burn onto a CD/DVD for storage. This is the default option. For more information, see Create a CA ARCserve D2D BMR ISO Image for a CD/DVD (see page 172).

- Create Bootable BMR USB Stick (see page 177)

  This method creates an ISO image and burns it directly onto a portable USB stick for storage. For more information, see Create a CA ARCserve D2D BMR ISO Image for a USB Stick (see page 174).

You can then use either of these bootable media to initialize the new computer system and allow the bare metal recovery process to begin. To ensure your saved image is always the most up-to-date version, it is good practice to create a new ISO image every time you update CA ARCserve D2D.

Note: If you are performing a BMR on a virtual machine (VM), then you can also directly attach the ISO image to the VM to start the BMR process without having to first burn it onto a CD/DVD.

Create a CA ARCserve D2D BMR ISO Image for a CD/DVD

The process to create a CA ARCserve D2D BMR ISO image consists of:

- Create Bootable BMR ISO Image (see page 172)
- Create a BMR CD/DVD (see page 173)

Create Bootable BMR ISO Image

If you select to create a BMR ISO image, you can then burn this image onto a bootable media (CD or DVD) to initialize the new computer system and allow the bare metal recovery process to begin.

Follow these steps:

1. From the Select the Boot Kit Method screen, select Create Bootable BMR ISO Image and click Next.

   The Select Platform and Destination dialog opens.

2. Select the applicable platform for the ISO image.

   You can select either of the two available options, or both. If you select both platforms, it will result in added time to create the image,

   Note: An ISO image that is created from a 32-bit platform should be used to restore a 32-bit server. An ISO image that is created from a 64-bit platform should be used to restore a 64-bit server. If you want to boot a UEFI firmware system, make sure the x64 platform option is selected.

   The available options are:

   - BMR ISO image for x86 platform (only).
   - BMR ISO image for x64 platform (only).
   - BMR ISO image for both x86 and x64 platforms.

3. Specify the Destination.

   Specify or browse to the location where the BMR ISO image file will be created and stored.

4. Specify the name of the generated BMR ISO image file.

5. After you specify the platform and destination, click Next,

   The Select Languages dialog opens.

6. Select the language for the generated BMR ISO image. During the BMR procedure, the user interface and keyboard will be integrated with the selected language.

   You can select one or more different languages for the BMR ISO image. However, each language selected will result in added time to create the image. The more languages you select, the longer it will take to complete. As a result, you should only select the languages that you actually need.

7. Click Next.

   The Specify Drivers dialog opens.

8. Specify the drivers to populate the driver list with drivers to be integrated into the BMR ISO image.

   The driver pane is enabled and you can specify any additional drivers that you want to add (or delete) from the BMR ISO image.

   Note: When integrating the VirtualBox Host-Only Ethernet Adapter driver into the BMR ISO image, a possible conflict with the Windows ADK components exists. To avoid any conflict, the best practice is not to integrate this driver into the BMR ISO image.

   a. Include Local Drivers: Load the local critical device drivers (only oem drivers for NIC, FC, or SCSI) to the driver list. When clicked, the utility checks your computer to determine if there are any critical device drivers that need to be added to the BMR ISO image for this computer. If any critical device drivers are found, they are automatically added to the list.

   b. Add Driver: Browse to the drivers you want to be added to the driver list.

   c. Delete Driver: Remove any drivers selected from the list that you do not want added to the BMR ISO image.

9. Click Create to launch the process and create a bootable BMR ISO image.

   During the process, the status is displayed.

10. When the process is complete a confirmation screen opens to indicate that the BMR ISO image was successfully generated. This screen also displays the location and platform for the image, along with a clickable link to browse to that location.

Create a BMR CD/DVD

After the ISO image is created and saved to the specified destination, you then need to burn this image onto a bootable CD or DVD. You can use this bootable media to initialize the new computer system and allow the bare metal recovery (BMR) process to begin.

To ensure your saved ISO image is always the most up-to-date version:

- You should create a new ISO image every time you update CA ARCserve D2D.
- If you saved the ISO image to a remote location, you should burn the CD/DVD only if you need to perform a BMR.
- If you have CA ARCserve D2D installed on multiple computers, you should create a new ISO image (and corresponding CD/DVD) from a known-good computer just prior to performing a BMR so that the image includes all latest CA ARCserve D2D updates.

Create a CA ARCserve D2D BMR ISO Image for a USB Stick

The process to create a CA ARCserve D2D BMR USB stick consists of:

Prepare the USB Stick (see page 175)

Create Bootable BMR USB Stick (see page 177)

Prepare the USB Stick

Prior to burning the BMR ISO image onto a USB stick, you must prepare the stick. To create a bootable USB BMR stick, the stick must be made active to enable it to boot a system. You can use the DiskPart command to make the stick active.

Important! If the USB stick needs to be formatted, this process will erase all data currently stored on your USB stick. Verify that there is nothing important on this stick prior to performing this process. If the USB stick was previously formatted, this process will overwrite any files with the same name.

Follow these steps:

1. Open a command prompt (with administrative rights if required by your OS).
2. Type **Diskpart** and press Enter.
3. Type **List Disk** and press Enter.

   A listing of all detected disks is displayed. Determine which of the displayed disks is your USB disk.
4. Select the USB disk by typing **Select Disk <n>** ("n" is the disk number for the USB disk), and press Enter.
5. Type **Clean** and press Enter.

   The system will display "DiskPart succeeded in cleaning the disk."
6. Type **create partition primary** and press Enter.

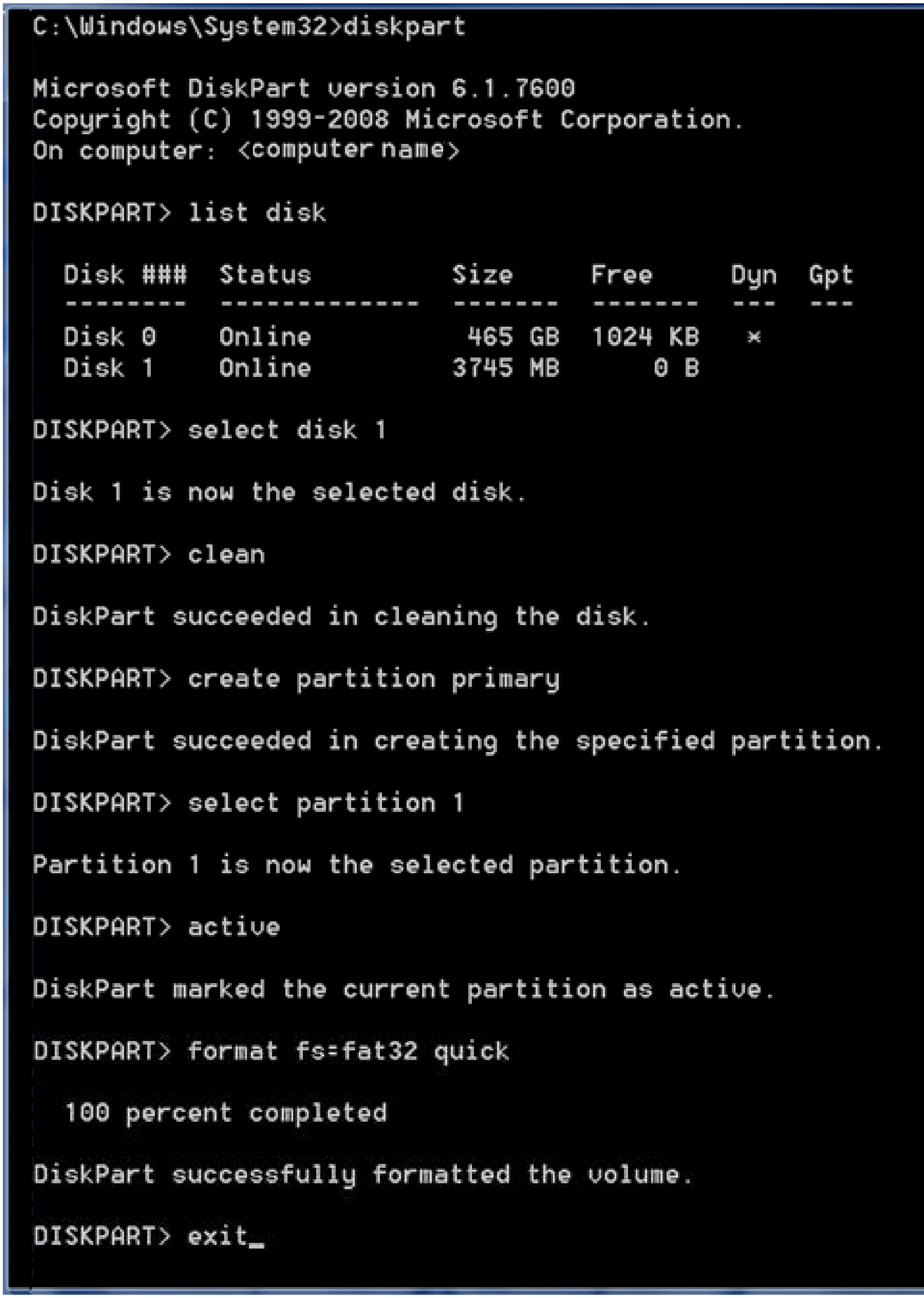
   The system will display "succeeded in creating the specified partition".
7. Type **select partition 1** and press Enter.

   The system will display "Partition 1 is now the selected partition."
8. Type **active** and press Enter.

   The system will display "DiskPart marked the current partition as active."
9. If necessary, format the USB stick with FAT32 or NTFS file system.

   Type **format fs=fat32 quick** or **format fs=ntfs quick**

The USB stick is now prepared and ready for use.



```
C:\Windows\System32>diskpart

Microsoft DiskPart version 6.1.7600
Copyright (C) 1999-2008 Microsoft Corporation.
On computer: <computer name>

DISKPART> list disk

  Disk ###  Status         Size     Free     Dyn  Gpt
  --------  -------------  -------  -------  ---  ---
  Disk 0    Online          465 GB  1024 KB   *
  Disk 1    Online         3745 MB      0 B

DISKPART> select disk 1

Disk 1 is now the selected disk.

DISKPART> clean

DiskPart succeeded in cleaning the disk.

DISKPART> create partition primary

DiskPart succeeded in creating the specified partition.

DISKPART> select partition 1

Partition 1 is now the selected partition.

DISKPART> active

DiskPart marked the current partition as active.

DISKPART> format fs=fat32 quick

  100 percent completed

DiskPart successfully formatted the volume.

DISKPART> exit_
```

Create Bootable BMR USB Stick

If you select to create a bootable BMR (Bare Metal Recovery) USB stick, you can then burn this ISO image directly onto a USB stick to initialize the new computer system and allow the bare metal recovery process to begin.

Follow these steps:

1. If necessary, prepare the USB stick. For more information, see Prepare the USB Stick (see page 175).
2. From the Select the Boot Kit Method screen, select “Create Bootable BMR USB Stick” and click Next.

   The Select Platform and Destination dialog opens.
3. Select the applicable platform for the ISO image.

   You can select either of the two available options, or both. If you select both platforms, it will result in added time to create the image,

   Note: An ISO image that is created from a 32-bit platform should be used to restore a 32-bit server. An ISO image that is created from a 64-bit platform should be used to restore a 64-bit server. If you want to boot a UEFI firmware system, make sure the x64 platform option is selected.

   The available options are:

   - BMR ISO image for x86 platform (only).
   - BMR ISO image for x64 platform (only).
   - BMR ISO image for both x86 and x64 platforms.
4. Specify the USB Drive.

   Specify or browse to the drive location where the BMR ISO image file will be created and burned onto the USB stick.

   Note: For a USB drive, if you want to boot the UEFI firmware system, you should format the USB drive as a FAT32 file system.
5. Verify that a prepared USB stick is inserted in the specified drive.
6. After you specify the platform and location, click Next,

   The Select Languages dialog opens.
7. Select the language for the generated BMR ISO image. During the BMR procedure, the user interface and keyboard will be integrated with the selected language.

   You can select one or more different languages for the BMR ISO image. However, each language selected will result in added time to create the image. The more languages you select, the longer it will take to complete. As a result, you should only select the languages that you actually need.

8. Click Next.

   The Specify Drivers dialog opens.

9. If necessary, select the Integrate additional drivers option.

   The driver pane is enabled and you can specify any additional drivers that you want to add (or delete) from the BMR ISO image.

10. Click Create to launch the process and create a bootable BMR ISO image.

    During the process, the status is displayed.

11. When the process is complete a confirmation screen opens to indicate that the BMR ISO image was successfully generated and burned onto your USB stick. This screen also displays the location and platform for the image, along with a clickable link to browse to that location.

Verify the Boot Kit is Created

After the BMR ISO image has been successfully created, the Create Boot Kit utility displays a link to connect to the location where the image is saved. Verify the BMR ISO image is saved at that location. By default, the image is saved to the Libraries/Documents folder, with a default image name format consisting of:

<PRODUCT>_BMR_<Platform>_<OS Kernel>_<version>(Build xxx).ISO

Example:

D2D_BMR_x86x64_w8_r16.5 (Build 1234).ISO

Define a Limit to the Quantity of Concurrent Backups

You can define a limit to the quantity of CA ARCserve D2D backup jobs that run concurrently. This capability lets you optimize the performance of the CA ARCserve D2D virtual machine proxy server in your backup environment. By default, Host-Based VM Backup can run up to ten D2D backup jobs concurrently. In environments that contain many virtual machines that are associated with a CA ARCserve D2D virtual machine proxy system, a high quantity of concurrent backups can have an adverse effect on network and backup performance.

Note: When the quantity of concurrent jobs exceeds the defined limit, the jobs that exceed the limit enter a job queue.

Follow these steps:

1. Log in to the CA ARCserve D2D virtual machine proxy system.
2. Open Windows Registry Editor and browse to the following key:

   ```
   HKEY_LOCAL_MACHINE\SOFTWARE\CA\CA ARCSERVE D2D
   ```

3. Right-click CA ARCserve D2D and select New and click String Value on the pop-up menu.

   Name the key as follows:

   ```
   VsphereMaxJobNum
   ```

4. Right-click VsphereMaxJobNum and click Modify on the pop-up menu.

   The Edit String dialog opens.

5. In the Value Data field, specify the quantity of CA ARCserve D2D backup jobs that you want to allow to run concurrently.
   - **Minimum limit--**1
   - **Maximum limit--**none.
6. Click OK. The limit is defined.
7. Restart the CA ARCserve D2D web service.

Increase the Quantity of Messages Retained in the VMVixMgr Log File

The VMVixMgr Log file retains messages that relate to VMware VIX operations. For more information about the VMware VIX API, see the VMware website.

The VMVixMgr log file (VMVixMgr.log) is stored in the following directory on the backup proxy system:

```
C:\Program Files\CA\ARCserve D2D\Logs
```

By default, the log file cannot exceed 500KB. When the log file exceeds 500KB, the messages contained in the log file will be overwritten. This behavior prevents the log file from exceeding 500KB.

When you define a schedule to back up data in 15-minute intervals, it is likely that the log file will be overwritten when the log file exceeds 500 KB. Increasing the size of the log file lets you retain more messages in the log file.

As a best practice, increase the size of the log file only when you define a schedule to back up data every 15 minutes.

Follow these steps:

1. Log in to the backup proxy system.
2. Open Windows Registry Editor and browse to the following key:

   ```
   HKEY_LOCAL_MACHINE\SOFTWARE\CA\CA ARCserve D2D
   ```

3. Right-click CA ARCserve D2D, select New, and click DWORD on the pop-up menu.

   Name the DWORD as follows:

   ```
   VixMgrLogSize
   ```

   Note: If this DWORD is not present, the default value for the log file is in effect at 500KB.

4. After you create the DWORD, right-click VixMgrLogSize and click Modify on the pop-up menu to open the Edit DWORD dialog.
5. In the Value Data field on the Edit DWORD dialog, specify a value (in KB) for the log file. For example, 750, 1000, and so on.
6. Click OK to apply the value and close the Edit DWORD dialog.

Protect the CA ARCserve D2D Backup Proxy

Backup sessions created with CA ARCserve Central Host-Based VM Backup are stored on the backup proxy. There are several ways you can protect the backup proxy itself, depending on your configuration.

- If you are running CA ARCserve Central Protection Manager, you can add the backup proxy as a node to be protected. For more information, see the CA ARCserve Central Protection Manager User Guide.
- Launch the CA ARCserve D2D instance running locally on the backup proxy and configure backup settings. Select Entire Machine as the backup source. For more information, see the CA ARCserve D2D User Guide.
- If you are running CA ARCserve Backup, you can configure a backup job to protect the proxy.

How the Installation Process Affects Operating Systems

The CA ARCserve Central Applications installation process updates various Windows operating system components using an installation engine named the Microsoft Installer Package (MSI). The components included in MSI let CA ARCserve Central Applications perform custom actions that let you install or upgrade CA ARCserve Central Applications.

The following table describes the custom actions and the affected components.

Note: All CA ARCserve Central Applications MSI packages call the components listed in this table when you install CA ARCserve Central Applications.

Component	Description
CallAllowInstall	Lets the installation process check for conditions relating to the current application installation.
CallPreInstall	Lets the installation process read and write MSI properties. For example, read the application installation path from the MSI.
CallPostInstall	Lets the installation process perform various tasks relating to installation. For example, registering application into the Windows Registry.
CallAllowUninstall	Lets the uninstallation process check for conditions relating the current application installation.

Component	Description
CallPreUninstall	Lets the uninstallation process perform various tasks relating to uninstallation. For example, un-registering application from the Windows Registry.
CallPostUninstall	Lets the uninstallation process perform various tasks after the installed files are uninstalled. For example, removing the remaining files.
ShowMsiLog	Displays the Windows Installer log file in Notepad if the end user selects the Show the Windows Installer log check box in the SetupCompleteSuccess, SetupCompleteError, or SetupInterrupted dialogs and then clicks Finish. (This works only with Windows Installer 4.0.)
ISPrint	Prints the contents of a ScrollableText control on a dialog. This is a Windows Installer .dll custom action. The name of the .dll file is SetAllUsers.dll, and its entry point is PrintScrollableText.
CheckForProductUpdates	Uses FLEXnet Connect to check for product updates. This custom action launches an executable file named Agent.exe, and it passes the following: /au[ProductCode] /EndOfInstall
CheckForProductUpdatesOnReboot	Uses FLEXnet Connect to check for product updates on reboot. This custom action launches an executable file named Agent.exe, and it passes the following: /au[ProductCode] /EndOfInstall /Reboot

- **Directories Updated--**The installation process installs and updates the application files in the following directories by default:

  C:\Program Files\CA\<*application name*> *(for example, ARCserve Central Applications or ARCserve D2D)*

  You can install the application into the default installation directory or into an alternative directory. The installation process copies various system files to the following directory:

  C:\WINDOWS\SYSTEM32

- **Windows Registry Keys Updated--**The installation process updates the following Windows registry keys:

  Default registry keys:

  `HKLM\SOFTWARE\CA\`*`<application name> (for example, ARCserve Central Applications or ARCserve D2D)`*

  The installation process creates new registry keys and modifies various other registry keys, based on the current configuration of your system.

- **Applications Installed--**The installation process installs the following applications into your computer:
  - CA Licensing
  - Microsoft Visual C++ 2010 SP1 Redistributable
  - Java Runtime Environment (JRE) 1.7.0_06
  - Tomcat 7.0.29

Binary Files Containing Incorrect File Version Information

CA ARCserve Central Applications installs binary files that are developed by third parties, other CA products, and CA ARCserve Central Applications that contain incorrect file version information. The following table describes these binary files.

Binary Name	Source
UpdateData.exe	CA License
zlib1.dll	Zlib Compression Library

Binary Files that Do Not Contain an Embedded Manifest

CA ARCserve Central Applications installs binary files that are developed by third parties, other CA Technologies products, and CA ARCserve Central Applications that do not contain an embedded manifest and do not contain a text manifest. The following table describes these binary files.

Binary Name	Source
BaseLicInst.exe	CA License
UpdateData.exe	CA License
vcredist_x64.exe	Microsoft

Binary Name	Source
vcredist_x86.exe	Microsoft
tomcat7.exe	Tomcat

Binary Files that have a Privilege Level of Require Administrator in Manifest

CA ARCserve Central Applications installs binary files that are developed by third parties, other CA Technologies products, and CA ARCserve Central Applications that have a privilege level of Administrator or Highest Available. You must log in using an administrative account or an account with the highest available permissions to run various CA ARCserve Central Applications services, components, and applications. The binaries corresponding to these services, components, and applications contain CA ARCserve Central Applications specific functionality that is not available to a basic user account. As a result, Windows will prompt you to confirm an operation by specifying your password or by using an account with administrative privileges to complete the operation.

- **Administrative Privileges--**The administrative profile or an account with administrative privileges has read, write, and execute permissions to all Windows and system resources. If you do not have Administrative privileges, you will be prompted to enter user name / password of an administrator user to continue.
- **Highest Available Privileges--**An account with the highest-available privileges is a basic user account and a power user account with run-as administrative privileges.

The following table describes these binary files.

Binary Name	Source
APMSetupUtility.exe	CA ARCserve Central Applications
ArcAppUpdateManager.exe	CA ARCserve Central Applications
CA ARCserve Central ApplicationsAutoUpdateUninstallUtility.exe	CA ARCserve Central Applications
CA ARCserve Central ApplicationsPMConfigSettings.exe	CA ARCserve Central Applications
CCIConfigSettings.exe	CA ARCserve Central Applications
CfgUpdateUtil.exe	CA ARCserve Central Applications
CfgUpdateUtil.exe	CA ARCserve Central Applications
D2DAutoUpdateUninstallUtility.exe	CA ARCserve Central Applications
D2DPMConfigSettings.exe	CA ARCserve Central Applications

Binary Name	Source
D2DUpdateManager.exe	CA ARCserve Central Applications
DBConfig.exe	CA ARCserve Central Applications
FWConfig.exe	CA ARCserve Central Applications
RemoteDeploy.exe	CA ARCserve Central Applications
RestartHost.exe	CA ARCserve Central Applications
SetupComm.exe	CA ARCserve Central Applications
SetupFW.exe	CA ARCserve Central Applications
SetupWrapper.exe	CA ARCserve Central Applications
Uninstall.exe	CA ARCserve Central Applications
UpdateInstallCommander.exe	CA ARCserve Central Applications
UpgradeDataSyncupUtility.exe	CA ARCserve Central Applications
jbroker.exe	Java Runtime Environment
jucheck.exe	Java Runtime Environment

Exclude Files from Antivirus Scanning

Antivirus software can interfere with the smooth running of the application by either temporarily blocking access to files or by quarantining or deleting files that are incorrectly classified as suspicious or dangerous. You can configure most antivirus software to exclude particular processes, files, or folders so that you are not scanning data that does not need to be protected. It is important to configure your antivirus software properly so that it does not interfere with backup and restore operations, or any other types of processes.

The following processes, folders, and files should be excluded from the antivirus scanning:

- Process list
  - C:\Program Files\CA\ARCserve Central Applications\BIN\CCIConfigSettings.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\CfgUpdateUtil.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\DBConfig.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\GetApplicationDetails.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\GetApplicationDetails64.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\GetVolumeDetails.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\VixGetApplicationDetails.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\VixGetVolumeDetails.exe
  - C:\Program Files\CA\ARCserve Central Applications\BIN\GetApplicationDetails64.exe
  - C:\Program Files\CA\ARCserve Central Applications\Deployment\Asremsvc.exe
  - C:\Program Files\CA\ARCserve Central Applications\Deployment\CheckProdInfo.exe
  - C:\Program Files\CA\ARCserve Central Applications\Deployment\DeleteMe.exe
  - C:\Program Files\CA\ARCserve Central Applications\Deployment\SetupComm.exe
  - C:\Program Files\CA\ARCserve Central Applications\Deployment\RestartHost.exe
  - C:\Program Files\CA\ARCserve Central Applications\Update Manager\D2DAutoUpdateUninstallUtility.exe
  - C:\Program Files\CA\ARCserve Central Applications\Update Manager\D2DPMConfigSettings.exe

- C:\Program Files\CA\ARCserve Central Applications\Update Manager\D2DUpdateManager.exe
- C:\Program Files\CA\ARCserve Central Applications\Update Manager\UpgradeDataSyncupUtility.exe
- C:\Program Files\CA\ARCserve Central Applications\TOMCAT\BIN\tomcat7.exe
- C:\Program Files\CA\ARCserve D2D\TOMCAT\JRE\jre7\bin
    - java.exe
    - java-rmi.exe
    - javaw.exe
    - keytool.exe
    - rmid.exe
    - rmiregistry.exe
- C:\Program Files (x86)\CA\SharedComponents\CA_LIC
    - CALicnse.exe
    - CAminfo.exe
    - CAregit.exe
    - ErrBox.exe
    - lic98log.exe
    - lic98Service.exe
    - lic98version.exe
    - LicDebug.exe
    - LicRCmd.exe
    - LogWatNT.exe
    - mergecalic.exe
    - mergeolf.exe

Glossary

Auto Discovery

Auto discovery is a process by which nodes are detected and added to one or more CA ARCserve Central Applications for central management.

Backup Proxy

A backup proxy is the host computer on which CA ARCserve D2D is running. The proxy performs the back up operations configured in CA ARCserve Central Host-Based VM Backup.

Catalog File

A catalog file is a directory of information about the backup data contained within the CA ARCserve D2D database. For more information about the CA ARCserve D2D catalog file, see the *CA ARCserve D2D User Guide.*

HOTADD Transport Mode

The HOTADD transport mode is a data transport method that lets you back up virtual machines configured with SCSI disks. For more information, see the Virtual Disk API Programming Guide on the VMware website.

NBD Transport Mode

Network Block Device (NBD) transport mode, also referred to as LAN transport mode, uses the Network File Copy (NFC) protocol to communicate. Various VDDK and VCB operations use one connection for each virtual disk that it accesses on each ESX/ESXi Server host when using NBD.

NBDSSL Transport Mode

Network Block Device Secure Sockets Layer (NBDSSL) transport mode uses the Network File Copy (NFC) protocol to communicate. NBDSSL transfers encrypted data using TCP/IP communication networks.

Node

A node is a physical or virtual machine managed by one or more CA ARCserve Central Applications.

Node Group

A node group is a method by which all nodes managed by one or more CA ARCserve Central Applications can be organized, such as by purpose, by OS, or by installed applications.

Policy

A policy is a set of specifications for protecting a node in one or more CA ARCserve Central Applications.

Preflight Check

Preflight Check (PFC) is a utility that lets you run vital checks on nodes to detect conditions that can cause backup jobs to fail. You can view the results of the PFC for a node by clicking the icon in the PFC Status column on the Node screen.

Recovery Point

A recovery pointy is a backup image comprised of parent-plus-oldest-child blocks. Child backups are merged with the parent backup to create new recovery point images so that the value specified is always maintained.

SAN Transport Mode

The SAN (Storage Area Network) transport mode lets you transfer backup data from proxy systems connected to the SAN to storage devices using Fibre Channel communication.

SRM

Storage Resource Management (SRM) is a feature by which information is collected for effective management of your environment such as application data, hardware and software data, or performance key indicators.

Synchronization

Synchronization is the process by which data in different databases is kept up to date so that the central site database is consistent with registered branches, nodes, or sites.

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