



# Symantec NetBackup **Blueprints** **Blueprint** for Microsoft Active Directory

Symantec Education Services



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## Notice



This NetBackup Blueprint presentation includes example diagrams that contain objects that represent applications and platforms from other companies such as Microsoft and VMware. These diagrams may or may not match or resemble actual implementations found in end user environments. Any likeness or similarity to actual end user environments is completely by coincidence.

The goal of the diagrams included in this blueprint presentation is not to recommend specific ways in which to implement applications and platforms from other companies such as Microsoft and VMware; the purpose of these diagrams is to illustrate NetBackup best practices only.

For guidelines and best practices on installing and configuring applications and platforms from other companies, please refer to best practice documentation and other resources provided by those companies.

These **Blueprints** are designed to show customer challenges and how NetBackup solves these challenges.

- Each **Blueprint** consists of:
  - **Pain Points:** What challenges a customer faces
  - **Whiteboard & Example Diagram :** Shows how NetBackup solves the customer challenges
  - **Advantages:** Summarizes the NetBackup advantages
- Use these **Blueprints** to:
  - Understand the customer challenges and how NetBackup solves them
  - Present the NetBackup best practice solution



## Pain Points

Symantec NetBackup Blueprints





## Active Directory

- The recovery process is tedious and difficult.
- The entire system state needs to be restored; increases downtime.
- Active Directory authoritative restores require the use of command-line system tools, such as `NTDSUTIL`.
- The Domain controller has to be disconnected from the network during an Authoritative restore. This prevents users from accessing the network resources during the recovery.
- The Domain Controller must be rebooted at least twice, creating additional downtime and risk.
- Restoring a Domain Controller to dissimilar hardware may present a variety of issues.





## NetBackup Advantages

# NetBackup Blueprints: **Advantages**

## What is NetBackup Microsoft Active Directory?



NetBackup Microsoft Active Directory (AD) backs up the Active Directory online and enables the granular restores of AD objects from a single pass AD backup.

BENEFITS	DETAILS
Granular restores of Active Directory data	Granular recovery includes the ability to recover all items with full attributes. For example, users, servers, and printers.  Day-to-day and Disaster recovery (DR) restores can be performed with a single backup image.
Eliminates the need to reboot the AD server	Minimizes downtime and keep the applications up and running.
Ease of use and control	Leverages Microsoft VSS system state backup for ease of use and control.





## Whiteboards and Diagrams

# White Boards: **Active Directory** Terminology



TERM	DESCRIPTION
Active Directory (AD)	AD is Microsoft's directory service that is available with Windows servers. It is a centralized system that automates network management of user data, security, and distributed resources. Microsoft Exchange, SQL, and SharePoint depend upon AD.
Granular Recovery Technology (GRT)	GRT enables individual objects to be restored from a one-pass full backups. GRT is supported for Microsoft Exchange, Microsoft SharePoint, and Active Directory backups.
Network File System (NFS)	NFS is a widely recognized, open standard for client and server file access over a network. It allows clients to access files on dissimilar servers through a shared TCP/IP network. NFS is typically bundled with the host operating system. NetBackup uses GRT and NFS to recover the individual objects that reside within a database backup image.

# White Boards: **Active Directory** Terminology (continued)

TERM	DESCRIPTION
Lightweight Directory Access Protocol (LDAP)	It is an application protocol used over an IP network to manage and access the distributed directory information service.
Active Directory Application Mode (ADAM)	It is a new mode of Active Directory that is designed specifically for directory-enabled applications. ADAM is a Lightweight Directory Access Protocol (LDAP) directory service that runs as a user service, rather than as a system service. It provides flexible support for directory enabled applications.
Active Directory Lightweight Directory Services (AD/LDS)	Formerly known as Active Directory Application Mode (ADAM). It can provide directory services for directory-enabled applications without incurring the overhead of domains and forests.

# White Boards: **Active Directory** Terminology (continued)



TERM	DESCRIPTION
System State	System State includes the registry, the COM+ Class Registration database, boot and system files. If the server is a domain controller, the data also includes the Active Directory database and the SYSVOL directory.

# Whiteboards: **Active Directory** System Requirements for AD Granular Recovery



Active Directory granular NetBackup restores are supported on the following systems:



Master server, media server, and clients must all have NetBackup 6.5.4 or later installed. In addition, they all must be at the same level.

Network File System (NFS) must be installed on the media server and all the Active Directory domain controllers or ADAM/LDS hosts.

NetBackup Client Service must be configured to log on as an account with domain privileges on the AD or ADAM server.



NetBackup for Active Directory agent is installed along with the NetBackup client software. No separate installation is required. A valid license for the agent must exist on the master server.



One **Application & Database Pack** license is required for each Active Directory domain that requires granular, object-level restores of AD objects.

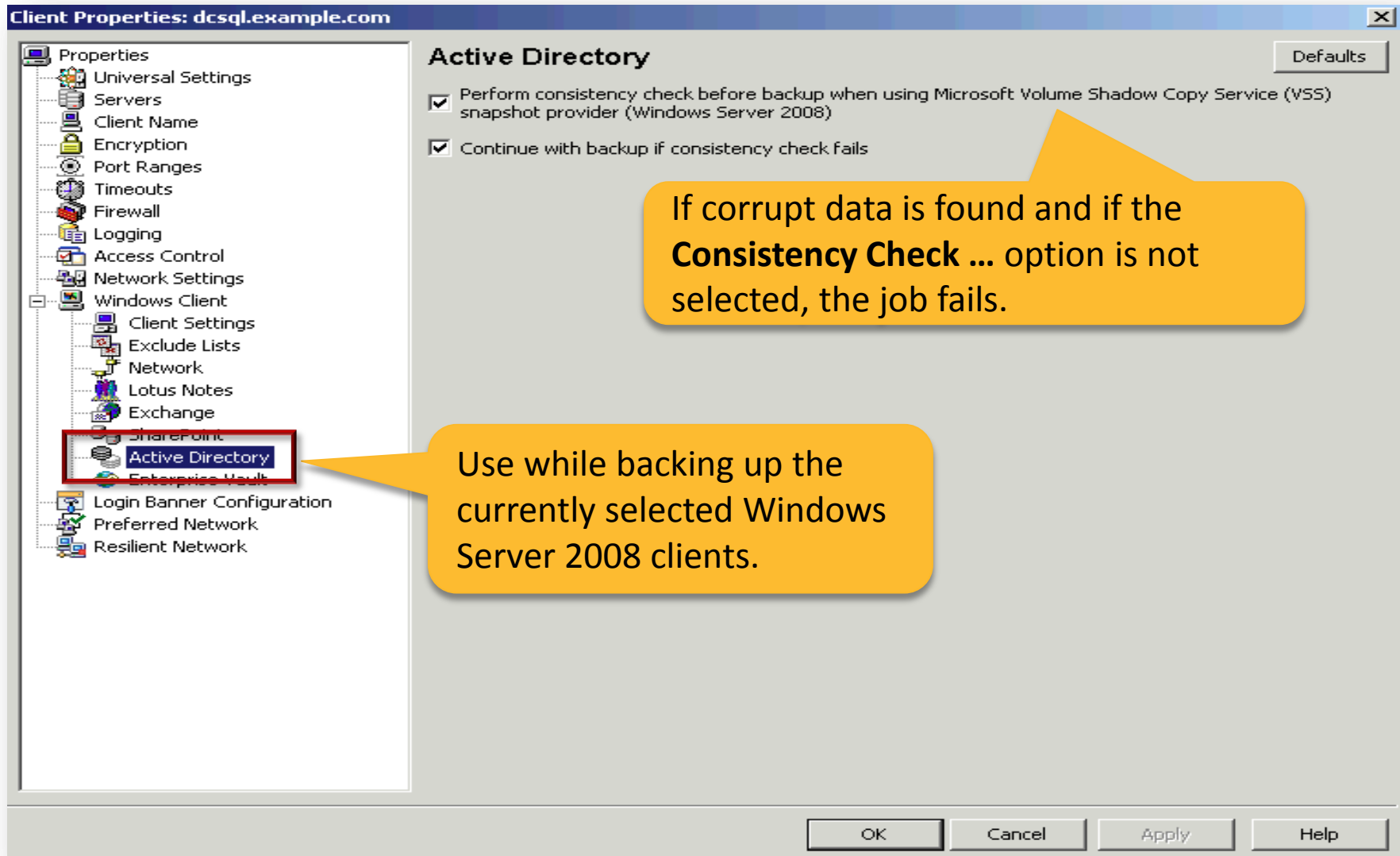


Full database recovery of Active Directory is included with the Standard Client license.



# Example Diagram: Active Directory

## Host properties



The screenshot shows the 'Client Properties: dcsql.example.com' dialog box. The left pane shows a tree view of properties, with 'Active Directory' selected and highlighted by a red box. The right pane, titled 'Active Directory', contains two checked options:

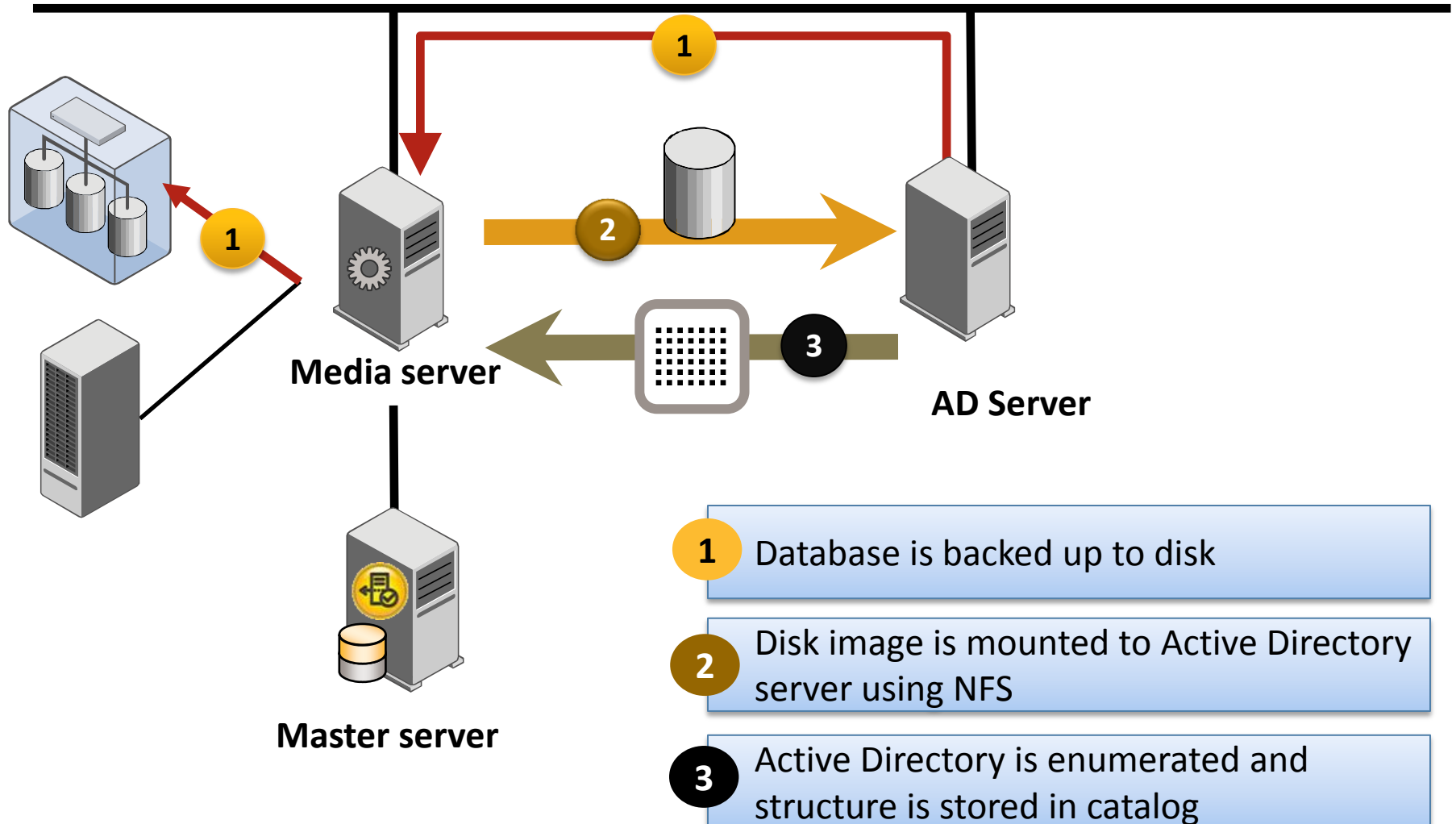
- Perform consistency check before backup when using Microsoft Volume Shadow Copy Service (VSS) snapshot provider (Windows Server 2008)
- Continue with backup if consistency check fails

At the bottom of the dialog are buttons for 'OK', 'Cancel', 'Apply', and 'Help'. A 'Defaults' button is also present in the top right of the right pane.

**Callout 1:** If corrupt data is found and if the **Consistency Check ...** option is not selected, the job fails.

**Callout 2:** Use while backing up the currently selected Windows Server 2008 clients.

# Whiteboards: **Active Directory** GRT Backup process



# Example Diagram: Active Directory

## Configuring policies for AD granular restores



Start

Preface

How to Use

Advantages

Whiteboards and Diagrams

Life Preservers

The screenshot shows the NetBackup Administration Console interface. The main window displays the configuration for a policy named 'Ad\_backup'. The 'Policy type' is set to 'MS-Windows'. The 'Enable Granular Recovery' option is checked and set to 'Yes'. The 'Schedules' section shows a 'Full Backup' schedule with a retention of 2 weeks and a frequency of 1 week. The 'Selections' section shows 'System State:\' selected. The 'Storage' section shows the backup is written to a disk storage unit.

Name	Type	Storage	Vol...	C...	S...	Enable Granular Recovery
Ad_backup	MS-Windows	master_bdisk_stu	back...	---	---	Yes

Name	Type	Retention	Frequency	M	Storage	Volum...	F.	S...	S
Full	Full Backup	2 weeks	1 Week	1					

Client name	Operating System	Resiliency
dcsql	Windows2008	

Backup Selections
System State:\

Policy type must be **MS-Windows**

**Enable Granular Recovery** must be set to Yes.

The **Enable granular recovery** option for AD granular restores must be set.

Granular-level restores can be performed only if the backup is written to a disk storage unit.

Include ADAM :\  
directive in the backup selection to protect ADAM/AD LDS data on computers where it is installed. This directive does not include Active Directory.

AD items are only fully backed up.

To back up AD, select any one of the following directives:  
System State:\  
Shadow Copy Components:\  
**OR ALL\_LOCAL\_DRIVES**

**Backup Selections**  
System State:\

# Example Diagram: **Active Directory** Restoring System State



Complete disaster recovery  
of a domain controller



Full Active Directory restore,  
such as when restoring AD  
schema



When AD GRT is not  
configured in the backup  
policy or if the storage unit  
(such as media manager  
storage units) does not  
support GRT restores.



# Example Diagram: Active Directory Restoring System State

Backup, Archive, and Restore - NetBackup - [Restore: Server: winmaster.example.com Client: dcsql.example.com]

File Edit View Actions Window Help

Select for Backup Select for Restore View Status

NetBackup History : For time range 12/31/1969 7:00:00 PM to 11/24/2015 6:25:03 AM

2014  
Nov  
23

All Folders

- dcsql.example.com
  - System State**
  - \_SharedHardlinkData\_
  - Active Directory
  - Automated System Recov
  - COM+ Class Registration
  - Internet Information Serv
  - Performance Counter
  - Registry
  - System Files
  - SYSVOL
  - Task Scheduler
  - VSS Express Writer Store
  - Windows Management In

Contents of 'dcsql.example.com'

Name	Time Backed Up	A...	S.	Time M
System State	11/23/2014 7:53:09 PM	d---	0	11/23/

Restore Marked Files

General

Restore Destination Choices

- Restore everything to its original location
- Restore everything to a different location (maintaining existing structure)

Destination: System State:\

Restore individual folders and files to different locations (double-click to modify)

Source	Destination	Time Backed Up	Ti
System State:\		11/23/2014 7:53:09 PM - 11/23/2014 7:53:09 PM	

Create and restore to a new virtual hard disk file

Destination for virtual hard disk file:

3

Restore Options

- Restore without access-control attributes (Windows clients only)
- Skip verification and force rollback
- Force rollback, even if it destroys later snapshots

If the destination file already exists:

- Overwrite existing files
- Restore the file using a temporary filename
- Do not restore the file

Override default job priority

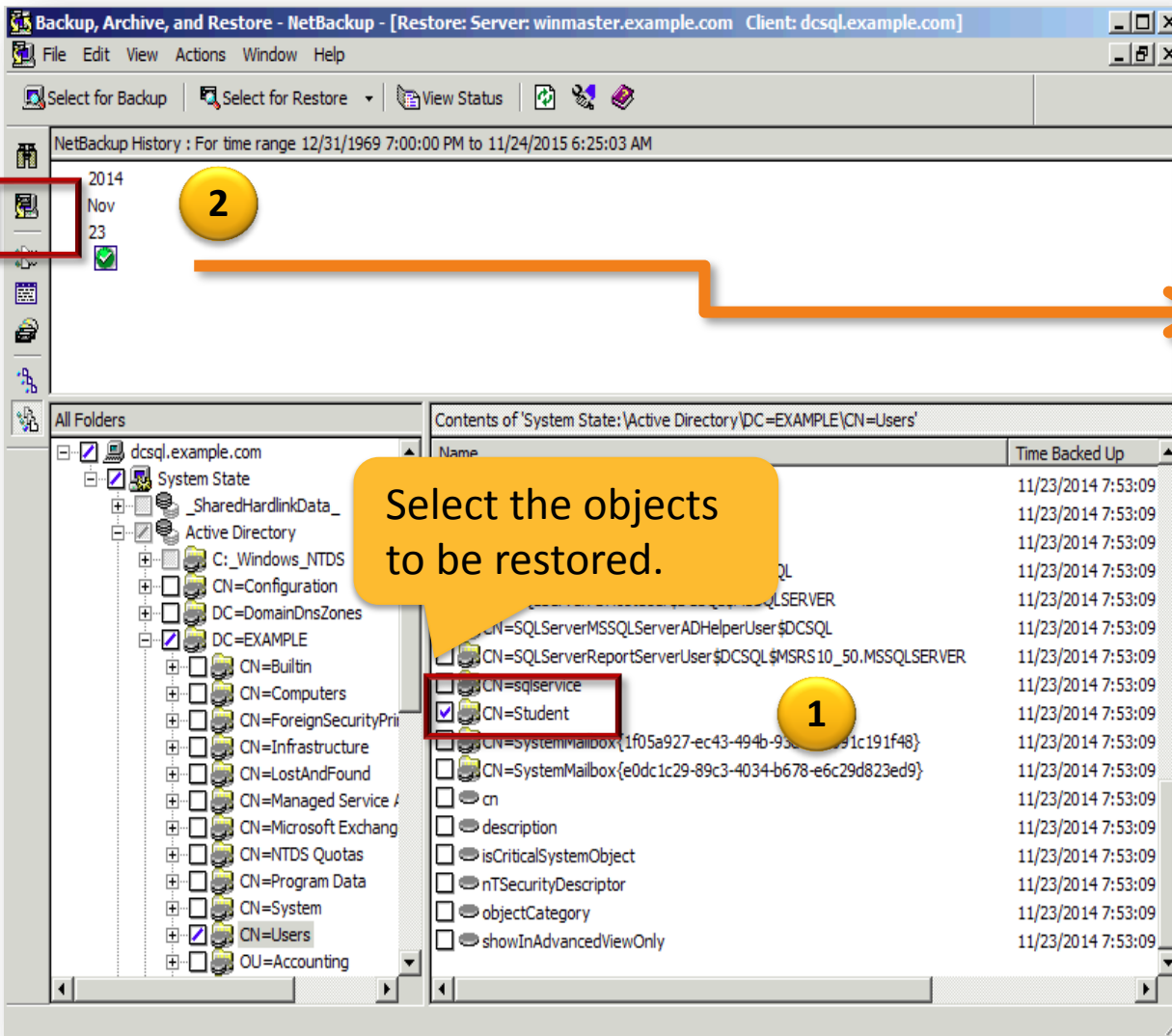
Job priority: 90000

(Higher number is greater priority)

Start Restore Cancel Help

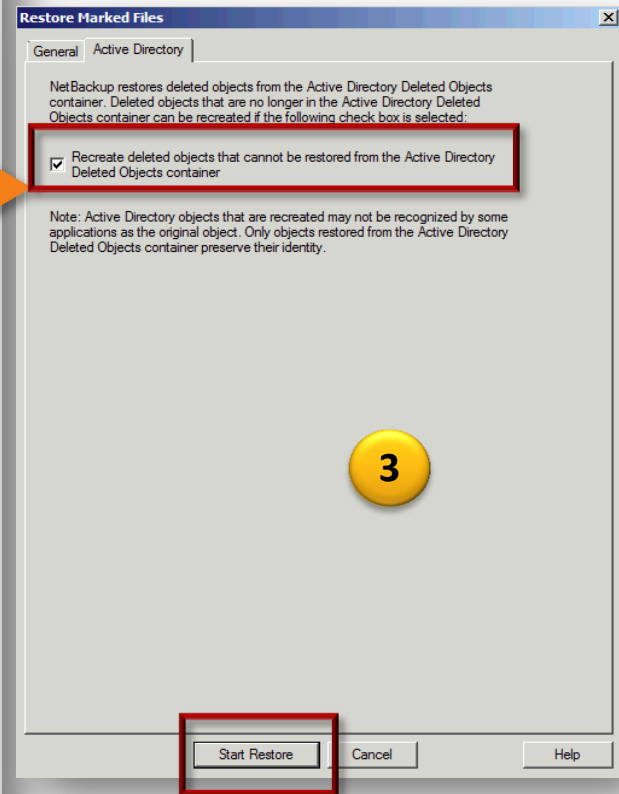
# Example Diagram: Active Directory

## Restoring Active Directory objects



The screenshot shows the NetBackup console interface. At the top, the window title is 'Backup, Archive, and Restore - NetBackup - [Restore: Server: winmaster.example.com Client: dcsql.example.com]'. Below the title bar is a menu bar (File, Edit, View, Actions, Window, Help) and a toolbar with icons for 'Select for Backup', 'Select for Restore', and 'View Status'. The main area is titled 'NetBackup History : For time range 12/31/1969 7:00:00 PM to 11/24/2015 6:25:03 AM'. On the left, a tree view shows the 'All Folders' structure, including 'System State' and 'Active Directory'. Under 'Active Directory', the 'DC=EXAMPLE' folder is expanded, showing various objects. A red box highlights the 'CN=Student' object, and a yellow callout bubble with the number '1' points to it with the text 'Select the objects to be restored.'. On the right, a table lists the contents of the selected folder, including names and 'Time Backed Up' values. A yellow callout bubble with the number '2' points to the 'NetBackup History' area. An orange arrow points from the 'NetBackup History' area towards the 'Restore Marked Files' dialog box on the right.

Name	Time Backed Up
CN=Student	11/23/2014 7:53:09
CN=sqservice	11/23/2014 7:53:09
CN=SystemMailbox{1f05a927-ec43-494b-9555-31c191f48}	11/23/2014 7:53:09
CN=SystemMailbox{e0dc1c29-89c3-4034-b678-e6c29d823ed9}	11/23/2014 7:53:09
cn	11/23/2014 7:53:09
description	11/23/2014 7:53:09
isCriticalSystemObject	11/23/2014 7:53:09
nTSecurityDescriptor	11/23/2014 7:53:09
objectCategory	11/23/2014 7:53:09
showInAdvancedViewOnly	11/23/2014 7:53:09



The 'Restore Marked Files' dialog box is shown with the 'Active Directory' tab selected. It contains a checkbox labeled 'Recreate deleted objects that cannot be restored from the Active Directory Deleted Objects container' which is checked. Below this is a note: 'Note: Active Directory objects that are recreated may not be recognized by some applications as the original object. Only objects restored from the Active Directory Deleted Objects container preserve their identity.'. At the bottom, there are three buttons: 'Start Restore', 'Cancel', and 'Help'. A yellow callout bubble with the number '3' is positioned to the right of the dialog box. A red box highlights the 'Start Restore' button.



## Debug logs and their locations

LOG NAME	DESCRIPTION
<b>bpbkar</b>	<p>The <b>backup and archive manager</b> (bpbkar) is used to read client data, which is sent to the media server to write to the storage media.</p> <p>Windows: <code>install_path\NetBackup\logs\bpbkar</code> UNIX: <code>/usr/opensv/netbackup/logs/bpbkar</code></p>
<b>nbfsd</b>	<p>The <b>NetBackup File System</b> (nbfs) service runs on the media server. NBFSD makes a NetBackup backup image appear as a file system folder to the NetBackup client over a secure connection.</p>
<b>bpbrm</b>	<p>The <b>NetBackup backup and restore manager</b> (bpbrm) manages the client and bptm process. It also uses the error status from the client and from bptm to determine the final status of backup and restore operations.</p> <p>Windows: <code>install_path\NetBackup\logs\bpbrm</code> UNIX: <code>/usr/opensv/netbackup/logs/bpbrm</code></p>

LOG NAME	DESCRIPTION
<b>bpdbm</b>	<p>The <b>NetBackup Database Manager</b> (bpdbm) manages the configuration, error, and file databases.</p> <p>Windows: <code>install_path\NetBackup\logs\bpdbm</code> UNIX: <code>/usr/opensv/netbackup/logs/bpdbm</code></p>
<b>bprd</b>	<p>The <b>NetBackup request daemon</b> (bprd) responds to client and administrative requests for backups, restores, and archives.</p> <p>Windows: <code>install_path\NetBackup\logs\bprd</code> UNIX: <code>/usr/opensv/netbackup/logs/bprd</code></p>
<b>tar</b>	<p>The <b>Tape Archive program</b> (tar) writes restore data to the client disk.</p> <p>Windows: <code>install_path\NetBackup\logs\tar</code> UNIX: <code>/usr/opensv/netbackup/logs/tar</code></p>

# Best Practices: **Active Directory**

## Logging needed to debug backups and restores



### GRT BACKUPS

- Bpbkar
- nbfsd : This log is present on the client and the media server.

### NON GRT RESTORES

- Bpbrm
- bpdbrm
- bprd
- tar

### GRT RESTORES

- bpdbrm
- bpbbrm
- bprd
- nbfsd : This log is present on the client and the media server.



## Life Preservers

# Best Practices: Active Directory

## General best practices



- When restoring user objects, you must reset the object's user password and enable the object's user account:
  - For AD user objects, use the Microsoft Active Directory Users and Computers.
  - For ADAM/AD LDS user objects, use ADSI Edit.
- Computer object credentials change every 30 days and the credentials from the backup may not match the credentials that are stored on the actual computer.
- NetBackup does not support granular restores of Group Policy Objects.
- To restore Active Directory group membership links may require that the restore job be run twice.
- Distributed File System, which is a part of Shadow Copy components should be backed up as a separate option and excluded from the Active Directory backup.

## Can you restore user group memberships without restoring the user?

- Yes, it is possible. Note that the restore operation requires the **Overwrite existing files** radio button for the restore operation initiated through the BAR GUI to retrieve the deleted attributes. Else, the deleted group membership is not retrieved.

## Can you limit the NBU client service with certain permissions?

- For AD GRT it is required that the NetBackup Legacy Client Service (bpinetd) on the DC runs under the context of domain admin credentials as documented in the following article: <http://www.symantec.com/docs/HOWTO34116>

## Can you restore the entire schema?

- It is possible to restore the entire schema. One method is to restore the entire AD (Full System State). This takes the AD schema back to the point of the image backup. However, if the environment involves multiple DCs, there could be challenges involved. AD GRT operations are always authoritative.



## Can you restore individual Sites and Services?

- Yes, Individual sites and services data can be restored using AD GRT.

## Can you do a full DC recovery without taking the DC offline?

- A full DC recovery implies complete System State recovery, which includes AD. This requires the DC to be taken offline into DSRM.



## Symantec Netbackup

- NetBackup 7.6 Administrator's Guide Volume 1  
<http://www.symantec.com/docs/DOC6452>
- NetBackup 7.x hardware compatibility list (HCL)  
<http://www.symantec.com/docs/TECH76495>
- NetBackup 7.x operating system compatibility list  
<http://www.symantec.com/docs/TECH76648>
- 7.6 Troubleshooting Guide  
<http://www.symantec.com/docs/DOC6470>

# Thank You!

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