Dell™ NetVault™ Backup Workstation Client 10.0.1

Administrator's Guide

Legend

⚠ CAUTION: **A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.**

⚠ WARNING: **A WARNING icon indicates a potential for property damage, personal injury, or death.**

ⓘ IMPORTANT NOTE, NOTE, TIP, MOBILE, or VIDEO: An information icon indicates supporting information.

Contents

Introducing Dell™ NetVault™ Backup Workstation Client

- Dell NetVault Backup Workstation Client – at a glance
- Key benefits
- Feature overview
- Target audience
- Recommended additional reading

Dell NetVault Backup Workstation Client – at a glance

Dell NetVault Backup (NetVault Backup) Workstation Client (Workstation Client) expands NetVault Backup enterprise-class data protection to workstations by enabling protection for vital intellectual property stored in documents and data files on desktops and laptops. Workstation Client's Shadowing process creates local redundant copies to protect data against corruption and accidental deletion. Seamless integration with the NetVault Backup Server protects the Workstation Client Shadow Area for long-term retention or disaster recovery to ensure business continuity. Workstation Client also maximizes IT staff efficiency by enabling end-user recovery of corrupted or accidentally deleted data from Workstation Client Shadow Area without the assistance of the NetVault Backup Administrator.

Key benefits

- Extends enterprise-class data protection capabilities to workstations:
  - Protects vital intellectual property stored in documents and data files on desktops and laptops.
  - Uses the Shadowing Process to create local redundant copies, which protects data against corruption and accidental deletion.
- Maximizes IT staff efficiency and end-user productivity:
  - Provides end-user interface for configuring the Shadowing Process, including scan frequency, number of versions to keep, and inclusion and exclusion lists.
  - Creates and schedules Dell™ NetVault Backup™ Plug-in for FileSystem (Plug-in for FileSystem) Full and Incremental Backup jobs automatically to protect the Workstation Client Shadow Area.
  - Enables end-user recovery of corrupted or accidentally deleted data from Workstation Client Shadow Area without the assistance of the NetVault Backup Administrator.
- Ensures business continuity:
  - Protects Workstation Client Shadow Area for long-term retention or disaster recovery via seamless integration with NetVault Backup Server.

- Prioritizes Workstation Clients for backup to ensure that the data at greatest risk is backed up first.
- Uses Plug-in for FileSystem to perform recovery of Workstation Client data that is no longer available in the Workstation Client Shadow Area.

Feature overview

- Protects vital intellectual property stored in documents and data files on desktops and laptops.
- Uses the Shadowing Process to create local redundant copies, which protects data against corruption and accidental deletion.
- Provides end-user interface for configuring the Shadowing Process, including scan frequency, number of versions to keep, and inclusion and exclusion lists.
- Protects Workstation Client Shadow Area for long-term retention or disaster recovery via seamless integration with NetVault Backup Server.
- Creates and schedules Plug-in for FileSystem Full and Incremental Backup jobs automatically to protect the Workstation Client Shadow Area.
- Prioritizes Workstation Clients for backup to ensure that the data at greatest risk is backed up first.
- Enables end-user recovery of corrupted or accidentally deleted data from Workstation Client Shadow Area without the assistance of the NetVault Backup Administrator.
- Uses Plug-in for FileSystem to perform recovery of Workstation Client data that is no longer available in the Workstation Client Shadow Area.

Target audience

This guide is intended for backup administrators and other technical personnel who are responsible for designing and implementing a backup strategy for the organization. A good understanding of the operating systems (OSs) under which NetVault Backup is running is assumed.

Recommended additional reading

The following documentation is also available:

- *Dell NetVault Backup Installation Guide* – This guide provides details on installing the NetVault Backup Server and Client software.
- *Dell NetVault Backup Administrator's Guide* – This guide provides details on administering NetVault Backup.
- *Dell NetVault Backup Command Line Interface Reference Guide* – This guide provides detailed description of the command line utilities.

    You can download these guides from http://software.dell.com/support/.

ⓘ | **IMPORTANT:** Starting with 10.0.0, NetVault Backup provides a web-based user interface (WebUI) to configure, manage, and monitor your NetVault Backup system and installed plug-ins. The procedures described in the guides for this version of the product are intended for the new WebUI. For procedures based on the NetVault Backup Console (user interface available with NetVault Backup 9.x and 8.x), refer to the documentation for an earlier version of the product.

Understanding Workstation Client architecture

Heterogeneous Client vs. Workstation Client

- **Heterogeneous Client** – NetVault Backup Heterogeneous Clients are used to protect any server, such as a File Server, Database Server, Email Server, Application Server, Web Server, and so on, that is running on Windows®, Linux®, Solaris®, Mac OS X, HP-UX®, IBM® AIX®, or FreeBSD® and is typically administered by the IT department. The NetVault Backup Heterogeneous Client includes the Plug-in for FileSystem, Plug-in for Data Copy, Plug-in for Consolidation, Plug-in for Raw Devices, and Plug-in for Databases. Additional characteristics of the NetVault Backup Heterogeneous Client include:

  - Supports other NetVault Backup plug-ins such as Plug-in for VMware® and NetVault Bare Metal Recovery.
  - Supports locally attached backup devices with NetVault Backup SmartClient license.
  - Requires continuous connectivity to NetVault Backup Server for all backups.
  - Lets administrators use the Plug-in for FileSystem to create multiple backup jobs that protect any or all the file system data that is visible to the plug-in.
  - Displays all backup jobs in the NetVault Backup Jobs window.
  - Requires that the NetVault Backup Administrator perform all restores from the NetVault Backup WebUI.

  While a Heterogeneous Client can be used to protect workstations, the Workstation Client is better suited for protecting intellectual property stored in documents and data files on desktops and laptops used by employees as their everyday workstation.

- **Workstation Client** – A Dell NetVault Backup Workstation Client is designed specifically to protect intellectual property stored in documents, spreadsheets, and other data files located on desktops and laptops used by employees as their everyday workstation. Additional characteristics of the Workstation Client include:

  - No support for additional plug-ins, such as VMware and Bare Metal Recovery.
  - No support for locally attached backup devices or NetVault Backup SmartClient licenses.
  - Supported by all NetVault Backup Server Editions.
  - Only requires connectivity to NetVault Backup Server to provide optional protection for the Workstation Client Shadow Area for long-term retention or disaster recovery.

- Only protects file system data stored in the Workstation Client Shadow Area.
- All backup jobs are hidden in the NetVault Backup Jobs window by default to reduce the number of entries in environments with a large numbers of Workstation Clients.
- end users can recover protected data stored in the Workstation Client Shadow Area without requiring NetVault Backup Administrator assistance.

Workstation Client architecture – an overview

Figure 1. Workstation Client information window

■ NetVault Backup Server software
◆ NetVault Backup Client software
● NetVault Backup Workstation Client Console
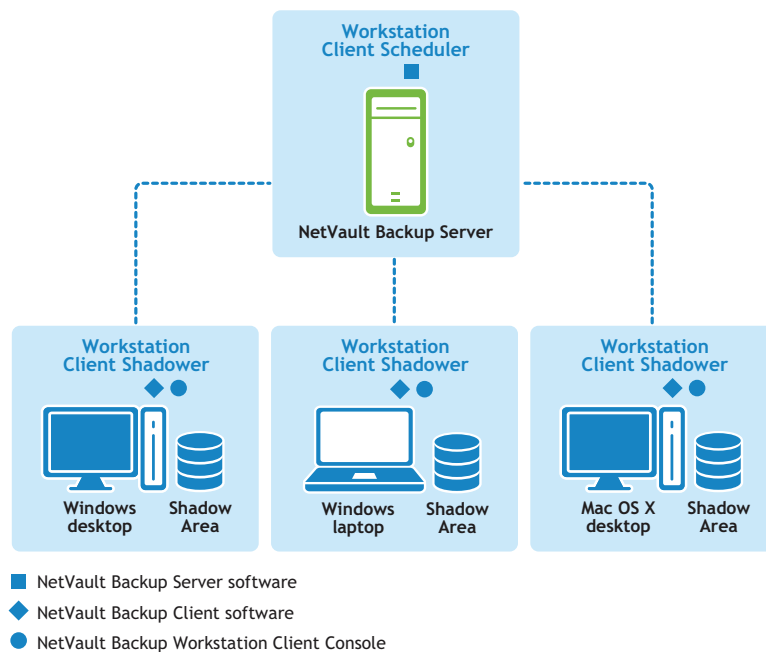
A Workstation Client deployment consists of the following components:

- **Dell NetVault Backup Workstation Client Shadower** – The **Dell NetVault Backup Workstation Client Shadower (Shadower)** is designed to protect directories, folders, and files from corruption or accidental deletion by proving a redundant copy. In addition, the Shadower provides versioning by allowing a user-configured number of previous versions of a protected file to be retained in the Workstation Client Shadow Area. At a cost of disk space, this reduces the likelihood of data loss for intellectual property protected by the Workstation Client.

- **Dell NetVault Backup Workstation Client Shadow Area** – The **Dell NetVault Backup Workstation Client Shadow Area (Shadow Area)** is the directory or folder on the Workstation Client where the shadow copies of the protected directories and their contents are stored. The selected Shadow Area directory or folder must exist and have enough free space to hold multiple copies of the protected data as specified. If a document or data file is corrupted or accidentally deleted, the end user or employee can restore the file from the Shadow Area without the assistance of the NetVault Backup Administrator.

- **Dell NetVault Backup Workstation Client Scheduler** – The **Dell NetVault Backup Workstation Client Scheduler (Scheduler)** is the NetVault Backup Server component of Workstation Client that is responsible for optionally protecting the Shadow Area on the Workstation Clients for long-term retention or disaster recovery. When a Workstation Client is added to the NetVault Backup Server as a Workstation Client, the Scheduler automatically creates and schedules Plug-in for FileSystem backup jobs that protect the Workstation Client's Shadow Area.

- **Dell NetVault Backup Workstation Client Console** – The **Dell NetVault Backup Workstation Client Console** is used on the Workstation Client to configure the Shadow Area, scan frequency, number of versions to keep, and inclusion and exclusion lists.

Understanding the Shadowing Process

This section includes the following topics:

- Initial synchronization
- Shadow Area file names
- Shadowing Process
- Deleted files
- Bundle support on Mac OS X

Initial synchronization

The Dell NetVault Backup Workstation Client Shadowing Process is focused on retaining backup copies of modified files in the Shadow Area. When the Workstation Client is first configured, the Shadow Area is empty and has no versions of any of the protected files. Therefore, the Shadower must copy each protected file from the protected directories or folders to the Shadow Area. This copy process is referred to as the **Initial Synchronization** (**Initial Sync**).

Because the Initial Sync is a significantly large copy operation, it places a greater load on the workstation than is expected during normal operation of the Workstation Client. The performance impact of the Initial Sync depends on the size and number of files in the Protected Folder Set and the **Performance Throttle** parameter and may take a significant amount of time to complete. To minimize the duration of the Initial Sync at the expense of higher performance impact during the synchronization, you can set the **Performance Throttle** parameter to **Off** for the duration of the Initial Sync.

A similar Initial Sync process will occur when additional directories or folders are added to the Protected Folder Set; however, unless the newly protected folders are exceptionally large, the performance impact should be less noticeable.

> ⓘ **NOTE:** To minimize disk usage, Dell recommends that you select only the directories and folders that contain critical files that you need to protect, for example, the My Documents folder on a Windows® system. OS and application-specific folders are usually protected by your IT department (or can be reinstalled by the same).

Shadow Area file names

File, directory, and folder names in the Workstation Client Shadow Area are identical to the original name except as described in the following sections:

- Previous version file names
- Items with changed type file names

Previous version file names

Previous versions of a specific file are assigned a new name that enables it to be distinguished from both the original and other versions of the same file. To ensure uniqueness and help the end user locate the version of the file to restore, the file name is concatenated with the date and time that the file was modified by the end user. In addition, marker text is inserted into the file name to reduce the likelihood of a derived file name conflicting with the name of an actual protected file while providing a simple method for recognizing protected

files. The default marker text is **_wc,v_**. The previous version file name layout is shown in the following diagram:

Figure 2. Previous version file-name layout
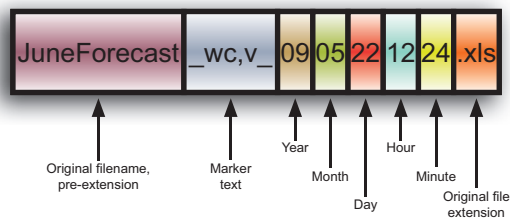
Items with changed type file names

It is possible that an item (file, directory, or folder) that was once present in a protected folder will be replaced with an item of a different type. For example, a file named **June** may initially exist and is later removed and replaced with a folder of the same name. Because of the widely accepted convention of applying file extensions to different file types and not using an extension on directories or folders, the chance of a conflict is rare. However, to ensure that end-user data is protected even in these cases, an additional default marker text is inserted into the original protected file name to ensure it is clear to a user that a type change has occurred.

Figure 3. Items with changed type file-name layout
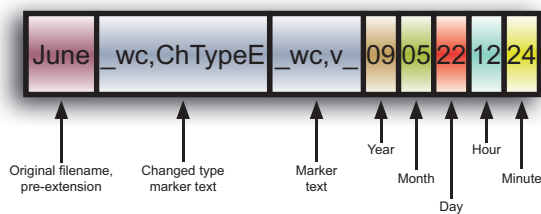
Shadowing Process

The Workstation Client Shadowing Process occurs at an interval defined by the **Scan Frequency** in the Workstation Client Console. Each time the Shadowing Process executes, the goal is to retain the most useful set of shadow copies of the protected files while avoiding infinite disk-usage growth. The Shadowing Process is comprised of the following phases:

- Folder shadowing
- Item shadowing
- Purging

Folder shadowing

When a folder is found during the Shadowing Process, it is first compared with existing folders in the Shadow Area. If an identical folder, including attributes, is found, the Shadower continues with no action. However, if an identical folder is not found, a new folder is created in the Shadow Area with the same name, attributes, and settings as the original. If the Shadower finds that the attributes for an existing folder have changed since the shadow folder was created, the new attribute settings are applied to the shadow folder. After the shadow folder is created and identical to the original folder, the Shadowing Process recurses and processes the contents of the folder in the same manner as it processed the parent folder.

Item shadowing

Any file that is found within the directory or folder in the Protected Folder Set is compared with the versions already present in the Shadow Area. If the versions are identical, nothing happens; however, if the versions are different or there is no version present in the Shadow Area, the file is **shadowed**.

The first step of shadowing is to rotate any existing shadow versions of the file. For example, the Shadower is configured to keep five versions of each protected file, and five versions were already present within the Shadow Area as shown in the following diagram:

Figure 4. Shadow Area with five versions of JuneForecast.xls file
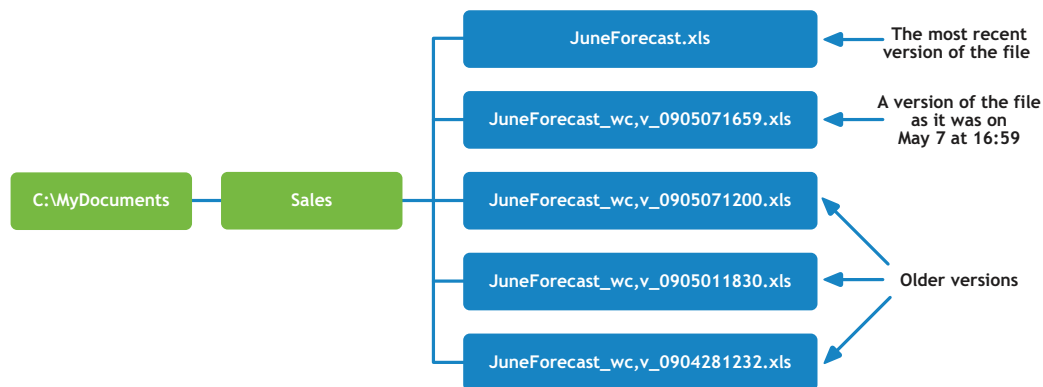
If a new version of JuneForecast.xls is found during the Shadow Process, the previous versions are rotated as shown in the following diagram:

Figure 5. Shadow Area rotating process
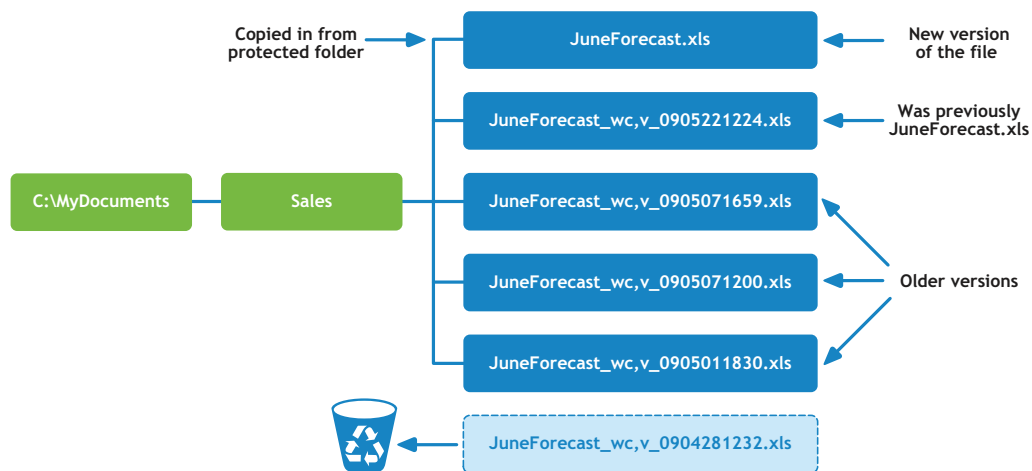
The new version of the file in the protected folder needs to replace the shadow version with the identical name in the Shadow Area. To accomplish this, the Shadowing Process first rotates any existing versions by automatically performing the following steps:

1   In the Shadow Area, rename the most recent shadow copy of the original file, **JuneForecast.xls**, to a name derived from the end user's modification time, **JuneForecast_wc,v_0905221224.xls**.

2   Copy the new version of the file from the protected folder into the Shadow Area. The most recent version of any given file will always share the same name as the original.

3   Count the versions of the file now stored within the Shadow Area. If there are more versions than the **Number of Versions to Keep** parameter stipulates in the Workstation Client **Console**, remove extra versions.

ⓘ   **NOTE:** All copy operations preserve all file metadata. This includes security settings, permissions, access control lists, and so on.

Purging

The final phase of the Shadowing Process is **Purging**. Purging is focused on controlling disk-usage growth by deleting obsolete data. The Shadower searches the contents of the Shadow Area for any files whose last modification date exceeds the value for the **Purge Shadow Copies Older Than (Days)** in the Workstation Client **Console**. Any file that exceeds this age is deleted from the Shadow Area unless it is either the most recent or second-most recent version of a protected file. A minimum of two versions are retained to safeguard the end user from accidental damage to a protected file. It is possible that the end user will not notice the damage caused to an important file for an extended period. If the shadow copy of the original was removed, the file would no longer be protected and could not be recovered.

Example:

An end user accidentally copies an empty file over the top of the protected file JuneForecast.xls. A few minutes later, the Shadowing Process copies the empty version of this file into the Shadow Area, rotating the previous version to JuneForecast_wc,v_0905281210.xls. Several weeks pass before the end user notices the empty file. By this time, the Shadowing Process has purged all copies of this protected file other than the most recent version, which is now empty, and the second most recent version, which contained the last version before the accidental damage. The end user can now retrieve a good version of the file from the Shadow Area. Had all versions been purged, this would not have been possible.

Deleted files

Because accidental deletion of files is one of the most common end-user errors, when a file is deleted from a protected folder, it is not optimal to reflect that deletion immediately by removing the corresponding files from the Shadow Area. It may be an extended period before an end-user notices that the file has been accidentally deleted, and it is the role of the Shadower to retain a copy of the original file in the Shadow Area. Therefore, the last two versions of deleted files are retained indefinitely in the Shadow Area. However, it is safe for the end user to delete files manually from the Shadow Area that he or she is certain are no longer necessary.

When the Workstation Client connects to a NetVault Backup Server, the deleted files are automatically cleaned from the Shadow Area each time a Plug-in for FileSystem Full or Incremental Backup job completes.

Bundle support on Mac OS X

On Mac OS X systems, there is a certain type of file-system object that appears to the end user as a single item yet actually manifests itself within the file system as a folder tree. This type of item is referred to as a **bundle**. A common example of a bundle is an application, which appears in the **Finder** as a single icon that can be opened, moved, or deleted as if it was a single item; however, the real contents of an application appear on the file system as a tree of folders and files as shown in the following:

```
Expose.app/
Expose.app/Contents
Expose.app/Contents/CodeResources
Expose.app/Contents/Info.plist
Expose.app/Contents/MacOS
Expose.app/Contents/MacOS/Expose
Expose.app/Contents/PkgInfo
Expose.app/Contents/Resources
Expose.app/Contents/Resources/da.lproj
Expose.app/Contents/Resources/da.lproj/InfoPlist.strings
Expose.app/Contents/Resources/da.lproj/Menu.strings
Expose.app/Contents/Resources/Dutch.lproj
Expose.app/Contents/version.plist
…
```

The concept of a bundle is a collection of files that appears to the user as a single entity. Users are never exposed to the internal structure of a bundle, nor are they intended to alter individual portions; the entire entity is manipulated as a whole. Therefore, a special strategy is adopted for the shadowing of bundles.

Example:

A version update is applied to **Expose.app** as shown earlier. The update consists of a new executable binary, which is stored in **Expose.app/Contents/MacOS/Expose**. All other files within the bundle remain unaffected. Unless the Workstation Client implemented specific bundle handling, the result would be to have two shadow versions of the executable: the older version with the previous version's file name transformed as described in previous sections, and both stored beneath the same **Expose.app** shadow folder. However, the Workstation Client's bundle handling is aware that the executable file is a part of a bundle, so the entire application bundle is shadowed as a new version, which results in two **Expose.app** bundles in the Shadow Area, including the older one with a previous-version-style name. This allows Workstation Client to protect a user from situations such as an incorrect application upgrade, or an incorrect update to a document that is stored in bundle format.

Understanding the scheduling process

Immediately following the addition of a NetVault Backup Client as a Workstation Client to the NetVault Backup Server, the Scheduler automatically creates the backups jobs used to protect the Workstation Client's Shadow Area. The Scheduler starts by fetching the location of the Shadow Area from the Workstation Client and creates one Plug-in for FileSystem Full Backup and one Plug-in for FileSystem Incremental Backup job using the **Advance Option Set** and **Target Set** parameters specified in the Workstation Client **Scheduler Configuration** window. The automatically created jobs are specific to the particular Workstation Client because each client can have a unique location for the Shadow Area.

Consideration process

The addition of a new Workstation Client is only one of several events, or **triggers**, that causes the Scheduler to examine the list of Workstation Clients, searching for any that should be backed up. The process of searching for a Workstation Client that needs to be backed up is called **Consideration**.

Consideration begins with a list of Workstation Clients that are sorted into an order where the Workstation Client that has been backed up most recently is at the tail or end of the list and the Workstation Client that has been backed up the least recently at the head or top of the list. The list is processed from top to bottom. For each Workstation Client in the list, a backup will be triggered if:

- The Workstation Client is online in that it is currently connected to the network where the NetVault Backup Server is located and is responding to communication.

- The last backup of the Workstation Client is older than the age specified in the **Number of Days Between Backup Attempts** parameter in the **Dell NetVault Backup Workstation Client Scheduler Configuration** window.

After a Workstation Client is found to meet either of these criteria, either the corresponding Full or Incremental Backup job is executed, depending on the Workstation Client's position in its Full/Incremental cycle. After the backup job has been completed successfully, the last known backup time for the Workstation Client is updated and the list is resorted, which causes the Workstation Client to move to the tail or bottom of the list. This list is then reconsidered because job completion is another triggering event.

Figure 6. Scheduler consideration process flow
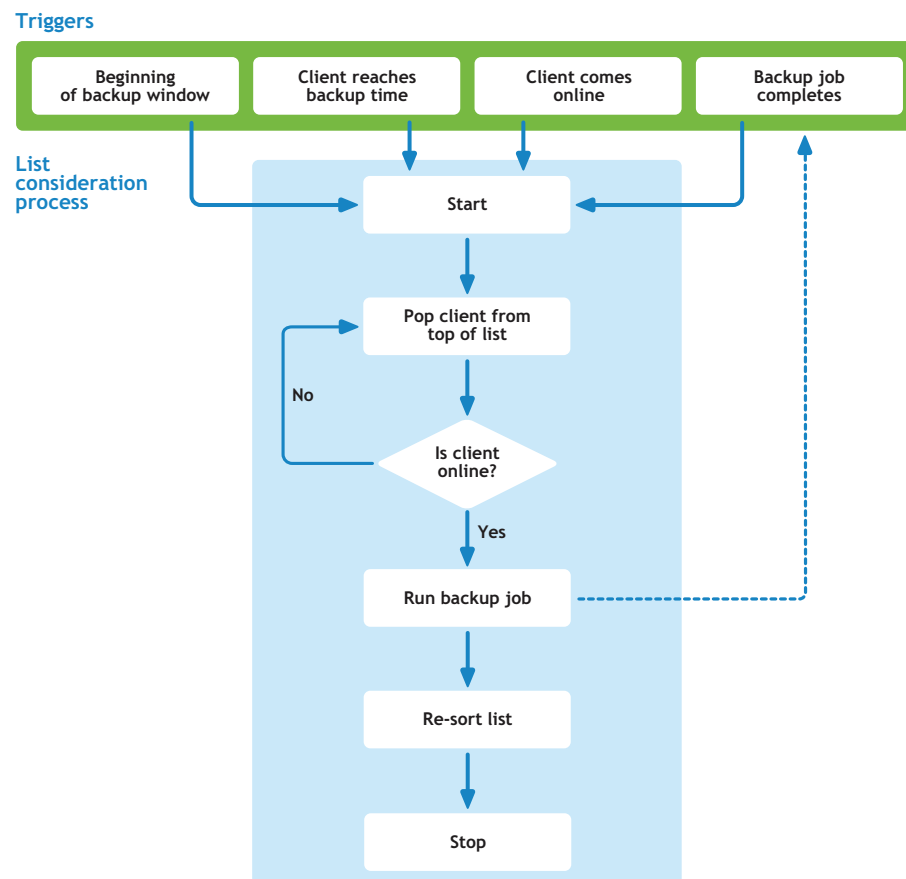
Other events that trigger the Consideration of the Workstation Client list are:

- The start of the Backup Window as defined in the **Dell NetVault Backup Workstation Client Scheduler Configuration** window.

- Workstation Client announces its presence on the network where the NetVault Backup Server resides when it is either powered on or when it moves into range of the local-area network (LAN).

- The age of a Workstation Client's last backup reaches the threshold set by **Number of Days Between Backup Attempts** in the **Dell NetVault Backup Workstation Client Scheduler Configuration** window, which requires a new backup to be performed.

  ⓘ | **NOTE:** The Workstation Client that has the least recent backup will be prioritized over all other Workstation Clients, ensuring that the data that is at the greatest risk is saved as soon as possible.

Installing Workstation Client

- Installation prerequisites
- Installing the Workstation Client
- Removing the Scheduler

Installation prerequisites

A NetVault Backup Server running a version that supports Workstation Client must be deployed and accessible via the network to the Workstation Clients for long-term retention or disaster-recovery protection.For information on supported NetVault Backup versions, refer to the *Dell NetVault Backup Compatibility Guide* at http://software.dell.com/support/.

Network connectivity between the NetVault Backup Server and the Workstation Clients does not have to be persistent; however, the Workstation Client will have to establish connectivity to the network where the NetVault Backup Server resides on a somewhat regular basis if the Workstation Client's Shadow Area will be protected by the NetVault Backup Server for long-term retention or disaster recovery.

For complete details on installing the NetVault Backup Server, refer to the *Dell NetVault Backup Installation Guide*.

Installing the Workstation Client

The Workstation Client is included in the NetVault Backup Client Distribution for the Windows® and Mac OS X platforms. The Shadower and Workstation Client Console are automatically installed when upgrading or performing a new NetVault Backup Client installation on the Windows; you must manually install them on the Mac OS X platform. Install the Workstation Client Scheduler separately on your Windows- or Linux-based NetVault Backup Server.

To install the Shadower and Console on a Windows system

Install the NetVault Backup Client Distribution on each Windows workstation to be protected by the Workstation Client. For complete details on installing a NetVault Backup Client, including details on unattended installation options, refer to the *Dell NetVault Backup Installation Guide*.

To install the Shadower and Console on a Mac OS X system

1   Install the NetVault Backup Client Distribution on each Mac OS X workstation to be protected by the Workstation Client.

    For complete details on installing a NetVault Backup Client, including details on unattended installation options, refer to the *Dell NetVault Backup Installation Guide*.

2   Access the **NetVault Configuration Wizard** or **Manage Clients** page.

    ⓘ | **NOTE:** You can use the configuration wizard to install the console on multiple clients at the same time. From the **Manage Clients** page, you can only select one client for Workstation Client installation.

- To access the **NetVault Configuration Wizard** page:

  a In the Navigation pane, click **Guided Configuration**.

  b On the **NetVault Configuration Wizard** page, click **Install Plugins**.

  c On the next page, select the applicable clients.

- To access the **Manage Clients** page:

  a In the Navigation pane, click **Manage Clients**.

  b On the **Manage Clients** page, select the applicable client, and click **Manage**.

  c On the **View Client** page, click the **Install Plugin** button ( ).

3 Click **Choose Plug-in File**, navigate to the location of the **".npk"** installation file for the Scheduler (on the installation CD or the directory to which the file was downloaded from the website).

Based on the OS in use, the path for this software may vary on the installation CD.

4 Select the file entitled **"nvwcshadower-x-x-x-x.npk"** (where **xxxx** represents the version number), and click **Open**.

5 Click **Install Plugin** to begin installation.

After the Console is successfully installed, a message is displayed.

To install the Scheduler on the NetVault Backup Server

1 Access the **NetVault Configuration Wizard** or **Manage Clients** page.

- To access the **NetVault Configuration Wizard** page:

  a In the Navigation pane, click **Guided Configuration**.

  b On the **NetVault Configuration Wizard** page, click **Install Plugins**.

  c On the next page, select the applicable clients.

- To access the **Manage Clients** page:

  a In the Navigation pane, click **Manage Clients**.

  b On the **Manage Clients** page, select the applicable client, and click **Manage**.

  c On the **View Client** page, click the **Install Plugin** button ( ).

2 Click **Choose Plug-in File**, navigate to the location of the **".npk"** installation file for the Scheduler (on the installation CD or the directory to which the file was downloaded from the website).

Based on the OS in use, the path for this software may vary on the installation CD.

3 Select the file entitled **"nvwcs-x-x-x-x.npk"** (where **xxxx** represents the version number and platform), and click **Open**.

4 Click **Install Plugin** to begin installation.

After the Scheduler is successfully installed, a message is displayed.

Removing the Scheduler

To remove the Scheduler

1   In the Navigation pane, click **Manage Clients**.

2   On the **Manage Clients** page, select the applicable client, and click **Manage**.

3   In the **Installed Software** table on the **View Client** page, select **Workstation Client Scheduler,** and click the **Remove Plugin** button ( ).

4   In the **Confirm** dialog, click **Remove**.

Configuring the Scheduler and the Workstation Clients

- Configuring the Scheduler
- Configuring Workstation Clients
- Adding Workstation Clients to the NetVault Backup Server

Configuring the Scheduler

The Scheduler on the NetVault Backup Server is used to protect the Shadow Area on the Workstation Clients for long-term retention or disaster recovery. Configuring the Scheduler must be performed before configuring Workstation Clients.

Defining Selection Sets for Workstation Client backups

All backups of the Shadow Area are performed by the Scheduler using predefined Selection Sets for all the Workstation Client Full and Incremental Backups. Identify or create the following Selection Sets for the Workstation Client backups:

- Target Set for Full Backups
- Target Set for Incremental Backups
- Advanced Option Set for Full Backups
- Advanced Option Set for Incremental Backups

Target Sets include settings for target backup device and media options while **Advanced Option Sets** include settings for backup retention, network compression, post-backup verification, duplication, migration, and pre- and post-scripts.

For complete details on Selection Sets, refer to the *Dell NetVault Backup Administrator's Guide*.

Best-practice guidelines for defining Selection Sets

Dell recommends the following:

- In the Target Sets, specify media groups to direct the Workstation Client Full and Incremental Backups to unique sets of backup media. For example, create a Full media group and an Incremental media group.
- Assuming that a number of Incremental Backups are performed between Full Backups, set Workstation Client backups to expire after two Full Backups by enabling **Discard after 2 Full Backups** in the Backup Life frame of the Advanced Options Set. In addition, specify the **Reuse Media** option as **Within same group label as target media** in the Target Set. This ensures that the Full Backup jobs will reuse any fully expired media in the Full media group while the Incremental Backup jobs will reuse media from the Incremental media group.

Using the NetVault Backup Configuration Wizard to configure the Scheduler

Configuring the Scheduler using the Configuration Wizard in the NetVault Backup WebUI must be performed before configuring and adding workstations to the NetVault Backup Server as Workstation Clients. You can run the wizard from the Guided Configuration or Manage Clients link in the Navigation pane of the WebUI.

1   In the Navigation pane of the NetVault Backup WebUI, click **Manage Clients**.

2   In the **NetVault Backup Clients** list, select the applicable client, and click **Manage**.

3   On the **View Client** page, locate the **Workstation Client Scheduler** node in the list, and click **Configure**.

The Workstation Client Scheduler Configuration page is displayed.

4   Complete the following configuration parameters:

- **Backup Window Start Hour** – Specify the start hour for the Workstation Client Backup Window using a 24-hour clock. When combined with **Backup Window Stop Hour**, this defines the backup window when Workstation Client backup jobs are allowed to run. By default, Backup Window Start Hour and Backup Window Stop Hour are set to zero (0 and 24 respectively), which disables the Workstation Client Backup Window and enables Workstation Client backups to run 24-hours a day.

  Defining a Workstation Client Backup Window provides the NetVault Backup Administrator the ability to ensure that Workstation Client backups do not cause additional, unnecessary load on the NetVault Backup Server that might interfere with the backup window for Database Server, Application Servers, Web Servers, Email Servers, and so on. In addition, the NetVault Backup Administrator can use the Workstation Client Backup Window to ensure that on Monday morning, when employees connect to the network where the NetVault Backup Server is accessible, the users are able to start their work day, get logged in, check their email, and so on, before the Workstation Client backups start.

- **Backup Window Stop Hour** – Specify the stop hour for the Workstation Client Backup Window using a 24-hour clock. When combined with **Backup Window Start Hour**, this defines the backup window when Workstation Client backup jobs are allowed to run. By default, Backup Window Start Hour and Backup Window Stop Hour are set to zero (0 and 24 respectively), which disables the Workstation Client Backup Window and enables Workstation Client backups to run 24-hours a day.

- **Number of Days Between Backup Attempts** – Specify the number of days between backup attempts for the Workstation Clients. The Scheduler will attempt to contact and back up each Workstation Clients after the age of its previous backup job reaches the value specified. The default is one, which indicates that each Workstation Client will be backed up once a day provided it is powered on and has network connectivity to the NetVault Backup Server.

- **Number of Incremental Jobs to Run Between Each Full Backup** – Specify the number of Workstation Client Incremental Backups that should be run between Full Backups. The default is 6.

  A typical strategy is to run Full Backups once a week and Incremental Backups the remaining six days of the week. When Number of Incremental Jobs to Run Between Each Full Backup is combined with Number of Days Between Backup Attempts, the NetVault Backup Administrator can implement the desired Workstation Client backup strategy. For example, retaining the defaults for Number of Days Between Backup Attempts and Number of Incremental Jobs to Run Between Each Full Backup ensures that Workstation Client is protected with a Full Backup once a week and an Incremental Backup every other day of the week.

- **Target Set for Incremental Backups** – Specify the Target Set to use for all the Workstation Client Incremental Backups. It can be identical to or different than the Target Set specified for the Workstation Client Full Backups. The specified Target Set must exist.

- **Target Set for Full Backups** – Specify the Target Set to use for all the Workstation Client Full Backups. The specified Target Set must exist.

- **Advanced Option Set for Full Backups** – Specify the Advanced Option Set to use for all the Workstation Client Full Backups. It can be identical to or different than the Advanced Option Set specified for the Workstation Client Full Backups. The specified Advanced Option Set must exist.

- **Advanced Option Set for Incremental Backups** – Specify the Advanced Option Set to use for all the Workstation Client Incremental Backups. It can be identical to or different than the Advanced Option Set specified for the Workstation Client Full Backups. The specified Advanced Option Set must exist.

> ⓘ **IMPORTANT:** If incorrect Target or Advanced Options Sets are specified in the configuration of the Scheduler, the Workstation Clients will have an **Offline** status until the next scan interval at which time the Workstation Client status will become **Online** and perform a backup as required.

Best-practice guideline for configuring the Scheduler

Unless Protected Folder Sets on the Workstation Clients are small in size, Dell recommends performing a number of Incremental Backup jobs between each Full Backup. The Incremental Backups are typically much smaller than Full Backups because they only include data that has changed since the previous backup completed. In addition, Incremental Backups reduce the amount of backup media used and also reduce network contention by reducing the amount of data that is transferred across the network during the backup job. Additionally, Workstation Clients that are laptops will typically connect to the network where the NetVault Backup Server resides via a wireless network connection, which results in a reduction in bandwidth usage that may vary over each connection.

Configuring Workstation Clients

After the NetVault Backup Client software has been successfully installed on the Workstation Client, the Workstation Client must be configured before the Shadower will start functioning. This configuration can be performed by the end user or employee, or it can be performed by the NetVault Backup Administrator if desired.

Launching the Workstation Client Console

To launch the console on Windows®

1. Log on to the system with administrator privileges.

2. Click **Start** on the taskbar.

3. Point to **Programs**, point to **Dell**, point to **NetVault Backup**, and then click **Workstation Client Console**.

To launch the console on Mac OS X

1. Click the **Spotlight** icon on the Mac OS X Menu bar.

2. Start typing **Dell NetVault Backup Workstation Client**.

3. When you see **Application | Dell NetVault Backup Workstation Client** in the list, select it.

   While the Workstation Client is running, it will also appear on the Mac OS X Dock.

   > ⓘ **NOTE:** To keep Workstation Client on the Dock permanently, right-click the **Workstation Client** icon on the Dock, and select **Keep in Dock**.

Configuring the Shadower

When configuring Workstation Clients, be aware of the following when you configure the **Shadow Area**:

- Windows®:
    - If you use shared drives, be aware that while Workstation Client supports Common Internet File System (CIFS) on Windows and you can specify a remote Shadow Area by using Universal Naming Convention (UNC) paths, mapped drives are not supported.
    - Make sure that you enter the complete path to the area that you want to shadow (for example, D:\UserData). This ensures that you do not accidentally purge a full drive or root-level location (for example, D:\).
    - The Shadower cannot shadow data if the remote Shadow Area is encrypted.
    - The Shadower does not fully preserve metadata if the remote Shadow Area is on a machine that uses Windows Server® 2008 or Windows 7. For example, the Shadower might not preserve ownership.
- Samba shares on Linux®:
    - The Shadower cannot protect encrypted files.
    - Compressed files are shadowed as uncompressed files.
    - Metadata, such as Access Control Lists (ACLs) and ownership, is not fully preserved.

To configure the Shadower

1. Launch the Workstation Client Console.

    The **Dell NetVault Backup Workstation Client Console** dialog is displayed.

2. Complete the following configuration parameters:

    - **Shadow Area** – The path, directory, or folder on the Workstation Client where the shadow copies of the protected directories and their contents are stored. The selected Shadow Area directory or folder must exist and have enough free space to hold multiple copies of the protected data as specified in the **Number of Versions to Keep** parameter.

        Workstation Client supports specifying CIFS shares on Windows for the Shadow Area. You can specify a remote Shadow Area by using UNC paths. Use the following format to specify a UNC path:

        `\\<HostName>\<SharedName>`

        If a document or data file is corrupted or accidentally deleted, the end user or employee can restore the file from the Shadow Area without the assistance of the NetVault Backup Administrator.

    - **NetVault Backup Backup Server** – Displays the name of the NetVault Backup Server that is protecting the Workstation Client.

    > (i) **NOTE:** Because the Workstation Client assumes that only one NetVault Backup Server is used to shadow the client, this field reflects the name of the NetVault Backup Server that is currently active for it. However, if this client has been added as a client to multiple NetVault Backup Servers over time, it might reflect a NetVault Backup Server that you do not expect to see. Make sure that this Workstation Client is managed by only one NetVault Backup Server.

    - **Last Backup Date** – Displays the last time and date on which a backup of the Shadow Area was processed. To update the information displayed to reflect changes that might have occurred since the dialog was displayed, click **Refresh**. Be aware that this information is based on notification received from the NetVault Backup Server; if the Workstation Client and the NetVault Backup Server are not synchronized, the information might not match.

    - **Space Usage** – Displays the amount of space that is currently available (in units and percentage) in the Shadow Area. This field is based on the space-usage thresholds specified in the

configuration file. If the warning or critical thresholds are reached, this field also reflects that. To update the information displayed to reflect real-time changes that might have occurred, click **Refresh**.

If the field indicates that the warning or critical threshold has been reached, you can force a purge the Shadow Area. To force a purge, click **Start Purge**.

- **Scan Frequency (Minutes)** – Workstation Client creates shadow copies by periodically scanning the contents of all protected directories for folders, looking to see if any files contained within them have been changed since the last shadow copy was taken. Scan Frequency controls how often this process is executed and ultimately the Recovery Point Objective (RPO).

  Updates made to documents and data files that are overwritten before the next scan occurs, will be lost. A low Scan Frequency will ensure that more changes are captured in the Shadow Area at the expense of higher load on the workstation. A higher value for Scan Frequency will reduce the load on the workstation.

  Example:

  > Scan Frequency is set to 60 minutes and a scan was performed at 10:00 A.M. At 10:25 A.M., the end user modifies a protected file. At 10:40 A.M., the user makes further changes that he determines were incorrect and wants to revert to the previous version that he saved at 10:25 A.M. Because a scan was not performed between 10:25 A.M. and 10:40 A.M., there is no shadow copy of the changes he made at 10:25 A.M. in the Shadow Area; therefore, the changes made at 10:25 A.M. are lost.

  > Had the Scan Frequency been set to 30 minutes, a shadow copy of the changes made at 10:25 A.M. would have been completed and he would have been able to revert back to the 10:25 A.M. version. Lowering the Scan Frequency improves the RPO.

- **Number of Versions to Keep** – Controls how many revisions of any given file will be kept in the Shadow Area following changes to the protected file. The most recent version of a protected file will appear in the Shadow Area with a file name identical to the original. Previous versions are rotated until the Number of Versions to Keep is reached and have file names derived from the original but concatenated with the date that the user modified the file.

  Example:

  > The user configured the **Number of Versions To Keep** to 3. One day, the end user changes a document twice in the morning and twice in the afternoon. On the morning of the second day, the end user realizes that yesterday he deleted a section of the document and he wants to revert to the version as it existed before he made any changes yesterday. Unfortunately, four updates to the document were saved and shadowed yesterday, and the version prior to any of his changes was retired as specified by the Number of Versions to Keep parameter; therefore, the original version is lost.

  > If the Workstation Client has been added to the NetVault Backup Server and yesterday the workstation established a connection to the network where the NetVault Backup Server resides, you might be able to restore the desired version from the NetVault Backup Server.

- **Purge Shadow Copies Older Than (Days)** – Limits Shadow Area disk space growth by retiring shadow copies after they reach the specified age. As part of the scan process, the Shadower examines the existing shadow copies within the Shadow Area and removes any that are both:

  - Older than specified Purge Shadow Copies Older Than parameter.

  - Not the most recent or second most recent versions of the protected file.

- **Exclusion Patterns** – Specify a comma-separated list of exclusion patterns using wildcard characters of file types such as *.m4a, *.avi that should be excluded from backup even if they are part of the Protected Folder Set. Defaults to *.pst to exclude Outlook Data Files.

- **Performance Throttle** – Specify the extent to which the performance of the Workstation Client will be affected by the Shadowing Process. Setting to **Off** improves the Initial Sync at the expense of more load being put on the workstation while the Initial Sync is being performed. Setting to **Max** slows the Shadowing and backup process while making the workstation more responsive to the end user.

- **Back Up These Folders** – Also known as the **Protected Folder Set**. Use the **Add**, **Edit**, **Remove**, and **Remove All** buttons to specify the directories or folders that are to be protected. After a directory or folder has been added to the Protected Folder Set, all the files or subdirectories will be protected in the Shadow Area unless the file or subdirectory is excluded by the **Exclude These Folders From Backup** parameter. It is important that both disk space and processing power are consumed by the Shadower; therefore, Dell does not recommend adding root drives, system folders, or network-attached sources to the Protected Folder Set. It is also important to understand that the Shadowing processing is recursive in that all non-excluded subdirectories will be processed for any given protected directory or folder.

  > (i) **NOTE:** On Mac OS X systems, **<Shift>** + **< - >** keys remove all selected folders that users protect or exclude in the Workstation Client.

- **Exclude These Folders From Backup** – After a directory or folder has been added to the Protected Folder Set, all the files or subdirectories will be protected in the Shadow Area unless the file or subdirectory is excluded in the Exclude These Folders From Backup parameter. Use the **Add**, **Edit**, **Remove**, and **Remove All** buttons to specify the directories or subdirectories of the Protected Folder Set that are to be excluded.

  Example:

  A Mac OS X user keeps most of his user documents and data files in the Documents folder; therefore this folder is added to the Protected Folders Set. However, this user also uses VMWare, which defaults to storing its virtual machine image files within a subdirectory of the Documents folder. These images can add up to 10GB or more of data, most of which changes frequently, and is therefore a bad candidate for the protection with the Workstation Client. This Documents folder also contains many other subdirectories that grow on a consistent basis; therefore, it is not convenient for the user to explicitly select all the files and directories in the Documents folder. However, the user can add the Documents folder to the **Back Up These Folders** parameter while excluding the VMware® subdirectory from backup, thereby ensuring that the Shadower skips the VMware subdirectory when it performs scans.

  > (i) **NOTE:** On Mac OS X systems, **<Shift>** + **< - >** keys remove all selected folders that users protect or exclude in the Workstation Client.

3 Click **Apply** to apply and save your changes.

4 If an error message appears because the **Shadow Area** field is empty, do one of the following:

- To complete the field now, click **No**, enter the applicable information, and click **Apply** again.

- To save the current information and complete the field later, click **Yes** to continue.

5 If you specified a UNC path for the Shadow Area, complete the following steps when the **Browse For Folder** dialog appears:

  a In the **Browse For Folder** dialog, point to the remote folder that should be used for the Shadow Area.

  b When the authentication message appears, do one of the following:

  - If you want to specify the logon credentials for a remote Shadow Area that is located on a Windows® machine, click **Yes**, enter the applicable user name and password, and click **OK**.

  - If you do not want or need to specify credentials (for example, the remote Shadow Area is on a Linux® system), click **No** to continue.

6 To close the Workstation Client Console, click **OK**.

  > (i) **NOTE:** To ensure process load is kept to a minimum, there is a three-minute delay before the new configuration parameters take affect. After the delay, the Shadow Area begins populating with a shadow copy of the Protected Folder Set.

Best-practice guidelines for configuring the Shadower

Dell recommends the following:

- Set **Scan Frequency** to 5 minutes. However, the ideal setting depends on the number of files contained within the protected folder set, the rate of change within those protected folders, and the speed of the workstation. Also, set the Scan Frequency to a value as low as possible and, if the load imposed on the workstation by the Shadower becomes noticeable, raise it until the load is no longer noticeable by the user. The noticeable load can also be affected by the **Performance Throttle** setting.

- The recommended value for **Number of Versions to Keep** depends on multiple factors including:

  - Increased disk space requirements for the Shadow Area. Retaining 10 versions of a protected file consumes five times more disk space in the Shadow Area versus keeping two versions.

  - Rate of change to the protected files. Do not assume that keeping 10 versions of protected files requires 10 times the size of the protected folders. Only files that have actually been updated 10 times will have 10 versions retained in the Shadow Area.

  - The Purge Shadow Copies Older Than (Days) parameter, which affects disk space requirements.

  Therefore, the recommended value for Number of Versions to Keep will be a factor of available disk space, rate of change, and retention period.

- Use a value for **Purge Shadow Copies Older Than** that is as large as disk space allows to give the user the best opportunity of finding a copy of the lost revision within the Shadow Area. Smaller values will keep the disk space consumption to a lower level at the cost of purging needed file revisions from the Shadow Area. In addition, the risk that needed file revisions are purged from the Shadow Area is reduced when the workstation is added to the NetVault Backup Server as a Workstation Client and backups are performed at a regular interval.

- Exclude temporary files (add them to Exclusion Patterns) because they are transient and protecting these files creates unnecessary clutter in the Shadow Area. In addition, protecting personal music and video files on the corporate network is typically a violation of company rules and should be excluded from protection by the Shadower.

  Different applications often use different naming conventions for their temporary data, so after running the Shadower for a while, examining the contents of the Shadow Area may reveal additional file types that you can add to the exclusion set.

- In **Back Up These Folders**, do not specify a subdirectory if the parent directory is already being protected. For example, if c:\My Documents is already in the Protected Folder Set, you do not need to add c:\My Documents\Sales Projections to the Protected Folder set.

  The exception to this recommendation is when a subdirectory of an excluded parent directory needs to be protected. For example, the c:\My Documents is protected and the c:\My Documents\Marketing is excluded, which means all subdirectories of c:\My Documents are protected except for the Marketing subdirectory. However, there is one directory under c:\My Documents\Marketing that needs to be protected; it is called Marketing Budget. In this case, c:\My Documents\Marketing\Marketing Budget should be added to the **Back Up These Folders** parameter.

  When determining what directories or folders should be included and excluded, you can use the Windows® Explorer or Finder application to calculate the size of the directories or folders before they are added to the Protected Folder Set. This lets you know whether an unexpectedly large set of data is being added to the Protected Folder Set.

- Administrators who provision new workstations for end users or employees should install and configure the Workstation Client before providing the workstation to the end user. After the Protected Folder Set has been defined and the Dell NetVault Backup Workstation Client services have started, there may be a lengthy Initial Sync that will be more intrusive to the end user after he or she starts using the workstation on a regular basis. You can expedite the Initial Sync process by setting the **Performance Throttle** to **Off** as this will allow the Shadower to run at full speed. After the Initial Sync, the **Performance Throttle** should be returned to a more appropriate value.

Adding Workstation Clients to the NetVault Backup Server

Adding Workstation Clients to the NetVault Backup Server uses a process similar to adding a Heterogeneous Client. The Workstation Clients must have network connectivity to the NetVault Backup Server at the time they are added.

To add a Workstation Client to the NetVault Backup Server

1 In the Navigation pane of the NetVault Backup WebUI, click **Manage Clients**.

2 Under **Auto-Discovered NetVault Backup Machines**, note the list of NetVault Backup Clients located on the network.

   These are machines on which you have installed either the NetVault Backup Server or Client software. The Status column indicates whether the client is currently online or offline. The Version column indicates the NetVault Backup version installed on the machine.

3 To add a Client that is currently available, select it, and click **Next**.

   > ⓘ **NOTE:** Clients that reside in a different subnet are not displayed in the table. To add such clients, click **Find Machine**. On the **NetVault Backup Configuration Wizard – Find Client** page, type the Fully Qualified Domain Name (FQDN) or IP address of the client, and click **Find**. After locating the client, the wizard displays the next page.

   If no password was set for the Client during NetVault Backup installation, the Client is added to the NetVault Backup Server without any further action.

4 For Clients on which a password was set during NetVault Backup installation, enter the NetVault Backup password in the **Enter Password** box, and click **Next**.

   On verification, the Client is added to the Server and listed under **Clients**.

When the Workstation Client is added to the NetVault Backup Server, the Scheduler generates the backup jobs that will be used for the Workstation Client.

Administering Workstation Clients

- Displaying the Workstation Client status
- Displaying the Workstation Client configuration
- Resetting the Workstation Client backup cycle
- Recreating Workstation Client backup jobs
- Reporting
- Enabling Workstation Client backups on the Job Status page

Displaying the Workstation Client status

To determine the status of the Workstation Clients that have been added to the NetVault Backup Server

1 In the Navigation pane of the NetVault Backup WebUI, click **Manage Clients**.

2 In the **NetVault Backup Clients** list, select the applicable client, and click **Manage**.

3 On the **View Client** page, locate the **Workstation Client Scheduler** node in the list, and click **Open**.

Workstation Clients that have been added to the NetVault Backup Server are displayed.

> ⓘ | **NOTE:** The Workstation Clients are displayed in the order in which they are scheduled to be backed up. To refresh the view, click **New**.

4 If the Workstation Client is Offline, select it, and click **Check Availability** on the Operations pane.

This step forces the Scheduler to attempt a connection to the last known network address of the Workstation Client when the Workstation Client has been brought online but has not been found by the network discovery method.

Displaying the Workstation Client configuration

To display the configuration of the Workstation Clients that have been added to the NetVault Backup Server

1 In the Navigation pane of the NetVault Backup WebUI, click **Manage Clients**.

2 In the **NetVault Backup Clients** list, select the applicable client, and click **Manage**.

3 On the **View Client** page, locate the **Workstation Client Scheduler** node in the list, and click **Open**.

Workstation Clients that have been added to the NetVault Backup Server are displayed.

4 Select the applicable Workstation Client, and click **Show Info**.

The following information about the selected Workstation Client is displayed:

- **Name** – Name of the Workstation Client.
- **Platform** – OS of the Workstation Client.
- **Status** – Indicates whether the Workstation Client is **Online** (it is powered on and has network connectivity to the NetVault Backup Server) or **Offline** (it is powered off or does not have any network connectivity to the NetVault Backup Server).
- **Last Seen** – Time and date of the last time that the Workstation Client was Online.
- **Last Backup Date** – Time and date of the last time that the Workstation Client was backed up.
- **Backup Selection Set** – Name of the Backup Selection Set automatically generated by the Workstation Client Scheduler when the Workstation Client was added to the NetVault Backup Server.
- **Full Backup Job** – Name of the Full Backup job automatically generated by the NetVault Backup Scheduler when the Workstation Client was added to the NetVault Backup Server.
- **Incremental Backup Job** – Name of the Incremental Backup Job automatically generated by the NetVault Backup Scheduler when the Workstation Client was added to the NetVault Backup Server.
- **Scan Frequency (Minutes)** – **Scan Frequency** setting for the Shadower.
- **Max Age (Days)** – **Purge Shadow Copies Older Than** setting for the Shadower.
- **Max Versions Kept** – **Number of Versions to Keep** setting for the Shadower.
- **Shadow Area** – **Shadow Area** path for the Shadower.
- **Exclusion Patterns** – **Exclusion Patterns** setting for the Shadower.
- **Protected Paths** – **Back Up These Folders** setting for the Shadower.
- **Excluded Paths** – **Excluded These Folders From Backup** setting for the Shadower.

Resetting the Workstation Client backup cycle

Typically, the backup sequence for a Workstation Client includes a Full Backup followed by a configurable number of Incremental Backups before repeating the cycle with another Full Backup.

To reset the backup cycle and ensure that the next backup is a Full Backup

1   In the Navigation pane of the NetVault Backup WebUI, click **Manage Clients**.

2   In the **NetVault Backup Clients** list, select the applicable client, and click **Manage**.

3   On the **View Client** page, locate the **Workstation Client Scheduler** node in the list, and click **Open**.

    Workstation Clients that have been added to the NetVault Backup Server are displayed.

4   Select the applicable Workstation Client, and click **Reset Backup Cycle to Full**.

    The **Reset Backup Cycle to Full** dialog is displayed and the backup cycle is reset.

5   Click **OK** to close the dialog.

Recreating Workstation Client backup jobs

If any of the Selection Sets in the Scheduler Configuration have been modified since a Workstation Client has been added to the NetVault Backup Server or the automatically created Workstation Client jobs have been accidentally deleted or modified, the Workstation Client backup jobs needs to be re-created.

To re-create the backup jobs for a specific Workstation Client

1   In the Navigation pane of the NetVault Backup WebUI, click **Manage Clients**.

2   In the **NetVault Backup Clients** list, select the applicable client, and click **Manage**.

3   On the **View Client** page, locate the **Workstation Client Scheduler** node in the list, and click **Open**.

    Workstation Clients that have been added to the NetVault Backup Server are displayed.

4   Select the applicable Workstation Client, and click **Recreate Backup Jobs**.

    The **NetVault Backup – Information** dialog is displayed and the backup job is re-created.

5   Click **OK** to close the dialog.

To re-create the backup jobs for all Workstation Clients

1   In the Navigation pane of the NetVault Backup WebUI, click **Manage Clients**.

2   In the **NetVault Backup Clients** list, select the applicable client, and click **Manage**.

3   On the **View Client** page, locate the **Workstation Client Scheduler** node in the list, and click **Open**.

    Workstation Clients that have been added to the NetVault Backup Server are displayed.

4   Select all Workstation Clients, and click **Recreate Jobs for All Clients**.

5   Locate the **Workstation Client Scheduler** node in the list, and do either of the following:

    The **NetVault Backup – Information** dialog is displayed and the backup jobs are re-created.

6   Click **OK** to close the dialog.

Best-practice guideline for re-creating backup jobs

When the Recreate Workstation Client Backup Jobs options are used, new backup jobs are created. Previous jobs for the Workstation Client are not automatically deleted, even though they are no longer used. Therefore, Dell recommends that you delete unused Workstation Client backup jobs on the **Manage Job Definitions** page.

Reporting

To provide the NetVault Backup Administrator a method for monitoring the status of Workstation Client backups, Workstation Client-specific reports have been added to NetVault Backup standard reports. As with standard reports, you can run these reports on-demand or schedule them to be delivered at any time of the day. Additionally, the Workstation Client reports are templates that you can use to create customized reports. For complete details on NetVault Backup Reporting, refer to the *Dell NetVault Backup Administrator's Guide*.

Default Workstation Client reports include:

- **Workstation Client Failed Jobs** – Use this report to obtain a list of the Workstation Client backups that have failed.

- **Workstation Client Jobs – By Client-** Use this report to obtain a list of the Workstation Client backup jobs sorted alphabetically by Workstation Client name.

- **Workstation Client Jobs – By Date** – Use this report to obtain a list of Workstation Client backup jobs sorted in chronological order with the most recent jobs at the top of the report.

- **Workstation Client Successful Jobs** – Use this report to obtain a list of the Workstation Client backups that have completed successfully.

- **Workstation Client Inactive For a Week** – Use this report to obtain a list of the Workstation Clients that have not had a backup attempted for more than seven days. Use this report to identify the workstation data that may be at risk by not being protected for long-term retention or disaster recovery.

Enabling Workstation Client backups on the Job Status page

By default, the Workstation Client backups are hidden on the Job Status page to reduce the number of entries for larger environments that include a mix of Heterogeneous and Workstation Clients.

To make Workstation Client backups visible

1   Stop the NetVault Backup Services on the NetVault Backup Server.

2   Open the file **…/config/scheduler.cfg**, where … represents the NetVault Backup installation or home directory.

3   To display only the Failed Workstation Client jobs, update the Value to **TRUE** for the following entry:

```
[Jobs:Display Workstation Client Failed Jobs]
Value=TRUE
```

4   To display all the Workstation Client jobs, update the Value to **TRUE** for the following entry:

```
[Test:Display Workstation Client Jobs]
Value=TRUE
```

5   Save and close the file.

6   Restart the NetVault Backup Services on the NetVault Backup Server.

Recovering data

- Performing an end-user recovery from a Shadow Area
- Performing recovery from the NetVault Backup Server

Performing an end-user recovery from a Shadow Area

If the end user or employee accidentally deletes or corrupts a directory, folder, or file that is part of the Protected Folder Set, the end user can recover the file or files from the Shadow Area.

To recover an individual file or multiple files on Windows®

1   Open **Windows Explorer**.

2   Navigate to the directory configured as the **Shadow Area**.

3   Select the desired version of the corrupt or deleted directory or file to be recovered.

    For more information on identifying Shadow Area file names, see Shadow Area file names.

4   Drag and drop the selected file from the **Shadow Area** to the original or target directory.

5   Close **Windows Explorer**.

> ⓘ **NOTE:** If you do not find the desired version of the corrupt or deleted file that you want to recover and the workstation is protected by the NetVault Backup Server for long-term retention and disaster recovery, contact the NetVault Backup Administrator or internal IT Support Desk to recover the files from the NetVault Backup Server.

To recover an individual file or multiple files on Mac OS X

1   Access the **Finder** by either selecting **Finder > Services > Finder > Open**, or clicking the **Finder** alias on the **Dock**.

2   Navigate to the folder configured as the **Shadow Area**.

3   In the right-most pane of the **Finder** window that launches, select the desired version of the corrupt or deleted folder or file to be recovered.

    For more information on identifying Shadow Area file names, see Shadow Area file names.

4   Drag and drop the selected file from the **Shadow Area** to the original or target directory.

5   Close **Finder**.

> ⓘ **NOTE:** If you do not find the desired version of the corrupt or deleted file that you want to recover and the workstation is protected by the NetVault Backup Server for long-term retention and disaster recovery, contact the NetVault Backup Administrator or internal IT Support Desk to recover the files from the NetVault Backup Server.

Performing recovery from the NetVault Backup Server

If a user deletes or corrupts an object that is part of the Protected Folder Set and the version of the object is not available for recovery in the Shadow Area, use the Plug-in for FileSystem to perform the recovery. This assumes that the Workstation Client is protected by the NetVault Backup Server for long-term retention and disaster recovery.

For details on performing Plug-in for FileSystem restores, refer to the *Dell NetVault Backup Plug-in for FileSystem User's Guide*.

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Contacting Dell

Technical support:
Online support

Product questions and sales:
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Email:
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Technical support resources

Technical support is available to customers who have purchased Dell software with a valid maintenance contract and to customers who have trial versions. To access the Support Portal, go to https://support.software.dell.com/.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. In addition, the portal provides direct access to product support engineers through an online Service Request system.

The site enables you to:

- Create, update, and manage Service Requests (cases)
- View Knowledge Base articles
- Obtain product notifications
- Download software. For trial software, go to Trial Downloads.
- View how-to videos
- Engage in community discussions
- Chat with a support engineer