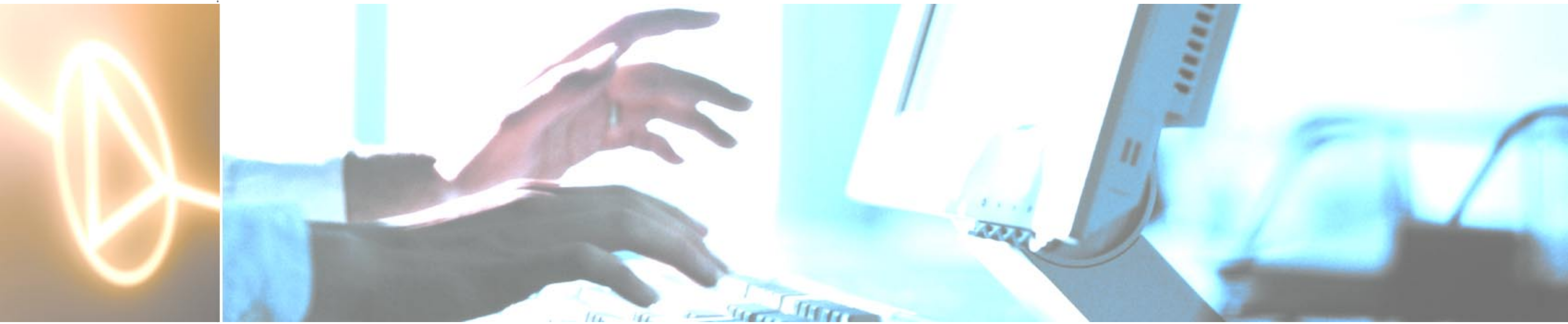

EVault InfoStage™ 6.0 Agent for Microsoft Windows

User’s Guide

September 2007

This document describes how to install and use the version 6.0 Agent for Microsoft Windows, for Windows and Web CentralControl Backups and Restores.

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Revision: This manual is updated for Version 6.0

Software Version: 6.00 (September, 2007)

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Acknowledgements: Two encryption methods, DES and TripleDES, include cryptographic software written by Eric Young. The Windows versions of these algorithms also include software written by Tim Hudson. Bruce Schneier designed Blowfish encryption.

The EVault InfoStage Agent, EVault InfoStage CentralControl, and EVault InfoStage Director applications (version 4 and above) now have the added encryption option of 128bit AES (Advanced Encryption Standard). Advanced Encryption Standard algorithm (named Rijndael, pronounced “Rain Doll”) was developed by cryptographers Dr. Joan Daemen and Dr. Vincent Rijmen. This algorithm was chosen by the National Institute of Standards and Technology (NIST) of the U.S. Department of Commerce to be the new Federal Information Processing Standard (FIPS). AES is not available when connecting to a Vault lower than version 4.1. See:**http://csrc.nist.gov/encryption/aes/round2/r2report.pdf** for details.

The EVault InfoStage Agent and EVault InfoStage Director applications (version 4 and above) also have the added security feature of an over the wire encryption method. Over the wire encryption is not available when connecting to a Vault lower than version 4.1

1. Introduction and Installation

This User's Guide is intended for the System Administrator responsible for ensuring that their Servers are properly configured to be backed up. The computer Users who use the Servers are not usually aware that their Systems are being backed up.

Different Servers may require different files and directories backed up, on different schedules, depending on what data needs to be secured. Some may require backing up more frequently, depending on how the data changes (its volatility).

This Guide will show the Administrator how to select data to be backed up, how to configure the Agents to do that, and how to schedule the backup times. Restores are also covered in detail.

The "Windows CentralControl Operations Guide" manual covers all the details about Windows CentralControl and Agents, from the point of view of "how to operate" the program.

This Guide covers the functionality required to perform a Backup (and Restore) using those tools.

Note that BUAgents running under Web CentralControl are described separately in the WebCC documentation. The Agent installation uses the same program for installation for WinCC or WebCC control.

1.1 What's New

New Features in this Release:

1. This version only supports backup and restore with versions 5.27, 5.52, 5.53 and 6.0 of the Director. It fully supports version 6.0 of WinCC (32-bit) and version 6.0 of WebCC. The 32 bit and 64 bit Agent installation kits offer the same functionality as the earlier (5.6) kits, but now they are MSI based.
2. The Windows installation kit allows the user to choose an account other than LocalSystem, under which to run the Server Agent's VVAgent services. Two separate options are provided. The first option lets the user specify an existing account (with password) and the second lets the kit automatically generate the user account and password.
3. The Agent provides support for vaults configured for LVR (Logical Vault Recovery: one-to-one, and many-to-one).
4. The Agent can re-create a missing delta file. The Agent includes additional information with the backup that allows it to re-build the file, partially or wholly. This delta recovery only occurs with Director 6.0+.
5. Bandwidth Throttling: The user now has the opportunity to either let the system use as much bandwidth as it can get for backups and restores, or "throttle back" and restrict the usage by a percentage (i.e.: in Kb/sec), and/or time of day, and days of the week. When two or more jobs are run simultaneously, they will share an equal portion of the available bandwidth. Backup and Restore jobs are weighted equally in terms of allocated bandwidth. Bandwidth sharing works regardless of how the job is created (i.e.: ad hoc, scheduled, or command line).
6. Performance improvements in backups and restores with multi threading features on multi CPU systems.
7. Advanced Filtering to improve backup performance and usability.
8. Longer Job name support. The Agent provides support for very long path names for both file system and plug-in data sources. The maximum path length supported by the Agent is 32,000 characters (older Agents supported only 511 characters). The Agent will only enable its support for long path names when connected to Director 6.0. For earlier vault versions, or when backing up to local media, the Agent only supports 511 character path names.
9. For Progress Monitoring during backup or restore, the path name displayed is limited to 511 characters. A path name that exceeds 511 characters will be shortened by removing characters in the middle of the path. Maximum path length is only enforced during backup. As a result, the Agent will allow the UI to configure a job with selections that are up to the maximum length supported (32,000 characters). When backing up to either local media or an older Director, the Agent will filter out these longer path selections. WinCC will only support browsing of path lengths up to the buffer size limit of (approximately 8,000 characters). When this limit is reached it will show a dialog box with “Selection spec is too long”, preventing the user from browsing any further. WebCC does not have this limitation.

10. Browse and backup network resources via UNC paths (for Windows Agents only). The UNC share will be the root for the browse, instead of a device letter.
11. Oracle Plug-In for Windows has functionality similar to that of the existing Oracle Plug-In for Solaris (non-RMAN).
12. Cross catalog searching. Users can search through all available catalogs when restoring files, without switching Restore Wizard screens.
13. Restore from another computer. The User can restore from another computer when the job name is identical on both computers.
14. The Agent supports symbolic and hard links on Vista. The Agent can backup and restore the symbolic link itself, but not the target. If the symbolic link is a directory, the Agent will not traverse the target path. Handling hard links allows the Agent to process a single instance of all selected hard linked files. That is, the backup size will be smaller, and the backup process will be faster.
15. SharePoint 2003/2007 Plug-in. This version of the MS SharePoint Server Plug-In performs backups and restores of SharePoint Portal 2003 and Server 2007 on Windows 2003 Servers. The SharePoint Plug-In enables brick level backups and restores of SharePoint items such as webs, lists, libraries, folders and documents.
16. When connected to a version 5.5+ Director, the Agent supports Director based licensing of these products/Plug-Ins: MS SQL Plug-In; MS Exchange DR Plug-In; MS Exchange MAPI Plug-In; Oracle Plug-In (Windows and Solaris); Cluster Plug-In; and OTM.
    ***Note**: If you are configuring a 5.5x vault (see Section 2.4 in this manual) the OTM License field, and the Validate Key field are shown as available to be changed, and used (that is, not grayed out). You cannot modify these with a 5.5x vault, and the Validate Key is not applicable, but you can use them on an earlier vault.*
17. Force Reseed. There is a new command line only option to force a re-seed, in case of a failure with delta recreation in rebuilding delta files. Delta recreation allows the user to rebuild a DTA file by using job synchronization. See section 5.4.1.8 in this Guide.

See the "CentralControl Operations Guide" for more details on these new features.

1.1.1 Agent 64-bit

This manual covers both 32-bit and 64-bit Agents.

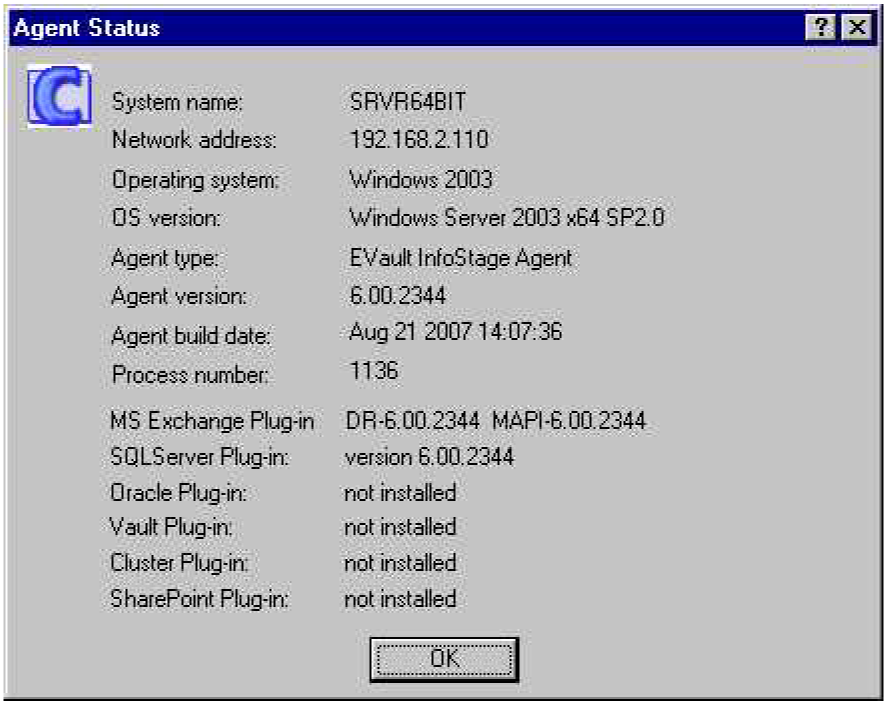
A 64-bit Agent can only be installed on a supported 64-bit Windows Server platform. See the Agent-Win 64 Release Note for a list of those supported platforms. If you try to install it on a non-supported platform, you will get an error message:

"This installation package is not supported by this processor type. Contact your product vendor."

The 64-bit Agent currently supports the following plug-ins:

- SQL Server Plug-in
- Cluster Support Plug-in

The 64-bit Agent is controlled by the same CentralControl as the 32-bit Agent. If you do an Agent Status after configuring a 64-bit Agent, you will see the OS version as one of the supported platform. For example:



Agent Status

System name:	SRVR64BIT
Network address:	192.168.2.110
Operating system:	Windows 2003
OS version:	Windows Server 2003 x64 SP2.0
Agent type:	EVault InfoStage Agent
Agent version:	6.00.2344
Agent build date:	Aug 21 2007 14:07:36
Process number:	1136
MS Exchange Plug-in	DR-6.00.2344 MAPI-6.00.2344
SQLServer Plug-in:	version 6.00.2344
Oracle Plug-in:	not installed
Vault Plug-in:	not installed
Cluster Plug-in:	not installed
SharePoint Plug-in:	not installed

Figure 1. - 64-bit Agent Status

1.2 Agent for Windows Installation

This chapter describes the steps required to install the Agent (VVAgent for Windows CentralControl) on Windows 2000 Server / 2003 Server / XP Professional. The installation requires that you have the Agent for Windows Installation kit and a Windows 2000 Server / 2003 Server/ XP Professional System.

To communicate with, configure and manage the VVAgent, the **Windows CentralControl** program must be installed on the same or a separate (networked) 32-bit Windows System.

Note: The Agent can use alternate vaults, in a Vault Replication scenario. To do this the Agent has a list of alternate vaults that is created and overwritten whenever the Agent connects to a Vault. This list (file) has a .ALT extension, and is kept in the installation folder.

1.2.1 32-bit System Requirements

(See the "Shipping Products Chart" for the most current version requirements. For 64-bit requirements, see the Release Notes.)

Hardware

☑ CPU and RAM - Should meet the basic requirement of your Operating System, as prescribed by Microsoft.

☑ HDD - at least 10 MB of available disk space.

Software

☑ OS - 32-bit editions of the following:
2000 Server & Advanced Server (SP4) / XP Professional (SP2) /
2003 Server (Standard, Enterprise, & Small Business) (SP1) and
2003 Server Standard & Enterprise R2

☑ Network - A TCP/IP stack (for communicating with the Vault Director and CentralControl software).

☑ Optional Open File Software for the Windows Agent:

- Open Transaction Manager * - OTM 1.12.211 for Windows (Included in the installation kit).

OR …

- Open File Manager ** - OFM 9.5 - 501 build. (Not included – available as a separate install).

*OTM™ is a product of Columbia Data Products. See the **CentralControl** Help files or the **CentralControl User's Guide** for configuration details.

OFM™ is a product of St. Bernard Software. See the **CentralControl Help files or the **CentralControl User's Guide** for configuration details.

Note: The CentralControl GUI optimally requires the video setting of 16-bit graphics. This setting is found in your Windows > Settings > Control Panel > Display Properties > Settings.

1.2.1.1 Privilege Requirements

Installation

To install the Agent for Server/2000, Server/2003, or Server/XP Professional, **Administrator or equivalent access** is required for the target machine.

Note: If you want to manage an Agent from both WinCC and WebCC, they must both be installed using the same service account user identities. That is, "EVault Infostage BUAgent" and "EVault Infostage Agent" service accounts must be the same. If not, the BUAgent will not be able to provide any status, or administration functions. The account under which services are running is shown in VVAgent and BUAgent logs.

Functional

Three modes of operation of the Agent for Windows 2000 Server / 2003 Server / XP Professional are provided:

Ad-Hoc: Using the CentralControl application, the User can configure, Backup and Restore Jobs on an Agent. The specified User must have the "Backup Files and Directories" privilege. The initial configuration requires these privileges.

Scheduled: Backup jobs can be configured to run in scheduled mode. Using the CentralControl application, the User can schedule, Backup and Restore Jobs on an Agent. If the VVAGENT.EXE program is run as a System service logged in under the System Account User, no special privileges are required to run scheduled jobs.

CLI: Command Line Interface mode allows the User logged on to the System console to execute Backup and Restores directly from the command line interface, or in a batch file. Users must Logon with an account that includes "Backup Files and Directories" privilege. This privilege is enabled by default for the Backup Operators and Administrators groups.

1.2.1.2 Configuration File locks

The directories where the Agent program files and configuration files are stored can be locked down to prevent both reading and writing by non-privileged users.

The only user/groups with permission will be:

.\Administrators group
.\BackupOperators group
.\LocalSystem user

Previously, the configuration files were readable by all users. Locking the directory tree down will prevent non-privileged user from reading sensitive information in the configuration files, or run applications in those directories.

Of course, the Agent itself will still be able to perform its functions. Only users without the proper permissions will be "locked out".

1.2.1.3 Open Files, File Lock Management, and Anti Virus Programs

The system supports two optional file-lock management software utilities called Open Transaction Manager™ (OTM) from Columbia Data Products and Open File Manager™ (OFM) from St. Bernard Software.

Note: Both OTM and OFM must NEVER be installed on the same System. Installing both OTM and OFM is not recommended or supported by EVault, Inc. Other open file software products are available.

Typically, OTM is used on small to medium sized servers, while OFM is used on large servers.

OTM and OFM are intended to protect open files, such as user data files, and databases. EVault installation and Agent directories should not be included in Agent backups.

Also, if using VBA, the Director WORK and RAID locations should be excluded from scanning.

If you use an Anti Virus program, you should disable real time scanning on reads (sometimes called "outgoing" on some AV products). Do not backup the AV directories themselves.

Do not use any file-lock management utilities on EVault directories, or AV directories.

Directories that contain the AV programs, and the Agent installation and application programs can be re-installed, if the Agent system crashes. The operating system can also be re-installed, but you should also be backing up the System State.

1.2.1.4 Default Installation Directories

By default the installation will put the files for fresh installs in directories called:

```
C:\Program Files\EVault InfoStage\Agent
C:\Program Files\EVault InfoStage\Agent Assistant
```

(Where "C:" may be another drive.) You may still change the path, if required.

All the EVault InfoStage applications are then located in a single directory, but have their own sub directory to run in. Requirements (like locking down for admin users only) won't affect the other applications. The Agent would only lock down the Agent sub directory for Administrators.

The install kit will not remove the top level directory (EVault InfoStage) unless it is empty at the end of an uninstall.

1.2.2 Installation Procedures

Note: The 32-bit Agent and 64-bit Agent installations are similar. See the Release Notes for versions and supported platforms.

The Agent for Windows Installation kit is available in a self-extracting executable format with the file name “Agent-Windows-6-xx-xxxx.exe”, or “Agent-Windows-x64-6-xx-xxxx.exe”. Your Service Provider may have renamed this file. This single self-extracting executable file contains all these components necessary to install the Agent under Windows:

- Windows Agents (32 and 64-bit)
- OTM (32-bit)
- SQL Server Plug-In (32 and 64-bit)
- Oracle Plug-In (32-bit)
- MS Exchange Plug-In (32-bit)
- Cluster Support Plug-In (32 and 64-bit)
- SharePoint Plug-In

1.2.2.1 Plug-Ins

MS Exchange, MS SQL Server, Oracle, Cluster Support and SharePoint Plug-Ins, and OTM can be installed along with the Agent. That is, there is no separate install for individual Plug-Ins.

You can always install a Plug-In afterwards by running the installation again, with the Modify option.

See the CentralControl Operations Guide, and the separate Plug-In Guides for more information on licensing and installation.

Note that Plug-Ins require a separate license if you are connecting to a vault that is lower than version 5.53. If you are connecting to a vault that is version 5.53 or more, the license is supplied automatically from the vault.

To apply a license that is not supplied automatically, you first install the Plug-In. Then enter and validate the license from CentralControl, under Agent Configuration, Plug-In tab. See the CentralControl User Guide.

Oracle Plug-In:

If you install the Oracle Plug-In, you must also install the "Oracle Plug-In Support Libraries" after the Agent has been installed.

This is a separate InstallShield installation, called "OraclePluginSupport-5-60.exe". This is not included as part of the Agent InstallShield installation, and must be run separately.

1.2.2.2 Requirements

You must have the following items before installing and using the 32-bit Agent:

The self-extracting Agent for Windows Installation kit.

A target System running 2000 Server (SP4)/2003 Server (SP1)/ XP Professional (SP2) (See the Release Notes for 64-bit Agents.)

1.2.2.3 Running the Self-extracting Install Kit

Depending on your service provider, you may have the option of installing from disk, or the Web or a CD. Each of the self-extracting install kits may be executed directly over the Web or may be copied to a temporary directory first and then executed. They may also be executed directly from a CD.

Option A: If installing directly from the Web, follow the instructions given on the Web page to start the installation process.

Option B: From the Web, you can download the self-extracting executable to a temporary directory. Navigate to the temporary directory.

Option C: If using a CD, place the media containing the CentralControl installation kit into the CD-ROM drive. Navigate to the disk or CD drive that contains the self-extracting executable.

To install the Agent for Windows using the installation Wizard:

1. Logon to the System.
2. Double click on the self-extracting executable file ("Agent-Windows-6-xx.exe"). You are first prompted to select a language for the installation. Choose English, French, German or Spanish.
3. InstallShield sets up the installation process (Extracting and Preparing). From the Setup Welcome dialog, click **Next**. A text viewer window appears.
4. From the viewer screen, Users can read or print Support Notes and product Release Notes. Click **Nex**t to proceed.
5. The "Software License Agreement" window is shown. You must Accept this to continue the installation.
6. Select Install Type. You can choose a Typical Install, or a Custom Install. Typical will finish without you having to choose more components. It will take you to the end (Step 13) and begin the actual installation. If you choose Custom, you will be asked the following steps, before you begin the installation.
7. "Agent Management Method Selection" is next. This allows you to choose how you want to give the proper credentials for the Agent Service to run on the PC.

   Note: "Use 'Local System' Account", and "Create Account automatically" supply the correct user rights (in the administrator group). If you select "Use custom account", you must ensure that the account (in the administrator group) has "act as part of the operating system", and "logon as a service" user rights. (See the note in section 1.2.1.1 – Privilege Requirement - about BUAgent and VVAgent together.)
8. Choose a destination folder for the installation, or accept the default. Click Next.
9. The "Custom Setup" dialog appears. You may choose these program features, depending on what your system will use to backup its data. They will require a

proper license before you can use them. Note that OTM is optional, but if it is chosen here, you will get an "OTM settings" screen later in this installation, and you will have to restart the computer.

Note: You can return to this installation at another time (with Modify) to install these program features, if you do not select them now. You must install at least the Agent. It cannot be turned off. The other features are optional. Click Next.

10. If you had chosen, before, to install OTM, you will now get an "OTM Settings" screen. These parameters are described in the "CentralControl Operations Guide", and can be changed, in the CentralControl GUI, under the Agent Configuration screen, Open File tab. OTM can also be set with Web CentralControl.

    Note: If you had asked for OTM before, you will be reminded here that this is a 30-day trial and you will need to get a permanent license if you wish to continue using OTM. Click **Next**.

11. Agent Management Method Selection. Choose one of:

    I will manage my Agent using Web CentralControl hosted at <WebCC URL>
    I will manage my Agent using Web CentralControl. I will specify the location.
    I will manage my Agent using Windows CentralControl only.

    That is, you may be asked to use a known WebCC URL address, or to supply one if you want to use Web CentralControl, or to only use Windows CentralControl.

    Depending on how your install kit is set-up, and what Agent you have installed already, you may see a) all three of these prompts, or b) the first and third, or c) the second and third ones.

12. If you have selected to manage your Agent with Windows CentralControl only, you will not see the next screen on Registering the Agent with Web CentralControl. But if you have selected one of the first two choices you will see that screen next. "Would you like to begin the installation?" Click **Yes**.

13. "Register Agent with Web CentralControl" screen. If you are using the Web CentralControl, you must Register the Agent with it so that it can be managed by the Web CentralControl. You may or may not have an address in the address field, depending on what you selected in the "Agent Management Method Selection". Enter the username and password that will allow this Agent to register with the Web CentralControl. This is a name and password created for this Agent by an Administrator on the Web CentralControl. Click **Next**. The Registration will fail if it cannot connect to the Web CentralControl. You can run the installation again to register if you cannot succeed here. (In that case use, "Skip Registration" to finish.)

14. You could "Skip Registration" here, and only manage the Agent with Windows CentralControl if you want. Click **Next**.

15. If you had selected to install OTM, you will be asked to restart. Select either **Yes, I want to restart my computer now** or **No, I will restart my computer later**. Click **Finish**.

16. If you did not choose OTM, the "Ready to Install the program" message is shown. Click **Install** to begin the installation.

17. Note: If you had chosen to include the Agent Assistant in a Custom Setup (in WebCC only), you will be prompted next for the URL of the Web

CentralControl program and the URL for the Help for the WebCC. When you installed the WebCC application on your server, you chose the locations for them. They must correspond to the addresses here. The WebCC and the Help applications can then be accessed from the Agent Assistant on the Agent machine.

In addition to holding the executables, the directory setup will also store all the required configuration and delta files. The space requirements for these files will vary depending on the following factors:

- whether or not Backups are targeted to a local directory,
- the retention settings that are applied to the Backups.

1.2.2.4 System Privileges for EFS

If you have Encrypted File System on your Win 2000/2003/XP Pro system, the Agent will need more than Administrator Rights to be able to backup those files. You might receive error messages (in the log) about “access is denied” and “ACL's for all subsequent files might not be backed up.”

After the Agent has been installed, you need to change local security settings, or the default domain policy.

1. For the logon for the Agent, you need to set it to “Act as part of the operating system”.

2. Set it to “Logon as a service”.

3. Then, in services, select the Agent Job, choose the logon tab, choose the “This account” button, and set it to the administrator logon.

This will ensure that the logon for the Agent has the correct rights to be able to do the EFS backups.

1.2.3 Setup Maintenance

Users can modify, repair, upgrade or uninstall the Agent currently on their System. To run the Setup Maintenance Wizard, double click on the Agent-Windows-6-00-xxxx.exe file (located on your computer hard drive, CD or the web) or select Add/Remove Programs from the Control Panel. The Setup Maintenance Wizard presents you with the following choices:

Modify: add or remove additional components (OTM and Plug-Ins).

Repair: fix your current version of the Agent. This option appears if the application detects that you have the same version of the Agent on your System.

Upgrade: move up to a newer version of the Agent. This option appears if the installation is a newer version than the previously installed one.

Uninstall: remove the currently installed Agent.

Note: If you run the Agent-Windows installation and it detects that you have a newer version of the Agent on your System, the Setup Maintenance Wizard will terminate. That is, you cannot install an older version of the Agent over a newer one.

1.2.3.1 Installation Languages

During a Modify/Upgrade of the Agent, if you select a language other than the language originally selected for installation, installation screens and notifications will be displayed in the previously installed language.

As a workaround, you can uninstall the Agent's Program files (not a total uninstall) and run a fresh install of the Agent kit, selecting the desired language when prompted.

1.2.3.2 Modify

To Modify Agent components under 2000 Server/2003 Server/XP Professional:

1. Choose Start > Settings > Control Panel > Add/Remove Programs, and select <Service Provider>**Agent**<version>. Or, instead of using Add/Remove Programs, you can re-run the installation program.
2. As in the initial installation, you are asked to "Choose Setup Language" here. This must be the same as the initial install language, or else it will default to it anyway. If you want to change languages, you must uninstall the program files and re-install the Agent. Click **OK**.
3. From the Welcome screen, click **Next**.
4. Choose the Modify option (from Modify, Repair, or Remove).
5. "Agent Management Method Selection" is next. This allows you to choose how you want to give the proper credentials for the Agent Service to run on the PC.

   Note: "Use 'Local System' Account", and "Create Account automatically" supply the correct user rights (in the administrator group). If you select "Use custom account", you must ensure that the account (in the administrator group) has "act as part of the operating system", and "logon as a service" user rights.

   For a Modify or Repair, you can typically leave these credentials unchanged.
6. Select the components (Agent, OTM, and/or Plug-Ins) you want to install and deselect the components you want to remove.
   Note: If you deselect everything, you will be doing an uninstall.
7. If you have selected components, the installation continues like a new installation. See the previous sections.
8. Agent Management Method Selection. Choose one of:

   I will manage my Agent using Web CentralControl hosted at <WebCC URL>
   I will manage my Agent using Web CentralControl. I will specify the location.
   I will manage my Agent using Windows CentralControl only.

   That is, you may be asked to use a known WebCC URL address, or to supply one if you want to use Web CentralControl, or to only use Windows CentralControl.

   Depending on how your install kit is set-up, and what Agent you have installed already, you may see a) all three of these prompts, or b) the first and third, or c) the second and third ones.
9. Ready to modify the program. Click Install.
10. If you had selected to install OTM, you will be asked to restart. Select either Yes, I want to restart my computer now or No, I will restart my computer later. Click Finish.

1.2.3.3 Repair

When the Agent installation is launched, it searches your computer for previously installed versions of the Agent. If the same version of the Agent is located, you will be offered the options of Modifying the software, Repairing or Uninstalling it.

To Repair the Agent under 2000 Server/2003 Server/XP Professional:

1. Choose Start > Settings > Control Panel > Add/Remove Programs, and select <Service Provider>**Agent**<version>. Or, instead of using Add/Remove Programs, you can re-run the installation program.
2. As in the initial installation, you are asked to "Choose Setup Language" here. This must be the same as the initial install language, or else it will default to it anyway. If you want to change languages, you must uninstall the program files and re-install the Agent. Click OK.
3. From the Welcome screen, click Next.
4. Choose the Repair option (from Modify, Repair, or Remove).
5. Agent Management Method Selection. Choose one of:

   I will manage my Agent using Web CentralControl hosted at <WebCC URL>
   I will manage my Agent using Web CentralControl. I will specify the location.
   I will manage my Agent using Windows CentralControl only.

   That is, you may be asked to use a known WebCC URL address, or to supply one if you want to use Web CentralControl, or to only use Windows CentralControl.

   Depending on how your install kit is set-up, and what Agent you have installed already, you may see a) all three of these prompts, or b) the first and third, or c) the second and third ones.
6. Ready to Repair the program. Click Install.
7. When the Repair is complete, the Maintenance panel appears indicating the Agent has been properly installed. Click Finish.

1.2.3.4 Upgrade

You will only see the Upgrade option if the installation detects an older version of the Agent on the machine. See the previous sections on installation and modify.

1.2.3.5 Uninstalling

To uninstall the Agent under 2000 Server/2003 Server/XP Professional:

1. Choose Start > Settings > Control Panel > Add/Remove Programs, and select <Service Provider>**Agent**<version>. Or, instead of using Add/Remove Programs, you can re-run the installation program.
2. As in the initial installation, you are asked to "Choose Setup Language" here. This must be the same as the initial install language, or else it will default to it anyway. If you want to change languages, you must uninstall the program files and re-install the Agent. Click OK.
3. From the Welcome screen, click Next.
4. Choose the Remove (Uninstall) option (from Modify, Repair, or Remove).
5. Select Total Uninstall or Program Files Only. A total uninstall removes all traces of the application from your System. Program Files Only leaves Job configuration files, log files, delta files and Backup Safesets on your computer for future use.
6. Click Remove to uninstall. (Note: You cannot Cancel after this stage, as the uninstallation is now irreversible.)
7. Once the Remove/uninstall is complete, click Finish.

1.2.4 Upgrading from earlier versions

Agent 6.0 supports upgrades from the following:

- Server Agent 5.6 and later,
- SBE Agent 5.3,
- Desktop Agent 5.3.

Upgrading an Agent to Version 6.0 includes the following Jobs:

1. Meeting System and Software Requirements
2. Preparing the Computer
3. Upgrading Program Files and Configuration Files

1. Meeting System and Software Requirements

To upgrade to Agent 6.0, your System must meet the minimum requirements mentioned in the User Guide.

Note: Available free space of the volume that the Agent is installed on should be bigger than the size of all Delta files + the size of the largest Delta file + a reasonable cushion (at least 100MB).

2. Preparing the Computer

To prepare your existing machine for upgrading Agent, complete the following Jobs:

1. Back up the previous Agent Files

   We strongly recommend that make at least one Backup of your previous Agent files, including all files and subdirectories under the Agent installation directory. Do not attempt an upgrade without a Backup.

2. Clean up Server Profiles in Global.vvc

   From the Management Console, open up the Agent Configuration that you want to upgrade. Go to Vaults section, check if there is any Server configuration that no longer being used and delete it. Also, highlight every Server configuration and click Edit, and double check the information of this Server Profile is valid. Then click OK to save your changes.

3. Clean up Jobs

   After the Global.vvc has been cleaned up, check all Backup Jobs to see if there is any Job backing up to a Vault that has been deleted from Global Settings. If so, delete that Job or assign it to a different Vault.

   If you have Jobs that are backing up to Tape drive or Directory on Disk, they are local Jobs and leave them unchanged. During upgrade, they will be registered to the first Vault indicated in Global Settings.

4. Synchronize all Backup Jobs

   After cleaning up the Jobs, check the Backup logs of each Job to see if any errors show "Validation failed: ". If so, you need to verify the validation information with your Vault Operator to make sure it is valid. If the latest Backup log shows no errors, do a Synchronize with the Vault and check the Synch log.

5. Verify eligible Director version

   For every Vault that you are backing up to, make sure it is running the latest version. Otherwise, the Vault software needs to be upgraded before upgrading the Agent.

3. Upgrading Program Files and Configuration Files

The files installed by Agent 6.0 are listed in the Release Notes.

We recommend starting the installation when all the Directors in Global Settings are not busy on other Jobs.

When the Installation Kit is launched, it detects the previously installed versions of the Agent and starts to upgrade it.

IMPORTANT: *When the upgrade process starts, you should wait until it finished. Do not run multiple upgrade processes at a time.*

Always check the log file, after an upgrade process. The log file will be used when troubleshooting in the case of failure. If an upgrade failed, the Global.vvc, Job vvc and Delta files are rolled back to the old version. But they will not work with new executables. You may try to run the upgrade program again. If it still fails, contact your service provider for support. To completely rollback to the old version, you need to manually copy back the previous Backups.

We recommend that to do at least one Backup for each Job after upgrading successfully to allow the Agent to upload new configuration files to the Director.

1.2.5 Silent Install

The InstallShield program allows users to create an installation answer file, to be used to install another Agent “silently” – that is, without any user interaction. An administrator can create an answer file on one machine, and then play that back on another machine, to perform an identical installation.

So, an administrator with many installs can run the installation once, and copy the files to other remote machines, and run them silently there.

Configuration File:

A configuration file is required for silent installation. This xml format configuration file contains the properties that need to be set for the installation. A file similar to the following example can be used for your system.

Example xml configuration file (“`silentinstall.xml`”):

```
<SilentInstallSettings>
        <AccountType>AutoCreate</AccountType>
        <ServiceAccountName>xxxxx</ServiceAccountName>
        <SeviceAccountPassword>zzzzzzzz</SeviceAccountPassword>
        <InstallDir>c:\program files\Evault Infostage</InstallDir>
        <FeatureOTM>ON</FeatureOTM>
        <FeatureCluster>Off</FeatureCluster>
        <FeatureSQL>ON</FeatureSQL>
        <FeatureExchange>Off</FeatureExchange>
        <FeatureOracle>off</FeatureOracle>
        <KeepExistingReg>true</KeepExistingReg>
        <RegisterWithWebCC>True</RegisterWithWebCC>
        <WebCCURL>192.168.2.167</WebCCURL>
        <WebCCPort>8086</WebCCPort>
        <WebCCLoginName>login</WebCCLoginName>
        <WebCCPassword>password</WebCCPassword>
        <BackupConsoleUrl>http://evault.com/login/login.aspx</BackupConsoleUrl>
        <BackupConsoleHelpUrl>www.evault.com</BackupConsoleHelpUrl>
        <InstallLanguage>English</InstallLanguage>
</SilentInstallSettings>
```

Silent Install Settings Descriptions:

AccountType: (required). There are three types : AutoCreate, LocalSystem, and Specified. For the first two types, ServiceAccountName and ServiceAccountpassword are not required. If the wrong account type is provided, or the account credentials are wrong, the installation will fail silently. The “SetUp.log” will contain the error information.

InstallDir: (required). If you are upgrading from a previous kit, the previous installation directory will be used for the silent installation directory.

FeatureOTM: This is for turning on/off the OTM plugin installation. If not specified, it defaults to Off.

***Note**: If you use Silent Install with OTM, you must reboot the Agent system manually for OTM to become operational. There is no prompt for the restart.*

FeatureCluster: This is for turning on/off the Cluster plugin installation. If not specified, it defaults to Off.

FeatureSQL: This is for turning on/off the SQL plugin installation. If not specified, it defaults to Off.

FeatureExchange: This is for turning on/off the Exchange plugin installation. If not specified, it defaults to Off.

FeatureOracle: This is for turning on/off the Oracle plugin installation. If not specified, it defaults to Off.

RegisterWithWebCC: This is for turning on/off the Registration with WebCC. If not specified, it defaults to False (Off).

WebCCURL: (required). This is only required if "RegisterWithWebCC" is set to True (On).

WebCCPort: (required). This is only required if "RegisterWithWebCC" is set to True (On).

WebCCLoginName: (required). This is only required if "RegisterWithWebCC" is set to True (On).

WebCCPassword: (required). This is only required if "RegisterWithWebCC" is set to True (On).

BackupConsoleUrl: (required). This is only required if "FeatureMaestro" is set to True (On).

BackupConsoleHelpUrl: (required). This is only required if "FeatureMaestro" is set to True (On).

InstallLanguage: (optional). If it is not set, the default is "English".

Example Command Line for Silent Install:

For Install/Upgrade:

```
Agent-Windows-6-00.exe /s /v"/qn SILENTINSTALLCFGPATH=\"C:\Program
Files\EVault InfoStage\silentinstall.xml""
```

For Uninstall:

```
Agent-Windows-6-00.exe /s /x /v"/qn TOTALUNINSTALL=2"
```

1.3 How the Windows Agent Works

The CentralControl Management Console and the Windows Agent comprise a data protection software suite that securely backs up file data from Servers across a network to a remote Data Protection Vault. The applications provide an automated, unattended method for protecting your valuable computer data without the need for tape devices or other Backup media.

Each Backup is termed a "full" backup in that it is possible to Restore all the data, if necessary, without using any incremental or differential backups.

Each computer (Server) that needs to be backed up must have the Agent software installed and running, and be connected to a network, to be able to access a Vault. The Agent runs on the Server as a background service, and starts automatically when the System is booted.

The setup of Agents, Jobs, scheduling, and monitoring is done from the CentralControl GUI application. The actual Backup is done from the Server System with the Agent, to the System with the Vault. No (Backup) User data goes through the CentralControl. The Vault has to be previously set up with an account, to receive your Agent's commands and data.

Once an Agent has been properly configured and scheduled, backups will occur automatically. The CentralControl does not have to be running all the time. It is used for configurations, and to check for successful completion and to view the error logs. Success or failure messages can also be sent by automated emails.

1.3.1 Agent Software

The Agent software runs on the individual computers to be backed up. Backups on the Agent computers are configured and scheduled by the CentralControl computer. The Agent then sends its Backup data (optionally encrypted, for security) directly to the Director (Vault).

The Agent consists of the following components:

- The "VV.exe" component performs the Backup and Restore functions to the vault.
- The Agent component ("VVAgent.exe" for Windows CentralControl and "BUAgent.exe" for WebCC) handles scheduling, configuration and communication with the CentralControl. It runs as a Windows Service on a supported Windows Operating System.

Note: Check the Appendix of this manual for more information on these, and other files that run the applications.

The Windows platform can optionally have: Exchange Plug-In; Oracle Plug-In; MS SQL Plug-In; Cluster Plug-In, and SharePoint Plug-In.

Note: See the appropriate Release Note for the current supported versions of the Agents, Plug-Ins, and Operating Systems.

The following products are optional on some Systems, and require an extra license. During installation of the Agent, the Plug-Ins are installed (i.e.: made available) and ready to be activated. You do not need a separate installation for a Plug-In. But, you may also install them later, using the Repair/Upgrade option.

1.3.1.1 MS Exchange Plug-In

The MS Exchange Plug-In is an add-in to the Windows Agent. It allows for full (DR) disaster recovery capabilities on Microsoft Exchange databases as well as for backing up and restoring individual mailboxes and folders (with MAPI).

1.3.1.2 Oracle Plug-In

The Oracle Plug-In is an add-on to the Windows or Solaris Agent. It allows a user to perform a database Backup on an Oracle database. The Plug-In is installed on top of the Agent on the database host to perform the Backups.

The Oracle Plug-In for Windows is installed via the Server Agent install kit. It will appear as a new option in the "Select Plug-Ins to install" page. The Server Agent kit will not contain the "Oracle Instant Client" required by the Oracle Plug-In for Windows. The Oracle Instance Client will be made available through a separate kit. The Server Agent kit, however, will detect when the Oracle Instant Client has not been installed, and direct the user to the appropriate installation kit.

The Oracle Instant Client kit, created with InstallShield, is dedicated to installing Oracle's Instant Client. The kit will only install the Oracle Instant Client into the installation directory of the Server Agent. If the Agent has not already been installed, the install will terminate gracefully.

1.3.1.3 MS SQL Server Plug-In

The MS SQL Server Plug-In is an add-on to the Windows Agent. It allows a user to perform a database Backup on an MS SQL Server database. The Plug-In is installed on top of the Agent on the database host to perform the Backups. The Plug-In, with ODBC, now supports SQL Server 2005. The Plug-In still supports SQL 2000.

Upgrades of earlier Plug-In versions are supported, and do not require any reconfiguration and/or reseeding of existing data.

1.3.1.4 Cluster Support Plug-In

The Virtual Server Cluster Support Plug-In is an add-in to the Windows Agent. It allows a user to be able to backup a server that has failed over to another machine (node) in the cluster. The configuration is automatically picked up by the correct server after a failover.

1.3.1.5 MS SharePoint 2003/2007 Plug-In

This version of the MS SharePoint Server Plug-In performs backups and restores of SharePoint Portal 2003 and Server 2007 on Windows 2003 Servers. The SharePoint Plug-In enables brick level backups and restores of SharePoint items such as webs, lists, libraries, folders and documents. This high level of granularity enables backups and restores of the entire site, down to different individual document versions. You can also restore a document as a document or a document version to the file system.

The SharePoint plug-in, on a restore, allows browsing and selection to the file level. You can also search for a file to restore.

The MS SharePoint Server Plug-In with the Agent installs directly on the server hardware.

1.3.2 CentralControl Software

The CentralControl provides a centralized point of control for managing all computers running the Agent software on a large computer network. Within an organization, the configuration and scheduling of Jobs is done through the computer(s) running the CentralControl software.

The CentralControl software connects to an organization's computers running the Agent software, activating that computer's Backup Job. The CentralControl software operates on Windows 2000/2003 Systems.

1.3.3 Director Software

The Director software controls and manages the pooling and storage of data at a remote secure Vault location. This data is communicated to the Director from the Agent computers over a WAN, LAN, the Internet, or imported from an alternate media.

The Director does not interact with the CentralControl program. The CentralControl communicates with, and manages the remote Agents. The Agent sends its backup data directly to the Vault.

1.3.4 Overview of Product Set

This diagram shows the relation between the various related products.

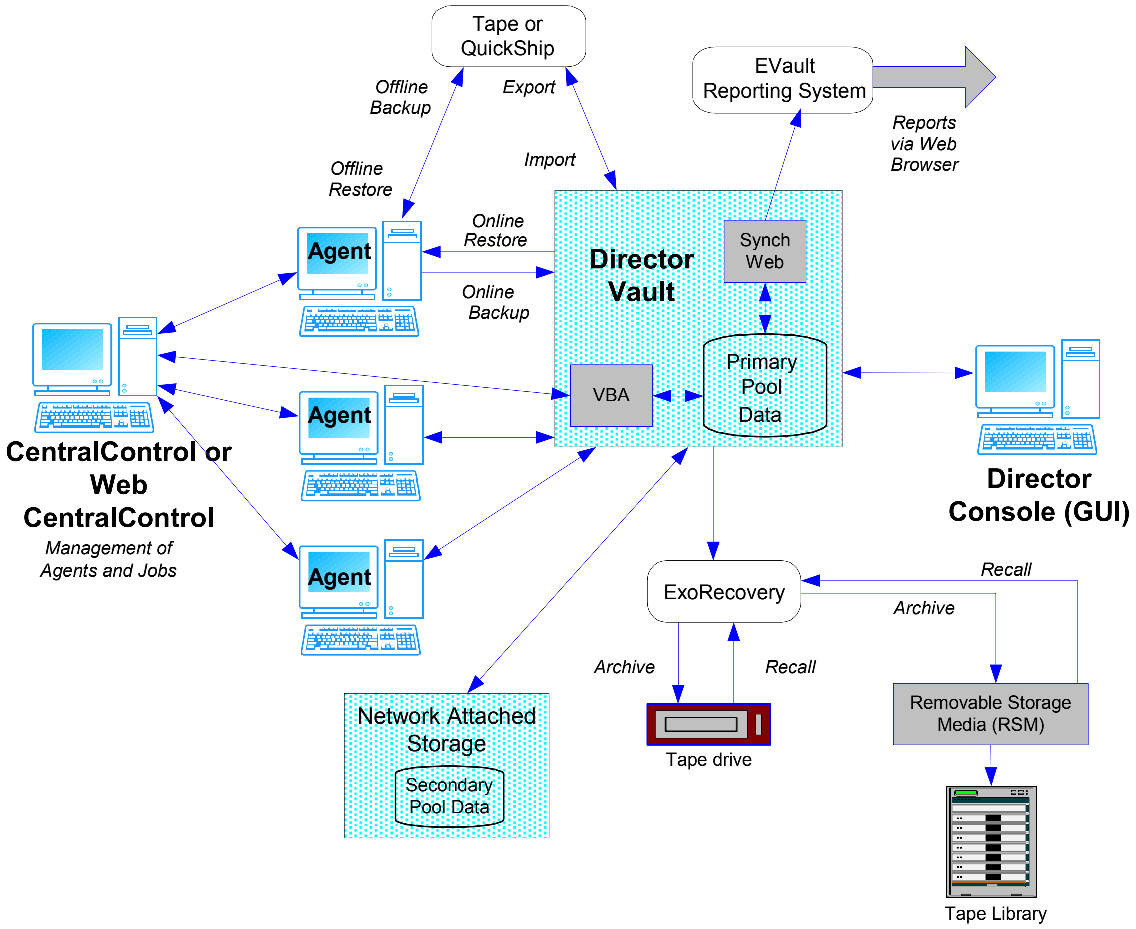


Figure 2. - Overview of Product Set

(Note: Not all of these products shown here are discussed in this manual. They are included in this diagram for completeness.)

1.4 Starting the CentralControl program.

The Windows CentralControl program, which typically controls many Agents, is the Graphical User Interface (GUI) that configures and schedules the remote Agents.

This Agent User Guide describes how to create a backup Job, and perform restores when necessary. The CentralControl Operation Guide has more details and background on installing and running the GUI.

The Windows CentralControl program may be started in one of several ways:

- from the CentralControl icon on the desktop,
- from the Windows "Start -> Programs" selection,
- Explore to the folder where the software was installed and click on the "`VVAdmin.exe`" file.

The installation of the Windows Agent is described in Section 5 of this Guide.

Note: Web CentralControl is described in the WebCC Administration User Guide, and the WebCC on-line help.

1.4.1 On Line Helps

The Windows CentralControl application (GUI) has an online help, which contains information similar to the user manual. The help is accessed from the main drop-down menu, or by using the F1 function key. There is also context sensitive "WhatsThis?" help on each GUI screen.

Note: If the F1 Help screen is open (even minimized) the "What's This" help will not be active. The F1 help must be closed for the "What's This" help to function properly.

1.5 Agent/CentralControl Configuration Overview

The Agent program runs as a service on the Server (computer) that will be backed up. The way to control/direct it is with the CentralControl GUI program. One CentralControl program controls many Agents on many Servers on a network.

1. Each server (computer to be backed up) needs an Agent.
2. You need to connect (from the CentralControl) to an Agent (when you create a new Agent).
3. You must supply: a Name, IP or DNS address, and user/password credentials.
4. Then, you must Register the computer on the vault.

You must Register a computer on a vault to be able to “logon” to the vault and establish a connection. The vault must know that this Agent is valid and is authorized to perform its functions.

You will need to “re-register” a computer if you are restoring from another computer, or you are performing a bare-metal Restore (described in chapter 4 of this Guide.).

Jobs are registered during the creation of the Job, and are used during a Backup. They contain information such as:

1. Which Profile is used? (i.e.: which Vault?)
2. What data is to be backed up?
3. What type of logs do you want?
4. What type of encryption (if any)?
5. When is it scheduled to run?

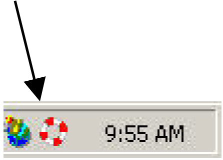
Note: The first Backup is a “seed” (a complete, full Backup), the next and subsequent ones are deltas (i.e. changes only), but they are equivalent to, and still considered a “full” Backup. That is, you are able to restore all or any files from it.

Depending on how your System is configured:
- There may be more than one Vault you can connect to.
- One CentralControl usually controls all the Agents on your network.
- You can also Backup to a disk or tape that is local to the Agent machine.

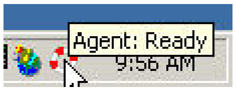
1.5.1 Agent Assistant Overview

If you have installed the Agent Assistant option with the Agent, you will have an icon in the System Tray that will show status messages with your backups and restores.

The Agent Assistant will start automatically when the PC is booted. You will see the Agent Assistant icon in the System Tray, beside the time/clock.



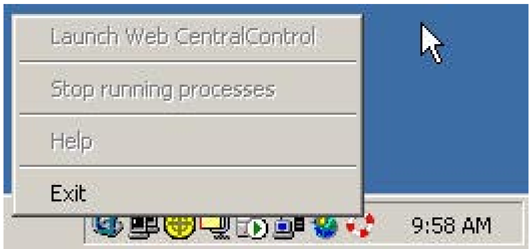
If you hover the mouse pointer over the icon, it will show you the current status.


Agent: Ready

The icon has three display states:

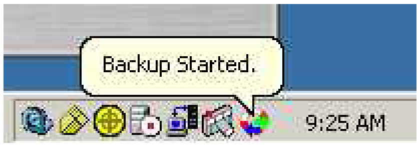
- ***Ready.*** This is the normal state. The Agent is operational and ready to perform scheduled backups.
- ***Processing.*** The Agent is currently running a backup.
- ***Not Ready***. The Agent may be down, or the network connection may not be accessible.

Right click on the Agent Assistant icon to show the menu choices. You can Exit from the Agent Assistant program. Scheduled backups will continue to run without the Agent Assistant running.



If there is a backup (or backups) or a restore running on your Agent, the “Stop running processes” line becomes active, to allow you to gracefully stop all the Agent Jobs.

When you run a backup, you will see a message in the balloon over the icon.


Backup Started.

If you hover the mouse over the Agent Assistant icon, after the "Backup Started" message disappears, you will see a message telling you how many backups are running (concurrently). Typically, there will only be one running at a time.

You may also see Job Status messages (in the balloons and when hovering) such as:

- There is a failed Backup Job.
- There is a Backup Job with errors.
- A Backup Job has not run in a week.

Note: If your Agent is controlled by WebCC, you will have all the menu choices active. But if the Agent is controlled by WinCC, only the Exit will be active.

If you Exit the Agent Assistant, scheduled backups will still occur, but you will not see the status messages here. If you want to restart just the Agent Assistant, go to "Program Files" on your installation disk, "EVault InfoStageAssistant" and run the program called "Maestro.exe".

2. Agent Configuration

2.1 Introduction

These steps are described from the point of view of a User on a newly installed System. They will "get you going" to be able to do a Backup. The Windows "CentralControl Operations Guide" manual and Help, or the WebCC On-line Help describes all the features, options and further details of the CentralControl program.

An Agent collects and readies the backup data, then runs and monitors Backup Jobs. You can manage and control many Agents through one CentralControl application (GUI). An Agent may have multiple Jobs.

A Job defines the parameters associated with a Backup, Restore, or other commands. Examples of parameters include: file selections and filters, compression, and encryption settings. A Job always belongs to only one Agent. Job names are unique on that Agent.

A Profile defines the Vault configuration that will be used by your Agent. It matches a Job to an account on a Vault. The Job uses the Profile to validate the Backup to the Vault, and to know where to put the Backup. A Profile may be used by more than one Job.

Briefly, the steps in the configuration are:

1. Create an Agent Profile. This is the local name (used by the CentralControl) of the Agent program that will initiate the Backups. There is one Agent Profile name per Server that needs to be backed up.

2. Save the default Workspace as a named Workspace (the default is "MyWorkspace"). To save all your configurations (Agents, Jobs and options) you must save your Workspace with a name of your choice, or use the default. You may have more than one Workspace saved, but only one open at a time.

3. Configure the Vault (with Agent Configuration – i.e.: Agent Properties). You create a Profile, with the properties of this Agent, to connect with your account on the Vault. Some Users may have only one Profile to service their one account (i.e.: all Agents backup to the one account). Others may have multiple Profiles (and accounts) on one or more Vaults.

4. Create a Job. Each Agent on the CentralControl has Jobs with names unique to that Agent. Other Agents may have similar or different Job names, even if they do similar functions. A named Job can be one of many used to do different types of Backups, in different ways, at different times. When you create a Job, you specify the Profile created above, to allow you access to the Vault (i.e.: your account).

5. Schedule the Job. The Job can now be run automatically, at times determined by you. All Jobs can also be run "manually" (ad hoc) when desired.

Once these configuration steps (described further in this chapter) have been completed, you will be ready to run a Backup. Backups are described in the next chapter.

2.2 Create an Agent Profile

This is the named function that will define and authenticate an Agent. You may (at this stage, when you create the Agent) continue right through to creating a Job, configuring the Vault, and running the Backup. This chapter will describe the steps for configuration only. Backups are described in the next chapter.

To create an Agent Profile, you must have the Workspace selected (highlighted).
From here, you may either:

- From the drop-down menus, use File -> New Agent, or
- Right-Click on the Workspace, and then click on New Agent.

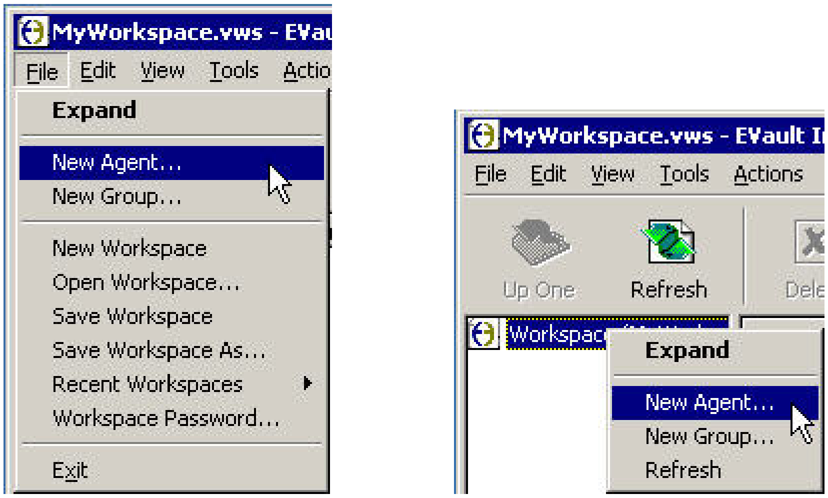
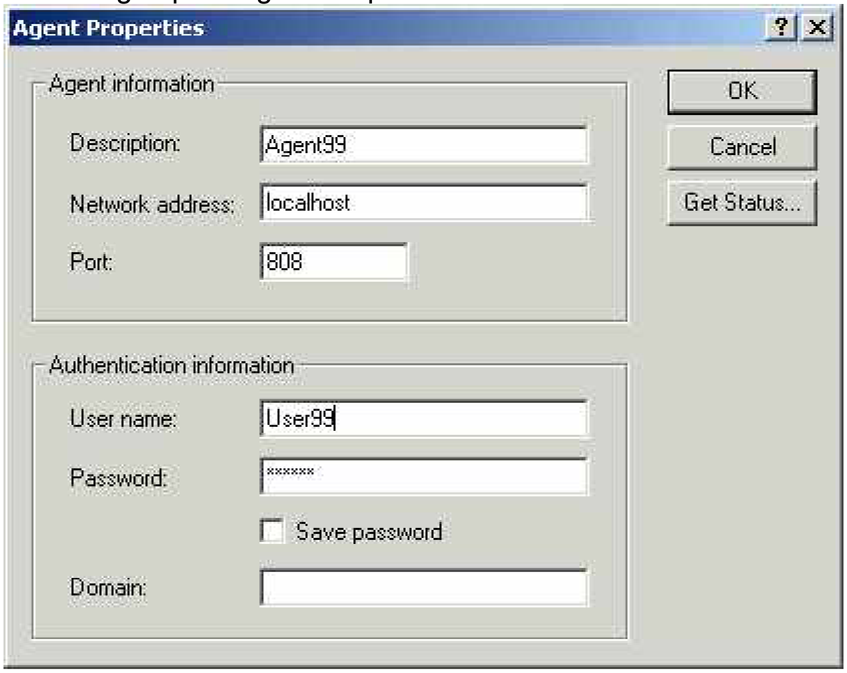


Figure 3. - Create an Agent Profile.

This brings up an Agent Properties screen.



Agent Properties

Agent information

Description: Agent99

Network address: localhost

Port: 808

Authentication information

User name: User99

Password: ******

□ Save password

Domain:

Figure 4. - Agent Properties

Agent Information:

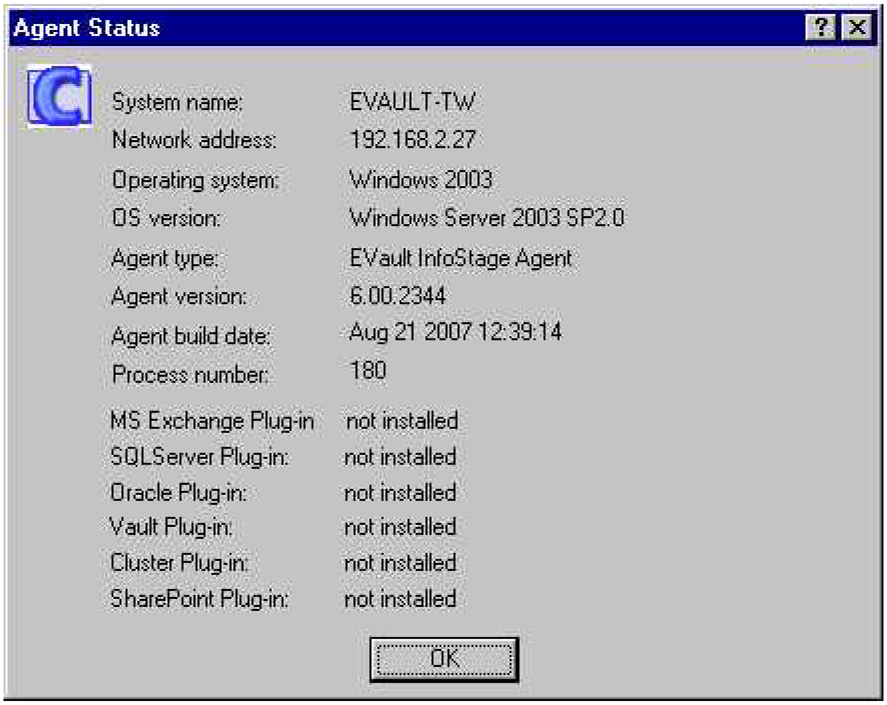
- Description: a description meaningful to you.
- Network Address: either the IP or DNS name of the Server the Agent software is on (i.e.: the one you are going to Backup).
- Port: the communications port number reserved for this service (the default is 808).

Authentication information:

- User name: authentication to communicate with the Agent Service.
- Password: Password assigned to the User above. Note that the password is case sensitive.
- (Check to save the Password): saves the Password on this machine with the CentralControl.
- Domain: Windows domain (if applicable).

Click the **Get Status** button to test to ensure the communication is valid and you can access the remote Agent. If not, check with your support or Vault service provider. Click **OK** to exit the Status window.

Click **OK** if finished, and exit the New Agent window, or **Cancel** to Quit without saving. Your new Agent's name will now show up in the left pane of the CentralControl GUI.



System name:	EVAULT-TW
Network address:	192.168.2.27
Operating system:	Windows 2003
OS version:	Windows Server 2003 SP2.0
Agent type:	EVault InfoStage Agent
Agent version:	6.00.2344
Agent build date:	Aug 21 2007 12:39:14
Process number:	180
MS Exchange Plug-in	not installed
SQLServer Plug-in:	not installed
Oracle Plug-in:	not installed
Vault Plug-in:	not installed
Cluster Plug-in:	not installed
SharePoint Plug-in:	not installed

Figure 5. - Check Agent Status.

In this screen, and others in Windows CentralControl, you may use the "What's This?" help (the '?' in the upper right corner, or right click on a field) for further information on the fields, as well as the main Help menu (F1) for general help. Or, you may reference the "CentralControl Operations Guide".

2.2.1 Agent Groups

Normally, when you create (add) a single New Agent, you enter six pieces of information (not counting the “Save password” checkbox):

- Description
- Network address
- Port
- User name
- Password
- Domain

Agent Groups allow you to add multiple agents at one time with a user-created text file containing agent information. This is a faster and easier way for an administrator to add many similar Agents to a system.

When you first create a group to logically hold Agent names, it is empty. Instead of adding the names individually, as if they were new, the Group function allows you to add a “block” of them using a csv (Comma Separated Value) text file that you create.

Later you can propagate the agent configuration (vault registration, retention and notification), and Job and schedule configuration to all of the agents in that group.

This function is described in detail in the “Agents Groups” section in the “CentralControl Operations Guide” manual.

2.3 Save the Workspace

A workspace is a convenient means to organize your Backup environment into manageable pieces. You can create as many workspaces as necessary to represent logical groups in your network Backup environment. For example, a workspace might be created for each physical location or department in a large company.

Within each workspace, Agents and Jobs are created. Each of these organizes and defines various parameters of the Backup process. They manage the regular Backup activities within a network.

To save all your configurations (Agents, Jobs and options) you must save your Workspace with a name of your choice (or you may leave it at the default “MyWorkspace”).

The CentralControl program will prompt you to save any changes, before you exit CentralControl. You may have more than one Workspace saved, but only one open at a time.

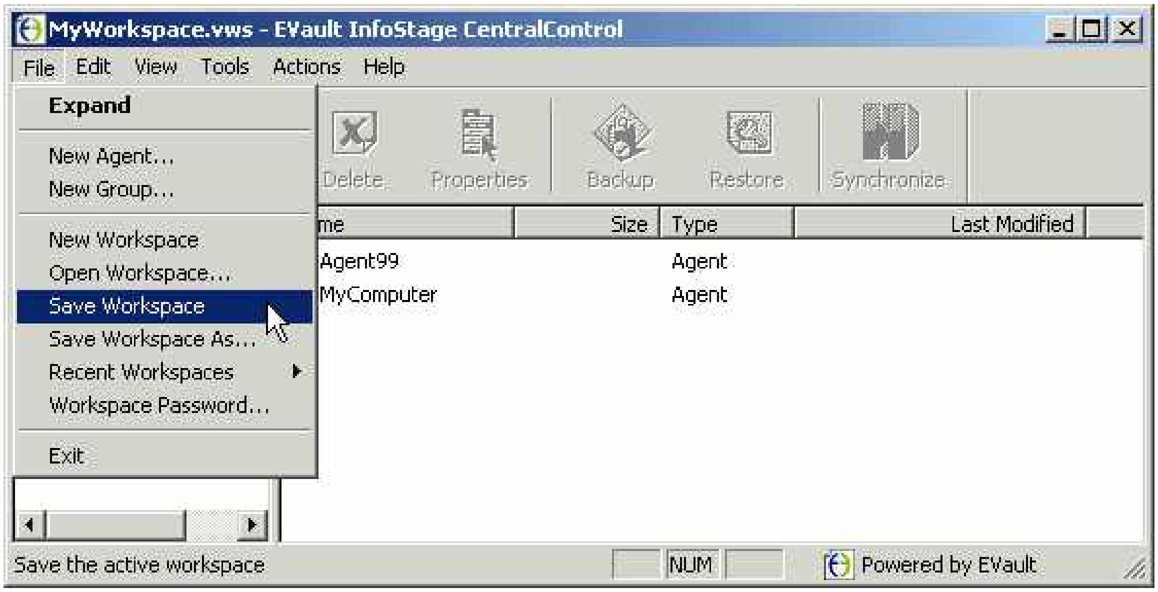
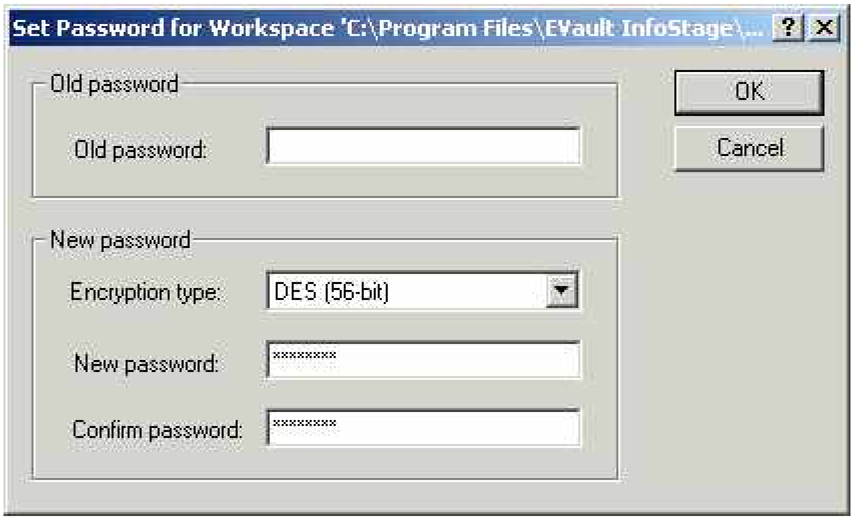


Figure 6. - Save the Workspace.

With the workspace selected (highlighted) you may choose “Save Workspace” or “Save Workspace As …” to save it.

Choose a name meaningful to you, for your Workspace. As well as saving the current Workspace as a new name, you may create new Workspaces, open existing ones, just save the current one (with changes), and see the recent ones.

Because a Workspace contains important User names and Passwords necessary for access to do Backups, it is advisable to optionally encrypt these Workspaces (with a Workspace Password) so that unauthorized Users cannot gain access to them.



Set Password for Workspace 'C:\Program Files\EVault InfoStage\...

Old password

Old password:

New password

Encryption type: DES (56-bit)

New password: ********

Confirm password: ********

Figure 7. - Set Workspace Password.

The "Workspace Password" option allows you to add or change a Password, as well as choosing an encryption type, with different cipher strengths.

If this is the first time that you are using a Password here, there will not be an "Old Password", so leave that field blank.

Select an encryption type, and create a New Password (case sensitive, up to 31 characters). The different types have different cipher strengths, ranging from DES-56 to AES-256.

- None – no password
- DES 56 bit
- Blowfish 56 bit
- TripleDES 112 bit
- Blowfish 128 bit
- AES 128 bit
- AES 256 bit

Confirm (re-enter) the password and click **OK**. The actual password is not displayed as you type it in. It is shown here as asterisks (the "star" character), for security reasons.

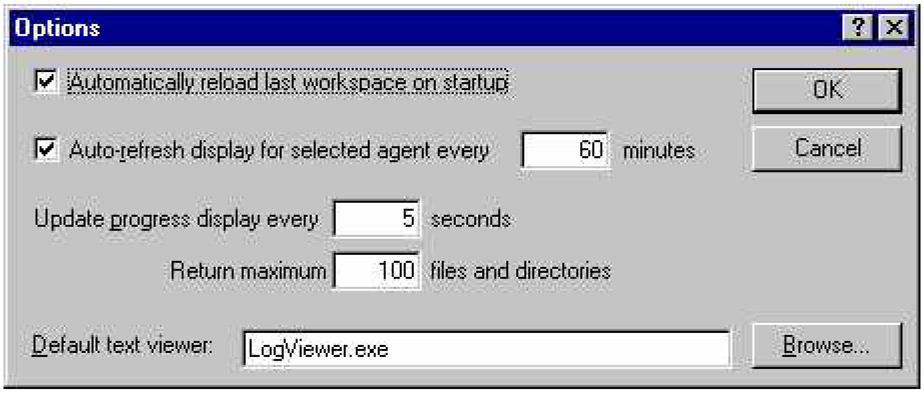
You are prompted for this password each time you open the Workspace. If you lose this password, you will have to recreate the Workspace.

In this screen, and others, you may use the "What's This?" help (the '?' in the upper right corner, or right click on a field) for further information on the fields, as well as the main Help menu (F1) for general help. Or, you may reference the "CentralControl Operations Guide".

Note: If the F1 Help screen is open (even minimized) the "What's This?" help will not be active. The F1 help must be closed for the "What's This" help to function properly.

2.3.1 Options

From Tools -> Options, you can set workspace options, as well as options for other functions.



☑ Automatically reload last workspace on startup

☑ Auto-refresh display for selected agent every 60 minutes

Update progress display every 5 seconds

Return maximum 100 files and directories

Default text viewer: LogViewer.exe

Figure 8. - Workspace Options

Automatically Reload Last Workspace on Startup:

Automatically loads your last saved workspace when you start the CentralControl application. If not set, you must select one manually. If there is a password on the workspace, it will prompt you for it on every startup.

Auto-Refresh Display for Selected Agent every <#> minutes:

This global value applies to all Agents, but only refreshes the one that is selected (highlighted). It will be polled for changed information every <#> of minutes (an integer value from 60 to 1440), to refresh the screen display. You may also refresh the screen at any time with the Refresh button, or with the F5 function key.

Update Progress Display every <#> seconds:

Specifies the number of seconds (an integer from 5 to 10000), after which the Progress Monitor Display will poll the Agent for changed information.

Return maximum <#> of files and directories:

Shows the maximum number of files and directories (from 10 to 10000000) that will be returned at one time when you select to view them. This optimizes the system in cases where there may be large directories, and you have to wait while the filenames are read and displayed. If there are more returned than the number here, you will be prompted if you want to see them all.

NOTE: In the above three <#> fields do not use a separator, such as a decimal point, or comma in the fields

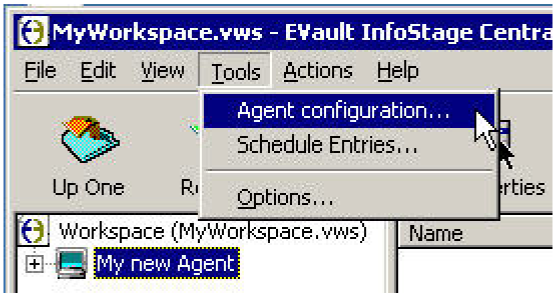
Default Text Viewer:

This is the viewer that is used to show logs (XML based), and other text based files.

2.4 Configure the Vault – Agent Configuration

These are the properties for this Agent to connect to your Vault. The settings are specific to an Agent, and affect all Jobs run under that Agent.

You can start the Agent Configuration from either the Tools -> Agent Configuration drop-down menus (with an Agent selected/highlighted) ...



... or by Right-Clicking on an Agent icon/name.

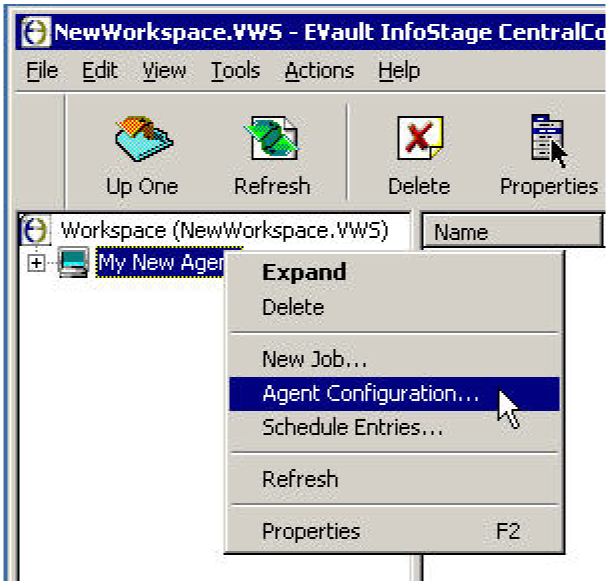


Figure 9. - Start Agent Configuration.

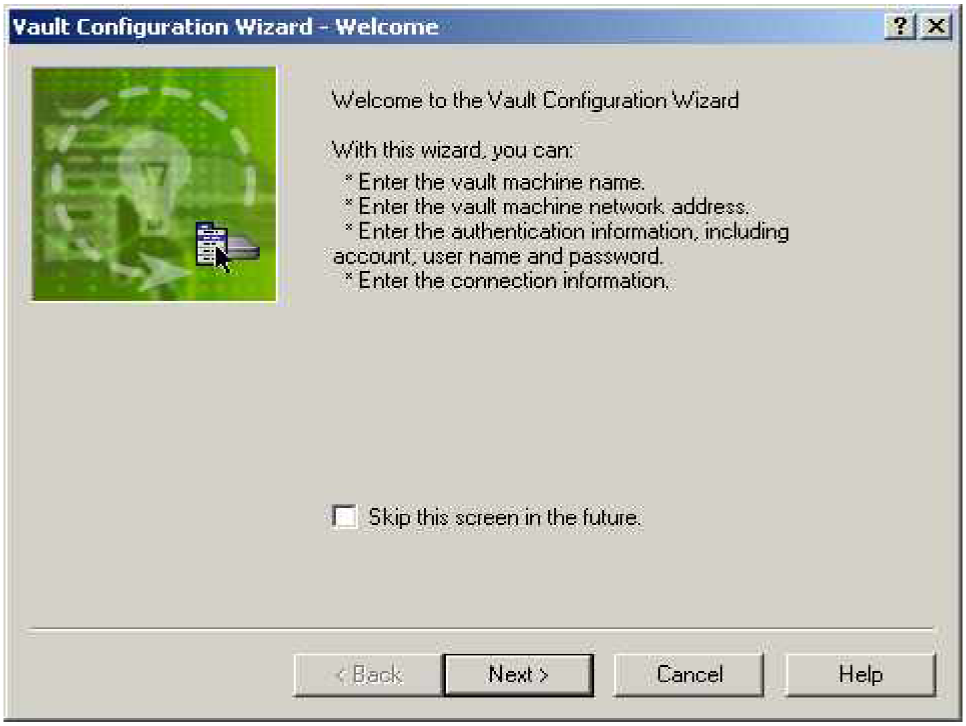
Starting the Agent Configuration shows a screen similar to Figure 11 (Agent Configuration Tabs). If you have the Vaults tab selected, and click on the "New" button, you will start the Vault Connection Wizard.

2.4.1 Configure a New Vault Connection

You must have a valid Agent configured first, before you can configure a vault to that Agent.

With an Agent selected, either right-click on it and choose Agent Configuration, or use Tools -=> Agent Configuration.

Agent Configuration -> Vaults -> New. You want to select a new (but already functioning) Vault, and enter the following information, supplied by your Vault service provider.



Vault Configuration Wizard - Welcome

Welcome to the Vault Configuration Wizard

With this wizard, you can:
* Enter the vault machine name.
* Enter the vault machine network address.
* Enter the authentication information, including account, user name and password.
* Enter the connection information.

□ Skip this screen in the future.

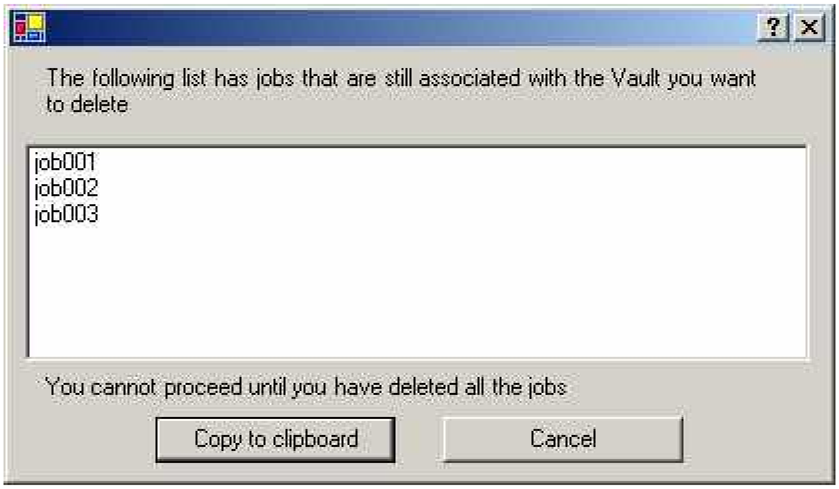
Figure 10. - Vault Configuration Wizard

You may not see this Welcome screen if the "Skip this screen in the future" box was previously chosen. The Vault Configuration Wizard continues and asks for:

- Registration: The first time is always New. (Re-Registration is used for changes to the Profile.)
- Profile Name: A name (meaningful to you) that points to your account on the Vault.
- Network Address: Vault machine address (IP or DNS). (There may be more than one address on the same machine.)
- Ports: Use a communication port.
- Reconnection: How to reconnect if there are communication problems. Also, you may choose to enable or disable Over The Wire (OTW) encryption.
- Authentication: Account, User name, and (31 characters maximum) Password to access your Vault account. Note that the password is case sensitive.

These fields are described in Section 3.3 of the "CentralControl Operations Guide".

Under the Agent Configuration screen, you can also add a new vault, or edit or delete an existing vault (connection). Note that you must have a vault selected (highlighted) to be able to edit or delete it.



The following list has jobs that are still associated with the Vault you want to delete

job001
job002
job003

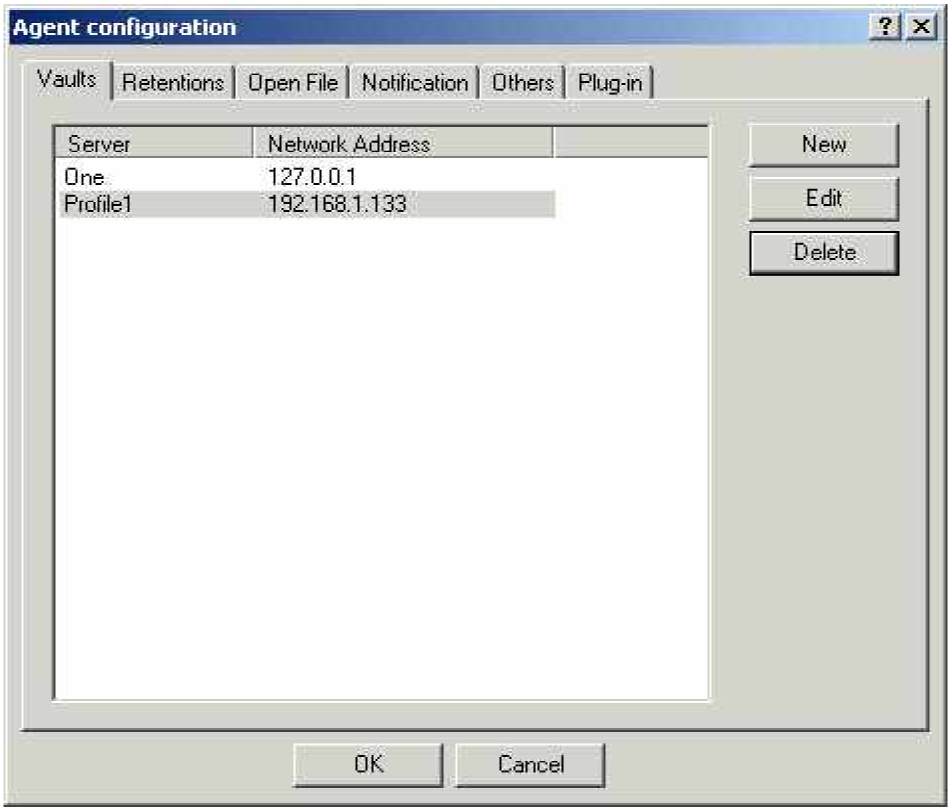
You cannot proceed until you have deleted all the jobs

Figure 11. - Can't delete a vault connection with jobs

If you try to delete a Vault Connection that has Jobs associated with it, you will be prompted to delete all of the Jobs (Jobs) first.

The "Copy to Clipboard" button allows you to capture the list of Jobs so that you can paste that list into Notepad, or a word processing document, for review.

2.4.2 Agent Configuration Tabs



Server	Network Address
One	127.0.0.1
Profile1	192.168.1.133

Figure 12. - Agent Configuration tabs

The Agent Configuration screen has several tabs available. (Note that this figure shows an already configured Agent, not a new one.)

With some tabs, you can accept defaults, or change the parameters later. Some, like Notification, or Plug-In, you might not use here, depending on your System, and company/organization policies.

Vaults - Adds new Vaults or edits or deletes existing ones (empty, with no Jobs).
Retention: Decide on the number of days online, copies online and number of days archived for your Backups (Safesets). This can affect the cost of your Backups.
Open File: How do you want to handle open files during backups? OTM and OFM are third party products.
Notification: Do you want to be alerted by emails, to successful and/or failed Backups?
Others: Lets you optimize your Windows System with execution priority, and bandwidth throttling.
Plug-Ins: Allows you to set and use optional Plug-In software. See the **Plug-In** manuals. *(Note that this tab will not be shown in systems that don't use Plug-Ins.)*

In this screen, and others, you may use the "What's This?" help (the '?' in the upper right corner, or right click on a field) for further information on the fields, as well as the main Help menu (F1) for general help. Or, reference the "CentralControl Operations Guide".

Note: If the F1 Help screen is open (even minimized) the "What's This?" help will not be active. The F1 help must be closed for the "What's This" help to function properly.

2.4.3 Re-Registration

If you “delete” an Agent from a Vault, you are deleting the actual profile on the Agent PC. If you then add that same Agent (it uses the Agent’s computer name) to the Vault, the Vault recognizes it and prompts you for a re-registration. This will also happen on a Restore From Another Computer.

The original profile is downloaded from the Vault back to the Agent, but in this case, it is minus several fields (you may not have all of these):

- the encrypted password, if you had used encryption on backups,
- the domain, username and password of the account used to perform a MAPI backup,
- the domain, username and password of the account used to backup SQL server,
- the domain, username and password of the account used to backup a networked drive.

You will receive messages similar to this example, in the error log, when a backup or restore fails, because of a re-registration, or restore from another computer situation.

```
PARS-W-0002   Due to a computer registration, configuration file
"weekend" is missing the following information:
PARS-W-0002   Enc_Password (Encryption Password)
 please use the CentralControl to re-enter the missing information.
```

In this version of the Agent, the agent re-registration process creates a "`register.log`" log file that reports any missing Job file settings. The log file can be viewed via the CentralControl once the re-registration has completed.

Any attempt to perform either a backup or restore using one of the affected Job files will fail until the Job file has been reconfigured. Should this failure happen, the backup or restore log file will contain information similar to that of the “register.log” indicating which Job settings are missing.

2.4.4 Cluster Support

The concept of a cluster involves taking two or more computers and organizing them to work together to provide higher availability, reliability and scalability than can be obtained by using a single system.

Clustering provides:

- multiple physical computers,
- shared storage,
- applications (such as MS Exchange, or MS SQL Server) can run on any computer in the cluster,
- reliability, by moving the applications to a “healthy” computer,
- transparency to the end user,
- a reduction in single point of failure (such as computer, memory, CPU, network),
- for “planned” outages (maintenance, configuration and upgrades).

When failure occurs in a cluster, resources can be redirected and the workload can be redistributed. Typically, the end user experiences a limited failure, and may only have to refresh the browser or reconnect to an application to begin working again.

A server cluster provides high availability by making application software and data available on several servers linked together in a cluster configuration. If one server stops functioning, a process called *failover* automatically shifts the workload of the failed server to another server in the cluster. The failover process is designed to ensure continuous availability of critical applications and data.

While clusters can be designed to handle failure, they are **not fault tolerant** with regard to user data. The cluster by itself does not guard against loss of a user's work.

Each node (physical computer) in a cluster configuration requires a separate installation of the EVault Agent. Each Agent installation requires a separate license.

The Agents are not “cluster aware”. This means that even if it is possible to do a backup/restore on a cluster, a failover of a node will cause the backup or restore to fail. In other words, the Agent does not automatically handle failovers. The user has to re-start the Jobs manually.

2.4.4.1 Virtual Server Agents

Microsoft provides Server Clustering Services (MSCS).

Multi-node clusters can be configured using different combinations of Active and Passive nodes. When a node is Active, it is actively handling requests. When a node is Passive, it is idle, on standby waiting for another node to fail.

From a GUI perspective, there is one “server” for each physical node and also one “server” in the GUI for each cluster virtual server. Virtual servers are marked with a different icon (see Figure 14).

Features:

- A user can connect to an Agent (with a Plug-In and proper license) on a Virtual Server or Local machine (a node) via IP or name.
- The Virtual Server Agent can backup virtual server shared data without re-seeding, or in case of a failover.
- Once created, Jobs (on a shared drive belonging to a virtual server) can be used by all Agents on the cluster.
- Scheduling of virtual server backups is handled between node Agents without schedule overlapping. The configuration files are located on the drive owned by the virtual server.
- Each physical node in a cluster configuration requires a separate installation of the Agent, each with a separate cluster Plug-In and license. You also need to enter the licenses of the Plug-Ins on the virtual server as well. The Cluster Plug-In should not be visible on the virtual server.

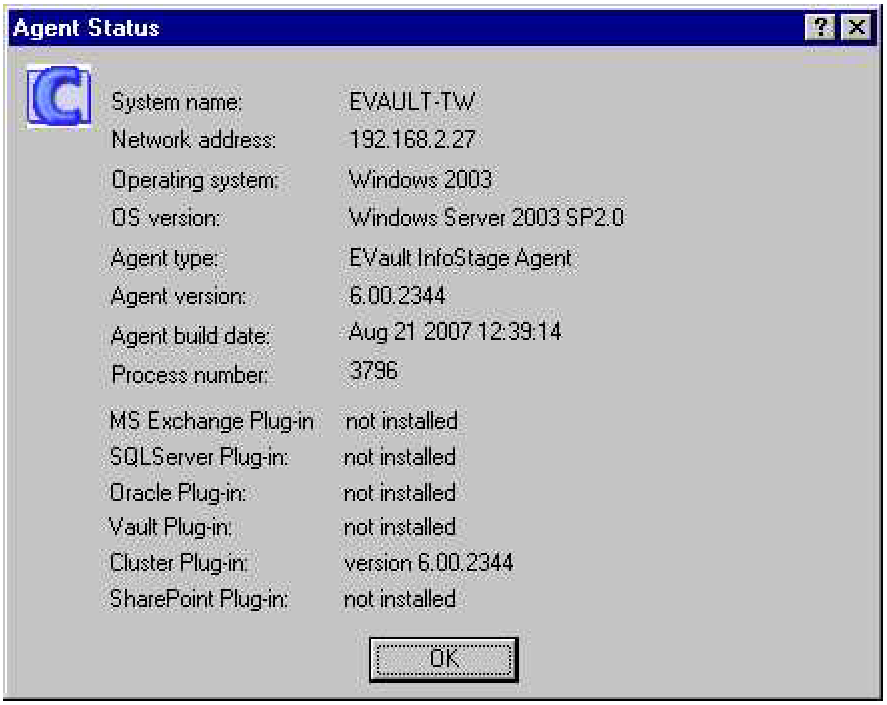
2.4.4.2 Cluster Support Plug-In

The main function of the Cluster Support Plug-In is for the Agent on a MS SQL or MS Exchange Server, which has a virtual IP address in the cluster, to be able to follow the server when it fails over to another node in a cluster.

The Agent can still access its configuration (on a shared drive), and scheduled backups will occur as usual, without it looking like a "different" backup and causing a reseed.

Agent Differences:

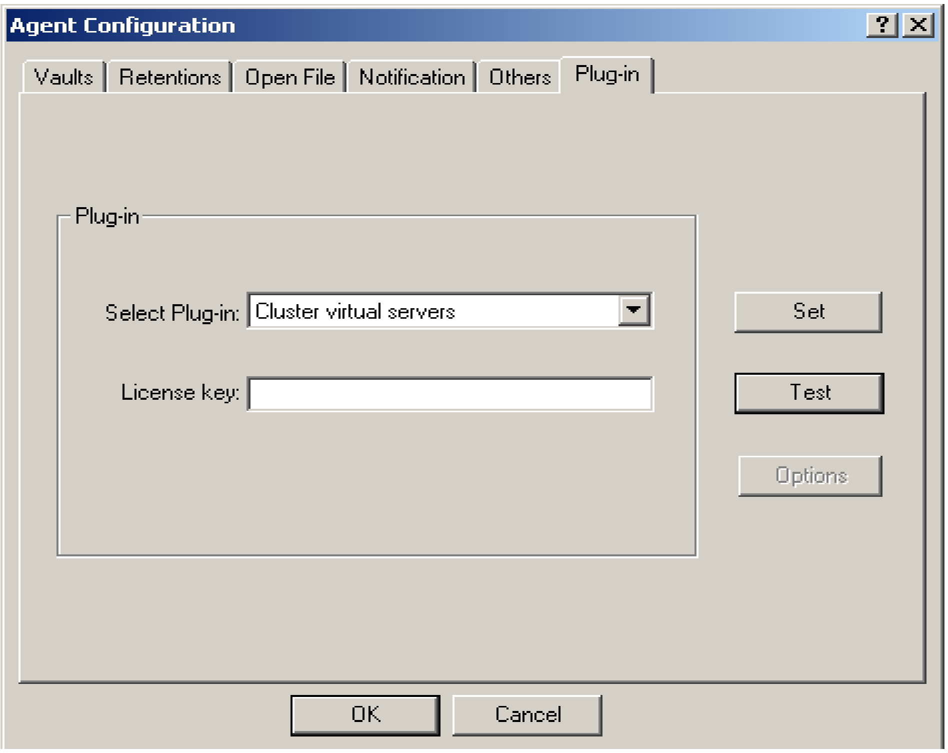
- At Agent installation time, you will have a choice of installing the Cluster Support Plug-In, which you must have installed and be properly licensed, to be able to use the Agent on clusters.



Agent Status

System name:	EVAULT-TW
Network address:	192.168.2.27
Operating system:	Windows 2003
OS version:	Windows Server 2003 SP2.0
Agent type:	EVault InfoStage Agent
Agent version:	6.00.2344
Agent build date:	Aug 21 2007 12:39:14
Process number:	3796
MS Exchange Plug-in	not installed
SQLServer Plug-in:	not installed
Oracle Plug-in:	not installed
Vault Plug-in:	not installed
Cluster Plug-in:	version 6.00.2344
SharePoint Plug-in:	not installed

Figure 13. - Cluster Support Plug-In

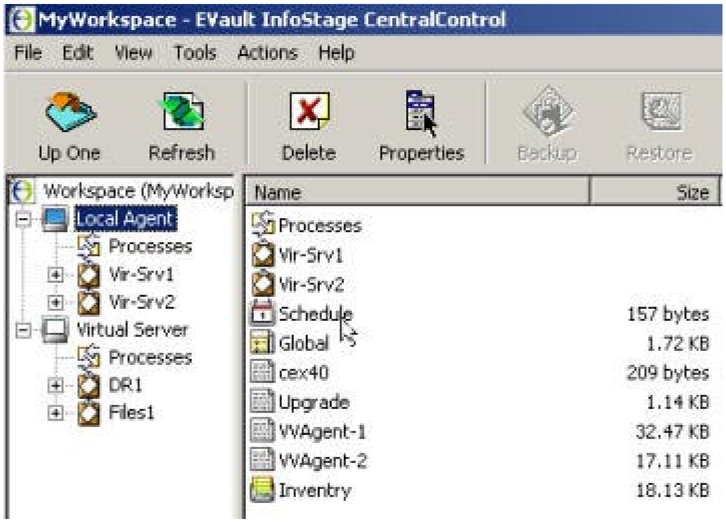


Select Plug-in: Cluster virtual servers

License key:

Figure 14. - Cluster Virtual Servers – Cluster Support Plug-In License

- When you first configure an Agent on a Virtual Server, you will be prompted for a location on a drive that the Virtual Servers see. So, after a failover, the Agent configuration will still be available to all servers.
- The icons representing the servers in the CentralControl are different, to represent a "regular" local Agent, and a Virtual Server Agent.



Name	Size
Processes	
Vir-Srv1	
Vir-Srv2	
Schedule	157 bytes
Global	1.72 KB
cex40	209 bytes
Upgrade	1.14 KB
VVAgent-1	32.47 KB
VVAgent-2	17.11 KB
Inventry	18.13 KB

Figure 15. - Virtual Server – Agent Icon

2.5 Create a Job

A named Job can be one of many used to do different types of Backups, in different ways, at different times.

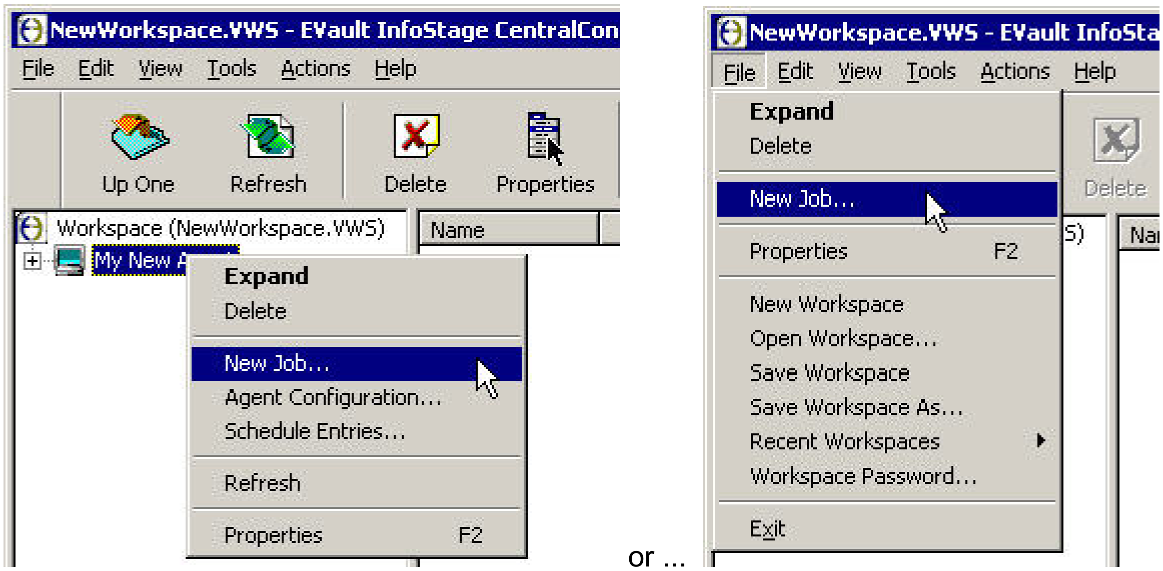


Figure 16. - Create a Job.

Select **New Job**, to start the New Job Wizard, a program that asks you questions and prompts for details regarding the new Job. See Chapter 4 in the "CentralControl Operations Guide" for more details.

- Job name – choose a unique Job name, meaningful to you. The name must be 1-30 characters in length and must consist of letters (A-Z and a-z), numbers (0-9) and/or _, -, $ (underscore, dash, dollar sign). (***Note***: The following names cannot be used as Job names when connected to an Agent: PRN, CON, LPT1, LPT2, LPT3, LPT4, COM1, COM2, COM3, COM4, NUL, AUX, Register, or Global.)

  Note: If the version of the Agent is 5.5 or lower, you will only be allowed 1-8 characters for the Job name.

- Backup source type – choose Local Drive only, or Network UNC Share, (there may be additional types and Plug-Ins shown here, depending on your system).

- Filename Encoding – Use "Default" if you are using a single language most of the time. Use "Unicode" if you use multiple languages on your system.

- File list Backup source - Data files; System State; RSM database; Event logs. You can include/exclude files and subdirectories here. (See the section below for more details.)

- Set the options – Quick File Scanning (on/off), Backup time Options (Disable Deferring) and Common File exclusion (filtering). (These are also accessible in the

Schedule Job Wizard.) See the "CentralControl Operations Guide" for more information.

- Select an encryption type – choose one from the list, or none. You must supply a Password if you choose to encrypt your data on the Vault. The data cannot be recovered if you lose the Password. Note that the password is case sensitive.

- Configure the logs – set log options and log copies. Choices here depend on your Backup activity, and your need for detailed logs and their length of retention. Changes here only affect the logs that will be created, not those already created.
  Note: The default choice to automatically purge expired log files means that when a safeset is expired, the log files will also be deleted. If you want to delete log files before the safeset expires, you can choose to keep the last "X" number of days of logs .In both cases you cannot keep the logs for longer than the safeset, unless you copy them off manually.

- Vault Profile – choose an existing one created earlier, or "branch out" from this Wizard and create a new one here (See Section 2.4.1).

- Finish – Run immediately, schedule a Backup, or just exit.

To do an "ad hoc" (on demand) Backup, you would choose to run this Job immediately. For this chapter, we are going to schedule the Job to run later. Choose either "Schedule a Backup" and go to the next section, or "**Exit**" and start the schedule in the next section.

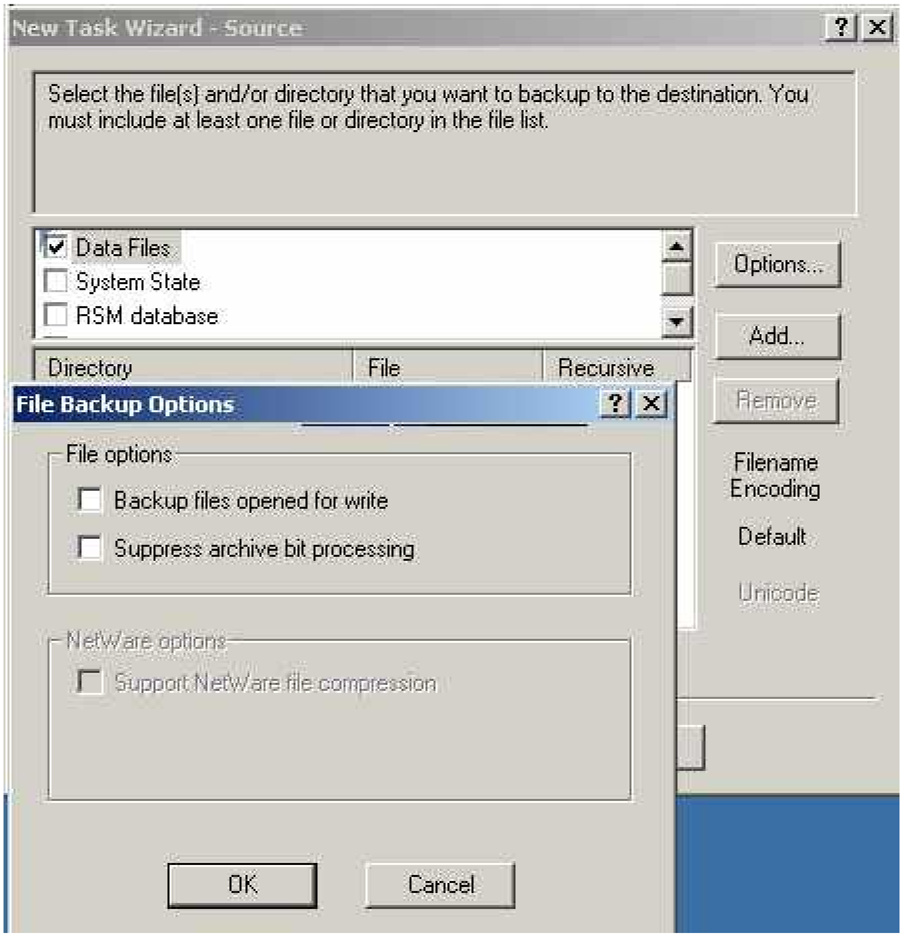
In this screen, and others, you may use the "What's This?" help (the '?' in the upper right corner, or right click on a field) for further information on the fields, as well as the main Help menu (F1) for general help. Or, you may reference the "CentralControl Operations Guide".

Note: If the F1 Help screen is open (even minimized) the "What's This?" help will not be active. The F1 help must be closed for the "What's This" help to function properly.

2.5.1 Adding Files and Directories to a new Backup Job

When you first create a Backup Job, you must include one or more files, or directories (folders). You may modify this list of files and directories afterwards.

In the New Job Wizard (described above), the Source screen asks you to select files and/or directories to be included in the Backup.



New Task Wizard - Source

Select the file(s) and/or directory that you want to backup to the destination. You must include at least one file or directory in the file list.

☑ Data Files
□ System State
□ RSM database

Directory	File	Recursive

File Backup Options

File options
□ Backup files opened for write
□ Suppress archive bit processing

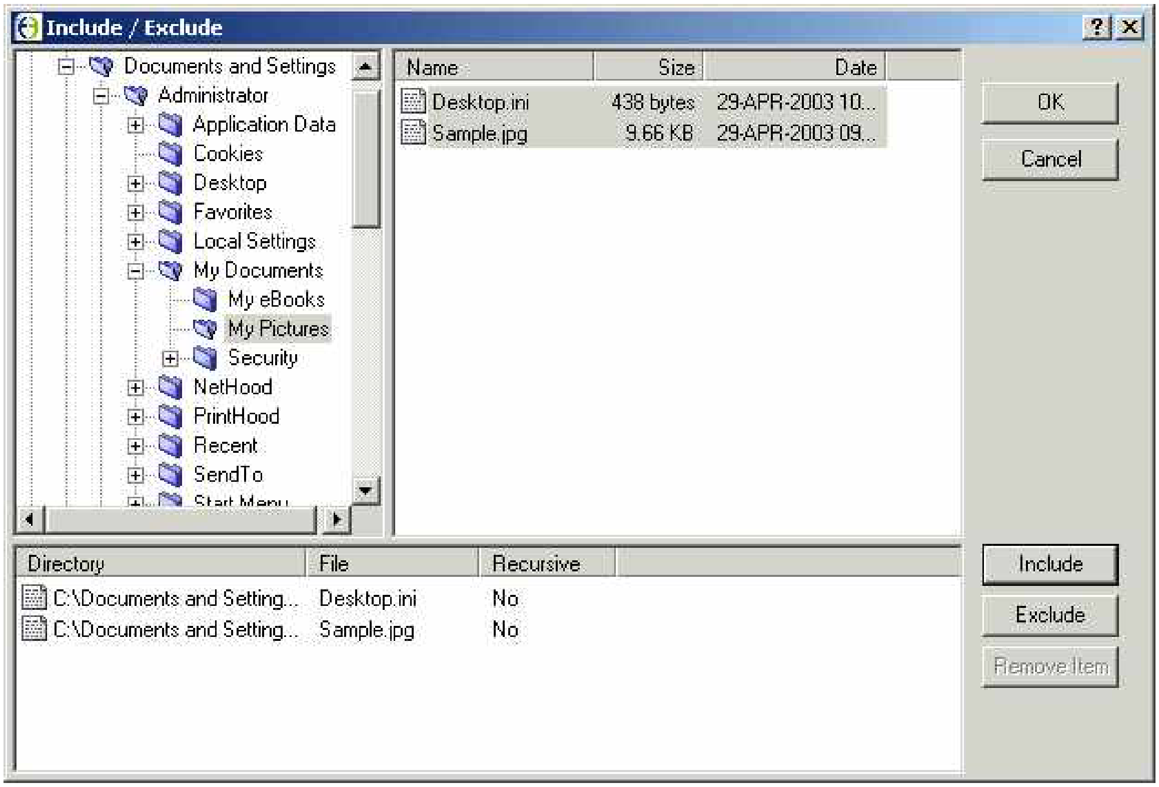
NetWare options
□ Support NetWare file compression

Filename Encoding
Default
Unicode

Figure 17. - Backup Source and Options

If you are selecting Data Files, the **Options** button allows you to select Backup files opened for write (that is, shared read, not opened exclusive), or Suppress archive bit processing. By default the Backup will clear the archive bit after a backup.

Click **Add** to start adding files/directories to the list to be backed up. This brings up the Include/Exclude screen, which displays a hierarchy of the disks and directories that you may select from for the backup.



Name	Size	Date
Desktop.ini	438 bytes	29-APR-2003 10...
Sample.jpg	9.66 KB	29-APR-2003 09...

Directory	File	Recursive
C:\Documents and Setting...	Desktop.ini	No
C:\Documents and Setting...	Sample.jpg	No

Figure 18. - Include/Exclude Directories and Files

You can "open" the tree in the left pane by clicking on the + signs. The files in that directory are displayed in the right pane, where you can select one or more files. Use the CTRL key and the mouse to select multiple files in that directory. Click **Include**. The file/directory names are moved to the lower part of the screen. The **Remove Item** button allows you to un-select names from this lower list, if you change your mind, before you click the **OK** button.

If you have a directory with a large number of files, and you want to select most of them, it might be easier to **Include** them all, and then **Exclude** (from the list) the ones you don't want.

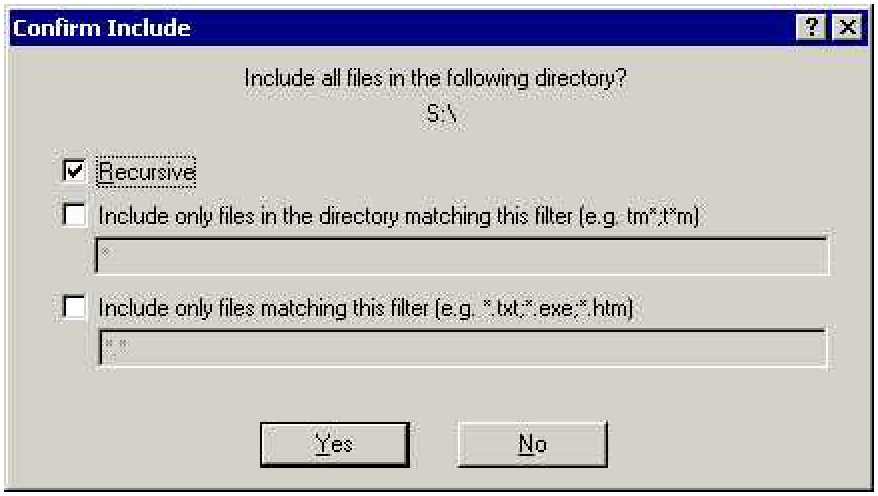
You should exclude any files and directories that will be busy (open) during the backup, and do not need to be backed up. This includes the directory where the Agent is installed. The backup will still work, but you will see error messages in the log file such as:

```
"error opening file …".
```

You may also select one directory (folder) at a time to be backed up. When you click **Include**, you will get a message asking if you want to include all files, or just some of them which match your selection criteria (filter).

Note that you must have the drive letter selected to properly show/select files in that drive.

If there is at least one item (file or directory) selected in a drive, the drive letter for that drive will change to an italicized letter. That is, for example, from **C:\** to ***C:\***



Confirm Include

Include all files in the following directory?
S:\

☑ Recursive

☐ Include only files in the directory matching this filter (e.g. tm*;t*m)

*

☐ Include only files matching this filter (e.g. *.txt;*.exe;*.htm)

.

Figure 19. - Confirm Include

"Recursive" means to include all files and directories below this directory. Otherwise you may choose to select certain files, depending on their names and extensions. A period (.) means a recursive directory.

Previously, if a file selection contained nested exclusions and inclusions, the exclusions would always take precedence. Now, the selection with the most detail will take precedence. This allows for nesting of multiple inclusions and exclusions. In these cases, the filtering will avoid traversing excluded directories.

2.5.1.1 Wildcards in File Names and Directories

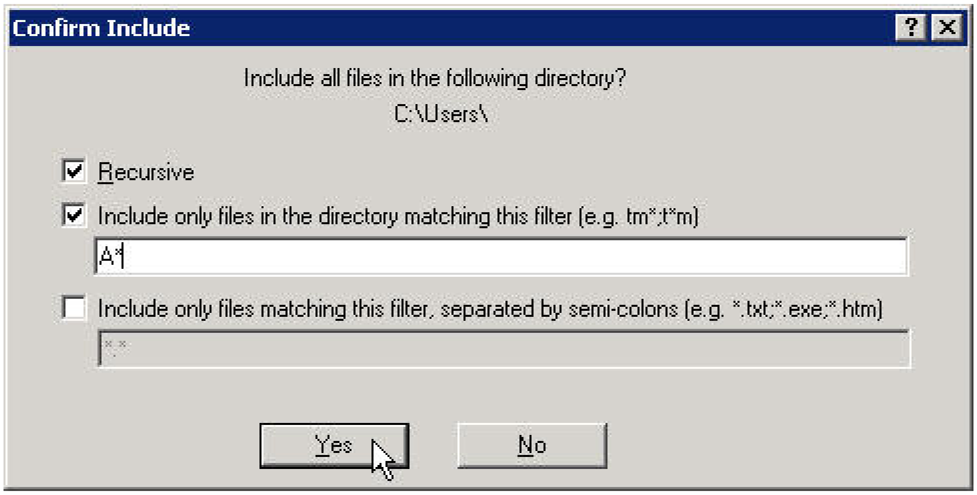
An asterisk (*) means all files with any (partial) name or extension, or a part (start, middle, end) of a Directory name.

A question mark (?) means a single character in a file name, or Directory.

2.5.1.2 Wildcards in Directory Paths

Wildcard path elements are handled and supported for Backup selections. The Director does not support or recognize wildcard folder selections for the purposes of Restore. The Agent supports wild-carded path elements for both inclusion and exclusion.

For example, assume you have on your server, a directory called "Users", and below it are directories for each user's name, in alphabetical order (C:\Users\<all the A's>, C:\Users\<all the B's> and so on until <all the Z's>. You want to be able to backup up all these user directories. If you just select "C:\Users" and select Recursive, you will get everything, in one backup. But as more users are added, the backup takes longer. What you want to do is break the backup into separate backups, with each taking a part of the data. For instance, one takes all the A to E, another takes all the F to J, or whatever "balance" you decide.



Include all files in the following directory?

C:\Users\

☑ Recursive

☑ Include only files in the directory matching this filter (e.g. tm*;t*m)

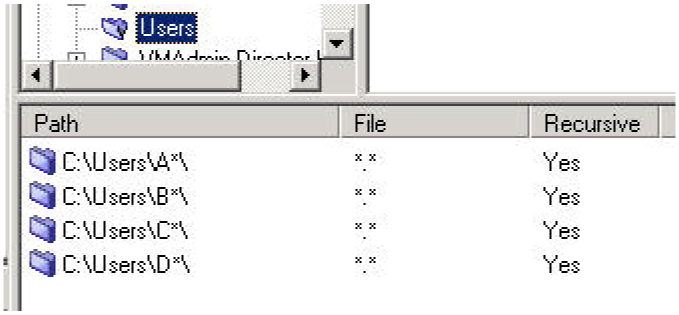
A*

□ Include only files matching this filter, separated by semi-colons (e.g. *.txt;*.exe;*.htm)

.

Figure 20. - Wildcard example

If you use a wildcard with each letter, A*, B*, C*, D*, E*, (and recursive) for one backup, you can get all the data, automatically including any new ones added, and excluding old ones deleted. Another backup Job may use F*, G*, H*, I*, J* (for example).



Path	File	Recursive
C:\Users\A*\	*.*	Yes
C:\Users\B*\	*.*	Yes
C:\Users\C*\	*.*	Yes
C:\Users\D*\	*.*	Yes

Of course, you can still filter further with "include only files matching this filter".

When you have finished selecting (and including) all the files and directories you want to be in this Backup Job, click **Yes** and you will be back at the Source screen, where you can click **Next** to continue the next step of the New Job Wizard. See the section on "Create a Job" above.

2.5.1.3 Wildcard Rules for Directories

In these examples, a path element" is a part of the path (\ …\ )of a directory. If the wildcards are not used in this way, you will see an error message. Note that the *.* at the end of the selection represents wildcards for the files. This is different than the wildcards for the folders.

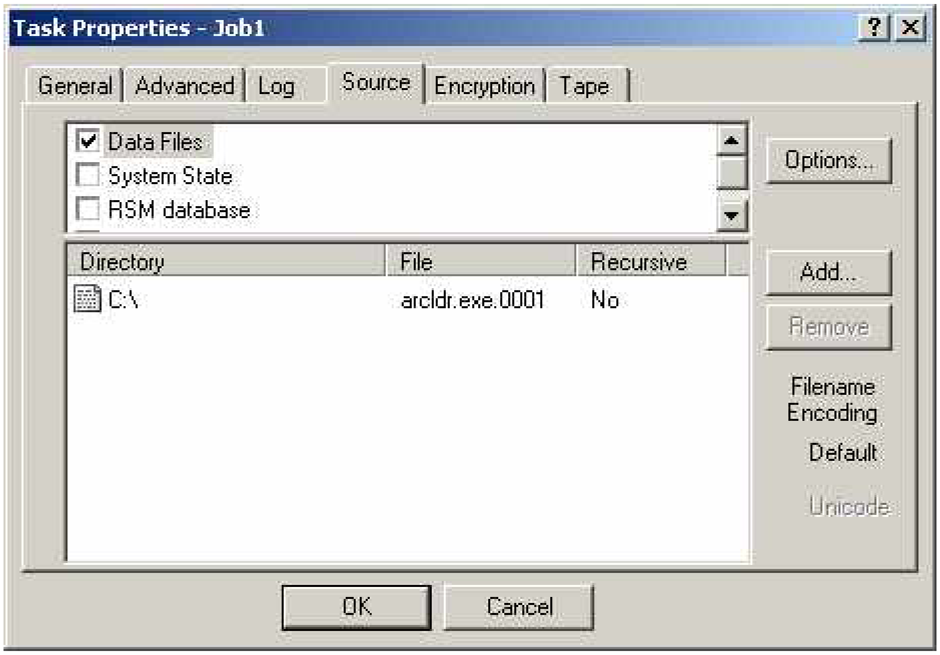
- Only the last path element of the selection can contain a wildcard:
    - · Supported: C:\Projects\A*\.*.*
    - · NOT supported: C:\P*\Active\.*.*
- A path element of a selection can only contain one wildcard:
    - · Supported: C:\Project*\.*.*
    - · NOT supported C:\P*j*\.*.*
- The wildcard can appear anywhere in the path element:
    - · Supported: C:\Project*\.*.*
    - · Supported: C:\*rojects\.*.*
- The Agent supports one path element with a wildcard per selection:
    - · Supported: C:\Projects\User*\.*.*
    - · NOT supported: C:\P*\U*\.*.*

2.5.2 Adding/Removing a File or Directory with an existing Backup Job

When you first create a Backup Job, you must include one or more files, or directories (folders). See the section above, on “Adding a File or Directory to your new Backup Job”. Later you may want to add or remove files or directories from the Backup Job.

Select a Job in the CentralControl window, and select “Properties” for that Job, either from the icons, or by right clicking or by using F2.

Select the “Source” tab in the Properties window.



☑ Data Files
□ System State
□ RSM database

Directory	File	Recursive
C:\	arcldr.exe.0001	No

Filename Encoding
Default
Unicode

Figure 21. - Source Tab in Job Properties.

This displays the existing list of files and directories for this Backup Job. You may select (highlight) one or more in the lower window, and click **Remove**. You will be prompted with a message “Are you sure you wish to delete the scheduled entry (or entries)?”

The **Add** and **Options** buttons work as described in the previous section on “Adding a File or Directory to your new Backup Job”.

Click **OK** when you are finished.

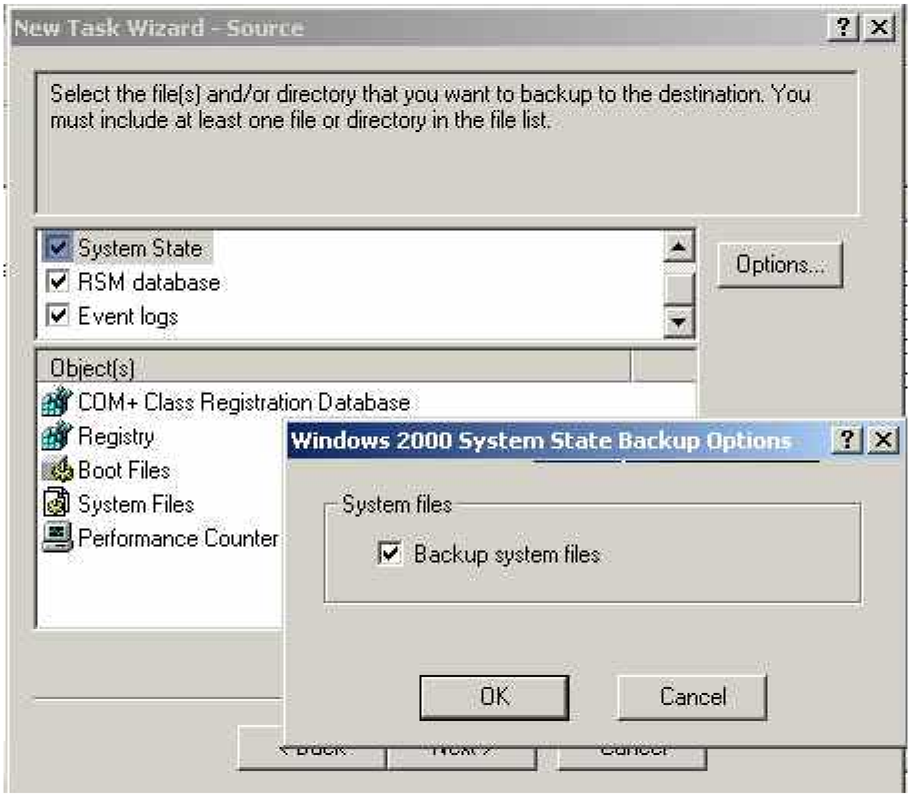
2.5.3 System State and System Files

Depending on the "Backup Type" (local or mapped drives) you chose in Job creation, you might be able to choose to backup the System State of the computer that has the Agent on it. The system state includes:

- COM + Class Registration Database
- Registry
- Boot Files
- System Files
- Performance Counter

Note that this list may be different, depending on your system.

If you click **Options** for System State, you are able to select/deselect including the System Files in the backup. By <u>not</u> selecting "Backup system files" you will see a red negation circle on the System Files icon, and they will not be included in the backup. The default is to have them included.



New Task Wizard - Source

Select the file(s) and/or directory that you want to backup to the destination. You must include at least one file or directory in the file list.

☑ System State
☑ RSM database
☑ Event logs

Object(s)
COM+ Class Registration Database
Registry
Boot Files
System Files
Performance Counter

Windows 2000 System State Backup Options

System files

☑ Backup system files

Figure 22. - System State and System Files

System files vary by system O/S and service packs. Usually there are several thousand of them. MS Windows makes a dynamic list of these DLLs when you include them in the backup.

Including the system files allows you to recover from corrupted system files, or if you accidentally uninstall some service packs, or want to recover with a bare-metal restore. It allows you to return to the state of the backup without having to reinstall the O/S from the installation kit, and then installing each service pack separately.

You should include the System State objects in a backup whenever you modify the Operating System.

2.5.4 Other Sources

If you chose a "Mapped Network drive only" you will be able to see and select only "Data Files" for inclusion in the backup.

If you selected "Local Drive Only" in the Backup Source Type, you will see "Data Files" plus you may have (depending on your operating system) "RSM database", "Event Logs", "IIS Metabase", "Terminal Services", and "Active Directory" to include in the backup.

Removable Storage Manager (RSM) facilitates communication among applications, robotic changers, and media libraries. It enables multiple applications to share local robotic media libraries and tape or disk drives, and manage removable media within a single-server system. RSM uses a database to store its persistent data.

To backup/restore RSM database the Agent uses a "Local Drive Only" Job (the same one as used for files or System State backup) but it has a special selection option called "RSM".

This option is always available on the CentralControl backup/restore interface if RSM service on the client is installed and functioning. To backup the RSM database, check the "RSM" option.

Event Logs – This backs up the Windows Event Logs. Event log databases store events that are viewed by using the Windows Event Viewer program. To backup all Event logs currently available on the system, select "Event Logs" checkbox on CentralControl backup interface:

To restore event logs select "Event Logs" checkbox on the CentralControl restore interface.

IIS Metabase - The backing up of IIS involves the backup of the IIS Metabase. The IIS Metabase is a database similar in structure to the Windows Registry. The IIS Metabase is optimized for IIS and provides a hierarchal storage and fast retrieval of IIS configuration properties for Web sites, Virtual directories, FTP Sites, SMTP and NNTP sites.

Terminal Services Licensing Database - Terminal Service licenses are stored in a database that needs to be properly handled during backup/restore. If Terminal services is installed and licensed on a Windows 2003 server, you will see this source option.

2000/2003 Active Directory - The Agent supports backups and restores of the Windows 2000/2003 Active Directory. It supports restoration of replicated data where the target is the primary AD server.

2.5.5 Performance

If the Agent is on a multi-cpu system, you can use multi-threading to improve the performance of backups and restores of files larger than 32KB.

There are three threading models available:

- *Single threading*. All the data processing is handled by a single thread.
- *Combined threading*. Data processing is divided up between two threads.
- *Block Processor threading*. Data processing is spread across four or more threads.

Threading Model User Options:

1. Default. With this option the Agent will check both backup settings and current hardware to determine which model it should use. This is the default setting used by the Agent.

   On a single CPU system, the Single threading model will be used.

   On a multi-CPU system the threading model used will depend on backup settings. If compression and/or encryption are turned ON, the Block Processor threading model will be used, otherwise the Combined threading model will be used.
2. Single. A Single threading model will be used.
3. Combined. The Combined threading model will be used.
4. Block Processor. The Block Processor threading model will be used with up to four processing threads.
5. Maximum Block Processor. The Block Processor threading model will be used with up to five processing threads.

Using the Options:

You can specify a threading model in the Job CFG file, or on the command line with VV.EXE:

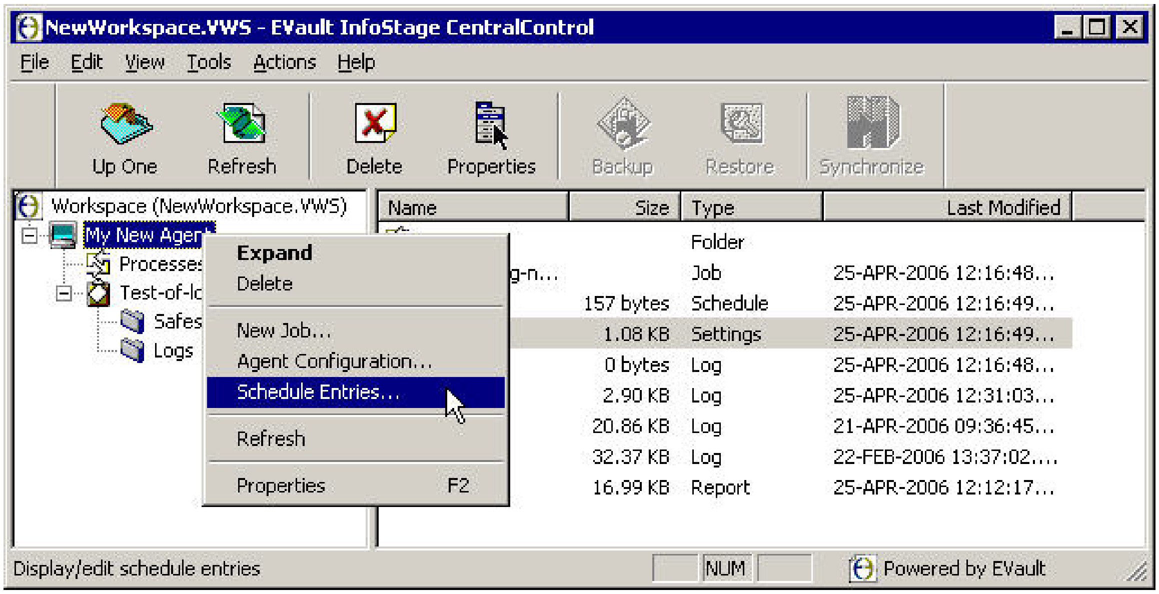
1. "Backup" section of the job configuration file: `Thread_Model = Default`
Possible values: Default, Single, Combined, BlockProcessor or MaximumBlockProcessor.

2."Restore" section of the job configuration file: `Thread_Model = Default`
Possible values: Default, Single, Combined or BlockProcessor. (Notice that there is no "MaximumBlockProcessor" option here.)

3. At the command prompt, specify: `"/ThreadModel=Value"`, where Value is one of the options above. (For example "/ThreadModel=Single").

2.6 Schedule the Job

A Job (a Backup or Synchronize, but not a Restore) can be run at pre-determined (scheduled) times. All Jobs can also be run “manually” (ad hoc, or unscheduled) when desired.



Name	Size	Type	Last Modified
		Folder	
g-n...		Job	25-APR-2006 12:16:48...
	157 bytes	Schedule	25-APR-2006 12:16:49...
	1.08 KB	Settings	25-APR-2006 12:16:49...
	0 bytes	Log	25-APR-2006 12:16:48...
	2.90 KB	Log	25-APR-2006 12:31:03...
	20.86 KB	Log	21-APR-2006 09:36:45...
	32.37 KB	Log	22-FEB-2006 13:37:02....
	16.99 KB	Report	25-APR-2006 12:12:17...

Figure 23. - Schedule the Job.

Start the scheduling from **Tools -> Schedule Entries**, or right-click on an Agent. This brings up the Schedule List screen. For a new installation, this will be empty.

Click New to add a new schedule. This will start the Schedule Wizard, which will take you through the steps to configure a schedule.

- Select a Command to schedule. You may choose: Backup, Synchronize, or Custom command. To perform a backup, choose “Backup”.

- Select a Job from the list. It shows the Target and Destination for each.

- Select a Backup type. (Note: This screen will not be displayed for a backup to a Vault). You would select Backup type and Processing Options for local disk or tape.

- Select a Retention. Choose Daily, Weekly, or Monthly from the list. This determines how long your Backup will be kept online.

- Set the Options. Choose Quick File Scanning (on/off), and Backup Time Options. (These are also accessible in the Create a Job Wizard.)
  Note: You may have MS Exchange options here. See the MS Exchange Plug-In User Guide.

- Select a Command Cycle. Choose Weekly, Monthly or a Custom Cycle for Backups. When you have selected one, and defined the days and times, the Wizard will finish. The command you have just created will now show in the Schedule List. You may Edit, Remove or Disable it. If you have more than one schedule in the list, you may move them up or down in position (priority), so that any conflicts are resolved by taking the parameters in the first (highest) one, and overriding any others.

- Click Finish when you are done the Wizard.

In this screen, and others, you may use the "What's This?" help (the '?' in the upper right corner, or right click on a field) for further information on the fields, as well as the main Help menu (F1) for general help. Or, you may reference the "CentralControl Operations Guide".

Note: If the F1 Help screen is open (even minimized) the "What's This?" help will not be active. The F1 help must be closed for the "What's This" help to function properly.

3. Performing Backups

Once all the Agent Configuration information has been entered, and a schedule set up, as in the previous chapter, the Backups will take place automatically.

On occasion, you may need to run a “one-time” Backup for a special reason. You can either use an existing Agent and Job (and modify it) or create one specifically for that Backup.

Seeding and Re-Seeding:

When you run your first Backup, a full backup (safeset) is created on the Vault. This first safeset contains all the data selected for backup and is called a "seed". Subsequent backups are deltas (changes in file) that are applied to the first full backup to create subsequent safesets. This way a current full backup is always available.

If the Agent detects changes, such as the encryption type or password changing, the next backup will be a re-seed.

In this case of a re-seed, your backup will take longer to complete and a message about re-seeding is created in the log file .

3.1 Running an ad hoc Backup

To start an un-scheduled (ad-hoc, or on-demand) Backup Job, and with a Job selected (highlighted) either:

- Choose Tools -> Backup, or
- Right-Click on the Job in the left pane, or
- Click the Backup icon (or use CTRL+B)

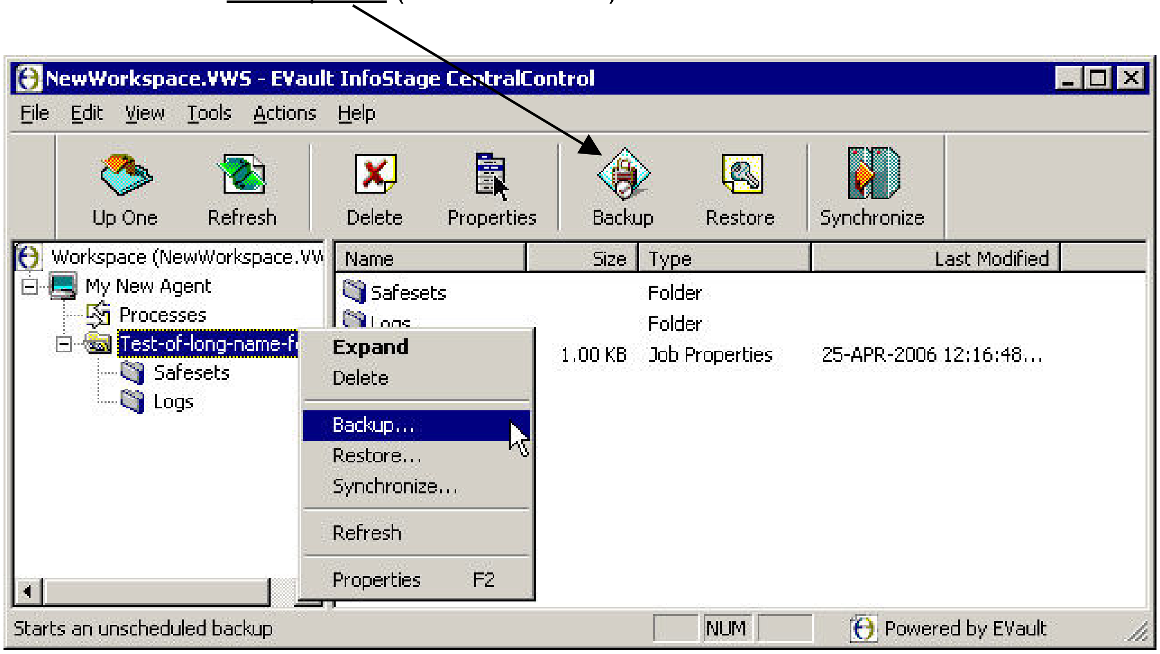
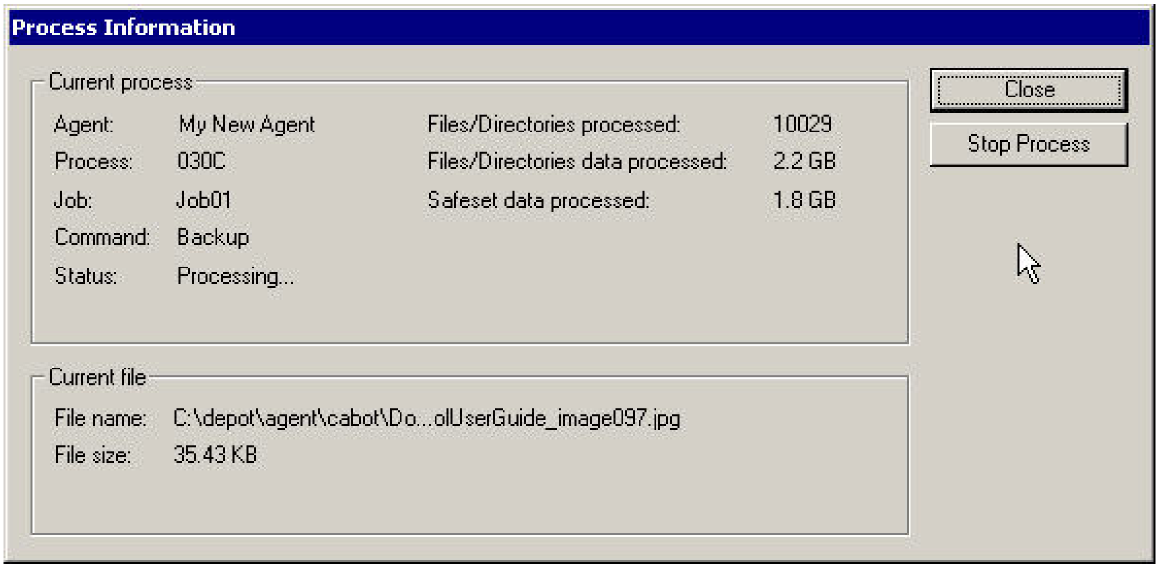


Figure 24. - Ad hoc Backups.

This starts the Backup Wizard, which asks you for:

- A destination (Vault, tape or directory on disk). You may choose “Skip further configuration and **Backup Now**”, or click **Next.**
- Backup type and options. Depending on your choice of Vault, tape or disk, make selections here for type and options. Note that a Vault Backup will skip over this screen.
- Retention scheme. Select a retention scheme: daily, weekly or monthly. This is the same as in the scheduling of Jobs.
- Options. Quick file scanning, and Backup time options. This is the same as in the scheduling of Jobs.
- Click **Finish** to complete the configuration and start the Backup.

As the Backup is running, you will see a Process Monitor screen that shows the progress of the Backup Job.



Current process

Agent: My New Agent
Process: 030C
Job: Job01
Command: Backup
Status: Processing...

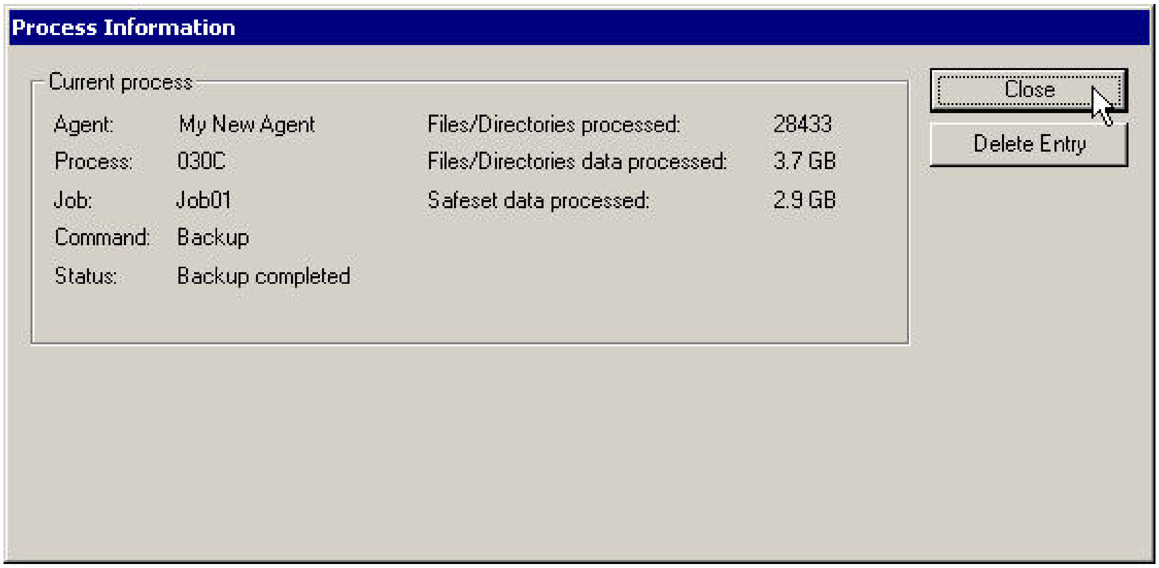
Files/Directories processed: 10029
Files/Directories data processed: 2.2 GB
Safeset data processed: 1.8 GB

Current file

File name: C:\depot\agent\cabot\Do...olUserGuide_image097.jpg
File size: 35.43 KB

Figure 25. - Backup Progress

Once the backup is completed, the Process Information screen can be Closed.



Current process

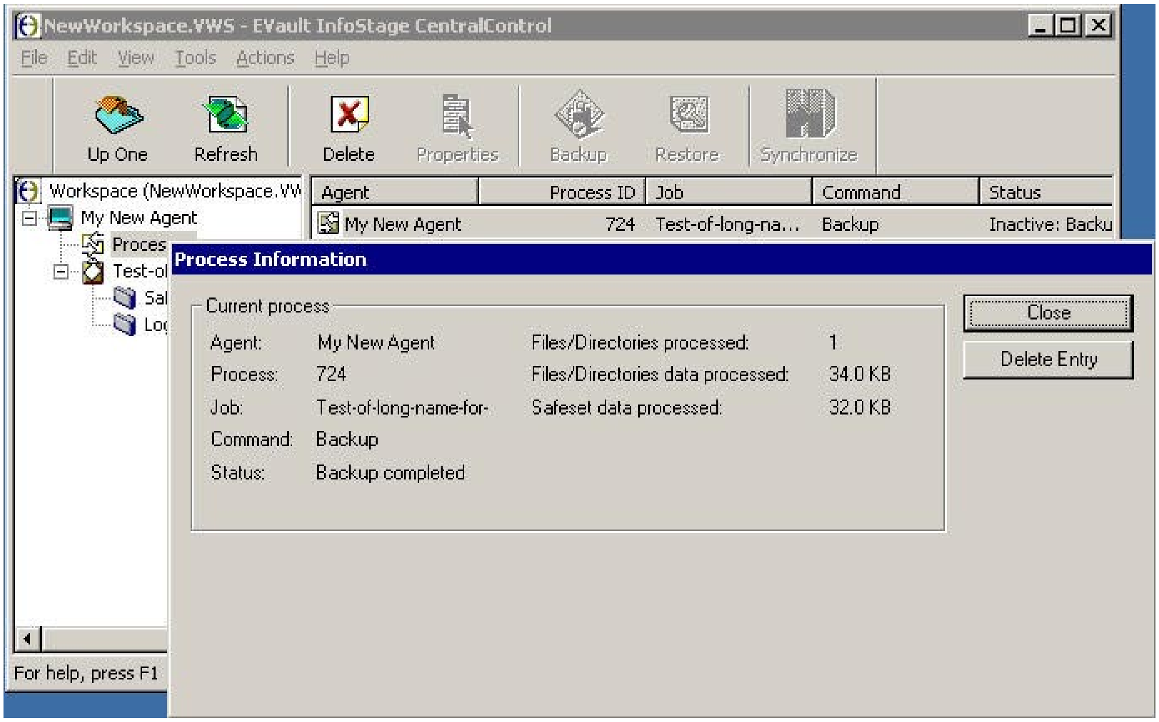
Agent: My New Agent
Process: 030C
Job: Job01
Command: Backup
Status: Backup completed

Files/Directories processed: 28433
Files/Directories data processed: 3.7 GB
Safeset data processed: 2.9 GB

Figure 26. - Backup Completed

3.2 Check the Backup results

After a Backup (scheduled or ad hoc) you can check the results for success, or any possible errors. Note that you may have chosen, in Agent Configuration, to be notified by email of successful and/or failed Backups. See section 3.2.4 for email notification examples.



Agent	Process ID	Job	Command	Status
My New Agent	724	Test-of-long-na...	Backup	Inactive: Backu

Agent: My New Agent

Process: 724

Job: Test-of-long-name-for-

Command: Backup

Status: Backup completed

Files/Directories processed: 1

Files/Directories data processed: 34.0 KB

Safeset data processed: 32.0 KB

Figure 27. - Checking Backup results.

3.2.1 Process Information - Backup

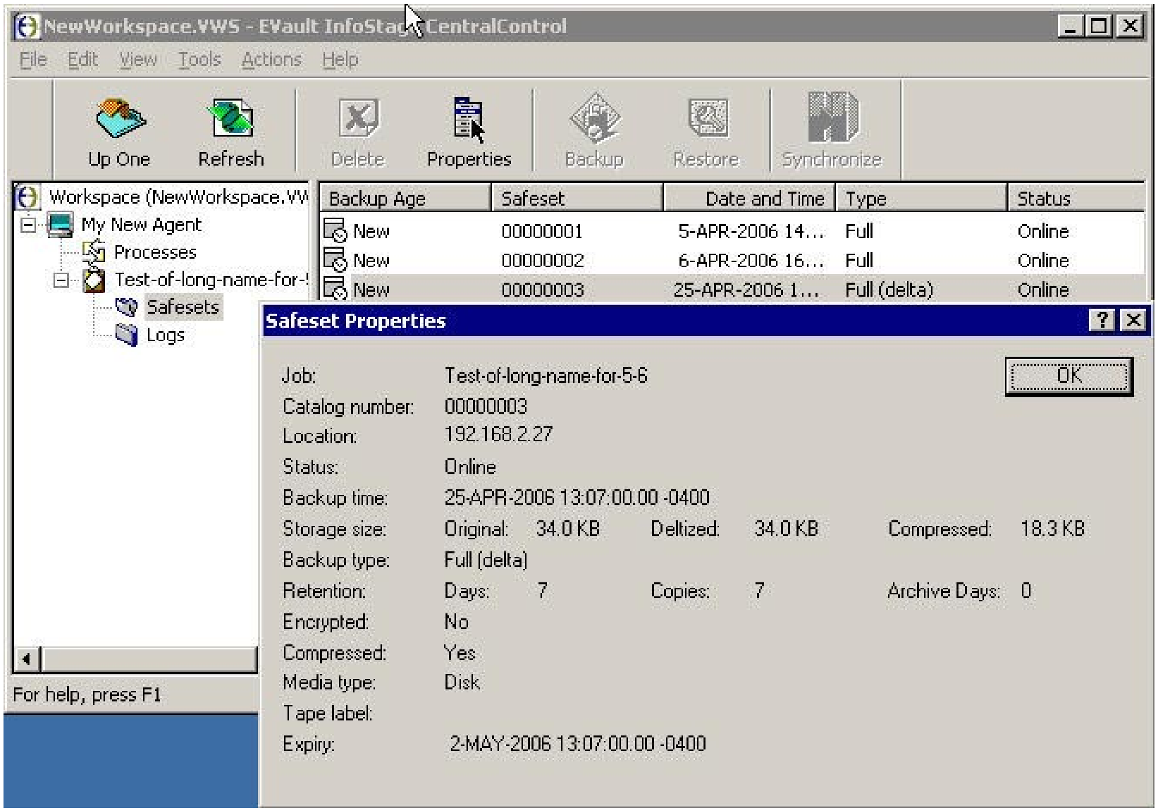
Processes are the “jobs” that the System has performed, such as Backups, Synchs, and Restores. If you select “Processes” in the left pane, you can see a list of processes. Double clicking on one will show you the details.

This Process Information will normally be deleted after approximately one hour in this list. Or you may delete it with the "Delete Entry" button. The information about the job is still retained in the log files.

To ensure an accurate (current) picture of the processes, you must perform a “Synchronize”.

3.2.2 Safeset Properties

Below each Job in the left pane are Safesets and Logs. Safesets are the ”sets” of Backup data (sequentially numbered) on the Vault. They remain until their retention date expires. Double clicking a Safeset will show you its properties.



Backup Age	Safeset	Date and Time	Type	Status
New	00000001	5-APR-2006 14...	Full	Online
New	00000002	6-APR-2006 16...	Full	Online
New	00000003	25-APR-2006 1...	Full (delta)	Online

Job:	Test-of-long-name-for-5-6				
Catalog number:	00000003				
Location:	192.168.2.27				
Status:	Online				
Backup time:	25-APR-2006 13:07:00.00 -0400				
Storage size:	Original: 34.0 KB	Deltized:	34.0 KB	Compressed:	18.3 KB
Backup type:	Full (delta)				
Retention:	Days: 7	Copies:	7	Archive Days:	0
Encrypted:	No				
Compressed:	Yes				
Media type:	Disk				
Tape label:					
Expiry:	2-MAY-2006 13:07:00.00 -0400				

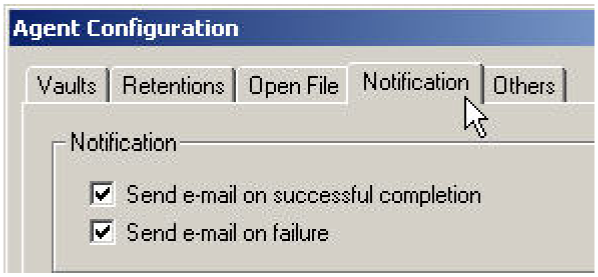
Figure 28. - Safeset Properties.

3.2.3 Log Files

Log files are the System transcripts of what happened while the Backup, Synch or Restore function was happening. Double clicking on a log will display the contents, which you can also print.

3.2.4 Email Notification

If you have configured the "Notification" tab, in Agent Configuration, and correctly entered the email information sections ("from address", "SMTP" address, and "to addresses"), then you can expect to receive emails about the success of the backup.



Notification

☑ Send e-mail on successful completion

☑ Send e-mail on failure

Figure 29. - Email Notifications

The following email example demonstrates a first backup, with all the selected data backed up. The second email example demonstrates that less data (only the delta) is sent after a seed.

The first time you run a backup, the data is "seeded". That is, all the data has to be copied from the PC to the vault.

```
        Agent: PCACCT
Date and time: 23-FEB-2006 10:17:26.25 -0500

The Job BACKUP DailyBak completed successfully.

BKUP-I-0000 errors encountered:                       36
BKUP-I-0000 warnings encountered:                      0
BKUP-I-0000 files/directories examined:           54,678
BKUP-I-0000 files/directories filtered:            9,731
BKUP-I-0000 common files excluded:                     0
BKUP-I-0000 files/directories deferred:                0
BKUP-I-0000 files/directories backed-up:          44,919
BKUP-I-0000 files backed-up:                      42,338
BKUP-I-0000 directories backed-up:                 2,581
BKUP-I-0000 data stream bytes processed:   6,973,189,793 (6.5 GB)
BKUP-I-0000 all stream bytes processed:    6,978,110,221 (6.5 GB)
BKUP-I-0000 pre-delta bytes processed:     6,978,110,221 (6.5 GB)
BKUP-I-0000 deltized bytes processed:      6,978,110,221 (6.5 GB)
BKUP-I-0000 compressed bytes processed:    5,095,823,625 (4.7 GB)
BKUP-I-0000 approximate bytes deferred:                0 (0 bytes)
BKUP-I-0000 reconnections on recv fail:                0
BKUP-I-0000 reconnections on send fail:                0
BKUP-I-0033 elapsed time 00:46:23
```

Some files were open, and were not backed up.

The data is deltized and compressed

The first time is longest, as all the data has to be sent.

For subsequent backups, only the changed (deltized) data is copied to the vault. This means less data transmitted, and less storage space taken on the vault. But, it is still a "complete" backup, and all the data (the original seed plus any changes) can be restored, if necessary.

```
        Agent: PCACCT
Date and time: 24-FEB-2006 10:15:18.89 -0500

The Job BACKUP DailyBak completed successfully.

BKUP-I-0000 errors encountered:                       48
BKUP-I-0000 warnings encountered:                      0
BKUP-I-0000 files/directories examined:           54,690
BKUP-I-0000 files/directories filtered:            9,736
BKUP-I-0000 common files excluded:                     0
BKUP-I-0000 files/directories deferred:                0
BKUP-I-0000 files/directories backed-up:          44,920
BKUP-I-0000 files backed-up:                      42,339
BKUP-I-0000 directories backed-up:                 2,581
BKUP-I-0000 data stream bytes processed:   6,973,190,632 (6.5 GB)
BKUP-I-0000 all stream bytes processed:    6,978,111,212 (6.5 GB)
BKUP-I-0000 pre-delta bytes processed:        34,083,596 (32.5 MB)
BKUP-I-0000 deltized bytes processed:         29,660,588 (28.3 MB)
BKUP-I-0000 compressed bytes processed:        8,711,184 (8.3 MB)
BKUP-I-0000 approximate bytes deferred:                0 (0 bytes)
BKUP-I-0000 reconnections on recv fail:                0
BKUP-I-0000 reconnections on send fail:                0
BKUP-I-0033 elapsed time 00:03:03
```

Less time is taken as only the changed data (delta) is sent to the vault.

The same data is processed, but much less data (only the delta) is sent to the vault after the initial seed.

4. Performing Restores

There are several circumstances or reasons you may want to do Restores.

- To recover one or more data files or directories. You can Restore them to their original location, overwriting any that are there, or Restore them to a different location on that disk, so that you can then decide on which files you want to copy (restore).
- To recover data that was backed up from one computer, to be Restored on another (similar) computer System.
- To recover a complete System (from the "bare-metal" up) when the original System has been lost.

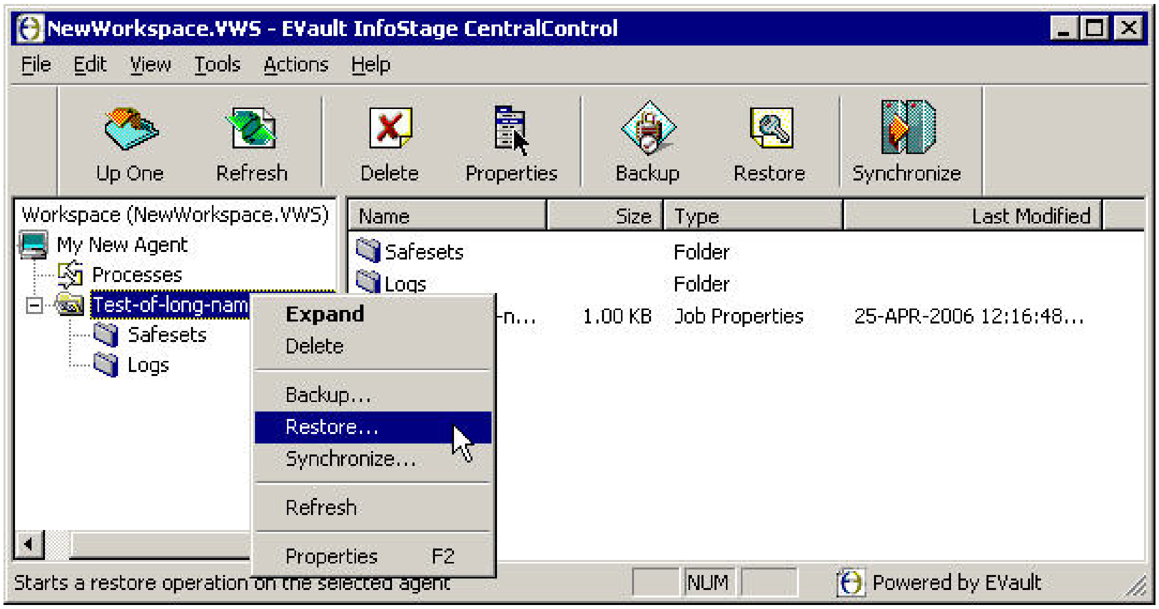
You can run multiple individual Restores at the same time (i.e.: simultaneous restores). Each one will start a new process, which you can monitor.

4.1 Restoring a Safeset

Restoring a Safeset is the most common usage, allowing you to recover anything from a single file to a complete directory structure.

To start a Restore Job, and with a Job selected (highlighted) either:

- Choose Tools -> Restore, or
- Right-Click on the Job in the left pane, or
- Click the Restore icon (or use CTRL+R).



Name	Size	Type	Last Modified
Safesets		Folder	
Logs		Folder	
-n...	1.00 KB	Job Properties	25-APR-2006 12:16:48...

Starts a restore operation on the selected agent

Figure 30. - Starting a Restore.

The Restore Wizard starts, and allows you to:

- Select a type of source device, Vault, tape or directory. Depending on what you choose here, you may also select a Vault and a Safeset, or a range of Safesets.

- Enter the Password if the Backup is encrypted. You may not see this screen if the Backup was not encrypted. If you have lost the Password, you cannot access the Backup data. Note that the password is case sensitive.

- Select the Restore objects (files or directories). You can expand the directories (if available) and select or deselect files to include in the Restore.

- Enter the Restore destination. You may choose to Restore files to their original locations, or to alternate locations; create sub-directories; overwrite or rename already existing files.

- Select the other Restore options. You may overwrite files that are locked; choose all streams or just data streams. You may choose to create a log file with different levels of detail.

Cross Catalog Searches:

You can search through all available catalogs when restoring files, without switching Restore Wizards.

In the Restore Wizard, when you select a source, you can specify a single safeset, or a range of safesets. For a range, you may chose a "from" and "to" in the two dropdown lists, to show multiple catalog entries.

For a single safeset, you must know, from the Job, data and safeset properties, which safeset you want to Restore.

Since cross catalog searches are done on all available safesets, all corresponding catalogs are loaded in case they are not present. The number of safesets could be high, so in case too many catalogs fail to load, you have the ability to "break" the search and display only the files that were found so far.

You cannot select System State when restoring from multiple safesets.

If you use renaming on Restores, it will only allow you to rename incoming files.

Restores are performed in order of older to newer ones.

4.1.1 File Restore Handling

You may choose from locations to restore your files, preserve directory structure and overwrite options here.

4.1.1.1 Original or Alternate Location

Original location or alternate location: If you choose original you may overwrite existing files. If you choose alternate, you may choose to create subdirectories.

4.1.1.2 Subdirectories

When restoring to an alternate location, you may choose whether or not to Restore your Backups in their original directory configuration. If you choose not to create sub-directories, all of your files will be Restored to one directory.

If you choose to Restore to the original location, the initial directory structure is recreated. When this option is selected, choosing not to create sub-directories has no effect.

To specify an alternate location, you can either enter the location in the text box or click on the **Browse** button to search for the location.

Note: If two files with the same name, but located in different volumes, are Restored to the same alternate location, CentralControl does not differentiate between volume names. The first file is Restored and then overwritten by the second file.

For example, a user copies some system files from C:\WINDOWS to D:\WINDOWS. After some time, the user Restores files from C: and D: to an alternate location. The first WINDOWS file is Restored and then overwritten by the second WINDOWS file. The Restored Windows directory will contain a mix of old and new files.

This issue can be resolved by restoring the files to separate alternate locations or to their original locations.

4.1.1.3 File Overwrite Options

- Rename files coming in from your Restore, so that they don't conflict with existing ones.
- Rename files that already exist, so that they don't conflict with restored ones.
- Do not restore existing files by overwriting the existing ones.
- Overwrite existing files with the restored ones.

Note: Renaming will append additional (cumulative) extensions to the file. These extensions start at .0001, the .0002, .0003, and so forth.

4.1.1.4 Overwrite if locked

If you choose to overwrite locked files, these files will be replaced after restarting the machine on which the Restore Job was performed.

Restoring the Registry or NDS are options that are related to performing complete systems recovery. The Windows Registry stores almost all of the custom data that Windows uses.

4.1.1.5 Restore all streams or just data streams

CentralControl stores the information from your files in various streams. The original data created by the user is called the Data Stream. Other information, such as security settings, alternate data for other operating systems and file reference information, is stored in separate data streams.

Restore all streams is selected by default. This option Restores all information streams and is recommended, provided you are restoring files onto a system with the identical operating system. If you wish to perform a cross platform Restore, select Data streams only. This option ensures that conflicts do not arise as a result of system-specific information streams.

4.1.1.6 Use all available bandwidth

This check box is on, by default. During backups you had a choice of using all bandwidth, or "throttling back" on a job, so that the network would not be overwhelmed with backup data, leaving others users with very little bandwidth for their daily tasks.

Typically you would want a restore to happen as fast as possible. But, you can choose to use only the bandwidth allocated during Agent Configuration.

4.1.2 Restoring from CD or DVD

The Agent will allow restores directly from a CD or DVD drive, without having to copy safesets to the hard disk first. CDs and DVDs with safesets are created by Vault personnel.

CDs typically can store around 700 MB, while a DVD will store about 4 GB.

There are several ways the safesets can be stored on the media:

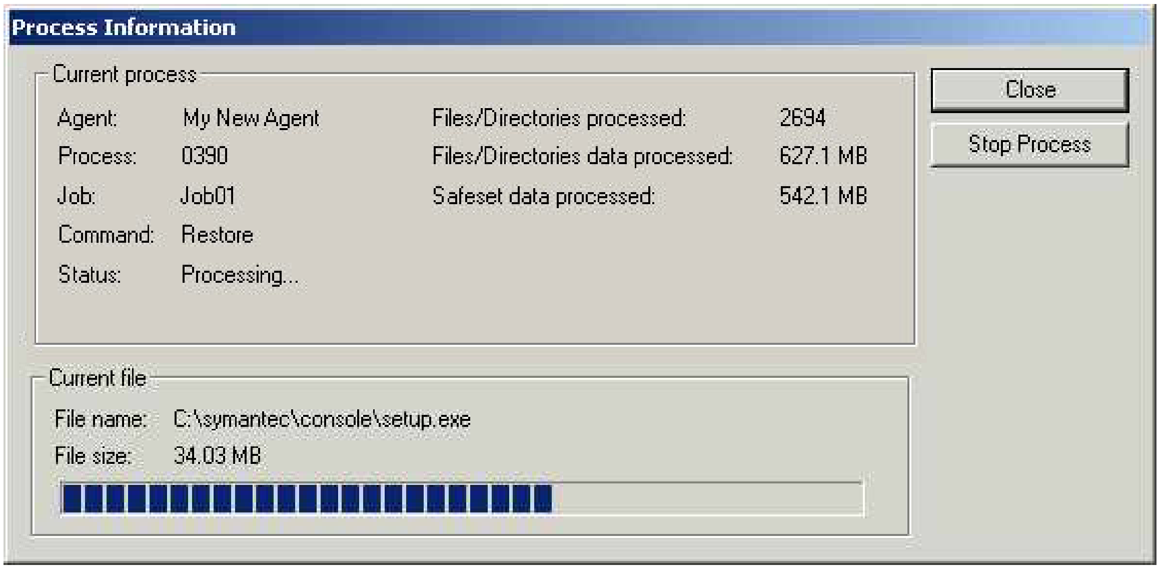
- a single SSI on a single CD/DVD.
- SSI files that are divided into many SSI files with a fixed length, but the whole set fits on a single medium.
- CDs or DVDs that contain a single backup that spans more than one media.

The user specifies "Directory on Disk" and then browses to the folder containing the SSI file. The SSI file on the CD/DVD must correspond correctly to the safeset number that is specified under "Restore from the following safeset". If not, the CC will show an error when the restore operation begins, saying that the medium is not the right one.

When the Restore operation begins it will request a certain CD/DVD to be mounted in the drive, if there is no media mounted. If a second (or more) media is required, it will be prompted. It will not prompt if the requested SSI is on a CD/DVD that is already in use (i.e.: mounted).

4.1.3 Process Information - Restore

Press the **Finish** button to start the Restore process. The Restore process proceeds, and the process information is displayed. A progress bar will indicate the approximate time used and time remaining for each file.



Process Information

Current process

Agent:	My New Agent	Files/Directories processed:	2694
Process:	0390	Files/Directories data processed:	627.1 MB
Job:	Job01	Safeset data processed:	542.1 MB
Command:	Restore		
Status:	Processing...		

Current file

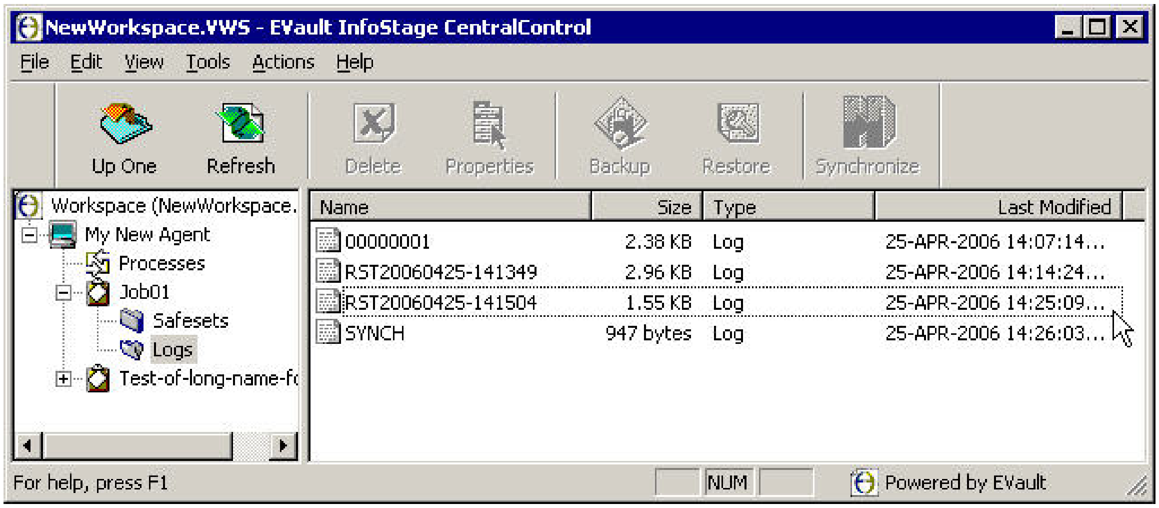
File name: C:\symantec\console\setup.exe

File size: 34.03 MB

Figure 31. - Restore in Progress.

4.1.4 Log Files for Restore Jobs

You may wish to review the log file afterwards. Under the Job name in the CentralControl GUI left pane is a selection called Logs. A Restore process will have a log file with this format: “RSTyyyymmdd-hhmmss”.



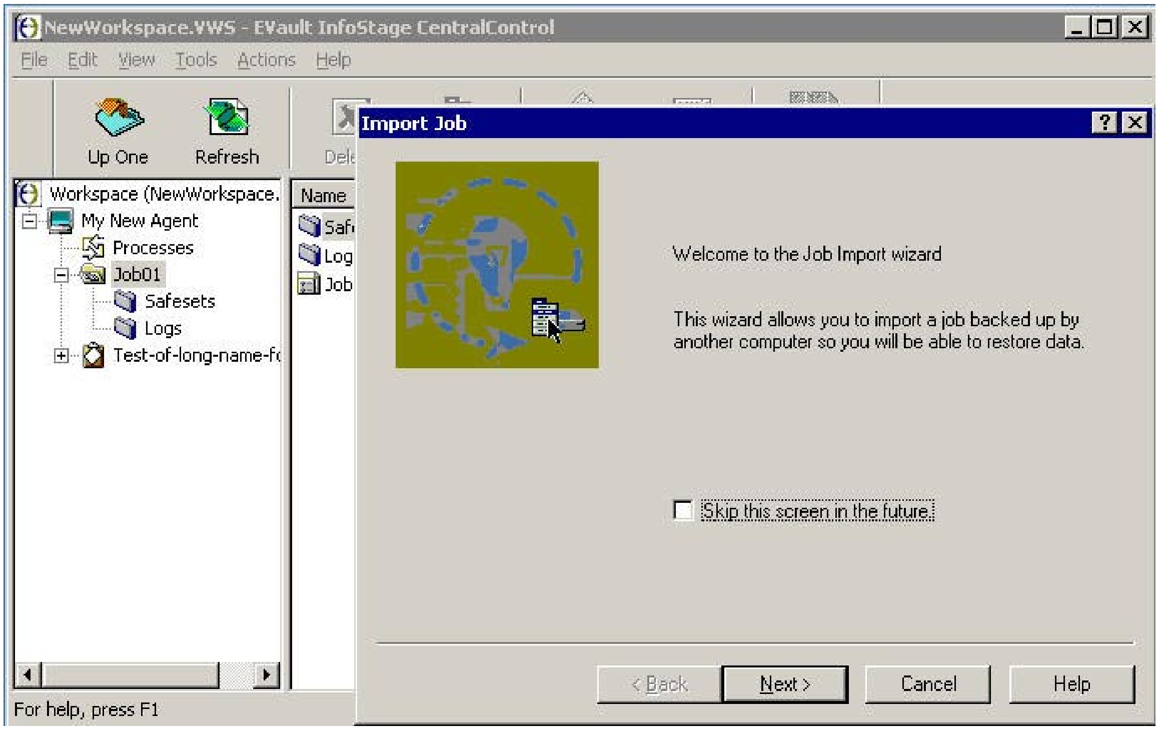
NewWorkspace.VWS - EVault InfoStage CentralControl

Name	Size	Type	Last Modified
00000001	2.38 KB	Log	25-APR-2006 14:07:14...
RST20060425-141349	2.96 KB	Log	25-APR-2006 14:14:24...
RST20060425-141504	1.55 KB	Log	25-APR-2006 14:25:09...
SYNCH	947 bytes	Log	25-APR-2006 14:26:03...

Figure 32. - Log Files for Restore Jobs

4.2 Cross Computer Restores

From the menus, select "Actions -> Restore from another computer". This starts the Job Import Wizard.



Welcome to the Job Import wizard

This wizard allows you to import a job backed up by another computer so you will be able to restore data.

Figure 33. - Restoring from another computer.

What the "restore from another computer" option does is allows the User to redirect the (original) Restore Job to a different client (location). It re-registers where the configuration file was originally pointing, so that the Restore Job can be redirected to another location. It does this by getting, authenticating and copying configuration information - Vault name, computer name, and Job name - from the original configuration, and adding it to your location so that the Restore can be accomplished there.

The steps that the Wizard takes you through, to do this are:

- Select an existing Vault Profile.
- Select the computer that has backed up the Job that you wish to import.
- Select the Job you want to Restore.

The Wizard will now copy the Job to your local Workspace. If one already exists with that name, it will prompt you to overwrite.

From here, the Restore proceeds like a normal Restore, as outlined in the previous section.

4.3 Bare-metal Recovery

A “bare-metal” restore is not a menu choice in the CentralControl program. Rather, it is a way of restoring a “complete” Backup to a new System.

You would want to do this, for example, if a System has crashed, and the disk has been replaced. Now you want to recover all the System and User data back to that disk.

Note that reinstalling the O/S and applications and then the data is possible, but you may not be able to recreate the exact state of the System that you would get with a Restore of a full drive Backup that included data files, System State, and System Files.

See the Appendix of this manual for an example of a bare-metal restore. A successful Restore should have your new System restored back to its state at the time the last full drive Backup was performed.

5. Appendix

5.1 Examples

The examples in this section are intended to allow a new User to be able to step through the major pieces of a Backup/restore process, by following an example. By using the beginning steps outlined in the chapters of this manual, and then by following the steps listed here, you should be able to complete a simple Backup and Restore. Further in-depth explanations and details about the steps can be resolved with the "CentralControl Operations Guide".

5.1.1 Example 1: Creating a Backup Job

1. Right-click on an Agent and select **New Job** or select **New Job** from the File menu. The New Job Wizard launches.
2. Give the Job a name that is unique from all the other Backup Jobs you may have created for the computer being backed up. This name will need to be 1 to 30 characters. It is good to be descriptive rather than generic. Click **Next** when ready.
3. Select a Vault to Backup to. The list of Vaults should have at least one Vault Profile name in it. Click **Next** when ready.
4. Select a Backup Source Type. Different types of Backups include: local files, network files, application Backups such as Microsoft Exchange. The list of types will vary depending on what you have installed on the computer you are being backed up. Select "Local Drive Only". Click **Next** when ready.
5. You should be now on the "Source" window. This window allows you to select the files you want backed up. This selection section will vary depending on the Backup Source Type. This part of the Job creation **may be extremely complex** depending on what you are backing up.
6. Double-click the **Data Files** check box then click the **Add** button. A pop-up dialog box should appear where you can select all the files you want to Backup. For the purposes of this example you should probably pick just a few small text files.
7. Select your files and click the **Include** button.
8. Repeat the previous step until your Backup file selection list is complete. Click **OK** when all your files you want backed up have been selected.
9. The pop-up dialog box should have disappeared and you should be back at the Source window. Click **Next** to continue.
10. You should be now on the Options window. This window allows you to enable/disable Quick File Scanning and to configure the amount of time to allow the Backup to complete and also to specify if you want the Backup to "defer" to the next day if it can't complete on time.
11. By default, Quick File Scanning is on. This option allows the Backup to quickly scan the System to figure out if any file has changed by reading the "header" information on each file that the System supplies. The alternative is for the

Backup to read every file in the Backup completely to see if the file has changed and is a much slower method but is 100% guaranteed to find all changes in files. For almost all situations you should leave Quick File Scanning on.

12. Disabling deferring means that the Backup time window settings will be ignored and all your selection will be backed up in one pass regardless of how long it takes. Normally it is preferable to defer a long Backup to the next time the Backup is scheduled; when this happens the Backup simply starts where it left off from the previous time.
13. The Backup Time Window indicates how long you are giving the Backup time to complete before stopping. It is normally set to 8 hours.
14. Accept all the defaults on this window and click **Next**.
15. You should be on the Encryption window. This allows you to indicate whether you want your data encrypted when it is stored on the Vault. If you do then you can select an encryption option and choose an encryption Password. **Be careful** if you do because the Vault operator will not know your Password when you want to Restore your data. Only you will know it. Note that the password is case sensitive.
16. Regardless of whether you choose to encrypt your data for storage on the Vault, during the actual transmission of the data over the network the Agent will (by default) encrypt the communications session to ensure privacy during the transfer of information. This Over The Wire encryption may be disabled in “Agent Properties”, under the “Connectivity” tab. See the “CentralControl Operations Guide” for more details.
17. You should now be on the Log options window. Whenever a Backup is run, a log file of the activity is created. On this window you can select how detailed the logging information should be. The more detailed, the larger the log file and the more disk space the Backup uses. You can also select for how long the logs should be kept around. Viewing the Backup logs periodically is a good way to ensure that everything is working. After the very first Backup is run you should check the first log to make sure everything happened correctly.
18. For now use all the defaults and just click **Next.**
19. You should now be on the last window of the Wizard. This is the Finished window. Here you can select to run the Job, schedule it or just create it and do nothing else. The default should be to “just exit” and do nothing. If this is not selected then select it now.
20. Click **Finish.** At this point the application will attempt to contact the Vault that was selected in order to register this new Job. If the network is down or the Vault is otherwise unavailable or there are other unforeseen problems then an Error dialog box will pop up. Normally everything is working ok and this step completes quickly in just a few seconds.
21. This section should now be completed and the Wizard has disappeared from the screen. Your new Job should be listed in the list of Job under the Agent icon on the left hand pane of the screen. If instead you received an error message then you should contact your support staff to troubleshoot the problem.

22. You should now go to the next example “Running an Ad-Hoc Backup” to run the Backup Job that was newly created.

5.1.2 Example 2: Running an ad hoc Backup

An “ad hoc” Backup is usually a one-time only, unscheduled Backup, run for a special or unique reason.

1. Right-Click a Job, and choose “Backup”.
2. Select a destination to Backup to: a Vault, a tape device or a disk directory.
3. There is an option to “Backup now”, without further configuration, but for this exercise, click Next.
4. The next screen has Choose a Backup Type, and Processing Options. Because this is a Vault Backup (with delta and compression pre-selected), the options will be grayed out.
5. Choose a Retention scheme (used to specify how long we will keep the Backups on the Vault) – daily, weekly or monthly. There are defaults that we will use for this example: Daily is retained for seven days; Weekly is retained for a month; and Monthly is retained for a year.
6. You should be now on the Options window. This window allows you to enable/disable Quick File Scanning and to configure the amount of time to allow the Backup to complete and also to specify if you want the Backup to “defer” to the next day if it can’t complete on time.
7. By default, Quick File Scanning is on. This option allows the Backup to quickly scan the System to figure out if any file has changed by reading the “header” information on each file that the System supplies. The alternative is for the Backup to read every file in the Backup completely to see if the file has changed and is a much slower method but is 100% guaranteed to find all changes in files. For almost all situations you should leave Quick File Scanning on.
8. Disabling deferring means that the Backup time window settings will be ignored and all your selection will be backed up in one pass regardless of how long it takes. Normally it is preferable to defer a long Backup to the next time the Backup is scheduled; when this happens the Backup simply starts where it left off from the previous time.
9. The Backup Time Window indicates how long you are giving the Backup time to complete before stopping. It is normally set to 8 hours. Accept all the defaults on this window and click Next.
10. Click Finish and the Backup Job starts, displaying the progress of the Backup.

5.1.3 Example 3: Scheduling a Backup Job

When you are creating a new Job, at the end of the New Job Wizard, you have the option to Run, Schedule or Exit. If you select the Schedule radio button and click **Finish** in the Job Wizard, the Schedule List panel appears.

To schedule an existing Job in the CentralControl, Right-Click the Agent, and choose Schedule Entries from the menus. The Schedule List panel appears.

To schedule a Backup:

1. Click the **New** button on the Schedule List panel. The schedule Wizard launches.
2. Welcome. Click Next.
3. Select **Backup** from the schedule command list. Click Next.
4. The Select a Backup Type window appears, but is grayed out. Click Next.
5. The Retention window appears. Choose a Retention scheme (used to specify how long we will keep the Backups on the Vault) – daily, weekly or monthly. There are defaults that we will use for this exercise: Daily is retained for seven days; Weekly is retained for a month; and Monthly is retained for a year. For this exercise, choose (default) Daily, and Click Next.
6. You should be now on the Options window. This window allows you to enable/disable Quick File Scanning and to configure the amount of time to allow the Backup to complete and also to specify if you want the Backup to "defer" to the next day if it can't complete on time.
7. By default, Quick File Scanning is on. This option allows the Backup to quickly scan the System to figure out if any file has changed by reading the "header" information on each file that the System supplies. The alternative is for the Backup to read every file in the Backup completely to see if the file has changed and is a much slower method but is 100% guaranteed to find all changes in files. For almost all situations you should leave Quick File Scanning on.
8. Disabling deferring means that the Backup time window settings will be ignored and all your selection will be backed up in one pass regardless of how long it takes. Normally it is preferable to defer a long Backup to the next time the Backup is scheduled; when this happens the Backup simply starts where it left off from the previous time.
9. The Backup Time Window indicates how long you are giving the Backup time to complete before stopping. It is normally set to 8 hours. Accept all the defaults on this window and click Next.
10. Command cycle. Choose Weekly or Monthly. The screen describes how to select the schedules.
11. Click Finish. The Schedule List panel appears.
12. Click OK.

5.1.4 Example 4: Check the Backup Results

When your Backup is complete, the results appear in the log files in your CentralControl window. To confirm a successful Backup:

1. Click an Agent on the left pane of the CentralControl window.
2. Click a Job. The Safesets and Log files for the selected Job appear in the right pane of the CentralControl window.
3. Click on the Logs folder. A log report for your Backup appears in the right pane. Double click the Log file to view the details of the Backup. The bottom (last) portion of the Log file should indicate that the Backup was completed with no errors. If your Job was not completed or you encountered errors, contact your service provider.

5.1.5 Example 5: Running a Restore Job

After you have completed one or more Backups, you can execute a file Restore at any time.

1. Select the Agent Job from which you want to Restore the file(s).
2. Choose the Restore button on the Standard toolbar. This starts the Restore Wizard.
3. From the Select a Source dialog, you can view the most recent type of source device (e.g. Vault), specific source (e.g. name of Service Provider) and Safeset (e.g. number of Safeset – Safesets are numbered starting at one and in increasing order). Typically, these are what you want to restore from. However, you may change any of them as required. Click Next.
4. From the Encryption Options dialog, enter your encryption Password in the Password text box if your data was encrypted during Backup. Also, enter your Password in the Verify Password text box. Note that the password is case sensitive. Click Next.
5. From the Select Restore Objects dialog, select the file(s) you would like to include/exclude from the Restore.
6. From the Destination Options dialog, establish the location to which the files are to be restored, whether or not you want sub-directories created and if existing files should be overwritten. The defaults are to restore to an alternate location (you need to specify the location), create sub-directories and overwrite existing files.
7. From the Advanced Restore Options dialog, set any desired options. The defaults are to not restore locked files, to not restore the Local Registry/Novell Bindery/NDS (depending on the operating System) and to restore all data and security streams. You may change any or all of the defaults.
8. Click Finish.

Check the Restore log to see if the Restore was successful.

5.1.6 Example 6: Cross Computer Restore

Normally when a Job is created to do a Backup, the client uses a unique configuration file. You must create a Profile for the Server which you want to Restore from, with the same authentication information as the original computer used for Backup. You may want to use this method for a disaster recovery plan, as well as for normal data migration.

There are limitations on which operating Systems can successfully transfer data in this way. For example, different versions of the same O/S, such as Windows 2000 and 2003 are okay. O/S's that are part of the same family, or share similar origins, such as Linux and Solaris are also okay.

What the "restore from another computer" option (via a Wizard) does is allows the User to redirect the (original) Restore Job to a different client (location). It re-registers where the configuration file was originally pointing, so that the Restore Job can be redirected to another location. It does this by getting, authenticating and copying configuration information - Vault name, computer name, and Job name - from the original configuration, and adding it to your location so that the Restore can be accomplished there.

Steps in the Restore

1. Ensure that the data is fully available for Restore (i.e. updated) on the Vault. This means that the Backup is current, and will properly Restore all needed data.
2. Logon to the System that you will Restore the data to. This is the different System than the one that did (created) the Backup.
3. Ensure that this System does not have a production Job with the same name as the Job used to Backup the data originally. This process will destroy any Safeset information for an existing Job and lead to a reseed of data being protected by this Job.
4. Create a Vault Profile for the Director on which the data is stored. Use the authentication information that was used for the original Backups.
5. From the Tools menu select "Restore from another computer", from the Vault Profile dialog select the Vault Profile that was created above. Click **Next >.**
6. On the Registered Computers dialog select the computer that originally stored the data being restored. Click **Next >.**
7. On the Job dialog select the Job that protects the data to be retrieved. Click **Next >.**
8. On the Import Job you are told that all information required has been collected to accomplish the Restore. Click **Next >.**
9. If the Job is already created the System will tell you be prompted to overwrite it. Click "Yes" to overwrite.
10. This process downloads catalogs for all available Safesets for this Job.

11. This process, when complete, spawns the Restore Wizard starting with the Select a Source dialog.

The Restore now continues like a Restore from the original computer – select Safeset, select Restore objects, etc.

Note that now you will have a "new" Job in your list of Jobs, which came from the other Agent. It only does Restores, and does not allow Backups

5.1.7 Example 7: Bare-metal Disaster Recovery

This section outlines the steps required to recover from a worst-case disaster whereby you have lost your entire Server System (i.e., hardware, operating System and data files). These steps will walk you through the CentralControl so as to get your new Server System up and running back to normal.

The steps below may refer to the new System as a replacement System. Also, the old System may be referred to as the original System.

1. Reconfigure hardware that is similar (at least a minimal configuration) to the original hardware.
2. Create a logical drive that matches the original configuration. Although hardware does not always need to be identical, be aware that some drivers that are listed in the Backup set may be incompatible with hardware on the new Systems, and may require you to manually remove or install drivers in Safe mode.
3. You may optionally want to test your System state Restore on some other test hardware (different from your replacement hardware) before you actually perform the System state Restore on the replacement System.
4. Reinstall the same version of the operating System (as was installed previously) as a stand-alone Server to the same drives and paths to which the operating System was previously installed.
5. When re-installing the operating System, you must use the same Server names as those used on the original System.
6. When re-installing the operating System, you must install all relevant service packs/patches as those used on the original System.
7. When re-installing the operating System, you must use the same license keys as those used on the original System.
8. Reinstall the Agent to the same installation directory as that used on the original System.
9. Reinstall the Management Console to the same installation directory as that used on the original System.
10. When a Job was first created, it was registered with the Vault, which still "remembers" the Registration, so you cannot register it again as if it was new, you must "re-register" it to tell the Vault that it is back. In CentralControl, under Agent

Configuration -> New -> Vault Registration, choose “Re-register previously registered computer”. Complete the rest of the registration as before.

11. Next, to do a Restore for recovering your full drive Backup (i.e. the Backup that includes your System state Backup as well as all of your other data) select the Agent Job from which you want to Restore the file(s).
12. Choose the Restore button on the Standard toolbar. This starts the Restore Wizard.
13. From the Select a Source dialog, you can view the most recent type of source device (e.g. Vault), specific source (e.g. name of the Service Provider) and Safeset (e.g. number of Safeset – Safesets are numbered starting at one and in increasing order). Typically, these are what you want to Restore from. However, you may change any of them as required. Click Next.
14. From the Encryption Options dialog, enter your encryption Password in the Password text box if your data was encrypted during Backup. Also, enter your Password in the Verify Password text box. Note that the password is case sensitive. Click Next.
15. From the Select Restore Objects dialog, select the file(s) (typically all the files, System and data) you would like to include/exclude from the Restore.
16. From the Destination Options dialog, establish the location to which the files are to be restored, whether or not you want sub-directories created and if existing files should be overwritten. The defaults are to Restore to an alternate location (you need to specify the location), create sub-directories and overwrite existing files.
17. From the Advanced Restore Options dialog, set any desired options. The defaults are to not restore locked files, to not restore the Local Registry/Novell Bindery/NDS (depending on the operating System) and to restore all data and security streams. You may change any or all of the defaults.
18. Click Finish. Check the Restore log to see if the Restore was successful.
19. A successful Restore should have your new System restored back to its state at the time the last Backup was performed.

5.2 Windows System Recovery

The purpose of this section is to illustrate techniques for recovering a Windows 2000 Server/2003 Server/XP Pro System. The procedures provided describe the minimum resources and information required to rebuild the Windows operating System to its state prior to the last System Backup. The recovery procedure can be performed either from a Backup tape, directory on disk or directly from a Vault Manager.

When you are recovering using the CentralControl, you need to meet some basic requirements and follow some basic restoration steps. Once these basic steps have been completed, you need to complete the recovery by following one of the two outlined methods.

5.2.1 Hardware Requirements

Ensure that the appropriate minimum System configuration is available. This may involve simply replacing a crashed disk device. Note any differences in the configuration such as changes in the network card or disk device.

5.2.2 Software Requirements

Ensure that the appropriate installation media is available. The minimum System software includes:

For Windows 2000 Server/2003 Server/XP Pro, installation CD identical to that used during original installation. All of these, including Service Pack levels, should be identical to those installed on the original System.

Agent for Windows Installation media identical with that installed on the original System and/or,

CentralControl Installation media identical with that installed on the original System.

Note: In order to complete the four step recovery [the Installation of the Basic Operating System (OS), the Installation of CentralControl, the System Recovery and the System Testing], it is crucial that the primary storage device (located where the OS is installed) contains enough storage to accommodate a full OS installation AND the contents of a full Backup. In situations where the primary storage device accommodates a paging file, the maximum size of the paging file should be added to the total space required.

5.2.3 Windows Restoration Steps

To Restore your Windows 2000 Server/2003 Server/XP Pro Operating System from a Backup tape or Data Protection Vault:

1. Boot the System up using the Setup Disks. NOTE that if your System can boot up from a CD-ROM, then you can use the CD-ROM to boot the System up.
2. Verify that the CD-ROM installed on the System is recognized by the setup.
3. Insert the OS installation CD when prompted.
4. When prompted to partition the drive, make sure that the partition is at least as large as the original partition. And, the setup of the partitioning must match in both the original and recovery systems.
5. When asked where to install the Windows directory, specify that it be installed in the same location as it was in the original System installation. Under 2000/2003/XP Pro, the default is C:\Winnt.
6. Continue the System installation process until the basic functionality of the OS is restored.
7. Under Windows 2000/2003/XP Pro, install the Service Pack identical to the one on the original operating System. After this, restart as prompted by your System.
8. Ensure that the TCP/IP stack is installed and configured according to the settings in the Hardware Configuration Settings Checklist. Verify that the network adapter is correctly identified. Also, apply any service patches required. (You may choose to set up the network during the Windows setup.)
9. Ensure that the basic networking structure is in place (e.g. connectivity between internal networks where the System to be restored resides) and that a connection is established between the System and the Vault. A router, if required, must be properly connected and configured. Test the TCP/IP connectivity between the local System and the Vault by Pinging the IP address of the Vault.
10. For recovery from a tape device under Windows 2000/2003/XP Pro, use the device manager located in the Control Panel\Administrative tools\Computer Management\Device Manager to locate tape drives. Use "Scan for Hard Drive Changes" if device not visible.

Continue with Client Installation

1. Install the version of the CentralControl described on your previously completed Configuration Settings Checklist.
2. Install the version of the Client Agent for Windows described on your Configuration Settings Checklist.
3. Using the CentralControl, first name the untitled Workspace. Choose File > Save Workspace As. Enter a name in the File Name text box. The name does not have to be the same as the one on the original System. However, it can be the same. Press Save. If desired, enter a Password in the Password text box and confirm it. Note that the password is case sensitive. Choose an encryption type from the Encryption type drop-down list. Click OK.

Create an Agent

1. Use the right mouse button and click on your Workspace. Click once on New Agent. This opens the Agent Properties dialog.
2. Enter the Description and the Network Address. The Description is the name of the Agent. It can be anything that you choose. It can be the same as the name on the original System but does not have to be. The Network Address can be specified using either a numerical IP format (192.0.0.1) or a textual DNS format (myAgent.myco.com). The default Port is 808.
3. Enter the Username, Password and Domain. The Username authenticates this program with the remote Agent System. When restoring under Windows, specify a Username with Backup Operator or Administrator privilege.
4. Click on the **Save Password** check box.
5. Specify the domain name in the **Domain** text box. The domain can optionally be left blank under the following circumstances: you are not specifying a Windows Agent, you belong to the same domain as the Windows Agent System or your network does not utilize a domain name Server.
6. After the Agent and Authentication information have been entered, click on **Get Status**. If the information is validated, your data will be displayed in the Agent Status window. Click **OK**. However, if the information is not validated, a message from the CentralControl will appear. Check your information and revise it as required. Once again, click on **Get Status**, and click **OK**. Finally, click **OK**.

Set up Notification

1. With the Agent highlighted, click on the **Agent Configuration** file. If you want to receive email notification upon success or failure of the Restore process, choose the **Notification** tab. Click on the **Send Email on Successful Completion** and **Send Email on Failure** check boxes.
2. Enter the address from which the notification is sent. This can be any valid email address.
3. Enter the STMP Server Network Address and recipient's address in the designated text boxes.

Re-Register the computer.

1. Re-Registering the computer will bring back all the Agent information from the vault. This includes your configuration and scheduling information. Re-registering basically re-assigns this information to the new computer.

Perform a Synchronize, only if you choose Tape or Directory on disk for Source.

1. With the Job highlighted, choose the Synch button on the Standard toolbar.
2. When asked to confirm the Synch, click Yes. This starts the Synch process. The Process Information dialog is displayed.
3. When the Synch is complete, click on Close.

Using the Restore Wizard

1. With the Job highlighted, click the Restore button on the Standard toolbar. The Restore Wizard leads you through the remaining restoration steps.
2. From the Select a Source dialog, you need to select which type of source device to Restore from. From the drop-down list, choose Vault, Tape Device or Directory on Disk. If you choose Vault, you need to choose which Vault to Restore from. Choose one from the drop-down list. You also need to choose the Safeset to Restore from. Choose a Safeset from the drop-down list.
3. Next, from the Encryption Options dialog, enter your Password if your Backup was encrypted. Note that the password is case sensitive.
4. Select the files to include or exclude from the restoration under the Select Files dialog. From the Select Files dialog, you can choose to Add files, Remove files and/or Search for files.
5. Next, select one of the following destination options:

   Do you wish to Restore files to their original locations? (If you select no, enter the alternate location in the text box.)

   Do you wish to create subdirectories?

   Do you wish to overwrite files that already exist?

6. From the Advanced Restore Options dialog, set the Advanced Options:

   Do you wish to overwrite files that are locked by another process?

   Do you wish to Restore the Local Registry?

   Do you wish to Restore security information?

   What detail level to choose.

   Select whether or not you want to Restore the Active Directory under Windows 2000/2003/XP Pro.

7. Once you have set your options, click Finish. A Process Information Window indicates the status of the Restore.
8. When completed, you have two choices: Reboot Now or Reboot Later. Choose Reboot Now. After you restart, the restoration procedure is complete and the process of verifying the integrity of the Restore can commence.

5.2.4 Windows Recovery Problems

Should any of the recovery Jobs fail, consider each of the following basic questions carefully:

Was the System restored using the same version of OS?

Were the proper Service Packs applied before recovering the System if you were restoring under Windows 2000/2003/XP? If you are doing a bare-metal restore on an XP System, you must install the service pack (i.e.: SP1a) on the OS, before doing the restore from the Vault. If you don't, the Restore will complete without errors, but after restarting, the machine will "blue screen" briefly, and continually try to restart. On a Windows 2000/2003 Server, it may work correctly without installing the SP before the Restore, but it is recommended to install the SP before the Restore.

Was the latest version of ASPI installed?

What possible differences were there in the hardware or software settings that could have affected the restoration?

Were any errors reported in the Restore.log file?

Were all the necessary drivers installed?

5.2.5 Recovery Verification for Windows

Once the Restore procedure is complete, there must be a way to determine and validate if the restoration is complete and correct. The listing and testing of the Jobs should be performed as part of the Systems recovery planning. The specific Jobs to be performed for verification will depend on the application environment deployed and the System's importance.

Once the System is restored, it is crucial to verify the integrity of the restoration. The test can be as simple as placing a duplicate file in a different directory structure and testing for any differences within the file. Then, confirm that the file can be opened using a known application and that you are able to send email to a known address. It can also be as complex as completing an SQL query on a known database set. Whatever the test, both the list and the test itself must be planned and executed during normal System operation.

5.2.6 Active Directory Restores

See section 9.2.2, 9.2.3 and 9.2.4 in the CentralControl Operations Guide for detailed information.

These sections cover:

- Perform a Primary Restore
- Perform a Non-Authoritative AD restore
- Perform an Authoritative AD restore
- Cluster quorum restores.

5.2.6.1 Troubleshooting:

If you experience problems booting your System after restoring the Active Directory, you may try the following:

Restart the computer. If the computer does not restart after restoration because of HAL mismatches, you can start from the Windows 2000/2003/XP Pro installation disk to perform an in-place installation or repair. This type of repair occurs after you accept the licensing agreement, and Setup searches for previous versions to repair. When the installation that is damaged or needs repair is found, press R to repair the selected installation. Setup re-enumerates your computer's hardware (including HAL) and performs an in-place upgrade while maintaining your programs and User settings. This also refreshes the SystemRoot%\Repair folder with accurate information that you can use for normal repairs.

If the computer does restart after the restoration, Logon as Administrator and initiate an in-place upgrade by running Winnt32.exe from the I386 folder on the Windows 2000/2003/XP Pro CD-ROM. This refreshes the Setup.log and registry files in the %SystemRoot%\Repair folder, and ensures the proper HAL is in use.

5.3 Cluster Awareness – Cluster Plug-In

Microsoft Server Clustering Services (MSCS) Cluster Support Plug-In is available for the Windows Agent.

The main function of the Cluster Support Plug-In is for the Agent on a MS SQL or MS Exchange Server, which has a virtual IP address in the cluster, to be able to follow the server when it fails over to another node in a cluster. The Agent can still access its configuration (on a shared drive), and scheduled backups will occur as usual, without it looking like a "different" backup and causing a reseed.

The Cluster Support Plug-In is supported on Windows Agents. It requires a separate license.

5.3.1 Main Features of the Cluster Plug-In

A user can connect to an Agent (with a Plug-In and proper license) on a Virtual Server or Local machine (a node) via IP or name.

The Virtual Server Agent can backup virtual server shared data without re-seeding, or in case of a failover.

Once created, Jobs (on a shared drive belonging to a virtual server) can be used by all Agents on the cluster.

Scheduling of virtual server backups is handled between node Agents without schedule overlapping. The configuration files are located on the drive owned by the virtual server.

Each physical node in a cluster configuration requires a separate installation of the Agent, each with a separate Plug-In and license. You also need to enter the licenses of the Plug-Ins on the virtual server as well.

When you first configure an Agent on a Virtual Server, you will be prompted for a location on a drive that the Virtual Servers see. So, after a failover, the Agent configuration will still be available to all servers owned by the virtual server.

The icons representing the servers in the CentralControl are different, to represent a “regular” local Agent, and a Virtual Server Agent.

5.3.2 Installation Setup Recommendations

1. Install the Agents and Plug-Ins on the Physical Nodes.

2. Set Cluster, SQL, and Exchange Plug-Ins on the Physical Nodes.

3. Create a New Agent for your Exchange or SQL cluster on the Virtual Node using the IP address or Hostname.

4. From the newly created agent, double click the Global file to open the "Virtual server shared area" window. From here you must select a drive letter for your SQL or Exchange Cluster. Click OK. This will launch the Agent Configuration Window.

5. Here you must specify all of your Vault connection information. Click OK when complete. Note: Once the folder for configuration files on the shared disk has been created you will not be prompted again for its location.

Note: *You must create the backup Job from the Virtual Node in order to use the Cluster Plug-In failover features even though you can perform backups from the Virtual Node as well as the Physical Node.*

Also, if you create a new MS Exchange Server Job from an SQL Server Virtual node, you will be able to see the MS Exchange Server in the drop-down "Backup Source Type" box. But you cannot backup the MS Exchange Server from there. You can only backup the SQL Server with a SQL Server Job on the SQL Server Virtual node.

And, if you create a new SQL Server Job from an MS Exchange Virtual node, you will be able to see the SQL Server in the drop-down "Backup Source Type" box. But you cannot backup the SQL Server from there. You can only backup the MS Exchange Server with an MS Exchange Job on the MS Exchange Virtual node.

5.4 Command Line Interface (CLI)

The Command Line Interface (CLI) is a feature that enables users to run the Agent from a command prompt instead of through the CentralControl GUI. This feature is mainly used to Restore data if the CentralControl application is not available. The CLI can be used to perform functions on both VV.exe and VVAgent.

5.4.1 VV.exe CLI Command Mode

The CLI can be used to execute commands on VV.exe. VV.exe is part of the Agent package and is responsible for Backup and Restore functions.

You can use the CLI to perform the following general Jobs:

JOB	DESCRIPTION
BACKUP	Backs up files to tape, disk or a remote Vault Service Provider.
RESTORE	Restores files from tape, disk or a remote Vault Service Provider.
SYNCH	Re-synchronizes files with a remote Vault Service Provider.
VERIFY	Verifies files backed up to tape or disk.
LIST	Lists files backed up to tape or disk.
RECOVER	Menu driven restores files from tape, disk or a remote Vault Service Provider.
INVENTORY	
ENCPASSWORD	
SETDIR	

5.4.1.1 General Command Options

Since the software makes uses of ASPI, only versions 4.2 or greater of NetWare are supported. ASPI devices appear as STA0: where ST means SCSI tape and A is your first SCSI adapter and 0 is the SCSI id 0 of the tape device.

The following qualifiers apply to all commands:

QUALIFIER	DESCRIPTION
/PROGRESS[=YES]	Shows progress messages.
/LOG[=YES]	Logs messages to a file.
/DETAIL=<detail>	Determines how verbose the logging messages will be.
/ENCPASSWORD=<password>	Is safeset encryption password (case sensitive).
/ASSIST[=YES]	Requests operator assistance, if necessary, when loading tapes.
/IGNLABEL[=YES]	Ignores tape label and expiry date processing.
/LABEL=<label>	Explicitly specifies the tape volume label.
/UNLOAD[=YES]	Ejects the tape when the program is finished with it.
/USEEOD[=YES]	Uses EOD instead of writing volume trailers.
/DIAGNOSTICS[=YES]	
/PARAM=<file_spec>	Specifies a parameter file that is used as input to the program.
FORMAT	
PRIORITY[=5]	
DIRECTORY	This setting specifies the location of all the Job-specific files and the root of the Job data sub-directories.

5.4.1.2 Backup Command Options

The following qualifiers apply to all Backup commands:

QUALIFIER	DESCRIPTION
/COMPRESSION=<type>	Types available are: • NONE – Do not compress any data. • MINIMUM – Minimize CPU consumption, possibly at the expense of a larger safeset size. • NORMAL– Balance CPU consumption against safeset size. o DEFAULT – same as normal o STANDARD – same as normal • BETTER– Minimize safeset size, possibly at the expense of extra CPU consumption. • MAXIMUM – Always minimize safeset size, regardless of the amount of CPU consumption required.
/DEFERAFTER=<time>	Specifies the defer time in minutes.
/DESTINATION=<destination>	Specifies the safeset location.
/ENCTYPE=<type>	Types available are: • NONE – no encryption used • BLOWFISH56 – 56 bit Blowfish encryption • BLOWFISH128 – 128 bit Blowfish encryption • DES – 56 bit DES encryption • TRIPLEDES – 112 bit DES encryption • AES – 128/256 bit Advanced Encryption Standard encryption
/EXCLUDE=<filelist>	Outlines the list of files to exclude from the Backup.
/IGNLOCKING[=YES]	Backs up locked files.
/IGNSECURITY[=YES]	Does not save file ownership and permission information.
/INCLUDE=<filelist>	Outlines list of files to include in the Backup.
/RETENTION=<retention>	States the retention name.
/TYPE=<type>	States the type of Backup. (e.g. FULL)
/INIT[=YES]	
/IGNALTDATA[=YES]	
/QUICKSCAN[=YES]	
/RETRY[=YES]	
/DELAY	
/DELTA[=YES]	
/IGNNOBACKUP[=YES]	
/SVRADDRESS	Server/Vault address.
/SVRACCOUNT	Server/Vault account name.
/SVRUSERNAME	Server/Vault user name.
/SVRPASSWORD	Server/Vault user password (case sensitive).

The following qualifiers apply to Windows Backup commands:

QUALIFIER	DESCRIPTION
/REGISTRY[=YES]	Backs up the Windows Registry under Windows.
/AD[=YES]	Active Directory
/INCLUDEEXCH	
/EXCHTYPE[=INCR]	
/DELEXCHLOG[=YES]	
/SQLTYPE[=FULL]	

5.4.1.3 Restore Command Options

The following qualifiers apply to all Restore commands:

QUALIFIER	DESCRIPTION
/CREATESUBDIRS[=YES]	Creates all necessary sub-directories.
/DESTINATION=<destination>	States the destination to Restore to. (e.g. c:\.*.*)
/INCLUDE=<filelist>	Outlines the list of files to include.
/EXCLUDE=<filelist>	Outlines the list of files to exclude.
/IGNSECURITY[=YES]	Does not Restore file ownership and permission information.
/OVRWRITE[=YES]	Overwrites existing files. If this option is not specified, the user will be notified of each existing file.
/OVRLOCKED[=YES]	Overwrites locked files.
/SOURCE=<source>	Names the location of the safeset file.
/IGNDATA[=YES]	
/SVRADDRESS	Server/Vault address.
/SVRACCOUNT	Server/Vault account name.
/SVRUSERNAME	Server/Vault user name.
/SVRPASSWORD	Server/Vault user password (case sensitive).

The following qualifiers apply to Windows Restore commands:

QUALIFIER	DESCRIPTION
/REGISTRY[=YES]	Restores the Windows Registry under Windows.
/AD[=YES]	Active Directory.
/SYSST[=YES]	
/INCLUDEEXCH	
/ROLLFORWARD[=YES]	
/EXCHLOGALTLOC	Restore Exchange log alternate location.

5.4.1.4 Sync Command Options

The following qualifier applies to the synchronize command (synch):

QUALIFIER	DESCRIPTION
/SOURCE=<source>	Names the server to re-synchronize from. By default, the Backup destination is used.

5.4.1.5 Inventory Command Options

The following qualifier applies to the INVENTORY command:

QUALIFIER	DESCRIPTION
/OUTPUT	

5.4.1.6 List Command Options

The following qualifiers apply to the list command:

QUALIFIER	DESCRIPTION
/INCLUDE=<filelist>	Names files to include in the listing.
/SOURCE=<source>	Names the location of the safeset file.
/LOG	Sends VV List output to a file named LIST.LOG. If a Job name is specified with the command, the file is created in the Job directory, otherwise it is created in the root directory of the VCS.
/FORMAT	Determines the amount of detail included in the VVList log. Choose either BRIEF, FULL or DUMP.
/EXCLUDE	

5.4.1.7 Verify Command Options

The following qualifiers apply to the verify command:

QUALIFIER	DESCRIPTION
/DESTINATION=<destination>	Names the location of files to verify. (e.g. C:\.*.*) The default is to use the original file locations.
/INCLUDE=<filelist>	Outlines the list of files to include.
/EXCLUDE=<filelist>	Outlines the list of files to exclude.
/IGNALTDATA[=YES]	Does not verify alternate data streams.
/IGNSECURITY[=YES]	Does not verify security information.
/SOURCE=<source>	Names the location of the safeset file.
/ERRORSONLY[=YES]	Only shows errors.
/COMPARE[=YES]	Compares file data.
/HEADERS[=YES]	Compares file headers (e.g. file date, attributes, etc.)

5.4.1.8 Forcereseed Option

Delta recreation allows the user to rebuild a DTA (delta) file by using job synchronization. This command line only option will force a re-seed, in case of a failure with delta recreation in rebuilding delta files.

Originally (before delta recreation), if the backup detected that the required DTA file was missing or corrupt, the backup was forced to reseed. With the delta recreation feature, on a missing or corrupt delta file the job fails and logs a message. Then the user is able to rebuild the DTA file through job synchronization.

The parameter will only apply to CLI. The UI will not be affected. In case of a failure in rebuilding a delta file, this is an alternative approach to rebuild the delta file by reseeding. With this parameter, if the Vault supports delta recreation, and the recreated file is unusable, then the backup will be forced to reseed.

The syntax of this parameter is:

```
VV backup job1 /param=job1.vpb /forcereseed
```

Note:

Delta files can be recreated only if a backup was done by a version 6 Agent to a version 6 vault. If you backup a safeset using a version 6 Agent to a version 5 vault, and then upgrade the vault to version 6, any delta information cannot be recreated. If you backup a safeset using a version 5 Agent to a version 6 vault, and then upgrade the Agent to version 6, any delta information cannot be recreated.

In these cases it will report errors in the restore log that the DTA recreation failed, on the version 5 files. The restore itself will still function properly. In this case you can use the forcereseed option to create new delta files that are compatible with the version 6 vault.

(But, if you backup a safeset using a version 6 Agent to a version 6 vault, then the delta information can be recreated.)

5.4.2 CLI Command Syntax

Commands can be abbreviated as long as the result is not ambiguous. Most commands and parameters are unique to within 4 characters. The format of the command string is as follows:

```
>    VV [<command> [<Job>] [/<para> ...]]
```

A command is performed on the specified Job. The parameters are used to override any associated parameters in the Job and global configuration files. Each time a command is performed, the parameters provided on the command line, <Job>.vvc file and the Global.vvc are used to form the complete syntax of the command.

5.4.2.1 Using File names in Command Strings

Some CLI settings require the inclusion of file names. Enter file names in the following format:

```
/INCLUDE=C:\WINNT\.\*.*
```

Users can include a list of files in their CLI settings. Commas are used to separate file names in a list. Enter a list of file names in the following format:

```
/INCLUDE=C:\WINNT\.\*.*,C:\TEST\.\*
```

File names that contain commas or blank spaces as part of the name require special treatment because Windows and the Agent use these symbols for specific purposes. Windows uses blank spaces to divide the command line into a program's arguments. The Agent uses commas to separate individual names in file lists. To make the use of blank spaces and commas in file names possible, the following conventions have been developed:

1. To add a file name containing a blank space to your file list, enclose the file name in quotation marks. Alternatively, replace the blank space with its ASCII hexadecimal code value.

   Example of quotation marks:

   ```
   vv /include="c:\Program Files\EVault\.\*","C:\Documents and Settings\.\*"
   ```

   Example of ASCII hexadecimal code value:

   ```
   vv/include=c:\Program^20Files\EVault\.\*,C:\Documents^20and^20Settings\.\*
   ```

   Note: The hexadecimal code for a blank space is 20.

2. To add a filename containing a comma to your file list, enclose the file name in backslashes and quotation marks. As an alternative, replace the comma with its ASCII hexadecimal equivalent.

   Example of backslash and quotation marks:

   ```
   vv/include=\"c:\Program,Files\EVault\.\*\",\"C:\Documents,and,Settings\.\*\"
   ```

   Example of ASCII hexadecimal equivalent:

   ```
   vv/include=c:\Program^2cFiles\EVault\.\*,C:\Documents^2cand^2cSettings\.\*
   ```

   Note: The hexadecimal code for a comma is 2c.

   Any character, even nonprintable ones, can be used as a part of a filename. To do this, enter ^ followed by the character's hexadecimal code.

   Hexadecimal codes:

SPACE ( ) - 20
COMMA (,) - 2c
CIRCUMFLEX (^) - 5e
DASH (-) - 2d
ASTERISK (*) - 2a
PLUS (+) - 2b
QUESTION MARK (?) - 3f
Refer to Windows Charmap utility for a complete list of hexadecimal codes.

5.4.3 CLI File Formats

The Agent system consists of the executable, a global configuration file, a data directory and some Job configuration files. The layout is as follows:

5.4.3.1 Directory Layout and Configuration Files

In the executable directory, there should be two files, which are VV.exe and Global.vvc.

In the data directory, there should be one or more Job configuration files, such as "MyJob.vvc".

As Backups are run, sub-directories are created under the data directory for each Job, with the same name as the Job.

Local catalog files, DeltaPro™ information files and other related files would be stored in the Job-specific sub-directory.

Configuration files such as Global.vvc, <JobName>.vvc and Schedule.cfg are normally configured through the CentralControl GUI application. The files are stored on, and used by the Agent. During a backup, these files, along with the backup data, and sent to the Data Protection Vault, and also stored there. They are not used there, by the Vault, but are available in case of a bare-metal restoration, when the computer has to be re-registered.

Normally, the configuration files will contain all of the necessary information for performing Backups. However, many configuration values can be superseded on the command-line as necessary.

5.4.3.2 Configuration Files

The global configuration file is called Global.vvc. This file resides in the same location as the executable.

The Job-specific configuration files reside in the directory pointed to by the "data_directory" value in the global configuration file.

Notes:

A Job-specific setting overrides a global setting and a command-line parameter overrides everything. Spaces before and after a value are ignored. Anything after two forward slashes '//' is treated as a comment. If the last character on the line is a dash ('-'), it is treated as a line-continuation character.

The following,

```
>           license {
                 account = xyz
```

```
                     key = 12345
                 }
```

is equivalent to,

```
    >           license.account = xyz
                 license.key = 12345
```

5.4.3.3 Settings that are Global to all Jobs

SETTING	DESCRIPTION
Data_directory	This setting specifies the location of all the Job-specific files and the root of the Job data sub-directories.
license.account, license.expiry, license.key, license.options, license.version, license.vendor	Your Service Provider or software provider will supply the license settings. All settings are sensitive to case and spacing.
retentionN	These are settings for retention #N where N is from 0 to 9 (e.g. "retention1").
retentionN.name	At least one retention name should match the name specified by the "Backup.retention" parameter.
retentionN.online_days	This specifies the minimum number of days to keep the safeset online. The parameters are 0-9999.
retentionN.online_copies	This specifies the minimum number of copies to keep online. For all Backups, the minimum value is 1 and the maximum value is 999.
retentionN.archive_days	This setting specifies the minimum number of days to archive the safeset offline. A value of 0 will cause online safesets to be deleted when the online days/copies expire. The parameters are 0-9999.
serverN	These are the settings for server #N where N is from 0 to 9 (e.g. "server1").
serverN.net_address	This specifies the TCP/IP address of Vault Service Provider.
serverN.account	This specifies the Vault Service Provider account.
serverN.username	This specifies the Vault Service Provider username.
serverN.password	This specifies the Vault Service Provider password.

5.4.3.4 Settings that are usually Job specific

SETTING	DESCRIPTION
Backup.destination	The destination can be any number of things. Examples include: 1) server1: (server Backup – a colon is required) 2) tape0:safeset.ssi (tape Backup - different operating systems have different names for tape devices) 3) device:\dir\abc.ssi (disk Backup) If you plan to use spaces or commas in your command line, see section 9.2.2.1
Backup.type	The Backup category determines the type of Backup that is made. The categories are Full, and Incremental and Differential.
Backup.include	This specifies a comma-separated list of files to Backup. To specify a whole directory tree, use the syntax "\.\". For example, "C:\TEMP\.*.DOC" would include all the DOC files in C:\TEMP or any of its sub-directories. See section 9.2.2.1 for more data on filenames.
Backup.exclude	This specifies a comma-separated list of files to exclude from the Backup. The set of files that will be backed up is the set of files specified in the include list minus the set of files specified in the exclude list. See section 9.2.2.1 for more data on filenames.
Backup.ignore_security	This does not Backup security-related information for the file.
Backup.allow_writers	This allows files to be backed up even if they are locked for writing by another process.
Backup.enc_type	The possible choices for encryption type are NONE, DES, TRIPLEDES, BLOWFISH and AES. The encryption algorithms are integrated into the Agent installation.
Backup.log_maxcopies	This states the number of logs to keep. The oldest logs are removed automatically in order to allow new logs to be created.
Backup.local_catalog	If this is set to YES, a local catalog file will be created in the Job sub-directory.
Backup.retention	This is the retention name.
Backup.registry	This specifies whether or not to Backup the Windows Registry. The values are YES or NO. The default is NO. This only applies to Windows 2000/2003.
Backup.nds	This specifies whether or not to Backup the Novell Directory Service (NDS). The values are YES or NO. The default is NO. This only applies to NetWare 4.2x. or greater
Backup.defer_after	This is used with Full Backups. After the specified number of minutes, the Backup will skip any

	new files or parts of new files that were not backed up completely previously. This makes it easy to auto-seed a large Backup over a period of several days or even weeks.
enc_password	This specifies the encryption password for the file data. This is the password (case sensitive) that will be used to encrypt or decrypt safesets.
log.log_to_file	If this is true, messages are logged to a file. The file is written to the Job directory and has the same name as the current command (e.g. "%data_directory%\myJob\Restore.log"). **NOTE** that upon successful completion of a Backup, the file "Backup.log" is renamed to a numbered file (e.g. "00000099.log").
log.detail	This is the level of detail in the log file. The levels, in increasing order of detail, are NONE, SUMMARY, DIRECTORIES and FILES. The default is FILES.
nds_pass	This specifies the password for the account used when backing up the NDS.
nds_path	This specifies the starting point in an NDS tree for the NDS Backup.
nds_user	This specifies the account used when backing up the NDS.
Restore.source	For server Restores, the safeset number can be shortened (e.g. server1:3). For other types of safesets, it should be the full name (e.g. tape9:monday1.ssi). See "Backup.destination" for more details.
Restore.include	This specifies a comma-separated list of files to Backup. To specify a whole directory tree, use the syntax "\.\". For example, "C:\TEMP\.*.DOC" would include all the DOC files in C:\TEMP or any of its sub-directories. See section 9.2.2.1 for more data on filenames.
Restore.exclude	This specifies a comma-separated list of files to exclude from the Backup. The set of files that will be backed up is the set of files specified in the include list minus the set of files specified in the exclude list. See section 9.2.2.1 for more data on filenames.
Restore.overwrite	This is used to specify whether files are overwritten during a Restore. The values are YES or NO. The default is NO. It overwrites existing files.
Restore.replace_locked	This overwrites locked files.
Restore.ignore_security	This does not Restore security-related information for the file.
Restore.create_subdirs	This creates sub-directories.
Restore.use_orig_dirs	This Restores to the original directories.
Restore.destination	This specifies the location to Restore to. Some examples are: \.*.* Restores to original locations and creates sub-directories c:\.*.* Restores to C:, creating sub-directories c:\temp\*.* Restores to c:\temp, without creating sub-directories
Restore.registry	This specifies whether or not to Restore the Windows Registry. The values are YES or NO. The default is NO. This only applies to Windows.
Restore.nds	This specifies whether or not to Restore the Novell Directory Service (NDS). The values are YES or NO. The default is NO. This only applies to NetWare 4.2x or greater.
show_progress	This shows progress messages. Normally, this option is set via the command-line qualifier /PROGRESS.
tape.label	This specifies the physical tape label.
tape.ignore_label	This ignores mismatched labels and expiry dates.
tape.init	This always initializes the tape so that the resulting safeset is the only one on the tape.
tape.unload	This ejects the tape after the Backup.
tape.assist	This requests operator assistance if necessary.
Tape.use_eod	This makes use of End-Of-Data Detection.

5.4.3.5 Miscellaneous Settings

Param_filename

This requests that a parameter file be used as input to the program in place of specifying command-line arguments. This file is created by the CentralControl application to execute immediate functions, such as Backup and Restore.

5.4.4 Scheduling Backups

The scheduling feature of Agent monitors the Backup schedule file for changes and prepares to initiate scheduled commands at specified times. Under Windows, the Scheduler runs as a Service. In addition to running the Scheduler under Windows, you can run the AT Service. Under NetWare, the Scheduler runs as an NLM. These are described below.

5.4.4.1 How to Schedule Backups under Windows

VVAgent is a service that enables the automatic scheduling and execution of other services to be loaded. When the VVAgent service is loaded, it reads the contents of the configuration file, Schedule.cfg, located in the directory where the CLI is installed. Each entry in the configuration file contains a time entry and a command name to run, optionally followed by the command arguments for the target Service.

The syntax of a Schedule.cfg file entry is as follows:

```
>    <mins>/<hours>/<days>/<months>/<dayofweek>
      <command name> [command arguments....]
```

Valid values for each portion of the time entry are as follows:

<mins>	0..59
<hours>	0..23
<days>	1..31
<months>	1..12
<dayofweek>	0..6 (Sunday..Saturday)

Multiple values may be specified for each time entry portion by separating each individual value with a comma. Furthermore, separating two values with a dash specifies a value range. Using an asterisk can specify a wildcard (all valid values).

Some examples:

```
>     30/11,23/*/*/* vv Backup netback
```

This entry loads the "vv" command with parameters "Backup" and "netback" daily at 11:30 a.m. and 11:30 p.m.

```
>     30/11/*/*/1-5 vv Backup netback
```

This entry loads the "vv" command with parameters "Backup" and "netback" at 11:00 a.m. on days Monday through Friday.

Note

This configuration file is checked for changes every minute. If any changes occur, the schedule is reloaded. There is no need to stop and start the Service.

5.4.4.2 How to use the AT Service under Windows

In addition to the VVAgent Scheduling program included with the product, you can use the AT service. The AT service is a standard scheduling service. In order to use the service, make sure it is set for automatic startup. To do this, open Control Panel|Services and check the startup options for the Schedule Service. To use the AT service, Set the startup to Automatic.

The AT service will remember scheduled jobs even if the machine is rebooted. Nevertheless, it is wise to create a batch file that can be used to recreate the jobs if they are accidentally deleted. A typical command file might look like this:

```
>    at \\ntserv1 19:30 /every:M,W,F c:\vvcmd\vv.exe
      Backup myJob /ret=daily
      at \\ntserv1 19:30 /every:S c:\vvcmd\vv.exe Backup
      myJob /ret=weekly
```

Note

We suggest you enter the node name so that the command procedure can be run from a remote machine. Also, the executable path must be full and complete.

More help on the AT command can be found in the Windows help file.

5.4.4.3 Entries Scheduled Simultaneously

Assume the Schedule.cfg file has the two following entries:

45/2/last/*/* vv Backup full /retention=Monthly

45/2/*/*/0-6 vv Backup full

The first entry is a Backup of the Job entitled 'full' using the Monthly retention and scheduled for 2:45 a.m. on the last day of every month. The second entry is a Backup of the Job entitled 'full' using the default retention and scheduled for 2:45 a.m. every day of the week.

Clearly, there is a potential conflict on the last day of the month. Both schedule entries are equally applicable. Which should be run, the Backup with the Monthly retention setting or the regular daily Backup?

In this situation, the position of the schedule entries in the file relative to each other determines which entry should take precedence. In this case, since the scheduled Backup with the Monthly retention setting appears closer to the top of the file than the regular Backup, it has priority. At 2:45 a.m. on the last day of the month, the scheduler notices that the two entries would run simultaneously. It runs the topmost schedule entry and reschedules the second (and any other conflicting) schedule entry or entries to run at the next available time.

For example, on January 31, 2006 at 2:45 a.m., the topmost schedule entry is run immediately since its position dictates its higher priority. However, the scheduler calculates the next available valid time that the second schedule entry may run. Since the second entry specifies that the regular Backup is to be run every day at 2:45 a.m., the next available time that fits these criteria is February 1, 2006. The second schedule entry will run at this time.

Note that such rescheduling will not take place for all conflicting Jobs. Only those Jobs with the same command (e.g. Backup, Restore, synchronize, etc.) and Jobname will be automatically rescheduled if they conflict. If the command or Jobname differ, the aforementioned procedure will not take place.

5.4.4.4 VVAgent CLI Command Mode

The CLI is used to execute commands on VVAgent from a command prompt instead of the CentralControl application. VVAgent is part of the Agent package and is responsible for scheduling, configuration and enabling communication between a Backup system and the CentralControl application.

The following switches can be controlled using the CLI:

-d : start VVAgent in the daemon mode (background). This is the most common mode because it enables the user to continue using the command prompt while VVAgent operates

-f : start VVAgent as a foreground process. In this mode, the command prompt cannot be used while the VVAgent is operating

-s : stop the VVAgent that is currently running

-p : set the working directory path

-n : set the port number for the CentralControl application connection (default 808)

The command line syntax rules are:./VVAgent (-d|-f|-s) [-p <EVault path>] [-n <port number>]

(...|...|...) user must choose either -d,-f, or -s.

[...] optional.

<...> a value provided by the user

Examples:

```
./VVAgent -d
./VVAgent -f -p /usr/local/EVault
./VVAgent -d -n 1680
./VVAgent –s
```

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