IBM Tivoli Storage Manager FastBack for Workstations
6.1.2.0

Central Administration Console Installation and User's Guide

SC27-2808-01

IBM Tivoli Storage Manager FastBack for Workstations
6.1.2.0

Central Administration Console Installation and User's Guide

SC27-2808-01

Note

Before using this information and the product it supports, read the information in "Notices" on page 53.

Edition notice

This edition applies to version 6, release 1, modification 2 of Tivoli Storage Manager FastBack for Workstations and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Preface

This publication helps you install and use Tivoli® Storage Manager FastBack for Workstations.

Who should read this publication

This publication is intended for administrators who use the central administration console to manage Tivoli Storage Manager FastBack for Workstations.

Accessing publications online

IBM® posts publications for this and other products, as they become available and when they are updated, to the product information center.

See the FastBack for Workstations section of the Tivoli Storage Manager FastBack products information center at http://publib.boulder.ibm.com/infocenter/tsmfbinf/v6/index.jsp.

Note: If you print PDF documents on other than letter-sized paper, set the option in the **File → Print** window that allows Adobe Reader to print letter-sized pages on your local paper.

Ordering publications

You can order or download PDF files and HTML versions of some IBM publications online.

To order or download IBM publications online go to the following Web site: IBM Publications Center at http://www.elink.ibmlink.ibm.com/publications/servlet/pbi.wss. The publications are available in PDF or HTML formats, or both.

The Web site also provides information for ordering publications from countries other than the United States. In the United States, you can also order publications by calling: 800-879-2755.

Support information

You can find support information for IBM products from a number of different sources.

- "Searching knowledge bases" on page vi
- "Finding product fixes" on page vi

Getting technical training

Information about Tivoli technical training courses is available online.

Go to Tivoli software training & certification at http://www.ibm.com/software/tivoli/education/.

Searching knowledge bases

If you have a problem with your IBM software, begin by searching the available knowledge bases to determine whether the resolution to your problem is already documented.

Search the internet

If you cannot find an answer to your question in the information center, search the Internet for the latest, most complete information that might help you resolve your problem.

To search multiple Internet resources for your product, go to the support web site for the product: Tivoli Storage Manager FastBack for Workstations support Web site at http://www.ibm.com/software/tivoli/support/storage-mgr-fastback-workstation/ and search support for the product. From this section, you can search a variety of resources including:

- IBM technotes
- IBM downloads
- IBM Redbooks®
- Forums and newsgroups

Using IBM Support Assistant

At no additional cost, you can install on any workstation the IBM Support Assistant, a stand-alone application. You can then enhance the application by installing product-specific plug-in modules for the IBM products that you use.

The IBM Support Assistant helps you gather support information when you need to open a problem management record (PMR), which you can then use to track the problem. The product-specific plug-in modules provide you with the following resources:

- Support links
- Education links
- Ability to submit problem management reports

For more information, see the IBM Support Assistant Web site at http://www.ibm.com/software/support/isa/.

Finding product fixes

This topic describes where and how to find a fix for your problem.

About this task

A product fix might be available to resolve your problem. You can determine what fixes are available for your IBM software product by checking the product support Web site:

Procedure

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support/.
2. Select the Tivoli brand. This opens a product-specific support site.
3. Under **Support for all Tivoli products** you will find a list of fixes, fix packs, and other service updates for your product.
4. Click the name of a fix to read the description and optionally download the fix.

What to do next

To receive weekly e-mail notifications about fixes and other news about IBM products, follow these steps:

1. From the support page for any IBM product, click **My support** in the upper-right corner of the page.
2. If you have already registered, skip to the next step. If you have not registered, click register in the upper-right corner of the support page to establish your user ID and password.
3. Sign in to **My support**.
4. On the My support page, click **Edit profiles** in the left navigation pane, and scroll to **Select Mail Preferences**. Select a product family and check the appropriate boxes for the type of information you want.
5. Click **Submit**.
6. For e-mail notification for other products, repeat steps 4 and 5.

Getting e-mail notification of product fixes

You can get notifications about fixes and other news about IBM products.

About this task

To receive weekly e-mail notifications about fixes and other news about IBM products, follow these steps:

Procedure

1. From the support page for any IBM product, click **My support** in the upper-right corner of the page.
2. If you have already registered, skip to the next step. If you have not registered, click **Register** in the upper-right corner of the support page to establish your user ID and password.
3. Sign in to **My support**.
4. On the My support page, click **Edit profiles** in the left navigation pane, and scroll to **Select Mail Preferences**. Select a product family and check the appropriate boxes for the type of information you want.
5. Click **Submit**.
6. For e-mail notification for other products, repeat steps 4 and 5.

Contacting IBM Software Support

You can contact IBM Software Support if you have an active IBM software maintenance contract and if you are authorized to submit problems to IBM.

About this task

Before you contact IBM Software Support, follow these steps:

Procedure

1. Set up a software maintenance contract.
2. Determine the business impact of your problem.
3. Describe your problem and gather background information.

What to do next

Then see "Submit the problem to IBM Software Support" on page ix for information on contacting IBM Software Support.

Setting up a software maintenance contract

Set up a software maintenance contract. The type of contract that you need depends on the type of product you have.

Procedure

- For IBM distributed software products (including, but not limited to, Tivoli, Lotus®, and Rational® products, as well as IBM DB2® and IBM WebSphere® products that run on Microsoft Windows or UNIX operating systems), enroll in IBM Passport Advantage® in one of the following ways:
  - **Online:** Go to the Passport Advantage Web page at http://www.ibm.com/software/lotus/passportadvantage/, click **How to enroll**, and follow the instructions.
  - **By Phone:** For the phone number to call in your country, go to the IBM Software Support Handbook Web page at http://techsupport.services.ibm.com/guides/contacts.html and click **Contacts**.
- For server software products, you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for server software products, go to the IBM Technical support advantage Web page at http://www.ibm.com/servers/eserver/techsupport.html.

What to do next

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States. For a list of telephone numbers of people who provide support for your location, go to the Software Support Handbook page at http://techsupport.services.ibm.com/guides/contacts.html.

Determine the business impact

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem you are reporting.

Severity 1	**Critical** business impact: You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.
Severity 2	**Significant** business impact: The program is usable but is severely limited.
Severity 3	**Some** business impact: The program is usable with less significant features (not critical to operations) unavailable.
Severity 4	**Minimal** business impact: The problem causes little impact on operations, or a reasonable circumvention to the problem has been implemented.

Describe the problem and gather background information

When explaining a problem to IBM, it is helpful to be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently.

To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can the problem be recreated? If so, what steps led to the failure?
- Have any changes been made to the system? For example, hardware, operating system, networking software, and so on.
- Are you currently using a workaround for this problem? If so, be prepared to explain it when you report the problem.

Submit the problem to IBM Software Support

You can submit the problem to IBM Software Support online or by phone.

Online
: Go to the IBM Software Support Web site at http://www.ibm.com/software/support/probsub.html. Enter your information into the appropriate problem submission tool.

By phone
: For the phone number to call in your country, go to the contacts page of the IBM Software Support Handbook at http://techsupport.services.ibm.com/guides/contacts.html

If the problem that you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. If a workaround is possible, IBM Software Support provides one for you to implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the Tivoli Storage Manager FastBack for Workstations support Web site at http://www.ibm.com/software/tivoli/support/storage-mgr-fastback-workstation/, so that users who experience the same problem can benefit from the same resolutions.

Chapter 1. Product Overview

This chapter provides an introduction to the Tivoli Storage Manager FastBack for Workstations central administration console and briefly describes enhancements for this version of the product.

New for the central administration console in version 6.1.2

The Tivoli Storage Manager FastBack for Workstations central administration console is updated for version 6.1.2.

The updates include the following enhancements:

Support for Tivoli Integrated Portal (TIP) 2.1
TIP 2.1 is a unifying platform for all Tivoli products that enables a common user interface (UI) look and feel, common tasks across aggregated views, and seamless cross-product integration.

See "Installing the central administration console" on page 7 for detailed information.

Support for Microsoft Windows 2008 R2
The central administration console supports installation on Microsoft Windows 2008 R2 systems.

Tivoli Storage Manager FastBack for Workstations central administration console: Introduction

With the Tivoli Storage Manager FastBack for Workstations central administration console, you can centrally manage many Tivoli Storage Manager FastBack for Workstations clients.

With the central administration console, you can manage Tivoli Storage Manager FastBack for Workstations clients in the following ways:
- Discover existing Tivoli Continuous Data Protection for Files and Tivoli Storage Manager FastBack for Workstations clients.
- Monitor the activity of clients to determine the health of your data protection system.
- Tune performance of clients and react to potential problems to maintain the highest level of data protection. You can update configurations and send command scripts.
- Deploy software updates throughout the enterprise.

The central administration console is a tool for monitoring and managing the clients. The central administration console makes an administrator's job easier, but is not a requirement for protecting your data. Tivoli Storage Manager FastBack for Workstations clients can protect your data without the central administration console. If you do not install the central administration console or if the central administration console is not running, your data is still protected by the Tivoli Storage Manager FastBack for Workstations clients.

Tivoli Storage Manager FastBack for Workstations can store backup copies on a Tivoli Storage Manager server, but there is no requirement to use Tivoli Storage

Manager. Tivoli Storage Manager FastBack for Workstations is a stand-alone product and has no dependencies on Tivoli Storage Manager or Tivoli Storage Manager FastBack.

The following concepts are key to understanding the central administration console: *groups* and *administration folders*:

Groups
: With the central administration console, you can administer many clients at a time. You can filter and select clients based on several criteria, but a typical filter is achieved by assigning clients with similar data-protection needs to the same group.

Administration folders
: The central administration console communicates with clients by sharing information with clients in administration folders.

Groups

Groups allow you to manage many clients with a single action.

A *group* defines a configuration of protection settings for a Tivoli Storage Manager FastBack for Workstations client. The same protection settings can be set with the **Settings Notebook** of the client.

A group can have 0 or more client members. All clients that are added to the group adopt the group configuration.

Rather than managing single clients, you can put many clients into one group, and manage all clients in that group with a single action. When you change the configuration of the group, you change the configuration of all client members. In the **Clients** task, you can filter clients by group, then select all members of a group, then perform an action on all selected clients.

For example, assume that you assign all clients in an accounting department to a group. Assume that the accounting department adopts a new tool that produces files of a type that are not currently protected by the Tivoli Storage Manager FastBack for Workstations clients. With a single action from the central administration console, you can change the configuration of all Tivoli Storage Manager FastBack for Workstations clients in the accounting group to protect the new file type.

Administration folders

Clients pull configuration information, commands, and software updates from administration folders. The central administration console manages clients by sharing information with clients in administration folders.

Managing clients

When the client and the central administration console access the same administration folder, they exchange information in the administration folder. The client sends reports to the folder. The central administration console collects the reports and presents the information to the administrator. The central administration console pushes software updates, configuration information, and command scripts to the administration folder, and the client periodically pulls the updates, configuration, and command scripts.

If the central administration console and a client are not configured to access the same administration folder, the central administration console cannot manage that client.

By default, the central administration console service uses a local system account to log on. A local system account can access administration folders on the central administration console server, but cannot access administration folders on shared drives on other computers. If the clients use administration folders on computers other than the central administration console server, run the central administration console service in an account that has access to the remote administration folders.

Determining administration folders for clients

Clients whose configuration files are created with the central administration console access the administration folder that you identify in the central administration console. The central administration console periodically scans the administration folder for reports from new clients. When the client is installed, the client accesses this administration folder, and the central administration console discovers the client. After the client is discovered, the central administration console locks the value of the administration folder.

If a Tivoli Storage Manager FastBack for Workstations client has not been discovered by the central administration console, you have some ability to specify the administration folder with the client. In this case, the administration folder defaults to the `\RealTimeBackup\` subfolder of the remote storage area. When such a client is discovered by the central administration console, the central administration console sets and locks the value of the administration folder.

If a remote storage area is not configured, or if the client uses remote storage on a Tivoli Storage Manager server, there is no default administration folder.

Tivoli Continuous Data Protection for Files Standard Edition clients have a **Central Administration Settings** panel that allows a user to explicitly configure the administration folder location. If the **Central Administration Folder** field is configured, that value overrides the default administration folder location. This allows a client that is configured with no remote storage, or one that is configured with remote storage on a Tivoli Storage Manager, to be discovered and managed by the central administration console. However, a user can change the administration folder setting to a location that is not known to the central administration console. If this happens, the central administration console cannot manage the Tivoli Continuous Data Protection for Files client.

Tivoli Continuous Data Protection for Files Starter Edition clients do not have a **Central Administration Settings** panel that allows a user to explicitly configure the administration folder location. If a Starter Edition client uses Tivoli Storage Manager server remote storage, there is no administration folder. You can configure an administration folder for such a client only by using the fpa config-set command. If you use the fpa config-set command to specify a folder that has been identified to the central administration console and is accessible to the client, the central administration console discovers the client.

The fpa config-set command sets the administration folder for any client, even one that has been discovered by the central administration console. Invoke the command from a Command Prompt window at the Tivoli Continuous Data Protection for Files install directory, like this:

```
fpa config-set GlobalManagementArea="\\MyServer\\MyShare\MyAdminFolder"
```

Replace `\\MyServer\\MyShare\MyAdminFolder` with the CIFS (Common Internet File System) URL of a folder that is accessible to the client and the central administration console.

Administration folder subfolders

The administration folder contains two levels of administrative subfolders.

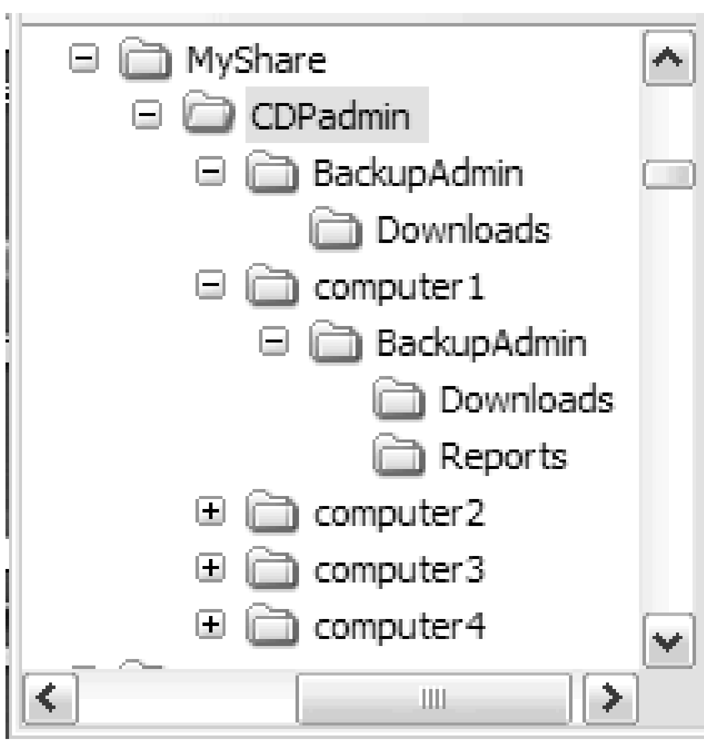
Computer-specific subfolders
These folders apply to only one computer. The central administration console communicates with clients through the computer-specific subfolders. In the computer-specific subfolder, there are two subfolders:

The Reports folder
The client stores status reports in the Reports folder. You can view the reports in the central administration console. The full path of the reports folder is *`administration_folder_location`*`\`*`computer_name`*`\BackupAdmin\Reports\`.

The Downloads folder

When you put product upgrades or configuration files in this folder, the client automatically adopts the product upgrades or configuration. The full path is *`administration_folder_location`*`\`*`computer_name`*`\BackupAdmin\Downloads\`.

Group administrative subfolders
These folders apply to all computers that share this administration folder. In each group administrative subfolder, there is a Downloads subfolder. When you put product upgrades or configuration files in the group administrative Downloads subfolder, all clients that share this group administrative folder automatically adopt the product upgrades or configuration.



Maintaining control of the clients

Follow these guidelines to maintain control of the clients:

- Upgrade Tivoli Continuous Data Protection for Files clients to Tivoli Storage Manager FastBack for Workstations clients. Upgrading to Tivoli Storage Manager FastBack for Workstations eliminates the opportunity for users to set their administration folder location with the **Central Administration Settings** panel.
- Deploy Tivoli Storage Manager FastBack for Workstations clients with a configuration file that is created by the central administration console. This configuration file defines an administration folder location that users cannot change.

Information currency

The client information that is displayed in the central administration console is as current as the reports received from the clients.

Clients push reports to the administration folder and pull information from the central administration console on an interval that can be configured in the central administration console. The default interval is 1 hour. Beyond the configured interval, a client report can be delayed because of issues with the client. Some issues that can prevent the client from reporting are the following:

- The client computer is turned off.
- The client computer cannot reach the administration folder.
- The Tivoli Storage Manager FastBack for Workstations client is not running.

The central administration console scans administration folders on an interval that also can be configured in the central administration console.

The client information in the central administration console is not real-time information, but is delayed by configured communication intervals between the client and the central administration console, and can also be delayed by client issues.

You can determine the information currency for a particular client by examining the date in the **Last Report** column in the **Health** view of the **Clients** task.

You can define an alert condition based on the time that has elapsed since a client last reported.

Chapter 2. Installing Tivoli Storage Manager FastBack for Workstations

This chapter contains information for installing and initially configuring Tivoli Storage Manager FastBack for Workstations.

System requirements

The Tivoli Storage Manager FastBack for Workstations central administration console requires a Windows server with minimum levels of hardware and software.

For current software and hardware requirements, see FastBack for Workstations Hardware and Software Requirements.

Installing the central administration console

Install the Tivoli Storage Manager FastBack for Workstations central administration console.

About this task

This task assumes that TIP (Tivoli Integrated Portal) is not installed on the computer.

The central administration console installer is an executable file with a name like `x.x.x.x-TIV-FB4WKSTNS-CAC_windows.exe`. You must have administrative privilege to install Tivoli Storage Manager FastBack for Workstations central administration console.

Procedure

1. Invoke the installer from the product CD or from a download image. The introduction panel gives an overview of the installation process. Click **Next**.
2. Accept the license agreement and click **Next**.
3. Provide the user name and password for TIP (Tivoli Integrated Portal).
   - If TIP is not previously installed, you are prompted to set the TIP user name and password.
   - If TIP is installed, you are prompted for the TIP user name and password.
4. Enter the installation path for Tivoli Storage Manager FastBack for Workstations central administration or chose the default path `C:\Program Files\Tivoli\TSM\IBM FB4WCA Console` and click **Next**.
5. If TIP has not been previously installed, enter the installation path for TIP or choose the default path `C:\IBM\Tivoli\TIPv2` and click **Next**.
6. Click **Next** when presented with the list of components and installation location, and click **Done** when presented with a summary of the installation. The installation path is predetermined, and cannot be changed. When installation is complete, the installer starts TIP in the default browser.

What to do next

Note: By default, the central administration console service uses a local system account to log on. A local system account can access administration folders on the central administration console server, but cannot access administration folders on shared drives on other computers. If the clients use administration folders on computers other than the central administration console server, run the central administration console service in an account that has access to the remote administration folders.

Uninstalling the central administration console

Uninstall the Tivoli Storage Manager FastBack for Workstations central administration console.

About this task

You must have administrative privilege to uninstall Tivoli Storage Manager FastBack for Workstations central administration console.

Procedure

1. Navigate to the **Control Panel** and then the list of installed programs.

Option	Description
On a Windows 2003 server:	**Start** > **Control Panel** > **Programs** > **Programs and Features**
On a Windows 2008 server:	**Start** > **Control Panel** > **Add or Remove Programs**

   A list of installed programs is displayed.
2. Click IBM FB4WCA Console.

Option	Description
On a Windows 2003 server:	Click **Change/Remove**.
On a Windows 2008 server:	Click **Uninstall/Change**.

3. In the introduction panel of the uninstall wizard, click **Uninstall**.
4. When you are prompted, enter the TIP (Tivoli Integrated Portal) user name and password.
5. Check the **Remove TIP** box if TIP is to be removed, and click **Next**.

   Note: Other products may be using TIP. Make sure that other products will not be adversely affected before removing TIP.

Results

Tivoli Storage Manager FastBack for Workstations central administration console is uninstalled. A message window indicates when uninstallation is complete.

Starting the central administration console GUI

Start the central administration console GUI (graphical user interface) to monitor and actively manage the Tivoli Storage Manager FastBack for Workstations clients. You can also change the administration settings and group configurations.

Before you begin

Before you start the central administration console GUI, you must install the central administration console.

About this task

When you are not logged in to TIP (Tivoli Integrated Portal) and working with the central administration console GUI, the central administration console continues to monitor clients, and sends you alerts when needed.

Procedure

1. Start the TIP (Tivoli Integrated Portal) GUI.
   - From the Start menu, choose **Tivoli** > **TSM** > **IBM FB4WCA Console** > **IBM_TSM_F4WS_Console**
   - With a Web browser on the central administration console server, go to https://localhost:16311/ibm/console/logon.jsp
   - With a Web browser on another computer, go to port 16311/ibm/console/logon.jsp on the central administration console server. For example, if the central administration console server address is 9.1.80.80, go to https://9.1.80.80:16311/ibm/console/logon.jsp.

   The TIP login panel prompts you for user name and password.
2. From the list of TIP tasks, choose FastBack for Workstations. The FastBack for Workstations subtasks are displayed: **Health Monitor**, **Clients**, **Groups Configuration**, **Administration Settings**.

   If the GUI session is inactive for some time (30 minutes by default), TIP closes the session. It is possible that TIP will prompt you for user name and password two times when you log in after a session timeout.

What to do next

You can administer clients with the central administration console GUI. You can monitor the health of clients, take action on clients, modify group configurations, and modify administration settings.

Starting and stopping the central administration console service

Start and stop the service that monitors Tivoli Storage Manager FastBack for Workstations clients and alerts you of problems with clients.

Before you begin

This task assumes that you installed the central administration console.

About this task

The central administration console service is automatically started after a successful installation and every time the computer starts. Whether or not you open the central administration console GUI (graphical user interface), the central administration console service monitors clients and sends alerts. In most cases you do not need to start and stop the central administration console service. If you need to stop or start the central administration console service, follow this procedure.

Procedure

1. Click **Start** > **Control Panel** > **Administrative Tools** > **Services**. A list of services is displayed.
2. Click the service with this name: IBMWAS70Service - TIPProfile_Port_16310 The **Services** panel indicates the log on account and whether you can stop, start, or restart the service.
3. Optional: Change the properties of the service to log on to an account that has access to administration folders on other computers. By default, the central administration console service uses a local system account to log on. A local system account can access administration folders on the central administration console server, but cannot access administration folders on shared drives on other computers. Run the service in an account that has access to the administration folders.
4. Optional: Click the appropriate action (stop, start, or restart). The central administration console service is stopped or started, according to your choice.

Chapter 3. Configuring the central administration console

You can configure administrative tools that monitor Tivoli Storage Manager FastBack for Workstations clients. This includes identifying the conditions that trigger alerts, and identifying who is alerted.

Configuring central administration console monitoring tools

Customize the central administration console tools that alert you to potential problems.

Configuring e-mail settings and scan interval

Configure the central administration console to send you e-mail when there is an alert. Configure the interval that the central administration console uses to scan administration folders to collect information about clients.

About this task

The central administration console can automatically send e-mail notifications when there is a potential problem. You must identify your SMTP mail server.

The central administration console scans all administration folders on a regular interval. During these scans, the central administration console updates the status of clients and discovers new clients.

Procedure

1. Open the **Administration Settings** task. The administration tables are displayed.
2. In the **Alerts Configuration** section, click the **Actions** menu.
3. Click **Configure the Scan Interval and E-mail for Alerts**. The **Configure the Scan Interval and E-mail for Alerts** panel is displayed.
4. Set the scan frequency.
5. Identify the SMTP e-mail server. Identify e-mail server authorization information, and mail server port number, if required. The SMTP e-mail server has an address like `smtp.example.com`.
6. Click **OK**. The e-mail configuration and scan interval are saved by the central administration console.

Defining alert conditions

Define the conditions that trigger an alert. Determine whether the conditions trigger a change in the health status of a client, or an e-mail notification, or both.

Before you begin

If any alerts trigger e-mail notifications, you must identify the SMTP e-mail server with the **Configure the Scan Interval and E-mail for Alerts** action.

Procedure

1. Open the **Administration Settings** task. The administration tables are displayed.

2. In the **Alerts Configuration** section, click the **Actions** menu.
3. Click **Define Alert Conditions**. The **Define Alert Conditions** panel is displayed.
4. Type the name of the alert.
5. Provide a message for operators who are notified by the alert. The message appears in e-mail notifications and in the **Alerts** table in the **Health Monitor** task.
6. Identify the e-mail addresses of operators who receive alert notifications.
7. In the **Set client health status** section, determine if these alert conditions change the health status of a client.
8. In the **Conditions** section, identify the conditions that trigger this alert.
9. Click **OK**. The new alert conditions appear in the **Alerts Configuration** table.

Modifying alert conditions

Change the conditions that trigger an alert or determine whether the conditions trigger a change in the health status of a client, or an e-mail notification, or both.

Before you begin

If any alert conditions trigger e-mail notifications, you must identify the SMTP e-mail server with the **Configure the Scan Interval and E-mail for Alerts** action.

Procedure

1. Open the **Administration Settings** task. The administration tables are displayed.
2. In the **Alerts Configuration** section, click the **Actions** menu.
3. Click **Modify Alert Conditions**. The **Modify Alert Conditions** panel is displayed.
4. Change any of part of the alert conditions except the alert name.
5. Click **OK**. The modified alert conditions are saved by the central administration console.

Creating a script for clients

Create your own, custom scripts for clients. Create commands or use commands that are provided with the central administration console.

About this task

A client can run a script automatically when the client is first discovered by the central administration console. A typical script at initial discovery contains a command to back up all files. This action creates an initial backup copy of all files that you identified for protection. Without this action, files are backed up only when they are changed.

You can also send a script to clients to address a problem. For example, if your network is impacted by remote backup activity, you can send a command to specific clients to immediately pause remote backup activity. If you want to reduce the network traffic that occurs at a later, scheduled backup time, you can send a command to specific clients to immediately back up e-mail files and other files that are typically backed up at the scheduled time.

Procedure

1. Open the **Administration Settings** task. The three administration tables are displayed.
2. In the **Custom Scripts** section, click the **Actions** menu.
3. Click **Create a Script**. The **Create a Script** panel is displayed.
4. Type a name for the script. Optionally, you can provide a description.
5. In the **Number of simultaneous clients** field, enter the maximum number of clients that can run this script at the same time. Some commands, such as **Back up all files**, can consume considerable network resources. You can limit the number of clients that run this script at the same time.
6. In the **Script acceptance timeout** field, enter the maximum time for the client to begin running the script. If the client has not started the script in this time, there are the following consequences:
   - The script is removed from the administration folder of the client.
   - The client is no longer counted as one that is running the script simultaneously with other clients.
   - The audit log records that the client failed to start the script in this time.
   - The script is sent to the client at a later time.
7. In the **Script completion timeout** field, enter an estimate of the time it takes for a client to complete the script. The central administration console is not notified when a client completes a script. When the **Script completion timeout** time elapses, the central administration console removes the client from the list of clients that are running the script. If the number of clients running the script is constrained by the value of **Number of simultaneous clients**, the central administration console can send the script to another client.
8. In the **Script** box, select a command from the list. The list contains popular commands. You can also create your own commands by directly editing the text area. The command is appended to the bottom of the list of commands.
9. Add more commands, if needed. You can add, modify, or delete commands by editing the text area.
10. Click **OK**. The new script appears in the **Custom Scripts** table.

What to do next

You can send this script to one or more clients.

Modifying Java virtual machine memory settings

Set Java virtual machine (JVM) memory settings to enhance central administration console performance.

Before you begin

The value of the JVM `maximumHeapSize` setting directly affects the ability of the central administration console to manage many Tivoli Storage Manager FastBack for Workstations clients. When the value is set too low, the central administration console might become slow to respond, fail to load, or even crash.

About this task

This task describes how to modify the `maximumHeapSize` setting in order to prevent performance issues when managing many clients. Complete this task on the system where the central administration console server is installed.

Procedure

1. Go to the `C:\IBM\Tivoli\Tipv2\bin` directory. Query the JVM settings by issue the following sequence of commands:

   Tip: You are prompted to enter the Tivoli Integrated Portal (TIP) user ID and password after issuing `wsadmin.bat`.

   ```
   wsadmin

   set server1 [$AdminConfig getid /Cell/TIPCell/Node/TIPNode/Server/server1/]

   set jvm [$AdminConfig list JavaVirtualMachine $server1]

   $AdminConfig show $jvm

   quit
   ```

   Identify the value of the `maximumHeapSize` setting in the command results. In this procedure, the default value is 256 MB.
2. In order to modify the value of the `maximumHeapSize` setting, create a text file that contains the following content:

   Note: This example uses text file `jvm.jacl` and modifies the value of the `maximumHeapSize` setting to 512 MB.

   ```
   set server1 [$AdminConfig getid /Cell/TIPCell/Node/TIPNode/Server/server1/]

   set jvm [$AdminConfig list JavaVirtualMachine $server1]

   $AdminConfig modify $jvm {{initialHeapSize 256} {maximumHeapSize 512}}

   $AdminConfig save
   ```
3. From the `C:\IBM\Tivoli\Tipv2\bin` directory, issue this command:

   ```
   wsadmin -f jvm.jacl
   ```
4. Stop and restart the central administration console server. The modified value of the `maximumHeapSize` setting is applied.

Chapter 4. Administering Tivoli Storage Manager FastBack for Workstations

Information is available for administering Tivoli Storage Manager FastBack for Workstations with the central administration console.

Preparing to manage groups of clients

Prepare for central administration by organizing users into groups with similar data-protection needs. Create groups in the central administration console.

Planning groups of users

Determine which users have similar needs, and organize these users into groups.

Before you begin

You need some knowledge of the applications, network issues, and business processes of the Tivoli Storage Manager FastBack for Workstations users.

About this task

Keep in mind that group membership is not static. If you find that the original groups needs to change, you can move clients from one group to another.

However, if you move a client to a group that uses a different storage target, existing backup copies cannot be restored by the client.

Procedure

1. Consider the backup protection needs of the users. Consider the following items:
   - What file types need to be continuously protected?
   - Are there some files that should be excluded from protection? (This can save storage and network resources).
   - Do some folders need to be vaulted?
   - How much space is needed for backup copies on the user's computer and on a remote storage device?
   - What mail programs need to be protected?
   - What other files need to be protected on a schedule?
   - Will the administration folder be unique for each group, or will several groups share the same administration folder?
   - When files are transferred to remote storage, do they need to be encrypted or compressed?
   - When files are transferred to remote storage, what are appropriate restrictions on file size and transfer rate?
2. As you consider the protection needs, note which users have the same or similar needs. Users that have similar needs can be managed as a group.

Example

As an example, assume a small business with the following teams.

- The engineering team use similar tools for their CAD (Computer-assisted design) work. All members of this team require protection of their CAD files and e-mail.
  – Some engineers work at the main office. They are the only users whose workstations are connected to a backup server by a high-speed data connection.
  – Some engineers work at remote locations.
- Members of the sales team create sales presentations and keep in touch with their customers. They need protection of their presentation files, customer information spreadsheet files, and e-mail. Occasionally when traveling they can go for long periods without network access to the remote backup server. At these times, they can use local storage on their mobile computers for backups.
- Members of the accounting team need to protect their spreadsheet files, accounting reports, and e-mail.
  – The principal accountant has some unique responsibilities. When an accounting cycle closes, you want to vault her files associated with that accounting project.

You decide to organize the end users by the teams listed, with two exceptions:

- You organize the engineers into a local group and a remote group.
- The principal accountant has unique needs. You could create a group for this one client, or you could manage it with no group. When you create a group, the central administration console stores the configuration settings. With stored configuration settings, you can generate the configuration file or create a similar configuration file for a user with slightly different needs. You decide to create a group for this one user.

Each of these teams has different data-protection needs. All members within a group have the same data-protection needs, and can be served by the same data-protection configuration.

What to do next

When you have decided how to organize the users, you are ready to create the groups.

Creating a group

Use the **Groups Configuration** task to create a group from scratch, or to create a group that is like an existing group. A group allows you to manage many clients at one time. A group defines a client configuration.

About this task

The **Groups Configuration** wizard of the central administration console is like the initial configuration wizard of the client. Both wizards guide you to configure the data-protection settings for clients. Unlike the initial configuration wizard of the client, the **Groups Configuration** wizard exposes all data-protection settings, and identifies a name and description for the group.

Procedure

1. Open the **Groups Configuration** task. The table of groups is displayed.
2. From the **Actions** menu, click **Create a Group**. The **Groups Configuration** wizard opens.

   Create a Group provides default settings, which you can modify in the wizard.

   Create a Group Like an Existing Group provides settings of an existing group, which you can modify in the wizard. Choose **Create a Group Like an Existing Group** if the new group is like an existing group. **Create a Group Like a Client** is enabled when you select one group from the table. The **Welcome** page of the **Groups Configuration** wizard is displayed.
3. Provide configuration settings as requested by the wizard. You can accept the configuration settings provided by the wizard, or change them.
4. At the last page, click**Finish** to create the group. The new group is added to the table of groups.

What to do next

You can add existing clients to this group, and they adopt the configuration.

If you associate this group with an administration folder, you increase your ability to manage clients in two ways:

- You can use the configuration of this group to create a configuration file for an installation package.
- When clients initially contact the administration folder, they become members of this group.

Creating a group with the configuration of an existing client

Create a group with a configuration that is imported from an existing client.

Before you begin

This task requires that the central administration console discovered a client.

Procedure

1. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
2. Select a client.
3. Click the **Actions** menu.
4. Click **Create a Group Like a Client**. In the **Groups Configuration** task, you can see the new group in the table of groups. The group has the configuration of the client that you selected.

What to do next

You can add clients to the group. You can use the configuation of this group when deploying new clients.

Modifying all clients in a group

Modify the data-protection configuration of all clients in a group.

Before you begin

This task assumes the following:
- You created a group.
- The central administration console discovered some clients.
- You assigned some clients to a group.

About this task

When you modify a group, the central administration console automatically sends the new configuration to all clients in the group.

Procedure

1. Open the **Groups Configuration** task. The table of groups is displayed.
2. Select the group that you want to modify.
3. From the **Actions** menu, click **Modify a Group**. The **Groups Configuration** notebook displays the current settings for the group.
4. Modify the configuration settings.
5. Click **OK**. The group configuration is modified, and the new configuration is sent to all clients in the group. The clients adopt the new configuration settings.

Groups Configuration: field explanations

The **Groups Configuration** notebook allows you to configure the data-protection settings for Tivoli Storage Manager FastBack for Workstations clients.

The **Groups Configuration** notebook of the central administration console is like the **Settings Notebook** of the client. Most of the panel titles and field labels are the same.

Continuous Protection panel of Groups Configuration

Use the **Continuous Protection** panel to set the maximum space on local storage for backup copies and the maximum versions of backup copies on local storage.

How many versions to keep field

Tivoli Storage Manager FastBack for Workstations can save more than one backup version of each file. When you restore a file, you can choose which version of the file you want to restore. When the configured number of versions is reached, older versions of a file are deleted. Keeping more versions requires more local storage space, but allows you more choices when restoring a file.

Maximum space for backups field

Specify how much space to use for all backup copies on local storage. When the storage area becomes full, older versions of files are deleted until the storage area is at about 80 percent of the configured maximum. If, after deleting all versioned backup copies, local storage space is still insufficient, Tivoli Storage Manager FastBack for Workstations will delete the oldest non-versioned files.

Note: No warning message displays when the maximum space is reached.

The default space for local backups is 500 MB.

Note: If you try to back up a file which is larger than the space you have allocated for your storage area, Tivoli Storage Manager FastBack for Workstations purges all older versions of your files, and then fails to back up the file. Make sure that the maximum space for your storage areas is greater than the file size limit in the **Advanced** page of the Tivoli Storage Manager FastBack for Workstations.

Continuous protection level list

Tivoli Storage Manager FastBack for Workstations offers two levels of protection for your files: continuous protection and scheduled protection.

Use this box to select which storage areas to use for continuously protected files.

None Files are not protected.

Local storage only
Tivoli Storage Manager FastBack for Workstations creates backup copies only on the local storage area.

Remote storage only
Tivoli Storage Manager FastBack for Workstations creates backup copies only on the remote storage area.

Local and remote storage
Tivoli Storage Manager FastBack for Workstations creates backup copies on both the local and remote storage areas. This choice provides the most protection for your files, and is the default choice.

If your continuous protection level includes local storage, Tivoli Storage Manager FastBack for Workstations creates backup copies in the `\RealTimeBackup\` folder on the nonremovable drive with the most free space.

Note: The client can specify the drive for local storage, but the central administration console cannot. The central administration console defines a configuration that potentially applies to many clients, and it is possible that not all the target computers have the same hardware configuration. Hence, the central administration console configuration specifies the default drive for local storage, which is the nonremovable drive with the most free space.

Files to Protect panel of Groups Configuration

Enter the files and folders that you want to continuously protect, and the files and folders that you want to vault. Exclude files from backup protection and from vaulting.

Enter one file specification per line. You can use wildcard characters in the file specifications.

For example, assume you want to protect all files in `c:\Projects\`, `c:\Contacts\`, and `d:\Art\`. However, you don't want to protect anything with `\junk\` in the file path. You also don't want to protect any files that end with `.tmp`.

- In the **Folders and files** box, enter the following:

```
c:\Projects\*
c:\Contacts\*
d:\Art\*
```

- In the **Excluded folders and files** box, enter the following:

```
\junk\
*.tmp
```

The following topics provide conceptual information to help you protect the right files.

Protected drives:

All files that meet the include and exclude specifications, and that appear to Tivoli Storage Manager FastBack for Workstations as internal drives, are protected.

In some cases, an external USB drive looks like an internal drive, and Tivoli Storage Manager FastBack for Workstations tries to protect the files on that drive. If you do not want to protect that drive, add the drive letter to the exclusion list so that all files on the USB drive are excluded from protection. For example, if your `E:` drive is a USB drive, add `E:\` to the list of excluded items.

Including and excluding files from protection:

Protected files are specified by including files and by explicitly excluding files.

Continuous and scheduled protection (not vaulted)

Tivoli Storage Manager FastBack for Workstations keeps a list of files that are included for protection, and a list of files that are explicitly excluded from protection. The list of included files is separated into those files that are included for continuous protection, and those files that are included for scheduled protection. If a file is excluded, it is excluded from both continuous and scheduled protection.

A file is on the include list for continuous protection if it is defined in the **Protected Folders and Files** field in the **Files to Protect** panel of the **Groups Configuration** notebook of the central administration console.

A file is on the include list for scheduled protection if it is defined in the **E-mail Protection** panel in the **Groups Configuration** notebook of the central administration console. A file can be defined in the **E-mail application data files or folders** field or in the field of additional files or folders you want to be backed up when your e-mail is backed up.

A file is on the exclude list if it is defined in the **Excluded Folders and Files** field in the **Files to Protect** panel in the **Groups Configuration** notebook of the central administration console.

It is possible that a file can be on both the include list and the exclude list.

If a file (or folder) is on the exclude list, it is not protected by continuous protection or by scheduled protection. Even if the file (or folder) is also on an include list, it is not protected.

If a file is on an include list and not on the exclude list, it is protected.

If a file is not on an include list, it is not protected.

The table summarizes the interaction of inclusion and exclusion. The two left columns indicate if a file is included or excluded, and the right column indicates if the inclusion and exclusion yield protection for the file.

Table 1. Inclusion and exclusion. File protection by Include list and Exclude list.

	File is not specified in Include list.	**File is specified in Include list.**
File is specified in Exclude list.	File is not protected.	File is not protected.
File is not specified in Exclude list.	File is not protected.	File is protected.

If you have leading or trailing blank spaces in your file specifications, or if you use wildcards in your file specifications, the specifications in your files list can match more than one folder or file. See "Wildcards in file specifications" for an explanation of how specifications match file and folder names.

For example, consider a small variation to an excluded specification: `\temp\`. If you use instead `\temp` (without the closing folder delimiter), there is a very different effect. This small change has a potentially large impact. All files which have `\temple`, `\temptation\`, `\temperature\`, `\template\`, and other variations of `\temp*`, would be excluded from protection.

Consider another example. You choose to exclude `*.gif` so you can avoid backing up files saved by your browser when you open different Web sites. This specification also excludes all `.gif` files in `\My Pictures\` folder.

Vaulted folders

Vaulted folders, and the files in them, are not affected by the lists of files that are included for continuous or scheduled protection. However, excluded files and folders are not vaulted. All objects that you define in the **Vaulting** box in the **Files to protect** panel of the **Groups Configuration** notebook of the central administration console are vaulted, unless they are excluded.

Wildcards in file specifications:

You can use wildcards to specify the files to protect.

You can enter the complete path of a file that you want to protect. For example, `C:\Documents and Settings\Administrator\My Documents\Soccer\2005AYSO\Parent Info U8B.doc`. The complete path unambiguously matches a single file. But to specify all files this way requires many file paths. Use asterisks and blanks as wildcards to specify several files.

An asterisk matches any number of characters in a file path. If there are no asterisks, then Tivoli Storage Manager FastBack for Workstations matches any file whose fully expanded path name has that exact pattern anywhere in the path or filename. The pattern is not case-sensitive.

If there are no asterisks in the pattern, then blank spaces before and after the pattern are interpreted as asterisks. Hence, `\myDocs\` and `*\myDocs\*` yield the same matches. If there are asterisks in the pattern, then blank spaces before or after the pattern match no characters. Hence, `\myDir\`, `*\myDir\`, and `\myDir\*` could yield three different matches, as in the table of examples pictured.

As an example, assume a pattern fish. This pattern matches: C:\dir\fish.doc and C:\fish\anyfile.doc and c:\Dirfishfood\something.

If the pattern has slashes around it (\fish\), it matches any object with \fish\ somewhere in the path. This pattern matches C:\fish\anyfile.doc but not C:\dir\fish.doc and not c:\Dirfishfood\something

Table 2. File and folder pattern matches

This pattern ...	... matches these folders and files on your computer:
\myDir\ or \mYdiR\ or *\myDir* or *\mydir*	c:\myDir\ c:\myDir\Contacts\ c:\myDir\Contacts\contacts.txt c:\Projects\myDir\ c:\Projects\myDir\myThings\ c:\Projects\myDir\myThings\things.doc c:\Projects\myDir\myThings\myPhoto.jpg d:\Notes\myDir\
*\myDir\	c:\myDir\ c:\Projects\myDir\ d:\Notes\myDir\
\myDir*	
d:*\mydir*	d:\Notes\myDir\
\my best	c:\Books\My Best.doc c:\Photos.jpg\My Best Photo\ c:\Photos.jpg\My Best Photo\Best.jpg f:\Projects\My Best Project\ f:\Projects\My Best Project\Dream.xls
.jpg	c:\Photos.jpg\ c:\Photos.jpg\myHouse.bmp c:\Photos.jpg\My Best Photo\Best.jpg c:\Projects\myDir\myThings\myPhoto.jpg
*.jpg	c:\Photos.jpg\ c:\Photos.jpg\My Best Photo\Best.jpg c:\Projects\myDir\myThings\myPhoto.jpg
E:\ E:*	All files and folders on the E: drive.

Vault duration:

You can specify the duration of vaulting by using special folder names. Files in these folders are vaulted for a specific period of time and after that time the files are not vaulted.

To specify duration of vaulting, create a folder named \KeepSafe\ in any vaulted area. In the \KeepSafe\ folder, create folders that indicate the vaulting period. For example, C:\MyImportantDir\KeepSafe\Retain 3 years\. Any file created in that folder are prevented from alteration or deletion for three years. After the expiration time, the file is no longer vaulted. There are three ways to indicate the vaulting period. Each way requires that you use a keyword in the folder name.

1. **\KeepSafe\RetainForever**
   Files in this folder are vaulted forever. Such material can never be moved to another folder with shorter vaulting duration. Material can be moved within the folder tree and to other folders of the same duration.

2. **\KeepSafe\Retain Duration**

Specify exact vaulting periods using English terminology. Duration is specified by a combination of the following time units:

Years

Days

Hours

Minutes

Seconds

Use 1 or more time units. Each time unit you use must be preceded by a number up to five digits long. You can include spaces or underlines or dashes and mix case in the folder name. The following are valid examples:

\Retain23days4hours\
\Retain 3years\
\Retain_3years\
\Retain-23DAYS_4minutes\
\Retain 1000 days\

3. **\KeepSafe\RetainUntil Date**

Specify a date after which the vaulting expires. The date must include year, month, and day in the following format: yyyymmddhhmmss. The hours, minutes, and seconds are optional. The default time is 00:00:00. The following are valid examples:

\RetainUntil20191231235959\
\RetainUntil 20200101\
\RetainUntil20200101\
\RetainUntil_20200101\

Note:

You cannot create a `\Retain...` folder within a vaulted `\Retain...` folder.

You cannot move material that is in one vaulted `\Retain...` folder to a `vaulted \Retain...` folder that has an earlier expiration date.

E-mail Protection panel of Groups Configuration

Select the e-mail applications and other files that you want to protect on a schedule. Select a schedule for protection.

Because email files typically are very large, they are not backed up continuously, but only on the schedule that you select.

Email files are backed up only to remote storage. If the remote storage is not available at the scheduled backup time, Tivoli Storage Manager FastBack for Workstations will back up the email files when the remote storage area becomes available.

E-mail Application list

Select one of the popular email applications in the list.

If your application is not listed, select **Other**.

E-mail application data files or folders field

If you choose your e-mail application from the **E-mail Application** list, the default file type for that application appears in this box, and you are not able to update the file specification. You can update this field only if you select **Other** in the **E-mail Application** list.

Additional files or folders you want to be backed up when your e-mail is backed up field

Identify additional files or folders to back up on the schedule. You can use a specification with wildcards to identify files. Enter each specification on a separate line.

How many versions to keep field

Indicate how many backup versions to save. The value applies to e-mail files and additional files that are backed up on a schedule. For example, if you select 3, the most recent three backup versions are saved. When the next backup version is created, the oldest version is deleted. If you need to restore a file, you can choose which of the three most recent backup copies you want to restore.

How often to protect your e-mail list

You can schedule email protection at one of several intervals:

- **Never**: Email will not be protected.
- **Hourly**: Email files will be backed up every hour, just after the hour.
- **Daily**: If you choose this interval, also select the time for the backup.
- **Weekly**: If you choose this interval, also select the day and time for the backup.
- **Monthly**: If you choose this interval, also select the day of the month and time for the backup.

Considerations for scheduled backups:

Protect appropriate files on a schedule, and prepare the files for backup.

Files that are appropriate to protect on a schedule

Large or frequently saved files can consume considerable computing or network resources when they are backed up. You can schedule periodic backups of these files when the burden on computing or network resources are least inconvenient.

Some files are not often closed and saved, but must be backed up periodically. Files protected by schedule are backed up even if they are open, but you can try to schedule the backup for a time when the files are closed.

Scheduled backup can yield fewer backup versions than continuously protected files. Fewer backup versions use less storage space, but offer fewer opportunities when you want to restore a file.

When does a scheduled backup occur

The files that you select for scheduled protection are backed up at the scheduled time, if they change during the scheduled interval. If a file changed several times during the schedule, only the last version of the file is backed up at the scheduled time.

If the remote storage area is not available at the scheduled backup time, the files that have changed at that time are noted and are backed up when the remote storage becomes available. If a noted file changes after the scheduled backup time, and before the remote storage becomes available, only the last version of the file is backed up.

If the computer is powered off or Tivoli Storage Manager FastBack for Workstations is not running at the schedule time, the scheduled backup runs when the computer is powered on and Tivoli Storage Manager FastBack for Workstations is running.

If you shut down a computer or stop the Tivoli Storage Manager FastBack for Workstations client when a scheduled backup is running, the backup resumes when the client is running again and the remote storage is available.

If you forced a backup of scheduled files during the 30 minutes prior to the scheduled time, the scheduled backup does not occur.

Closing applications before a scheduled backup

Tivoli Storage Manager FastBack for Workstations backs up all files that have changed during the schedule interval, including files that are still open at the time of backup. The backup copies of files that are backed up while open can be corrupted. So it is suggested that you close applications before a scheduled backup. Tivoli Storage Manager FastBack for Workstations offers an opportunity to close applications before a scheduled backup.

At the beginning of a scheduled backup, Tivoli Storage Manager FastBack for Workstations attempts to close all files that are listed in a text file called `closeapps.txt` in the installation directory. Each line in the file must be a program name, with name and extension, but no folder path. Tivoli Storage Manager FastBack for Workstations sends a close command to each instance of every program named in the `closeapps.txt` file. Note that Tivoli Storage Manager FastBack for Workstations does not send a start command to any of those programs when the scheduled backup is finished.

Remote Storage panel of Groups Configuration

Specify the remote storage for the backups of your protected files.

Storing files in a remote storage area will protect the files in case local copies are lost. Backups of continuously protected files, and files protected on a schedule, are stored in the same remote area. Tivoli Storage Manager FastBack for Workstations is very tolerant of intermittently available networks. If remote storage area is temporarily unavailable, Tivoli Storage Manager FastBack for Workstations will queue backup copies until the remote storage becomes available.

Back up to: list and Location: text field:

Specify the remote storage device for your backup copies.

Specify the type of storage in the **Back up to:** list, and the location of your storage device in the **Location:** field. What you select from the **Back up to:** list affects what you enter in the **Location:** field.

External Device or File Server storage location

You can specify a file server or removable disk to store the backup copies. The remote device can be another computer (such as a NAS or file server), or a remote disk, or a removable disk.

In the **Location:** field, if you choose a remote server, it is recommended that you use Universal Naming Convention (UNC) specification for the file server instead of drive letters. Drive letters can change after rebooting and often do not reconnect automatically.

If you choose a USB external device, you can select the driver letter. However, removable external device drive letters can change. Recommendations and detailed procedure for configuring USB drives as remote storage is in technical note 1245761 at the Tivoli Storage Manager FastBack for Workstations collection of technical notes: http://www-1.ibm.com/support/search.wss?rs=2339&tc=SS3PE6&rank=8&dc=DB520+D800+D900+DA900+DA800&dtm

Tivoli Storage Manager FastBack for Workstations creates backup copies in a subfolder named `\RealTimeBackup\`*`computer name`*. For example, if a computer name is Computer1, and the remote storage location is configured with the value `\\remote\share`, backup copies are stored in `\\remote\share\RealTimeBackup\Computer1\`.

If you log in to your computer with a user name and password that is valid also on your remote storage location, Tivoli Storage Manager FastBack for Workstations authenticates transparently into that network location. If you do not log in to your computer with a user name and password that is valid also on your remote storage location, you must log in to the network interactively using another account with regular privileges. You can log in interactively by using the Net Use command.

Some versions of Windows have a concept of simplified file sharing, which allows one computer to easily connect to another computer over the network. The resulting connection allows only limited file system capabilities, and inhibits the creation of backup copies. Some information such as access control lists or file streams can be lost. It is recommended to disable simplified file sharing on the remote storage area.

WebDAV Server storage location

Some Internet Service Providers (ISPs) provide Web-based Distributed Authoring and Versioning, or WebDAV. The WebDAV protocol provides the functionality to create, change, and move documents on a remote server. The WebDAV protocol is useful for authoring the documents which a Web server serves, but can also be used for general Web-based file storage. If your ISP provides WebDAV functionality, Tivoli Storage Manager FastBack for Workstations can store backups on a Web-based server.

In the **Location:** field. Enter your WebDAV server location using the following format: `https://MyISP.com/MyAcct`.

When using WebDAV, Tivoli Storage Manager FastBack for Workstations only supports the Basic Authentication method described in the HTTP 1.0 RFC. Because this authentication method sends the password as clear text over the network, it is also recommended that the Web server be configured to use secure sockets.

Tivoli Storage Manager storage location

Tivoli Storage Manager FastBack for Workstations can store backup copies on a Tivoli Storage Manager server. You do not need to install the Tivoli Storage Manager backup-archive client. If you install the Tivoli Storage Manager backup-archive client, it functions independently from Tivoli Storage Manager FastBack for Workstations.

In the **Location:** field, specify the Tivoli Storage Manager server location, using the following format: tsm://Host.com. You can also use an IP address for the server address.

Tivoli Storage Manager FastBack for Workstations supports Tivoli Storage Manager server version 5.5 or later.

Configure your Tivoli Storage Manager server before trying to connect from Tivoli Storage Manager FastBack for Workstations. Register your computer as a Tivoli Storage Manager node. Tivoli Storage Manager FastBack for Workstations will prompt for the password assigned at registration to connect to the Tivoli Storage Manager server. For more information about registering a Tivoli Storage Manager node for your computer, see *IBM Tivoli Storage Manager for Windows Administrator's Guide*.

If you specify a Tivoli Storage Manager server as the backup target, do not check any of the Advanced Settings on this page. If you want to use encryption or compression, you must specify these options in the `dsm.opt` file in the Tivoli Storage Manager FastBack for Workstations subfolder of the "Program data folder" on page 29. Subfile backup is not supported when Tivoli Storage Manager server is the backup target.

As an alternative to backing up directly to a Tivoli Storage Manager server, consider backing up in two stages. First, use Tivoli Storage Manager FastBack for Workstations to create remote backups on a file server. Second, schedule a Tivoli Storage Manager backup-archive client on that file server to back up the files to a Tivoli Storage Manager server. In this scenario, the only restriction is that if you use Tivoli Storage Manager FastBack for Workstations encryption, then you cannot use Tivoli Storage Manager compression.

In order to manage storage space, the Tivoli Storage Manager administrator must grant authority to the Tivoli Storage Manager client node to delete backup copies. For steps to assign authority to delete backup copies, see the topic in the problem determination section of the client documentation: *Client Node Lacks Authority to Delete Backup Copies*.

To avoid problems when using the Tivoli Storage Manager server, see the topic in the problem determination section of the client documentation: *Files are not backed up to Tivoli Storage Manager server*.

You can restore backup copies from the Tivoli Storage Manager server only with the Tivoli Storage Manager FastBack for Workstations GUI. You cannot use the

Tivoli Storage Manager Backup-Archive client to restore backup copies created by Tivoli Storage Manager FastBack for Workstations.

When storing data on a Tivoli Storage Manager server, the following features must be turned off:

- Encrypt backups
- Compress backups
- Use sub-file copy

If encryption or compression is required for your data, then use the Tivoli Storage Manager compression or encryption features. Detailed information is available in the Usage recommendation for encryption, compression, and subfile backup document.

How many versions to keep: field:

Specify how many backup versions of a file to keep on remote storage.

Tivoli Storage Manager FastBack for Workstations can store more than one backup version of each file. When you restore a file, you can choose which version of the file you want to restore. When the configured number of versions is reached, older versions of a file are deleted. Keeping more versions requires more storage space, but allows you more choices when restoring a file.

Maximum space for backups: field:

Specify how much space to use for all backup copies on remote storage.

The default size for the remote storage area is 40 GB. If you increase the number of backup versions to keep, consider increasing your storage area size. If you are unsure of how much space to allocate, you can monitor your space usage on the Status panel and adjust the version and space settings accordingly.

When the storage space becomes full, Tivoli Storage Manager FastBack for Workstations deletes older backup copy versions of files that have several backup copy versions. After deleting the versioned backup copies, if more space is needed for new backup copies, Tivoli Storage Manager FastBack for Workstations deletes the last remaining backup copies of enough files to make room for the newest backup copy.

If you try to remotely back up a file which is larger than the space you have allocated for your remote storage area, Tivoli Storage Manager FastBack for Workstations will purge all older versions of your files, and then may fail to back up the file. Make sure that the maximum space for your remote storage areas is greater than the maximum file size for remote backup in the **Advanced** page of the Settings Notebook. For example, if you decrease your maximum space for backups to 1 GB, you must decrease the maximum file size for remote backup from the default of 1 GB.

Encrypt backups radio button:

Set encryption for remote backup copies.

The encryption feature provides extra security on your remote location. The encryptions feature can be useful if multiple people have access to the remote server location, and you need to ensure that each user's data is protected from other users, or anyone else who has access to the remote server.

When you click the button labeled **Encrypt backups**, Tivoli Storage Manager FastBack for Workstations will present a dialog so you can create a password for the encrypted files. This password is required to view or access any files which are backed up by Tivoli Storage Manager FastBack for Workstations. The encrypted password is kept in the "Program data folder." If the files in the program data folder are lost, you will be prompted to enter a new password.

Once encryption has been enabled, the password is stored. If you disable encryption, then enable again, you are not prompted for a new password.

Tivoli Storage Manager FastBack for Workstations does not support prompted encryption. Hence, if you specify Tivoli Storage Manager server as your remote storage area, you must configure non-prompted encryption in the Tivoli Storage Manager `dsm.opt` options file. In the `dsm.opt` file, use the statement: `encryptkey generate`. See *Tivoli Storage Manager for Windows Backup-Archive Client Installation and User's Guide* for information about setting encryption options in Tivoli Storage Manager `dsm.opt` file. Tivoli Storage Manager FastBack for Workstations supports AES128 encryption but does not support AES56 encryption.

The dsm.opt file is in the "Program data folder."

Files stored on the local storage area are not encrypted. Files that are compressed can not be encrypted, and the user interface does not allow you to configure both encryption and compression. Files that use sub-file copy can be encrypted.

Tivoli Storage Manager FastBack for Workstations can not protect backup copies that it has encrypted. This means that Tivoli Storage Manager FastBack for Workstations cannot create encrypted backup copies, and then make backup copies (encrypted or not) of those backup copies.

If you configure Tivoli Storage Manager FastBack for Workstations to encrypt the backup copies to a file server, you must not use Tivoli Storage Manager FastBack for Workstations to protect the encrypted backup copies on that file server. You can use Tivoli Storage Manager or another backup solution to protect the encrypted backup copies on that file server.

You do not have to choose either encryption or compression. By clicking the buttons, you can clear both buttons, and select neither encryption or compression.

Program data folder: The program data folder varies according to the operating system and installation of the Tivoli Storage Manager FastBack for Workstations client. This list indicates the program data folder for each operating system and product version:

Microsoft Windows XP, upgrade from Continuous Data Protection for Files 3.1
: `C:\Documents and Settings\All Users\Application Data\Tivoli\CDP_for_Files\`

Microsoft Windows Vista, upgrade from Continuous Data Protection for Files 3.1
: `C:\ProgramData\Tivoli\CDP_for_Files\`

Microsoft Windows XP new installation of FastBack for Workstations version 6.1
: `C:\Documents and Settings\All Users\Application Data\Tivoli\TSM\FastBack_for_Workstations`.

Note: `\Application Data\` is a hidden folder, and to see it you must modify your view preferences in **Explorer** to show hidden files and folders.

Microsoft Windows Vista, new installation of FastBack for Workstations version 6.1
`C:\ProgramData\Tivoli\TSM\FastBack_for_Workstations`.

Note: `\ProgramData\` is a hidden folder, and to see it you must modify your view preferences in **Explorer** to show hidden files and folders.

Compress backups radio button:

Set compression for remote backup copies.

Use compression to save space on your remote storage location. The compression feature is not compatible with the encryption feature. You can use compression or encryption, but not both simultaneously. Files backed up using the compression function must be restored using Tivoli Storage Manager FastBack for Workstations.

If you enable both compression and sub-file copy, sub-file copy has precedence. This means that a file which has a size larger than the minimum for sub-file copy is not compressed, since it is subject to sub-file copy activity. Only files smaller than the minimum size for sub-file copy are compressed.

You do not have to choose either encryption or compression. By clicking the buttons, you can clear both buttons, and select neither encryption or compression.

Use sub-file copy radio button:

Set sub-file copy for remote backup copies.

Initially, an entire file is copied to the storage areas. When sub-file copy is turned on, and when the file changes, only the changed information is copied to the storage area. The sub-file copies are saved as separate files on the remote storage.

Sub-file copy can significantly reduce the amount of network traffic. However, sub-file copy consumes more processing resource on your computer. The default setting is to use sub-file copy for files larger than 50 MB. If you need to conserve more network resources, you can reduce the size setting so sub-file copy is not used on even smaller files.

To use sub-file copy to remote storage, you must have a backup copy of your files on local storage. In the **General** panel of the **Groups Configuration**, set the **Continuous protection level** field to **Local and remote storage**. Then you can set the sub-file backup option.

Check the button to turn on sub-file copy. In the **Use sub-file copy for files larger than:** field, specify the file size threshold for using sub-file copy. For files larger than this size, only the changed information is copied to the storage area.

Advanced panel of Groups Configuration

Use the **Advanced** panel to control messages and tune performance.

Allow program messages to open

For certain types of activities or notifications, Tivoli Storage Manager FastBack for Workstations opens messages from the icon in the system tray. To prevent the messages from opening, clear the check box.

Note: If messaging is disabled, important program messages regarding the failure of Tivoli Storage Manager FastBack for Workstations operations is suppressed, which could lead to potential loss of data.

Lock the configuration

Set this option to prevent a user from changing the configuration of the client.

How often to check for updates

Set the interval that the client checks the administration folder for command scripts, software upgrades, and configuration changes.

Performance Settings

Do not locally back up files larger than: field
: Limit the size of files that are backed up to your local storage area. If you try to back up a file that is larger than the space you have allocated for your storage area, Tivoli Storage Manager FastBack for Workstations purges all older versions of your files, and then fails to back up the file. Make sure that the file size limit in this field, and the size limit for files backed up to remote storage, is less than the maximum space for your storage areas.

Do not remotely back up files larger than: field
: Limit the size of files that are backed up to your remote storage area.

Maximum remote transfer rate: field
: You can set a limit on the volume of data that Tivoli Storage Manager FastBack for Workstations transfers to remote storage. Consider limiting the transfer rate if you need to ease the burden on your network.

  Note: This option is only used by Tivoli Storage Manager FastBack for Workstations client version 6.1 or earlier.

Considerations for scheduled backups:

Protect appropriate files on a schedule, and prepare the files for backup.

Files that are appropriate to protect on a schedule

Large or frequently saved files can consume considerable computing or network resources when they are backed up. You can schedule periodic backups of these files when the burden on computing or network resources are least inconvenient.

Some files are not often closed and saved, but must be backed up periodically. Files protected by schedule are backed up even if they are open, but you can try to schedule the backup for a time when the files are closed.

Scheduled backup can yield fewer backup versions than continuously protected files. Fewer backup versions use less storage space, but offer fewer opportunities when you want to restore a file.

When does a scheduled backup occur

The files that you select for scheduled protection are backed up at the scheduled time, if they change during the scheduled interval. If a file changed several times during the schedule, only the last version of the file is backed up at the scheduled time.

If the remote storage area is not available at the scheduled backup time, the files that have changed at that time are noted and are backed up when the remote storage becomes available. If a noted file changes after the scheduled backup time, and before the remote storage becomes available, only the last version of the file is backed up.

If the computer is powered off or Tivoli Storage Manager FastBack for Workstations is not running at the schedule time, the scheduled backup runs when the computer is powered on and Tivoli Storage Manager FastBack for Workstations is running.

If you shut down a computer or stop the Tivoli Storage Manager FastBack for Workstations client when a scheduled backup is running, the backup resumes when the client is running again and the remote storage is available.

If you forced a backup of scheduled files during the 30 minutes prior to the scheduled time, the scheduled backup does not occur.

Closing applications before a scheduled backup

Tivoli Storage Manager FastBack for Workstations backs up all files that have changed during the schedule interval, including files that are still open at the time of backup. The backup copies of files that are backed up while open can be corrupted. So it is suggested that you close applications before a scheduled backup. Tivoli Storage Manager FastBack for Workstations offers an opportunity to close applications before a scheduled backup.

At the beginning of a scheduled backup, Tivoli Storage Manager FastBack for Workstations attempts to close all files that are listed in a text file called `closeapps.txt` in the installation directory. Each line in the file must be a program name, with name and extension, but no folder path. Tivoli Storage Manager FastBack for Workstations sends a close command to each instance of every program named in the `closeapps.txt` file. Note that Tivoli Storage Manager FastBack for Workstations does not send a start command to any of those programs when the scheduled backup is finished.

Discovering preexisting clients and assigning them to groups

Manage Tivoli Continuous Data Protection for Files clients and Tivoli Storage Manager FastBack for Workstations clients that existed before you installed the central administration console.

Before you begin

This task assumes that you or client users installed Tivoli Continuous Data Protection for Files clients or Tivoli Storage Manager FastBack for Workstations clients before you installed the central administration console, or you installed the clients without a configuration file that was generated by the central administration console.

If you want to manage the clients by groups, you must create the groups.

About this task

You can discover and manage Tivoli Continuous Data Protection for Files clients and Tivoli Storage Manager FastBack for Workstations clients.

Procedure

1. Identify the administration folders that are used by the preexisting clients.
   a. Open the **Administration Settings** task. The administration tables are displayed.
   b. In the **Administration Folders** section, click **Actions**.
   c. Click **Identify an Administration Folder**. The **Identify an Administration Folder** panel is displayed.
   d. Enter data in the required fields: **Alias** and **Administration folder**. The value of the **Select a group for new clients** and **Select a script for new clients** fields does not affect preexisting clients.
   e. Click **OK**.

   The preexisting clients are discovered by the central administration console.
2. Optional: If you want to manage the clients by groups, assign the clients to appropriate groups. Clients that existed before you installed the central administration console are not automatically added to groups.
   a. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
   b. In any view of the **Clients** task, click the **Group** column heading.
   c. Scroll the list of clients to find the clients that belong to group **none**. When a preexisting client is discovered, it is not automatically added to a group. Find preexisting clients in the table by filtering clients that belong to group **none**.
   d. Select all the clients that you want to add to one group.
   e. In the **Actions** menu, click **Assign Clients to a Group**, and select a group from the list.
   f. Click **OK**. The clients are displayed in the table in the **Clients** task again. The clients are members of the group you selected.

Deploying new clients

Deploy new clients with a configuration file generated by the central administration console. When the clients are installed and discovered by the central administration console, the central administration console can automatically assign them to a group and send them a script.

Before you begin

This task assumes that you created one or more groups, and that you have a Tivoli Storage Manager FastBack for Workstations installer file.

About this task

With the central administration console, you can create a configuration file. You must obtain the Tivoli Storage Manager FastBack for Workstations client installer, and deploy the installer and configuration file to end users.

Procedure

1. Create a script that a Tivoli Storage Manager FastBack for Workstations client runs when it is first deployed. A typical script contains a command to back up all files.
2. Identify an administration folder for the clients. Select a group for the clients from the **Select a group for new clients** list.
3. Create a configuration file.
4. Deploy the installer and configuration file to other computers. The clients are installed and discovered by the central administration console. The central administration console can automatically assign the clients to groups.

Creating a script for clients

Create your own, custom scripts for clients. Create commands or use commands that are provided with the central administration console.

About this task

A client can run a script automatically when the client is first discovered by the central administration console. A typical script at initial discovery contains a command to back up all files. This action creates an initial backup copy of all files that you identified for protection. Without this action, files are backed up only when they are changed.

You can also send a script to clients to address a problem. For example, if your network is impacted by remote backup activity, you can send a command to specific clients to immediately pause remote backup activity. If you want to reduce the network traffic that occurs at a later, scheduled backup time, you can send a command to specific clients to immediately back up e-mail files and other files that are typically backed up at the scheduled time.

Procedure

1. Open the **Administration Settings** task. The three administration tables are displayed.
2. In the **Custom Scripts** section, click the **Actions** menu.
3. Click **Create a Script**. The **Create a Script** panel is displayed.
4. Type a name for the script. Optionally, you can provide a description.
5. In the **Number of simultaneous clients** field, enter the maximum number of clients that can run this script at the same time. Some commands, such as **Back up all files**, can consume considerable network resources. You can limit the number of clients that run this script at the same time.
6. In the **Script acceptance timeout** field, enter the maximum time for the client to begin running the script. If the client has not started the script in this time, there are the following consequences:
   - The script is removed from the administration folder of the client.
   - The client is no longer counted as one that is running the script simultaneously with other clients.
   - The audit log records that the client failed to start the script in this time.
   - The script is sent to the client at a later time.
7. In the **Script completion timeout** field, enter an estimate of the time it takes for a client to complete the script. The central administration console is not notified when a client completes a script. When the **Script completion timeout** time elapses, the central administration console removes the client

from the list of clients that are running the script. If the number of clients running the script is constrained by the value of **Number of simultaneous clients**, the central administration console can send the script to another client.

8. In the **Script** box, select a command from the list. The list contains popular commands. You can also create your own commands by directly editing the text area. The command is appended to the bottom of the list of commands.
9. Add more commands, if needed. You can add, modify, or delete commands by editing the text area.
10. Click **OK**. The new script appears in the **Custom Scripts** table.

What to do next

You can send this script to one or more clients.

Identifying administration folders

Identify a folder that is accessible to the central administration console and Tivoli Storage Manager FastBack for Workstations clients.

Before you begin

If you want to associate an administration folder with a group, you must first create a group.

Procedure

1. Open the **Administration Settings** task. The administration tables are displayed.
2. In the **Administration Folders** section, click **Actions**.
3. Click **Identify an Administration Folder**. The **Identify an Administration Folder** panel is displayed.
4. Enter data in the required fields.

   Alias Enter a name that helps you identify this administration folder. Each alias must be unique.

   Administration folder
   Enter a CIFS (Common Internet File System) file server Web address. For example, `\\server\sharename\folder`. The administration folder must be accessible to both the clients and the central administration console. Each administration folder must be unique.
5. Select optional items.

   Select a group for new clients
   Selecting a group has the following consequences.

   You can create a configuration file for installation packages.

   When an administration folder is associated with a group, you can create a configuration file that has the protection settings of the group. The created configuration file contains a setting for the administration folder.

   If a group is associated with more than one administration folder, you can create similar configuration files. Each created configuration file has the same protections settings except for the value of the administration folder.

If an administration folder is associated with no group (**Group = none**), you cannot create a configuration file when you select that administration folder.

When a new client initially contacts the administration folder, the client is added to the group.
Using the configuration file that you created, a new client accesses the administration folder, and becomes a member of the group.

Existing clients that contact this administration folder and are members of group none are added to the group.

If a client belongs to any group besides **none**, changing the value of **Select a group for new clients** does not assign the client to the selected group.

Select a script for new clients

When a new client initially contacts the administration folder, this script is sent to the client.

If a client was discovered at this administration folder, changing the value of **Select a script for new clients** does not send a script to the client. Similarly, if a client was using this administration folder before the administration folder is identified to the central administration console, changing the value of **Select a script for new clients** does not send a script to the client.

6. Click **OK**. The administration folder is displayed in the table in the **Administration Folders** section.

Example: Prepare to deploy clients to the sales group

Identify an administration folder for the clients you deploy to the sales group.

Before you begin

You have a plan for grouping your end users according to their data-protection needs. You created the groups.

About this task

Assume that you created groups with the following aliases:

- engineers local
- engineers remote
- sales people
- accountants

You plan to use \\server1\fbwsadmin\sales as the administration folder for the Tivoli Storage Manager FastBack for Workstations clients of the sales team. Hence, you must identify the administration folder: \\server1\fbwsadmin\sales.

Procedure

1. In the **Identify an Administration Folder** panel, in the **Administration folder** field, enter the CIFS (Common Internet File System) Web address: \\server1\fbwsadmin\sales.
2. In the **Select a group for new clients** field, select the group sales people, and click **OK**.

What to do next

Now you can create a configuration file for the Tivoli Storage Manager FastBack for Workstations clients that you deploy to the sales team.

Creating a configuration file

Create a configuration file that you can use to deploy clients.

Before you begin

Before you can create a configuration file, you must create a group. You must also identify an administration folder. When you identify the administration folder, you must select a group for new clients.

Procedure

1. Open the **Administration Settings** task. The administration tables are displayed.
2. In the **Administration Folders** section, select one administration folder.
3. In the **Actions** menu, click **Create a Configuration File**. The **Create a Configuration File** panel is displayed.
4. Click **Get Configuration**. The central administration console generates the XML configuration code of the group that is associated with the administration folder. The XML code is displayed in the text box. The configuration also contains the location of the administration folder.
5. Copy the code in the text box and paste it into a file.
6. Rename the file. If the configuration file is used when you initially instal a client, rename the file to `fpa.txt`. If the configuration file is pulled by an existing client from the administration folder, rename the file to `fpcommands.xml`.

What to do next

After you create a configuration file, you can deploy Tivoli Storage Manager FastBack for Workstations clients to other computers. Rename the configuration file to `fpa.txt`. You must also have a client installer.

You can change the configuration of existing clients that have not been discovered by the central administration console by putting the configuration file in the downloads folder of the client. The client pulls the new configuration information from the downloads folder. If the configuration file is used to change the configuration of an existing client in this way, rename the file to `fpcommands.xml`.

You can change the configuration of clients that have been assigned to groups by changing the settings in the **Groups Configuration** panels. For this task, it is not necessary to create a configuration file.

Deploying the client to other computers

There are several ways to deploy the initial installation of the Tivoli Storage Manager FastBack for Workstations client to other computers.

- Use Microsoft Systems Management Server to install the Tivoli Storage Manager FastBack for Workstations.msi package. Refer to Microsoft Systems Management Server documentation.

- Use IBM Tivoli Provisioning Manager Express®. Refer to IBM Tivoli Provisioning Manager Express documentation.
- Place the installer on a file server and ask end users to invoke the installer.

When the Tivoli Storage Manager FastBack for Workstations client is initially installed, the installer can get configuration data from the file `\System32\fpa.txt` in the Windows installation folder. (See "Windows installation folder"). If this file does not exist, the installer installs Tivoli Storage Manager FastBack for Workstations with the default configuration settings.

Windows installation folder

The Tivoli Storage Manager FastBack for Workstations client references the Windows installation folder during installation. During the installation, the client can get configuration information from a file named `fpa.txt` in the `\System32\` subfolder in the Windows installation folder.

The Windows installation directory is also known by the environment variable %WINDIR%, and as shared drive ADMIN$. Typically, the Windows installation directory is `C:\Windows`.

Monitoring

Monitor the activity of clients and the central administration console

Viewing the health status of all clients

View the health of your data-protection system. The **Health Monitor** panel displays a summary of all clients, and provides links for more information and actions.

Before you begin

This task assumes that the central administration console discovered some clients.

Procedure

1. Open the **Health Monitor** task. The **Health Monitor** panel displays the following sections:
   - **Clients Summary**
   - **Audit Logs**
   - **Alerts**

   The **Clients Summary** section displays a summary of the health of clients. The status of each client can be one of the following: **Fatal**, **Critical**, **Warning**, **Normal**.
2. Click a health status to see details of clients with that health status. The **Health** view of the **Clients** task displays all clients with that health status.
3. Optional: Filter the client entries that are displayed.
   a. In the text filter field, type a text string.
   b. Click the arrow to the left of the filter text field.
   c. From the list of names in the **Filter On** box, select one or more column names.

d. Click **OK**. The table displays only the clients that match the text string that you entered. If you selected more than one column name, the filter yields only clients that have matching text in all selected columns. The filter is case-sensitive.

For example, if you typed **none** and selected the **Group** column name, only the clients associated with no group (**Group** = **none**) are displayed.

More strings are matched when you use wildcards in the filter text. An asterisk replaces several characters. A question mark replaces one character. If you use an asterisk or wildcard in the filter text, the blank space beyond the end of your filter text matches any text.

Table 3. Filter strings and matching text

Filter text string	Matching text
Jupiter	Jupiter
Jupiter?	Jupiter Jupiter_bright_moon_light Jupiter_moon
Jupiter?moon	Jupiter_moon
*moon	Jupiter_bright_moon_light Jupiter_moon moon Saturn_moon Saturn_moon_light

4. Optional: Order the entries by sorting on the values in any column.
   a. Click a column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.
   b. Click the same column heading again. The entries are ordered in descending sequence according to the text in the cells of that column.
   c. Click another column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.

What to do next

You can further investigate a client by viewing the activity log of a client or viewing the current configuration of a client.

If you determine that some action is needed, you can deploy software updates, change the configuration of a client, or send a script to a client.

Viewing the audit log

Monitor the health of the data-protection system by viewing the log of the central administration console server. The audit log records all interaction with the central administration console and with the clients.

About this task

The audit log records events from the central administration server. If you are interested only in the events of an individual client, see the activity log for that client.

The audit log is located in the IBM WebSphere Application Server profiles folder. The audit log folder in a default installation path is `C:\IBM\tivoli\Tipv2\`

profiles\TIPProfile. The audit log is composed of 10 files, named audit.log.0, audit.log.1...audit.log.9. File audit.log.0 logs the most recent activity and audit.log.9 logs the least recent activity.

Procedure

1. Open the **Health Monitor** task. The **Health Monitor** panel displays the following sections:
   - **Clients Summary**
   - **Audit Logs**
   - **Alerts**

   In the **Audit Logs** section, the most recent events are listed.
2. Optional: To display more events, click **More log entries . . .**.
3. Optional: Filter the log entries that are displayed.
   a. In the filter text field, type a text string.
   b. Click the arrow to the left of the filter text field.
   c. From the list of names in the **Filter On** box, select one or more column names.
   d. Click **OK**. The log entries are filtered according to your filter criteria.

      For example, if you typed `*fail` and selected the **Message Text** column name, all entries with `fail` in the message text are displayed.

      More strings are matched when you use wildcards in the filter text. An asterisk replaces several characters. A question mark replaces one character. If you use an asterisk or wildcard in the filter text, the blank space beyond the end of your filter text matches any text.

Table 4. Filter strings and matching text

Filter text string	Matching text
Jupiter	Jupiter
Jupiter?	Jupiter Jupiter_bright_moon_light Jupiter_moon
Jupiter?moon	Jupiter_moon
*moon	Jupiter_bright_moon_light Jupiter_moon moon Saturn_moon Saturn_moon_light

4. Optional: Order the entries by sorting on the values in any column.
   a. Click a column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.
   b. Click the same column heading again. The entries are ordered in descending sequence according to the text in the cells of that column.
   c. Click another column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.

What to do next

If you notice an issue with one or more clients, you can investigate the attributes, logs, and current configuration of those clients in the **Clients** task.

Viewing recent alerts

View all recent alerts.

Procedure

1. Open the **Health Monitor** task. The **Health Monitor** panel displays the following sections:
   - **Clients Summary**
   - **Audit Logs**
   - **Alerts**

   In the **Alerts** section, the most recent alerts are listed.
2. Optional: Filter the log entries that are displayed.
   a. In the filter text field, type a text string.
   b. Click the arrow to the left of the filter text field.
   c. From the list of names in the **Filter On** box, select one or more column names.
   d. Click **OK**. The log entries are filtered according to your filter criteria.

      For example, if you typed `*fail` and selected the **Message Text** column name, all entries with `fail` in the message text are displayed.

      More strings are matched when you use wildcards in the filter text. An asterisk replaces several characters. A question mark replaces one character. If you use an asterisk or wildcard in the filter text, the blank space beyond the end of your filter text matches any text.

Table 5. Filter strings and matching text

Filter text string	Matching text
Jupiter	Jupiter
Jupiter?	Jupiter Jupiter_bright_moon_light Jupiter_moon
Jupiter?moon	Jupiter_moon
*moon	Jupiter_bright_moon_light Jupiter_moon moon Saturn_moon Saturn_moon_light

3. Optional: Order the entries by sorting on the values in any column.
   a. Click a column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.
   b. Click the same column heading again. The entries are ordered in descending sequence according to the text in the cells of that column.
   c. Click another column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.

What to do next

If you need to further investigate a client, you can view the health, deployment, and storage data for that client in the **Clients** task. In the **Clients** task, you can also view the activity log of a client or view the current configuration of a client.

If you determine that some action is needed, you can deploy software updates, change the configuration of a client, or send a script to a client in the **Clients** task.

Administering clients

Investigate a Tivoli Storage Manager FastBack for Workstations client. Respond to client issues.

Creating a group with the configuration of an existing client

Create a group with a configuration that is imported from an existing client.

Before you begin

This task requires that the central administration console discovered a client.

Procedure

1. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
2. Select a client.
3. Click the **Actions** menu.
4. Click **Create a Group Like a Client**. In the **Groups Configuration** task, you can see the new group in the table of groups. The group has the configuration of the client that you selected.

What to do next

You can add clients to the group. You can use the configuation of this group when deploying new clients.

Investigating a client

View the health, storage, and deployment data of one or more clients. View the activity log and the current configuration of a client.

Viewing the health, storage, and deployment data of one or more clients

The **Clients** table displays information about the clients. Select clients and take action.

Before you begin

This task assumes that the central administration console discovered some clients.

Procedure

1. Open the **Clients** task. The **Clients** panel displays three tabs: **Health**, **Storage**, and **Deployment**.
2. Click the tab that contains information that you want to view. Each tab has a table that shows different information about the clients. There is also information that is shared among the three tabs.
3. Optional: Filter the client entries that are displayed.
   a. In the text filter field, type a text string.
   b. Click the arrow to the left of the filter text field.

c. From the list of names in the **Filter On** box, select one or more column names.

d. Click **OK**. The table displays only the clients that match the text string that you entered. If you selected more than one column name, the filter yields only clients that have matching text in all selected columns. The filter is case-sensitive.

   For example, if you typed **none** and selected the **Group** column name, only the clients associated with no group (**Group** = **none**) are displayed.

   More strings are matched when you use wildcards in the filter text. An asterisk replaces several characters. A question mark replaces one character. If you use an asterisk or wildcard in the filter text, the blank space beyond the end of your filter text matches any text.

Table 6. Filter strings and matching text

Filter text string	Matching text
Jupiter	Jupiter
Jupiter?	Jupiter Jupiter_bright_moon_light Jupiter_moon
Jupiter?moon	Jupiter_moon
*moon	Jupiter_bright_moon_light Jupiter_moon moon Saturn_moon Saturn_moon_light

4. Optional: Order the entries by sorting on the values in any column.
   a. Click a column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.
   b. Click the same column heading again. The entries are ordered in descending sequence according to the text in the cells of that column.
   c. Click another column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.

What to do next

With the data provided, you can decide what action is needed to maintain the health of a client.

For example, if the **Storage** view indicates that all clients in the accounting group are using more than 90% of their allocated storage space, you can do several things.

Define alert conditions for high space usage.
If you did not yet define alert conditions for high space usage, you can define those conditions. This time you discovered the current high space-usage situation by browsing the storage data, but next time you want to alert the right people sooner. You can define conditions to alert operators when space usage reaches 80%, and another set of conditions to alert operators when space usage reaches 90%.

Gather more information about what is causing the high space usage.
Reconsider the data-protection needs of the end users. Verify that the group configuration matches the data-protection needs. Consider whether appropriate file types are being protected, and if the clients are saving the

appropriate number of versions of each file. You can check activity logs of clients and even view the backup copies on the remote storage locations.

If you noticed a problem with only a single client, you can check the current configuration file of that client to confirm that the end user did not modify some data-protection settings for the client.

Modify the data-protection configuration of the group.
Perhaps you decide that the clients in the accounting group require more storage space than is allocated in their current configuration. You can modify the group configuration in the **Groups Configuration** task. The new configuration is automatically sent to all clients in the accounting group.

Viewing the activity log of a client

View the log of activity for a single client. The activity log provides information for one client. In the client GUI, this same log is called the activity report.

Before you begin

This task assumes that the central administration console discovered some clients.

About this task

An activity log records events for a single client. If you are interested in the events of the central administration server, view the audit log.

Procedure

1. Open the **Clients** panel. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
2. Click the **Health** tab.
3. Select the client whose log you want to see.
4. Click the **Actions** menu.
5. Click **View Activity Log**. The log entries are displayed.
6. Optional: Filter the log entries that are displayed.
   a. In the filter text field, type a text string.
   b. Click the arrow to the left of the filter text field.
   c. From the list of names in the **Filter On** box, select one or more column names.
   d. Click **OK**. The log entries are filtered according to your filter criteria.

      For example, if you typed `*fail` and selected the **Message Text** column name, all entries with `fail` in the message text are displayed.

      More strings are matched when you use wildcards in the filter text. An asterisk replaces several characters. A question mark replaces one character. If you use an asterisk or wildcard in the filter text, the blank space beyond the end of your filter text matches any text.

Table 7. Filter strings and matching text

Filter text string	Matching text
Jupiter	Jupiter
Jupiter?	Jupiter Jupiter_bright_moon_light Jupiter_moon

Table 7. Filter strings and matching text (continued)

Filter text string	Matching text
Jupiter?moon	Jupiter_moon
*moon	Jupiter_bright_moon_light Jupiter_moon moon Saturn_moon Saturn_moon_light

7. Optional: Order the entries by sorting on the values in any column.
   a. Click a column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.
   b. Click the same column heading again. The entries are ordered in descending sequence according to the text in the cells of that column.
   c. Click another column heading. The entries are ordered in ascending sequence according to the text in the cells of that column.

What to do next

After viewing the activity log, you can gather more information or take action.

For example, assume that you investigate the activity log of client23 because this client is near the maximum capacity for remote storage. The activity log for client23 indicates that client23 has backed up many audio and movie files. You know that client23 belongs to a group that excludes audio and movie files from backups.

You view the current configuration file for client23, and you notice that it does not contain the same settings as the group.

You contact the end user, and determine that the audio and movie files should not be backed up. You can resend the group configuration to client23 by assigning client23 to the group again.

Viewing the last reported configuration of a client

View configuration data reported from the client. Because clients can modify their data-protection settings, the current configuration can be different from a configuration that the administrator deployed.

Before you begin

This task assumes that the central administration console discovered some clients.

About this task

The client periodically pushes configuration information to the administration folder. If you send a script that contains the Report command, the client responds with a report that includes configuration information. The configuration information is as recent as the date in the **Last Report** column in the **Health** view of the **Clients** task.

Procedure

1. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.

2. Select the client whose current configuration you want to see.
3. Click the **Actions** menu.
4. Click **View the Last Known Configuration of a Client**. The current data-protection settings are displayed.

What to do next

If the current configuration does not match the group configuration, you can resend the group configuration to the client. To resend the group configuration to the client, reassign the client to the group.

Configuring alerts (from the Clients task)

From the **Clients** task, you can open the **Administration Settings** task to configure alerts.

Procedure

1. Open the **Clients** task. The **Clients** panel displays three tabs: **Health**, **Storage**, and **Deployment**.
2. Click the **Health** tab.
3. In the **Actions** menu, click **Configure Alerts**. The **Administration Settings** task opens. You can define, modify, and delete alerts in the **Alerts Configuration** section.

Responding to client issues

Update client software, resend data-protection configurations, send command scripts, modify groups.

Deploying software updates

Deploy software updates to the clients.

Before you begin

This task assumes that the central administration console discovered some clients, and that you have an installer file for updated client software.

About this task

This task upgrades the software of clients that are already installed. This task does not include installing a client.

The client installer file-name must include FB4WKSTNS and must be file type `.exe`. A typical file name is `x.x.x.x-TIV-FB4WKSTNS-x86_windows.exe` .

Procedure

1. Put the client installer file in the `fbfw\deployments\` subfolder of the TIP WebSphere Application Server profiles folder. The deployments folder in a default installation path is `C:\IBM\Tivoli\Tipv2\profiles\TIPProfile\fbfw\deployments`.
2. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
3. Click the **Deployment** tab.
4. Select the clients that you want to update.

5. In the **Actions** menu, click **Deploy Software Updates**. The **Deploy Software Updates** panel is displayed. A list displays the files in the `deployments` folder.
6. Select a client installer file from the list and click **OK**.

Results

The installer file is pushed to the Downloads subfolder of the administration folder of the client. The client pulls the installer file from the Downloads subfolder of the administration folder.

Considerations for upgrading a client:

You can upgrade the client from previous releases as well as from a previous build of the current release.

The new client installer file name must contain the string FB4WKSTNS and end with .exe. For example, a typical name is `x.x.x.x-TIV-FB4WKSTNS-x86_windows.exe`.

The date of the new installer file must be more recent than the date of the installer file that was used for the current product level.

Cleaning up after uninstallation

If you uninstall the client, you must clean your data files before installing the client again. When the client is uninstalled, some files are not removed by the installer. The old files can cause problems for a new installation of the client.

After uninstalling the client, and before installing it again, remove files in the following areas:

local storage area
: The local storage area is the `RealTimeBackup` folder on a local drive. Rename this folder if you want to save the backup copies.

remote storage area for the computer
: The remote storage area is in the `RealTimeBackup\`*`computer_name`* folder of the remote device that you configured for the previous installation. Rename this folder if you want to save the backup copies.

installation folder
: The default installation folder is `c:\Program Files\Tivoli\TSM\FastBack_for_Workstations`. If you upgraded from Tivoli Continuous Data Protection for Files, the default installation folder is `C:\Program Files\Tivoli\CDP_for_Files`.

The program data folder
: The program data folder varies according to operating system and previously installed versions.

Upgrade from Continuous Data Protection for Files

If you upgrade from Tivoli Continuous Data Protection for Files, your Tivoli Continuous Data Protection for Files client must be at level 3.1 or later.

Tivoli Continuous Data Protection for Files versions older than 3.1.5.9 accept client installer files with a name like `TivoliCDP_CDPForFiles_3.1.8.0_windows.exe`. The installer name must include CDP and must be file type `.exe`. Tivoli Continuous

Data Protection for Files version 3.1.5.9 and later accepts client installer files with CDP or FB4WKSTNS in the file name. Tivoli Storage Manager FastBack for Workstations client installer files have a name like `Tivoli_FB4WKSTNS_6.1.2.0_x86_windows.exe`. The installer file name for a Tivoli Storage Manager FastBack for Workstations client must contain FB4WKSTNS. Hence, if you want a Tivoli Continuous Data Protection for Files client at less than version 3.1.5.9 to pull an upgrade to Tivoli Storage Manager FastBack for Workstations, you have two options.

- You can rename the Tivoli Storage Manager FastBack for Workstations installer file to include CDP in the file name.
- You can first upgrade the Tivoli Continuous Data Protection for Files client to version 3.1.5.9 or later. Then the client can pull an installer file with CDP or FB4WKSTNS in the file name.

Program data folder: The program data folder varies according to the operating system and installation of the Tivoli Storage Manager FastBack for Workstations client. This list indicates the program data folder for each operating system and product version:

Microsoft Windows XP, upgrade from Continuous Data Protection for Files 3.1
: `C:\Documents and Settings\All Users\Application Data\Tivoli\CDP_for_Files\`

Microsoft Windows Vista, upgrade from Continuous Data Protection for Files 3.1
: `C:\ProgramData\Tivoli\CDP_for_Files\`

Microsoft Windows XP new installation of FastBack for Workstations version 6.1
: `C:\Documents and Settings\All Users\Application Data\Tivoli\TSM\FastBack_for_Workstations`.

Note: `\Application Data\` is a hidden folder, and to see it you must modify your view preferences in **Explorer** to show hidden files and folders.

Microsoft Windows Vista, new installation of FastBack for Workstations version 6.1
: `C:\ProgramData\Tivoli\TSM\FastBack_for_Workstations`.

Note: `\ProgramData\` is a hidden folder, and to see it you must modify your view preferences in **Explorer** to show hidden files and folders.

Sending a script to clients

Send your customized scripts to one or more clients.

Before you begin

This task assumes that you created a script and that the central administration console discovered some clients.

About this task

To send a script to a client when the client is first installed and initially discovered by the central administration console, you can set the **Select a script for new clients** field when you identify an administration folder.

To send a script to a client after the initial discovery, follow these steps:

Procedure

1. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
2. Select one or more clients to which you want to send a script.
3. In the **Actions** menu, click **Send Clients a script**. The script is sent to the selected clients. The clients run the script.

Modifying the configuration of a single client

You can modify the configuration of a single client. Because configurations are associated with groups, you must determine the consequence for the group.

If all clients in the group need the same modification, then modify the group.

If other clients in the group do not need the same modification, you must assign the client to a group with an appropriate configuration. Consider whether any existing groups are appropriate. If no groups have an appropriate configuration, create a group with the appropriate configuration for just this client.

If the client is not assigned to a group, consider if any existing groups are appropriate. If no groups have an appropriate configuration, you must create a group with the appropriate configuration for just this client.

Modifying all clients in a group

Modify the data-protection configuration of all clients in a group.

Before you begin

This task assumes the following:

- You created a group.
- The central administration console discovered some clients.
- You assigned some clients to a group.

About this task

When you modify a group, the central administration console automatically sends the new configuration to all clients in the group.

Procedure

1. Open the **Groups Configuration** task. The table of groups is displayed.
2. Select the group that you want to modify.
3. From the **Actions** menu, click **Modify a Group**. The **Groups Configuration** notebook displays the current settings for the group.
4. Modify the configuration settings.
5. Click **OK**. The group configuration is modified, and the new configuration is sent to all clients in the group. The clients adopt the new configuration settings.

Assigning clients to a group

Assign or reassign one or more clients to a group. You can move clients to another group, and you can assign clients that are not assigned to a group.

Before you begin

This task assumes the following:
- You created a group.
- The central administration console discovered some clients.

About this task

This task is for clients that are not assigned to a group, or for clients that you want to move to another group.

Procedure

1. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
2. In any view of the **Clients** task, filter and select the clients that you want to assign to a group.
3. In the **Actions** menu, click **Assign Clients to a Group**.
4. In the **Assign Clients to a Group** panel, select a group from the list and click **OK**. The clients are displayed in the table in the **Clients** task again. The clients are members of the group that you selected.

Restoring the data-protection configuration of clients

Restore a group configuration to a client that has been changed by the end user.

Before you begin

This task assumes the following:
- You created a group.
- The central administration console discovered some clients.
- You assigned some clients to a group.

About this task

If you do not lock the configuration of a group, users can modify the data protection settings of their clients. You can use the central administration console to restore the data-protection configuration of the group that the client belongs to. Assign the client to the group again, and the central administration console automatically sends the group configuration to the client.

Procedure

1. Open the **Clients** task. The **Clients** panel displays the following tabs: **Health**, **Storage**, and **Deployment**.
2. In any view of the **Clients** task, filter and select the clients that you want to reassign to a group.
3. In the **Actions** menu, click **Assign Clients to a Group**.
4. In the **Assign Clients to a Group** panel, select a group from the list and click **OK**. The central administration console sends the group configuration to the clients.

Appendix. Accessibility features for Tivoli Storage Manager FastBack for Workstations

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features of Tivoli Storage Manager FastBack for Workstations are described in this topic.

Accessibility features

The following list includes the major accessibility features in Tivoli Storage Manager FastBack for Workstations:
- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Keys that are discernible by touch but do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices
- User documentation provided in HTML and PDF format. Descriptive text is provided for all documentation images.

The Tivoli Storage Manager FastBack for Workstations Information Center, and its related publications, are accessibility-enabled.

Keyboard navigation

Tivoli Storage Manager FastBack for Workstations follows Microsoft conventions for most keyboard navigation and access. Drag and Drop support is managed using the Microsoft Windows Accessibility option known as MouseKeys. For more information about MouseKeys and other Windows accessibility options, please refer to the Windows Online Help (keyword: MouseKeys).

The following access methods differ from Microsoft conventions.

In the central administration console, access table toolbars in the following way:
1. Press Tab and Shift+Tab to navigate to a table. The first element in a table that receives focus is the toolbar. Typically, the refresh tool is the first tool in the toolbar.
2. Press Right Arrow and Left Arrow to navigate among the tools in the toolbar.
3. Press Enter to activate the tool.

In the central administration console, access table elements in the following way:
1. Press Tab and Shift+Tab to navigate to a table. The first element in a table that receives focus is the toolbar.
2. Press Spacebar to navigate to the column headings.
3. Press Right Arrow and Left Arrow to navigate among the column headings.
4. Press Enter to at a column heading to sort the rows according to the values in that column.
5. Press Tab to navigate to the body of the table.
6. Use Up Arrow and Down Arrow to move from one row to another.

7. Use Right Arrow and Left Arrow to navigate the cells in a row.
8. To select or clear a check box in a row, do the following:
   - With focus on the check box, press Enter. You can now edit the cell, and you cannot use arrow keys to navigate the table cells.
   - Press Spacebar to select or clear the check box.
   - Press Esc to leave edit mode. You can now use the arrow keys to navigate the table cells.

Related accessibility information

You can view the publications for Tivoli Storage Manager FastBack for Workstations in Adobe Portable Document Format (PDF) using the Adobe Acrobat Reader. You can access these or any of the other documentation PDFs at IBM Publications Center at http://www.ibm.com/shop/publications/order/.

IBM and accessibility

For more information about the commitment that IBM has to accessibility, see the IBM Human Ability and Accessibility Center at http://www.ibm.com/able.

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
1623-14, Shimotsuruma, Yamato-shi
Kanagawa 242-8502 Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation
Software Interoperability Coordinator, Department 49XA
3605 Highway 52 N
Rochester, MN 55901
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

IBM, the IBM logo and the following terms are trademarks of the International Business Machines Corporation in the United States, other countries, or both:

Lotus Notes
Redbooks
Tivoli

UNIX is a registered trademark of The Open Group in the United States and other countries.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other product and service names might be trademarks of IBM or other companies.

Index

Printed in USA

SC27-2808-01