IBM® Rescue and Recovery
2.0 Windows Environment

User's Guide

IBM

IBM® Rescue and Recovery
2.0 Windows Environment

User's Guide

Notice:

Before using this information and the product it supports, be sure to read "Notices and Trademarks," on page 21.

First Edition (October 2004)

Before using this information and the product it supports, be sure to read "Notices and Trademarks," on page 21.

Contents

IBM® Rescue and Recovery 2.0 Windows Environment: User's Guide

Preface

This guide contains information on setting up and using IBM® Rescue and Recovery to protect valuable computer data.

This guide is organized as follows:

Chapter 1, "Introducing IBM Rescue and Recovery" contains a listing of IBM Rescue and Recovery components and system requirements, and an overview of IBM Rescue and Recovery concepts.

Chapter 2, "Using IBM Rescue and Recovery to back up your hard drive" contains information about backup strategies and best practices, and instructions on how to initiate a backup operation, schedule backup operations, copy backups from the hard drive, and set preferences.

Chapter 3, "Using IBM Rescue and Recovery to complete a restore operation" contains instructions on how to restore your system and restore single files using IBM Rescue and Recovery.

Chapter 4, "Troubleshooting" contains information that might be helpful if you encounter trouble using IBM Rescue and Recovery.

"Notices and Trademarks" contains notice and trademark information.

Who should read this guide

This guide is intended for anyone who is interested in using IBM Rescue and Recovery to back up their valuable computer data.

How to use this guide

Use this guide to design, set up, and implement a backup-and-restore strategy for your computer.

Additional information

You can obtain additional information and download this publication from the http://www-3.ibm.com/pc/support/site.wss/MIGR-4Q2QAK.html Web site.

Chapter 1. Introducing IBM Rescue and Recovery

IBM® Rescue and Recovery™ 2.0 is a managed-recovery program that protects computers from software-related system failures. In the event of a system failure, you can use IBM Rescue and Recovery 2.0 to restore the contents of the primary hard disk to a previously saved state.

IBM Rescue and Recovery functions

IBM Rescue and Recovery 2.0 enables you to perform the following functions:

- **Schedule daily, weekly, or monthly backups.** IBM Rescue and Recovery enables you to schedule backup operations so that your valuable data is automatically protected. For information on how to perform this function, see "Scheduling backup operations" on page 7.

- **Save backup files to a hidden, protected folder.** IBM Rescue and Recovery stores the backup files in a hidden, protected folder on the local hard disk drive, thereby minimizing the use of network bandwidth during a backup and restore operation.

- **Restore files to a backed-up state.** IBM Rescue and Recovery saves one base backup image and up to five incremental backup images on the local drive in a protected folder, if size permits. For information on how to restore files, see Chapter 3, "Using IBM Rescue and Recovery to complete a restore operation," on page 13.

- **Restore files after an operating-system failure.** Under normal circumstances, you can use IBM Rescue and Recovery from the Microsoft® Windows® interface. However, if an operating-system failure prevents you from accessing the Windows interface, you can use the IBM Rescue and Recovery workspace to perform a full system-recovery operation.

- **Protect the entire software image, including user data.** IBM Rescue and Recovery protects the entire contents of the hard disk, including the Windows operating system, software applications, registry settings, network settings, fix packs, desktop settings, and unique data files.

- **Copy backups to a CD drive, DVD drive, USB hard disk drive, or network drive.** If your computer has access to a network drive, a USB hard disk drive, or a recordable DVD or CD drive, IBM Rescue and Recovery enables you to copy backup files to these devices, thus providing an additional level of protection. These devices can then be used to restore the contents of the hard disk in the event of a hard disk drive failure.

- **Back up directly to a CD drive, DVD drive, USB hard disk drive, or network drive.** If your computer has access to a network drive, a USB hard disk drive, or a recordable DVD or CD drive, IBM Rescue and Recovery enables you to back up files directly to these devices, thus providing an additional level of protection. These devices can then be used to restore the contents of the hard disk in the event of a hard disk drive failure.

- **Support enterprise-wide recovery and backup policies.** IBM Rescue and Recovery supports a command-line interface, which can be used with systems-management tools to integrate enterprise-wide recovery and backup policies. For information about installation and deployment options, see the *IBM Rescue and Recovery 2.0 Deployment Guide*.

- **Restore single files or folders.** IBM Rescue and Recovery enables you to view, select, and recover one or more individual files or folders from a backup image.
- **Exclude specific files or folders from a backup.** IBM Rescue and Recovery enables you to exclude specific files or folders from a backup operation. Excluding files and folders reduces the size of the backup and enables the backup operation to be performed more quickly.

IBM Rescue and Recovery components

The IBM Rescue and Recovery program provides valuable functionality in both the IBM Rescue and Recovery workspace and the Windows environment. The IBM Rescue and Recovery workspace provides the interface from which IBM Rescue and Recovery is launched if the Windows operating system is disabled.

IBM Rescue and Recovery includes the following main components:

- **IBM Rescue and Recovery scheduler.** The IBM Rescue and Recovery Scheduler is responsible for invoking the backup process on a periodic basis. The periods supported are: daily (at a specified time), weekly (on a particular day of the week at a specified time), and monthly (on a particular day of the month at a specified time). The Scheduler runs as a Windows service, so that it functions even when no one is logged onto the computer.
- **Windows interface.** IBM Rescue and Recovery includes a Windows interface that enables the end user to customize its behavior. From this interface, the user can define a backup schedule, initiate a backup operation, copy backups onto removable media, restore the system from a backup, and select individual files to restore. Large enterprise administrators can restrict this interface to enforce a company-wide policy. The policy settings are defined in a text file as part of the installation operation. For more information about installation and deployment options, see the *IBM Rescue and Recovery Deployment Guide*.
- **IBM Rescue and Recovery workspace.** The IBM Rescue and Recovery workspace is designed to provide valuable rescue and recovery functionality in a pre-boot environment. Press Enter during startup to start the IBM Rescue and Recovery workspace.

  The pre-Windows environment can be booted from the local hard drive, a USB hard disk drive, a CD-ROM drive, or from a network.
- **IBM Rescue and Recovery engine.** The IBM Rescue and Recovery engine performs backup and restore operations.
- **Command-line interface.** The Windows command-line interface provides an interface for automated scripting, which enables custom image deployment and enterprise management functionality. The command-line interface can be used from the Windows environment.
- **On-screen help.** An IBM Rescue and Recovery help file is provided. This file documents the IBM Rescue and Recovery Windows interface.

Supported operating systems and devices

The IBM Rescue and Recovery program supports IBM ThinkCentre and ThinkPad computers, and is compatible with the following non-server based operating systems:

- Microsoft Windows XP Home
- Microsoft Windows XP Professional
- Microsoft Windows 2000 Professional

The following optional devices are also supported:

- USB hard drive
- Second hard drive
- Internal CD-ROM/DVD-ROM drive
- USB CD-ROM/DVD-ROM drive
- Internal CD-RW drive
- USB CD-RW drive
- Internal DVD-RW drive
- USB DVD-RW drive
- Ethernet NIC
- Network attached storage as a Windows mapped drive

Upgrade considerations

In order to ensure the successfully upgrade IBM Rescue and Recovery 2.0 from a computer that has IBM Rescue and Recovery 1.0 installed, a new backup set must be taken. When you install IBM Rescue and Recovery 2.0 on a computer that has IBM Rescue and Recovery 1.0 installed, complete the following tasks:

1. Archive all backups using IBM Rescue and Recovery 1.0.
2. Delete all rescue media and non-archived backups that were created using IBM Rescue and Recovery 1.0.
3. Install IBM Rescue and Recovery 2.0.
4. Create a new base backup image using IBM Rescue and Recovery 2.0.
5. Create new rescue media using IBM Rescue and Recovery 2.0.

Note: After upgrading, do not restore a full backup created by Rescue and Recovery 1.0 However, these files can be accessed by using the IBM Rescue and Recovery 2.0 rescue file function.

Chapter 2. Using IBM Rescue and Recovery to back up your hard drive

IBM Rescue and Recovery saves backup images in a hidden, protected folder. Users can decide how many backups to store on the local drive. Five incremental backups will be stored on the local drive by default, if size permits.

Advantages of multiple backups

The IBM Rescue and Recovery program enables users to manage multiple backups. The advantages of using multiple backup images include:

- **Increased performance during the creation of an incremental backup image.** All files that are on your hard disk during the initial installation and setup of IBM Rescue and Recovery, including the operating system, program files, and personal settings, are copied into the base backup image. Because these files are saved in this base backup image, they are not saved again during subsequent backup operations unless they have been modified.
- **Choice of recovery level.** You can choose to recover your computer from the base backup image or from any available incremental backup image. Each backup reflects the state of your hard disk at a different point in time. This backup protection is enhanced even further when you copy backups to an external device, such as a USB hard disk drive, or a network.

Backup considerations

The IBM Rescue and Recovery program enables you to complete a vast number of tasks. For example, you can schedule or manually initiate a back up your system; you can restore your system from the Microsoft Windows operating system or the IBM Rescue and Recovery workspace; you can save backups to and restore from a variety of devices, including CD, DVD, USB hard drive, and a network; backups can be scheduled and password-protected; you can exclude specific file types and restore individual files. All of this functionality gives IBM Rescue and Recovery a great degree of flexibility. Due to this flexibility, however, it is very important to think through your individual needs before you use IBM Rescue and Recovery.

When you initiate a manual backup operation or schedule a backup operation, IBM Rescue and Recovery enables you to choose where you want to save your backup files. These selections are saved and become the default settings for any ensuing backup operations. However, it is important to understand how IBM Rescue and Recovery will respond when these selections are changed.

When you perform a backup operation you should think through the following considerations:

- **Where you want to save your backup files.** The IBM Rescue and Recovery interface enables you to select from the available devices installed on your computer. When multiple devices are selected, IBM Rescue and Recovery creates a duplicate backup on each device that is selected. By default, copies of the base backup and five incremental backups can be stored on each device. Consider which locations will provide the best protection.
- **Whether and when to schedule future backup operations.** IBM Rescue and Recovery enables users to schedule backup operations. This feature ensures that

your data is backed up regularly, minimizing data loss sustained by a catastrophic software failure. Consider what schedule and frequency will best suit your individual needs.

- **Whether to password-protect your backup files.** IBM Rescue and Recovery enables users to password-protect backup files. This feature helps ensure that data contained in a backup file can be restored only by the authenticated user.
- **Whether to delete old backup files.** IBM Rescue and Recovery enables users to delete backup files from any of their attached devices. Whenever you change your backup settings with IBM Rescue and Recovery, it is best to save old backup files by archiving them to removable media. Local copies of these backups can then be deleted from the local drive.

Developing a backup strategy

The IBM Rescue and Recovery program enables you to restore your system to a number of backed-up states, thereby granting you multiple levels of protection. IBM Rescue and Recovery default settings establish a basic level of protection; however, your specific backup strategy and schedule should be customized to your own needs.

Multiple backups

The IBM Rescue and Recovery program stores multiple backup images on your hard drive. Each backup image reflects the state of your hard disk at the time of its creation, as follows:

- **The base backup image.** This compressed, complete file-based backup file is created when you perform your initial backup following installation of Rescue and Recovery. Normally, this file reflects the state of your hard disk at the time that IBM Rescue and Recovery is installed. All files on your hard disk at that time are saved in the base backup image.
- **Incremental backup images.** The incremental backup files archive the files that have changed since the last incremental backup was taken. New backups should be initiated whenever your system software is updated or a database or application is added. Only new files and those that changed since the last backup are saved in an incremental backup file. Incremental backup operations can be performed on a pre-set schedule, or can be initiated manually.

Archiving your backups

Additional protection can be achieved using the following techniques:

- **By copying your data to external media or a network.** By copying your incremental backup images, you ensure that you can restore your hard drive to any of your saved states. This expands your recovery options in the event of a system failure. The IBM Rescue and Recovery program enables you to copy your backups to a CD drive, DVD drive, USB hard drive, or a network drive (when booted to the IBM Rescue and Recovery workspace). Each archived backup provides an additional level of protection against application and data loss. For more information on this feature, see "Copying backups from the hard drive" on page 9.
- **By backing up directly to a CD drive, DVD drive, USB hard disk drive.** IBM Rescue and Recovery can save backups to a CD drive, DVD drive, USB hard disk drive, or network drive. By backing up directly to remote storage locations, you add redundant protection to your backup strategy.

Best practices for backup operations

The following sections provide useful information about best practices for using IBM Rescue and Recovery program to back up your valuable data.

Preparing your hard drive for the base backup

The IBM Rescue and Recovery program stores *images* of the state of your hard drive in a protected folder. These images contain a compressed copy of the operating system, applications, settings, data files and personal files on your computer. Consequently, it is best to set up your computer completely before initiating your first backup operation.

Before you begin your initial backup operation, it is best to complete the following tasks:
- Load all applications
- Configure and set up all printers
- Configure and set up all network connections
- Run a virus scan

Creating a bootable rescue and recovery CD

The IBM Rescue and Recovery program enables you to create a rescue and recovery CD that enables you to boot your computer and restore your backups even in the event of catastrophic software or hardware failure. It is best to create this CD when you perform your base backup operation.

Scheduling backup operations

The IBM Rescue and Recovery program enables you to schedule backups according to a daily, weekly, or monthly schedule. Scheduling your backups provides systematic protection against data loss. It is best to establish a backup schedule when you perform your base backup operation.

Backing up encrypted files

IBM Rescue and Recovery Version 2.0 provides support for the following encryption methods:
- Windows Encrypting File System (EFS)
- IBM File and Folder Encryption (FFE)

Note: Versions of IBM Rescue and Recovery prior to Rapid Restore Ultra 4.0 are **not** compatible with these encryption techniques.

During a backup operation, IBM Rescue and Recovery Version ensures that both Windows EFS-encrypted and IBM FFE-encrypted files are backed up in their encrypted format. During a full-restore operation (using the Restore your system option), the IBM Rescue and Recovery program ensures that both Windows EFS and IBM FFE files are restored to their original location in their encrypted format. All Rescue and Recovery operations involving a full or incremental backup or a full restore of the hard disk ensure that both encryption formats are handled correctly.

IBM Rescue and Recovery also enables users to restore individual, encrypted files and folders from a backup with the following limitations:

- **Windows EFS files.** Individual files encrypted by Windows EFS can only be restored using Rescue and Recovery from the Windows operating system. These files cannot be restored using Rescue and Recovery from the IBM Rescue and Recovery preboot environment.
- **IBM FFE-encrypted files.** Individual files encrypted by IBM FFE can only be restored using Rescue and Recovery from the IBM Rescue and Recovery preboot environment. Furthermore, these files must be restored to their original location to be successfully restored.

Setting preferences

How you should set your IBM Rescue and Recovery preferences depends on a number of variables. Use the following information to determine what settings best suit your needs. Most users fall into one of the following categories:

- **Large enterprise users.** Large enterprise users have system administrators who manage the settings of IBM Rescue and Recovery. These settings are set for the enterprise and enforced remotely.
- **Small business users.** Small business users that do not have system administrator support should set their preferences mindful of their business needs and the limitations of their workstation. Depending upon the available space available on their hard drive, network considerations, and their sensitivity to data loss, small business users should establish a strategy that includes scheduled backups and systematic copying of saved backup files. Features such as password protection should also be considered.
- **Storage sensitive users.** Computer users that are forced to conserve space on their hard drives should set their backup preferences to preserve hard disk space. Storage-sensitive users can reduce the default number of backups stored on the local hard disk, or they can store their backups directly to a remote device, such as a USB hard disk drive or a network location. If this is not possible, remote users can systematically copy their backup files to a removable medium, such as a USB drive, CD drive, or DVD drive.
- **Mobile computer users.** Mobile computer users should set their backup preferences mindful of the possibility of data theft and data loss. Consequently, mobile computer users should use the backup encryption and password protection features, and should copy their backups for safe keeping. Mobile computer users might consider keeping a set of backup CDs or DVDs with their computer.

Backing up now

The IBM Rescue and Recovery program uses a hidden, protected folder on the local hard disk to save your backup files. It also backs up and protects the entire contents of the hard disk, including the Microsoft Windows operating system, software applications, registry settings, network settings, fix packs, desktop settings, and unique data files.

The Back up now screen enables you to initiate a backup procedure. This screen also provides a pie chart that illustrates the amount of free space available on your hard drive.

For specific instructions on initiating a backup operation, refer to the product help files.

Important: Make sure that your system is connected to an ac power supply before initiating a backup, restore, or archive procedure. Failure to do so can result in data loss, or an irretrievable system failure.

Scheduling your backups

Establishing a schedule for your backup operations ensures that your valuable files will be systematically protected.

Setting your backup schedule

Use the Schedule your backups function to schedule automatic backup operations to take place on a daily, weekly, or monthly basis at a day and time of your choosing. If you prefer not to have backup operations take place automatically, you can use the Schedule your backups feature to disable scheduled backup operations.

By default, backup operations are not scheduled. Depending on how critical your data is or how often it changes, you might want to enable the scheduled backup feature so that backup operations take place according to a pre-set schedule and your data is automatically backed up.

For specific information about scheduling automatic backup operations, see the product help files.

Copying backups from the hard drive

The IBM Rescue and Recovery program enables you to use removable media (USB hard disk drive, DVD drive, or CD drive) to restore the contents of the hard disk in the event of a hard disk drive failure. Copying your backup files to removable media enhances backup protection and enables you to restore your system from any of your archived backup files.

For specific information about how to archive your backups, see the product help files.

You will need blank removable media when copying backups from the hard drive to CD or DVD. Make sure that you label each disc as it is created, and that you store them together in a safe place.

Setting your preferences

The Set your preferences screen lets you customize IBM Rescue and Recovery backup functionality by enabling users to select which partitions, files, and folders to include or exclude.

The Set your preferences screen enables you to make the following choices:
* Partition backup options:
  - **Back up all partitions.** This option backs up all partitions on the local hard drive. Use this preference when you want to back up all files and folders on all partitions of your local hard drive. This option provides the most backup protection and ensures that you have every file backed up. This is the default setting.
  - **Include only selected partitions.** This option enables you to select specific partitions to include in your backup. Use this preference when you do not

want to back up all partitions, but want to select specific partitions to back up. This selection enables you to select between the partitions on your local hard drive.

When you select **Include only selected partitions**, a screen displays all of the partitions on your local hard drive. Only the partitions you select will be backed up.

- File and folder backup options:
  - **Back up all files and folders.** This option backs up all files and folders on the selected partitions of the local hard drive. This option provides complete backup protection for the selected partitions. This is the default setting.
  - **Exclude specified files and folders.** This option enables you to select specific files or folders to exclude from your backup. Use this preference when you do not want all files or folders to be backed up.

    When you select **Exclude specified files and folders**, a screen displays that enables you to browse the selected partitions and select files and folders to be excluded from future backups. Only the files and folders that you select will be excluded from subsequent backups.

    Note: Some files and folders on the selected partitions might not be available for exclusion. The Exclude specified files and folders option does not enable users to exclude files or folders that are essential to the operating system or the system-restore process.

For specific information about how to set your preferences, see the product help files.

The Set Preferences - Summary screen

The Set Preferences - Summary screen summarizes the choices that you have made. It displays the partitions that will be included in subsequent backups and the files and folders that will be excluded from subsequent backups. Use this screen to review your choices before continuing with any further backup operations.

Managing backups

The IBM Rescue and Recovery program enables you to manage how often the hard disk is backed up by enabling you to schedule backups at a customized time and frequency. If you prefer to perform backup operations manually, or you need to perform a backup operation between scheduled backups, you can use the Backup function to perform an on-demand backup operation.

Managed backup and recovery for the enterprise

The IBM Rescue and Recovery program integrates with corporate business continuity plans to extend business recovery policies across a global work environment, from branch and regional offices to mobile or remote locations. Through a command-line interface, IT administrators can manage the recovery image for each system, no matter where it is located.

The IBM Rescue and Recovery program includes the following system-management features:

- **Command-line interface.** The command-line interface provides an interface for automated scripting, which enables custom image deployment and enterprise management functionality. The Rescue and Recovery command-line interface can be used in a Windows environment and can be automated with

systems-management tools including IBM Director, IBM LANClient Control Manager™, Tivoli® TME™, or Microsoft SMS.

- **Customizable installation options.** IT administrators can personalize Rescue and Recovery by setting policy. The following options are available:
  - Hide the Windows interface
  - Set the backup schedule
  - Modify the amount of storage space allocated for IBM Rescue and Recovery

  See the *IBM Rescue and Recovery 2.0 Deployment Guide* for more details about the command-line interface and custom deployment options.

By default, the IBM Rescue and Recovery program backs up the primary partition and any extended partitions on the primary hard disk and stores the backups in a hidden, protected folder on the hard drive. During the installation process, you have the option to initiate a complete system backup. Ideally, this *base* backup should not be taken until your computer has all necessary software installed and configured.

Additional incremental backups are automatically created by subsequent backup operations. By default, five incremental backups will be stored on the local drive.

The ability to save multiple images enables an IT administrator to create, store, and manage multiple backup images in an enterprise. Users can also manage additional levels of backups while the operating system is running, enabling them to protect their own data by storing it separately from the backup images.

Chapter 3. Using IBM Rescue and Recovery to complete a restore operation

You can use the IBM Rescue and Recovery program to restore your system, or to restore individual files or folders. Performing a system-restore operation restores the contents of your hard disk to a previously known state. This includes the operating system, software applications, registry settings, network settings, fix packs, desktop settings, and data files.

Accessing the IBM Rescue and Recovery workspace

The IBM Rescue and Recovery workspace provides vital restore functionality outside of the Windows environment. In the event of an operating-system failure, access the IBM Rescue and Recovery workspace by pressing Enter at system startup.

Restoring your system

The IBM Rescue and Recovery program enables you to restore files to any number of backed-up states. Each backup is differentiated by its creation time and date. The Restore your system screen enables users to select the backup they want to use to restore their system. IBM Rescue and Recovery can restore your system from a backup stored in any of the following locations: the local hard drive, CD-R drive, DVD drive, USB hard drive, or a network drive.

For specific information about how to restore your system, refer to the product or context-sensitive help files.

Notes:

1. When performing a restore operation, all data created since the selected backup is erased from your computer.
2. Make sure that your system is connected to an ac power supply before initiating a backup, restore, or archive procedure. Failure to do so can result in data loss, or an irretrievable system failure.

Restoring individual files and folders

Copying files and folders to an external medium provides valuable redundancy protection for your data. The Restore Files and Folders screen enables you to copy files and folders from your hard drive to the following types of external media:

- Diskette (through an integrated diskette drive or USB diskette drive)
- USB hard disk drive
- CD drive
- DVD drive
- A network drive

For specific information about how to restore one or more individual files, refer to the product or context-sensitive help files.

Rescuing or restoring encrypted files

IBM Rescue and Recovery provides support for the following encryption methods:
- Windows Encrypting File System (EFS)
- IBM File and Folder Encryption (FFE)

Note: Versions of IBM Rescue and Recovery prior to Rapid Restore Ultra 4.0 are **not** compatible with these encryption techniques.

Backup and restore operations

During a backup operation, IBM Rescue and Recovery ensures that both Windows EFS and IBM FFE files are backed up in their encrypted format. During a full-restore operation (using the Restore your system option), the IBM Rescue and Recovery program ensures that both Windows EFS and IBM FFE files are restored to their original location in their encrypted format. All Rescue and Recovery operations involving a full or incremental backup or a full restore of the hard disk ensure that both encryption formats are handled correctly.

Rescuing encrypted files from a backup

If you are working in the Windows environment and attempt to rescue one or more individual files or folders from a Rescue and Recovery backup using the Restore files option, you must take some precautions if you have any files in your backup that are encrypted through either the Windows EFS- encryption or IBM FFE-encryption methods.

- **IBM FFE-encrypted files:** You can use the IBM Rescue and Recovery program to rescue IBM FFE-encrypted files and folders from a Rescue and Recovery backup, provided they are rescued to their original location. The destination drive must be the same drive from which the files or folders were backed up.

- **Windows EFS-encrypted files:** You can use the IBM Rescue and Recovery program to rescue Windows EFS-encrypted files from a Rescue and Recovery backup, provided they are rescued to an NTFS-formatted drive.

Rescuing encrypted files from outside of a backup

Neither IBM FFE-encrypted nor Windows EFS-encrypted files that reside outside of a backup can be rescued. If you attempt to rescue or copy an encrypted file from outside of the backup, it will not be usable under any conditions.

Rescuing encrypted files using the Rescue and Recovery workspace

If you are working in the Rescue and Recovery workspace and attempt to rescue one or more individual files or folders from a Rescue and Recovery backup, you must take some precautions if you have any files in your backup that are encrypted through either the Windows EFS-encryption or IBM FFE-encryption methods.

- **IBM FFE-encrypted files:** You can use Rescue Files function to rescue IBM FFE-encrypted files and folders from a Rescue and Recovery backup, provided they are rescued to their original location. The destination drive must be the same drive from which the files or folders were originally backed up.

- **Windows EFS-encrypted files:** The Rescue files function cannot be used to rescue EFS-encrypted files from a Rescue and Recovery backup, nor can the Restore from backup function be used to selectively restore EFS-encrypted files.

However, you can use the Restore from backup function to perform a full restore, which will restore all files, including EFS-encrypted files to the selected destination drive.

Creating and using startable recovery media

The IBM Rescue and Recovery workspace enables you to use a USB hard disk drive, or to create a DVD or CD that you can use, to help recover from failures that prevent you from gaining access to the Windows environment or the Rescue and Recovery workspace on your hard disk. Although such problems are rare, it is best to be prepared and make your startup recovery media as soon as possible, before a problem occurs.

You can perform the following tasks using the Rescue and Recovery workspace from your startup recovery media:

- Recover files, folders, or your entire hard disk contents from a backup using the IBM Rescue and Recovery program
- View key information about your computer and an event history
- Troubleshoot problems by using information and diagnostics
- Transfer files from your computer or network to other media
- Access the Internet and link to the IBM support site

Creating your startable recovery media

To create your startup recovery media now, complete the following procedure:

1. Select the radio button for the type of startup media you want to create.
2. Click **OK**.
3. Follow the instructions on the screen.

If you do not want to make startup media now, click **Cancel**.

Using your startable recovery media

To use your startup recovery media, complete one of the following procedures:

- Insert the startup CD or DVD into your CD or DVD drive, then restart your computer.
- Attach your USB hard disk drive to one of the USB connectors on your computer; then, turn on your computer.

When the startup recovery media starts, the IBM Rescue and Recovery workspace opens. Help for each feature is available from the Rescue and Recovery workspace.

Note: If your startup media fails to start, you might not have your startup device (CD drive, DVD drive, or USB device) set correctly in your BIOS startup sequence. Refer to the documentation that came with your computer for information about gaining access to the BIOS configuration utility.

Chapter 4. Troubleshooting

The following information might be helpful if you encounter trouble using the IBM Rescue and Recovery application.

General troubleshooting information

When new Microsoft Windows users are created, the system must be rebooted before the new users can perform a backup operation.

Do not use the IBM Rescue and Recovery program in conjunction with any other utility software that modifies the master boot record. Software that modifies the master boot record of your hard disk might render your backups inaccessible. Such software includes, but is not limited to Roxio GoBack, System Commander, and PowerQuest BootMagic.

Backup troubleshooting information

The following information might be helpful if you encounter trouble while attempting a backup operation using IBM Rescue and Recovery software.

- **User accounts are included in backup and restore operations.** Therefore, if you restore your system to a time when a user did not exist or had a different password, that user will not be able to log in.
- **IBM Rescue and Recovery works in the background.** If the IBM Rescue and Recovery interface is closed while performing a Windows incremental backup, IBM Rescue and Recovery will continue to backup files in the background.

Backup operation is slow

Backup performance depends upon the size and type of operation being performed. Backup operation performance can be optimized by performing frequent backups.

Running another program, such as an anti-virus program, while creating a backup image will adversely affect backup performance. Do not run any programs while creating a backup image.

Run anti-virus programs before or after performing a backup operation.

Scheduling dates on the 29th, 30th, or 31st

Rescue and Recovery does not allow you to specify a scheduled backup on the 29th, 30th, or 31st day of the month, but you can schedule a backup for the end of the month.

Unable to select the Copy backups from hard drive function

In order to copy backups to an external location, local backups must exist. If the Copy backups from hard drive option is not available, the user does not have an external device attached to the computer. Attach a CD, DVD, or USB hard drive to the computer and try again.

To restore a backup set from CD, DVD or USB drive, the appropriate drive must be a supported boot option for the computer you are restoring.

In order to perform a CD-R archive, the hard drive must have at least 700MB of free space.

Restore troubleshooting information

The following information might be helpful if you encounter trouble while attempting a restore operation using IBM Rescue and Recovery software.

To restore a backup set from a CD, your CD drive must be a supported boot option for the computer you are restoring.

User cannot log on after a restore operation

This problem will occur on multi-user systems when a new user is added and a backup operation takes place before the new user logs on for the first time.

To remedy this problem, the IT administrator must add the new user again and either restart the computer, or have the new user log on before the next backup operation.

To prevent this problem, restart the computer after adding a new user, or ensure that the new user logs on before the next backup operation is performed.

Installation troubleshooting information

The following information might be helpful if you encounter trouble while attempting to install or uninstall the IBM Rescue and Recovery software.

Unable to install IBM Rescue and Recovery

IBM Rescue and Recovery cannot be installed over certain previous versions. The earlier version must be uninstalled prior to installing the newer version.

IBM Rescue and Recovery must be installed on the C: drive. Furthermore, if you are using SCSI hard disk drives, the C: drive must be installed on the lowest SCSI ID on all the local drives.

Uninstalling the software

To uninstall IBM Rescue and Recovery from a computer running Windows 2000 Professional or Windows XP, you must log onto the computer with administrator rights. For more information on user accounts, see the help system provided with the operating system.

When a non-administrator tries to uninstall IBM Rescue and Recovery, an error message will appear indicating that IBM Rescue and Recovery files are corrupt when no files are actually corrupt. If an administrator uninstalls IBM Rescue and Recovery, this message will not be displayed and IBM Rescue and Recovery will uninstall correctly.

Power management troubleshooting information

The following information might be helpful if you encounter trouble while using IBM Rescue and Recovery due to power management issues, such as standby, hibernate, and power loss.

IBM Rescue and Recovery will respond to a system request in the following manner:

- **When a Microsoft Windows backup or CD-R Archive is in progress.** When a Microsoft Windows backup or CD-R Archive is in progress and the system requests to enter standby/hibernate, the IBM Rescue and Recovery program will stop the backup in progress and allow the power request to proceed. Upon resume, it will record the backup as failed and query the user to run the backup again.
- **When a Microsoft Windows restore is in progress.** When a Microsoft Windows restore is in progress, the power request will be rejected and the restore will continue.
- **When an IBM Rescue and Recovery environment backup is in progress.** When an IBM Rescue and Recovery environment backup is in progress, the power request will occur, and the user will have to reinitiate the backup.
- **When an IBM Rescue and Recovery workspace restore is in progress.** When an IBM Rescue and Recovery workspace restore is in progress, the power request will occur, and the user will have to initiate a new IBM Rescue and Recovery workspace restore to return the machine to a stable configuration.

Encryption troubleshooting information

The following information might be helpful if you encounter trouble while using the IBM Rescue and Recovery program with encrypted files.

Restoring from a backup that contains encrypted files

IBM Rescue and Recovery base and incremental backup operations capture Windows Encrypting File System (EFS) files and IBM Client Security Software File and Folder Encryption (FFE)-encrypted files. Full restore operations from a base or incremental backup will successfully restore both EFS- and FFE-encrypted files. The encrypted files introduce no limitations to a full restore operation.

Restoring individual, encrypted files and folders from a backup

IBM Rescue and Recovery enables users to restore individual, encrypted files and folders from a backup with the following limitations:

- **Windows EFS files.** Individual files encrypted by Windows EFS can only be restored using Rescue and Recovery from the Windows operating system. These files cannot be restored using Rescue and Recovery from the IBM Rescue and Recovery preboot environment.
- **IBM FFE-encrypted files.** Individual files encrypted by IBM FFE can only be restored using IBM Rescue and Recovery from the IBM Rescue and Recovery preboot environment. Furthermore, these files must be restored to their original location to be successfully restored.

Rescuing (copying) encrypted files that are not in a backup

Support for rescuing or copying encrypted files that are not in a backup is as follows:

- **From within the Windows operating system.** Users can copy encrypted files that are not in a backup from within the Windows operating system as follows:

- *Windows EFS-encrypted files.* Individual files encrypted by Windows EFS can only be rescued using the Windows Explorer utility. Use Windows Explorer to copy the encrypted files to removable media before initiating the restore process.
- *IBM FFE-encrypted files.* IBM FFE-encrypted files that are not in a backup cannot be rescued or copied from within the Windows operating system.
- **From within the IBM Rescue and Recovery workspace.** Individual, encrypted files cannot be rescued or copied from within the IBM Rescue and Recovery preboot environment.

Additional information

Other considerations and helpful information can be found on the http://www.pc.ibm.com/support IBM Web site.

Note: Full hard disk encryption programs generally do not work with IBM Rescue and Recovery because they require a master boot record program in order to operate.

Versions of IBM Rescue and Recovery prior to Rapid Restore Ultra Version 4.0 do **not** support Microsoft Windows encrypted files (EFS) or IBM FFE-encrypted files.

Boot Manager troubleshooting information

The following information might be helpful if you encounter trouble while using the IBM Rescue and Recovery Boot Manager.

Startup-interrupt prompt does not display

If you do not see the startup-interrupt prompt during startup, it might be that the prompt displayed too quickly. If this occurs and you want to interrupt the startup process and access the IBM Rescue and Recovery environment, press and hold the Enter or F11 key and then turn on the computer. Release the Enter or F11 key when the IBM Rescue and Recovery workspace opens.

Appendix. Notices and Trademarks

This appendix gives legal notice for IBM products as well as trademark information.

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 give 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.

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.

Licensees of this program who wish to have information about it for the purpose of enabling: (1) 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, Department 80D, P.O. Box 12195, 3039 Cornwallis, Research Triangle Park, NC 27709, 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 document 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.

Trademarks

The following terms are trademarks of the IBM Corporation in the United States, other countries, or both:
    DB2
    IBM
    LANClient Control Manager
    Rapid Restore
    Rescue and Recovery
    ThinkCentre
    ThinkPad
    TME
    Wake on LAN

Tivoli is a trademark of Tivoli Systems Inc. in the United States, other countries, or both.

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

Other company, product, and service names may be trademarks or service marks of others.

IBM ®

Printed in USA