



Barracuda Backup Service Administrator's Guide

Version 2.x

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v20-100205-04-0507

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Chapter 1

Introduction

This chapter provides an overview of the Barracuda Backup Service, including some important concepts to understand before installation.

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Overview

The Barracuda Backup Service provides a full local data backup and is combined with a storage subscription to replicate data to two offsite locations. This approach provides the best of both worlds – onsite backups for fast restore times and secure offsite storage for disaster recovery.

Cloud Storage With Data Deduplication

Barracuda Backup Service Subscription plans provide diverse offsite storage that scales to meet your changing data requirements. Offsite storage is allocated in 100 Gigabyte increments and provides the following:

- Secure backup to two geo-separate data centers
- Deduplicated efficient backup storage to save space and keep costs low
- Redundant disk-based storage
- Best-of-breed data retention policies
- Web interface multi-location management
- Restore by Web, FTP and Windows software

Email Server Full Backup

The Barracuda Backup Service provides a complete backup of the email server for disaster recovery. The combination of software, configuration, and email data is needed to restore an organization's email server should the server be corrupted or destroyed. *This can only be done* if a full backup of the email server software and email database is available. The Barracuda Backup Service with BarracudaWare agents provides the capability to do a full backup of Microsoft Exchange Server, while Novell GroupWise email servers can be completely backed up using the Novell dbcopy backup software included with GroupWise.

Key Features of full email server backup include:

- Restoration of an email server
- Reliable backup of entire email server including software, configuration, and database
- Minimized downtime and quick restore of email services

Email Message-level Backup

Message-level backup of email stores every email message from each user for fast restoration. This allows administrators or users to access messages that were accidentally deleted or corrupted in a single email account. Individual email messages, entire folders of emails, or all of the emails for a specific user can be restored to the email server without having to restore the entire server. The restored emails can be sent directly back to their original location in the user's mailbox or to an alternate location. Message-level backup allows you to use the Barracuda Backup Service Web interface to view individual messages that were backed up on a certain date.

Key Features of message-level backup include:

- Recorded folders and locations of emails from the server
- Restoration of email at a user level without restoring the entire email server
- Quick restoration of a small amount of email messages
- Individual messages located to restore easily

Basic Terminology

Backup

Backing up is the process of copying files and folders for data storage, including selected data from file servers, application servers, and user PCs to the Barracuda Backup. The original data remains intact in its current location and a copy of the data, or backup, is kept for the purpose of recovery should the original file be lost or damaged. In this guide we refer to a “backup” as the stored data, while “to back up” refers to the action or process of creating the backup of data. So, for example, you will “back up your data” on a regular basis so that you’ll always have “a backup” of your data.

Backup Efficiency With Data

Barracuda Networks has developed an innovative method of “bit differential analysis” which provides efficient storage for the data that you are backing up. Once your Barracuda Backup Service is installed, it collects the data from your servers during an initial backup period. After the initial backup is complete, the Barracuda Backup Service identifies new or changed information and analyzes each file at the bit level. After the files have been analyzed, the Barracuda Backup Service only has to copy and store the new bit sequences, or the changed parts of the data. This technique saves on the amount of Internet bandwidth required to send the data offsite and it keeps your storage costs low.

Restore

A restore is the process of copying data from storage to its original location or to a new location. Data can be restored directly from the Barracuda Backup Service, at local network speeds, or from the offsite data centers using your available Internet bandwidth speeds.

Rate Limit

The Barracuda Backup Service enables control over the rate at which data is replicated to the offsite locations throughout the day. The rate control feature provides for the preservation of Internet bandwidth during peak usage and optimizes offsite backup transfers during daily non-peak hours.

Disaster Recovery

Disaster recovery is the ability to quickly restore critical systems and data after a disaster. A disaster can range from an isolated hardware failure to a wide-spread natural disaster. Successfully recovering from a disaster requires pre-planning to ensure critical systems and data are fully backed up and that backed up data is available if needed. The disaster recovery process restores the operating system and applications onto the new or repaired computer from the most recent system backup. A general restore operation can then be done to restore the critical data.

Backup Security

Data transfers between your network and Barracuda Networks' data storage network are always encrypted and totally secure. Only authorized customer representatives equipped with valid account authentication are able to access and restore your stored data. Barracuda Networks approaches the security of your data from three aspects: technical, physical and policy-based.

Technical Security

The most aggressive combination of symmetrical and asymmetrical encryption in the industry keeps your data stored in a format that nobody but you can access. The United States government recently approved 192-bit AES encryption as the preferred method for protecting top-secret information.

Barracuda Networks' backup solution starts with the even higher 256-bit AES encryption. Barracuda Networks' efforts to protect your data do not stop at a simple encryption algorithm though. We have developed a proprietary advanced digital cataloging system that shreds your data into small pieces and tracks the changes of these parts over time. That system serves to further protect your information by breaking it up and stripping the original meta identifiers from your files.

As your data is transmitted to Barracuda Networks' secure offsite data storage facilities, your symmetrically encrypted data parts are compressed and sent over your Internet connection with an asymmetrical encrypted key through another encrypted IP tunnel. While traversing the internet, three separate encryption algorithms two layers deep are used to keep your data safe.

Physical Security

Your data is backed up to at least two offsite secure locations with Barracuda Networks. Each Barracuda Networks storage location is highly secure and includes alarms, controlled access, fire suppressors, redundant bandwidth, and emergency power generators - everything necessary to ensure your valuable data is not in danger.

The Barracuda Networks storage infrastructure boasts high-quality RAID redundant hardware with hot-spare drives in every file server and near instant data mirroring over high-speed fiber connections between our storage locations.

No single computer anywhere has all of the information that it needs to access your data. Barracuda Networks has made it as easy as a single click to restore backed up data; however, there is a team of isolated computers on the back-end. Each of these computer systems and databases communicate in unison to deliver you your data. The diversity and isolation of all the systems needed to reconstruct your data strengthens the physical security of your information.

Contacting Technical Support

To contact Barracuda Networks Technical Support:

- By phone: call 1-408-342-5400, or if you are in the United States, (888) Anti-Spam, or (888) 268-4772
- By email: use *support@barracuda.com*
- Online: visit *http://www.barracuda.com/support* and click on the **Support Case Creation** link.

There is also a Barracuda Networks Support Forum available where users can post and answer other users' questions. Register and log in at *http://forum.barracuda.com*.

Chapter 2

Getting Started

This chapter will guide you in installation and initial configuration of the Barracuda Backup Service.

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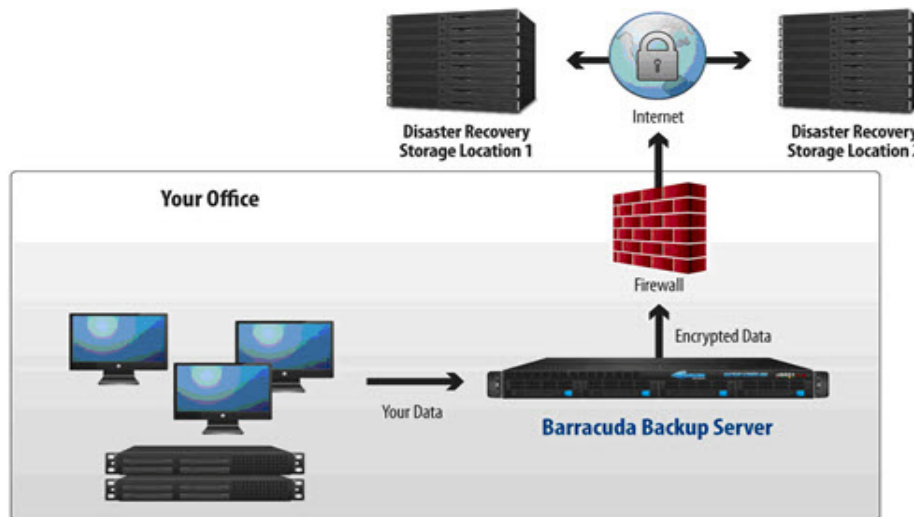
Installation

The Barracuda Backup Service is deployed between the firewall and servers, which includes a direct path to Barracuda Central's geographically dispersed data centers.

Before installing your Barracuda Backup Service, verify that you have the necessary equipment and information:

- Barracuda Backup Server (check that you have received the correct model)
- AC power cable
- Ethernet cables
- VGA monitor (recommended)
- PS2 keyboard (recommended)
- Barracuda Backup Server serial number and linking code (on reverse side of appliance)
- Connectivity and access information for servers to be backed up

Figure 2.1: Barracuda Backup Server Deployment



Physical Installation

1. Fasten the Barracuda Backup Server to a 19-inch rack or place it in a stable location.

Warning



Do not block the cooling vents located on the front and rear of the unit.

2. Connect an Ethernet cable from your network switch to the Ethernet port on the back panel of the Barracuda Backup Server.
3. Connect the power cord, VGA monitor, and a PS2 keyboard to the Barracuda Backup Server.

4. Press the POWER button on the front panel to turn the unit on.

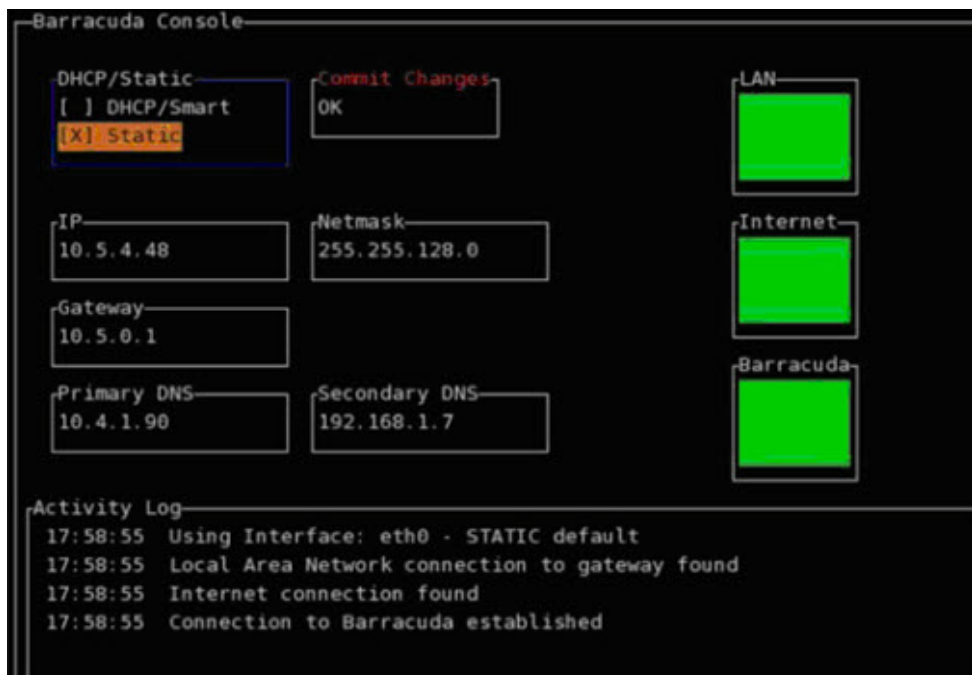
Configuring the IP Address and Network Settings

The Barracuda Backup Server is configured to obtain an IP address on your network using DHCP. If you need to specify a static IP, you can use the console administration interface by connecting a monitor and keyboard to the Barracuda Backup Server.

If the default DHCP or Static IP assignment configured on a Barracuda Backup Server does not work, it will revert to Smart-mode to try to establish a connection to the Internet. Smart-mode is intended to be a temporary measure of establishing network connectivity and should be changed to a permanent DHCP or Static IP assignment by Barracuda Networks or by using the Barracuda Backup Server Console Administration Interface.

1. Use your arrow keys to highlight the DHCP/Static field.
2. Using the spacebar select Static for your IP address assignment preference.
3. Enter the IP Address, Netmask, Default Gateway, Primary DNS Server and Secondary DNS Server (optional) as appropriate for your network.
4. Press Enter to Commit Changes.

Figure 2.2: Barracuda Backup Server Console Administration Interface



The Barracuda Backup Server is considered online when the LAN, Internet and Barracuda boxes on the Barracuda Backup Server Console Administration Interface are green. Note that the lights on the Console Administration Interface will not turn green until you have completed the linking process at <http://backup.barracuda.com>. See *Linking Your Barracuda Backup Server to an Account* for more information.

Configuring your Corporate Firewall

If your Barracuda Backup Server is located behind a corporate firewall, you may need to open the following ports to allow communication between the Barracuda Backup Server and the Internet.

- Port 1194 outbound for both TCP and UDP traffic. The Barracuda Backup Server uses port 1194 to connect to the internet in order to transfer data to the offsite storage location and uses UDP by default.

If you would like to restrict the outbound network traffic on port 1194 to only reach the Barracuda Central offsite servers, please contact Barracuda Networks Technical Support for a list of the required IP addresses to allow.

- Port 80 for both TCP and TCP traffic. The Barracuda Backup Server uses port 80 as a fail over in the event that Port 1194 is closed.

Configuring Access to your Barracuda Backup Server

When a server is brought online for the first time, a new account needs to be created and linked to the server to activate your Barracuda Backup subscription plan. You will need to create an account before you can access the Web interface features.

Creating a login account

1. Access the Barracuda Backup Web interface at <https://backup.barracuda.com>.
2. Click **Create a New Account**.
3. Enter your company information in the fields provided, and then click **Next**.
4. Enter the primary and alternate contact information in the fields provided, and then click **Next**.
5. Enter your billing information by choosing a Credit Card or Purchase Order payment type, and then click **Next**. If you selected Credit Card as your payment type you will need to provide the card contact information for the card holder and the credit card details in the fields provided.
6. Read through the License and Warranty information and then mark the box indicating you agree to the license terms.
7. Click **Create my New Account**.
8. A confirmation email is sent to the primary contact using the email address specified. Click on the link provided in the email to activate your login and select a password for your account.
9. Create a new password using the field provided and then click Set Password to continue to the log on screen.

Linking Your Barracuda Backup Server to an Account

Your Barracuda Backup Server needs to be linked to an account before you can activate your offsite storage subscription plan and initiate data backups.

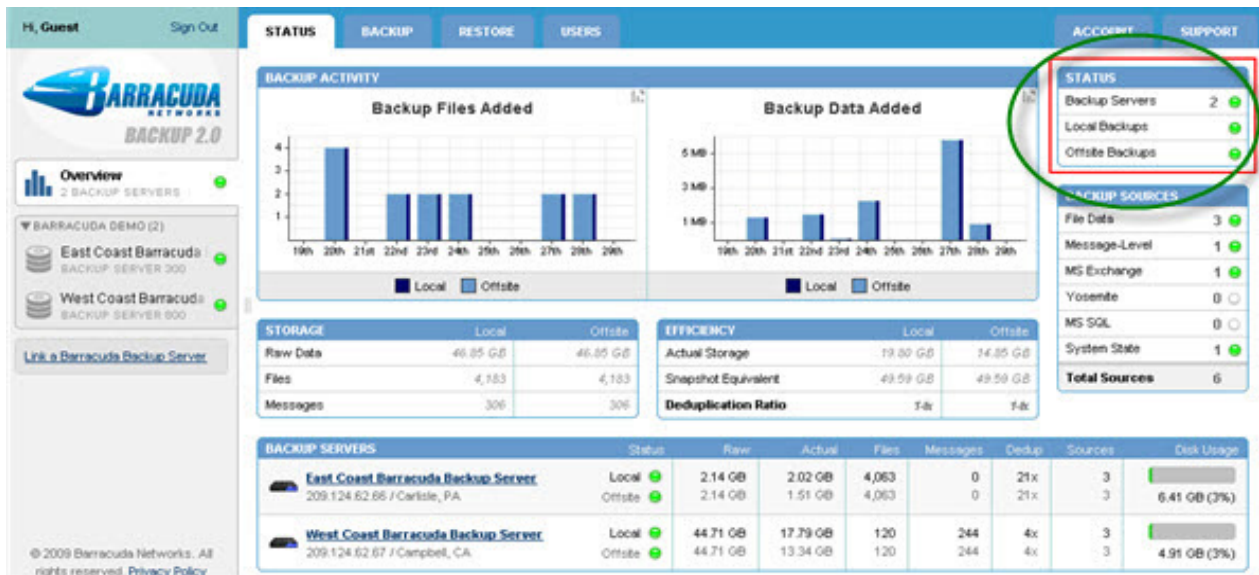
To link your account:

1. Access the Barracuda Backup Web interface at <https://backup.barracuda.com>.
2. Log in to your account using your email address and password.
3. From the STATUS page click on the link labeled **Link a Barracuda Backup Server**.

4. Enter your Serial Number and Linking Code, and then click Continue. The Serial Number and Linking Code are provided on a sticker attached to the Barracuda Backup Quick Start Guide shipped with your Barracuda Backup Server. The serial number can also be found on a sticker on the back of the unit.
5. Supply the following information for your account:
 - 5a. The appropriately sized plan for your offsite storage needs, the payment period associated with your subscription, and your method of payment.
 - 5b. The geographical location and the time zone associated with your backup server.
 - 5c. The purchaser information for your backup server indicating who the unit is identified with; either a company or a reseller.
6. Click Save & Link Server. **Note that the linking process could take a few minutes to complete.** Please wait until the **STATUS** page is displayed, indicating that the backup server was successfully linked to your account.

A green light next to the Backup Server in the Status section indicates that your Barracuda Backup Server was successfully connected.

Figure 2.3: Status page of Barracuda Backup



Administrative Settings

Controlling Access to the Web Interface

The **USERS > Contacts & Users** page allows you to add contacts to your account and to give the contacts permissions to log in and make changes from the Barracuda Backup Web interface. You can set the following options for a contact:

- Receive email notifications related to:
 - Full Backup Reports
 - Backup Error Reports
 - Backup Overage Reports
 - Backup Server Offline Reports
 - Invoices
- Allow access to the Web interface with permissions to:
 - Manage the Barracuda Backup with full administrative access
 - Manage Billing Information
 - Manage Web interface settings
 - View Reports
 - View Statistics
 - View and download backed up files
- Allow access to selected Backup Servers when multiple servers are linked to the account.

Registering your Account as a Reseller

1. If you are a Barracuda Authorized Reseller, you can help your customers manage their Barracuda Backup Servers by linking them in your Barracuda Backup account. To do this, you must first register your account as a Reseller with Barracuda Networks:
1. Access the Barracuda Backup Service Web interface at <https://backup.barracuda.com>.
2. Log in to your account using your email address and password.
3. Go to the **ACCOUNT > Reseller Registration** page and enter the Serial Number and Order Number from any Barracuda Networks invoice.

After you have registered your Barracuda Backup Account as a Barracuda Networks Reseller, you will be able to link purchased Barracuda Backup Servers normally

Verifying your Subscription Plan Size

The Barracuda Backup subscription plan provides offsite storage for your data requirements and Firmware updates. Once you have successfully linked your Barracuda Backup Server, your subscription becomes active. To ensure that you have a sufficient amount of offsite storage space at Barracuda Central, it is important for you to verify that the plan size is the one you selected. In most backup scenarios, the plan size is 1.5 times the amount of data to be backed up, as it is

sized on your file servers, which is sufficient to store all current and historic versions of that data. To check your plan size:

1. Access the Barracuda Backup Web interface at <https://backup.barracuda.com>.
2. Log in to your account using your email address and password.
3. Go to the **STATUS** tab to view your selected offsite storage size.

Verifying your Billing Information

The Barracuda Backup subscription plan is billed either monthly, quarterly, semi-annually or annually on the date corresponding with the day your Barracuda Backup Server was linked. Invoices are sent to the billing address specified during the linking process. It is important for you to keep the billing information current to ensure that your subscription plan remains active. The **ACCOUNT > Account Information** page allows you to access or modify your billing address, shipping address and credit card information.

Managing Email Notifications

Administrators can choose to add themselves and other contacts to the following email notification lists:

- Invoices
- Full Offsite Backup Reports
- Offsite Backup Error Reports
- Offsite Backup Over-Usage Notice
- Backup Server Offline Notice

The **USERS > Email Notifications** page allows you to specify email addresses that will receive notification when the matching parameters are detected. In addition, you can add a contact to an email notification list by editing their contact details from the **USERS > Contacts & Users** page.

Configuring Backups

This chapter describes the configuration and management tasks you can perform from the Barracuda Backup Service Web interface.

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Adding a Computer for Backup

The **BACKUP > Sources** page allows you to add computers and data sources to be backed up. The Barracuda Backup Service supports the following computer types:

- Microsoft Windows
- Novell Netware
- Mac OS X
- Linux
- Unix

To add a computer to back up, click the **Add Computer** link as illustrated below and follow onscreen directions to enter details about the computer to be backed up.

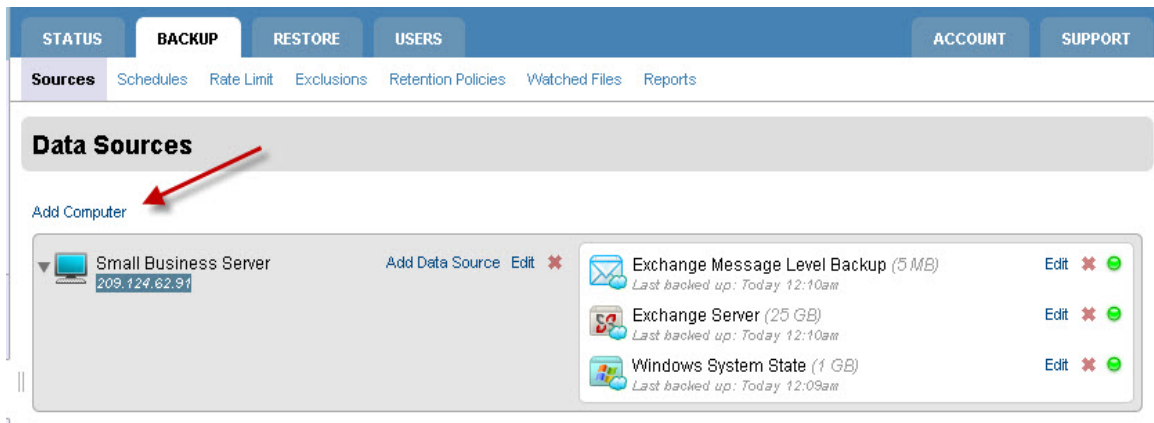
Important: When you enter a set of user credentials on this page for the computer to be backed up, the specified username will be used for directory based file shares and **must have at least read access** to the data you intend to back up. For Microsoft Windows and Novell Netware you'll need to enter both a username and password. For Mac OSX, Linux and Unix (SSHFS) you'll only enter a username.

For Active Directory users it's customary to add the domain and then a \ in the username field. For example:

Username = **cuda\jsmith**

Once you add a computer to back up, that computer should be indicated in the list on the **BACKUP > Sources** page.

Figure 3.1: Click the **Add Computer** link from the **BACKUP > Sources** page



Obtaining a Public Key for Secure Connections

The Barracuda Backup Service uses an SSH (SecureShell) client to access data contained on Mac OS X or Linux / Unix based computers running an SSH daemon. The SSH client uses public key cryptography to establish a secure connection to the SSH daemon. You must first configure SSH access to any computer you want to add for back up, and the procedure to do so differs depending on the operating system on that computer as described below.

Obtaining and configuring an SSH key

Mac OS X Download and run the SSH Key installer from the BACKUP > Sources > Add a Computer page.

- Enable the **Remote Login** option in the Sharing pane of the System Preferences application on the local machine.

Linux / Unix

- Copy the SSH key from the BACKUP > Sources > Add a Computer page.
- Enter the following commands in the user's home directory using the command line.

```
mkdir .ssh;  
echo "ssh-rsa <Public Key>" >> .ssh/authorized_keys;  
chmod 600 .ssh/authorized_keys;  
chmod 700 .ssh;
```

- Set the **PubkeyAuthentication** option to **Yes** in the `/etc/ssh/sshd_config` file on the local machine.

Selecting the Type of Data to Back Up

After a computer has been added, you can select what data you would like to be backed up on that computer. First, you need to define the type of data you would like to have backed up. The Barracuda Backup Server supports the following data types:

- Directory based file shares
- Message-Level backup of Exchange and GroupWise Servers
- Microsoft Exchange Storage Group full backup
- Microsoft SQL
- Windows System State

Directory Based File Shares

When you back up a file share you will need to specify the share name before you can select the folders to be backed up. The share name is the name of the share on the network. On a Windows machine, a share name can be a drive volume such as "C\$", or a folder and its associated subfolders such as "My Documents". **At a minimum you will need *Read access to the data that you are backing up and Change Access or Full Control to the shares in order to perform a restore.*** For Mac OS X, and Linux / Unix based computers with SSH connections the share name should be the entire path to the directory you would like to back up, for example "/home/<user>".

When you select folders for backup you should begin by selecting the folders at the top of the folder tree hierarchy, and then deselect folders lower in the hierarchy that you do not want to back up. You can also specify an optional exclusion rule, which is applied when the backup runs, to rule out files that don't meet your back up criteria. Refer to *Excluding Files from a Backup*, page 26.

To select data to be backed up, go to the **BACKUP > Sources** page and click **Add Data Source** next to the associated computer. Enter the information for the data to be backed up on the **Add Data Source** page. Once you click **Save Changes**, you'll see your new data source for the specified computer on the **Data Sources** page.

Message-Level Backup: Microsoft Exchange and Novell GroupWise

The Barracuda Backup Service connects directly to Microsoft Exchange and Novell GroupWise servers to back up individual emails stored within user mailboxes. When you select the **Message-Level Backup** data type you need to supply the authentication information to access your mail server before you can select which mailboxes to back up. In addition to the authentication information provided on the Barracuda Backup Service Web interface, you will need to configure the Message-Level settings on your Exchange or GroupWise server.

Message-Level Backup with Microsoft Exchange

Microsoft Exchange system requirements include:

- Outlook Web Access with WebDAV enabled.
- Primary and Secondary DNS settings on the Barracuda Backup Server are DNS servers which participate in Active Directory.
- Exchange Server 2003 Service Pack 1 or above
- Service Account on the Exchange Server for the Barracuda Backup Server.

If you are using Microsoft Exchange 2003, first set up your Exchange server:

1. Create an account to be used by the Barracuda Backup Service to access the email in each mailbox. The service account needs to be a member of the Enterprise Administrators, or Domain Administrators group.
2. Open the Exchange System Manager and navigate to the First Storage Group.
3. Right click and select Properties on the Mailbox Store in the First Storage Group.
4. Open the Security tab and assign the service account permissions to the Storage Group using the Add button.
5. In the Permissions section, set the Receive As and Send As options to Allow.
6. Depending on replication policies and Exchange Server activity, you may want to perform a group policy update on the Exchange server using the `gpupdate /force` command.

If you are using Microsoft Exchange 2007, first set up your Exchange server:

1. Create an account to be used by the Barracuda Backup Service to access the email in each mailbox. The service account needs to be a member of one of the following groups: Exchange View-Only Administrators, Exchange Organization Administrators, Enterprise Administrators, or Domain Administrators.
2. Open the Exchange Management Shell and list your Exchange Servers using the `Get-ExchangeServer` command.
3. Assign the service account permissions to the Storage Group using the following command. Replace ExchangeServer and ServiceAccount with the actual names for each. `Get-StorageGroup -Server "<Exchange Server>" | Add-ADPermission - User <ServiceAccount> - AccessRights GenericAll.`
4. Depending on replication policies and Exchange Server activity, you may want to perform a group policy update on the Exchange Server using the `gpupdate /force` command.

Set up the Barracuda Backup Service Web Interface for your Exchange Message-Level backup:

From the **BACKUP > Sources** page click **Add Data Source** next to the associated device from which you want to back up. Select **Message-Level Backup (Exchange)** for the Data Type and continue with the configuration information and save the changes.

Message-Level Backup with Novell Groupwise

Novell Groupwise system requirements include:

- GroupWise 7 and above
- Barracuda Networks GroupWise Trusted Application Key Generator

Novell GroupWise Server Setup

1. Create an account to be used by the Barracuda Backup Server to access the email in each mailbox. The service account needs to be a member of the Enterprise Administrators, or Domain Administrators group.
2. Download the Barracuda Networks GroupWise Trusted Application Key Generator.
3. Launch the Application Key Generator and enter the path to the folder that contains the GroupWise primary domain database file wpdomain.db.
4. Click Generate Key to create the GroupWise Trusted Application Key.
5. Click Copy Key, as you will need the key when you add the computer from the Barracuda Backup Service Web interface.

Set up the Barracuda Backup Service Web Interface for your GroupWise Message-Level backup:

From the **BACKUP > Sources** page click **Add Data Source** next to the associated device from which you want to back up. On the **Add Data Source** page, you'll select **Message-Level Backup (Exchange)** for the **Data Type**. Continue with the configuration information and save the changes.

Agent Based Backups

The Barracuda Backup Agent allows you to back up Microsoft Exchange, Microsoft SQL Server and Windows System State. The Barracuda Backup Agent Software can be downloaded from the **SUPPORT > Software Downloads** page on the Web interface. The agent software is installed on the server to be backed up, and configuration is done from the Barracuda Backup Service Web interface.

Installing the Barracuda Backup Agent

1. From the **SUPPORT > Software Downloads** page, select the link to download the latest version of the Barracuda Backup Agent software.
2. Copy the software to the server you wish to back up and then launch the installer.
3. Click on the **Install** icon from the installation manager screen.
4. Click **Next** to install the software in the default installation directory. Optionally, you can browse to an alternate location to install the software in a different directory.
5. When the "Your installation of Barracuda Backup Agent has been completed." message is displayed, click **OK** to close the window.

The Barracuda Backup Agent runs as a service which must be started for the agent to communicate with the Barracuda Backup Server.

Microsoft Exchange Storage Group Backup

The Barracuda Backup Agent for Microsoft Exchange Server provides a full backup of the Exchange Storage Group. An Exchange Storage Group is a container for your email database and its associated system and transaction log files. Microsoft Exchange uses transaction logging to commit new and changed data to the database, and to ensure that records of the transactions exist if a store is damaged

between backups. The Exchange Storage Group, and its associated transaction logs, is the most important data to back up on your Exchange Server to ensure your email database is available in the event it becomes damaged or unrecoverable.

If a disaster occurs, and you must rebuild a server, you can use the latest transaction log files to recover your database. If you have access to the latest backup and the transaction log files since the last full backup, you can recover all of your data. The Barracuda Backup Agent for Microsoft Exchange Server backs up and restores the entire Storage Group; it does not allow a backup or restore of individual mailboxes or individual databases within an Exchange Storage Group.

Set up the Barracuda Backup Service Web Interface for your Microsoft Exchange Server backup:

From the **BACKUP > Sources** page, click **Add Data Source** next to the associated device from which you want to back up. On the **Add Data Source** page, select **Exchange Server** for the Data Type and continue with the configuration information and save the changes.

Microsoft SQL Server Backup

The installation of Microsoft SQL Server is composed of several databases. The Barracuda Backup Agent provides a complete backup of the Microsoft SQL Server including the Master, Model, MSDB and Pubs databases. The purpose of creating SQL Server backups is to enable you to recover a damaged database. A well planned backup strategy should be put into place to ensure a quick and reliable recovery of your databases in the event of data loss.


Microsoft SQL Server has three backup and recovery modes that can be set for databases - Simple, Full, and Bulk-Logged. The simple recovery model, which is the default model, supports database backups, **but does not support transaction log backups**. The Full Recovery and Bulk-Logged Recovery models provide the greatest protection for data. These models rely on the transaction log to provide full recovery and to prevent data loss in the broadest range of failure scenarios. The transaction log is a critical component of your SQL backup and restore strategy as it records all of the transactions and database modifications. Therefore it is recommended that all of the user databases configured in SQL are configured for Full Recovery Model, regardless of whether or not those databases are being backed up by the Barracuda Backup Service.

Full Recovery Mode ensures that you are taking advantage of log backups to restore a database to any point of time that is contained within a transaction log backup.

Set up the Barracuda Backup Service Web Interface for your SQL Server backup:

From the **BACKUP > Sources** page, click **Add Data Source** next to the associated device from which you want to back up. On the **Add Data Source** page, select **SQL Server** for the Data Type and continue with the configuration information and save the changes.

Microsoft SQL Server has default utilities and commands for backing up data. When you use the Barracuda Backup Agent to back up SQL Server databases, you can still use these default SQL Server utilities and commands.

Note  Beware of using multiple methods of backing up MS SQL databases when using the Barracuda backup agent. When using more than one method of backing up the same database, one or more of those methods will cause SQL Server to truncate the transaction logs, thus forcing a full backup of the database every time. This negates the benefits of doing transaction log backups and can cause problems with the binary data queue.

It is recommended that you backup the master database each time it is changed. For example: changes to server-wide or database configuration options, adding logins or other security-related operations,

creating or removing logical backup devices, or configuring the server for distributed queries and remote procedure calls such as adding linked servers or remote logins.

Windows System State Backup

The Barracuda Backup Agent allows a backup and restore of Microsoft Windows System State. Microsoft Windows System State backups allow backup of critical system related components. A System State backup contains the local Registry, COM+ Class Registration Database, the System Boot Files, Active Directory Database Files (NTDS.DIT) for Domain Controllers, and the SYSVOL folder. A System State Backup can be used to recover to a known good system state after a hardware or software crash.

Set up the Barracuda Backup Web Interface for your Windows System State backup:

From the **BACKUP > Sources** page, click **Add Data Source** next to the associated device from which you want to back up. On the **Add Data Source** page, select **Windows System State** for the Data Type and continue with the configuration information and save the changes.

Creating a Backup Schedule

Now that you have configured your computers and data sources, you need to determine how often your data should be backed up. When a new computer and data source are added, the Barracuda Backup Server collects all of the data for the first time during an initial back up period.



Note

Your initial offsite backup may take on the order of days to get in sync, but all of the data is backed up locally on the Barracuda Backup Server during this period. After the initial large transfer is complete, replicating your data offsite should complete with only a few hours of transfer each day.

After the initial backup is complete, you can set the schedule to check for changed and new data as often as you like. When the new or changed information is identified, the Barracuda Backup Service analyzes each file at the bit level and only copies and transfers the new bit sequences in the files themselves. This technique saves on bandwidth and keeps the cost down for storing multiple revisions of the same file over time.

You can create back up schedules to be applied to individual servers or all servers. When a back up schedule is defined, it runs automatically at the specified interval. You can also choose to run an immediate back up against an existing schedule. If a computer and data source are not associated with a specific back up schedule, they will be backed up using the default schedule which runs nightly at 8 PM Local Time.

Adding a Backup Schedule

From to the **BACKUP > Schedules** page of the Barracuda Backup Service Web interface click **Add a Schedule**. Fill in the information on the **Add Backup Schedule** page and note that, if you are scheduling a backup with the Barracuda Backup Agent, you will need to specify the type of backup to run:

- Full – This backup type performs a full backup of the data including the transaction logs. The transaction logs are truncated (cleared) of inactive transactions each time a backup is run.
- Log – This backup type only backs up the transaction logs which have been collected since the last full backup.
- Smart – This backup type is a combination of the full backup and the transaction log backup.

With the Smart Backup type, threshold values are used to determine when to switch between full and log backups. The minimum threshold value specifies how many days the Barracuda Backup Service will continue to back up transaction logs before another full backup is run. Once the minimum threshold value is met, the Barracuda Backup Service examines the binary data queue to check whether it is low enough to handle another full backup. Based on the binary data queue size, either a full backup is run or the transaction log backup will continue until the maximum threshold level is met.

Modifying Your Back Up Rate Limit

Rate limits control the rate that data is replicated to the Barracuda Central offsite storage locations. Rate limiting allows for the preservation of Internet bandwidth during peak usage and optimizes offsite backup transfers during daily non-peak hours.

Your initial offsite backup may take on the order of days to get in sync but all of the data is backed up locally on the Barracuda Backup Server during this period. After the initial large transfer is complete, replicating your data offsite should complete with only a few hours of transfer each day. By default, the Barracuda Backup Service is configured to run full speed data transfers at night so your bandwidth is not affected while your users are at work. An alternate rate limit allows you to adjust the limit speed and time interval.

The length of transfer time it will take to get your data offsite is impacted by the compression and de-duplication rates on your data, the “uplink” speed of your Internet connection, the amount of your data that changes everyday, and any speed limits you apply to the Barracuda Backup Service.

To adjust the rate limit, from to the [BACKUP > Rate Limit](#) page of the Barracuda Backup Service Web interface, click on the **Modify it** link to customize the rate limit for the backup server highlighted on the left menu.

The following table shows typical amounts of data that various Internet connection speeds support based on average storage efficiency and data change rates.

Table 3.1: Barracuda Backup Service

Data Amount	Uplink Speed	Normal Initial Sync	Daily Change Sync
20GB-100GB	200 kbps (entry DSL, Cable)	1-20 days	~ 1-8 hours
100GB-250GB	512 kbps (mid range DSL, Cable)	1-20 days	~ 1-8 hours
250GB-500GB	768 kbps (premium DSL, Cable)	1-20 days	~ 1-8 hours
500GB-1TB	1.54 Mbps (T1 or equivalent)	1-20 days	~ 1-8 hours
2TB and Up	1 + #TB/2 Mbps (Fiber, DS3, etc.)	1-20 days	~ 1-8 hours

Additional Back Up Configuration

Excluding Files from a Backup

The Barracuda Backup Service uses exclusion rules to allow administrators to control critical data storage. Regular expression pattern matching, based on directory or file names, is used to exclude items from a backup. Common file exclusions include music, movies or other files which are non-essential for business needs. You can add exclusion rules from the [BACKUP > Exclusions](#) page.

Watching Important Backup Files

File watch rules are used to monitor and send email alerts when specified files have not been changed often enough or appear smaller than expected. For example an administrator could choose to be alerted if third-party backup software fails to process dump files or if the dump files appear to be of insufficient size.

The [USERS > Email Notifications](#) page allows you to specify the email addresses that will receive notification when files matching the parameters in a file watch rule are detected.

From the [BACKUP > Watched Files](#) page of the Barracuda Backup Service Web interface you can add files to watch on a particular backup server.

Creating Data Retention Policies

Data retention policies allow you to specify the retention of selected files or broader data based on daily, weekly, monthly or annual time intervals. Multiple retention policies can be created for different types of data that you are backing up – files, data backed up by the Barracuda Backup Agent (Exchange, SQL, System State), and email messages.

Each file that is backed up can have multiple revisions stored; these revisions represent different versions of the backed up file over time. When you decide to delete or purge your data, you are removing it from both the local backup server and the offsite storage locations. This is important to note since once your data has been purged, it is gone forever. Purging applies to historic file revisions only; your current data will never be impacted by a retention policy.

File revisions and data backed up using agent based software are defined based on a linear time line. You can select how long to keep all, daily, weekly, monthly, and yearly revisions or changes of a file or backup. After a changed file has been retained for the entire time line, it will be purged from your plan. The email message time line allows you to specify how long to retain email messages in day, months, or years. Each of the timelines also allows you to keep changed data forever or to never keep file changes.

Configure retention policies from the [BACKUP > Retention Policies](#) page of the Barracuda Backup Service Web interface.

Understanding Weekly Retention Timelines

The following illustration will help you to understand problems that can arise from using weekly time periods and how the Barracuda Backup Service weekly time period works and why it is set up as it

is. While days always fit neatly into months and months always fit neatly into years, weeks can span across the end of months and the end of a year.

We will consider for the purpose of this illustration that a calendar week always begins on a Sunday at midnight and ends on Saturday night at 11:59:59 PM. We will also assume that during your retention policy you want to keep only the latest file revision for each week and only the latest file revisions of each month. When using a calendar week, your actual latest file revision of the month will be purged by your weekly retention policy for any month that does not end on a Saturday. When your monthly retention policy kicks in, it will no longer have the latest revision of the month available, since it was purged by the preceding weekly policy. Instead, the latest revision available will be the last Saturday in the month.

Since weeks often span the calendar year boundary of December 31st, the same problem would occur if a weekly retention setting were applied before a yearly retention setting in the policy. Being able to keep the actual latest revision of months and years is an important functionality of a good data retention system. Therefore, Barracuda has introduced the following concept of weekly purging in order not to break the more important monthly and yearly schedules.

The solution is to consider weeks as a period of 7 days in a row beginning on the first of each month instead of Sunday through Saturday. According to the retention policy the last week of the month may be 3, 2, 1 or actually 7 days long depending on the number of days (31, 30, 29, or 28 respectively) in the month.

Therefore, under a weekly retention setting, the retention policy will keep the latest revision of the file for the greatest day in the week. For the first four 7 day periods, it will always keep the file revision from the 7th, 14th, 21st, and 28th day of the month. For months longer than 28 days, it will end up keeping the last day of the remaining week, which will always be the last day of the month. That way, when the subsequent monthly or yearly retention schedule is applied, it will always have the latest revision of the month or year available for retention.

Restoring Backups

This chapter covers concepts and some procedures for restoring backups. Online help provides additional details as needed.

<i>Restoring Files and Shares</i>	30
<i>Restoring Agent Based Data</i>	31
<i>Restoring an Exchange Storage Group</i>	32
<i>Restoring a Microsoft SQL Database</i>	32
<i>Restoring Windows System State</i>	33
<i>Restoring Windows System State on a Domain Controller</i>	34
<i>Restoring Exchange and GroupWise Messages</i>	34

Restoring from Local and Offsite Backups

Data can be restored from the local backup server or from the offsite data center locations. Restores from the local backup server offer the fastest restore times. If data requested for restore is not all available from the local backup server it will be retrieved automatically from the offsite data center. Offsite restores from the remote data center will be slower as the data is being retrieved over your Internet connection, not the local network. This section covers the following:

- Restoring Files and Shares
- Restoring Agent Based Data
- Restoring Exchange and GroupWise Messages

Restoring Files and Shares

Data that has been backed up by the Barracuda Backup can be restored using any of the following methods:

- Barracuda Restore Tool for Windows
- FTP from Barracuda Backup Server
- FTPS from Barracuda Central
- Barracuda Backup Web Interface
- Windows WebDAV protocol

Using the Barracuda Restore Tool for Windows

The Barracuda Restore Tool is a Windows-based client that allows you to restore data from your local Backup Server or from the offsite data center. The Barracuda Restore tool can be downloaded from the [SUPPORT > Software Downloads](#) page.

When you open the Restore Tool you will need to log in to connect to the local server or the offsite location. Your account must have administrator rights to use the Restore Tool. The username and password are the same as those used to access the Barracuda Backup Web interface.

To launch the Barracuda Restore Tool, go to **Start > All Programs > Barracuda > Restore Tool** on your Windows-based computer, then do the following:

1. When the Restore Tool opens, it loads your local Barracuda Backup Servers into the explorer search results window.
2. Select **Options > Connections** to choose a restore location, and then highlight the server name.
3. Click the **Server** button to restore from the local Backup Server or the **Offsite** button to restore from the offsite data center.
4. Select whether to view documents using **Folder View** or **File Search**. The system will return a list of files based on your search string or provide a list of Servers and Data Shares based on date. The connection location is highlighted at the top of the client window as either Local Server: (<Local Server IP Address>; Port 5126) or Offsite: (restore.barracuda.com; Port 5120).
5. Select the directories or files you wish to restore and then click the **Restore** button. Restores are copied to your *My Documents* folder unless an alternate restore location is provided from the **Options > Preferences** menu.

As files are restored, their progress and location are shown in the Explorer restore results window. Restored files are copied into a new folder, labeled *Restores*, within the specified restore location.

Using the FTP / FTPS Client

An FTP restore client can be used to restore data from your local Barracuda Backup Server. FTPS is a secure FTP connection to restore.barracuda.com and allows you to restore data from your offsite backup.

Programs such as FileZilla for Windows or Linux and Transmit for Mac OS X work well. Follow directions in the online help for FTP and FTPS on the [Restore > FTP Instructions](#) (Restoring Data) page.

Using the Barracuda Backup Web Interface

The Barracuda Backup Web interface can be used to restore data directly from the Offsite Data Center. Restoring file share data from the Web interface works well when you only need to restore a few documents, as only one document can be restored at a time. From the left side of the Backup Web interface, click on the Backup Server you from which you wish to restore data. Go to the [RESTORE > File Share](#) Browser page and select the computer and the associated data source that contains the files that you would like to restore, following onscreen instructions.

Using Windows Explorer

The Barracuda Backup Server supports the WebDAV protocol. Web-based Distributed Authoring and Versioning (WebDAV) allows users to access and manage documents on a remote server. Windows users can restore data from the local Barracuda Backup Server using the built-in Windows Explorer as follows:

1. From a Windows machine, go to My Network Places.
2. On the sidebar, click Add Network Place to start the wizard.
3. Select Choose Another Network Location and click Next.
4. Enter `http://<Backup Server IP Address>` and then click Next. The IP address of your Backup Server is available from the Account > Link Server page of the Barracuda Backup web interface.
5. Enter a username and password and click OK. The username and password are the same used to access the Barracuda Backup web interface. Users must have administrator rights to the Backup Server to access WebDAV.
6. Name the Network Place for future reference then click OK. Click Finish.
7. Once you are connected you will be presented with a list of directories on the Barracuda Backup Server. The directories are labeled by year and include subdirectories for each month, and within each month there is a directory for each day. Each daily directory contains folders for the servers and directory shares that are deployed on the Backup Server. The data files that can be restored are located within each server's directory share.
8. You can select and restore files by right clicking on them or you can drag and drop files from the Backup Server to a directory on your network or local machine.

Refer to the linked article for details on [Installing and Configuring WebDAV on IIS7](#).

Restoring Agent Based Data

Data that was backed up using the Barracuda Backup Agent is also restored using the same agent; therefore the Barracuda Backup Agent software must be installed on the local machine before you can perform a restore. Agent backups can only be restored from the Barracuda Backup Web interface.

From the left side of the Backup Web interface click on the Backup Server you wish to restore data from, then go to the **RESTORE > Agent Browser** page. Select the computer and the associated data source that contains the files that you would like to restore, and then click **Update**. Select the day and time for which you want to restore files and the items to restore.

Restoring an Exchange Storage Group

The Barracuda Backup Agent for Exchange restores the entire Storage Group; it does not allow for restores of individual mailboxes or individual databases within a selected Storage Group. When you restore an Exchange Database from a backup, your current database files will be overwritten. As a precaution, you should **rename the old database files before you begin the restore process**, which follows:

1. Verify that the Barracuda Backup Agent is installed on the local machine.
2. Open the Exchange System Manager on your Exchange Server.
3. Navigate to the Storage Group to be restored.
4. Right-click on the store and select Properties.
5. Open the Database tab and select the option for "This database can be overwritten by a restore", and then click OK.
6. Right-click on each store and click Dismount. Note that a highlighted Storage Group in the Exchange System Manager is an indication that the item is locked and can not be restored.
7. Close the Exchange System Manager.
8. Navigate to the transaction logs and database directory on your Exchange Server, located in `C:\Program Files\Exchsrvr\Mdbdata` by default, and rename the storage group files or move them to a backup folder. These files have *.edb, *.stm, *.chk and *.log extensions.
9. Open the Barracuda Backup Web interface and begin the restore from the Agent Browser.

Restoring a Microsoft SQL Database

The Barracuda Backup Service will restore your data back to the SQL server in the proper sequence, so all you need to do is the following:

- From the RESTORE tab, click **Browse** for the Data Source from which you want to restore
- Select the day and time from which you want to restore
- Select the database(s) to restore
- Click the **Restore** button

Restoring an SQL Master Database

A damaged master database is evident by the failure of the SQL Server to start, by segmentation faults or by input/output errors. The procedure used to recover a damaged master database is different from the procedure used to recover user databases. If the master database becomes unusable, it must be restored from a previous SQL Dump or backup. All changes made to the master database after the last backup or dump are lost when the dump is reloaded and therefore must be reapplied. It is strongly recommended that the master database be backed up each time it is changed.

Recovering a Damaged Master Database

Follow these steps to recover the damaged database:

1. Verify that the Barracuda Backup Agent is installed on the local machine.
2. Stop the SQL Server Services using the SQL Server Enterprise Manager.
3. Rebuild the master database. Refer to MSDN for detailed procedures for your version of SQL.
4. Initiate Single User Restore Mode on the SQL database by entering the following from a command prompt. Leave the window open after executing the command.

```
CD \program files\microsoft sql server\\mssql\binn
sqlservr -c -m (SQL 7)
sqlservr -c -m -s %<Named Instance>% (SQL 8)
```

5. After you are finished with the restore, remove the `-m` before you restart the server instance in the normal multi-user mode.

```
CD \program files\microsoft sql server\\mssql\binn
sqlservr (SQL 7)
sqlservr -s %<Named Instance>% (SQL 8)
```

6. If login IDs or devices have been added to or dropped from the master database since the last backup, those changes must be reapplied. Restart the server and reapply the changes manually or from saved batch files.
7. If any databases have been created, expanded or shrunk since the last dump of the master, those databases must be dropped and then restored. Refer to MSDN for detailed procedures for your
8. Close the command prompt.
9. Restart the SQL Service using SQL Enterprise Manager.

During a rebuild of the master database, the set up program drops and re-creates the msdb database, which results in a loss of all scheduling information. This includes tasks that you schedule from the Task Scheduling window, automatic backups scheduled from the Database Backup/Restore window and all replication tasks. As a result, you may want to restore the msdb database from your last full backup.

Restoring Windows System State

If your system crashes and you have not created Disaster Recovery bootable media you will need to reinstall the entire Operating System, including any Service Packs or patches, before you can restore the Windows System State. The following requirements must be met for a restore without bootable media:

- The computer name must remain the same as it was at the time of the backup.
- All files and programs must be installed and restored to their original location.
- You must have an Administrator account with full access to the system.
- All files and programs must be restored to the same partition and drive letter.
- The Operating System must be the same version and service pack level.

To restore a Windows System State backup:

1. Install the Operating System and any Service Packs or patches to bring the system up to the same level as of the last backup, and then restart the machine.

2. Log in to the Barracuda Backup Web interface and locate and restore your last System State Backup from the **RESTORE > Agent Browser** page.
3. You will be prompted for the location to restore the selected databases. You can choose to restore the data in the original location, you can select from other computers being backed up by the Barracuda Backup Server, or you can specify the Host Name or IP Address of a remote server.
4. Click **Start Restore**.
5. Restart the system when the restore is complete.
6. Verify your settings are correct, and your programs are functioning properly.

After you have restored the Windows System State you should restore your last File System backup and then restart the system. Incomplete restores may occur if files were in use when the original backup was run or if the registry was corrupt and failed to back up properly. When this happens some programs may not function after the system restore, in which case a fresh installation is recommended for the programs that were not properly restored.

Restoring Windows System State on a Domain Controller

To restore the system state on a domain controller, restart the computer and press the F8 key when you see the Boot menu. Then do the following:

1. Choose Directory Services Restore Mode.
2. Choose the Windows 2000 installation you are going to recover, and then press ENTER.
3. At the logon prompt, supply the Directory Services Restore mode credentials you supplied during the Depromo.exe process.
4. Click OK to acknowledge that you are using Safe mode.
5. Log in to the Barracuda Backup Web interface and locate and restore your last System State Backup from the RESTORE > Agent Browser page.
6. You will be prompted for the location to restore the selected databases. You can choose to restore the data in the original location, you can select from other computers being backed up by the Barracuda Backup Server, or you can specify the Host Name or IP Address of a remote server.
7. After the restore process is finished, restart the computer.

Restoring Exchange and GroupWise Messages

The Barracuda Backup Web interface can be used to view, search and restore Microsoft Exchange and Novell GroupWise messages. You can view all of the messages within a single mailbox or select multiple mailboxes to search for a text string. To restore a backup of messages:

Select the computer and click **Browse** next to the associated data source that contains the messages that you would like to restore. All of the mailboxes that have been backed up will be displayed in the browser window. Follow onscreen directions to select and restore the data.

Monitoring the Barracuda Backup

This chapter describes the monitoring tasks you can perform for the Barracuda Backup and covers the following topics:

<i>Viewing Back Up Statistics</i>	38
<i>Backup Verification - Reports</i>	39
<i>Alerts and Notifications</i>	40
<i>Shutting Down the System</i>	41
<i>Front Panel Indicator Lights</i>	42

Viewing Back Up Statistics

The **STATUS** page provides an overview of the performance and health of your Barracuda Backup. If you have more than one Barracuda Backup Server linked to your account, you can select a specific server and view its individual statistics. From the **STATUS** page you can view:

- Backup activity for local and offsite locations, indicating the size and the number of backup files added by date.
- Storage statistics representing the total amount of storage used by each data source type on the local Barracuda Backup Server and at Barracuda Central as well as the number of files being backed up.
- Efficiency statistics show:
 - **Actual Storage:** The amount of actual storage space being used
 - **Snapshot Equivalent:** The amount of space that would be required to back up your data *without* deduplication and compression
 - **Deduplication Ratio:** The overall percentage of space savings with deduplication and compression. See *Backup Efficiency With Data*, page 6, for details about how deduplication works.
- Status indicator lights which note the health of your Barracuda Backup Servers and your local and offsite backups and data sources. Green shows that your servers are online and that no errors were encountered as a result of your backup. Red lights are displayed when a local server is offline or when errors were generated during a backup.
- Performance statistics, including percentage of CPU, Disk and Ethernet usage. Performance statistics displayed in red signify that the value exceeds the normal threshold. These values will fluctuate based on the amount of data that is being backed up, but if any setting remains consistently in the red for a long period of time, please contact Technical Support.
- Storage History displays the current, historic and actual data storage size on the local and offsite locations by date.
- Transfer History displaying the efficiency of your data transfer and the size of the file parts yet to be transferred offsite, organized by date.

Backup Verification - Reports

The Barracuda Backup provides a detailed report for each back up that is run. Backup reports can be accessed from the **BACKUP > Reports** page of the Barracuda Backup Web interface. In addition, any back up process that is currently running is also displayed from the reports page. Backup reports include details about the backup such as when the backup started, how long it took, if there were any errors or warnings, and any new, changed, or removed items. Reports also include links to each backed up file to view or download the item from the report.

User Activity Reports

The **USERS > User Activity Reports** page displays logs of the activity of users accessing the Barracuda Backup Web interface. Logged activity includes log on authentication, changes to settings, changes to account information and more.

Alerts and Notifications

The **USERS > Email Notifications** page allows you to configure the Barracuda Backup to automatically email notifications to the addresses you specify. To enter multiple addresses, separate each address with a comma. Email notifications are sent when:

- Your Barracuda Backup Server is offline
- You have reached the limit on your offsite subscription plan size
- An error has occurred in a backup
- A scheduled back up was run
- An invoice is sent for your current subscription period
- Your storage location loses electricity or Internet connection for longer than 3 hours

You will also receive automated messages if the situation returns to normal and no action is required. These alerts are generated from Barracuda Networks' highly redundant and secure offsite storage facilities, ensuring that you will be notified quickly when something goes wrong.

Shutting Down the System

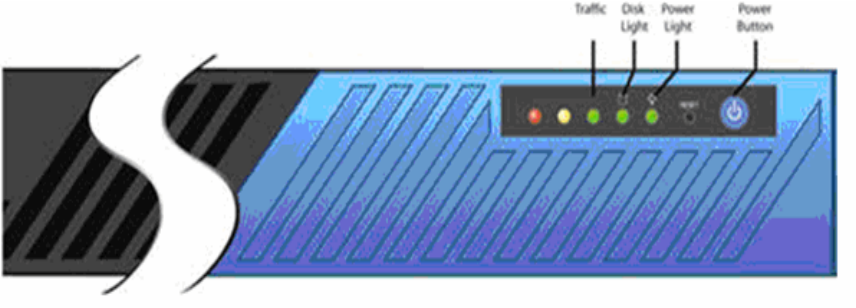
You can perform a safe shutdown of your Barracuda Backup Server by briefly holding down the power button on the front of the device. This will issue a shutdown command to all system and service processes before the device powers down. If this does not shut down your Backup Server or if it is physically inaccessible, contact Barracuda Networks technical support for assistance.

In the event that you must perform an immediate hard shutdown of the Barracuda Backup server, you can do so by pressing and holding the power button for five seconds. Please be aware that doing so will interrupt processes running and power the server down before unmounting the file system. In this scenario, Barracuda Networks recommends first contacting Technical Support to verify a safe remote shutdown is not an option.

Front Panel Indicator Lights

The Barracuda Backup has five indicator lights on the front panel that blink when data is being backed up or restored.

Figure 5.1: Barracuda Backup front panel indicator lights



About the Hardware

Hardware Compliance

This section contains compliance information for the Barracuda Backup Service hardware.



Notice for the USA

Compliance Information Statement (Declaration of Conformity Procedure) DoC FCC Part 15: This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and the receiver.
 - Plug the equipment into an outlet on a circuit different from that of the receiver.
 - Consult the dealer or an experienced radio/ television technician for help.

Notice for Canada

This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communication Radio Interference Regulations.



Notice for Europe (CE Mark)

This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

Limited Warranty and License

Barracuda Networks Limited Hardware Warranty (v 2.1)

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