

SyncBreeze

FILE SYNCHRONIZATION



User Manual

Version 18.2

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www.syncbreeze.com

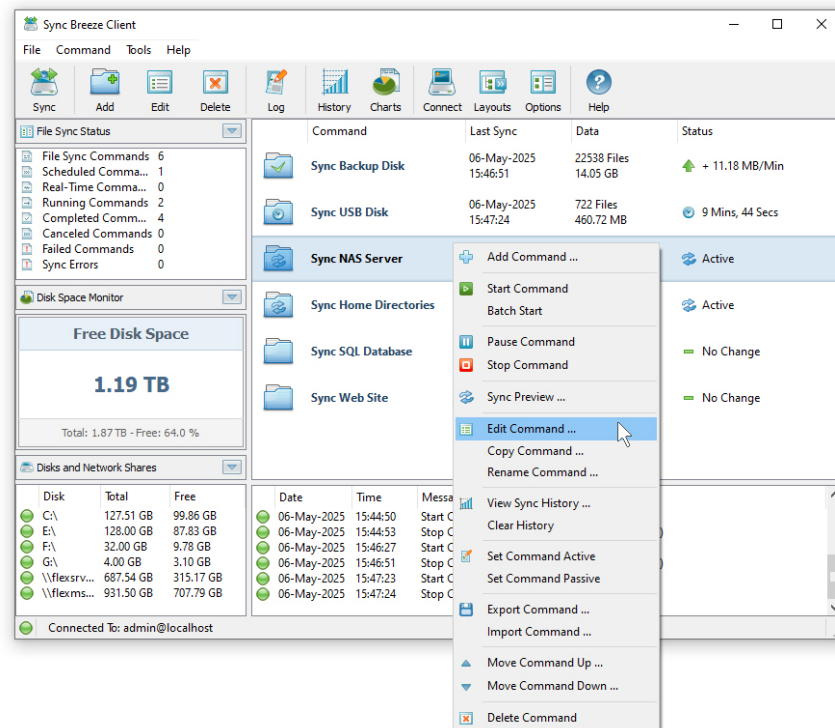
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Flexense Ltd.

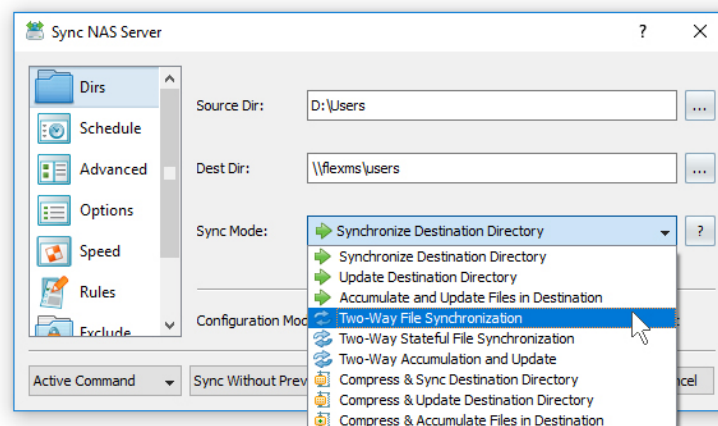
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1 SyncBreeze Overview

SyncBreeze is a powerful, easy-to-use and fast file synchronization solution allowing one to synchronize files between disks, directories, network shares and NAS storage devices. Users are provided the ability to configure a number of file synchronization commands, setup background periodic and/or real-time file sync operations, save file synchronization logs and send E-Mail notifications when a file synchronization operation fails.

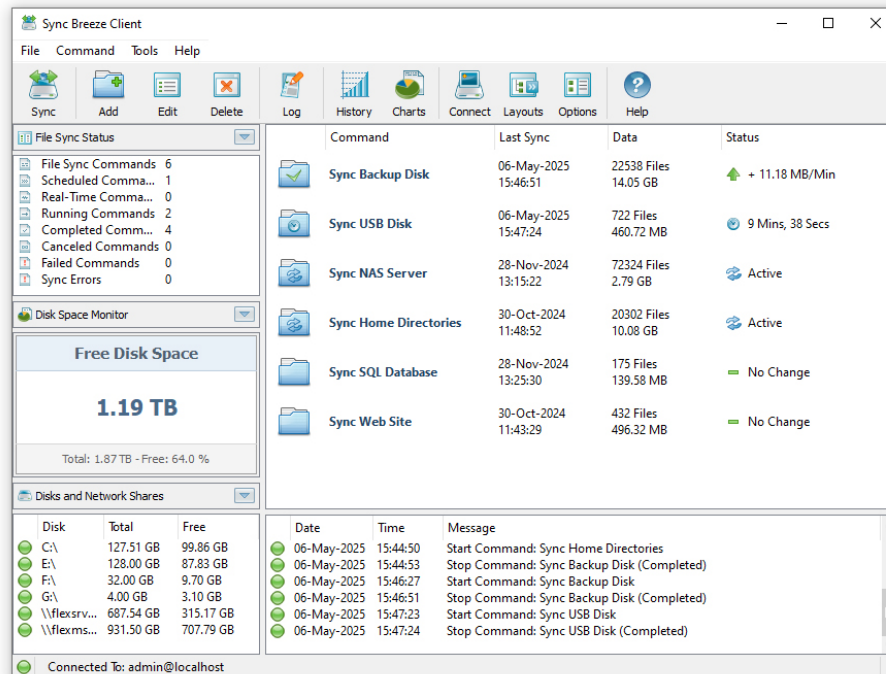


SyncBreeze provides multiple one-way and two-way file synchronization modes, periodic file synchronization, compressed file synchronization, background file synchronization, real-time file synchronization, an option to synchronize specific types of files, an option to exclude directories from the file synchronization process and allows one to define multiple customizable file synchronization commands making it very simple to synchronize numerous disks, directories, network shares and NAS storage devices.

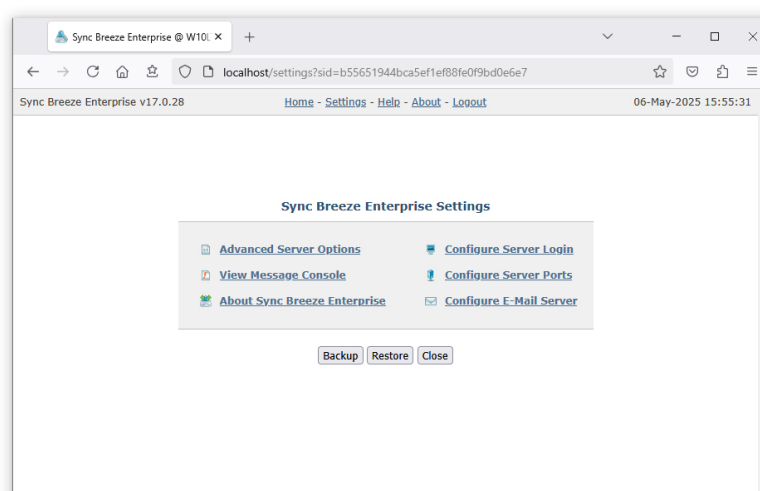


Users are provided with the ability to synchronize files with preview allowing one to select/unselect specific file synchronization actions. In addition, SyncBreeze provides a stream file synchronization mode, which synchronizes files on-the-fly without showing the sync preview dialog allowing one to sync huge file systems containing tens of millions of files.

IT and storage administrators are provided with the SyncBreeze command line utility, which can be used to sync disks, directories or network shares and/or execute pre-configured file synchronization commands from shell scripts and batch files. The command line utility is available in SyncBreeze Server and SyncBreeze Enterprise product versions and it can be used to perform file synchronization operations locally or control one or more SyncBreeze Servers through the network.



In addition, IT and storage administrators are provided with SyncBreeze Server, which runs in the background as a service and may be controlled locally or via the network using a full-scale client GUI application, the SyncBreeze command line utility. SyncBreeze Server allows one to execute multiple, simultaneous file synchronization operations, monitor disks and directories and trigger file synchronization operations after a user-specified number of changes, execute pre-sync and post-sync actions, save file synchronization logs and send E-Mail notifications for failed file synchronization operations.



Finally, enterprise customers are provided with the SyncBreeze Enterprise product version which adds a large number of enterprise-grade features and capabilities such as the web-based management interface allowing one to control the product via the network using a regular web browser, fault-tolerant clustering capabilities, file synchronization commands priorities, statistical reports, etc.

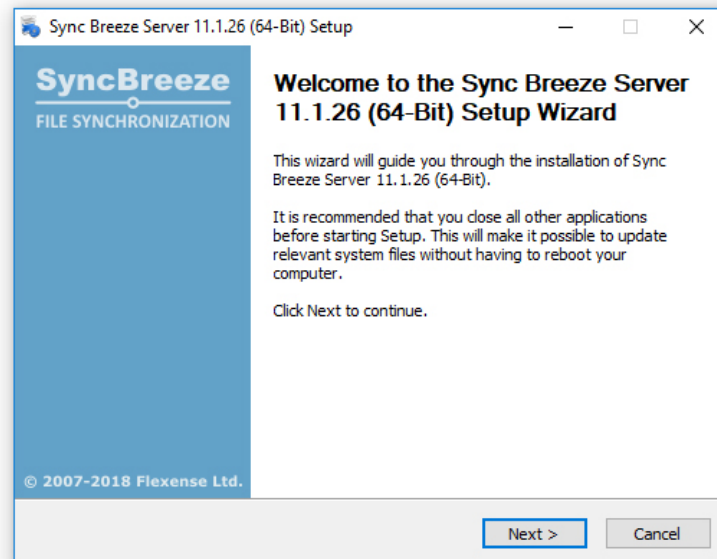
2 SyncBreeze Product Versions

Features	Server	Enterprise
Maximum Number of Files	100 Million	Unlimited
Maximum Amount of Disk Space	100 TB	Unlimited
Maximum Number of Sync Commands	100	Unlimited
Maximum Number of Network Shares	100	Unlimited
Multiple File Synchronization Modes	Yes	Yes
File Synchronization with Preview	Yes	Yes
Support for Unicode File Names	Yes	Yes
Support for Long File Names	Yes	Yes
Support for UNC Network Path Names	Yes	Yes
Support for ACLs and Security Attributes	Yes	Yes
Option to Sync Specific Types of Files	Yes	Yes
Multi-Stream File Synchronization	Yes	Yes
Periodic File Synchronization	Yes	Yes
Background File Synchronization	Yes	Yes
Performance Tuning Options	Yes	Yes
Fault-Tolerant File Synchronization	Yes	Yes
Compressed File Synchronization	Yes	Yes
Multi-Way File Synchronization	Yes	Yes
Bit-Level File Synchronization	Yes	Yes
Pre-Sync and Post-Sync Actions	Yes	Yes
Command Line Utility	Yes	Yes
Runs in the Background as a Service	Yes	Yes
E-Mail Notifications for Failed Operations	Yes	Yes
File Synchronization History Statistics	Yes	Yes
Real-Time File Synchronization	x	Yes
File Synchronization Commands Priorities	x	Yes
Active-Active Clustered Configurations	x	Yes
Periodic File Sync Statistics Reports	x	Yes
Web-Based Management Interface	x	Yes
Support For Multi-User Configurations	x	Yes
OS Native User Authentication	x	Yes
Price	\$250	\$450

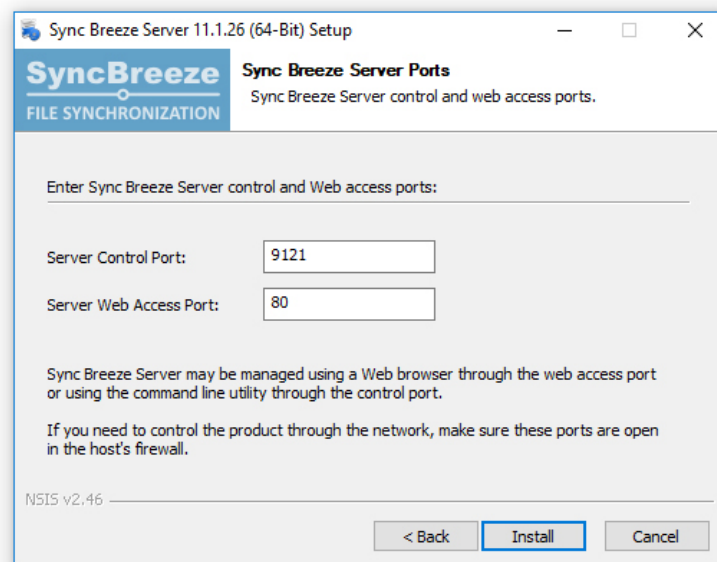
* Product features, prices and license terms are subject to change without notice.

3 Product Installation Procedure

SyncBreeze Server is especially designed to be as simple as possible. The product does not require any third-party software applications and may be installed and configured within a couple of minutes. A fully functional 30-days trial version of SyncBreeze Server may be downloaded from the following page: <https://www.syncbreeze.com/downloads.html>.



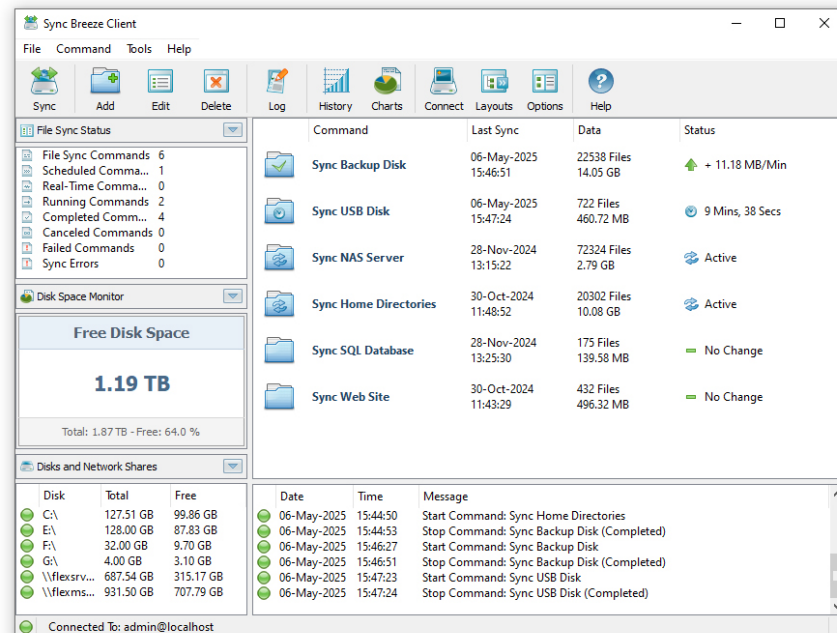
The installation package is very small, approximately 10 MB depending on the target operating system, and the product requires just 100 MB of the free disk space on the target server. In order to install SyncBreeze Server, start the setup program, select a destination directory and press the 'Next' button.



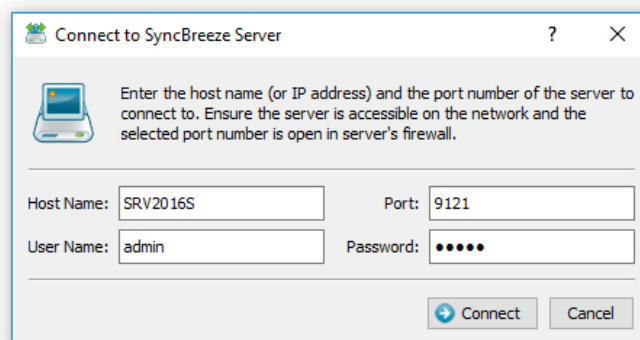
Optionally, enter custom server control and/or web access ports. The server control port is used by the SyncBreeze client GUI application and the command line utility to connect to SyncBreeze Server. The web access port is the port for the web-based management interface allowing one to control SyncBreeze Server using a standard web browser from any computer on the network. If SyncBreeze Server should be controlled remotely through the network, make sure one or both of these ports are open in the server's firewall.

4 SyncBreeze Server GUI Application

SyncBreeze Server provides a client GUI application, which is capable of controlling one or more SyncBreeze Servers locally or through the network. The client GUI application allows one to configure file synchronization commands, setup periodic file synchronization operations, control execution of file synchronization commands, setup error logs and E-Mail notifications, configure advanced server options, etc.



In order to connect to a remote SyncBreeze server through the network, press the 'Connect' button located on the main toolbar, enter the host name (or an IP address) of the server to connect to, enter the SyncBreeze user name and password (default is **admin/admin**) and press the 'Connect' button.

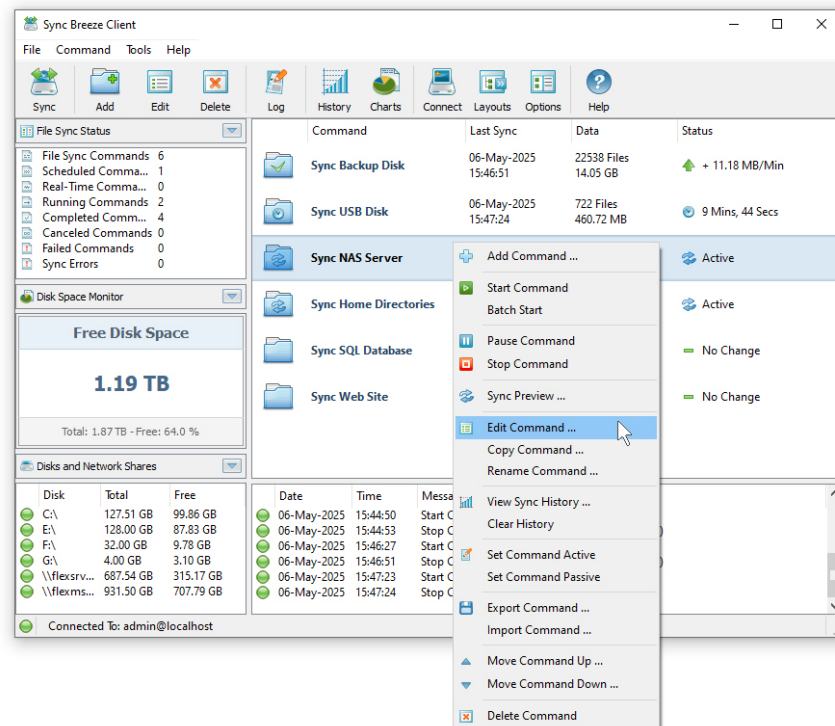


When connected to a SyncBreeze server, the client application displays file synchronization commands configured on the server and allows one to start file synchronization operations, add, edit, delete file synchronization commands and manage advanced server options. In order to add a new file synchronization command, press the 'Add' button located on the main toolbar, specify a unique command name, enter the source and destination directories to synchronize and press the 'Save' button.

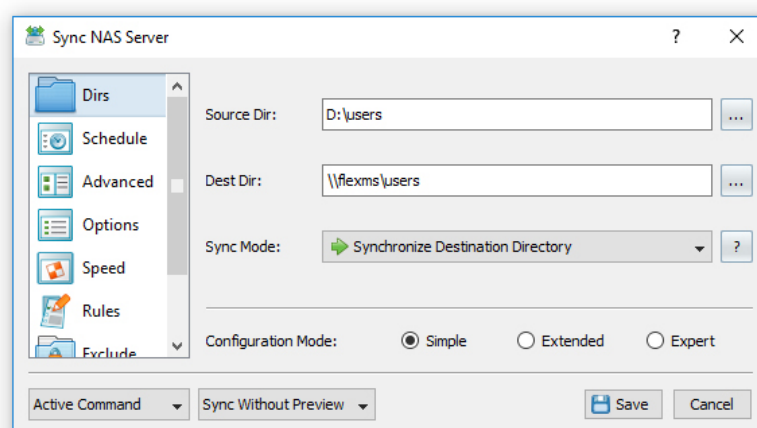
Now, in order to start the file synchronization command, select the command item, press the right mouse button and select the 'Start Command' menu item. The file synchronization command will be executed on the SyncBreeze server while the file synchronization status dialog will be displayed in the client GUI application, which can be connected to the server remotely through the network.

5 Managing File Synchronization Commands

SyncBreeze Server provides the ability to setup a number of file synchronization commands with each one configured to synchronize files between a pair of source and destination disks, directories or network shares. The SyncBreeze client GUI application shows the configured file synchronization commands and allows one to add, edit, start, stop and delete file sync commands and configure advanced file synchronization options.



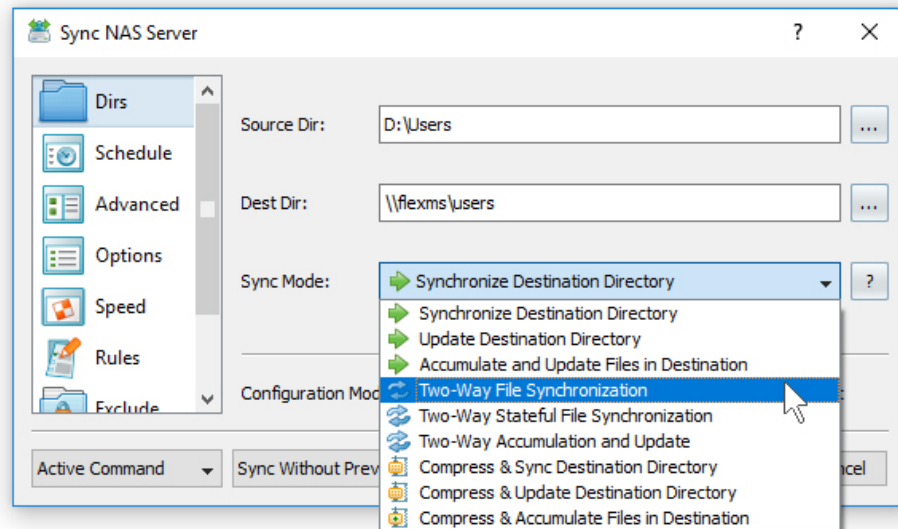
In order to add a new file synchronization command, press the 'Add Command' button located on the main toolbar, enter a unique file synchronization command name, specify a source and destination directories to synchronize, select an appropriate file synchronization mode and press the 'Save' button.



The newly created file synchronization command will be displayed in the SyncBreeze client GUI application and in order to start the file sync command manually, click on the command item and press the 'Start' button. SyncBreeze Server provides a large set of advanced file synchronization options allowing one to customize file synchronization commands for user-specific needs and requirements. In order to customize advanced file synchronization options, select the command, press the right mouse button and select the 'Edit Command' menu item.

6 Selecting File Synchronization Modes

SyncBreeze Server provides a number of different one-way and two-way file synchronization modes allowing one to perform different types of file synchronization operations depending on user-specific needs and requirements.

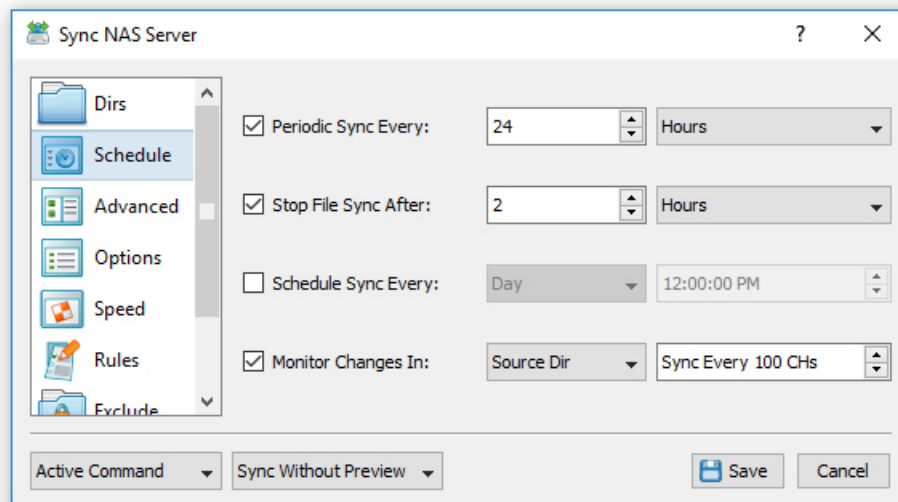


In order to change the file synchronization mode for a file synchronization command, open the file synchronization command dialog, select the 'General' tab and select one of the following file synchronization modes:

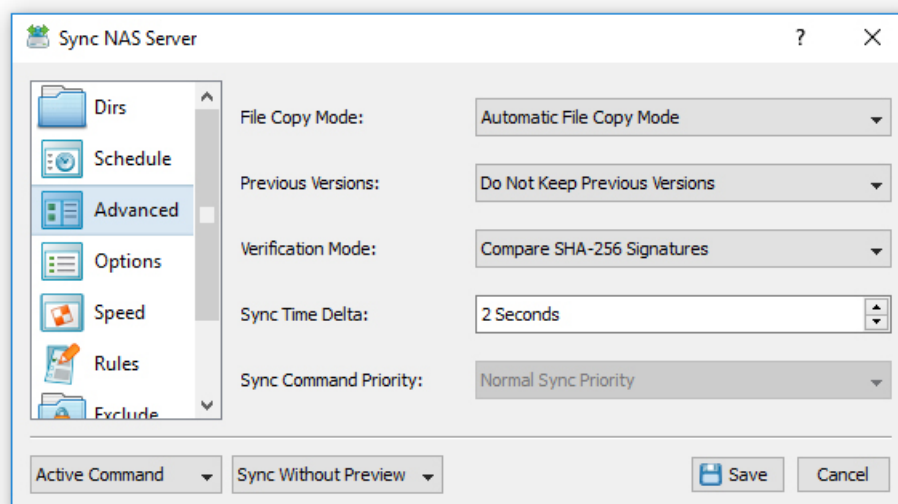
- **Synchronize Destination Directory** (one-way) - All changes made in the source directory will be propagated to the destination directory. Files deleted from the source directory will be deleted from the destination directory. All files changed or deleted in the destination directory will be restored using files from the source directory. No changes will be made in the source directory. After the file synchronization process is complete both locations will be identical.
- **Update Destination Directory** (one-way) - Newly created and modified source files will be copied to the destination directory. Files deleted from the source directory will be deleted from the destination directory. Files deleted from the destination directory will be restored using files from the source directory. Newly modified destination files will be kept in place. No changes will be made in the source directory.
- **Accumulate and Update Files in Destination** (one-way) - Newly created and modified source files will be copied to the destination directory. Files deleted from the destination directory will be restored using files from the source directory. Newly created and modified destination files will be kept in place. No files will be deleted from the destination directory. No changes will be made in the source directory.
- **Two-Way File Synchronization** - Newly created and modified files will be synchronized in both directions. Files deleted from the source directory will be deleted from the destination directory. Files deleted from the destination directory will be restored from the source directory. Changes may be made in both locations. After the file synchronization process is complete both locations will be identical.
- **Two-Way Stateful File Synchronization** - Newly created and modified files will be synchronized in both directions. Files deleted from the source directory will be deleted from the destination directory. Files deleted from the destination directory will be deleted from the source directory. Changes may be made in both locations. After the file synchronization process is complete both locations will be identical.
- **Two-Way Accumulation and Update** - Newly created and modified files will be updated in both directions. Files deleted from one location will be restored from the second location. Changes may be made in both locations. After the file synchronization process is complete both locations will be identical.

7 Advanced File Synchronization Options

SyncBreeze Server provides the ability to schedule periodic file synchronization operations. In order to configure a file synchronization command to be executed periodically, open the file synchronization command dialog, select the 'Advanced' tab, enable the 'Periodic Sync' option and specify an appropriate time interval. Another option is to configure a file synchronization command to be executed at a specific time of the day.



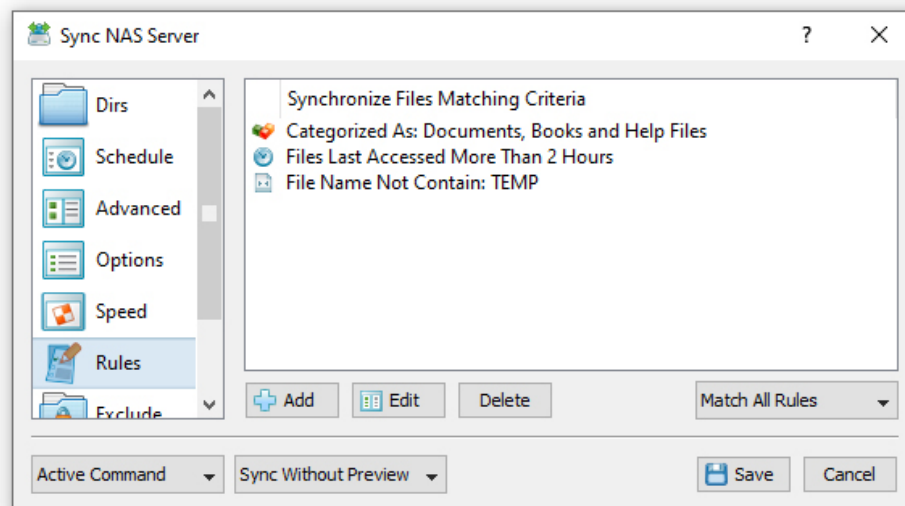
In addition to periodic file synchronization operations, SyncBreeze Server provides the ability to monitor the source and/or destination directories and automatically trigger a file synchronization operation when a user-specified number of changes is detected. In order to enable the real-time disk change monitor for a file synchronization command, open the file synchronization command dialog, select the 'Advanced' tab, enable the 'Monitor Changes' option and specify the number of changes that should trigger the file sync command.



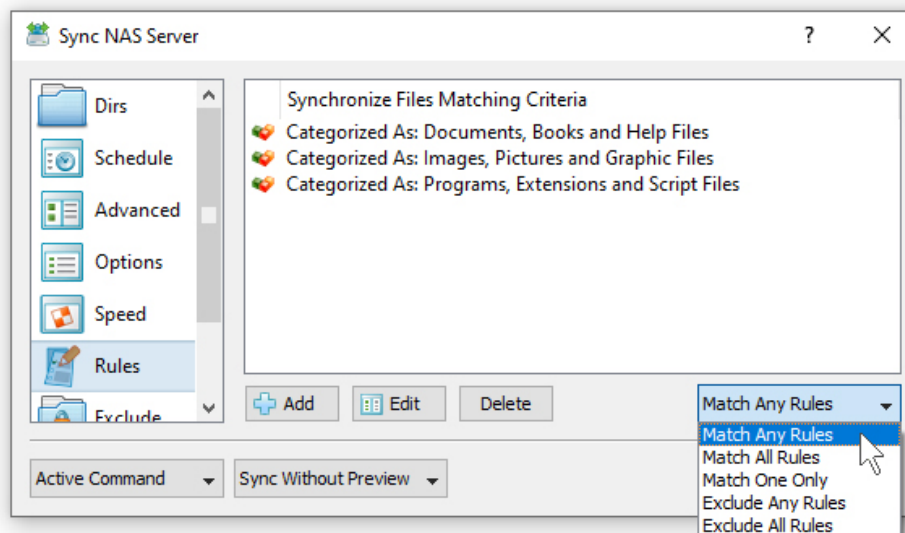
SyncBreeze Server provides a rich set of advanced file synchronization options such as file security attributes synchronization, bit-level file synchronization, file copy verification, etc. In order to configure advanced file synchronization options, open the file synchronization command dialog and select the 'Options' tab.

8 Synchronizing Specific Types of Files

SyncBreeze provides the ability to synchronize specific types of files or file groups using one or more user-specified file matching rules. For example, the user can synchronize all types of documents, images and music files, while skipping all other types of files from the file synchronization process. In order to add one or more file matching rules to a file synchronization command, open the file synchronization command dialog, select the 'Rules' tab and press the 'Add' button. On the 'Rules' dialog select an appropriate rule type and specify all the required parameters.

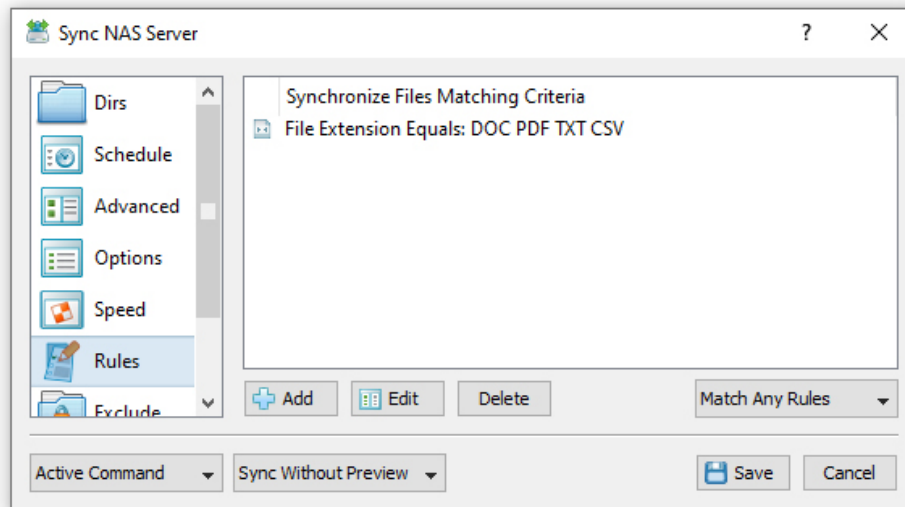


During the file synchronization process, SyncBreeze will scan the source and destination directories and apply the specified file matching rules to all processed files. Files not matching the specified rules will be skipped from the file synchronization process effectively limiting the file synchronization operation to the user-specified files only.

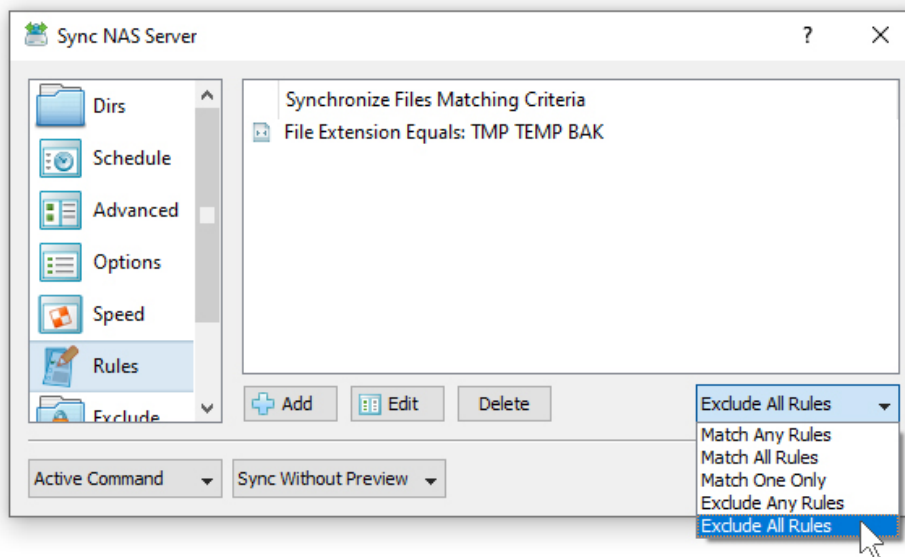


Sometimes, it may be required to synchronize a number of different types of files and skip all the other files. In this case, the user can add multiple file matching rules with each one selecting a specific type of files and then set the rules logic to 'Match Any Rules'.

Another option to specify which types of files to synchronize is to use the file extension rule, which provides the ability to select files by one or more file extensions. Press the 'Add' button on the 'Rules' tab, select the 'File Extension' rule type, set the rule operator to 'Equals' and enter up to 6 file extensions per rule to match.

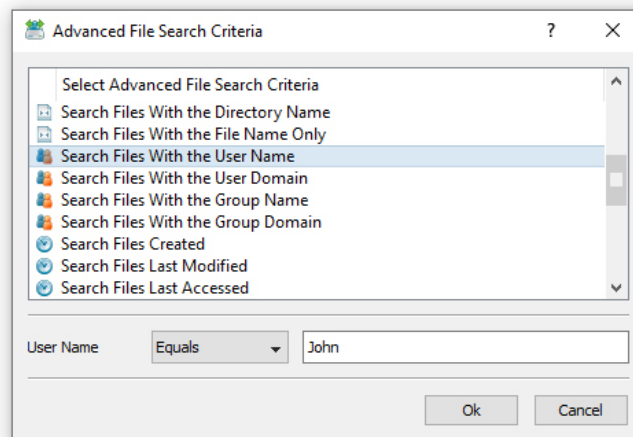


In addition to the positive file matching rules, which are good to synchronize user-selected types of files, SyncBreeze provides negative file matching rules allowing one to exclude specific types of files from the file synchronization process.

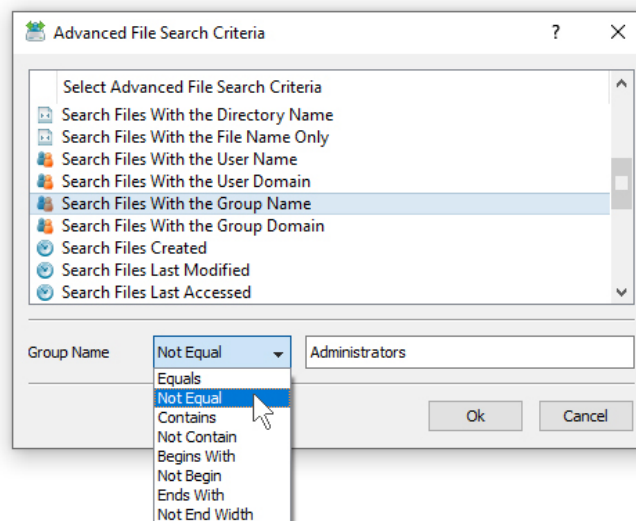


In general, all types of file matching rules provide negative operators allowing one to exclude files by the file name, extension, file type, location, size, file attributes, file creation and modification dates, etc. For example, in order to exclude temporary and backup files by the file extension, add the file extension rule, set the rule operator to 'Equals', set the list of file extensions to 'TMP TEMP BAK' and then set the rules logic to 'Exclude Any Rules'.

In multi-user environments, SyncBreeze provides the ability to synchronize files by the user name, group name and domain name. For example, in order to sync files owned by a specific user, open the sync command options dialog, select the 'Rules' tab, select the 'Search Files With User Name' and enter the user name to search for.



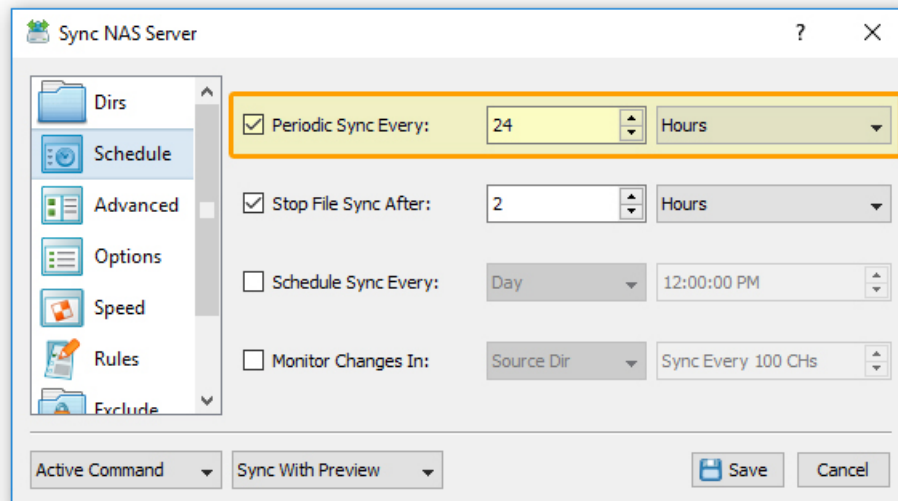
In addition to the positive file matching rules, SyncBreeze provides negative file matching rules allowing one to exclude files matching the specified criteria. For example, in order to exclude all files owned by any member of the 'Administrators' user group, open the sync command options dialog, select the 'Rules' tab, select the 'Search Files With Group Name', set the rule operator to 'Not Equal' and enter the 'Administrators' group name.



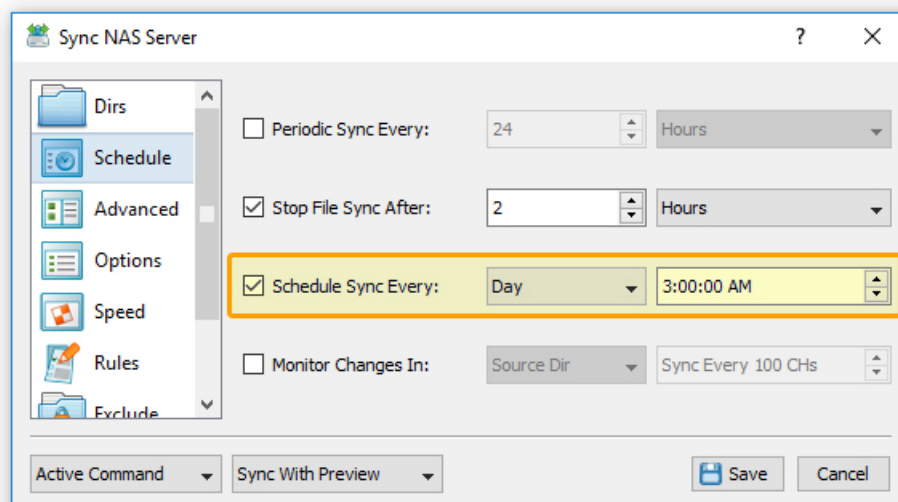
One of the most powerful features of the SyncBreeze file matching rules is the ability to combine multiple types of rules allowing one to precisely select which files should be synchronized and which files should be excluded from the file synchronization process. For example, the user can configure a file synchronization command to sync all types of documents and image files, which were created during the last week by any regular user, but exclude all files owned by Administrators.

9 Periodic File Synchronization Operations

Another advanced option provided by SyncBreeze is the ability to execute file synchronization commands periodically at user-specified time intervals. In addition, SyncBreeze allows one to schedule daily or weekly sync operations to be performed at a specific time of the day. The major reason to execute a file synchronization command periodically is to continuously keep a frequently changing directory synchronized with a backup directory located on an external USB disk or a NAS storage device.



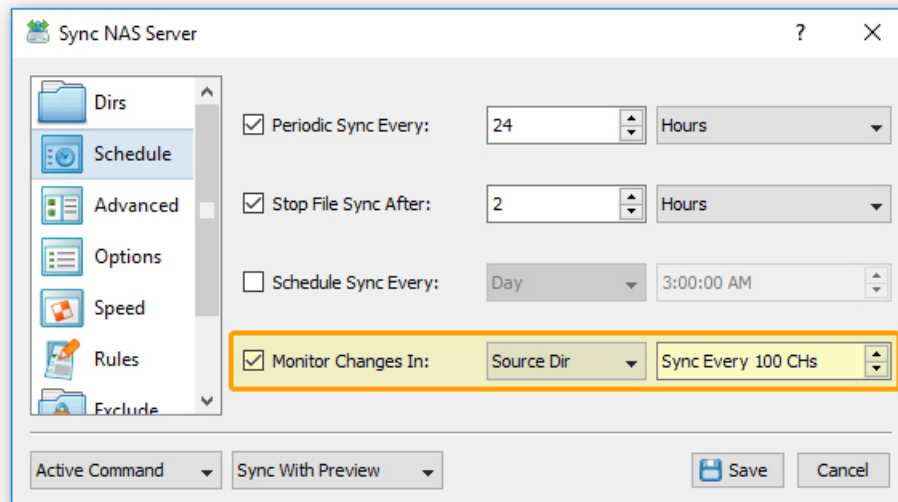
In order to enable periodic file synchronization for a sync command, open the command dialog, select the 'Schedule' tab, specify the time period to execute the file synchronization command and press the 'Save' button.



For all periodic file synchronization commands, SyncBreeze displays the time remaining to the next sync operation. After each elapse of the specified time period, SyncBreeze will start the file synchronization command in the background and mark it as 'Active' in the status field. In order to open a synchronization process dialog for an active sync command, click on the command item in the sync commands view. After finishing a periodic file synchronization command, SyncBreeze will update the command status reset periodic sync timer.

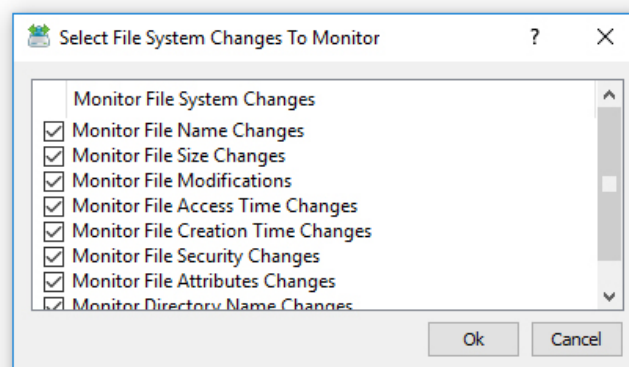
10 Real-Time File Synchronization

In addition to the periodic and scheduled file synchronization capabilities, the SyncBreeze Enterprise product version provides the user with advanced real-time file synchronization allowing one to monitor the source and/or destination directory and trigger the file synchronization command after a user-specified number of file system changes.



The real-time file synchronization capabilities are especially useful when the amount of file system changes is not even over time with sudden spikes of file system changes followed by periods of low activity. In such a situation, it will be wasteful to frequently perform periodic file synchronization if nothing has changed, but on the other hand, if someone suddenly changes a large number of files, these changes should be synchronized as soon as possible.

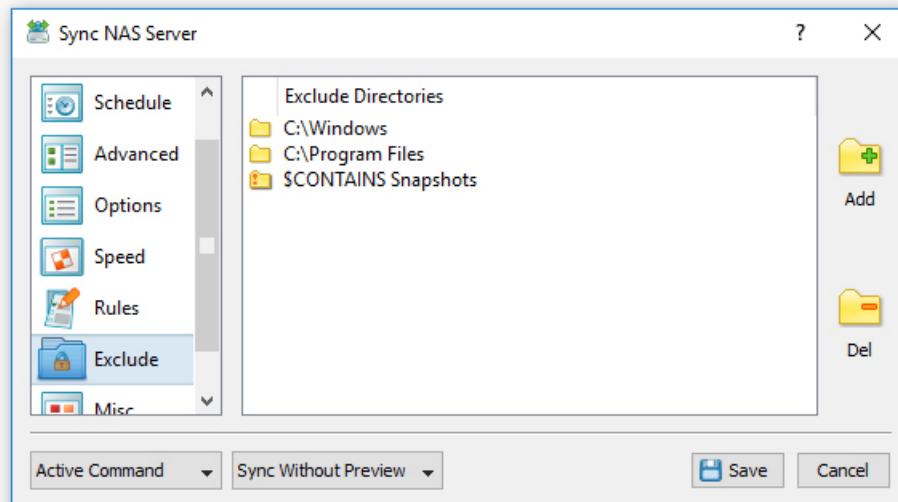
The most balanced approach for such situations is a combination of periodic file synchronization with real-time disk change monitoring configured to trigger the file synchronization command after a user-specified number of changes. In this way, if the amount of file system changes is below the threshold defined in the real-time disk change monitor, the timer will execute the file synchronization command according to the scheduled time interval. On the other hand, if there are too many changes, the disk change monitor will trigger the file synchronization command before the scheduled time.



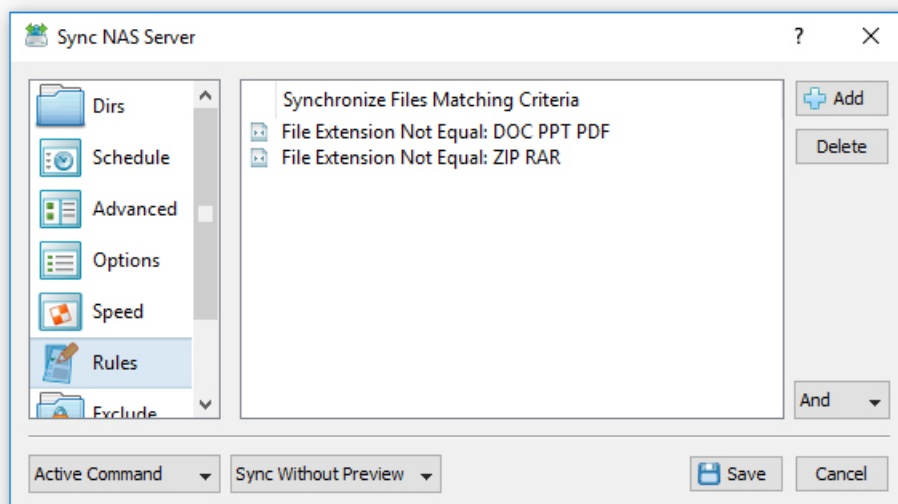
In order to enable real-time file synchronization for a file sync command, open the command dialog, select the 'Schedule' tab and select the 'Monitor Changes' checkbox. SyncBreeze allows one to monitor the source directory, the destination directory or both directories simultaneously. Enter an appropriate number of changes that should trigger the file synchronization command and press the 'Save' button.

11 Excluding Directories or Files from Sync Process

SyncBreeze Server allows one to exclude directories or files from the file synchronization process. In the simplest case, in order to exclude a subdirectory from a file synchronization command, open the file synchronization command dialog, select the 'Exclude' tab and add one or more subdirectories to the exclude list.



During the file synchronization process, SyncBreeze will skip all directories specified in the exclude list including all subdirectories and files located in these directories. Another option is to exclude files using negative file matching rules. For example, in order to exclude all temporary files with the 'TMP' or 'TEMP' file extensions, add a file matching rule configured to match files with extensions different from 'TMP' and 'TEMP'.

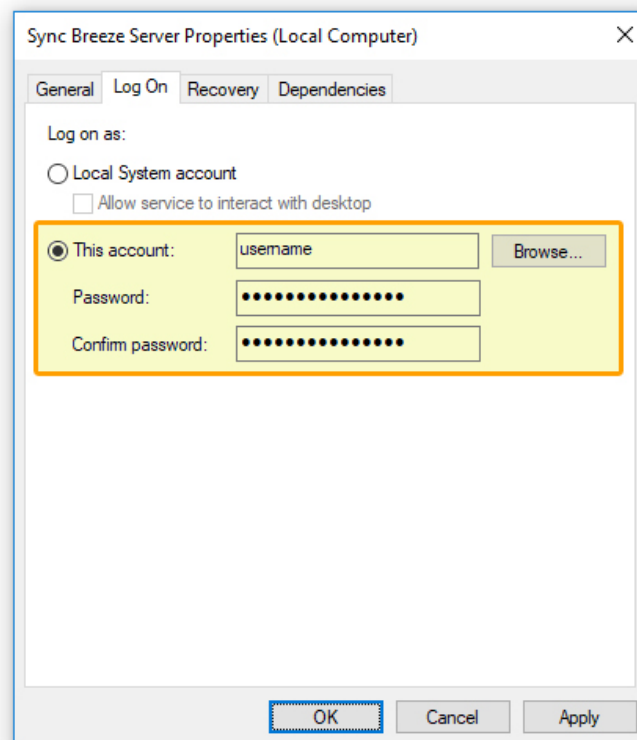


In order to add one or more exclude file matching rules, open the file synchronization command dialog, select the 'Rules' tab, select an appropriate rule type, select a negative file matching operator and specify all the required parameters.

12 Using SyncBreeze Server to Sync Network Shares

By default, the SyncBreeze file synchronization server is configured to run under the local system account, which is good to synchronize files and directories located on local disks. On the other hand, the local system account does not have permissions to synchronize files and directories located on network shares and NAS storage devices.

In order to enable the SyncBreeze server to synchronize network shares and NAS storage devices, the file synchronization server should be configured to run under a user account, which has permissions to access and write files and directories located on the required network shares.



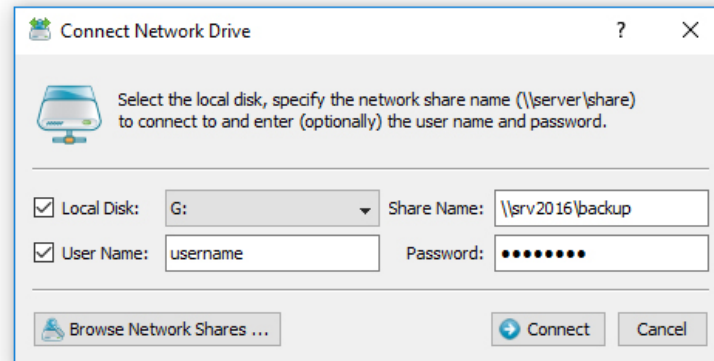
The configuration is very simple and may be performed within a couple of seconds using the following step-by-step guide:

1. Open the Windows control panel and click on the 'Administrative Tools' utility.
2. Open the Services control center and find here the 'Sync Breeze Server' service.
3. Open the 'Sync Breeze Server' service, select the 'General' tab and stop the service.
4. Select the 'Log On' tab and specify a user account to use for the service.
5. Select the 'General' tab and start the 'Sync Breeze Server' service.

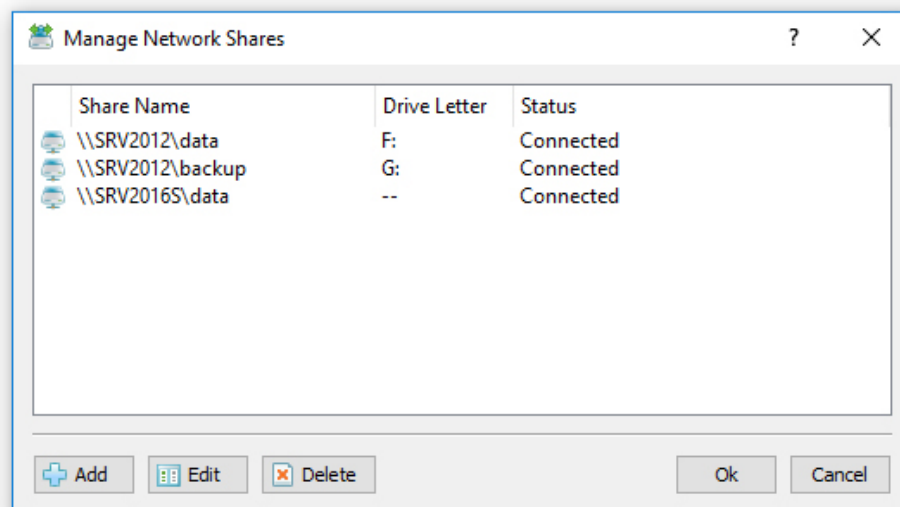
IMPORTANT: SyncBreeze Server is a regular Windows service and therefore it has a separate space of mapped network drive letters. Mapped network drive letters visible in a desktop login session are not accessible to the SyncBreeze service and in order to synchronize network shares, the user needs to use UNC path names (\\server\share) or mount network drive letters using the SyncBreeze client GUI application.

Now, the SyncBreeze file synchronization server will run under the specified user account and will have exactly the same permissions as the specified account when accessing network shares and NAS storage devices.

Sometimes, it may be required to synchronize files between network shares and NAS storage devices in different domains using different user accounts. In order to connect to a network share with a custom user name and/or password, select the menu 'Tools - Connect Network Drive', enter the name of the network share to connect to and specify the user name and password to use.



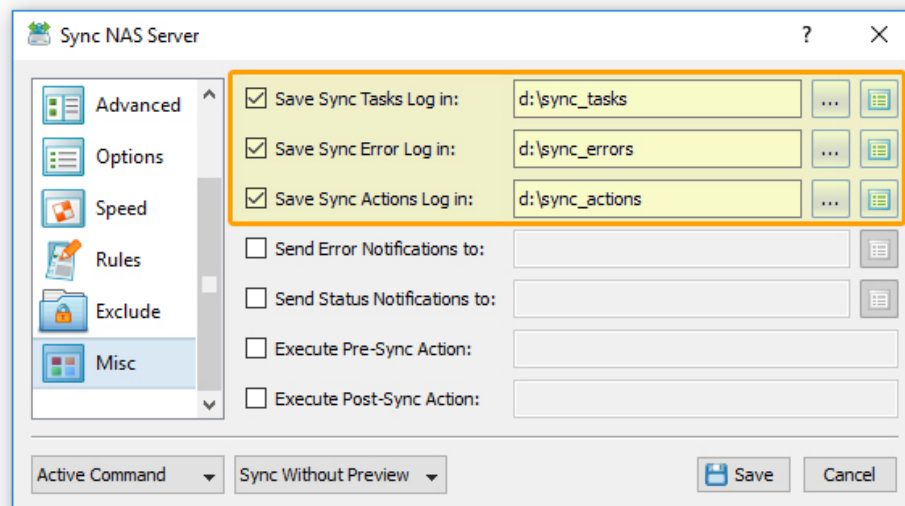
When synchronizing tens of network shares and NAS storage devices, it may be not convenient to assign a drive letter for each connected network share just because there may be not enough letters to assign to all the required network shares. For such cases, the user is provided with the ability to connect network shares without assigning drive letters. In order to connect a network share without assigning a drive letter, unselect the 'Local Disk' check box on the network share configuration dialog.



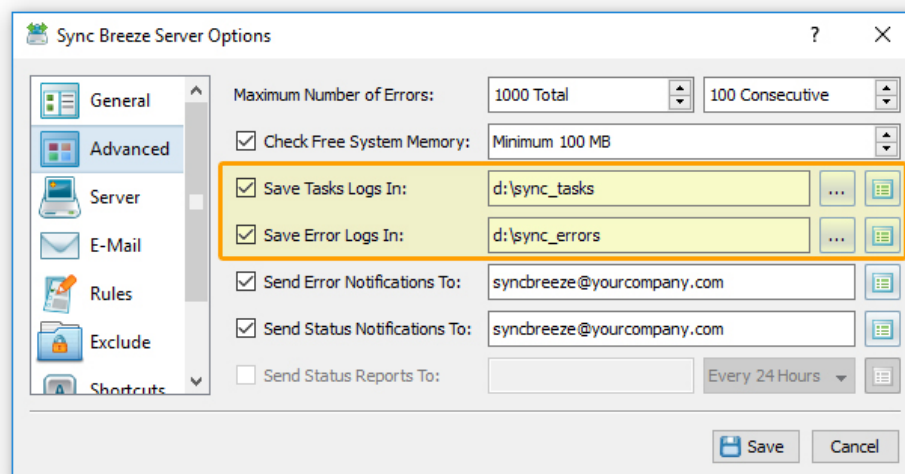
SyncBreeze Server provides the ability to configure periodic file synchronization operations to be executed fully automatically in the background. In order to enable automated synchronization of network shares and NAS storage devices, SyncBreeze allows one to pre-configure a list of network shares to be automatically connected during the server startup. The user is provided with the ability to specify an unlimited number of network shares to connect to and optionally configure custom login credentials for each specific network share. In order to pre-configure one or more network shares, select the 'Tools - Manage Network Shares' menu item, press the 'Add' button and specify all the required parameters.

13 File Synchronization Logs

SyncBreeze Server provides a number of different types of file synchronization logs allowing one to save log files listing file synchronization tasks, file synchronization errors and full logs including all file synchronization actions. Log files can be enabled for each file synchronization command individually and for all configured file synchronization commands globally. An individual file synchronization log configured for a file synchronization command takes precedence over global file synchronization logs configured for all sync commands.

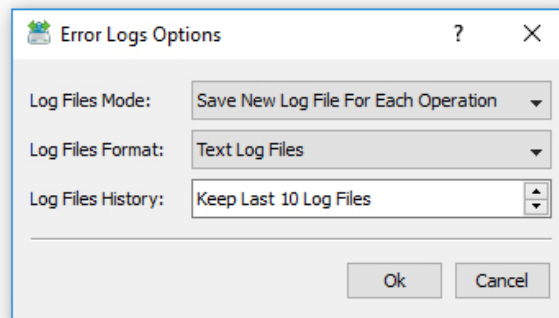


In order to enable a file synchronization log for a file sync command, open the sync command options dialog, select the 'Misc' tab, enable an appropriate file sync log and specify a directory to save log files in. In addition, for each type of file synchronization logs, the user is provided with the ability to control the log file mode, the log file format and the number of history log files to keep in the specified logs directory.

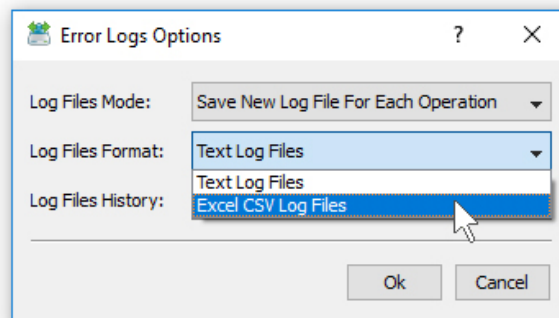


Another option is to enable global file synchronization log files to be saved for all configured file synchronization commands. In order to enable, global file synchronization log files, open the SyncBreeze Server options dialog, select the 'Advanced' tab, enable file sync logs and specify a directory to save log files in. For each file synchronization command, SyncBreeze Server will create a sub-directory in the specified logs directory and then save all log files according to the selected log files mode and format while keeping the specified number of history log files for each configured file synchronization command.

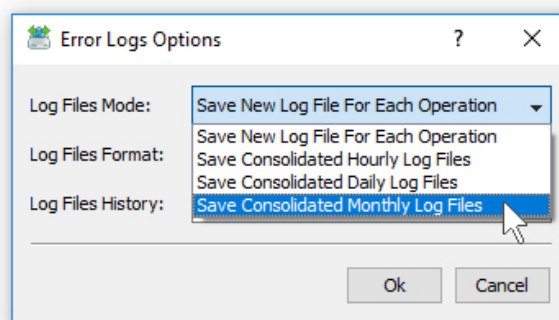
SyncBreeze Server provides a number of file synchronization logs options allowing one to customize log files for user-specific needs and requirements. In order to open the log files options dialog, press the 'Log Options' button located beside a log files directory entry.



The user is provided with three different log files modes allowing one to save an individual log file for each file synchronization operation, consolidated hourly log files, consolidated daily log files and consolidated monthly log files.



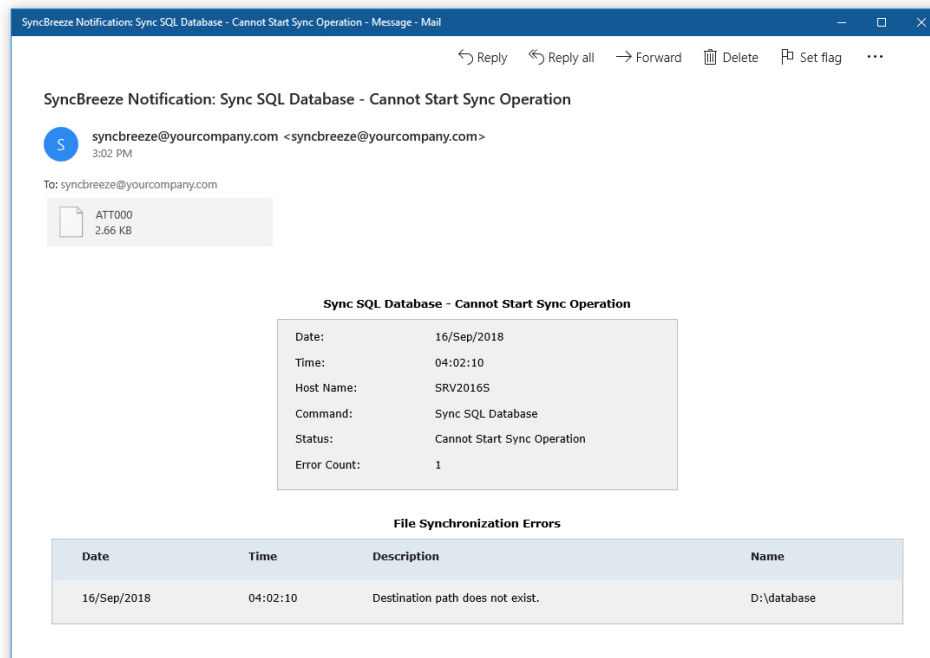
In addition, the user is provided with the ability to save log files to the following formats: ASCII text files or Excel CSV files. Excel CSV log files can be used to open file synchronization log files in Microsoft Excel or import log files to an SQL database.



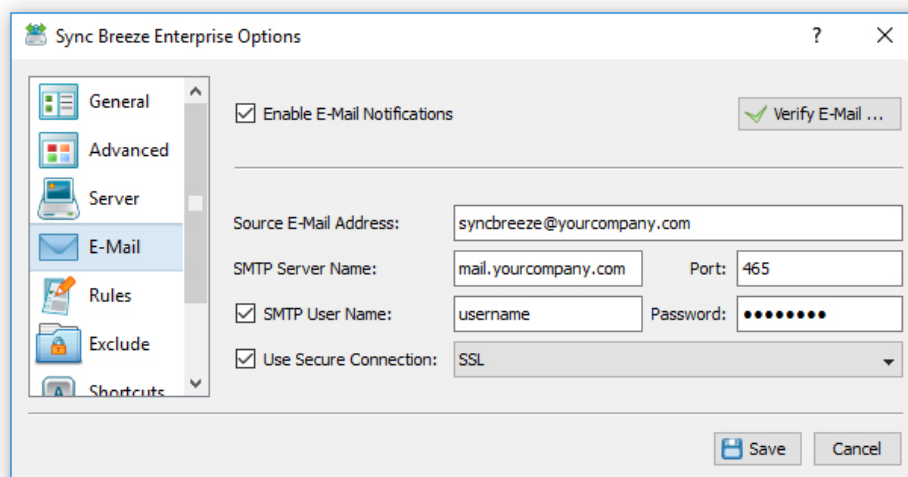
Finally, SyncBreeze Server provides the ability to keep a user-specific number of history log files in the logs directory. By default, SyncBreeze Server keeps the last 10 file synchronization log files and in order to change the number of history log files, open the 'Log Options' dialog and change the 'Log Files History' option.

14 File Synchronization Error E-Mail Notifications

The SyncBreeze file synchronization server runs in the background as a service and performs all the required file synchronization operations in a fully automatic and unattended mode. In general, once configured, the file synchronization server does not require any manual intervention, but if there is no space left on the destination device or there are some other file synchronization errors, the user will need to know about such issues as soon as possible.



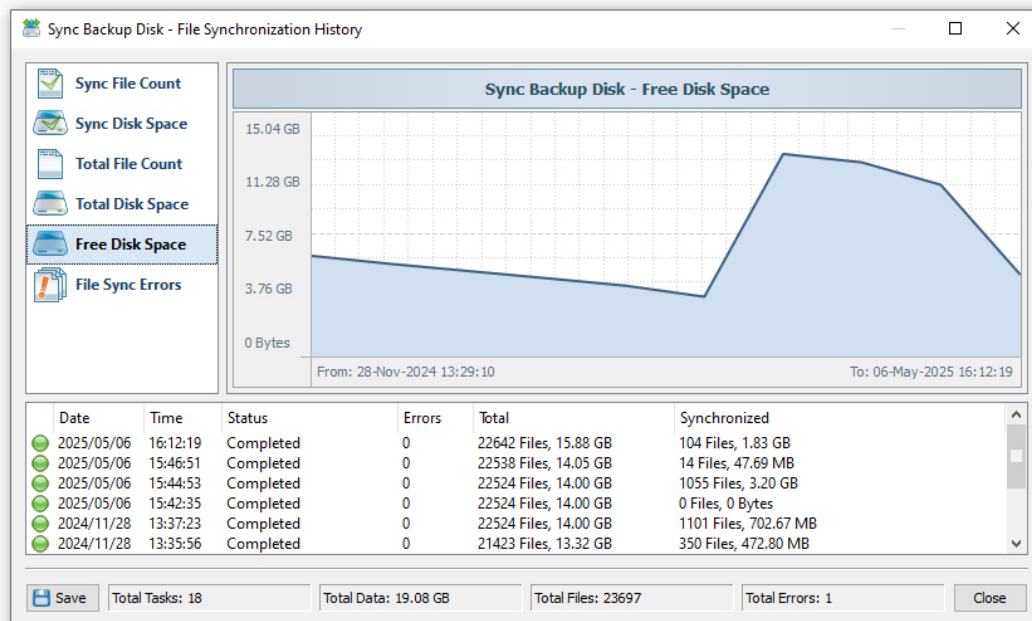
The SyncBreeze file synchronization server provides the user with the ability to send E-Mail notifications about failed file synchronization commands with a detailed description explaining the exact reason for the failure and a list of files that caused the failure.



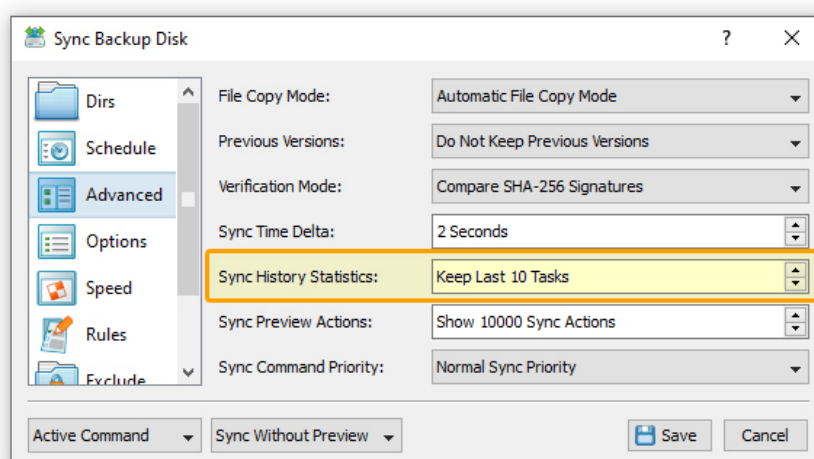
In order to enable error E-Mail notifications, open the SyncBreeze Server options dialog, select the 'E-Mail' tab and specify an SMTP server host name (or IP address), E-Mail account and password to use to send E-Mail notifications. In addition, select the 'Advanced' tab, enable the E-Mail notifications option and specify a destination E-Mail address to send notifications to.

15 File Synchronization History

SyncBreeze Server and SyncBreeze Enterprise versions keep history statistics for last X file synchronization operations for each file synchronization command according to the user-specified number of command history tasks, which may be configured on the sync command options 'Advanced' tab. In order to open the file synchronization history statistics dialog for a file synchronization command, select the file sync command in the commands view, press the right mouse button and select the 'View Sync History' menu item.

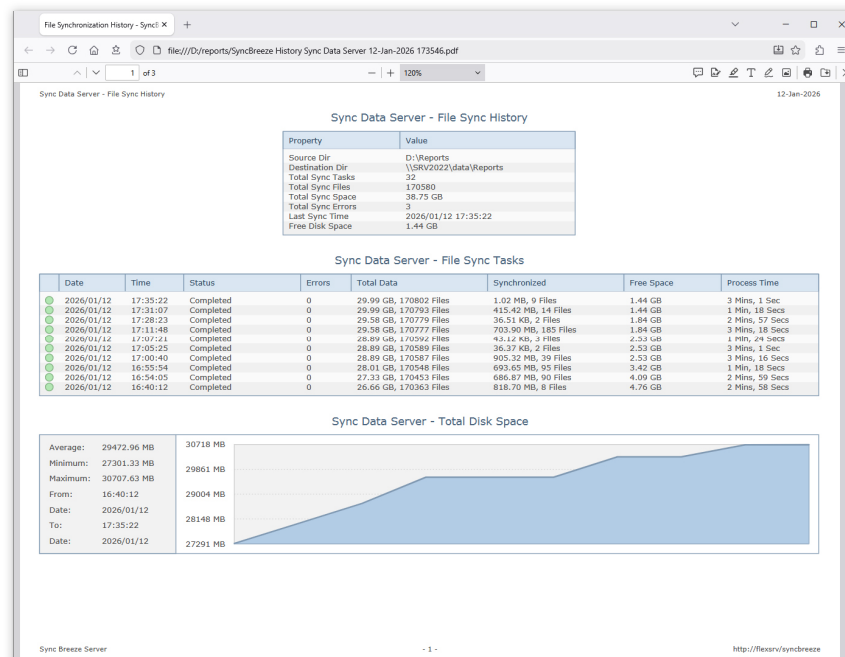


The file synchronization history dialog displays charts showing the total number of files in the synchronized directories, the total amount of disk space in the synchronized directories, the number of synchronized files, the amount of synchronized disk space, the amount of the free disk space in the destination directory and the number of file synchronization errors. In addition, the file sync history dialog shows a list of the last X file sync operations according to the number of history sync tasks configured on the file sync command options dialog.

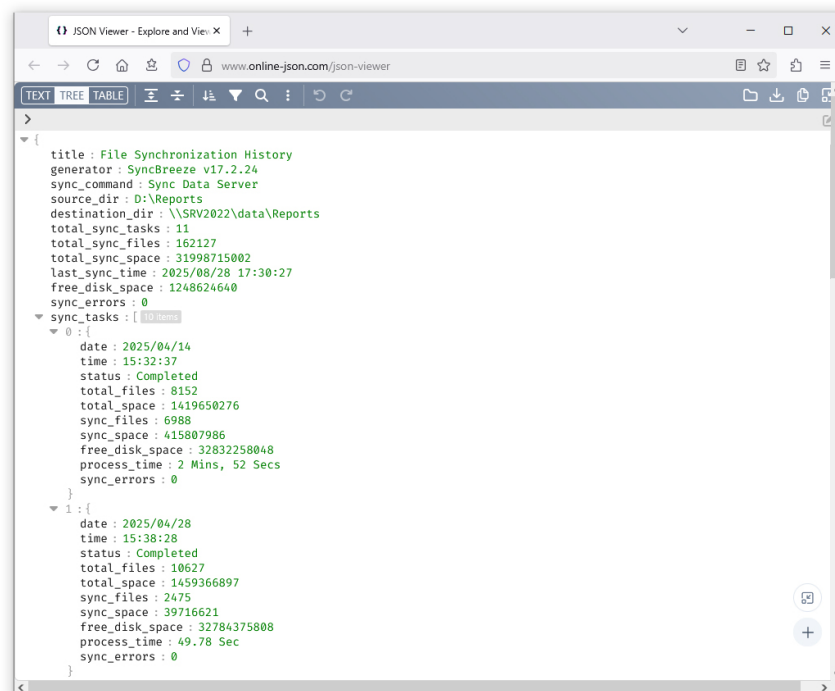


In order to change the number of history file synchronization tasks saved for the file sync command, select the file sync command in the commands view, press the right mouse button and select the 'Edit Command' menu item. On the file sync command options dialog, select the 'Advanced' tab and set the 'Sync History Statistics' option to an appropriate value.

SyncBreeze Server and SyncBreeze Enterprise provide the ability to export the file synchronization history to a number of standard file formats including HTML, PDF, Excel, CSV, text, JSON and XML. In order to save a file sync history report file, press the 'Save' button located on the file sync history dialog, select an appropriate report format, enter a report file name and press the 'Save' button.

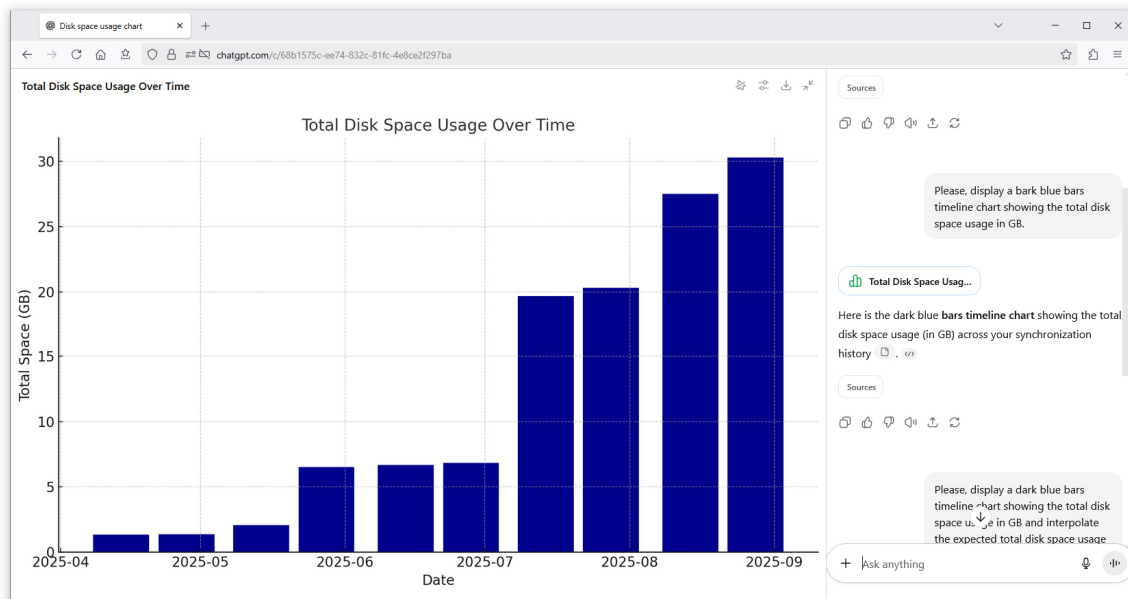


For example, the file synchronization history PDF report includes the file synchronization command summary, the list of completed file synchronization tasks and a number of timeline charts showing the total amount of disk space, the total number of files, the amount of synchronized disk space, the number of synchronized files and the number of file sync errors.

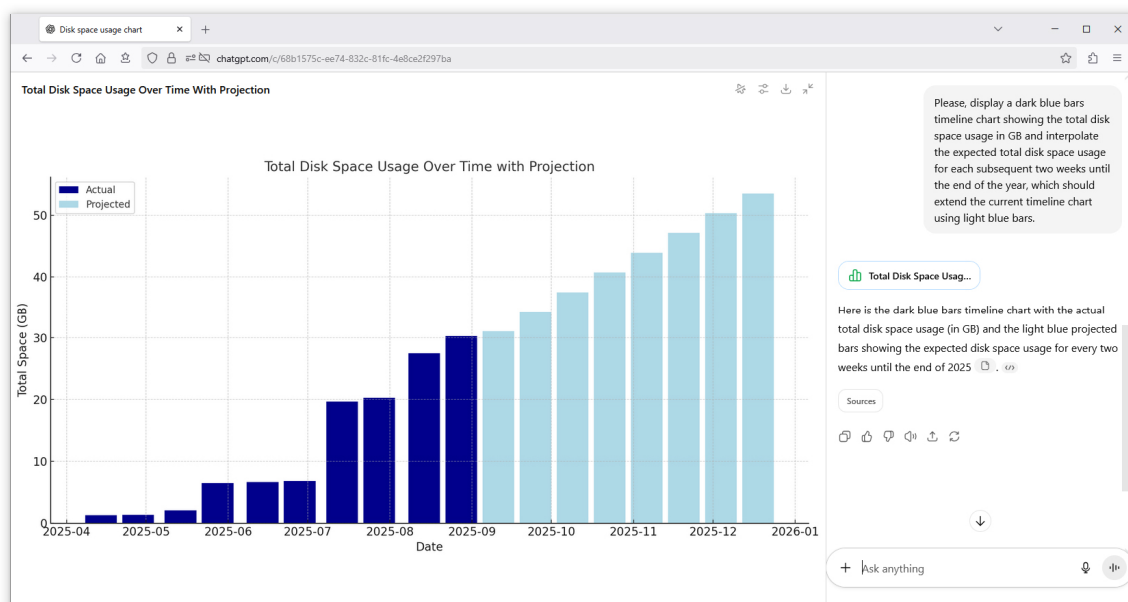


In addition to the graphical report formats, the user is provided with the ability to export the file synchronization history to a number of structured file formats such as CSV, JSON and XML allowing one to analyze the file synchronization history using external analysis tools.

One of the most powerful capabilities of SyncBreeze Server and SyncBreeze Enterprise product versions is the ability to export file synchronization history to AI-friendly file formats allowing one to easily import file synchronization history to various AI platforms, perform advanced analysis operations and generate user-custom charts.



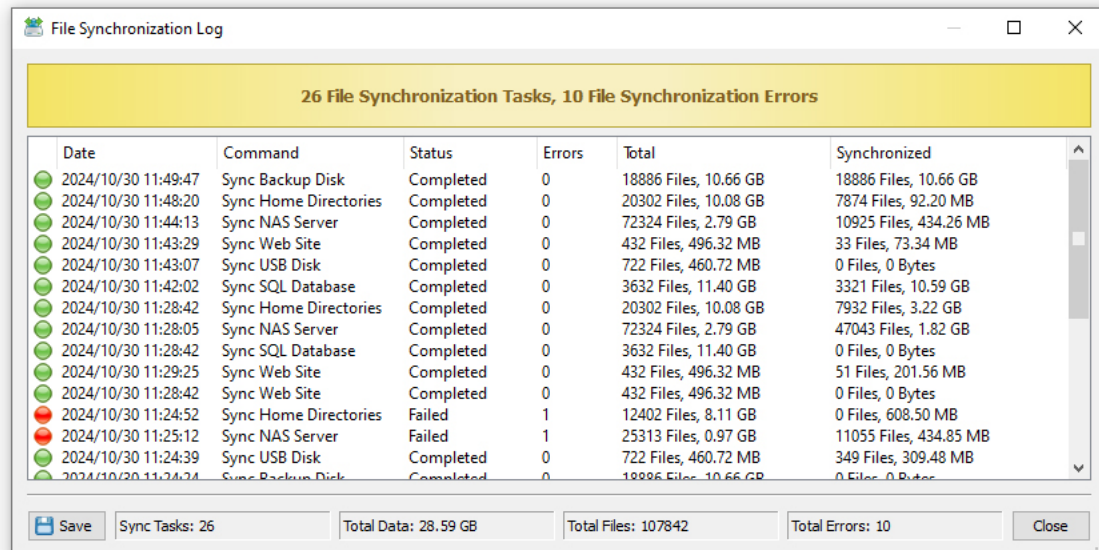
For example, in order to generate a timeline chart showing the total disk space usage for a file sync command using the ChatGPT AI platform, press the 'Save' button located on the file synchronization history dialog, export the file synchronization history to the JSON file format, import the JSON report file to the ChatGPT AI platform and ask ChatGPT to display a timeline chart showing the total disk space usage according to the uploaded JSON report file.



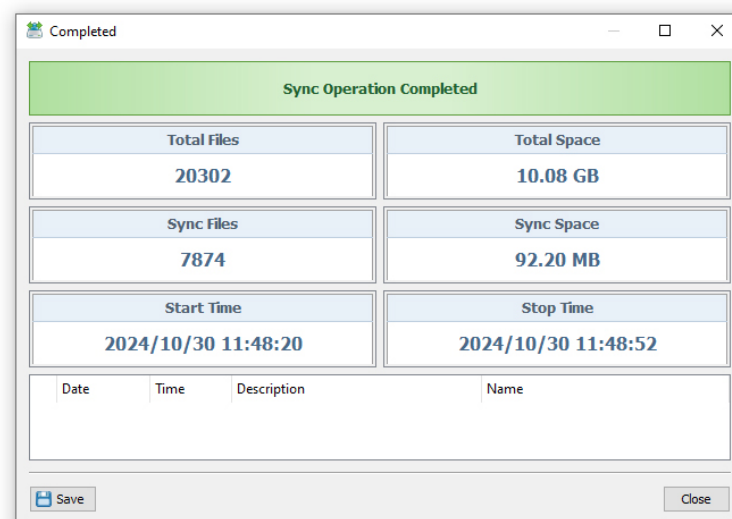
In order to display a projected total disk space usage for a use-specified period of time, import the file synchronization statistics JSON report file to the ChatGPT AI platform and ask ChatGPT to interpolate the projected total disk space usage based on the historical data for this specific file synchronization command and extend the timeline chart with the projected total disk space usage. Similarly, the user can generate charts showing the projected amount of the free disk space, the projected amount of the file synchronization time, etc.

16 File Synchronization Log

SyncBreeze Server and SyncBreeze Enterprise keep a log of previously completed file synchronization operations including statistics and a list of errors for each performed file synchronization operation. In order to open the file synchronization log dialog, press the 'Log' button located on the main toolbar.



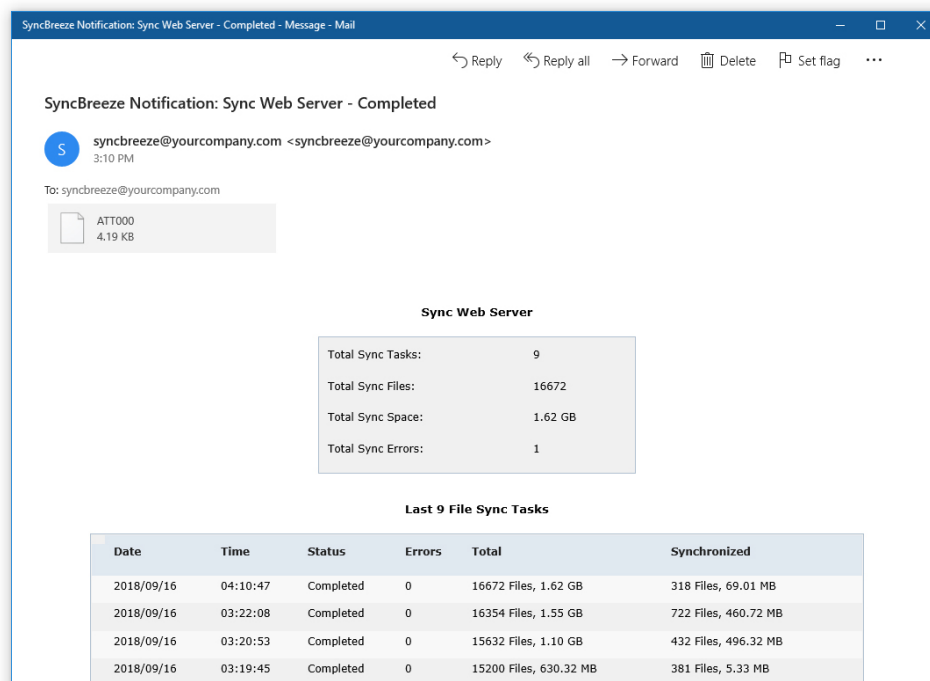
For each performed file synchronization operation, the file synchronization log dialog shows the date and time of the file sync operation, the file synchronization command name, the completion status, the number of file synchronization errors, the total amount of processed disk space, the total number of processed files, the amount of the synchronized disk space and the number of synchronized files. In order to export the file synchronization log to a log file, press the 'Save' button, select an appropriate log format and specify a log file name.



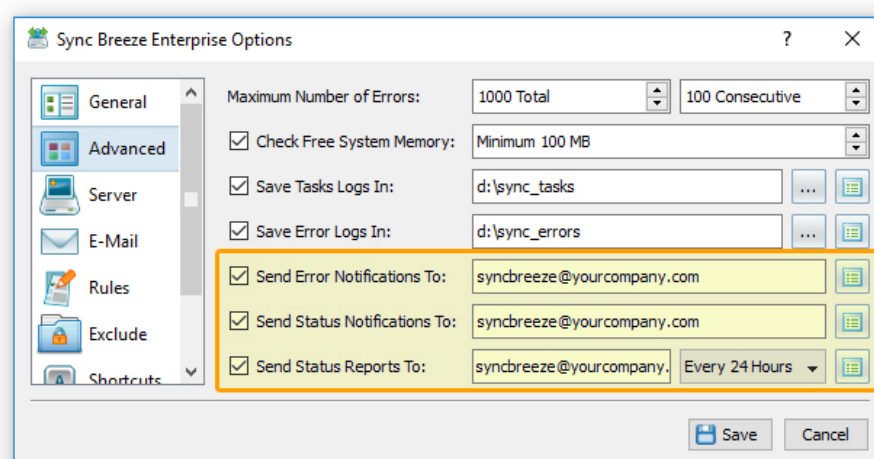
In order to view the file synchronization statistics and a list of file synchronization errors for a previously completed file synchronization command, click on the command item on the file sync log dialog. In order to save the list of file synchronization errors to an error log, press the 'Save' button and specify a log file name.

17 Sending Sync Commands Status Notifications

In addition to error E-Mail notifications, SyncBreeze Enterprise allows one to send sync status notifications showing file synchronization history statistics for a file synchronization command. By default, status notifications are disabled, but the user is provided with the ability to enable status notifications for any file synchronization command.



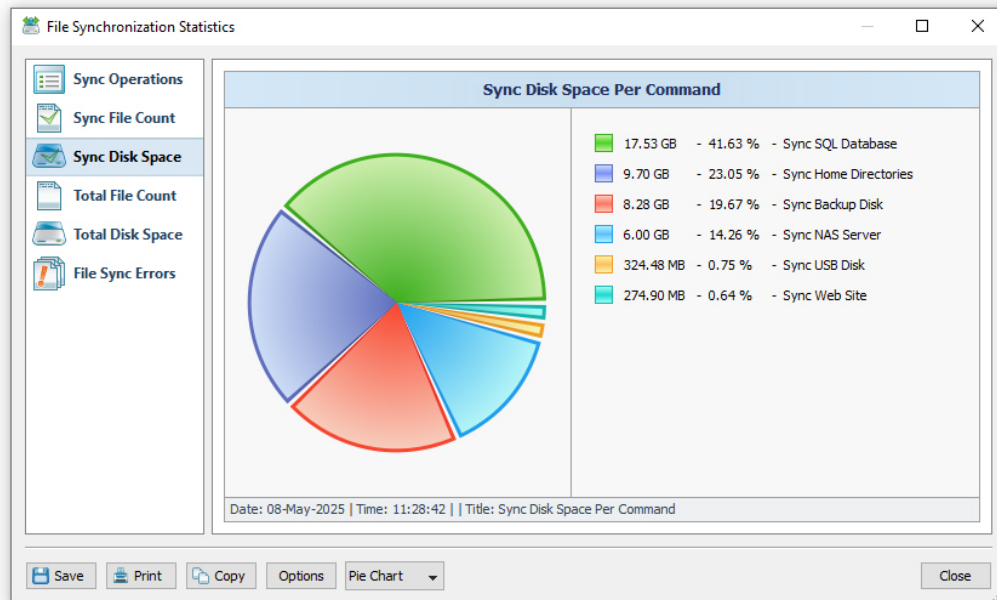
When enabled, status notifications are sent for all successfully completed and failed file synchronization operations. A file synchronization status notification shows the total number of file synchronization operations for the sync command, the total number of synchronized files, the total amount of synchronized disk space and the total number of file synchronization errors. In addition, a sync status notification shows a history of last X file sync operations according to the number of history sync tasks configured on the options dialog.



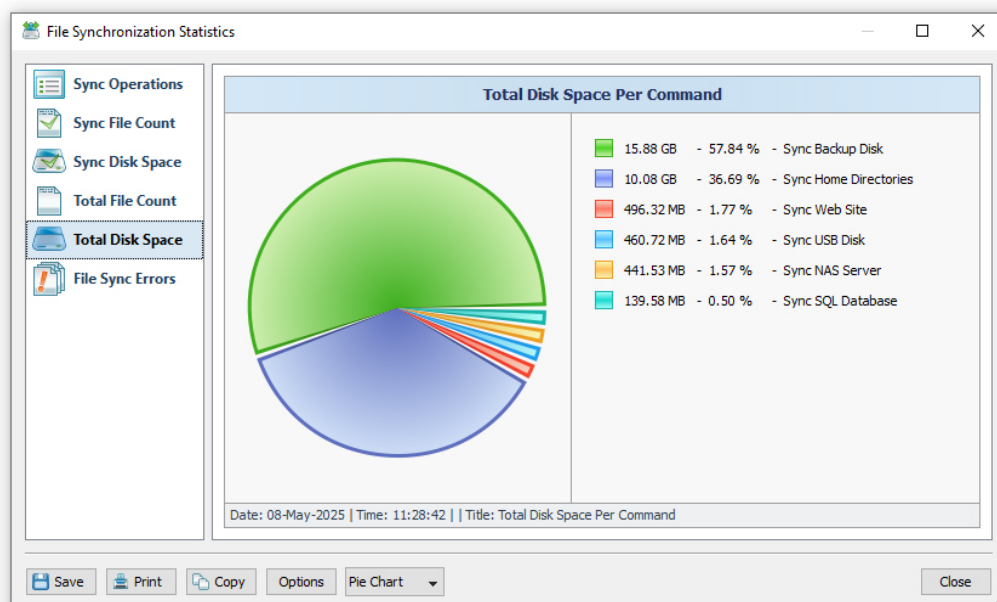
In order to enable status E-Mail notifications, open the SyncBreeze Server options dialog, select the 'E-Mail' tab and specify an SMTP server host name (or IP address), E-Mail account and password to use to send E-Mail notifications. In addition, open the sync command dialog, select the 'Misc' tab, enable the status E-Mail notifications option and specify a destination E-Mail address to send notifications to.

18 Viewing File Synchronization Statistics

SyncBreeze Server and SyncBreeze Enterprise keep file synchronization statistics for X last sync operations for each file synchronization command. In order to access the file synchronization history statistics, open the SyncBreeze Serve GUI application and press the 'Charts' button located on the main toolbar.



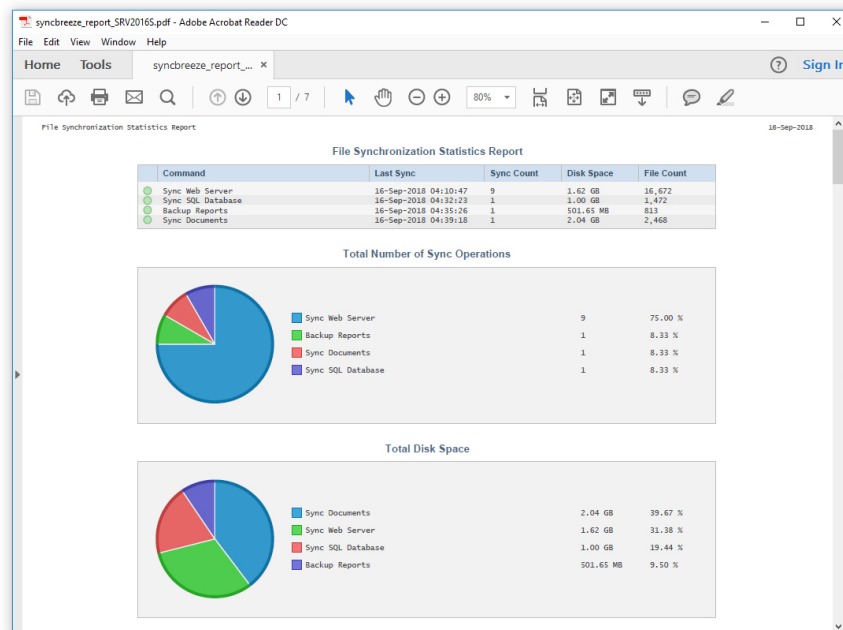
The file synchronization statistics dialog allows one to display pie charts showing the total number of sync operations per file synchronization command, the total amount of disk space in the synchronized directories, the total number of files, the amount of synchronized disk space, the number of synchronized files and the number of sync errors per file synchronization command.



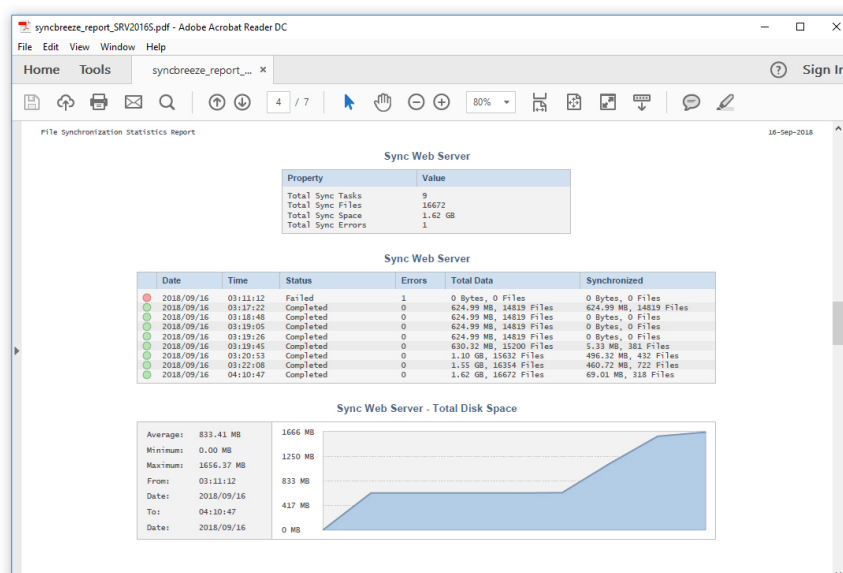
In addition, the user is provided with the ability to export file synchronization statistics reports into a number of standard formats including PDF, XML, HTML, Excel CSV and plain text. In order to export a statistics report, which includes history statistics for all commands, press the 'Save' button and select an appropriate report format.

19 Sending Status Reports to an E-Mail Address

SyncBreeze Enterprise provides the ability to periodically send PDF status reports to an E-Mail address. PDF status reports include the current status of all file synchronization commands, file synchronization statistics and a number of history line charts for X last file synchronization operations.



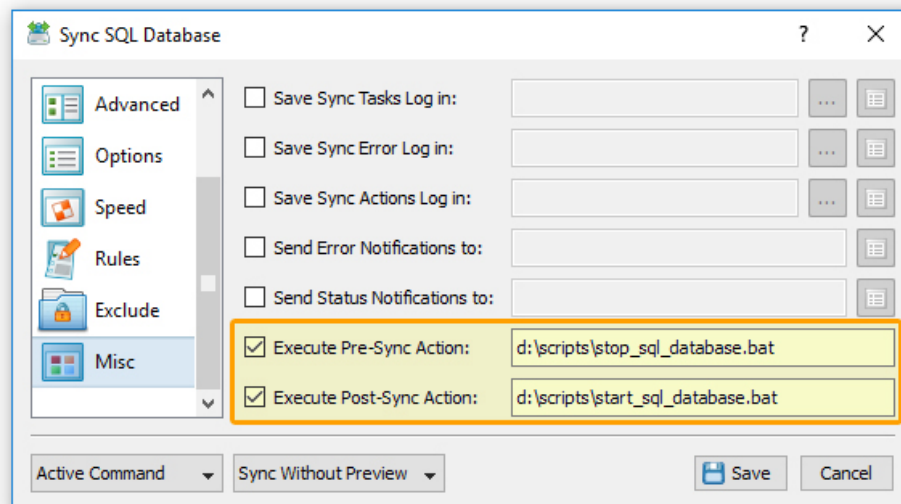
Each status E-Mail notification includes an HTML summary table showing the current status of all file synchronization commands and an attached PDF report with detailed information about all file synchronization commands, history statistics, pie charts and history line charts for X last file synchronization operations according to the configuration selected on the 'Advanced Server Options' page.



In order to configure periodic status reports, open the 'Advanced Server Options' page, enable periodic status reports, select the time interval, enable E-Mail notifications and specify an E-Mail address to send status reports to. In addition, open the E-Mail server configuration page and specify an SMTP server to use to send E-Mail notifications.

20 Synchronizing Running Databases

Databases and other continuously running applications usually lock data files preventing SyncBreeze from synchronizing these files. Moreover, even when some database files are not locked and may be synchronized, the consistency of the database is not guaranteed and the only way to properly backup a database or synchronize two databases is to suspend the database before starting the file synchronization operation and restart the database when the file synchronization operation is completed.



SyncBreeze Server and SyncBreeze Enterprise provide the ability to configure pre-sync and post-sync actions for any file synchronization operation allowing one to stop a database before the file synchronization operation is started and restart the database again when the file sync operation is completed.

For example, in order to safely backup Microsoft SQL server data files, set the pre-sync action and the post-sync action as follows:

Pre-Sync Action: **'net stop MSSQLSERVER'**

Post-Sync Action: **'net start MSSQLSERVER'**

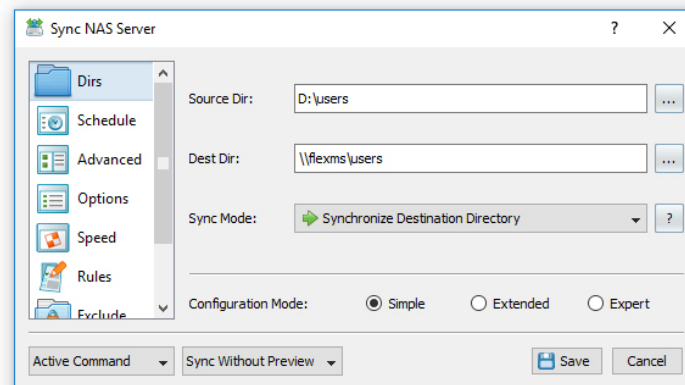
The pre-sync action will stop the Microsoft SQL Server database service before the file sync operation and the post-sync action will start the Microsoft SQL Server database service again after the sync operation is completed.

Sometimes, a database may use multiple directories for different types of files. In this case, in order to synchronize such a database using a single file synchronization command, open the file synchronization command dialog, select the 'General' tab, select the 'Expert' configuration mode and add all directory pairs that should be synchronized. This way the database will be stopped only once when the file synchronization command is started and all the required directories will be synchronized in a single operation.

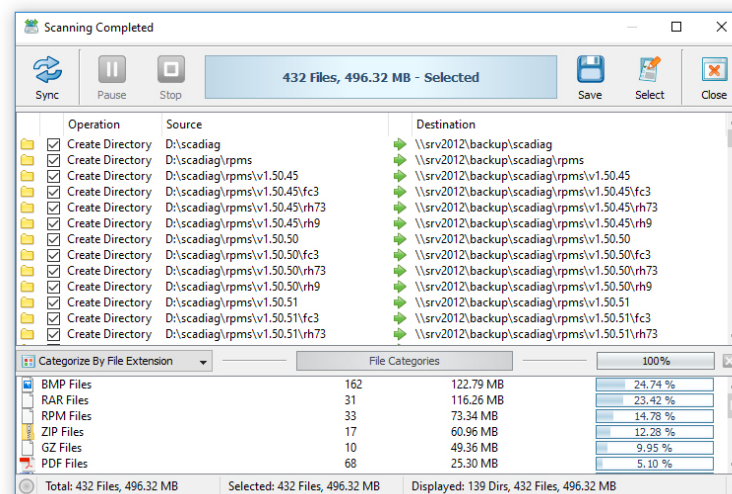
In order to minimize the impact of the database downtime on users and other applications, the file synchronization operation may be scheduled to be executed automatically when no users are working with the database.

21 Synchronizing Disks or Directories

In the simplest case, in order to synchronize two disks or directories, press the 'Sync' button located in the top-left corner of the main toolbar, enter the source and destination directories and press the 'Sync' button. SyncBreeze will scan the specified source and destination directories and show a preview dialog with a list of files that should be synchronized.



The file sync preview dialog shows all files that should be synchronized and allows one to manually select/unselect specific file synchronization actions. In order to see more information about a file synchronization action, select the action item, press the right mouse button and select the 'Action Properties' menu item. Once finished selecting all the actions that should be executed, press the 'Sync' button located in the bottom-right corner of the preview dialog.

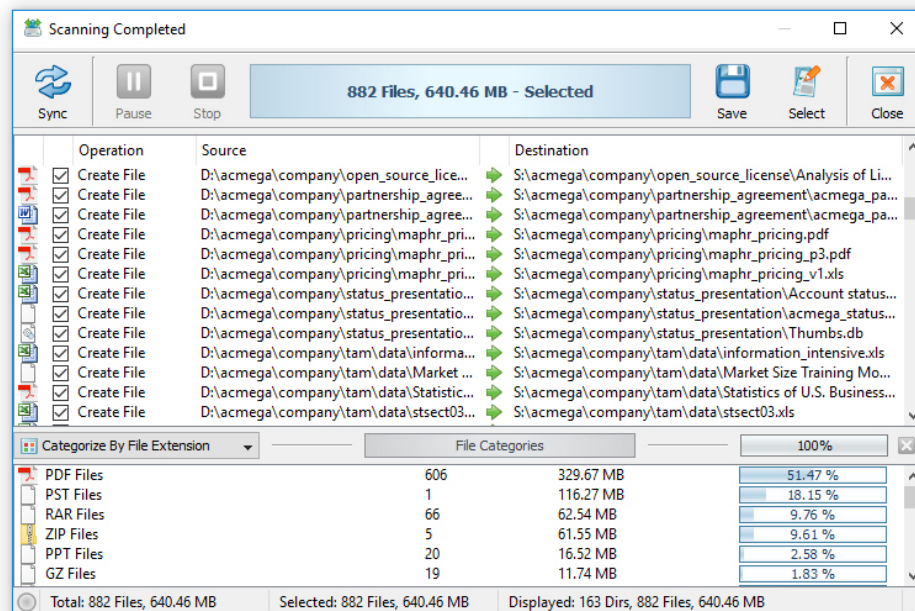


During the file synchronization process, SyncBreeze will display a synchronization process dialog showing the total number of synchronized files, the amount of synchronized storage space, the performance of the file synchronization process and the process time. Press the 'Pause' button to temporarily suspend the file synchronization operation. Press the 'Continue' button to resume a previously paused file synchronization operation. In order to cancel the currently running file synchronization operation, press the 'Stop' button.

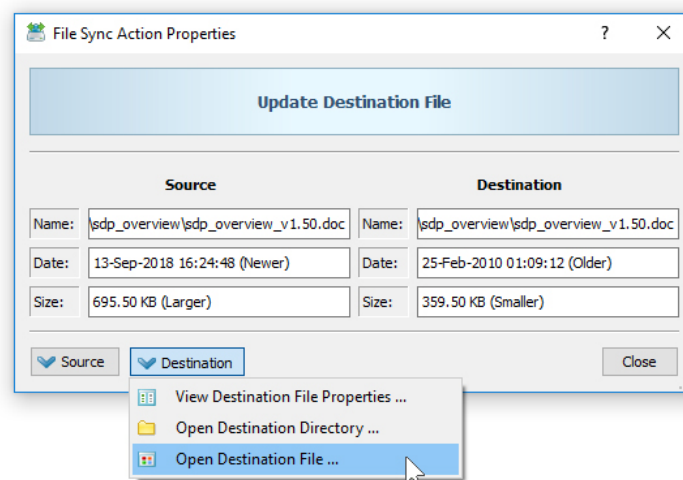
Once the file synchronization operation is finished, SyncBreeze will show a confirmation message informing about the status of the completed file synchronization operation. By default, SyncBreeze will try to perform as many file synchronization actions as possible without interrupting the operation on non-fatal errors. In the case that any errors will occur during the file synchronization operation, SyncBreeze will show an appropriate error message and enable the 'Errors' button allowing the user to access the error log.

22 Synchronizing Files with Preview

By default, SyncBreeze displays a file synchronization preview dialog showing a list of file synchronization actions that should be performed and allowing one to review file synchronization actions and select/unselect individual file sync actions. The top-level status pane of the sync preview dialog displays the currently selected number of files and the amount of disk space and the central pane of the file sync preview dialog displays the list of file synchronization actions to be performed.

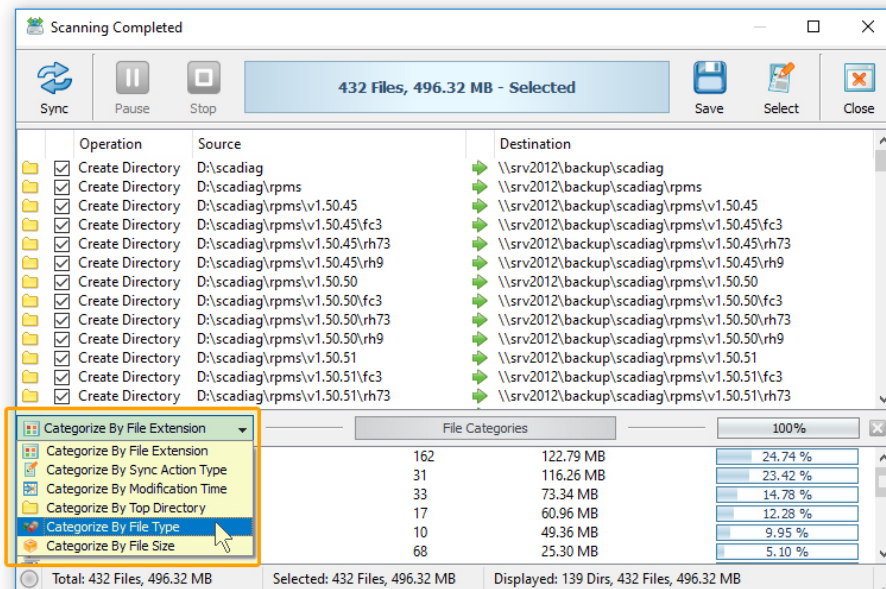


For each file synchronization action, the file sync preview dialog displays the type of the file sync action (create, update or delete), the source file or directory name and the destination file or directory name. In order to view detailed information for a file sync action, double-click on the required file sync action in the file sync actions view.

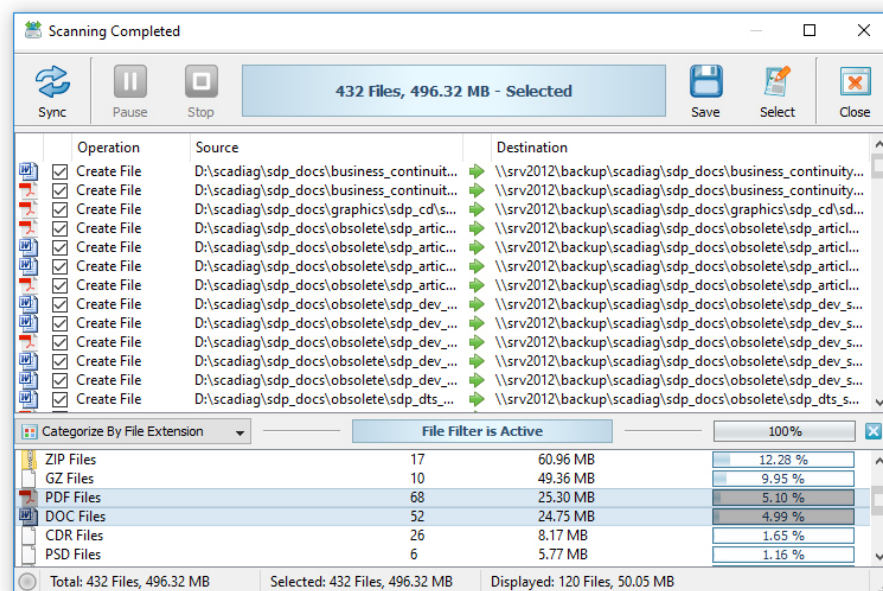


The file sync action properties dialog shows the source file name, the source file size, the last modification date of the source file, the destination file name, the destination file size and the last modification date of the destination file. In order to view a detailed properties dialog for the destination file, press the 'Destination' button and select the 'View Destination File Properties' menu item. In order to open the destination directory, press the 'Destination' button and select the 'Open Destination Directory' menu item.

In addition, the file synchronization preview dialog allows one to categorize and filter file synchronization actions by the file extension, file type, file size, sync action type and the last modification time. In order to change the current file categorization mode, click on the categorization mode combo box located on the left-center side of the preview dialog and select an appropriate categorization mode.



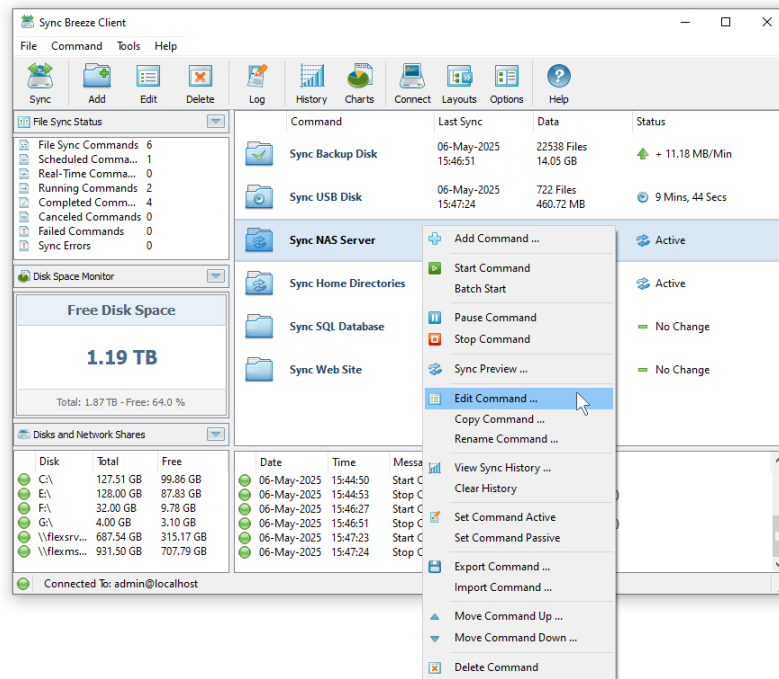
In order to filter file synchronization actions by one or more file categories, select the required file categories in the bottom view, press the right mouse button and select the 'Set Filters' menu item. When the file filter is active, all select/unselect operations are performed on filtered file sync actions allowing one to precisely selected which files to synchronize.



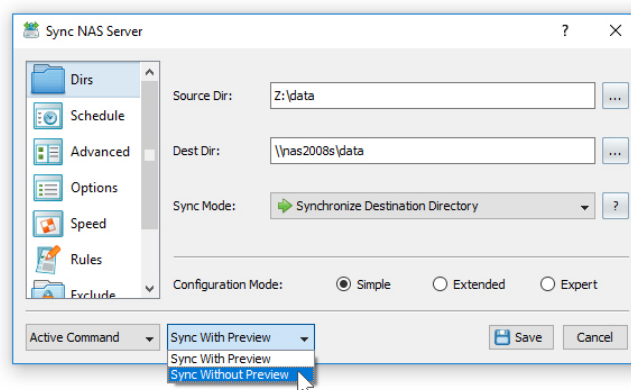
The bottom status bar shows the total number of files and the total amount of disk space in the scanned directories, the number of currently selected files and the amount of selected disk space and the number of files and the amount of disk space currently displayed in the file synchronization preview dialog, which may be affected by one or more active file filters. Once finished selecting files to be synchronized, press the 'Sync' button located in the top-left corner of the file synchronization preview dialog.

23 Synchronizing Files without Preview

File synchronization with a preview is very useful when the user needs to review a list of files that should be synchronized. On the other hand, file synchronization with a preview may be ineffective or completely inappropriate when there is a need to synchronize large file systems containing millions of files, especially due to the fact that no one will have the ability to manually review lists of file synchronization actions containing many thousands of items.



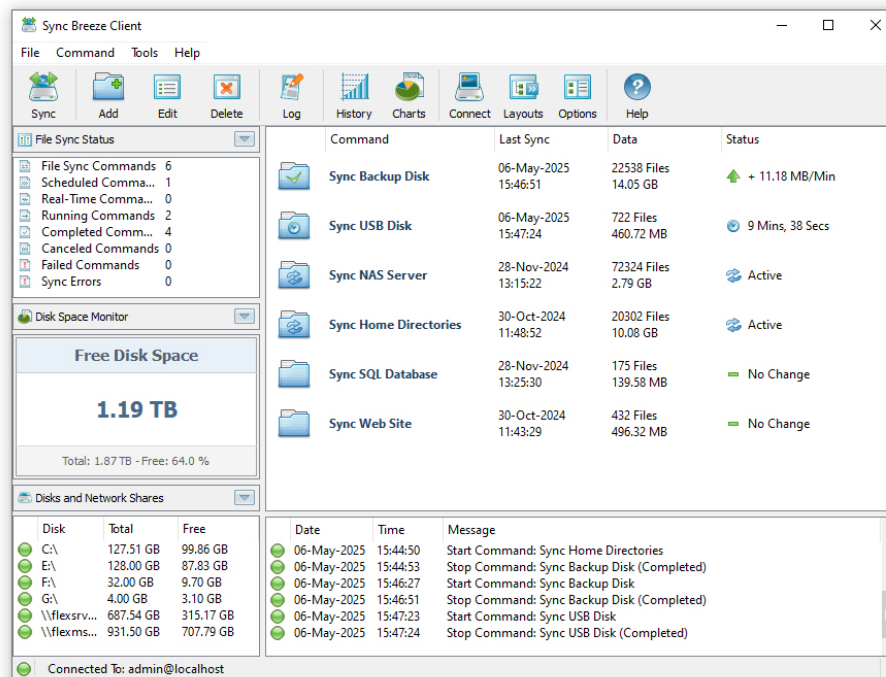
In addition to the preview file synchronization mode, SyncBreeze provides a stream file synchronization mode, which performs file synchronization actions on-the-fly without showing the file synchronization preview dialog. The stream file synchronization mode is especially designed for file systems containing huge amounts of files and is capable of synchronizing large directories, disks and NAS storage devices containing millions of files very fast and effectively. Finally, the stream file synchronization mode is ideal for automated, periodic and real-time file synchronization operations performed in the background without any user intervention.



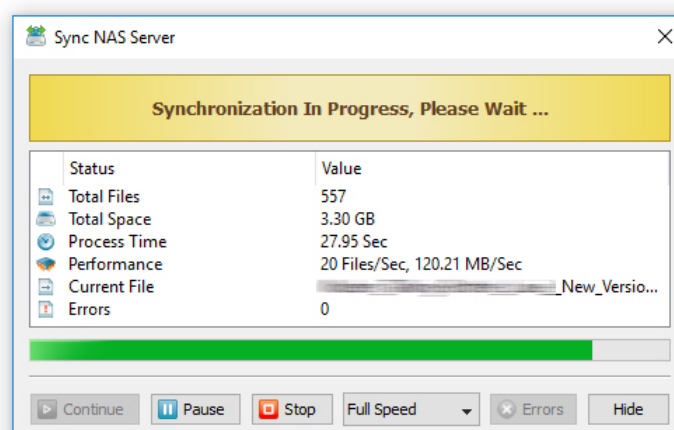
In order to configure a file synchronization command to perform file synchronization actions on-the-fly without showing the file synchronization preview dialog, select the file sync command in the SyncBreeze GUI application, press the right mouse button and select the 'Edit Command' menu item. Open the file synchronization command dialog and switch the file synchronization mode from 'Sync With Preview' to 'Sync Without Preview'.

24 Background File Synchronization

By default, when the user clicks on a sync command item, SyncBreeze starts the selected file synchronization command and executes it in the foreground. Another option provided by SyncBreeze Pro is to execute one or more file synchronization commands in the background. The main reason to execute sync commands in the background is to synchronize multiple disks or directories simultaneously thus reducing the total time required to synchronize multiple directories.



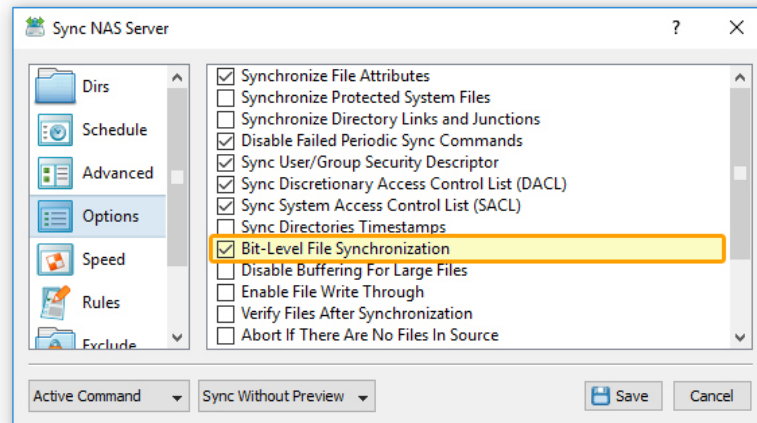
In order to synchronize multiple directories in the background, select all the required sync commands in the command list, press the right mouse button and select the 'Start Background Sync' menu item. SyncBreeze will start all the selected sync commands in the background and mark them as 'Active' in the status field. In order to open a synchronization process dialog for an active command, click on the command item in the commands view.



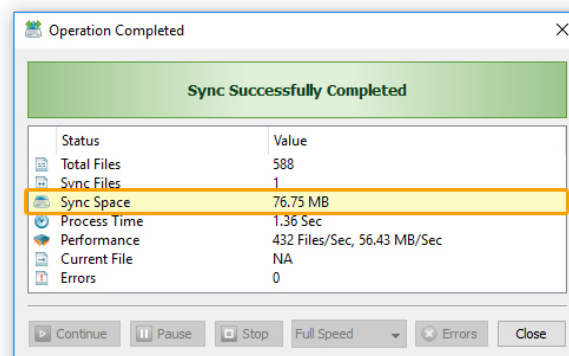
The process dialog allows one to pause, resume or stop any background file synchronization operation. In addition, the user is provided with the ability to dynamically control the speed of any file synchronization operation. In order to change the speed of a running file synchronization command, just set an appropriate performance mode in the 'Speed' combo box located on the file synchronization process dialog.

25 Bit-Level File Synchronization

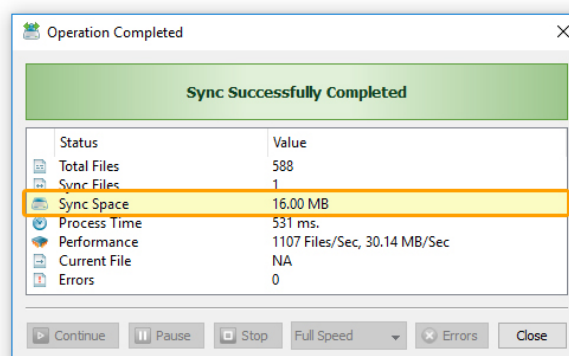
SyncBreeze Pro and SyncBreeze Server provide bit-level file synchronization capabilities allowing one to synchronize only changed file system clusters in each file thus minimizing the amount of disk write operations and extending the life of SSD disks.



In order to enable bit-level file synchronization for a file synchronization command, open the sync command dialog, select the 'Options' tab and enable the 'Bit-Level File Synchronization' option. When this option is enabled, for each changed file, SyncBreeze will update changed data blocks only.

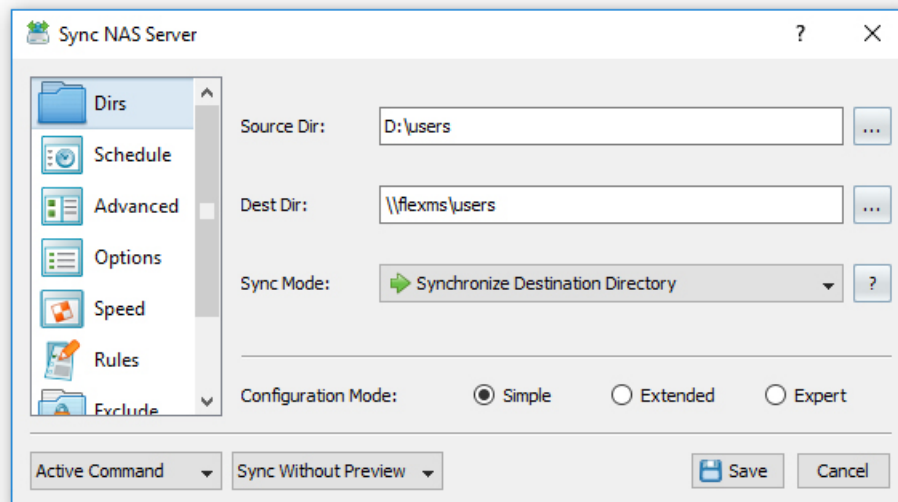


For example, let's assume we have a large 58MB Microsoft Word document file. When bit-level file synchronization is disabled, SyncBreeze will copy the whole file each time the file is modified. On the other hand, with the bit-level file synchronization option enabled, SyncBreeze will update changed data blocks only thus significantly reducing the amount of data written to the disk and extending the life span of SSD disks.

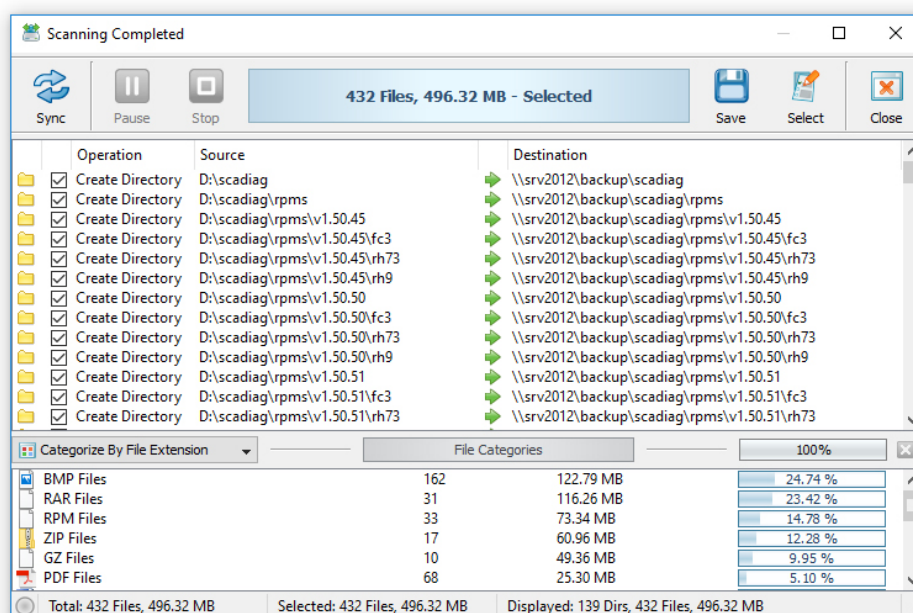


26 Synchronizing Network Shares

For users frequently working with multiple networked computers or NAS storage devices, SyncBreeze provides the ability to synchronize network shares using UNC path names. In order to specify the source and/or destination directory using UNC path names, open the command dialog, select the 'General' tab and enter the source and/or destination directories using the following format: **\\server-name\share-name\directory**



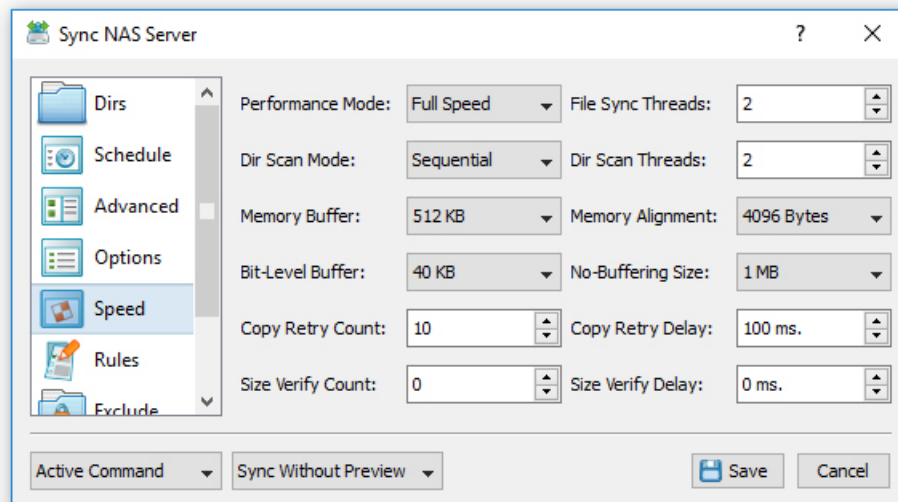
While working with UNC path names, please take into account that in order to be able to synchronize files on network shares and/or NAS storage devices, the user should have directory access and file write permissions for each specific network share and/or NAS storage device. If the user will not have directory access or file write permissions, the file synchronization operation will fail with one or more error messages reporting about access denied errors.



For sync operations configured to synchronize network shares, the file synchronization preview dialog will show file sync actions using the UNC network location allowing one to easily understand which files will be updated in each sync operation.

27 File Synchronization Performance Tuning Options

In order to increase the performance of file synchronization operations, SyncBreeze provides the ability to synchronize files using multiple, parallel file synchronization streams. Multi-Stream file synchronization significantly improves file synchronization performance when synchronizing large amounts of files between multiple disks, NAS storage devices or enterprise storage systems.



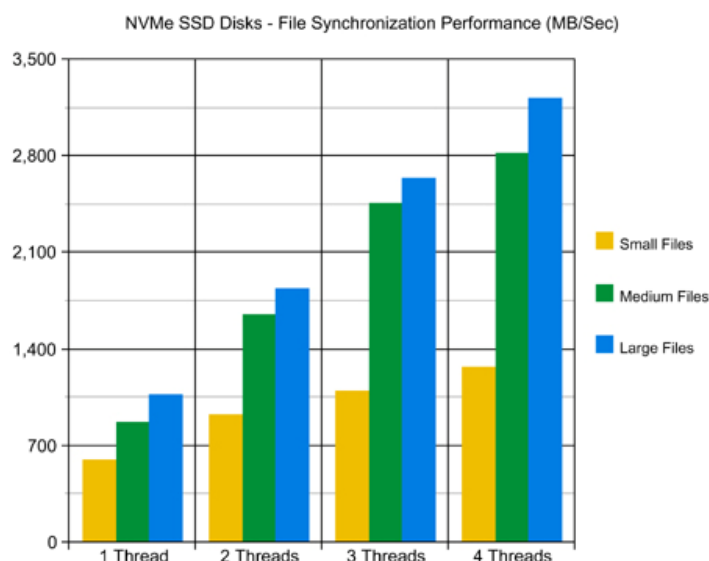
In order to enable multi-stream file synchronization for a sync command, open the file sync command dialog, select the 'Speed' tab and set an appropriate number of file synchronization threads. Take into account that multi-stream file synchronization is optimized for SSD disks, multi-disk, RAID and networked configurations and it is not recommended to use when the source and destination directories are located on the same mechanical hard disk.

- Performance Mode - allows one to intentionally slow down file sync operations
- File Sync Threads - sets the number of parallel file sync streams
- Dir Scan Mode - sets the 'Sequential' or 'Parallel' directory scanning mode
- Dir Scan Threads - sets the number of parallel directory scanning streams
- Memory Buffer - controls the size of the memory buffer for each sync stream
- Memory Alignment - controls the alignment of the memory buffer
- Bit-Level Buffer - controls the bit-level file sync window size
- No-Buffering Size - sets the file size threshold for no-buffering operations
- Copy Retry Count - sets the maximum number of file copy retries
- Copy Retry Delay - sets the delay between file copy retries

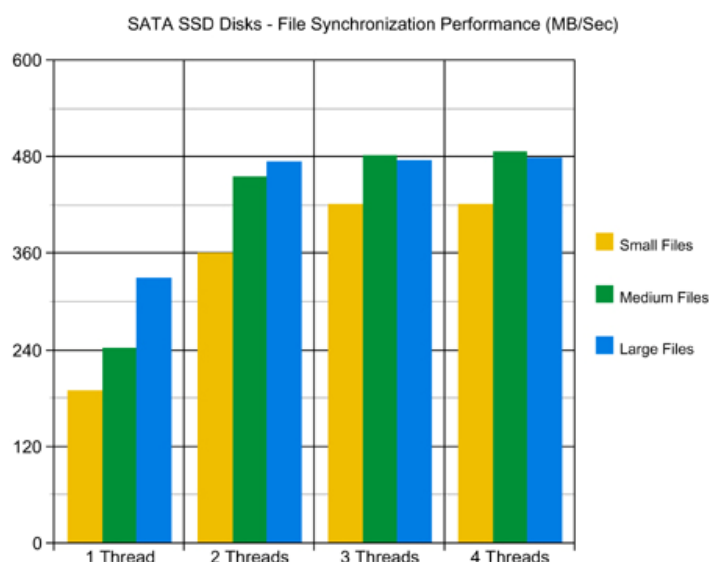
In addition, users required to synchronize files on running, production systems are provided with the ability to intentionally slow down file synchronization operations thus minimizing the performance impact on running applications. In order to change the speed of a file synchronization command, open the command dialog, select the 'Speed' tab and select an appropriate performance mode in the 'Performance Mode' combo box.

Finally, SyncBreeze provides a large number of file copy performance tuning options allowing one to control the file copy mode, the memory buffer size, memory alignment, the bit-level sync window size, the no-buffering file size threshold, the file copy retry count and the file copy retry delay.

For example, when synchronizing large files stored on fast NVMe SSD disks, the performance of the file synchronization operations reaches up to 1,068 MB/sec with a single file synchronization stream, increases up to 1,840 MB/sec with two parallel file synchronization streams and scales up to 3,220 MB/sec with four parallel streams allowing one to synchronize huge amounts of data very fast.

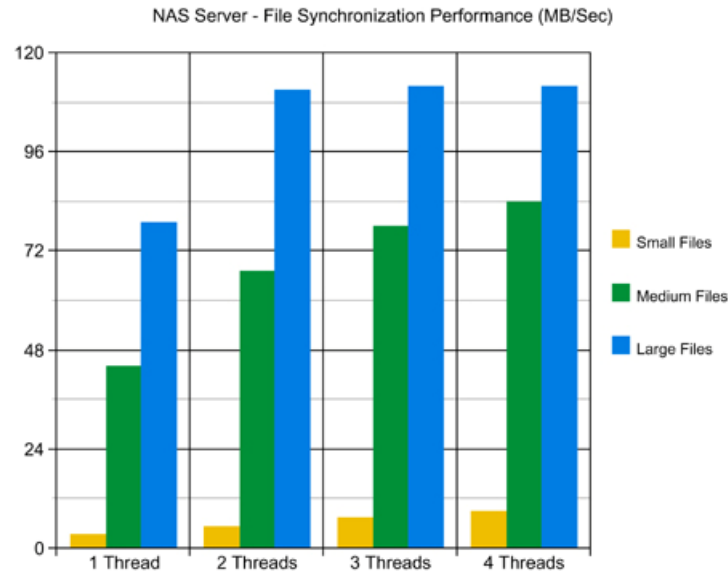


When synchronizing medium-sized files stored on fast NVMe SSD disks, the performance of the file synchronization operations reaches up to 873 MB/sec with a single file synchronization stream, increases up to 1,650 MB/sec with two parallel file synchronization streams and scales up to 2,816 MB/sec still showing a very good level of the performance scalability. Usually, processing large numbers of small files incurs significant performance degradations, but in the case of NVMe SSD disks, synchronizing small files still results in a very high performance level reaching up to 598 MB/sec with a single file synchronization stream, increasing up to 927 with two parallel file synchronization streams and scaling up to 1,273 MB/sec with four parallel file synchronization streams.

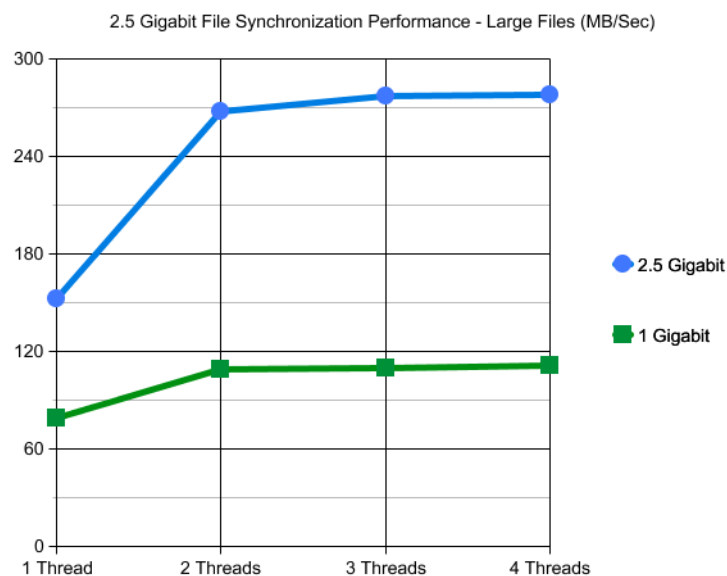


Regular SATA SSD drives are significantly slower than NVMe SSD drives, but still deliver a very respectable performance level. For example, when synchronizing large files stored on regular SATA SSD drives, the performance of the file synchronization operations reaches up to 330 MB/Sec with a single file synchronization stream and scales up to 480 MB/sec when synchronizing large files with 4 parallel file synchronization streams.

Synchronizing files stored on NAS storage devices via a network is more complicated because the user needs to take into account the speed and the latency of the network. If the computer, on which SyncBreeze is installed, is connected to the NAS storage device via a high-speed, low-latency network, the performance of the file synchronization operations may reach up to 79 MB/sec with a single file synchronization stream and scale up to 112 MB/sec with four parallel file synchronization streams.

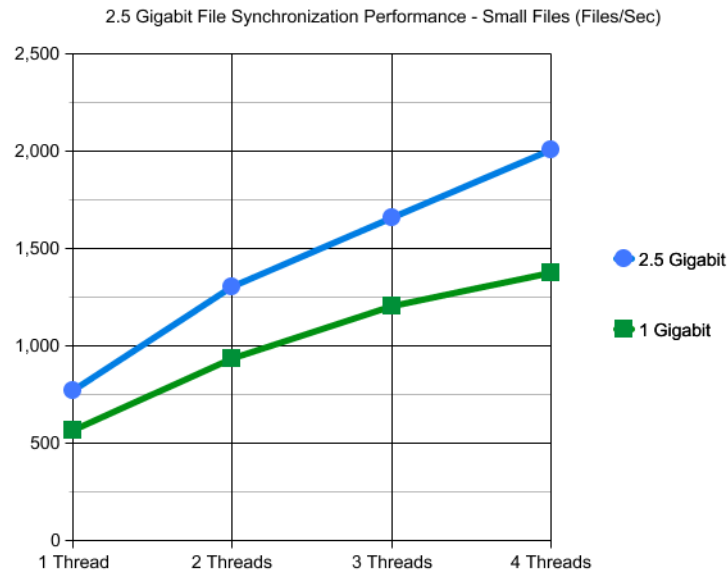


On the other hand, if SyncBreeze will need to access network shares via the Internet or via a long-distance, high-latency network, the performance of the file synchronization operations will be relatively slow. One of the options to increase the performance of the file sync operations in such configurations is to set the 'Parallel' directory scanning mode and increase the number of parallel file synchronization streams to 8 or even 16 disregarding how many CPUs are actually installed on the computer.

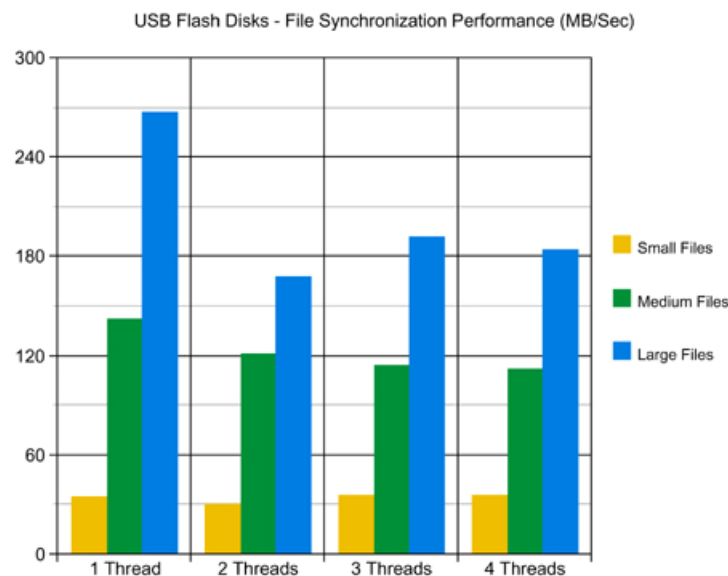


When synchronizing large files via the 2.5 Gigabit Ethernet, SyncBreeze reaches up to 152 MB/Sec with a single file synchronization thread and scales up to 278 MB/Sec with 4 parallel file synchronization threads, which is close to the theoretical maximum of the 2.5 Gigabit Ethernet.

If the user needs to synchronize a large number of small files, the 2.5 Gigabit Ethernet also provides very significant improvements over the regular Gigabit Ethernet network. With a single file synchronization thread, SyncBreeze reaches up to 772 Files/Sec and scales up to 2007 Files/Sec, which is a very significant 68% improvement compared to the regular Gigabit Ethernet.



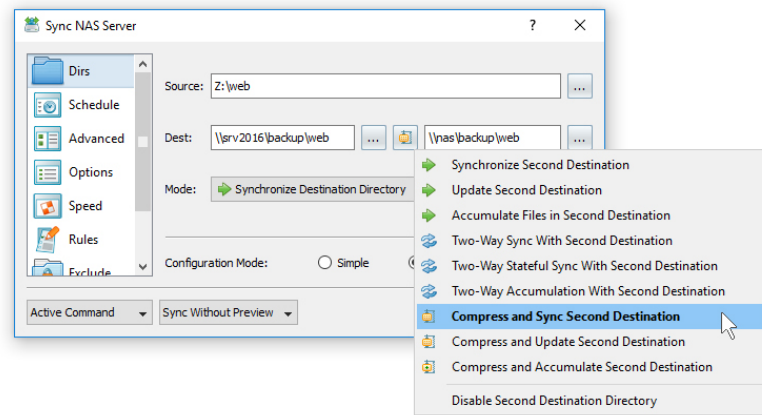
Modern USB flash drives provide plenty of the storage space and are reasonably fast allowing one to store vast amounts of data for backup purposes. When synchronizing large files stored on a high-speed USB flash drive, SyncBreeze can reach up to 267 MB/sec with a single file synchronization stream.



But, with two parallel file synchronization streams, the performance of the file synchronization operations degrades to 170 MB/sec and remains slightly degraded with more parallel file synchronization streams showing that USB flash drives are significantly less scalable than NVMe and SATA SSD drives.

28 Synchronizing Tertiary Destination Directories

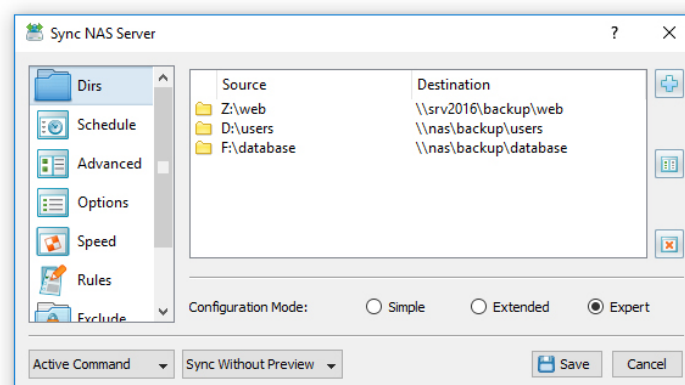
Sometimes, when backing up very important information, it may be required to synchronize a single source directory with two destination directories, potentially located on different physical disks, servers or NAS storage devices. Making a third copy of important files significantly reduces the risk of losing the important information in the case that one of the backup copies will be destroyed by a catastrophic hardware failure.



SyncBreeze Pro and SyncBreeze Server allow one to define a tertiary destination directory for any file synchronization command. In order to configure a tertiary destination directory, open the file sync command dialog, select the 'General' tab, select the 'Extended' configuration mode and specify a tertiary destination directory. During runtime, SyncBreeze will first synchronize the source directory with the first destination directory and after that with the tertiary destination directory.

29 Synchronizing Multiple Directory Pairs

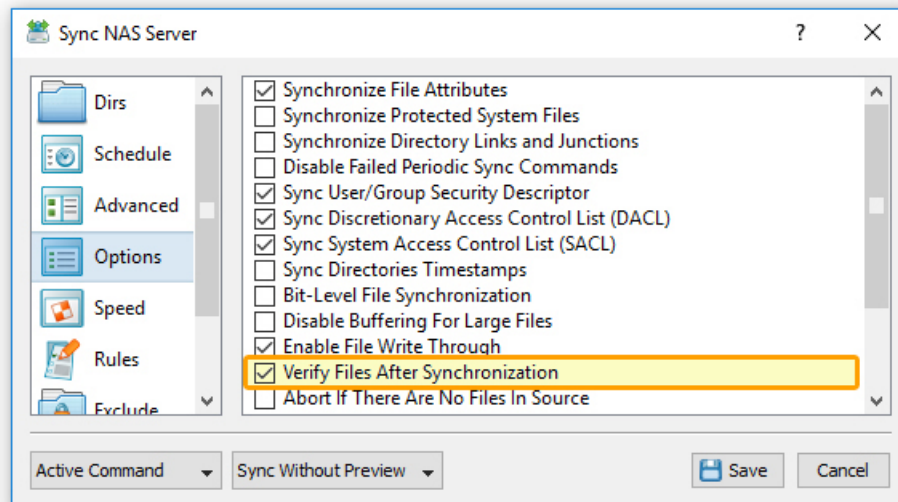
One of the most powerful features provided by SyncBreeze Pro and SyncBreeze Server is the ability to synchronize multiple directory pairs in a single file synchronization command. In order to specify multiple directories for a file synchronization command, open the command dialog, select the 'General' tab, select the 'Expert' configuration mode and add all the required directory pairs.



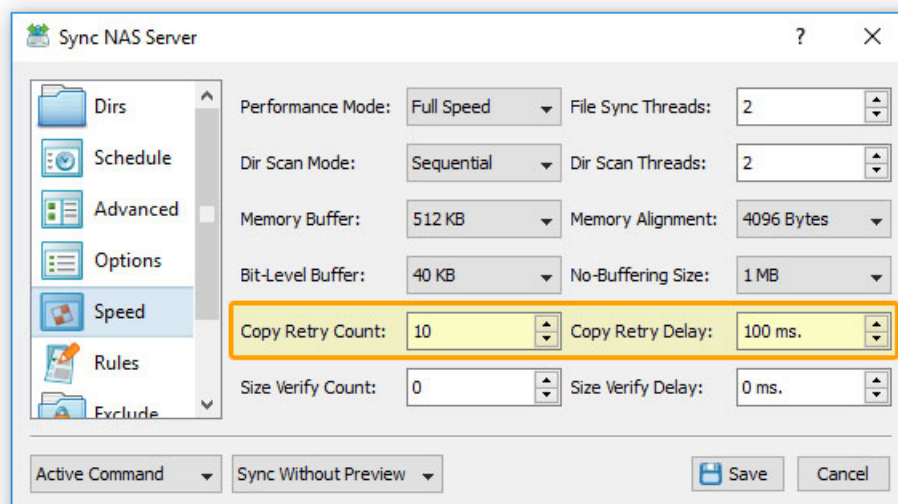
For each directory pair, the user is provided with the ability to specify a source directory, a destination directory, an optional tertiary destination directory and the file synchronization mode that should be used for this specific directory pair. During runtime, SyncBreeze will synchronize all directory pair sequentially, one after one, in the same order as the directory pairs are specified in the sync command dialog. In order to change the order of the specified directory pairs, select a directory pair item, press the right mouse button and select the 'Move Up' or 'Move Down' menu item.

30 Recoverable File Synchronization Operations

SyncBreeze provides recoverable file synchronization capabilities allowing one to retry failed file copy operations. In order to enable recoverable file synchronization operations, open the sync command dialog, select the 'Options' tab and enable the 'Verify Files After Synchronization' option.



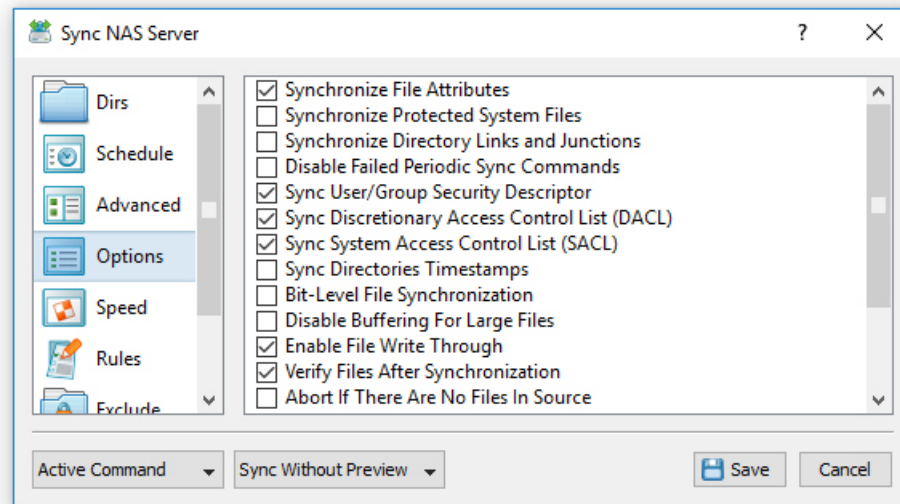
With this option enabled, SyncBreeze will calculate the SHA256 file signature for each source file, reread each destination file after copy and compare the source and destination files signatures. Now, select the 'Advanced' tab, press the performance 'Options' button and enter an appropriate number of file copy retries and a retry delay (in milliseconds).



When a file copy operation will fail due to a disk I/O error, network error or the source and destination SHA256 file signatures will not match, SyncBreeze will retry the file copy operation the specified number of times while adding the specified delay before each retry.

31 Advanced File Synchronization Options

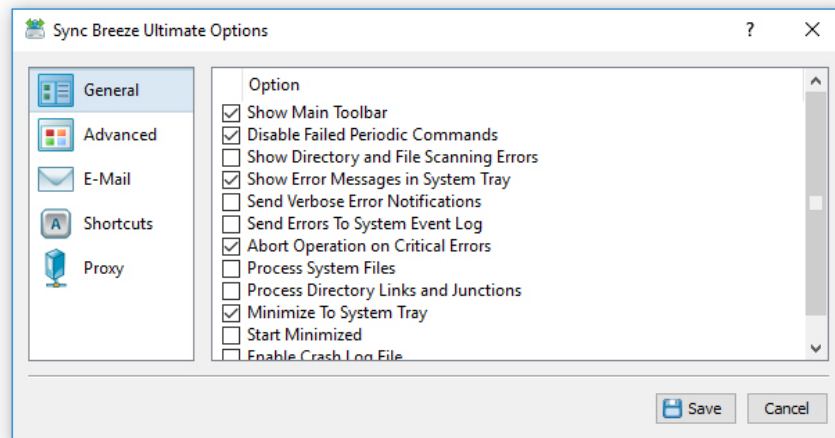
The file synchronization options tab provides the user with the ability to control the following advanced file synchronization options:



- **Synchronize File Attributes** - this option enables synchronization of file attributes.
- **Synchronize Protected System Files** - this option enables synchronization of protected system files and directories.
- **Synchronize Directory Links and Junctions** - this option enables synchronization of directory links and directory junctions.
- **Disable Failed Periodic Sync Commands** - this option provides the ability to automatically disable failed periodic file synchronization commands, which cannot be started due to network connectivity problems.
- **Sync User/Group Security Descriptor** - this option enables synchronization of files' ownership information.
- **Sync Discretionary Access Control List (DACL)** - this option enables synchronization of files' DACL access control lists.
- **Sync System Access Control List (SACL)** - this option enables synchronization of files' SACL access control lists.
- **Sync Directories Timestamps** - this option enables synchronization of directories timestamps.
- **Bit-Level File Synchronization** - this option enables bit-level file synchronization for the file sync command, which updates only changed data blocks for each copied file.
- **Disable Buffering For Large Files** - this option disables disk I/O buffering for large files when synchronizing files on a modern operating system such as Windows Server 2012 or newer.
- **Enable File Write Through** - this option RDMA network transfers when synchronizing files on a modern operating system such as Windows Server 2012 or newer.
- **Verify Files After Synchronization** - this option enables verification of each synchronized file.
- **Abort If There are No Files in Source** - this protection option is intended to prevent accidental deletion of files from the destination directory when the source directory is reported empty due to a network connectivity problem.
- **Abort If There are No Files in Destination** - this protection option is intended to prevent accidental deletion of files from the source directory when the destination directory is reported empty due to a network connectivity problem.

32 SyncBreeze Options Dialog

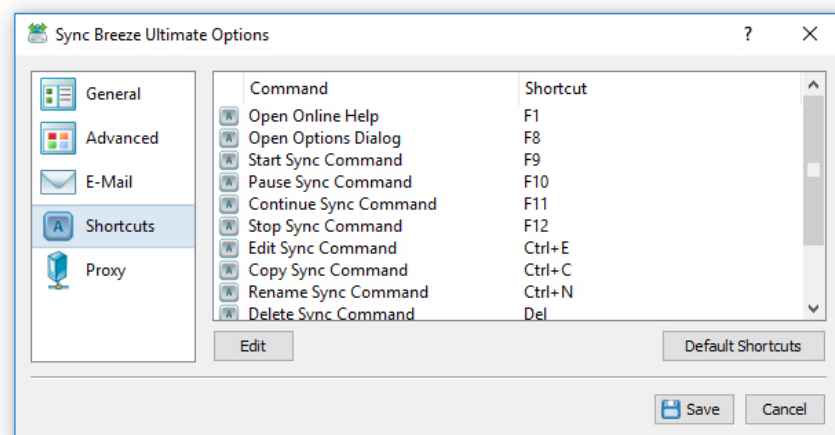
Select the 'Tools - Advanced Options' menu item to open the options dialog.



The 'General' tab allows one to control the following options:

- **Show Main Toolbar** - Enables/Disables the main toolbar
- **Automatically Check For Product Updates** - select this option to instruct SyncBreeze to automatically check for available product updates.
- **Show Scanning Access Denied Errors** - select this option to see error messages when SyncBreeze is prevented to scan files in a directory
- **Process System Files** - select this option to synchronize system files.
- **Abort Operation On Critical Errors** - by default SyncBreeze is trying to process as many files as possible logging non-fatal errors in a process log. Select this option to instruct SyncBreeze to abort operation when encountering a critical error.

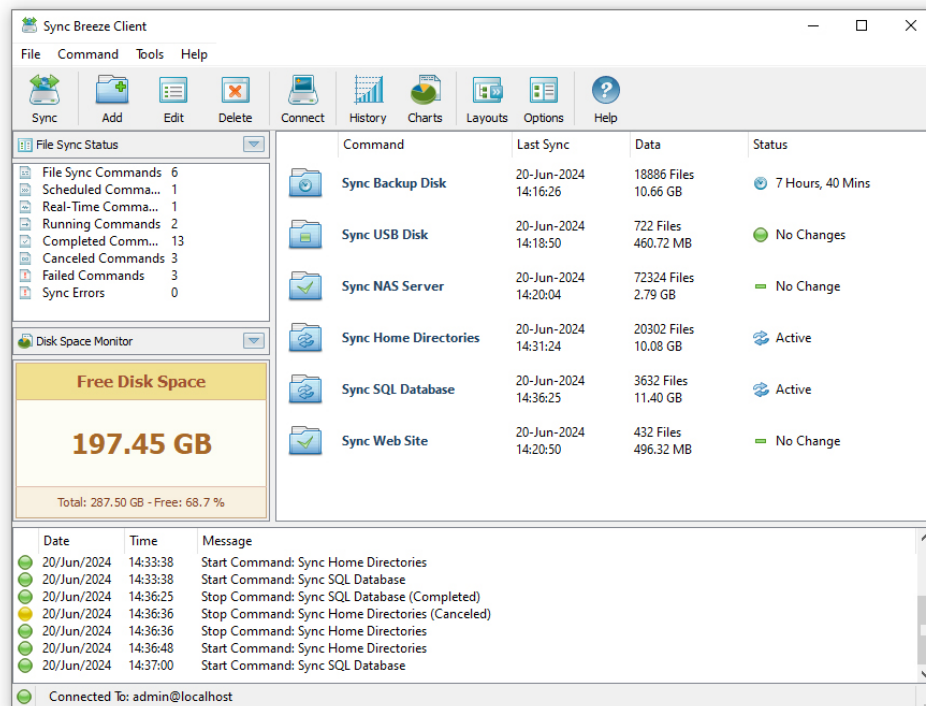
The 'Shortcuts' tab provides the user with the ability to customize keyboard shortcuts. Click on a shortcut item to edit the currently assigned key sequence. Press the 'Default Shortcuts' button to reset all keyboard shortcuts to default values.



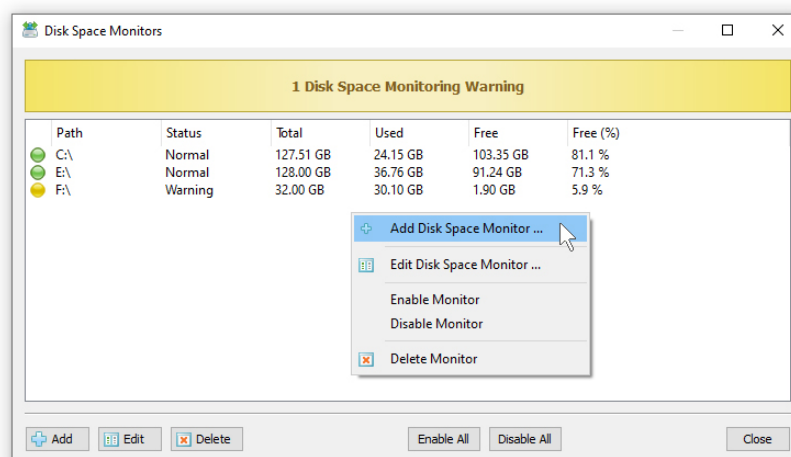
The 'Proxy' tab provides the user with the ability to configure the HTTP proxy settings. SyncBreeze uses the HTTP protocol in order to inquire whether there is a new product version available on the web site. By default, SyncBreeze detects proxy settings and connects to the Internet directly or through an HTTP proxy depending on the configuration of the host computer. Depending on a specific host and network configuration, the user is provided with the ability to connect to the Internet directly, through automatic HTTP proxy discovery or manually by entering the HTTP proxy server name and port.

33 Using Built-In Disk Space Monitor

SyncBreeze Server and SyncBreeze Enterprise include a built-in disk space monitor allowing one to monitor the free disk space in a number of disks, directories or network shares and provide the ability to send E-Mail notifications when the amount of the free disk space drops below a user-specified limit.

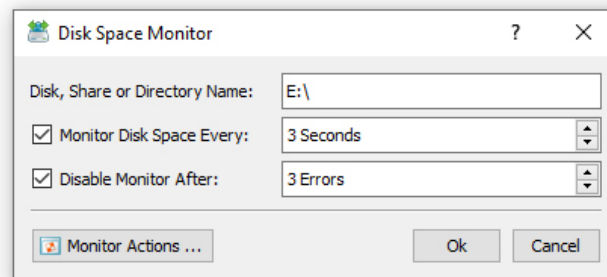


The disk space monitor can be displayed in any of the left-side tool panes of the SyncBreeze client GUI application. By default, the disk space monitor shows the status of all local disks in the server. In order to open the disk space monitors dialog, double click on the disk space monitor tool pane. For each disk, the disk space monitors dialog shows the disk name, the total amount of the disk space, the amount of the free disk space and the disk status according to the configuration of the disk space monitor.

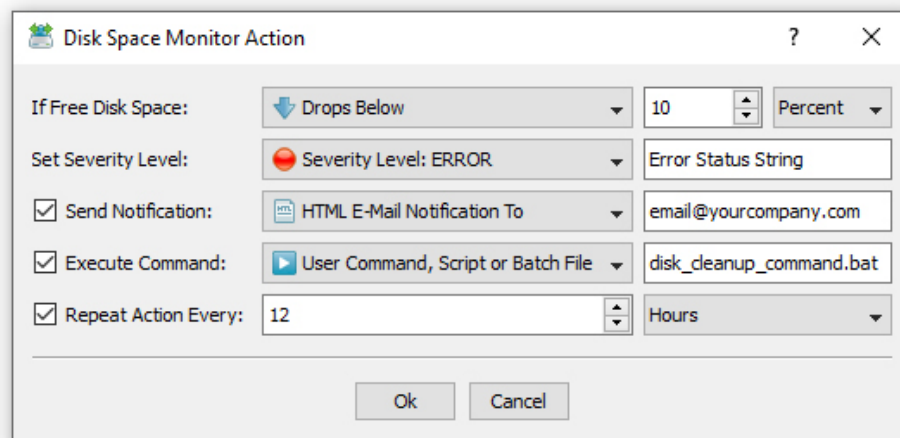


In order to add an additional disk or network share to the disk space monitor, press the right mouse button over the disk space monitors dialog, specify the name of a disk, directory or network share to monitor and press the 'Ok' button. In order to change the configuration of a previously created disk space monitor, select the required disk item in the disk space monitor pane, press the right mouse button and select the 'Edit Monitor' menu item.

For each monitored disk, the disk space monitor allows one to control the disk space monitoring frequency, the maximum number of monitoring errors and disk space monitoring actions and/or E-Mail notifications. Sometimes, when monitoring the disk space usage in remote servers or NAS storage devices via the network, a network server or NAS storage device may be temporary offline due to unexpected connectivity or hardware problems. In this case, the disk space monitor will mark such a disconnected device as 'Offline' and continue to monitor the server according to the user-specified maximum number of errors. On the other hand, if a network server or NAS device was permanently disconnected from the network, the disk space monitor will disable monitoring of the disconnected server after the user-specified number of monitoring errors.



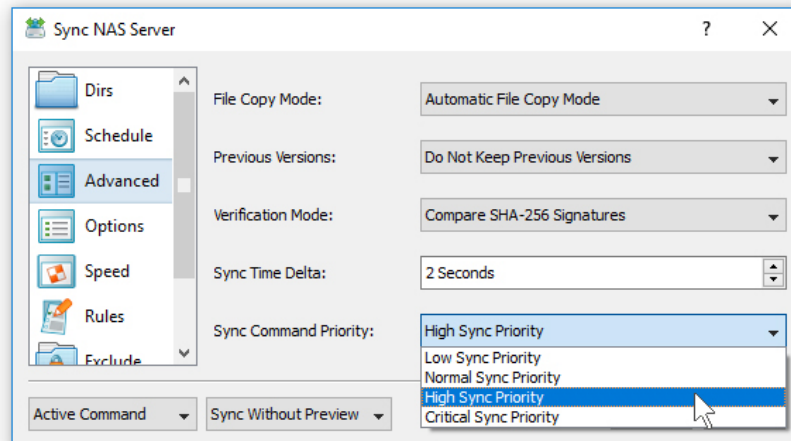
In order to automatically send an E-Mail notification and/or execute a custom action when the amount of the free disk space drops below a user-specified limit, the user needs to configure one or more disk space monitoring actions. Open the disk space monitor dialog, press the 'Monitor Actions' button, specify the minimum amount of the free disk space to trigger the action, select the 'Send Notification' option, select an appropriate notification format and specify an E-Mail address to send the notification to. In addition, in order to enable E-Mail notifications, the user needs to open the main options dialog, select the 'E-Mail' tab and configure an E-Mail server to use to send E-Mail notifications.



In addition to E-Mail notifications, the user is provided with the ability to automatically execute a custom command, script or batch file to delete unused or old files to free up the disk space. In order to enable an automatic disk clean-up command, select the 'Execute Command' option, set the command mode to 'User Command, Script or Batch File' and specify the name of the command or batch file to be executed.

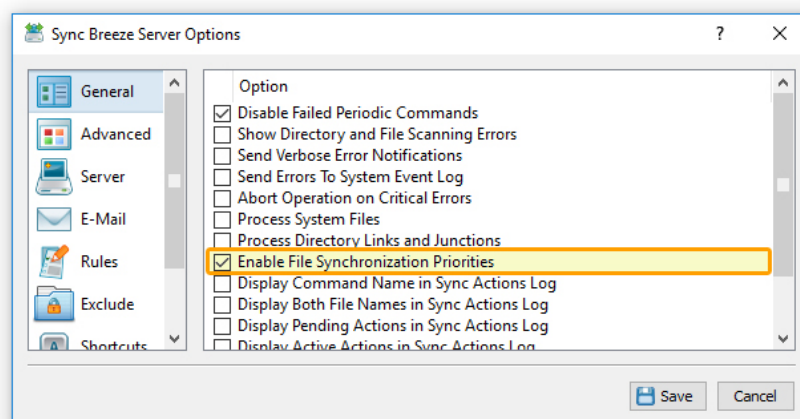
34 File Synchronization Commands Priorities

SyncBreeze Enterprise provides the ability to set a priority for each file synchronization command allowing one to dynamically slow down or pause low priority file synchronization operations when a high priority sync command should be performed. In order to assign a priority to a file synchronization command, open the command options dialog, select the 'Advanced' tab, select an appropriate file sync priority and press the 'Save' button.



Each file synchronization command may be assigned one of the following file sync priorities:

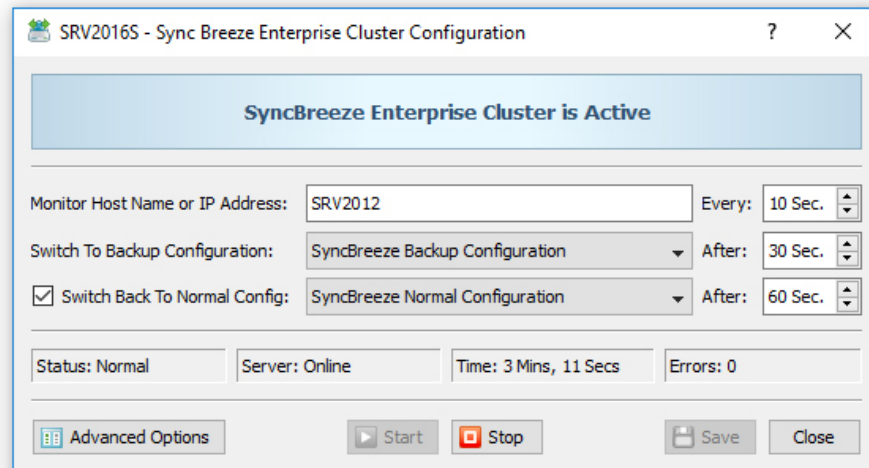
- **Low Sync Priority** - low priority file synchronization commands are dynamically paused when one or more higher priority file sync commands are running and automatically resumed after higher priority sync commands completed.
- **Normal Sync Priority** - normal priority file synchronization commands are dynamically slowed down when one or more high-priority commands are running and automatically restored to the default speed after high priority sync commands completed. In addition, a normal priority sync command will dynamically pause all low priority file sync commands.
- **High Sync Priority** - a high priority file sync command will dynamically pause all low priority file sync commands. In addition, a high priority sync command will dynamically slow down all normal priority sync commands.
- **Critical Sync Priority** - a critical priority file sync command will dynamically pause all other sync commands and automatically resume all paused sync commands after the critical priority file sync command completed.



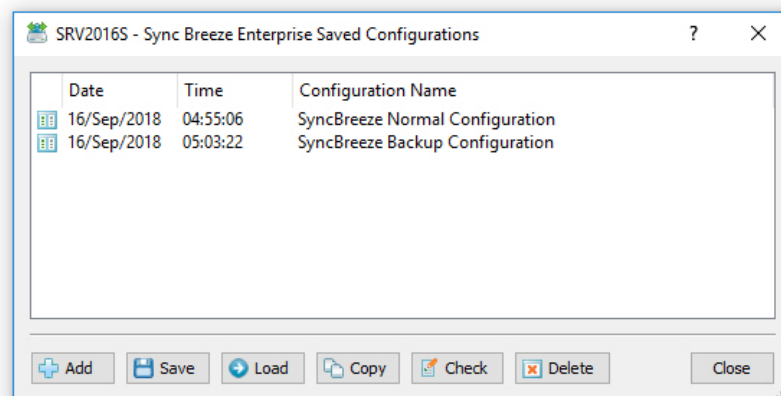
By default, dynamic sync priorities are disabled and in order to enable these capabilities, the user needs to open the main 'Options' dialog, select the 'General' tab and select the 'Enable File Synchronization Priorities' option.

35 SyncBreeze Enterprise Clustered Configurations

SyncBreeze Enterprise allows one to setup active-active and active-passive, fault-tolerant clustered configurations. The user is provided with the ability to monitor a file synchronization server via the network and automatically activate a backup file synchronization server when the primary server goes offline. In order to be able to setup a clustered configuration, the user needs to install SyncBreeze Enterprise on at least two servers.

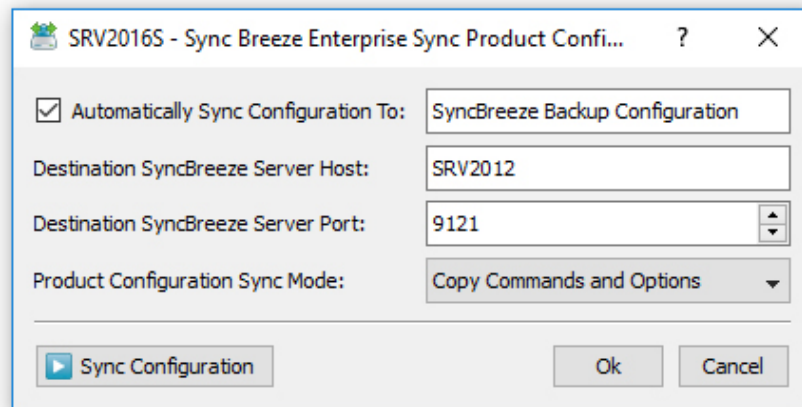


Let's assume that we have a primary server synchronizing files between two network shares and we need to configure a backup server to automatically start synchronizing the same pair of network shares when the primary server will go offline. In the simplest case, the user needs to save two pre-defined configurations on the backup server with the first one representing the normal operation mode and the second one representing the backup operation mode, which should be activated when the primary server will go offline. Now, the user needs to open the SyncBreeze cluster configuration dialog on the backup server and specify the host name or an IP address of the primary server to monitor, the name of the backup configuration to use when the primary server goes offline and the normal configuration, which should be activated when the primary server goes back online.

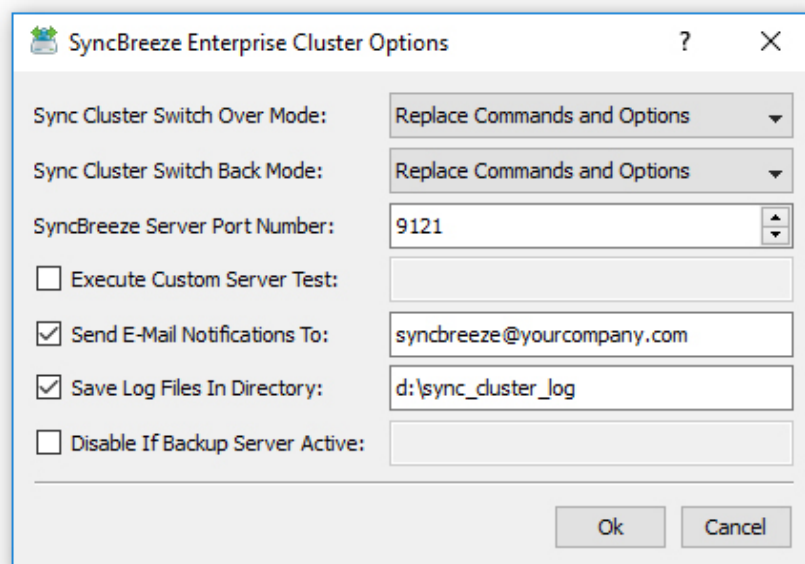


The normal and the backup configurations may contain any number of file synchronization commands synchronizing any number of disks, directories or network shares. In order to create the normal configuration, setup all the required file synchronization commands, open the configurations management dialog, press the 'Add' button and specify a unique configuration name. The current SyncBreeze configuration will be saved with the specified name and it will be possible to use the saved configuration on the SyncBreeze cluster configuration dialog. In the same way, create the backup configuration and save it with a different configuration name. Now, open the SyncBreeze cluster configuration dialog, enter the name of the primary server to monitor and select the backup and normal configurations.

In order to setup an active-passive configuration, the backup server may be configured to use an empty configuration (without any file synchronization commands) as the normal configuration and automatically switch to the backup configuration with file synchronization commands when the primary server goes offline. In order to continuously keep an up-to-date configuration of the primary server on the backup server, SyncBreeze Enterprise provides the ability to automatically sync the configuration of the primary server (including all file synchronization commands) on the backup server as a saved product configuration.



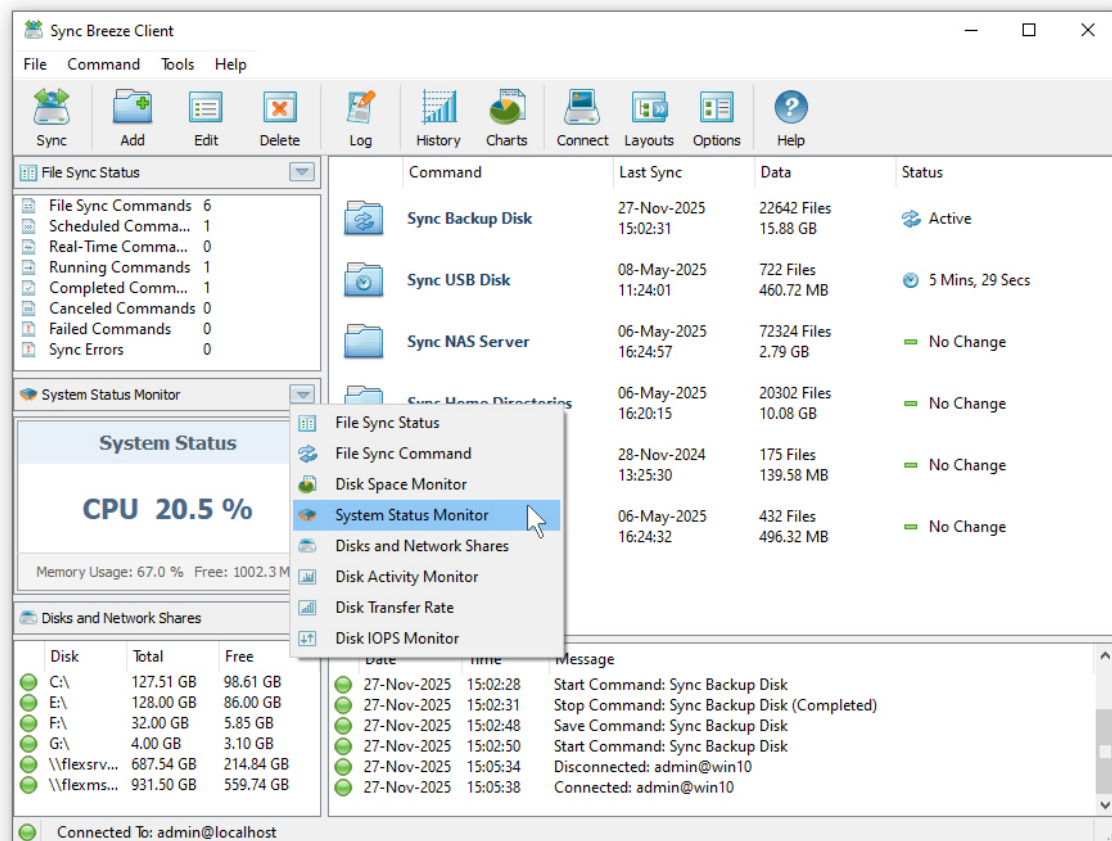
In order to enable automatic synchronization of the configuration of the primary server with a saved configuration on the backup server, connect to the primary server using the SyncBreeze client GUI application, select the menu 'Tools - Sync Configuration', enable automatic synchronization of the product configuration, specify the name of the saved configuration on the backup server and enter the host name or an IP address of the backup server. The configuration of the primary server will be continuously synchronized to the backup server and when the primary server will go offline, the backup server will automatically activate the latest configuration saved on the backup server.



In addition, SyncBreeze Enterprise provides a large number of advanced options allowing one to control the primary server monitoring frequency, the switch-over timeout and the switch-back timeout. Also, the user is provided with the ability to send E-Mail notifications when the primary server goes offline and save SyncBreeze cluster log files in a user-specified directory. In order to access the advanced clustering options, press the 'Advanced Options' button located on the SyncBreeze cluster configuration dialog.

36 Customizing SyncBreeze Server GUI Application

The SyncBreeze Server GUI application includes a side-bar allowing one to select different types of status views and customize the GUI application. The user is provided with the file synchronization status view, the current file synchronization command view, the system status monitor view, the disk space monitor status view, the list of local disks and mounted network shares, the disk activity monitor view, the disk transfer rate view and the disk IOPS view. In order to select a different status view, click the status menu button located in the top-right corner and select a required status view type.



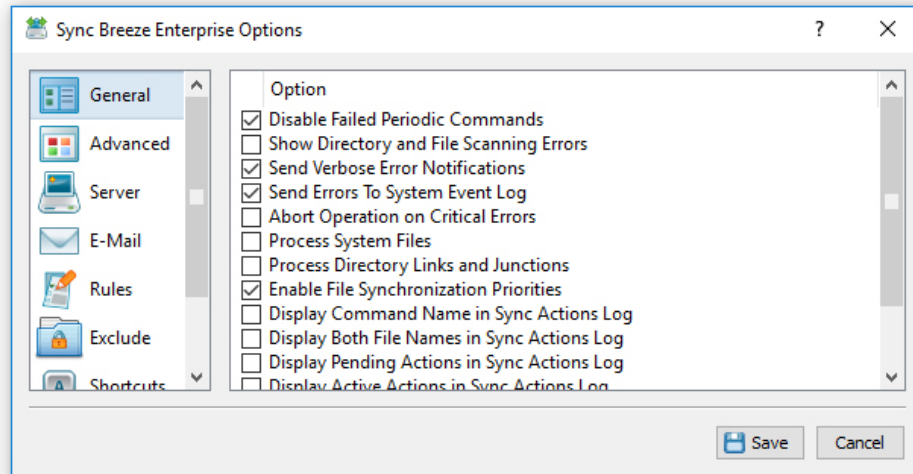
The file synchronization status view displays the number of configured file synchronization commands, the number of scheduled file synchronization commands, the number real-time file synchronization commands, the number of currently active file synchronization commands, the number of completed file synchronization commands, the number of canceled sync commands and the number of failed file synchronization commands.

The current file synchronization command view, shows the command name, the last synchronization date and time, the total number of files, the total amount of disk space, the number of files synchronized during the last file synchronization operation, the amount of disk space synchronized during the last file synchronization operation, the free disk in the destination directory, the number of file synchronization errors, the file synchronization process time, the source directory, the destination directory, the file synchronization mode and the performance mode.

The system monitor status view displays the current CPU usage, memory usage and the amount of the free system memory. The disk space monitor status view displays the amount of the free disk space in all disks installed in the computer or a specific disk selected by the user. In addition, the status bar of the disk space monitor shows the total disk space, the used disk space and the percentage of the free disk space. When the amount of the free disk space changes, the disk space monitor displays a disk space change notification showing the amount of the changed disk space. In order to set a specific disk drive to be displayed, click the right mouse button over the disk space monitor and select the required disk.

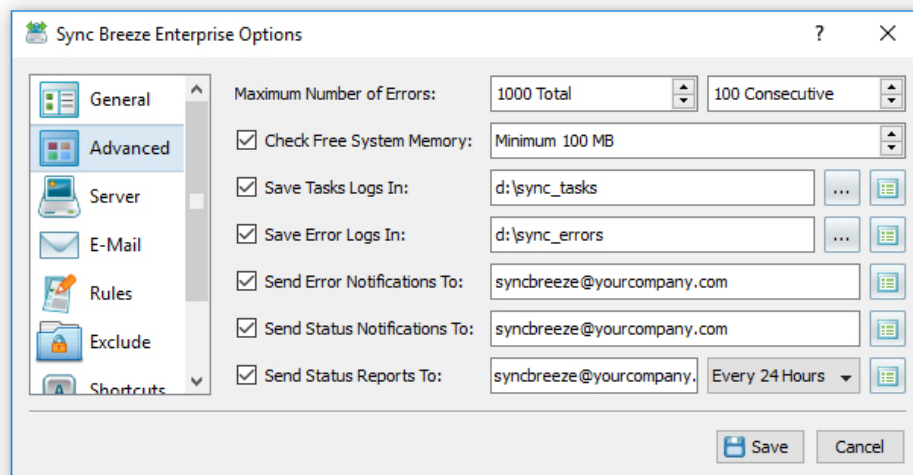
37 Configuring SyncBreeze Server

SyncBreeze Server provides a variety of configuration options allowing one to easily integrate the product into a user-specific network environment. In order to open the main options dialog, press the 'Options' button located on the main toolbar.



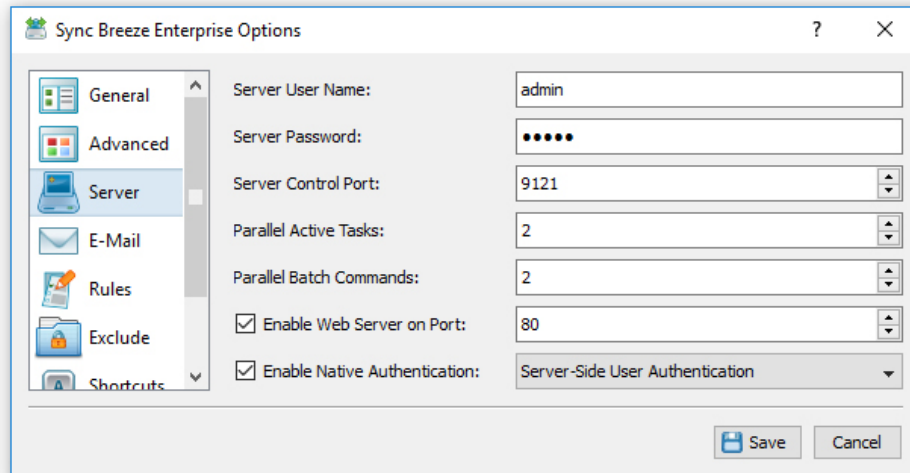
38 Configuring Advanced Server Options

SyncBreeze Server provides a large number of advanced server configuration options allowing one to control the maximum total number of errors per sync command, the maximum number of consecutive errors per sync command, the number of history tasks per sync command, the file copy verification mode, the sync tasks logs directory, the error logs directory, etc.



39 Configuring Server Ports, Custom User Name and Password

Normally, the SyncBreeze client GUI application, connects to the SyncBreeze Server using the default user name and password, which is set to **admin/admin**. In addition, SyncBreeze Server provides the ability to set a custom user name and/or password for the SyncBreeze client GUI application, the web-based management interface and the command line utility. In order to set a custom user name and password, open the main options dialog, select the 'Server' tab, enter a new user name and password and press the 'Save' button.



By default, SyncBreeze Server uses the TCP/IP port 9121 as the server control port and the TCP/IP port 80 as the web-management interface port. Sometimes, these ports may be in use by some other software products or system services. If one or both of these ports are in use, SyncBreeze Server will be unable to operate properly and the user needs to change the SyncBreeze server control port and/or web access port.

In order to set a custom server control port and/or web access port, open the main options dialog, select the 'Server' tab and enter a custom server control port or web-access port to use. If the SyncBreeze server should be controlled through the network, make sure the server control port and the web access port are open in the server's firewall.

40 SyncBreeze Server Command Line Utility

The SyncBreeze command line utility available in SyncBreeze Pro and SyncBreeze Server installations may be used to control the SyncBreeze server locally or remotely through the network. The command line utility allows one to automate configuration, control and management of one or more SyncBreeze Servers.

SyncBreeze command line utility server commands:

syncbreeze -server_status

Shows the Sync Breeze server status.

syncbreeze -server_show_commands

Shows file synchronization commands defined in the Sync Breeze Server configuration.

syncbreeze -server_add_command <Command Name> -source <Dir> -dest <Dir>

Adds a new file synchronization command.

syncbreeze -server_delete_command <Command Name>

Deletes the specified file synchronization command.

syncbreeze -server_execute_command <Sync Command>

Synchronously executes the specified file synchronization command on the SyncBreeze server.

syncbreeze -server_start_command <Sync Command>

Asynchronously starts the specified file synchronization command on the SyncBreeze server.

syncbreeze -server_pause_command <Sync Command>

Pauses the specified file synchronization command.

syncbreeze -server_stop_command <Sync Command>

Stops the specified file synchronization command

syncbreeze -server_start_all_commands

Starts all configured file synchronization commands.

syncbreeze -server_stop_all_commands

Stops all running file synchronization commands.

syncbreeze -server_enable_command_monitor <Sync Command>

Enables the real-time disk change monitor for the specified file synchronization command.
Optional Parameters: [-monitor <SOURCE | DEST | ALL>] [-changes CHANGE-COUNT]

syncbreeze -server_disable_command_monitor <Sync Command>

Disables the real-time disk change monitor for the specified file synchronization command.

syncbreeze -server_enable_command_timer <Sync Command>

Enables periodic file synchronization for the specified file synchronization command.
Optional Parameters: [-time TIME-VALUE] [-units <MIN | HOUR>]

syncbreeze -server_disable_command_timer <Sync Command>

Disables periodic file synchronization for the specified file synchronization command.

**syncbreeze -server_enable_command_schedule <Sync Command>
-day <All | Week Day> -time <HH:MM:SS>**

Enables scheduled file synchronization.

syncbreeze -server_disable_command_schedule <Sync Command>

Disables scheduled file synchronization.

syncbreeze -server_set_command_option <Command> <Option> <Value>

Sets one or more of the following sync command options:

-sync_mode <Sync Mode>

SYNC-DEST	- Synchronize Destination Directory
SYNC-UPDATE-DEST	- Update Destination Directory
SYNC-ACC-DEST	- Accumulate and Update Files in Destination
SYNC-TWO-WAY	- Two-Way File Synchronization
SYNC-TWO-WAY-ACC	- Two-Way Accumulation and Update
SYNC-DEST-GZIP	- Compress & Sync Files in Destination
SYNC-UPDATE-DEST-GZIP	- Compress & Update Files in Destination
SYNC-ACC-DEST-GZIP	- Compress & Accumulate Files in Destination
SYNC-TWO-WAY-STATE	- Two-Way Stateful File Synchronization

-sync_options <Sync Options>

ATTR	- Sync File Attributes
OWNER	- Sync User/Group Security Descriptor
DACL	- Sync Discretionary Access Control List (DACL)
SACL	- Sync System Access Control List (SACL)
BLSYNC	- Enable Bit-Level File Synchronization
VERIFY	- Verify Files After Synchronization

-copy_mode <Copy Mode>

AUTO	- Automatic File Copy Mode
NATIVE	- OS Native File Copy Mode
DIRECT	- Direct File Copy Mode
FAULT-TOLERANT	- Fault-Tolerant File Copy Mode

-perf_mode <Performance Mode>

FULL	- Full-speed file synchronization
MEDIUM	- Medium-speed file synchronization
LOW	- Low-speed file synchronization

-streams <Number of Sync Streams>**syncbreeze -server_command_status <Sync Command>**

Shows the status of the specified file synchronization command.

syncbreeze -server_command_history <Sync Command>

Shows the sync history for the specified file synchronization command.

syncbreeze -server_clear_command_history <Sync Command>

Clears the sync history for the specified file synchronization command.

syncbreeze -server_export_command <Sync Command> -file <XML File Name>

Exports the specified file synchronization command to an XML file.

syncbreeze -server_export_all_commands -dir <Directory Name>

Exports all configured file synchronization commands to a directory as XML files.

syncbreeze -server_import_command -file <XML File Name>

Imports a file synchronization command from the specified XML file.

syncbreeze -server_import_commands -dir <Directory Name>

Imports all XML command files located in the specified directory.

syncbreeze -server_show_debug_log

Shows the Sync Breeze Server debug message log.

syncbreeze -server_clear_debug_log

Clears the SyncBreeze server debug message log.

syncbreeze -server_set_user <User Name>

Sets the server user name. Execute this command locally to reset the user name.

syncbreeze -server_set_password <Password>

Sets the server password. Execute this command locally to reset the password.

syncbreeze -server_set_port <Port Number>

Sets the server control port (default is 9121).

After changing the port number restart the server to apply changes.

syncbreeze -server_set_defaults -host <Host Name> -port <Port Number> -user <User Name> -password <Password>

Sets the default server host name, port, user name and password to connect to.

syncbreeze -server_register_online -customer <Customer Name> -key <Unlock Key> -servers <Server1;Server2;ServerX>

This command performs the online product registration procedure for one or more SyncBreeze servers via the network. The command should be executed on a host directly connected to the Internet. Internet access for the registered SyncBreeze servers is not required.

syncbreeze -server_export_product_id -directory <Directory> -customer <Customer> -key <Unlock Key> -servers <Server1;Server2;ServerX>

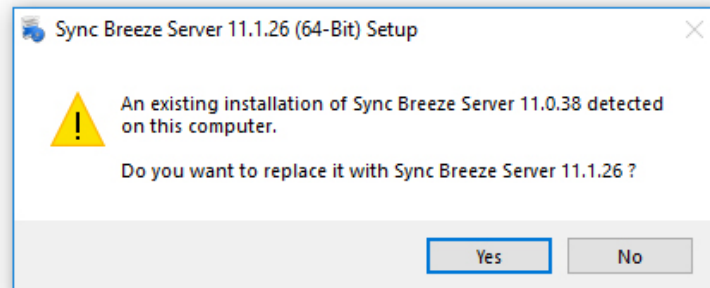
This command exports product ID files from one or more SyncBreeze Servers to the specified directory.

syncbreeze -server_import_unlock_file -directory <Directory>

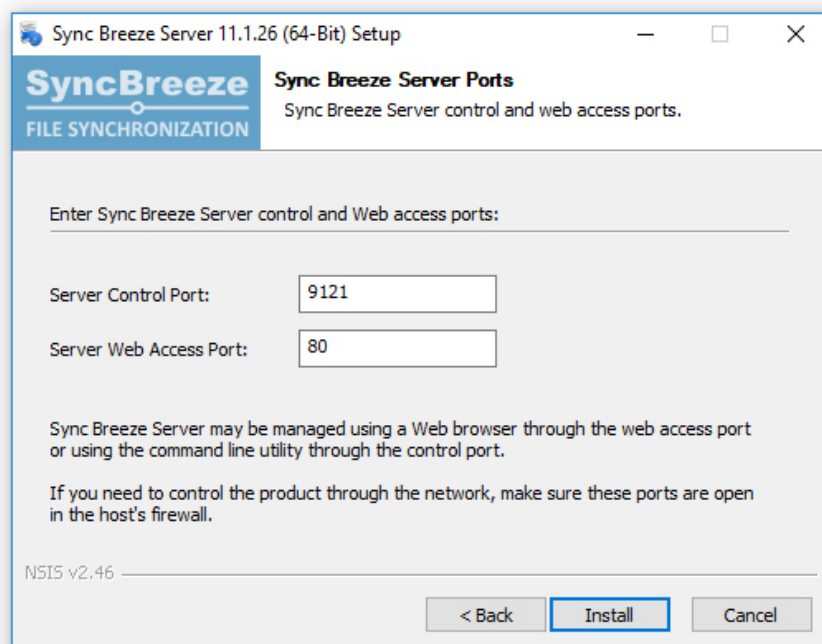
This command performs the manual product registration procedure via the network using unlock files located in the specified directory.

41 Updating SyncBreeze Server

Flexense develops SyncBreeze Server using a fast release cycle with minor product versions, updates and bug fixes released every month and major product versions released every year. New product versions and product updates are published on the product web site and may be downloaded from the following page: <https://www.syncsreeze.com/downloads.html>.



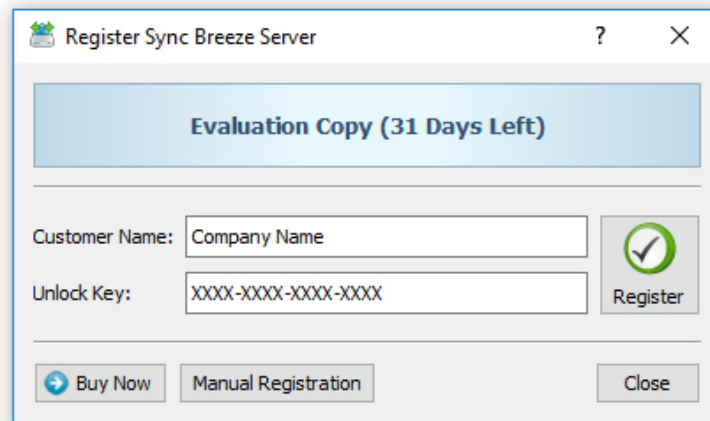
Due to the fact that the product is especially designed for servers running in production environments where stability is a major decision factor, SyncBreeze Server updates should be manually installed by the user. In order to update an existing product installation, download the latest product version and just start the setup program.



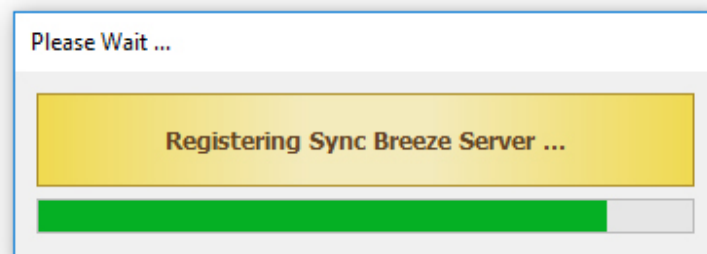
The SyncBreeze Server setup program will properly shutdown the running SyncBreeze service, update the product and restart the SyncBreeze service after finishing the update procedure. All product configuration files, saved file synchronization commands and product registration will remain valid and there is nothing to reconfigure or manage after the update.

42 Registering SyncBreeze Server

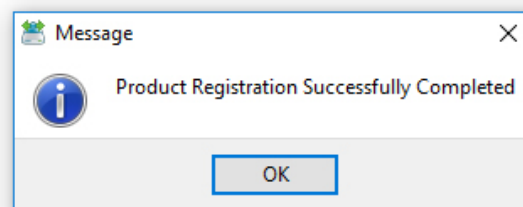
Within a couple of hours after purchasing a product license, the customer will receive two e-mail messages: the first one confirming the payment and the second one containing an unlock key, which should be used to register the product. If you will not receive your unlock key within 24 hours, please check your spam box and if the unlock key is not in the spam box contact our support team: **support@flexense.com**.



If the computer where SyncBreeze Server is installed on is connected to the Internet, open the SyncBreeze client GUI application, connect to the SyncBreeze server, click on the 'Register' button located in the top-right corner of the window, enter your name or your company name, enter the received unlock key and press the 'Register' button.

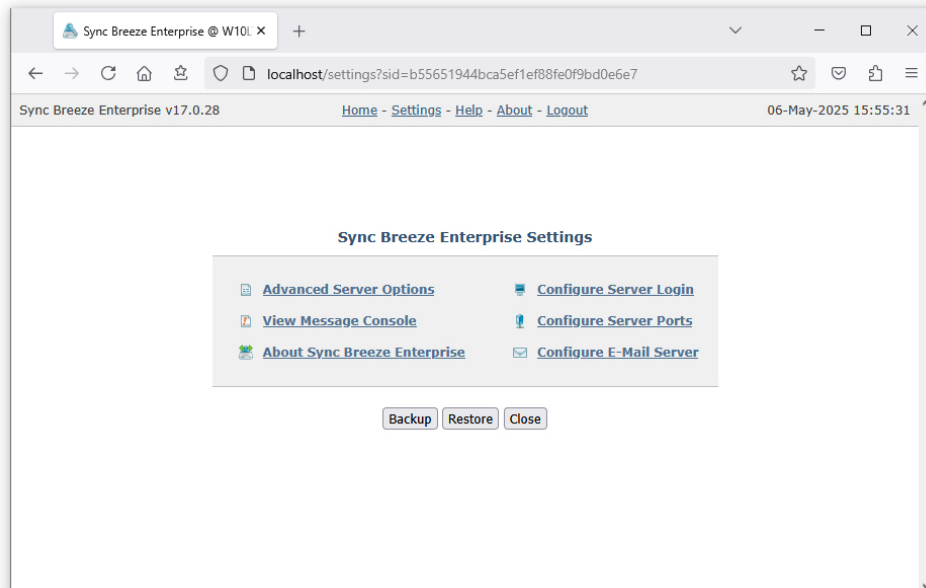


If the computer is not connected to the Internet, press the 'Manual Registration' button, export the product ID file and send the product ID file to **register@syncbreeze.com** as an attachment. Within a couple of hours, you will receive an unlock file, which should be imported in order to finish the registration procedure.



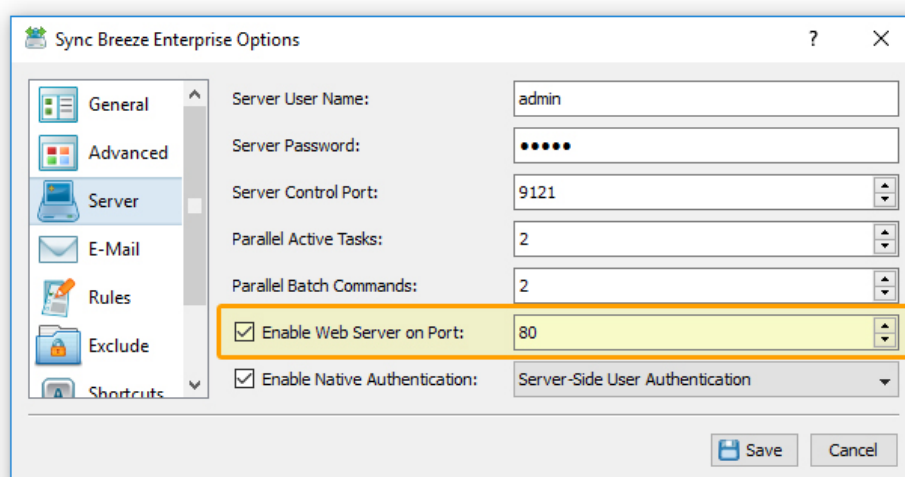
43 Web-Based Management Interface

SyncBreeze Enterprise provides a complete web-based management interface allowing one to control, configure and manage one or more SyncBreeze Servers using a regular web browser from any computer on the network.



In order to enable the web-based management interface on a SyncBreeze Server, connect to the server using the SyncBreeze client GUI application, open the 'Options' dialog, select the 'Server' tab, enable the 'Web Server' option and press the 'Save' button.

By default, the SyncBreeze web server uses the TCP/IP port 80, which is a standard port used by web browsers to connect to web servers. Sometimes, the standard web access port may be in use by other applications or services installed on the server preventing the SyncBreeze web interface to operate properly. In this case, the user needs to change the web access port number and then, in order to connect to the custom port, type in the web browser address bar: `http://server-name:port-number`.



The SyncBreeze Enterprise web-based interface is a dynamic web application, which automatically updates the status and progress of active file synchronization operations, and in order to operate properly, the web based interface requires JavaScript to be enabled in the web browser.

44 SyncBreeze Server OEM Version

Flexense provides system integrators, value-added distributors and IT service providers with the ability to resell SyncBreeze Server and/or provide services based on the product under third-party brand names. Resellers and integrators are provided with the ability to change the product name, the product web site address, the product vendor name and the product vendor web site address.

The screenshot shows a web browser window with the URL `localhost/set_oem_info?sid=5263c3aaa2cd6ce8eb9e96ec512d5273`. The page title is "OEM Product Name v17.0.28". The main content area displays a "Set OEM Info" dialog box with the following fields:

Set OEM Info	
OEM Vendor Name:	OEM Vendor Name
OEM Vendor URL:	www.yourcompany.com
OEM Product Name:	OEM Product Name
OEM Product URL:	www.yourproduct.com

At the bottom of the dialog box are "Save" and "Cancel" buttons.

In order to be able to set custom OEM product and vendor information, the user needs to register the product using a special OEM-Enabled unlock key, which may be purchased on the product purchase page. Once the product is registered using an OEM unlock key, open the 'About' page, press the 'Set OEM Info' button, specify your custom OEM product and vendor information and press the 'Save' button.

The screenshot shows a web browser window with the URL `localhost/about?sid=5263c3aaa2cd6ce8eb9e96ec512d5273`. The page title is "OEM Product Name v17.0.28". The main content area displays an "About OEM Product Name" dialog box with the following information:

About OEM Product Name	
Product:	OEM Product Name v17.0.28
Vendor:	OEM Vendor Name
License:	Registered To Your Company Name
Build Date:	May 5 2025 16:25:22
Build OS:	Windows (64-Bit) (Release)
Install Date:	06/05/2025
Memory Usage:	14.16 MB

At the bottom of the dialog box are "Set OEM Info" and "Close" buttons.

Custom OEM product and vendor information will be displayed on all pages of the SyncBreeze web-based management interface, in all types of reports generated by the product and all notification E-Mail messages sent by SyncBreeze Server.

45 Supported Operating Systems and System Requirements

Supported Operating Systems

- Windows XP
- Windows Vista
- Windows 7
- Windows 8
- Windows 8.1
- Windows 10
- Windows 11
- Server 2003
- Server 2008
- Server 2008 R2
- Server 2012
- Server 2012 R2
- Server 2016
- Server 2019
- Server 2022
- Server 2025

Minimal System Configuration

- Supported Operating System
- 2 GHz or better CPU
- 4 GB of system memory
- 100 MB of free disk space

Recommended System Configuration

- 64-Bit Operating System
- 2+ GHz dual-core CPU
- 4 GB of system memory
- 200 MB of free disk space

SyncBreeze Enterprise System Configuration

- 64-Bit Operating System
- 2+ GHz quad-core CPU
- 8 GB of system memory
- 2 GB of free disk space