

DiskBoss

DATA MANAGEMENT



Disk Space Analysis

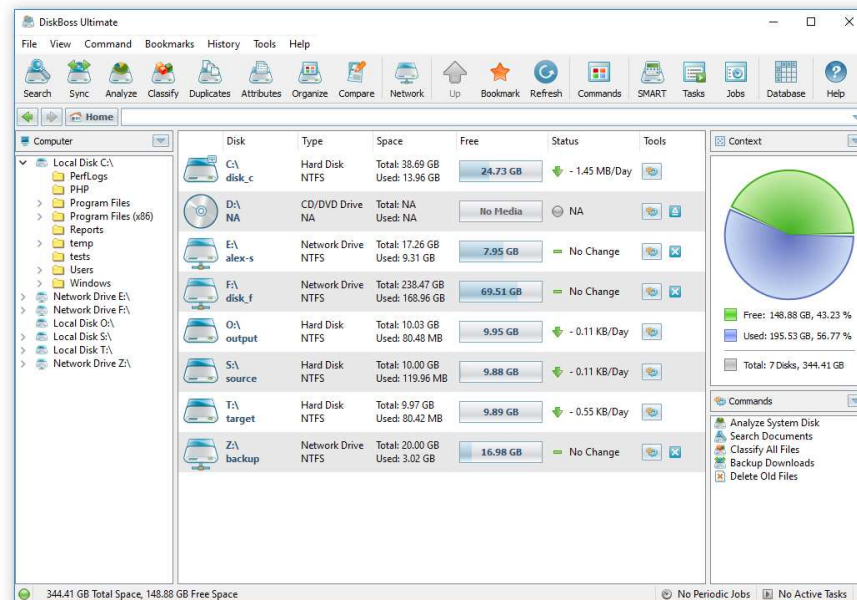
Version 14.1

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1 Product Overview

DiskBoss is an automated, policy-based data management solution allowing one to analyze disks, directories and network shares, classify and categorize files, search and cleanup duplicate files, perform automated file management operations according to user-defined rules and policies, synchronize disks, directories and network shares, compare directories and files, perform bulk file delete and secure data wiping operations, detect unauthorized changes in files and directories, etc.



All disk space analysis and file management operations are integrated into a centralized and easy-to-use GUI application allowing one pre-configure analysis and file management operations as user-defined commands and execute any required command in a single mouse click using the DiskBoss GUI application or direct desktop shortcuts.

- Disk Space Analysis
- File Classification and Organizing
- Duplicate Files Search and Cleanup
- Bulk File Delete and Secure Data Wiping
- Automated, Policy-Based File Management
- Real-Time Disk Change Monitoring
- High-Speed File Synchronization
- Secure File Transfer Operations
- File Integrity Monitoring

DiskBoss allows one to generate various types of pie charts and save HTML, PDF, Excel, text, CSV and XML reports for all types of disk space analysis, file classification and file search operations. The user is provided with the ability to categorize and filter analysis and file classification results and perform file management operations on categories of files.

IT administrators are provided with extensive SQL database integration capabilities allowing one to submit disk space analysis, file classification, duplicate files search and disk change monitoring reports into an SQL database. Reports from multiple servers and NAS storage devices may be submitted to a centralized SQL database allowing one to display charts showing the used disk space, file categories and duplicate files per user or per server and providing an in-depth visibility into how the disk space is used, what types of files are stored and how much space is wasted on duplicate files across the entire enterprise.

In addition to the DiskBoss GUI application, IT and storage administrators are provided with the DiskBoss command line utility, which can be used to execute all types of analysis and file management operations from batch files and shell scripts. The command line utility provides an extensive set of command line options allowing one to execute various types of disk space analysis, file synchronization, data migration and bulk file delete operations pre-configured for user-custom needs and hardware configurations.

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c:\Program Files\DiskBoss Ultimate\bin>diskboss -classify -dir c:\

DiskBoss Ultimate v9.0.18 (Mar  8 2018)

Operation Successfully Completed

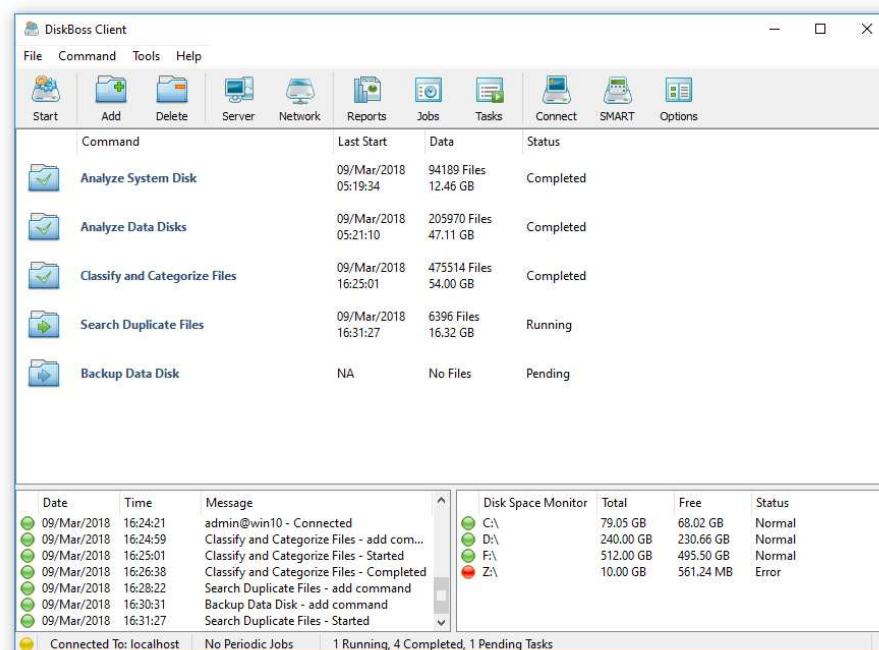
Date           - 2018/03/08
Time           - 18:04:30
Total Files    - 127539
Total Space    - 13.96 GB
Performance   - 14653 Files/Sec
Process Time   - 8.70 Sec
Host Name      - Windows10-64
User Name      - alex-s
Input Dirs     - c:\

Programs, Extensions and Script Files - 23267 Files, 9.43 GB
Windows Files                          - 43840 Files, 1.85 GB
Miscellaneous Files                    - 40489 Files, 1.64 GB
Archive, Backup and Disk Image Files   - 2540 Files, 286.23 MB
Unknown Files                          - 5321 Files, 258.63 MB
Internet Files                         - 4709 Files, 153.99 MB
Game Files                             - 18 Files, 118.05 MB
Development Files                      - 1099 Files, 103.72 MB
Images, Pictures and Graphic Files      - 5140 Files, 57.13 MB
Documents, Books and Help Files         - 960 Files, 35.46 MB
Movies, Clips and Video Files           - 144 Files, 33.95 MB
Music and Audio Files                   - 7 Files, 13.21 MB
Temporary Files                         - 5 Files, 304.63 KB

c:\Program Files\DiskBoss Ultimate\bin>

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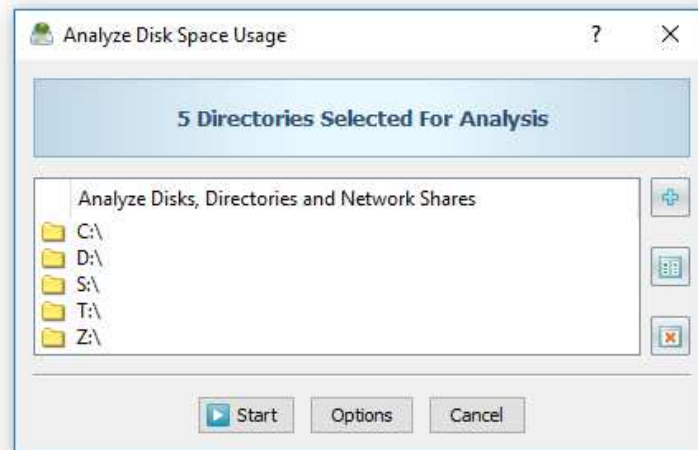
Finally, IT professionals and enterprise customers are provided with DiskBoss Server – a server-based product version, which runs in the background as a service and is capable of performing all type of disk space analysis and file management operations in a fully automatic and unattended mode according to a user-specified schedule.



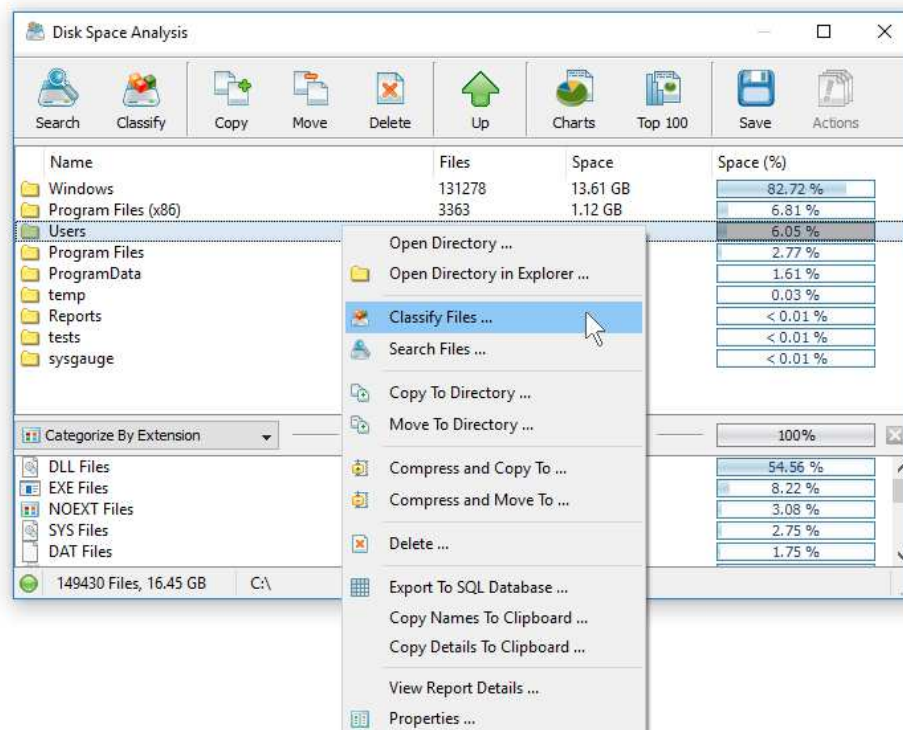
DiskBoss Server can be controlled locally or through the network using the DiskBoss client GUI application or the command line utility. DiskBoss Server provides the ability to pre-configure various types of disk space analysis and/or policy-based file management operations, schedule periodic jobs, save analysis reports into a number of different formats, export analysis results to an SQL database, periodically synchronize disks, directories and network shares and monitor critical disks and directories for unauthorized changes.

2 Disk Space Analysis

In order to analyze one or more disks or directories, select the directories in the DiskBoss file navigator and press the 'Analyze' button located on the main toolbar. DiskBoss will scan the selected disks and directories and display the analysis results dialog showing disks, directories and files sorted by the amount of the used disk space.



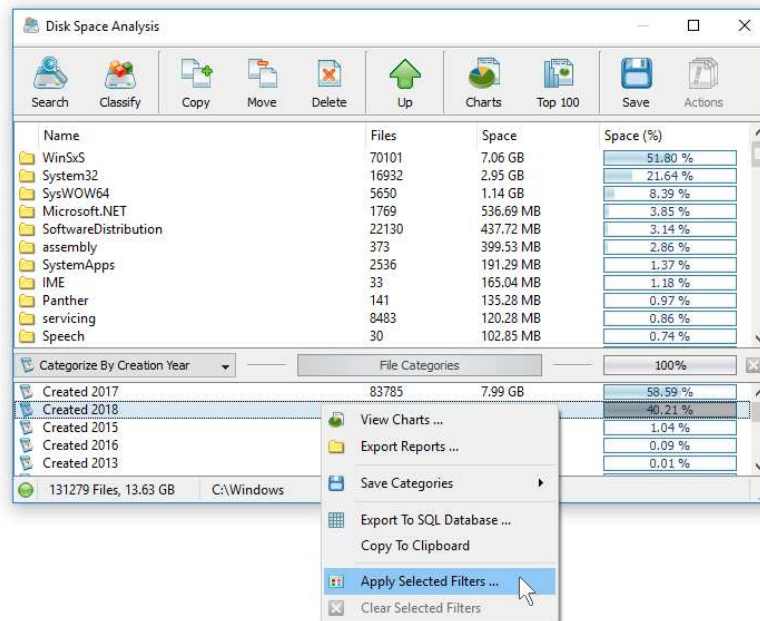
The disk space analysis results dialog allows one to browse analysis results, perform file management operations, categorize and filter results, generate various types of charts, save analysis reports into the HTML, PDF, Excel, XML, text and CSV formats, submit reports to an SQL database, etc.



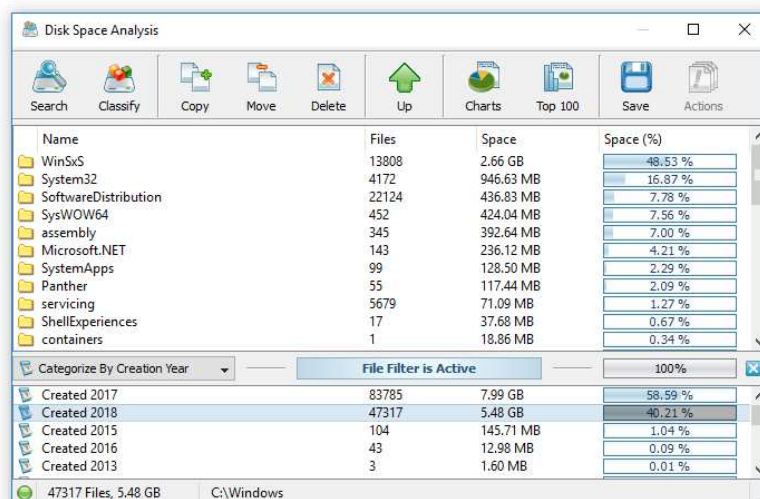
In order to perform an operation on one or more files or directories, select the required files and press an appropriate button on the dialog's toolbar. Alternatively, use the dialog's context menu, which provides access to additional options and features.

3 File Categories and File Filters

The top view of the analysis results dialog shows directories and files sorted by the amount of the used disk space and the bottom view shows the currently selected file categories, which are allowing one to categorize and filter files and directories displayed in the top view. DiskBoss provides the ability to categorize disk space analysis results by the file extension, file type, file size, user name, creation, last modification and last access dates.

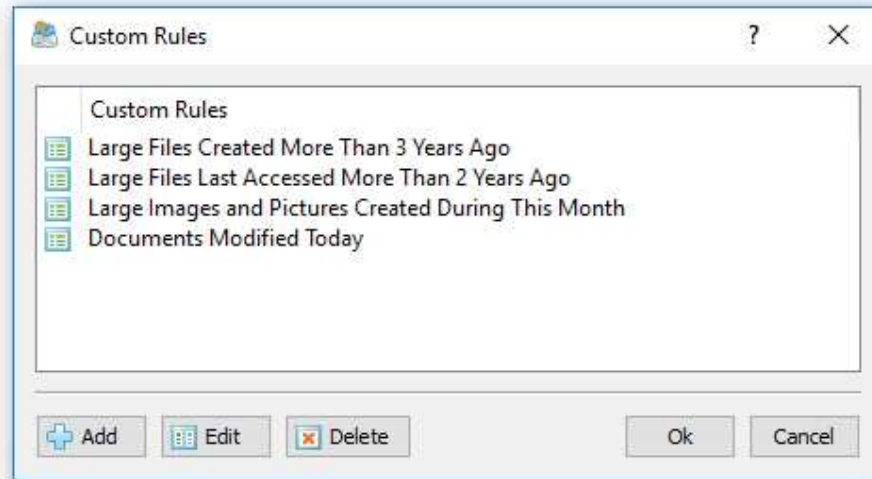


In order to change the file categorization mode, click on the 'Categories' combo box located in the top-left corner of the categories view and select an appropriate file categories mode. In order to apply one or more file categories as a filter, select the required file categories in the bottom view, press the right mouse button and select the 'Apply Selected Filters' menu item. DiskBoss will filter the disk space analysis results and display in the top view files matching the selected file filters and directories containing these files.

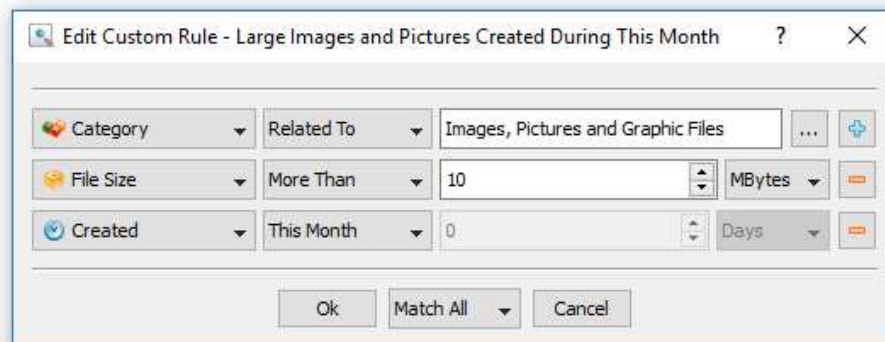


With an active file filter, all operations such as browsing, file copy, move and delete, reports generation, charts, etc. will be performed on filtered results only. In order to reset the currently active file filter, press the right mouse button over the filters view and select the 'Clear Selected Filters' menu item.

In addition to the built-in file filters, DiskBoss provides the ability to pre-configure one or more custom file filters according to user-specific needs and requirements and then categorize and filter the disk space analysis results using the user-custom file filters. In order to add a custom file filter, select the custom file filters view, press the right mouse button over the filters view and select the 'Edit Custom Rules' menu item.



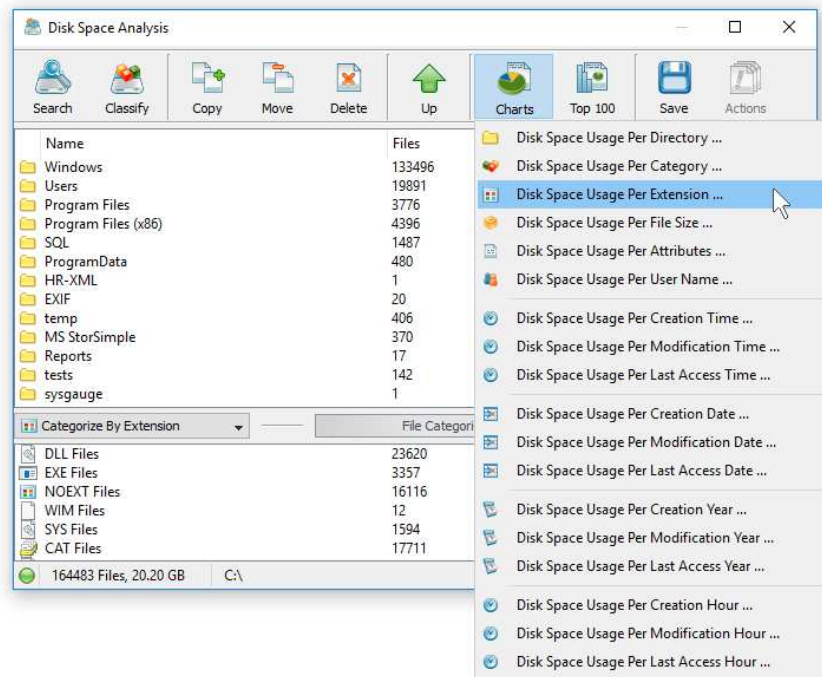
In order to add a new custom file filter, press the 'Add' button, enter a unique filter name and configure one or more file matching rules specifying which types or groups of files to display. In order to edit a custom file filter, select the filter in the custom file filters dialog and press the 'Edit' button.



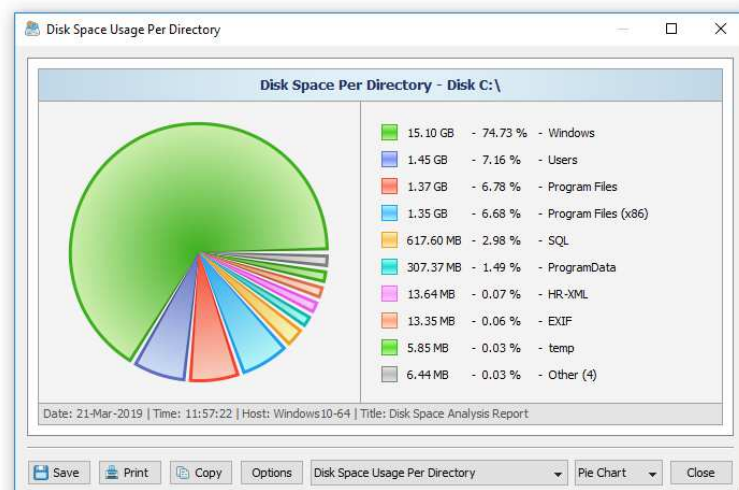
Once finished configuring custom file filters, close the filters dialog and DiskBoss will categorize the currently displayed disk space usage results and show the list of user-specified custom file filters sorted by the amount of data and the number of files matching the specified file filters. In order to filter the currently displayed disk space usage results by one or more custom file filters, select the required custom file filters in the filters view, press the right mouse button and select the 'Apply Selected Filters' menu item. DiskBoss will filter the disk space analysis results according to the selected custom file filters and display the amount of data and the number of files matching the selected file filters.

4 Disk Space Usage Pie Charts

The DiskBoss disk space analyzer provides multiple types of statistical pie charts and timeline charts capable of showing the amount of disk space usage and the number of files per directory, file extension, file type, file size, file owner, creation, modification and last access time. In order to open the charts dialog, press the 'Charts' button located on the main toolbar and select an appropriate chart type.

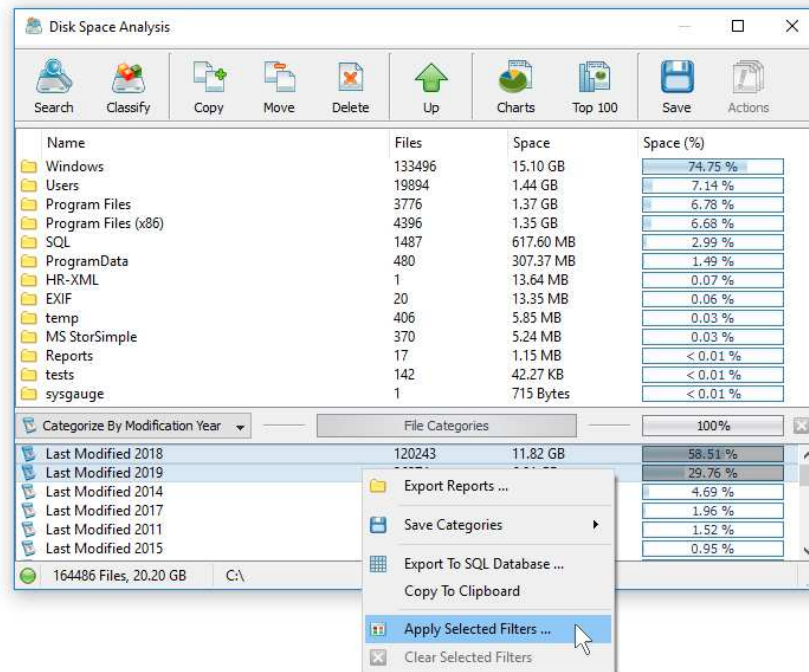


By default, the charts dialog shows the amount of disk space usage and the number of files for the current file system location. For example, in order to open a chart showing the disk space usage and the number of files per file category in the current directory, press the 'Charts' button located on the main toolbar and select the 'Disk Space Usage Per Category' chart type.

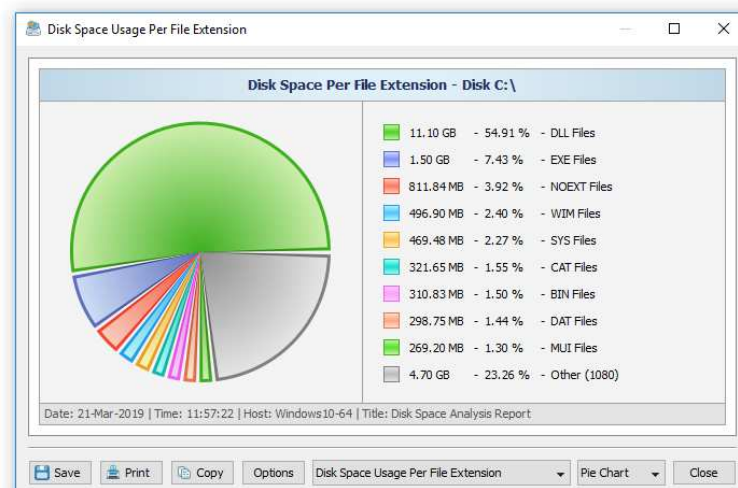


In addition, the charts dialog provides the user with the ability to export the chart data to a number of different formats and copy the displayed chart image to the clipboard allowing one to easily integrate DiskBoss charts into user's documents and presentations. In order to customize the chart's description, press the 'Options' button and specify a custom chart title, host name, date or time.

One of the most powerful features of the DiskBoss disk space analyzer is the ability to filter disk space analysis results using one or more user-specified filters and then categorize filtered results and display statistical pie charts. For example, in order to display a pie chart showing the amount of disk space per file extension for files that were modified during the last two years, set the file categorization mode to 'Categorize By Modification Year', select one or more years to show the information for, press the right mouse button over the file filters view and select the 'Apply Selected Filters' menu item.

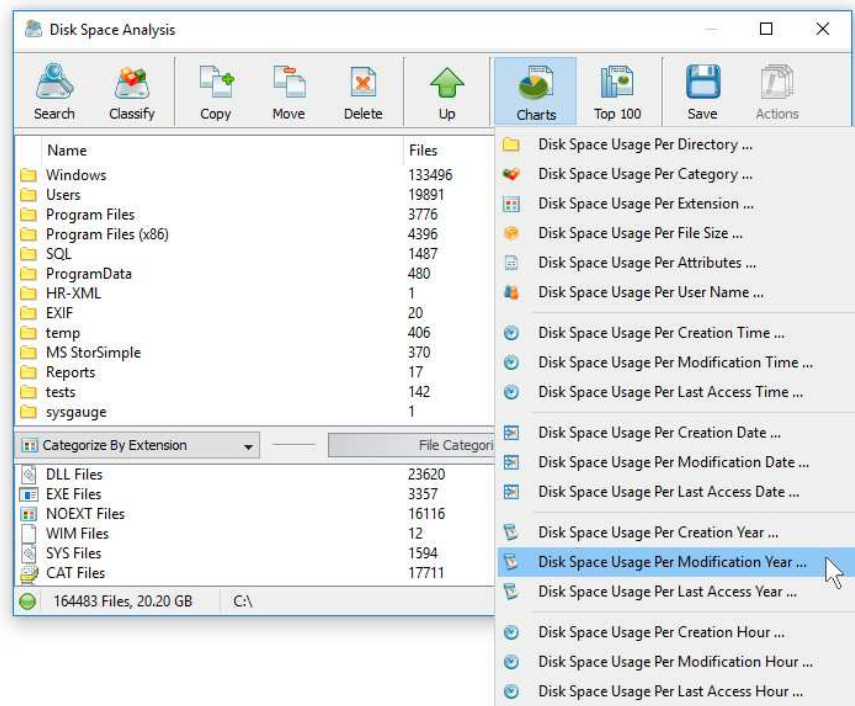


DiskBoss will filter the disk space analysis results and display files that were modified during the selected years. Now, press the 'Charts' button located on the main toolbar and select the 'Disk Space Usage Per Extension' menu item. DiskBoss will categorize the filtered disk space analysis results and display a pie chart showing the amount of disk space usage per file extension for files that were modified during the selected years.

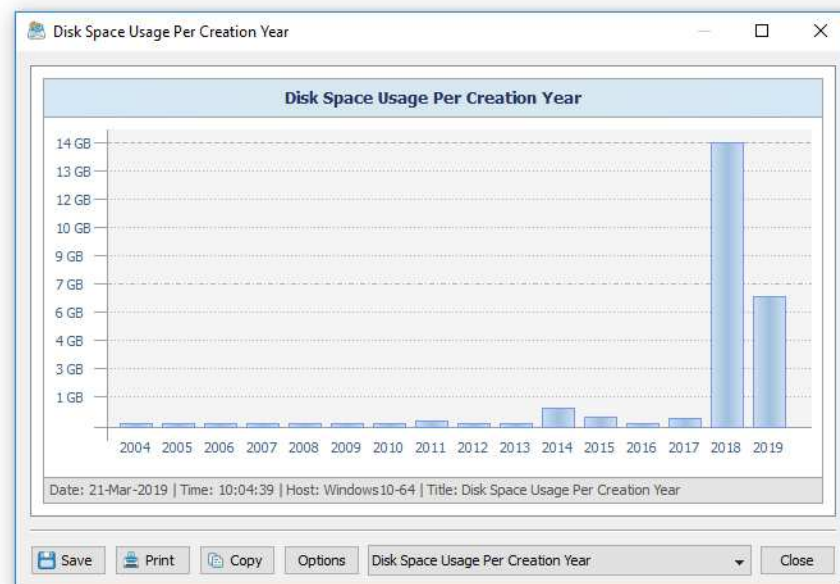


In a similar way, the user can filter disk space analysis results by file type, size, user name, file attributes, creation, modification and last access dates and then display various types of charts showing the disk space usage or the number of files according to user-specific needs.

Another powerful capability is the ability to display the disk space usage timeline charts for all or filtered disk space analysis results. In the simplest case, press the 'Charts' button located on the main toolbar and select the 'Disk Space Usage Per Modification Year' menu item.



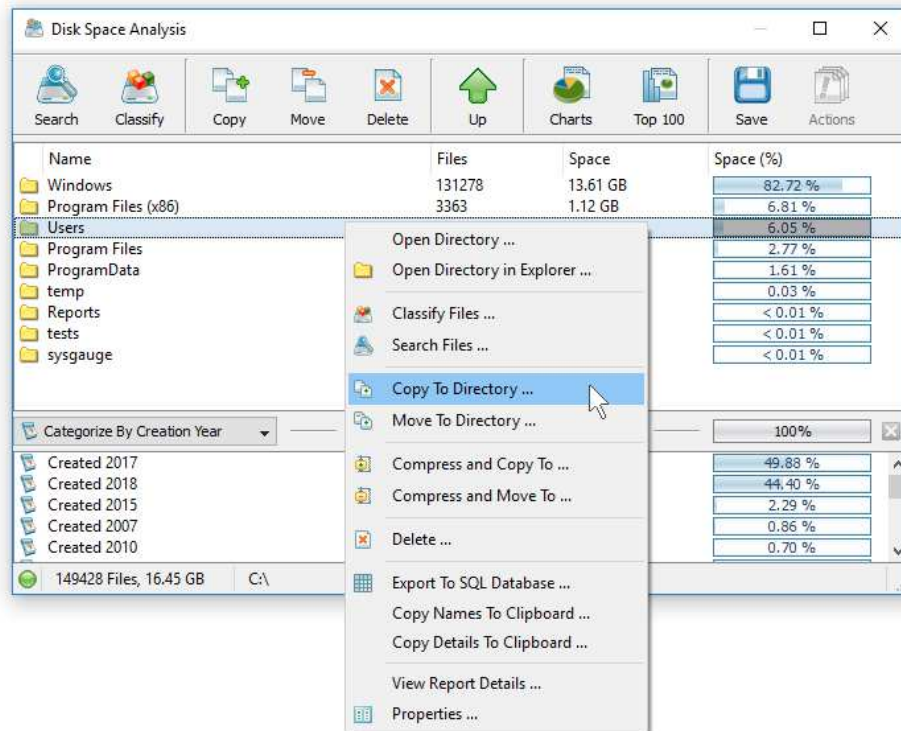
DiskBoss will display a time line chart showing how much data was modified per year. In order to display how many files were modified per year, set the chart mode to 'Number Of Files Per Modification Year'.



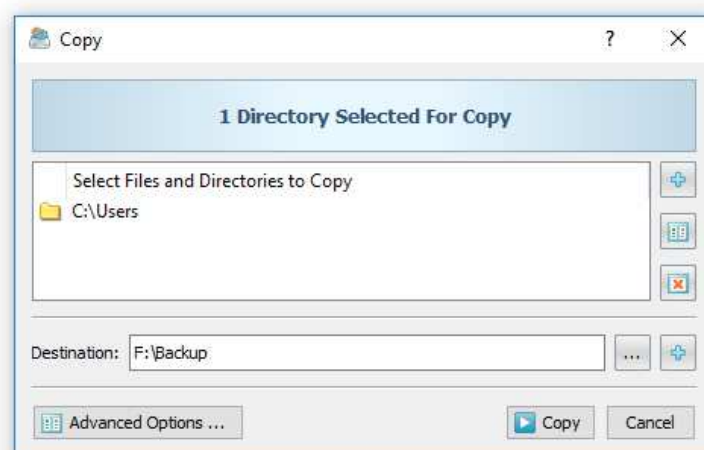
In addition, the user is provided with the ability to display timeline charts for filtered disk space analysis results. For example, in order to display how many documents were created per year, set the file categorization mode to 'Categorize By File Type', select the 'Documents, Books and Help Files' file category, press the right mouse button and select the 'Apply Selected Filters' menu item. Now, press the 'Charts' button located on the main toolbar, and select the 'Disk Space Usage Per Creation Year' menu item.

5 Using File Management Operations

DiskBoss allows one to copy, move and delete files and directories displayed in the disk space analysis results dialog. In order to perform a file operation on one or more files or directories, select the required items in the directory view, press the right mouse button and select an appropriate file management operation.



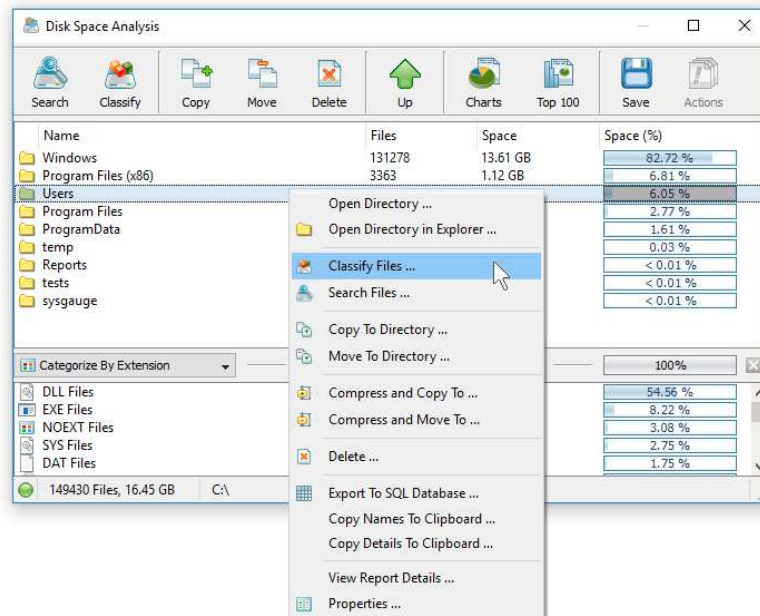
For copy and move operations, enter the destination directory and optionally press the 'Advanced Options' button to open the file copy options dialog. The copy options dialog allows one to control the file overwrite mode, file copy rules, performance tuning options and error handling options.



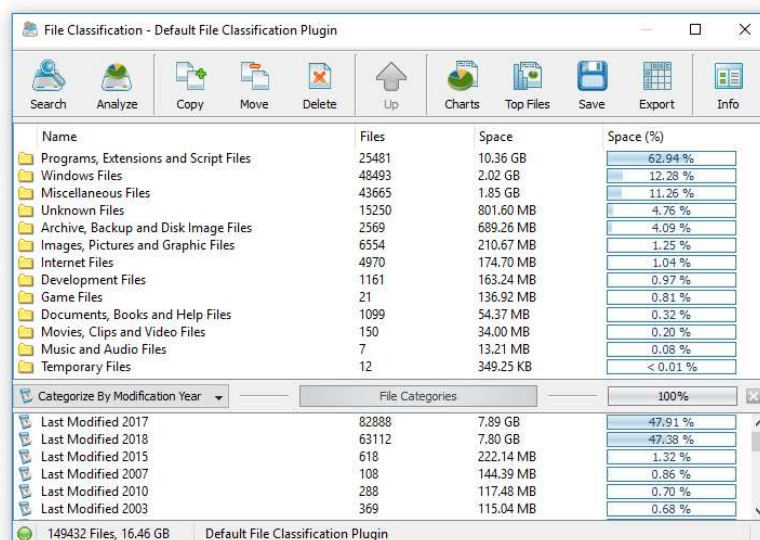
When copying files with an active file filter, DiskBoss automatically adds one or more file matching rules to the 'Rules' tab ensuring that only filtered files are copied to the destination directory. In order to delete one or more files or directories, select the required files or directories in the analysis results view, press the right mouse button and select the 'Delete' menu item.

6 Classify Disk Space Analysis Results

DiskBoss provides the ability to classify and categorize disk space analysis results allowing one to understand what types of files are stored in directories holding most of the used disk space. In order to classify files in one or more directories displayed in the disk space analysis results dialog, select the required directories in the directory view, press the right mouse button and select the 'Classify Files' menu item.



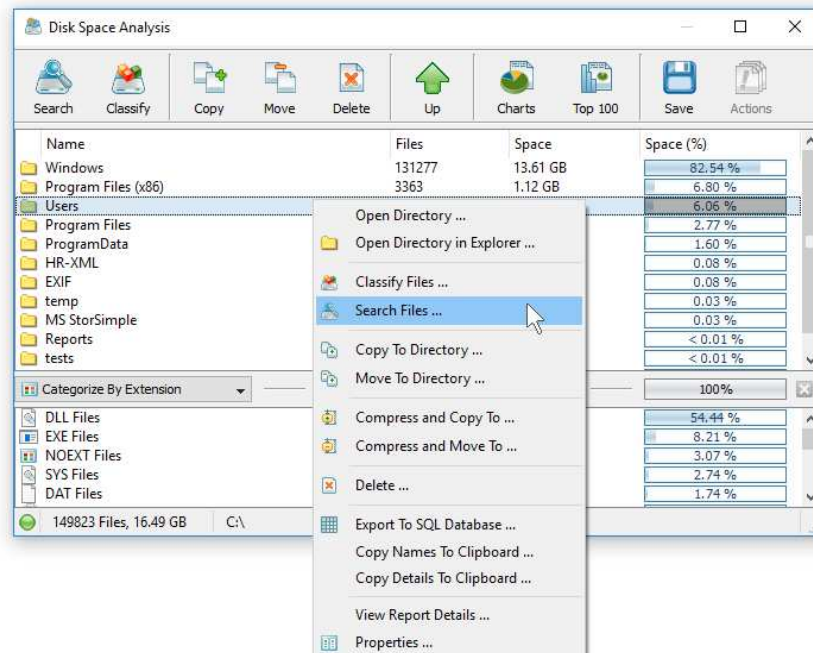
On the file classification plug-ins dialog, select an appropriate file classification plug-in and press the 'Classify' button. DiskBoss will classify files in the selected directories and display a list of file categories sorted by the amount of the used disk space.



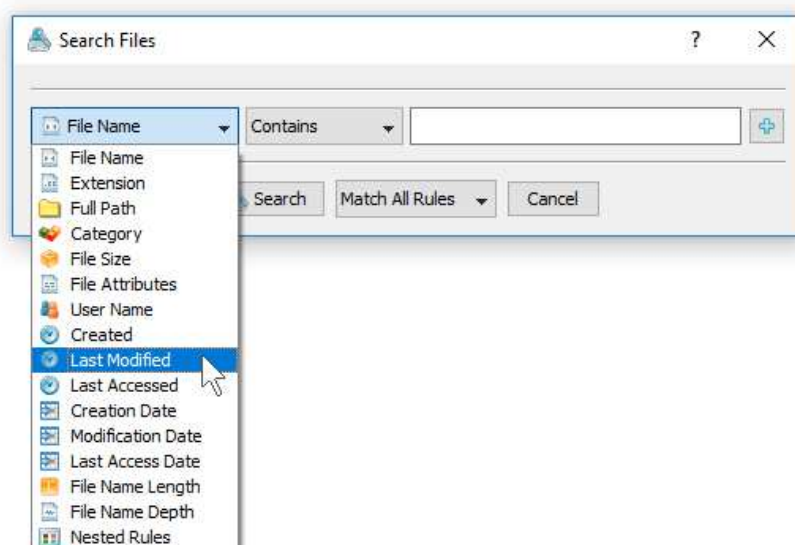
The file classification results dialog shows file categories and classes according to the selected file classification plug-in and provides the user with the ability to export charts, save reports, submit results to an SQL database and perform file management operations on specific types of files. Moreover, the user is provided with the ability to apply second-level file categories and filters by the file size, extension, last access, creation and modification dates, etc. to further focus on specific files or file groups.

7 Searching Files in Disk Space Analysis Results

DiskBoss provides the ability to search files in disk space analysis results by the file name, extension, full path, file category, file size, file attributes, creation, last modification and last access dates. In order to start a file search operation, analyze one or more disks or directories and press the 'Search' button located on the main toolbar.



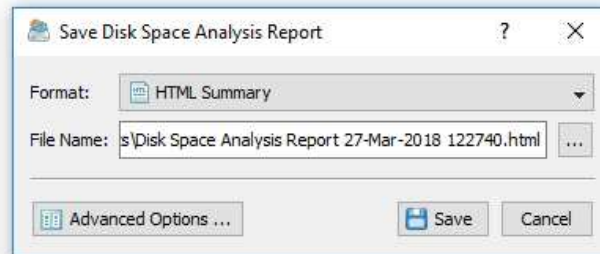
By default, the search operation will be performed on all disk space analysis results. In order to search files in a specific disk, directory or network share, select one or more directories in the disk space analysis results view, press the right mouse button and select the 'Search Files' menu item. DiskBoss will search in the selected directories and display the file search results dialog showing a list of files matching the user specified criteria.



The search results dialog allows one to filter and categorize file search results, display various types of pie charts, copy, move and/or delete files, export file search results to a number of standard report formats including PDF, HTML, text, Excel CSV and XML. In addition, advanced users are provided with the ability to export file search results to an SQL database.

8 Disk Space Analysis Reports

DiskBoss allows one to save disk space analysis reports into a number of standard formats including HTML, PDF, Excel, XML, text and CSV. In the simplest case, perform a disk space analysis operation and press the 'Save' button located on the disk space analysis results dialog. On the save report dialog, select an appropriate report format, enter a report file name and press the 'Save' button.



For the HTML, PDF, Excel, text, CSV and XML report formats, the user is provided with the ability to save a short summary report or a longer detailed report, which may be very long for large file systems containing millions of files. By default, DiskBoss will save a short, summary disk space analysis report in the HTML report format, which will include a top-level view of analyzed disks or directories and a list of tables showing the disk space usage and the number of files per file extension, file type, user name, etc.

Disk Space Analysis Report

Date	2018/03/27
Time	12:40:23
Total Files	149828
Total Space	16.49 GB
Performance	9686 Files/Sec
Process Time	15.47 Sec
Host Name	Windows10-64
User Name	alex-s
Input Dirs	c:\

C:\

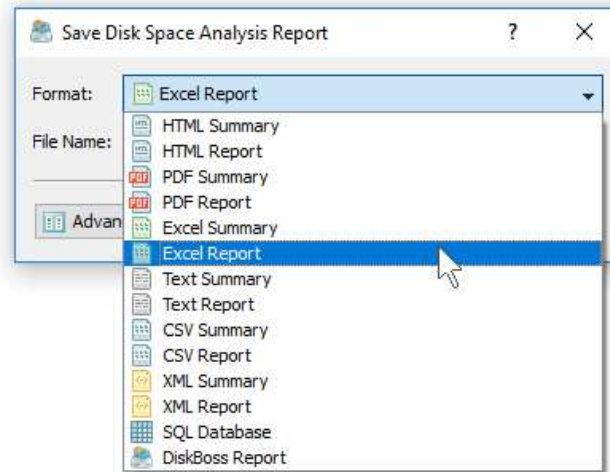
Name	Files	Disk Space	Percent
Windows	131278	13.61 GB	82.53 %
Program Files (x86)	3363	1.12 GB	6.80 %
Users	12639	1.00 GB	6.08 %
Program Files	1423	467.34 MB	2.77 %
ProgramData	194	270.94 MB	1.60 %
HR-XML	1	13.64 MB	0.08 %
EXIF	20	13.35 MB	0.08 %
temp	394	5.85 MB	0.03 %
MS StorSimple	370	5.24 MB	0.03 %
Reports	3	87.85 KB	< 0.01 %
tests	142	42.27 KB	< 0.01 %
sysgauge	1	715 Bytes	< 0.01 %

Disk Space Usage Per File Extension

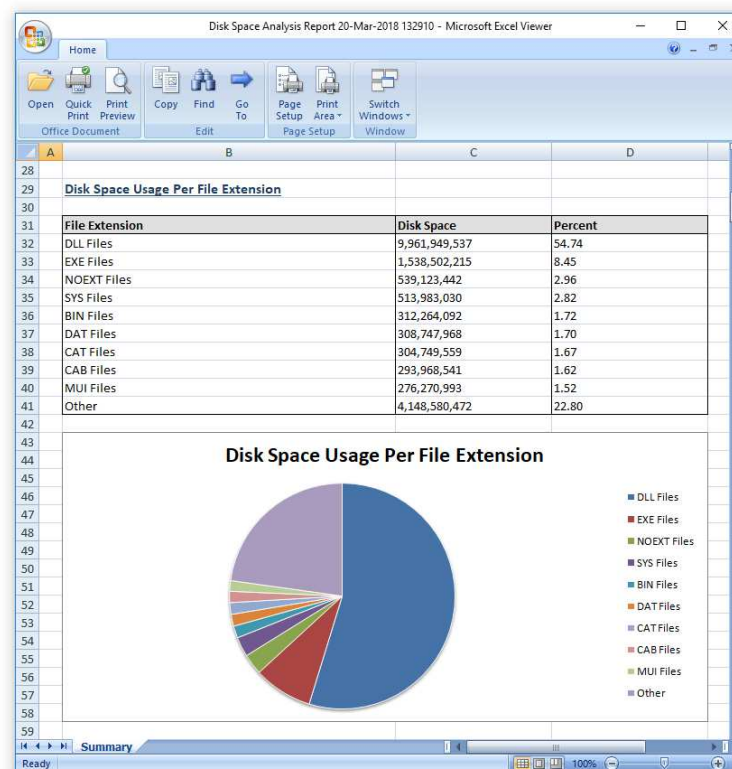
File Extension	Disk Space	Percent
DLL Files	8.98 GB	54.43 %
EXE Files	1.35 GB	8.21 %

In addition, the user is provided with the ability to save disk space analysis results to the DiskBoss native report format, which preserves all information related to each specific disk space analysis operation and may be loaded at any time just by clicking on a report file in the DiskBoss file navigator.

Sometimes, it may be required to perform additional analysis of disk space usage results using external tools such as Microsoft Excel. In order to export disk space analysis results to the Excel report format, perform a disk space analysis operation, press the 'Save' button located on the disk space analysis results dialog, select the 'Excel Summary' report format for a short summary report or the 'Excel Report' format for a detailed disk space analysis report.

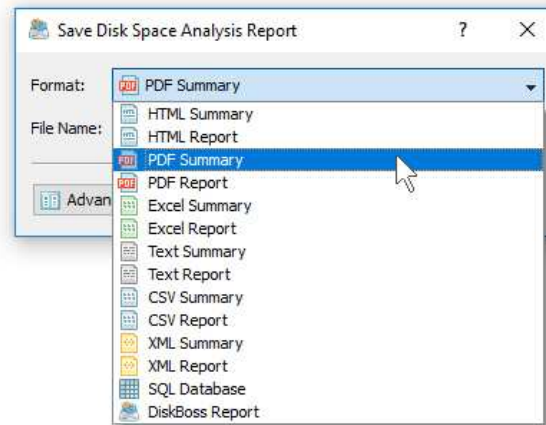


A summary Excel report will include a top-level list of analyzed disks and directories and a number of tables showing the used disk space and the number of files per file extension, file category, file creation time, last modification time, user name, etc.

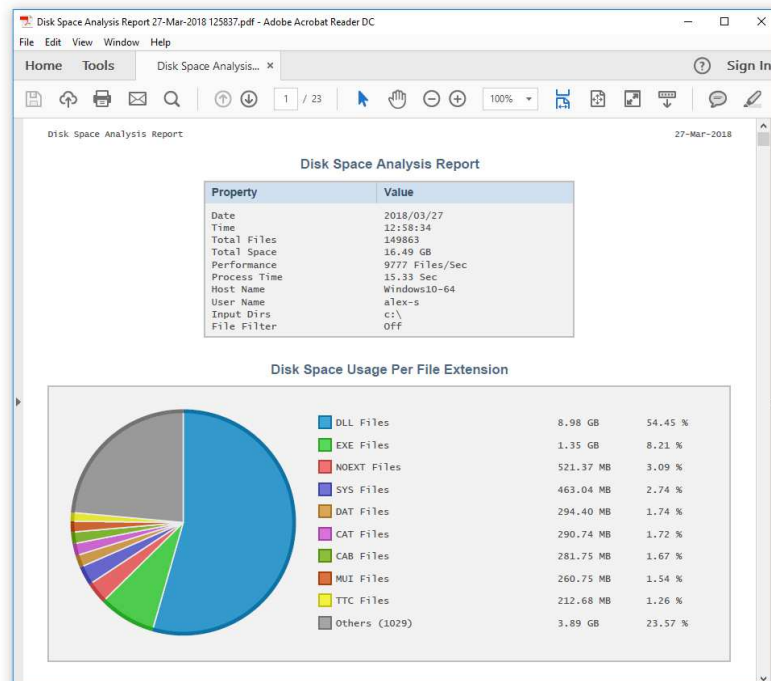


A detailed Excel report will include a list of file categories according to the currently selected file categorization mode and an hierarchy of directories and files sorted by the amount of the used disk space, which may be very long for large file systems containing millions of files. In order to control how many directory levels and how many files per directory are exported in the detailed report, press the 'Advanced Options' button located on the 'Save Report' dialog and customize the disk space analysis report for your specific needs.

One of the most useful ways to export disk space analysis results is to use the PDF summary or the PDF report formats. Both of these report formats include various types of graphical pie charts showing disk space usage and the number of files per file extension, file category, creation time, last modification time, user name, etc. In order to save disk space analysis results to a PDF report file, press the 'Save' button located on the disk space analysis results dialog and select the 'PDF Summary' report format for a short, summary report or the 'PDF Report' format for a detailed disk space analysis report.



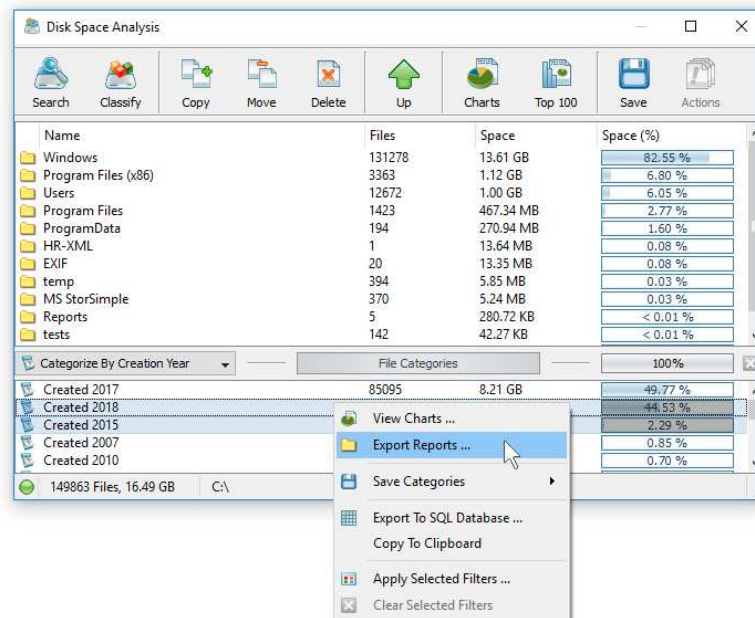
A summary PDF report will include a top-level list of analyzed disks, directories or network shares sorted by the amount of the used disk space followed by a number of pie charts showing the disk space usage and the number of files per file extension, file category, file creation time, last modification time, user name, etc. A detailed PDF report will include an hierarchy of directories and files sorted according to the used disk space, which may be very long for large file systems containing millions of files.



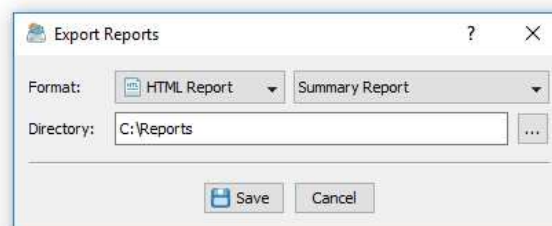
In addition to the directory tree sorted by the used disk space, detailed PDF reports include pie charts showing the disk space usage per file category and the number of files per file category according to the currently selected file categorization mode. For example, if the second-level file categories mode is set to categorize disk space analysis results by the file extension, the PDF report will display pie charts showing the used disk space and the number of files per file extension.

9 Batch Disk Space Analysis Reports

DiskBoss allows one to save batches of disk space analysis reports according to the currently selected categories of files with each report showing the number of files per directory and the disk space usage for a corresponding category of files. For example, let's assume that we need to save disk space analysis reports for the last 10 years with each report showing the number of files per directory and the disk space usage for all files that were created during each year.



In order to generate such reports, set the file categorization mode to 'Categorize By Creation Year', select all years for which you need to generate analysis reports in the file categories view, press the right mouse button and select the 'Export Reports' menu item. On the 'Export Reports' dialog, select an appropriate report format and report mode, specify a destination directory to export reports to and press the 'Save' button.

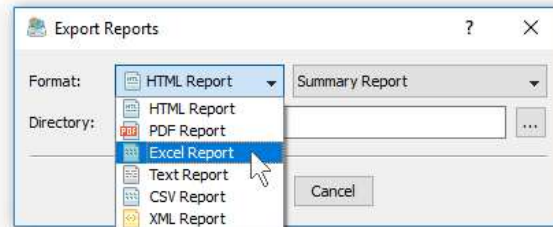


For each selected year, DiskBoss will filter disk space analysis results by the file creation year and save an individual disk space analysis report in the specified destination directory with each report file name and report title containing the corresponding file creation year.

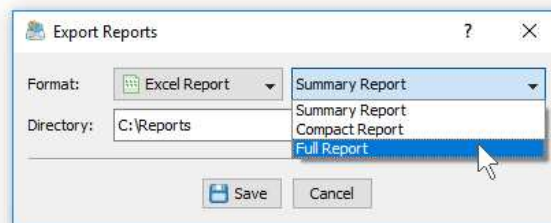
In the same way, the user can generate batches of analysis reports showing the number of files per directory and the disk space usage per user, last modification date, last access date, file attributes, file size, top directory or user-custom categories pre-configured using flexible file matching rules.

For example, in order to export individual disk space analysis reports for all users, set the file categorization mode to 'Categorize By User Name', select all the required users, press the right mouse button and select the 'Export Reports' menu item. Now, the destination directory will contain a series of disk space analysis reports with each report showing the number of files per directory and the disk space usage for the corresponding user.

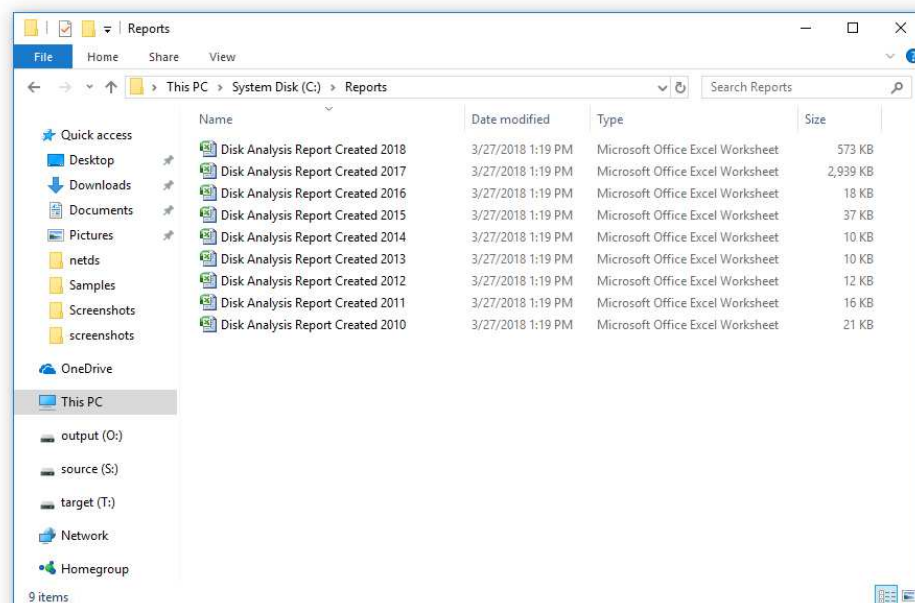
The batch reports dialog provides the ability to export reports to a number of standard report formats including: HTML, PDF, Excel, text, CSV and XML. Depending on the selected report format and report mode, each report will include a summary table showing statistics about the report and a list of tables showing disks, directories and files sorted by the amount of used disk space.



In addition, the batch reports dialog allows one to select one of the following report modes: summary report, compact report or full report. When the summary report mode is selected, each report will include a summary table and up to 3 levels of directories sorted by the amount of used disk space. When the compact report mode is selected, each report will include a summary table and up to 5 levels of directories with up to 20 files per directory sorted by the amount of used disk space. When the full report mode is selected, each report will include a summary table and a complete list of directories and files sorted by the amount of used disk space.

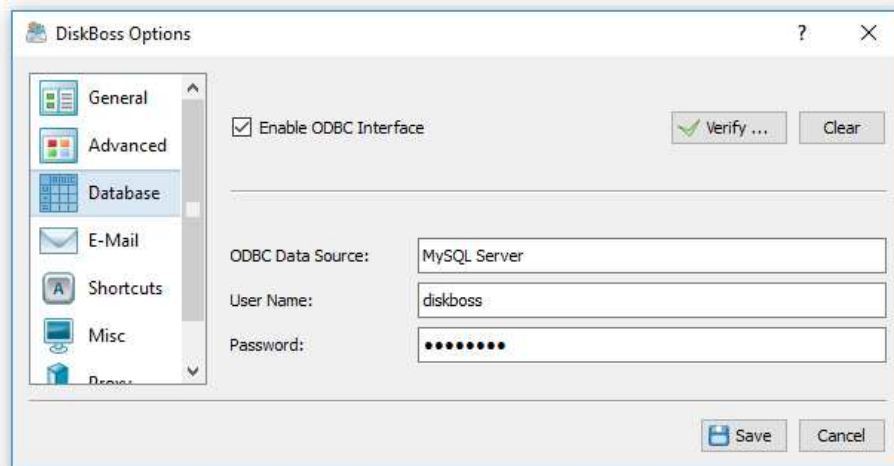


Once the export operation will be completed, the specified destination directory will contain a number of disk space analysis reports according to the selected file categorization mode, selected categories of files and the selected report format.

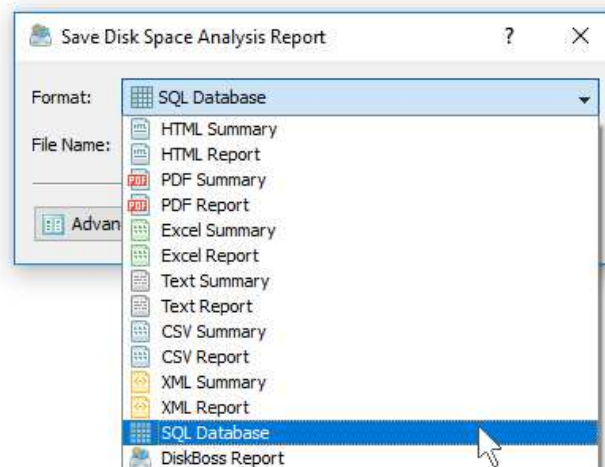


10 Exporting Reports to an SQL Database

DiskBoss Ultimate and DiskBoss Server allow one to save disk space analysis reports into an SQL database. A long-term history of disk space analysis reports from multiple servers and desktop computers may be submitted to a centralized SQL database and used to analyze disk usage trends across the entire enterprise.



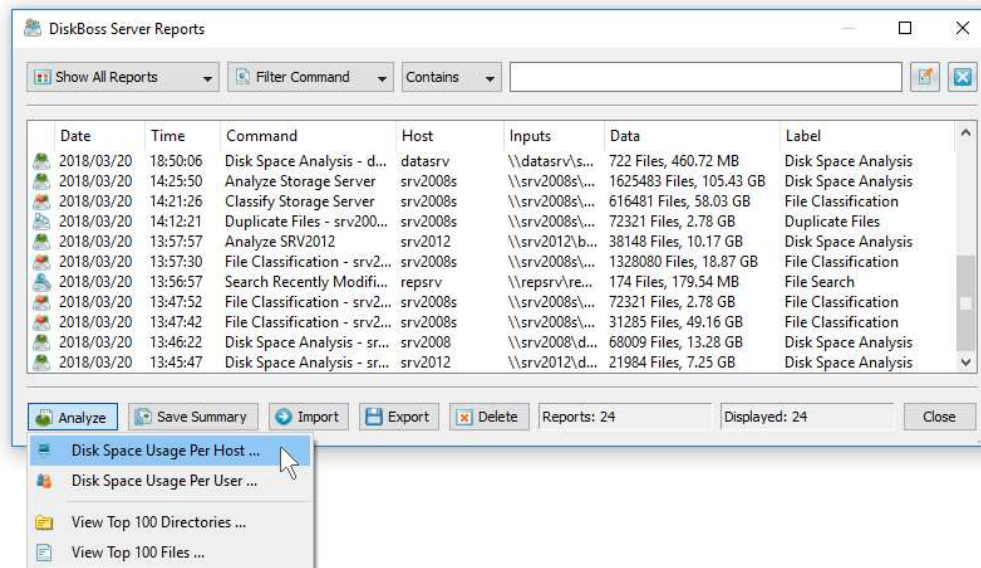
In order to be able to export reports to an SQL database, open the 'Options' dialog, enable the ODBC interface and specify the name of the data source, database user name and password to use to connect to the database.



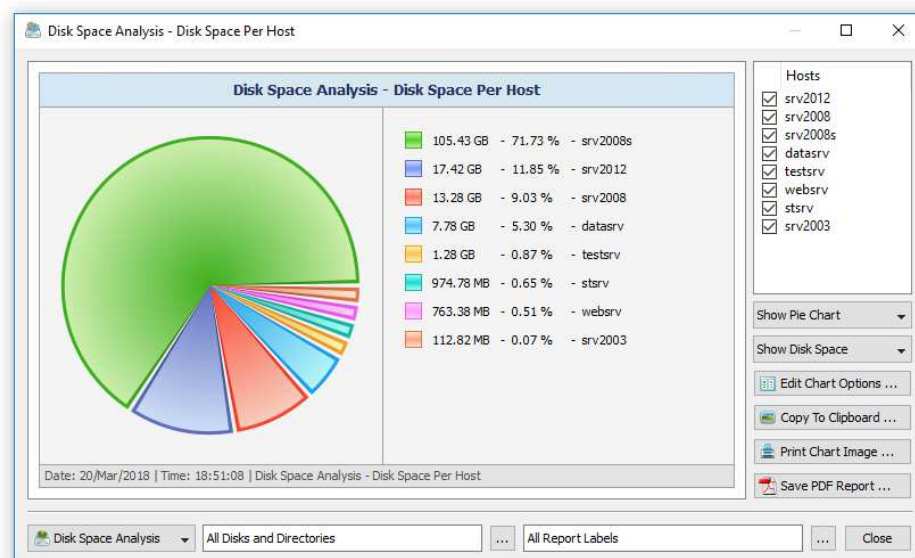
In order to export a disk space analysis to an SQL database, press the 'Save' button located on the results dialog's toolbar and select the 'SQL Database' report format. Optionally, press the 'More Options' button and specify the number of file system levels and the number of items per file system level to be exported to the database. For each report in the database, DiskBoss displays the report date and time, the host name, the input directories, the total number of files and disk space and the report title. To open a previously saved report, just click on the report item in the database reports dialog.

11 Analyzing Disk Space Usage Per Host

DiskBoss Server and DiskBoss Enterprise provide the ability to automatically detect all servers and NAS storage devices on the network, analyze hundreds of servers and/or NAS storage devices via the network, submit reports to a centralized reports database and display charts showing the disk space usage per server or NAS storage device across the entire enterprise.



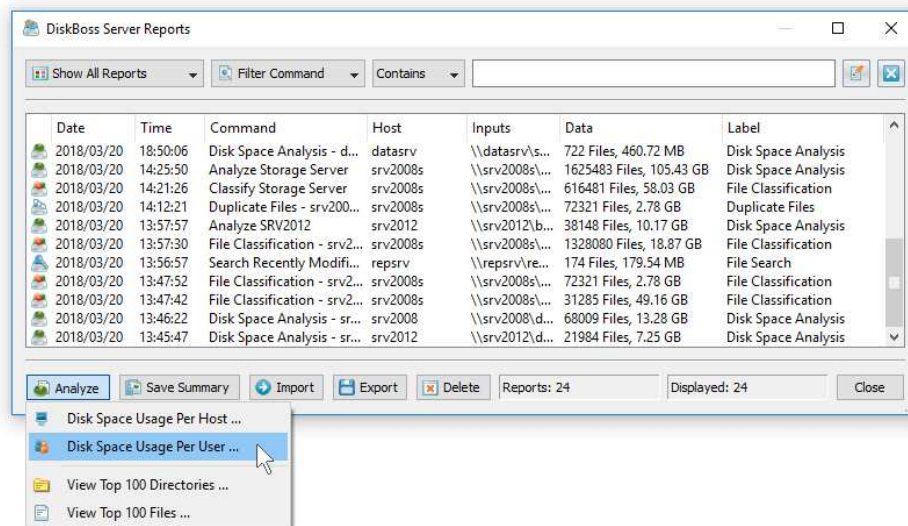
In order to analyze disk space usage per server, perform one or more disk space analysis operations on multiple servers and/or NAS storage devices, open the 'Reports' dialog, press the 'Analyze' button and select the 'Analyze Disk Space Usage Per Host' menu item. DiskBoss will analyze all reports saved in the reports database and display the hosts analysis dialog showing the disk space usage per host.



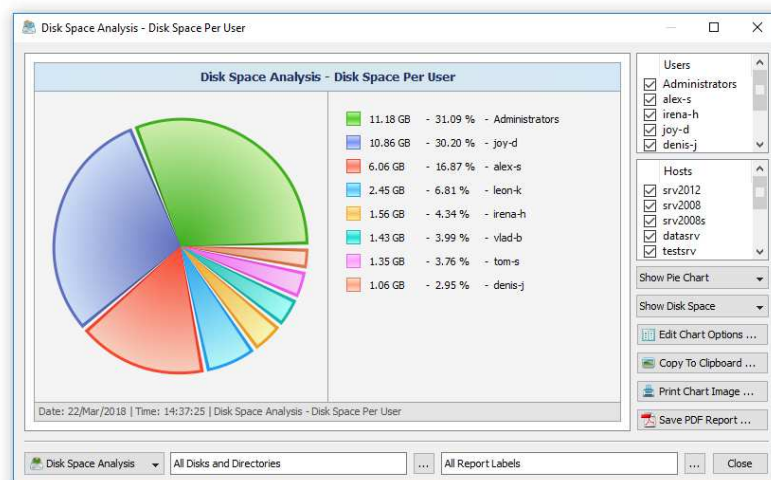
The hosts analysis dialog provides the ability to display pie charts and bars charts showing the disk space usage per server or NAS storage device according to analysis reports saved in the reports database. The user is provided with the ability to select types of disk space analysis operations and file system locations to analyze, edit the chart header and footer, copy the chart image to the clipboard and export graphical PDF reports including pie charts.

12 Analyzing Disk Space Usage Per User

DiskBoss Server and DiskBoss Enterprise provide the ability to automatically detect all servers and NAS storage devices on the network, analyze hundreds of servers and/or NAS storage devices via the network, submit analysis reports to a centralized report database and display charts showing the used disk space per user across the entire enterprise.



In order to analyze disk space usage per user, perform one or more disk space analysis, file classification and/or duplicate files search operations on multiple servers and/or NAS storage devices, open the 'Reports' dialog, press the 'Analyze' button and select the 'Analyze Disk Space Usage Per User' menu item. DiskBoss will analyze all reports saved in the reports database and display the users analysis dialog showing the disk space usage per user.

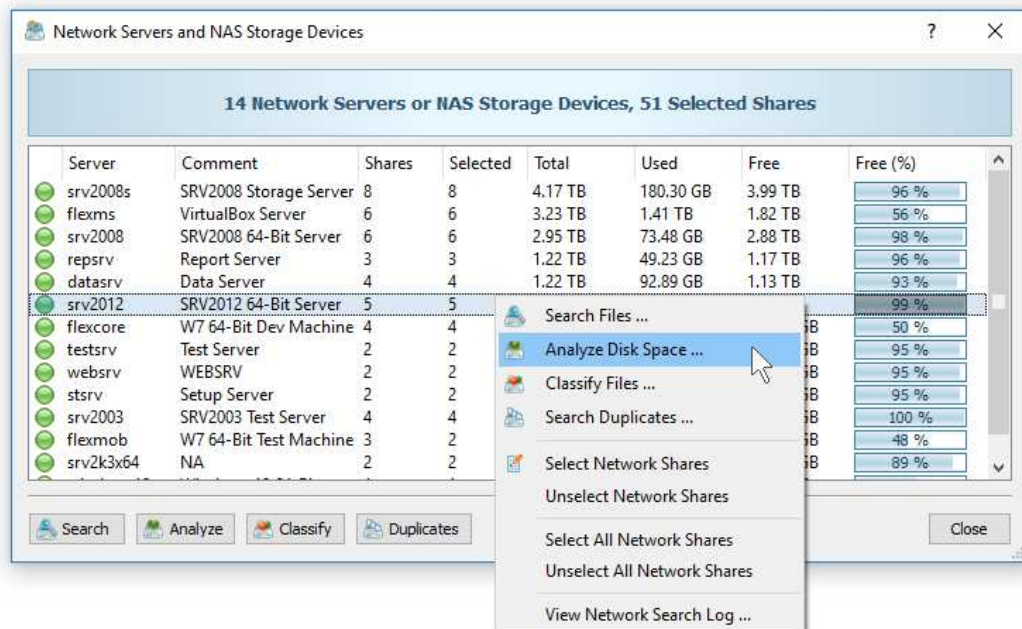


The users analysis dialog provides the ability to display pie charts and bars charts showing the disk space usage, file categories, the number of duplicate files and the amount of duplicate disk space per user according to analysis reports saved in the reports database. The user is provided with the ability to select types of disk analysis operations, file categories and file system locations to analyze, edit the chart header and footer, copy the chart image to the clipboard and export graphical PDF reports including pie charts.

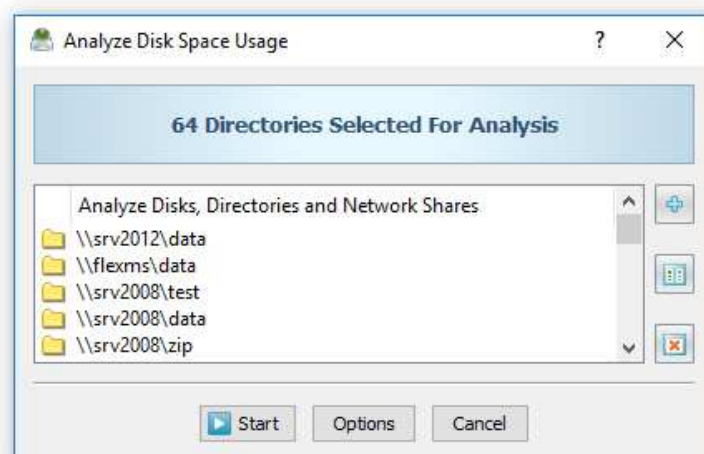
IMPORTANT: In order to be able to display the disk space usage per user, the disk space analysis operation should be configured to process and display files user names.

13 Analyzing Servers and NAS Storage Devices

DiskBoss allows one to scan the network, discover network servers and NAS storage devices, automatically detect all accessible network shares and analyze disk space usage in hundreds of network servers and NAS storage devices. In addition, the user is provided with the ability to export the list of detected servers and NAS storage devices (including lists of network shares for each server) into HTML, PDF, text and Excel CSV reports.



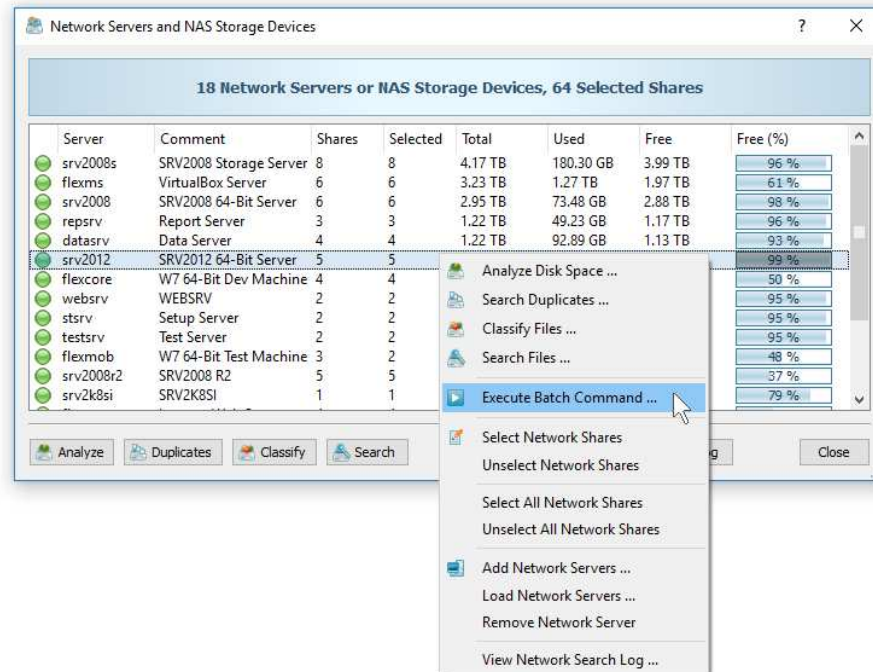
In order to discover all network servers and NAS storage devices on the network, press the 'Network' button located on the main toolbar and wait while DiskBoss will scan the network and show a list of detected network servers and NAS storage devices. In order to analyze disk space usage in one or more servers or NAS storage devices, select the required servers and NAS storage devices and press the 'Analyze' button.



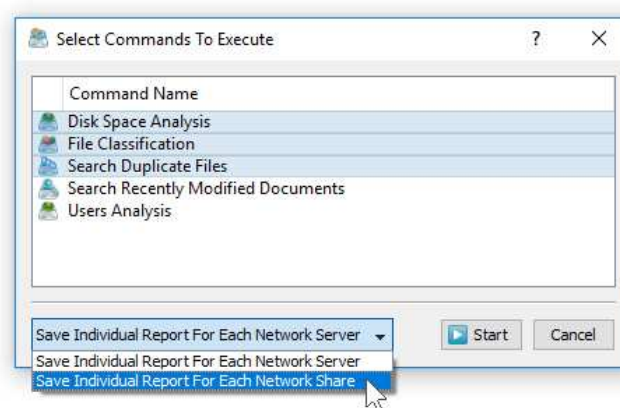
DiskBoss will show all accessible network shares hosted on the selected servers and NAS storage devices allowing one to analyze disk space usage and save various types of disk space analysis charts and reports. In addition, the user is provided with the ability to customize a large number of advanced disk space analysis options allowing one to tune disk space analysis operations for user specific needs and hardware configurations.

14 Batch Disk Space Analysis Operations

DiskBoss Server and DiskBoss Enterprise provide the ability to execute one or more pre-configured disk space analysis operations on all network servers and NAS storage devices on the network and generate an individual disk space analysis report for each server and NAS storage device. In order to be able to use batch disk space analysis operations, the user needs to pre-configure one or more disk space analysis commands customized to generate disk space analysis reports according to user-specific needs and requirements.



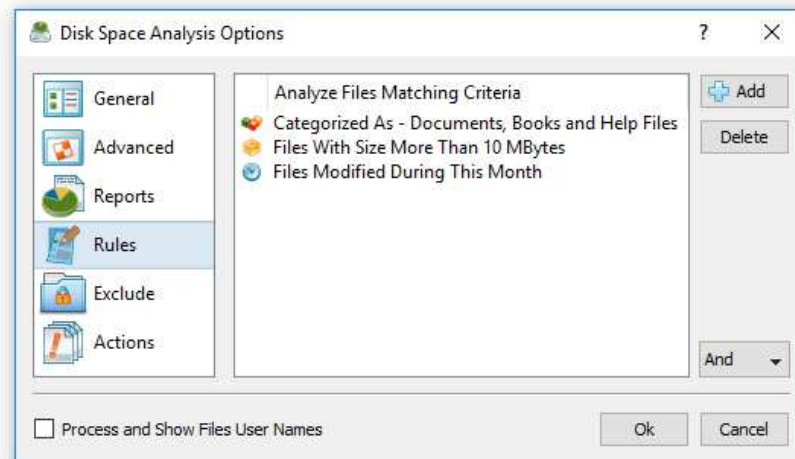
In order to start a batch disk space analysis operation, press the 'Network' button located on the main toolbar, search all servers and NAS storage devices on the network, select one or more servers and NAS storage devices, press the right mouse button and select the 'Execute Batch Command' menu item.



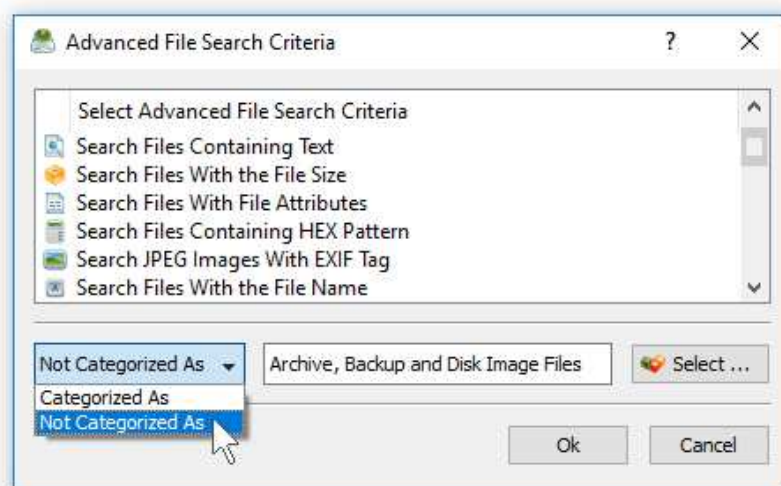
DiskBoss will display a list of pre-configured disk space analysis commands allowing one to select one or more commands to be executed on all selected servers and NAS storage devices. In addition, the user is provided with the ability to select how to save disk space analysis reports - for each analyzed server or for each analyzed network share. By default, all disk space analysis reports will be saved in the DiskBoss internal reports database allowing one to open each report, review results, generate various types of pie charts and export reports into a number of standard formats including HTML, PDF, Excel, text, CSV and XML.

15 Analyzing Specific File Types or Categories

One of the most powerful capabilities provided by DiskBoss is the integration between disk space analysis and file search features allowing one to perform disk space analysis on files matching one or more user-specified rules. For example, the user is provided with the ability to analyze files related to a specific file category, with a specific file size that were modified or created during a specific time period or any other combination of user-specific rules.

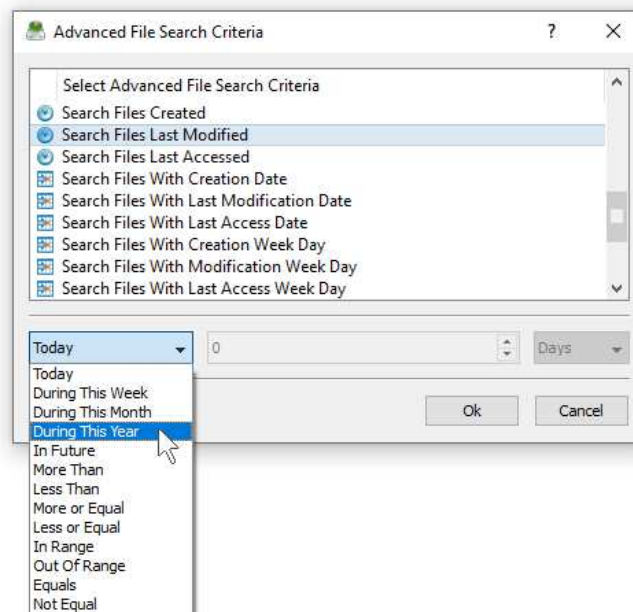


In order to add one or more file matching rules to a disk space analysis operation, press the 'Advanced Options' button on the disk space analysis command dialog, select the 'Rules' tab and press the 'Add' button. Once finished to add file matching rules, select an appropriate rules logic mode (AND/OR) and press the 'Save' button. For a rule-based disk space analysis operation, the results dialog will show files matching the specified rules and directories containing these files. All types of charts and reports will include information about filtered files only making it very easy to focus on specific types or categories of files.

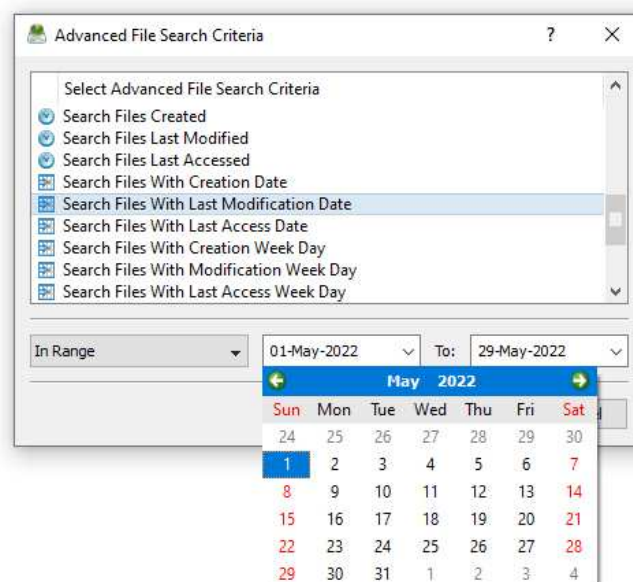


In addition to positive file matching rules allowing one to analyze disk space usage for files matching user-specified rules, DiskBoss provides the ability to add negative file matching rules, which will exclude specific type or categories of files from the disk space analysis process. For example, in order to exclude all types of backup and archive files from disk space analysis results, add a file category rule, select the 'Not Categorized As' rule operator and select the 'Archive and Backup Files' file category.

Another very useful analysis rule provides the ability to analyze the disk space usage by the creation, last modification or the last access date. For example, in order to analyze files modified during the last year, select the rule named 'Search Files Last Modified' and set the rule operator to 'During This Year'.



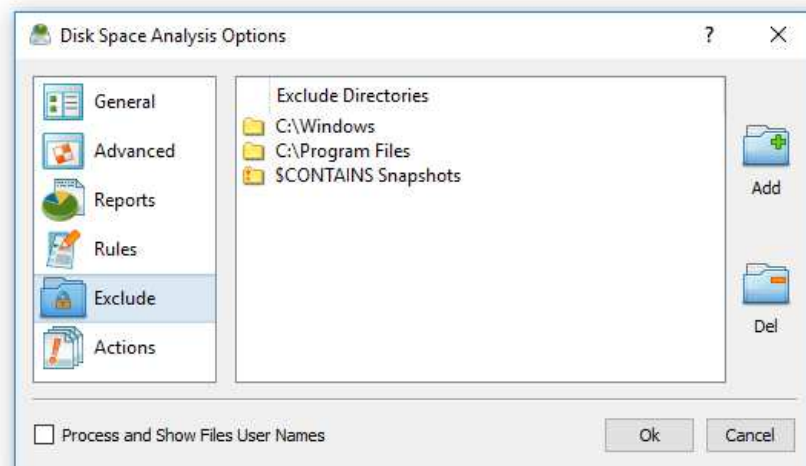
In addition, there are analysis rules to match files by the number of days, months, years, hours, minutes or seconds since the creation, last modification or the last access time allowing one to precisely select which files to analyze. Finally, the user is provided with the ability to analyze files created, last modified or last accessed before or after a specific date or a date range. For example, in order to analyze files by a modification date range, select the rule named 'Search Files With Last Modification Date', set the rule operator to 'In Range' and then select the start date and the end date.



In advanced analysis operations the date and time rules may be combined with other types of file matching rules allowing one to view the disk space analysis results according to the user-specific needs. For example, in order to free the disk space, the user may display analysis results showing the disk space usage for all types of backup files with the file size more than 100 MB which were created more than a year ago.

16 Excluding Subdirectories from Disk Analysis

Sometimes, it may be required to exclude one or more subdirectories from the disk space analysis process. For example, if you need to analyze a disk excluding one or two special directories, you may specify the whole disk as an input directory and add the directories that should be skipped to the exclude list.



In order to add one or more directories to the exclude list, open the disk space analysis command dialog, press the 'Options' button, select the 'Exclude' tab and press the 'Add' button. All files and subdirectories located in the specified exclude directory will be excluded from the disk usage analysis process. In addition, advanced users are provided with a number of exclude directories macro commands allowing one to exclude multiple directories using a single macro command.

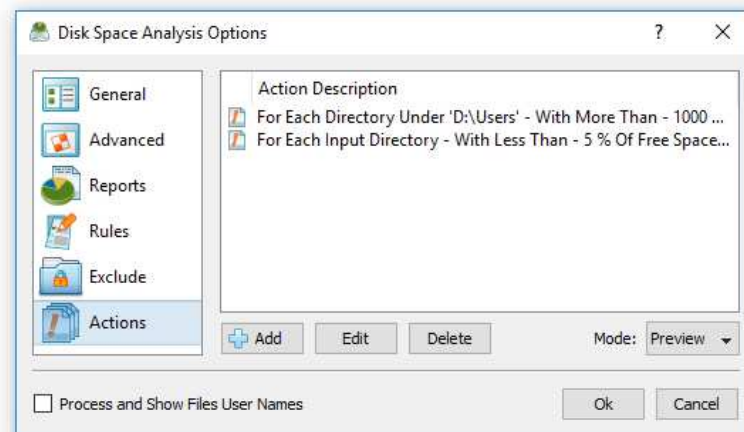
DiskBoss provides the following exclude directories macro commands:

- **\$BEGINS <Text String>** - this macro command excludes all directories beginning with the specified text string.
- **\$CONTAINS <Text String>** - this macro command excludes all directories containing the specified text string.
- **\$ENDS <Text String>** - this macro command excludes all directories ending with the specified text string.
- **\$REGEX <Regular Expression>** - this macro command excludes directories matching the specified regular expression.
- **\$DIRLIST <File Name>** - this macro command excludes all directories listed in the user-specified text file.
- **\$FILELIST <File Name>** - this macro command excludes all files listed in the user-specified text file.

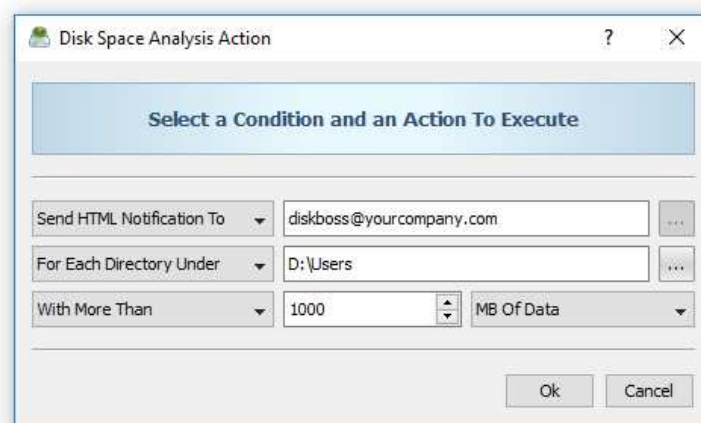
For example, the exclude macro command '\$CONTAINS Temporary Files' will exclude all directories with 'Temporary Files' in the full directory path and the exclude macro command '\$REGEX \.(TMP|TEMP)\$' will exclude directories ending with '.TMP' or '.TEMP'.

17 Conditional Disk Space Analysis Actions

IT professionals and storage administrators are provided with the ability to automatically detect abnormal disk space usage patterns, send E-Mail notification, save disk space usage reports and/or execute file management commands or custom actions. The user is provided with the ability to define one or more disk space analysis conditions, evaluate these conditions on disk space analysis results and send E-Mail notifications and/or execute actions if one or more of the specified conditions are met.



In order to add one or more disk space analysis conditions and actions, open the disk space analysis options dialog, select the 'Actions' tab and press the 'Add' button. On the action dialog, select the directory mode, enter the directory to evaluate the condition for, select the condition type, enter the condition value, select the action type and enter the action value.

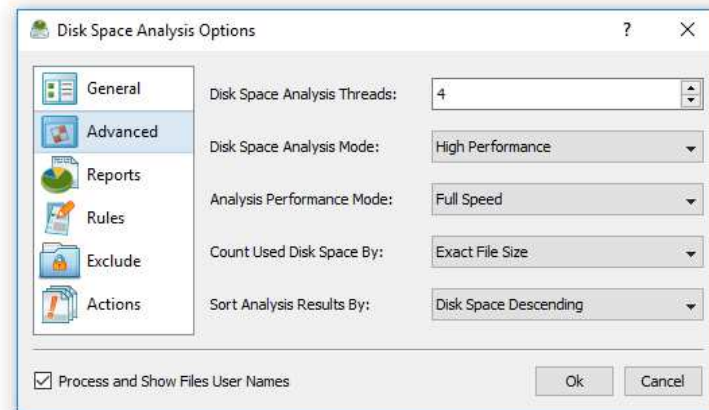


During runtime, DiskBoss will perform disk space analysis and evaluate the specified conditions for one or more directories depending on the selected directory mode. Execution of disk space analysis actions depends on the selected actions mode. In the 'Preview' mode, DiskBoss will mark directories matching the specified conditions in the results dialog and show the actions preview dialog allowing one to verify and manually confirm all disk space analysis actions, reports and E-Mail notifications to be executed.

In the 'Execute' mode, instead of showing the disk space analysis results dialog, DiskBoss will automatically send E-Mail notifications, save reports and/or execute actions for each directory matching the user-specified conditions. The 'Execute' mode is especially useful for automatic disk space analysis and file management operations performed periodically using DiskBoss Server allowing one to trigger user-defined disk cleanup and file management operations based on disk space analysis results.

18 Advanced Disk Space Analysis Options

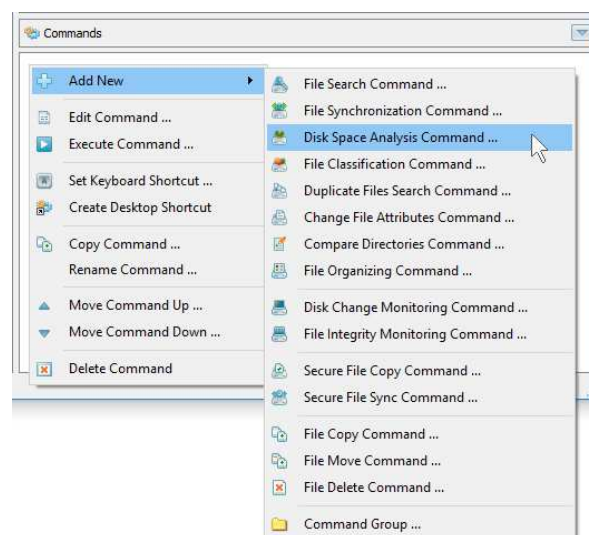
DiskBoss provides a large number of advanced disk space analysis options allowing one to customize and configure disk space analysis operations for user-specific needs and custom hardware and storage configurations.



The disk space analysis options dialog allows one to control the directory scanning mode, the default report title, advanced reporting options, the performance mode and enable/disable automatic report generation. In addition, the user is provided with the ability to analyze specific file types, control performance tuning options, exclude specific directories from the disk space analysis process and specify one or more conditional analysis actions.

18.1 Pre-Configured Disk Space Analysis Commands

One of the most powerful and flexible capabilities of DiskBoss is the ability to pre-configure custom disk space analysis operations as user-defined commands and execute such commands in a single mouse click using the DiskBoss GUI application or direct desktop shortcuts.



User-defined commands may be managed and executed through the commands dialog or the commands tool pane. In order to add a new command through the commands pane, press the right mouse button over the pane and select the 'Add New - Disk Space Analysis Command' menu item. In order to execute a previously saved command, just click on the command item in the commands tool pane or create a direct desktop shortcut on the Windows desktop.

19 Using the DiskBoss Command Line Utility

In addition to the GUI application, DiskBoss Ultimate provides a command line utility capable of performing disk space utilization analysis operations and executing user-defined disk space analysis commands from shell scripts and batch files. The DiskBoss command line tool is located in the '<ProductDir>/bin' directory.

Command Line Syntax:

diskboss -analyze -dir <Input Directory 1> [... <Input Directory X> <Options>]

This command analyzes the specified disks, directories or network shares.

diskboss -analyze -server <Host Name 1> [... <Host Name X> <Options>]

This command analyzes all network shares in the specified servers or NAS storage devices.

diskboss -analyze -network [Options]

This command analyzes all network shares in all servers on the network.

diskboss -execute <User-Defined Disk Space Analysis Command>

This command executes a user-defined disk space analysis command.

Parameters:

-dir <Input Directory 1> [... <Input Directory X>]

This parameter specifies the list of input disks or directories to analyze. In order to ensure proper parsing of input disks and directories, directories containing space characters should be double quoted. By default, DiskBoss will generate a combined disk space analysis report showing information about all analyzed disks, directories or network shares. In order to generate an individual report for each input directory use the '**-batch**' command line option to enable the batch report generation mode.

-server <Host Name 1> [... <Host Name X>]

This parameter specifies the list of host names or IP addresses of servers or NAS storage devices that should be analyzed. DiskBoss will enumerate all network shares accessible in the specified servers or NAS storage devices, perform disk space analysis and generate reports if required. By default, DiskBoss will generate a combined disk space analysis report showing information about all analyzed network shares. In order to generate an individual report for each network share use the '**-batch**' command line option to enable the batch report generation mode.

-network

In the network-wide disk space analysis mode, DiskBoss will discover servers and NAS storage devices accessible on the network, enumerate all network shares available in all detected servers and NAS storage devices, perform disk space analysis and generate reports if required. By default, DiskBoss will generate a combined disk space analysis report showing information about all analyzed network shares. In order to generate an individual report for each network share use the '**-batch**' command line option to enable the batch report generation mode.

Options:**-save_html_report [ReportFileName]**

This option saves a disk space analysis report and the list of all file categories to an HTML file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_[date]_[time].html

-save_csv_report [ReportFileName]

This option saves a disk space analysis report and the list of all file categories to an Excel CSV file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_[date]_[time].csv

-save_text_report [ReportFileName]

This option saves a disk space analysis report and the list of all file categories to a text report file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_[date]_[time].txt

-save_pdf_report [ReportFileName]

This option saves a disk space analysis report and the list of all file categories to a PDF report file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_[date]_[time].pdf

-save_xml_report [ReportFileName]

This option saves a disk space analysis report and the list of all file categories to an XML report file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_[date]_[time].xml

-save_report [ReportFileName]

This option saves a disk space analysis report and the list of all file categories to a native DiskBoss report file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_[date]_[time].flr

-exclude_dir <Exclude Directory 1> [... <Exclude Directory X>]

This option specifies the list of directories that should be excluded from the disk space analysis operation. In order to ensure proper parsing of command line arguments, directories containing space characters should be double quoted.

-batch

This option enables the batch report generation mode. In the batch report generation mode DiskBoss saves an individual report file for each input disk, directory or network share.

-v

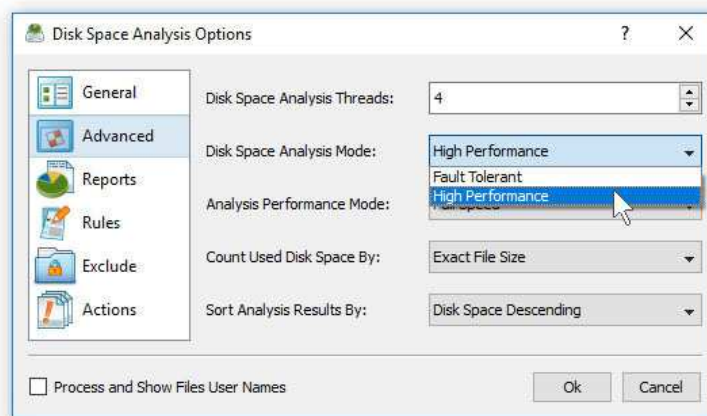
This option shows the product's major and minor versions.

-help

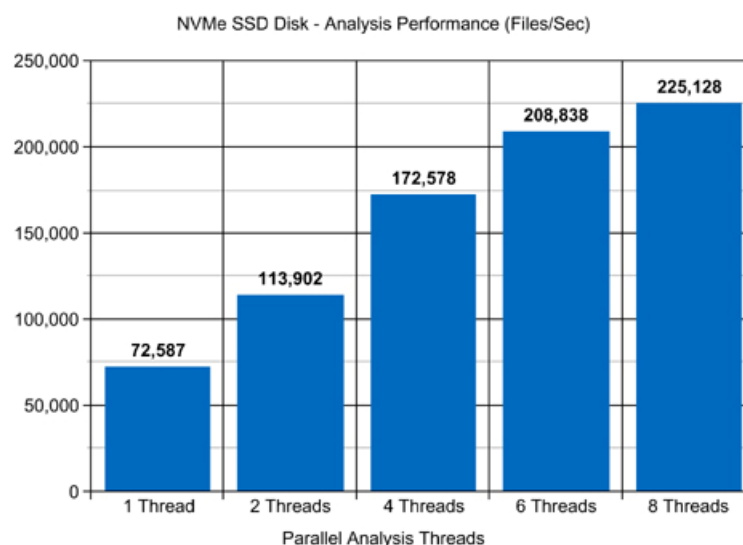
This option shows the command line usage information.

20 Disk Space Analysis Performance

DiskBoss is optimized for modern multi-core and multi-CPU systems and is capable of analyzing multiple disks, directories or network shares in parallel using all CPUs installed in the computer. DiskBoss provides a number of different performance optimization options allowing one to tune the disk space analysis operations for user-specific hardware and storage configurations.

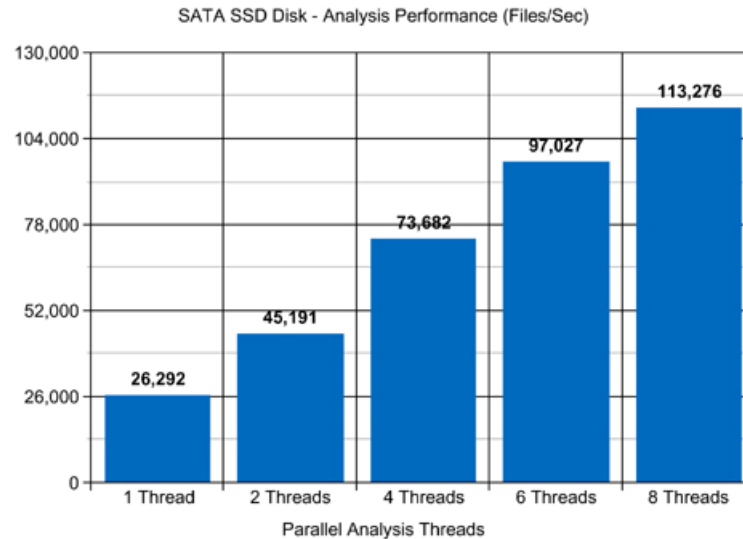


In order to customize the disk space analysis performance optimization options, open the disk space analysis operation dialog, press the 'Options' button and select the 'Advanced' tab. The 'Dir Scan Threads' option controls how many parallel disk space analysis threads are used to scan input disks, directories and network shares. In the 'Fault-Tolerant' directory scanning mode, DiskBoss uses an individual processing thread for each input disk, directory or network share, but limits the maximum number of parallel scanning threads to the specified value. In the high-performance directory scanning mode, DiskBoss always uses the specified number of parallel directory scanning threads even when processing a single input disk, directory or network share.

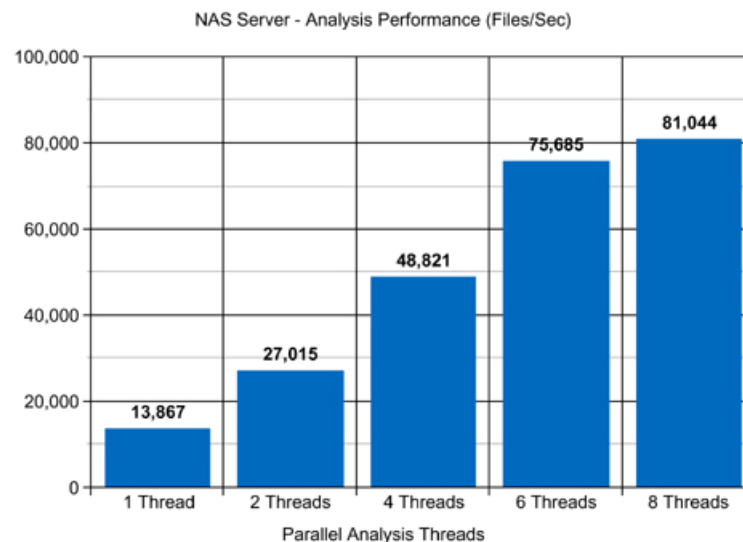


For example, when analyzing files stored on a high-speed NVMe SSD disk, DiskBoss reaches up to 72,000 files/sec using a single disk space analysis thread. With two parallel analysis threads, the performance scales up to 113,000 files/sec and with four parallel analysis threads, the performance increases up to 172,000 files/sec showing a very good level of multi-threaded performance scalability. With six processing threads the analysis performance reaches up to 208,000 files/sec and with eight processing threads the performance increases up to 225,000 files/sec, which makes it possible to analyze 10 millions files within one minute.

When analyzing files stored on regular SATA SSD drives, which are significantly slower than NVMe SSD drives, the performance of the disk space analysis process reaches up to 26,000 files/sec using a single processing thread and scales up to 73,000 files/sec with four parallel analysis threads. With eight parallel analysis threads, the performance reaches up to 113,000 files/sec, which allows to analyze huge numbers of files relatively fast.

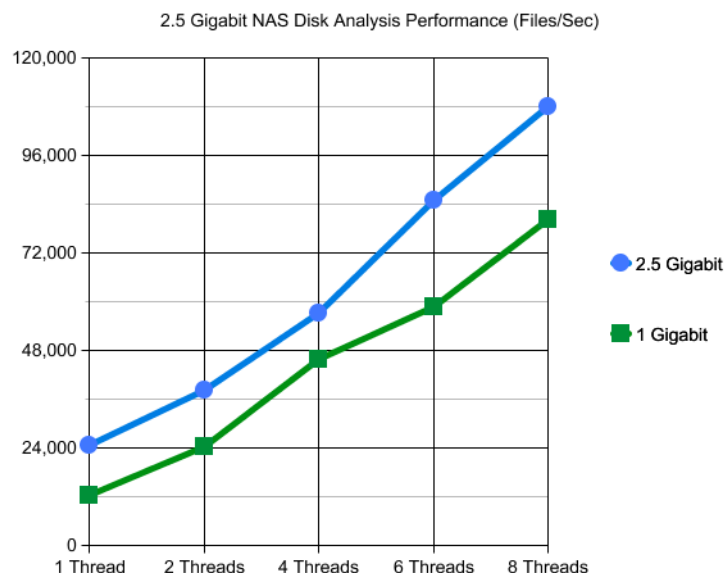


Analyzing files stored on NAS storage devices via a network is more complicated because the user needs to take into account the speed and the latency of the network. If the computer, on which DiskBoss is installed, is connected to the NAS storage device via a high-speed, low-latency network, the performance of the disk space analysis operations may reach up to 13,000 files/sec with one processing thread, scale up to 48,000 files/sec with four parallel processing threads and increase up to 81,000 files/sec with eight parallel analysis threads.

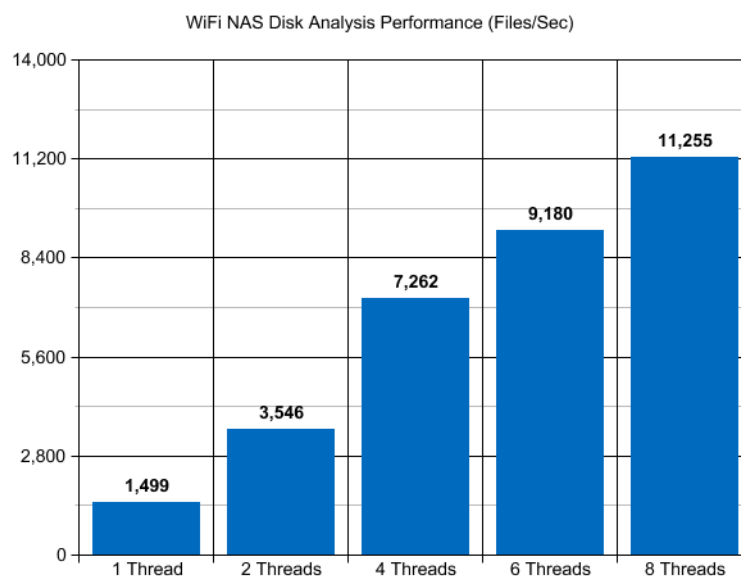


On the other hand, if DiskBoss will need to access network shares via the Internet or via a long-distance, high-latency network, the performance of the disk space analysis operations will be relatively slow. One of the options to increase the performance of the analysis operations in such configurations is to set the 'High-Performance' directory scanning mode and increase the number of parallel directory scanning threads to 16 or even 32 disregarding how many CPUs are actually installed on the computer.

Analyzing large file systems distributed across a number of NAS servers may be a very time consuming operation and one of the ways to speed-up the disk space analysis process is to perform the analysis operation via a 2.5 Gigabit Ethernet network. With 2.5 Gigabit Ethernet the performance of the DiskBoss analysis operations continues to scale up to 108,000 Files/Sec with 8 parallel disk space analysis threads, which represents a 25% improvement compared to the standard Gigabit Ethernet.

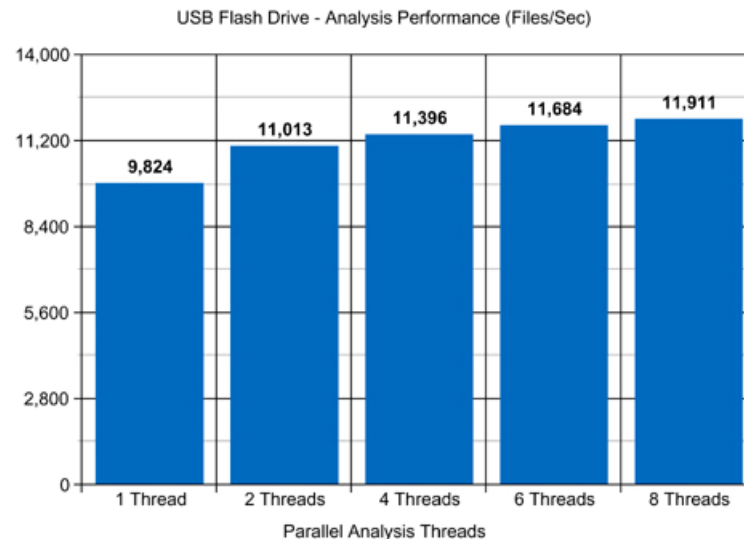


Due to a very wide adoption of laptops and NAS servers with built-in WiFi network interfaces, many users may consider analyzing NAS servers via the wireless network. But, the latency of the wireless network is much higher and therefore it will take much more time to complete the disk space analysis operation via the wireless network. The question is how much longer the user will need to wait and if it will save any significant amount of time via a wired network.

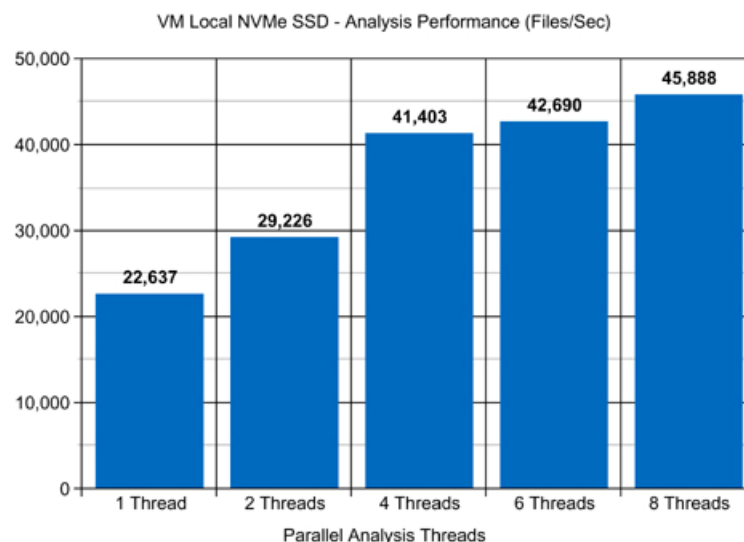


Based on our benchmarks, via a 5 GHz wireless network, DiskBoss reaches up to 1,500 Files/Sec with a single disk space analysis thread and scales up to 11,000 Files/Sec with 8 parallel disk space analysis threads, which is approximately 7 times slower compared to the standard Gigabit Ethernet and 10 times slower when compared to the 2.5 Gigabit Ethernet. So, if the user needs to analyze up to 1 million files, it is possible to use a wireless network. On the other hand, if the user needs to analyze a large NAS server with many millions of files, a low-latency Gigabit Ethernet or 2.5 Gigabit Ethernet is required.

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. Sometimes, it may be required to analyze a USB flash drive in order to free the used disk space. When analyzing files stored on a USB flash drive, DiskBoss can reach up to 9,000 files/sec with a single disk space analysis thread. With two parallel disk space analysis threads, the performance increases up to 11,000 files/sec, which is good, but more than two parallel analysis threads improve the performance of the disk space analysis operations very slightly.



Today, modern IT environments widely deploy virtual servers and/or virtual workstations. Most of the popular virtualization platforms provide a high level of performance, but anyway some performance degradations are inevitable when a task is executed on a guest virtual machine compared to the same task executed directly on the host computer.



For example, when a virtual machine with 4 virtual CPUs is stored on an NVMe SSD disk and analyzing files stored on a virtual local disk drive, which is physically stored on the same NVMe SSD disk, the performance of the disk space analysis operations reaches up to 22,000 files/sec using one disk space analysis thread. With two parallel analysis threads, the performance of the analysis operations increases up to 29,000 files/sec and with four parallel analysis threads, the performance of the disk space analysis operations scales up to 41,000 files.