

DiskBoss

DATA MANAGEMENT



Rule-Based File Search

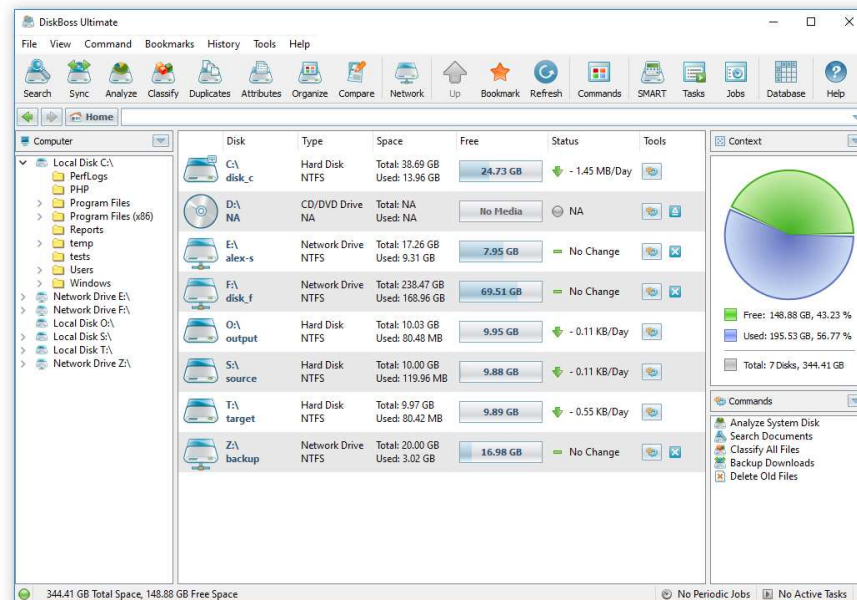
Version 14.1

Jan 2024

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Flexense Ltd.

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

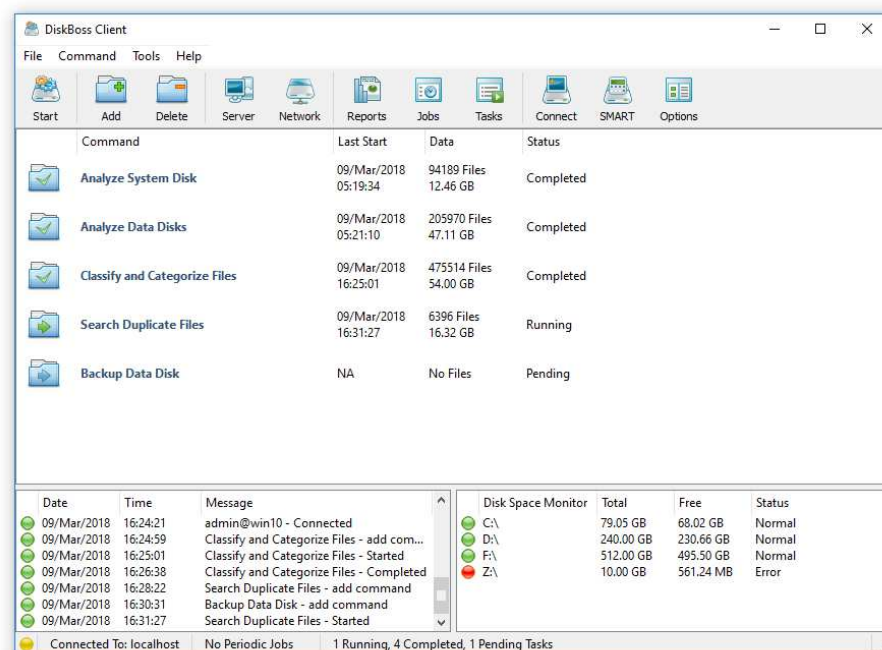
Date           - 2018/03/08
Time           - 18:04:30
Total Files    - 127539
Total Space    - 13.96 GB
Performance   - 14653 Files/Sec
Process Time   - 8.70 Sec
Host Name      - Windows10-64
User Name     - alex-s
Input Dirs     - c:\

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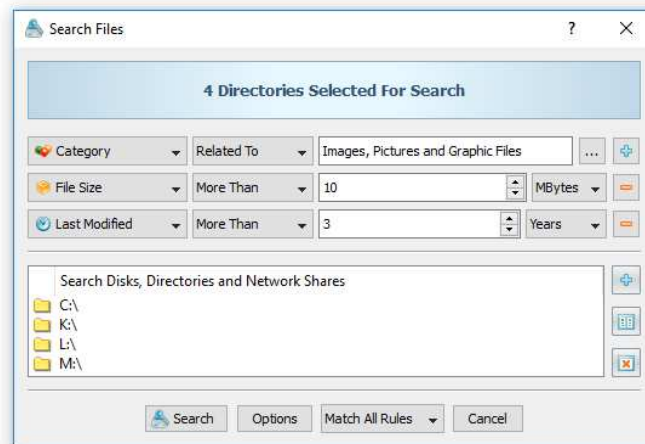
Finally, IT professionals and enterprise customers are provided with DiskBoss Server – a server-based product version, which runs in the background as a service and is capable of performing all type of disk space analysis and file management operations in a fully automatic and unattended mode according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



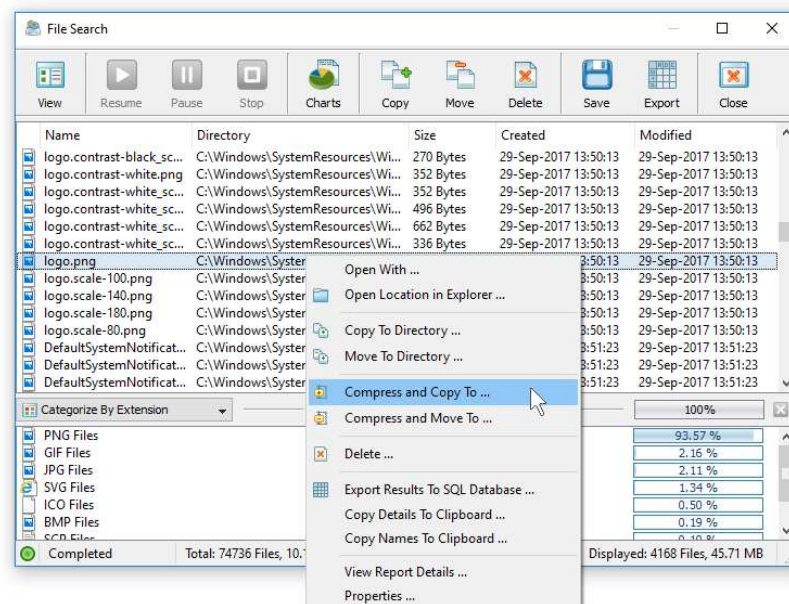
DiskBoss Server can be controlled locally or through the network using the DiskBoss client GUI application or the command line utility. DiskBoss Server provides the ability to pre-configure various types of disk space analysis and/or policy-based file management operations, schedule periodic jobs, save 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 Rule-Based File Search

DiskBoss provides extensive file search capabilities allowing one to search files by the file name, extension, type, location, size, attributes, text and binary patterns, creation, last access and modification dates, user name, JPEG EXIF tags, etc. Users are provided with the ability to use different types of file matching rules combined with logical operators to compose file search queries capable of finding files matching multiple criteria.



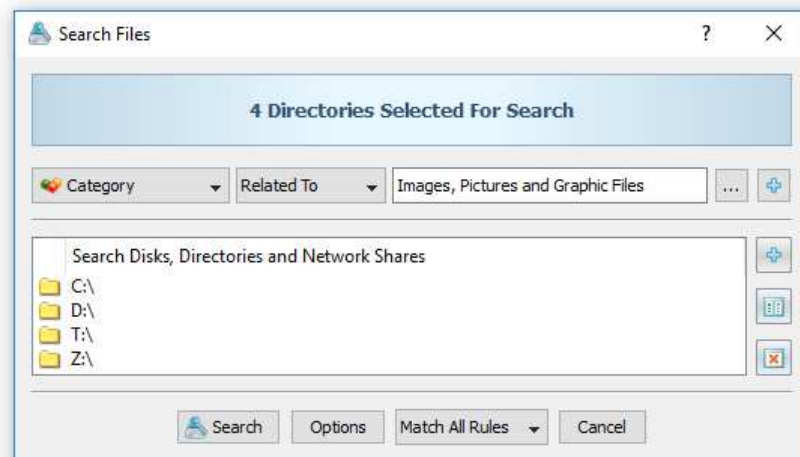
The DiskBoss file search capabilities are fully integrated with other product features allowing one to perform disk space analysis, file classification, duplicate files detection, file copy, delete and disk change monitoring operations on files matching one or more user-defined rules. In order to start a file search operation, just press the 'Search' button located on the main toolbar, enter a file name pattern and press the 'Search' button. If nothing is selected in the DiskBoss' file navigator, the search operation will be performed in the current location. Alternatively, DiskBoss will search the selected disks and directories and display search results.



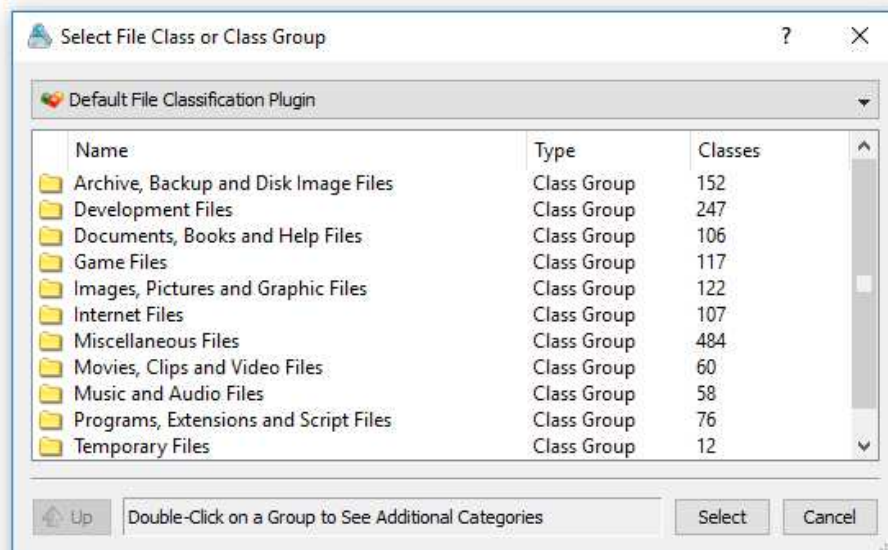
The search results dialog displays files matching the specified rules and allows one to export HTML, PDF, Excel, XML, text and CSV reports and perform a number of file management operations such as file copy, move or delete. For each search result, the results dialog displays the file name, directory, the file size and the last modification date. In order to see more information about a file, select the file in the result list, press the right mouse button and select the 'File Properties' menu item.

3 Searching Files by Category

DiskBoss is capable of automatically recognizing more than 3,500 file types and categories organized into a logical hierarchy of file classes and class groups, making it very easy to search for broad categories of files such as documents, music files, videos, images, etc. In order to search for files by the file type select the 'Search Files Categorized As' file matching rule and press the 'Select' button to select a file category.



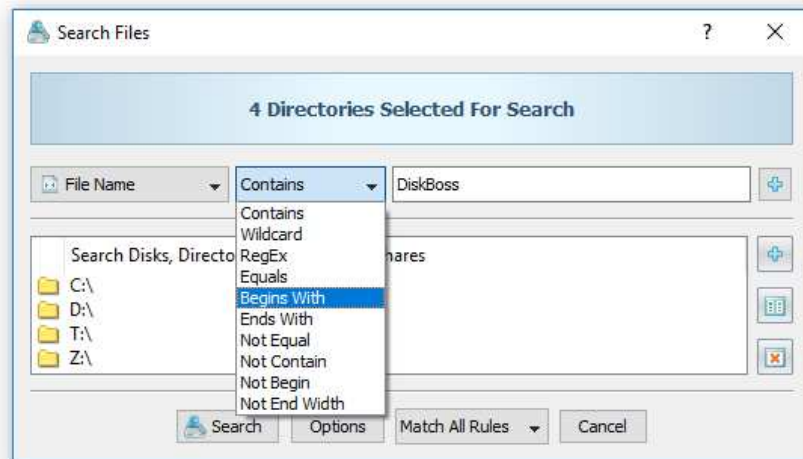
File categories and file classes are organized into a logical hierarchy representing specific file types grouped into a number of broad file categories. DiskBoss includes a number of file classification plugins, which provide different types of file categories allowing one to categorize files by the file type, size, creation, last access and modification dates, etc. In order to select a different file classification plug-in, use the plug-in combo box located on the top side of the file categories dialog.



In order to open a file category, just click on the category item in the list. Select the required file category or file class and press the 'Select' button to select the file category for the file matching rule. During runtime, DiskBoss will match files related to any file class in the selected file category or the exact file class if the file matching rule was set to match an individual file type.

4 Searching Files by File Name

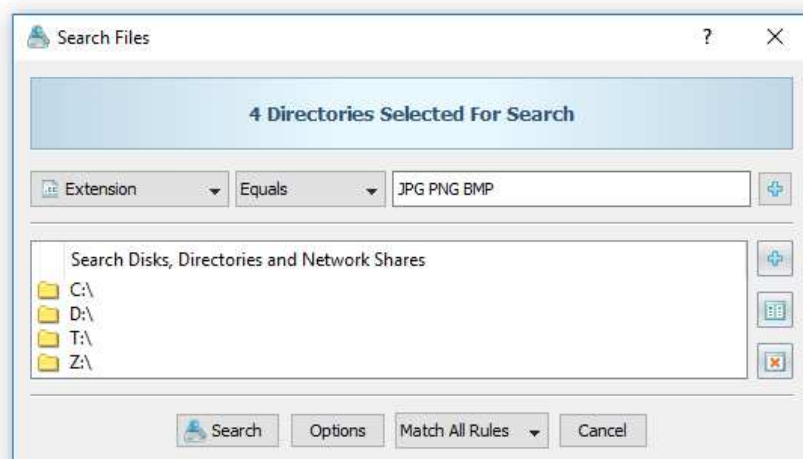
In order to search files by the file name, open the search operation dialog, press the 'Add' button, select the 'Search Files with the File Name' rule, select an appropriate file name comparison operator and enter a file name pattern string to compare file names with.



The file name comparison operator allows one to find files matching, beginning with, ending with or containing the specified string pattern. In addition, negative comparison operators are provided as well. File name searches are case insensitive and the entered file name pattern string will match both low case and upper case letters.

5 Searching Files by File Extension

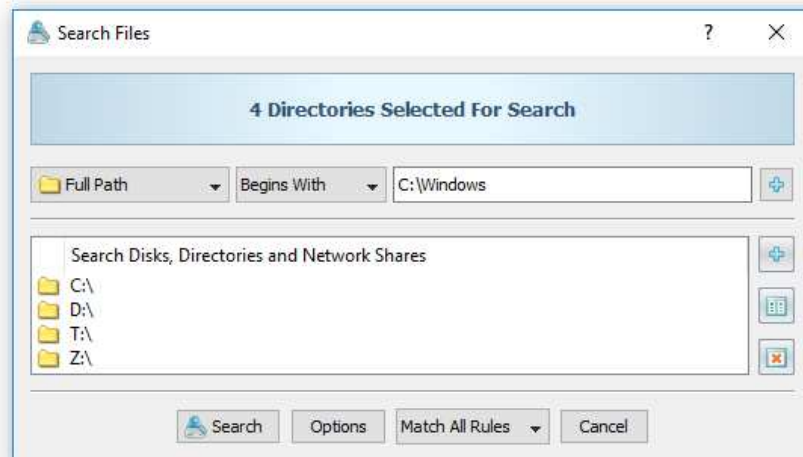
In order to search files by the file extension, open the search operation dialog, press the 'Add' button, select the 'Search Files with the File Extension' rule, select an appropriate file extension comparison operator and enter a file extension pattern string to compare file extensions with.



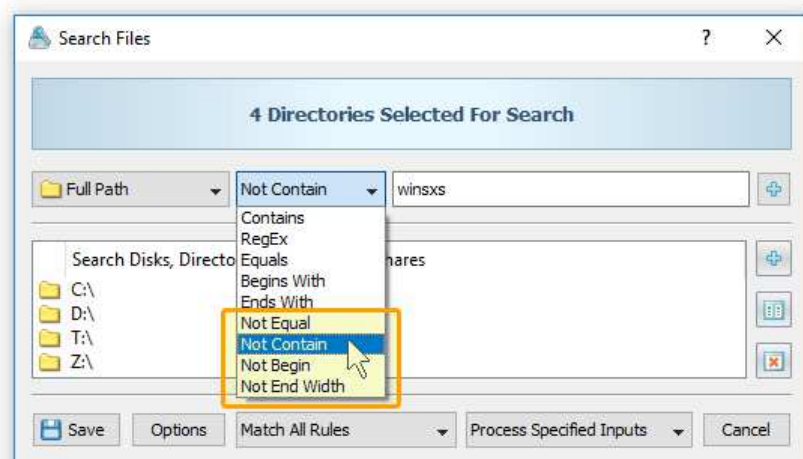
The file extension comparison operator allows one to find files matching, beginning with, ending with or containing the specified string pattern. In addition, negative comparison operators are provided as well. File extension searches are case insensitive and the entered file extension pattern string will match both low case and upper case letters.

6 Searching Files by File Path

In order to search files by the directory name, open the search operation dialog, press the 'Add' button, select the 'Search Files with the Directory Name' rule, select an appropriate directory name comparison operator and enter a directory name pattern string to compare directories with.



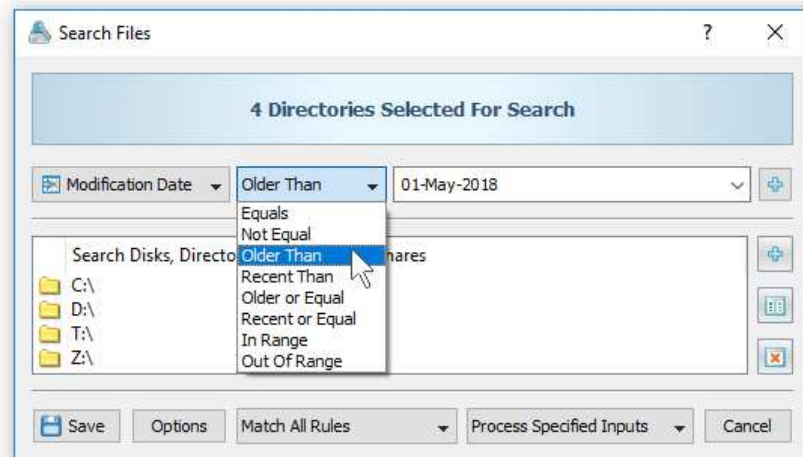
The directory name comparison operator allows one to find directories matching, beginning with, ending with or containing the specified string pattern. In addition, negative comparison operators are provided as well. Directory name searches are case insensitive and the entered directory name pattern string will match both low case and upper case letters.



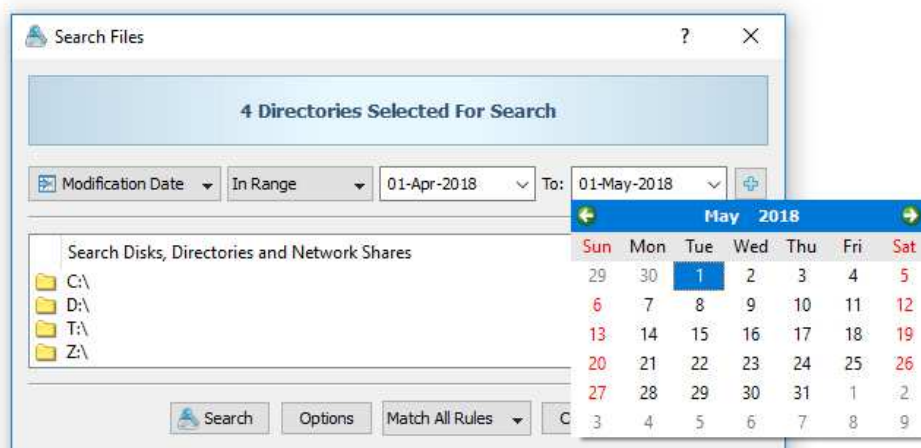
In addition, the user is provided with a number of negative file search operators allowing one to exclude files by a text pattern in the directory name. For example, in order to exclude all files containing a specific pattern in the full file path, add the 'Full Path' rule, set the operator to 'Not Contain' and enter a text pattern to match.

7 Searching Files by Date

DiskBoss provides a set of file matching rules allowing one to search files by the creation, modification and last access dates. The set of date-based file matching rules provides the ability to search files created, last modified or last accessed on a specific date, older or newer than a specific date. In addition, the user is provided with the ability to search files created, last modified or last accessed between user-specified dates.



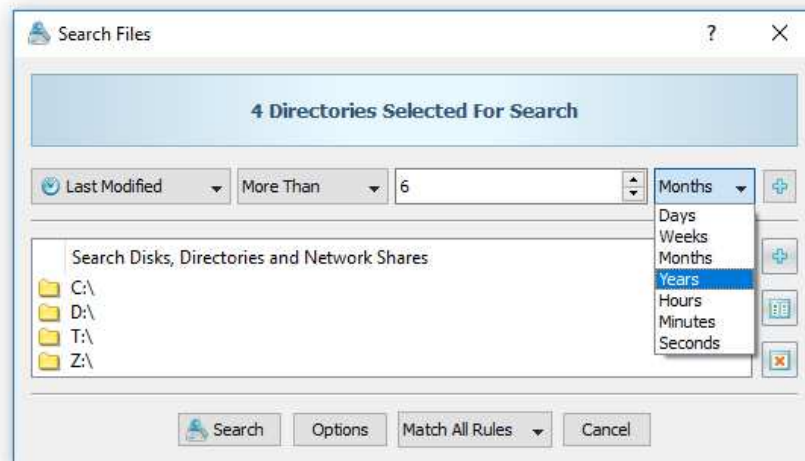
For example, in order to search files which were created before 1-May-2018, set the file search rule type to 'Modification Date', set the operator to 'Older Than' and set the date to 1-May-2018. In a similar way, the user can search files that were created before the specified date or exactly on the user-specified date.



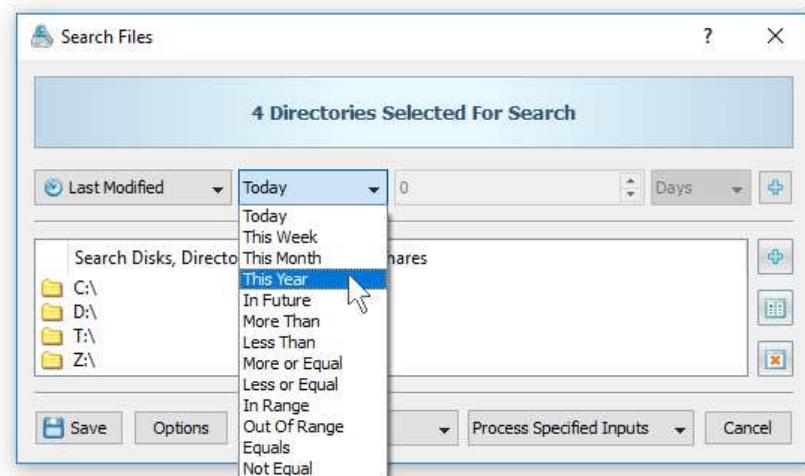
Finally, the user is provided with the ability to search files created, last modified or last accessed within a user-specified range of dates. For example, in order to search files that were created between two dates, set the rule operator to 'Creation Date', set the operator to 'In Range', enter the start date and enter the end date.

8 Searching Files by Time

In addition to the file matching rules capable of searching files by user-specified dates, DiskBoss provides an additional set of file matching rules allowing one to search files by relative periods of time. For example, the user can search files that were created, last modified or last accessed during the last X years, months, days, hours, minutes or seconds.



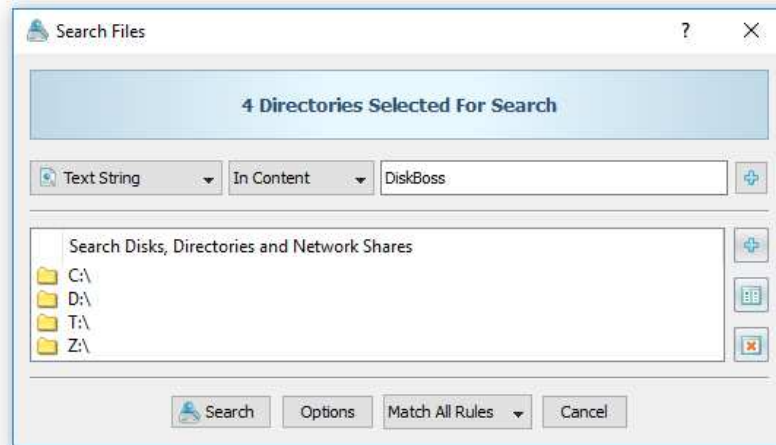
The relative time-based rules are useful when the user needs stable periods of time not changing and keeping valid as the time passes by. For example, a file matching rule searching files that were modified during the last 7 days is always valid disregarding of the current date.



The time-based file matching rules provide a number of pre-configured operators allowing one to search files that were created, last modified or last accessed today, during this week, during this month or during this year. In addition, there are a number of standard comparison operators and time range operators. Finally, the user is provided with the ability to search files with the creation, last modification or last access timestamps set to a future time.

9 Searching Files by Text Patterns

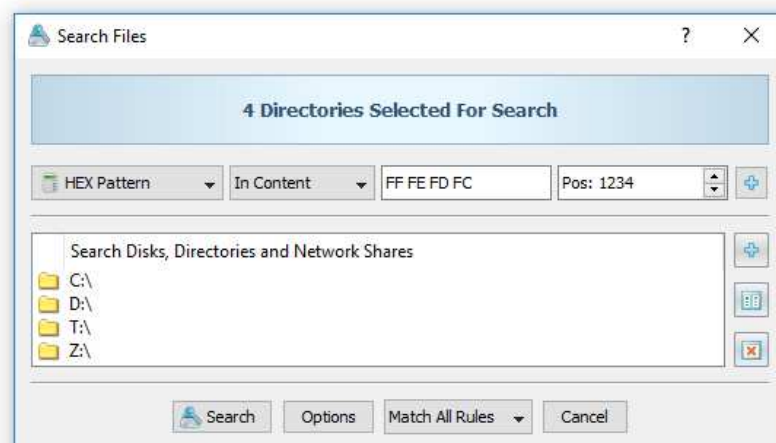
In order to search files by a text string inside of files, open the search operation dialog, press the 'Add' button, select the 'Search Files Containing Text' rule, select an appropriate text comparison operator and enter a text pattern string to search inside of files.



The text pattern comparison operator allows one to find files containing or not containing the specified text pattern. Text searches are case insensitive and the entered text pattern string will match both low case and upper case letters.

10 Searching Files by Binary Patterns

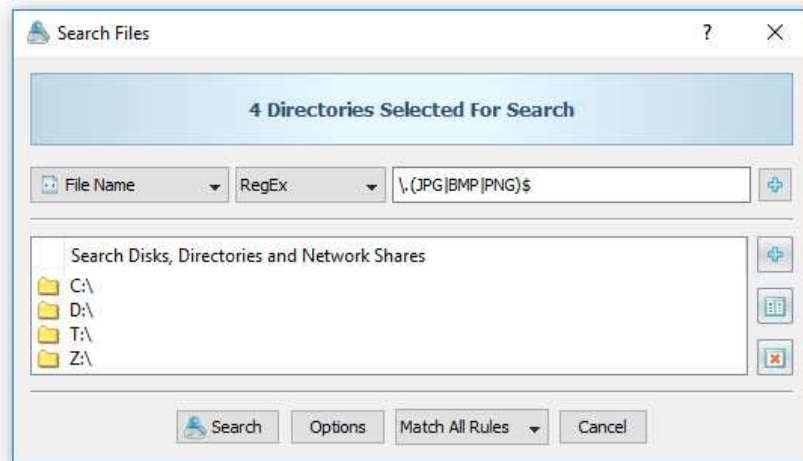
DiskBoss is capable of searching files by binary patterns located or not located at specific positions inside of files. In order to add a binary pattern search rule, press the 'Add' button, select the 'Search Files Containing HEX Pattern' rule, select an appropriate comparison operator, enter the HEX pattern to search for and specify an absolute position inside of files the pattern should be located on.



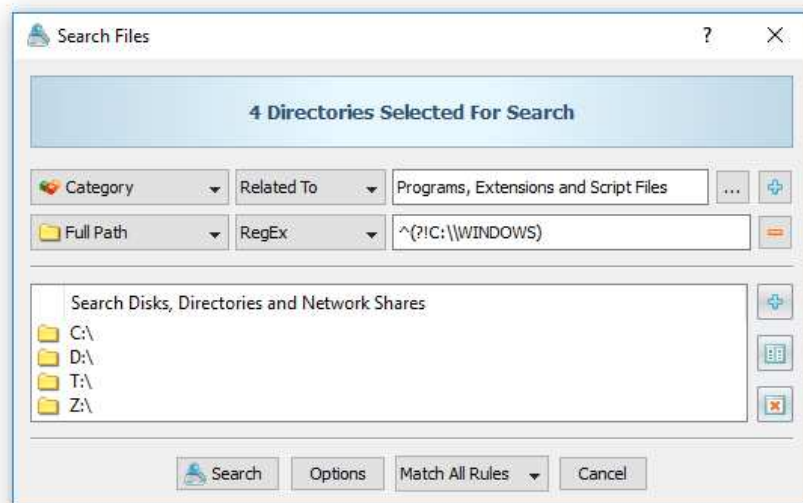
The HEX pattern should be specified as a string of upper case HEX numbers delimited by the space character with each number representing a single byte of the pattern. Users needed to match multiple binary patterns located at different places in each file may use multiple binary file matching rules with each one configured to match a single pattern. Moreover, multiple hierarchical binary file matching rules may be combined with logical operators allowing one to compose sophisticated, multi-level file search queries capable of finding the exact files the user is looking for.

11 Searching Files Using Regular Expressions

Regular expressions provide a flexible and powerful way to match text patterns in file names and directories. DiskBoss provides RegEx pattern matching operators for the file name search rule and the file path search rule.



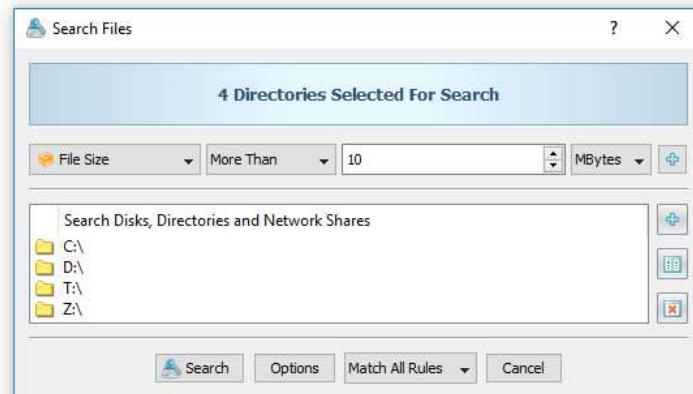
In order to search files using a regular expression, select the 'File Name' file matching rule, select the 'RegEx' pattern matching operator and enter a regular expression that should be matched. For example, the '\.(JPG|BMP|PNG)\$' regular expression will match all JPG, BMP and PNG image files.



Regular expressions may be combined with other types of file matching rules allowing one to match a very specific set of files. In addition to the ability to match files using regular expressions, DiskBoss allows one to exclude files using regular expressions. For example, in order to search all programs and executable files while excluding files located in the Windows directory, use the regular expression '^(!C:\\WINDOWS)' applied to the 'Full Path' file matching rule.

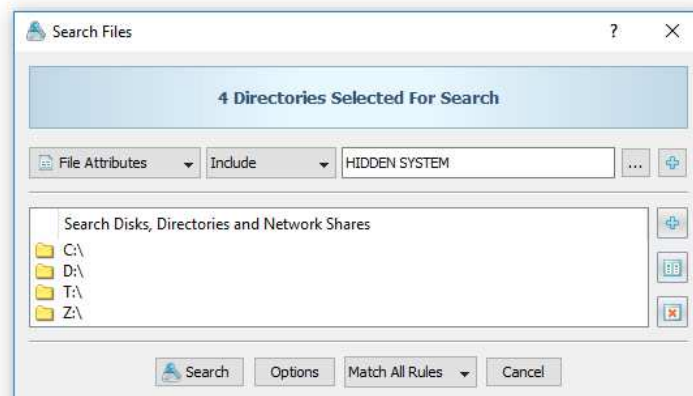
12 Searching Files by File Size

DiskBoss provides the ability to search files by the file size. In order to add a file search rule capable of matching files by the file size, press the 'Add' button, select the 'Search Files with File Size' rule, select an appropriate size comparison operator and enter the file size value.

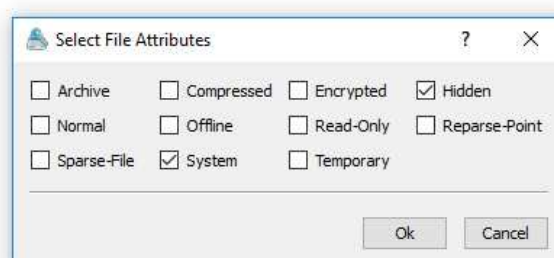


13 Searching Files by File Attributes

Sometimes, it may be required to find files by file attributes such as read-only, hidden, system, etc. In order to add a file search rule capable of matching files by file attributes, press the 'Add' button, select the 'Search Files with File Attributes' rule, select an appropriate comparison operator and press the 'Select' button to select the file attributes to look for.

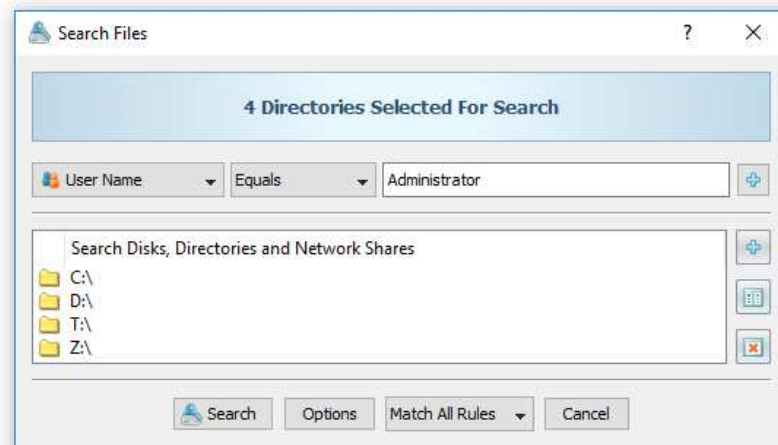


On the select dialog, check the required file attributes and press the 'Ok' button. When the rule is set to find files having the selected attributes, DiskBoss will match files having any of the selected file attributes. Otherwise, when the rule is set to find files not having the selected attributes, DiskBoss will match files having none of the selected attributes



14 Searching Files by User Name

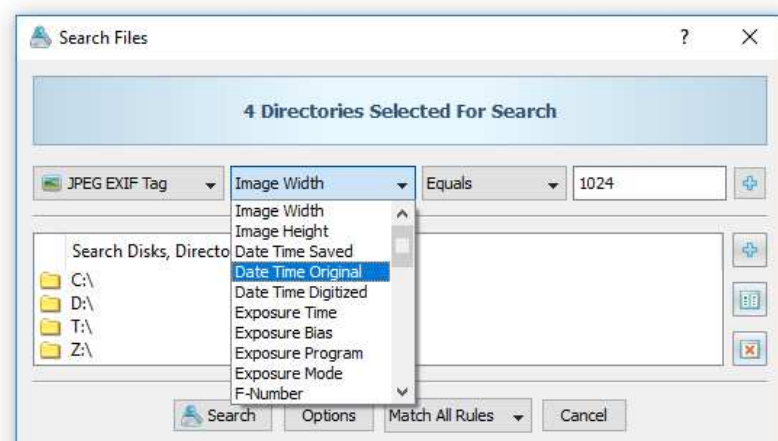
DiskBoss is capable of searching files by the user name. In order to add the user name file matching rule, press the 'Add' button, select the 'Search Files with the User Name' rule, select an appropriate user name comparison operator and enter the user name pattern string.



The user name comparison operator allows one to find user names matching, beginning with, ending with or containing the specified string pattern. In addition, negative comparison operators are provided as well. User name searches are case insensitive and the entered user name pattern string will match both low case and upper case letters.

15 Searching JPEG Images by EXIF Tags

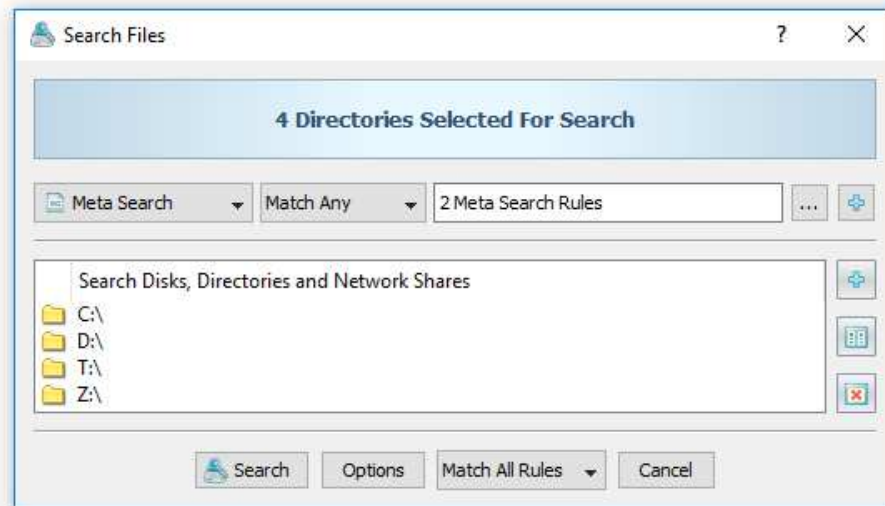
DiskBoss provides a JPEG EXIF tags file matching rule allowing one to search JPEG images by standard and/or custom JPEG EXIF tags. In order to add a JPEG EXIF tags matching rule, press the 'Add' button, select the 'Search JPEG Images with EXIF Tag' rule, select the JPEG EXIF tag to match, select an appropriate comparison operator and enter the string value to search for.



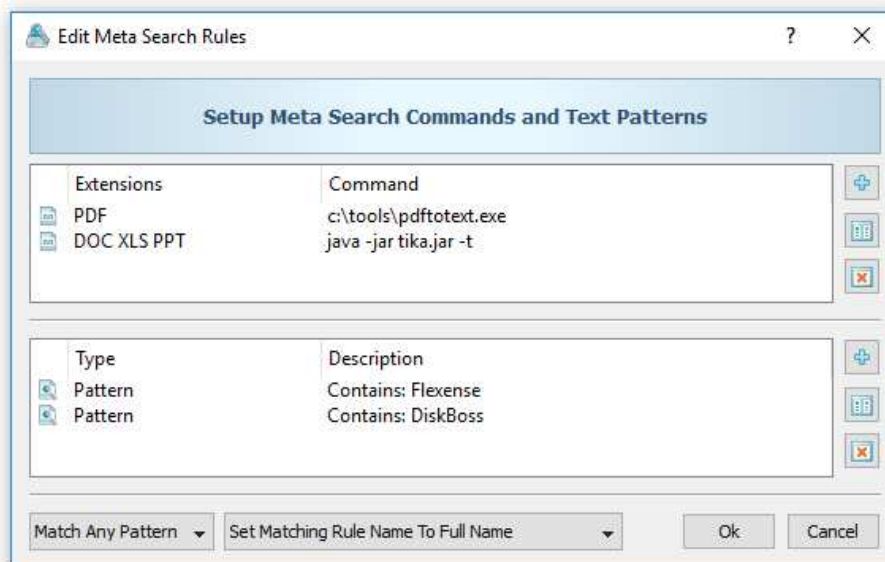
In addition to the ability to search for standard EXIF tags, users can customize the list of supported EXIF tags adding user-specific custom tags to the product configuration. In order to customize supported EXIF tags, select a JPEG image in the DiskBoss' file navigator, press the right mouse button and select the 'EXIF Viewer' menu item. On the EXIF viewer dialog, press the 'Customize' button and use the 'Add', 'Edit', 'Delete' buttons to customize the supported JPEG EXIF tags.

16 Integrating DiskBoss Search With External Tools

DiskBoss allows one to integrate external tools in the file search operations. The user is provided with the ability to specify which external tools, commands or script files to execute for which file extensions and then configure one or more text patterns to search in the output generated by the configured external tools.



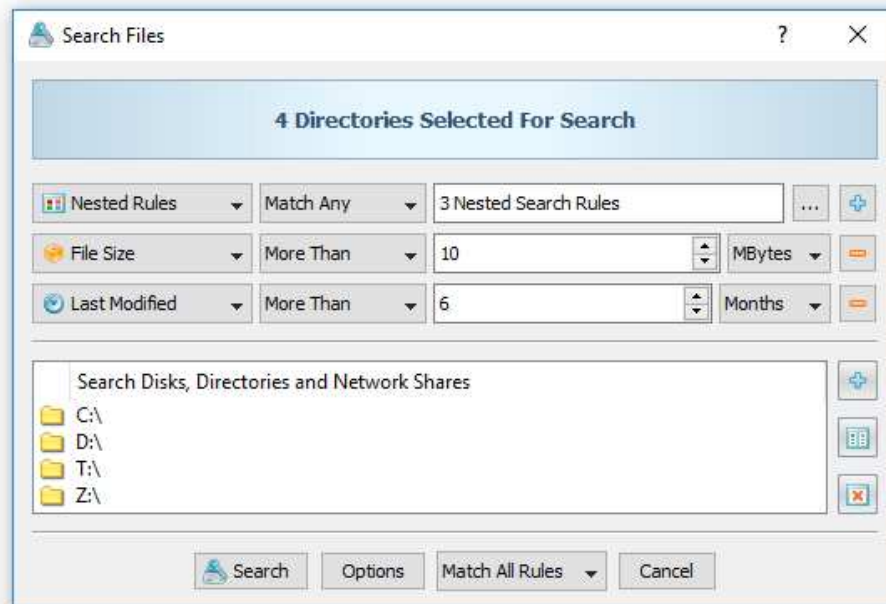
In order to configure a search operation to use an external tool, open the search dialog, select the 'Meta Search' rule type and press the 'Edit Rule' button. On the 'Meta Search' rule dialog, press the 'Add' button in the top view and specify one or more file extensions to process and a custom command to execute for each file with the specified extensions.



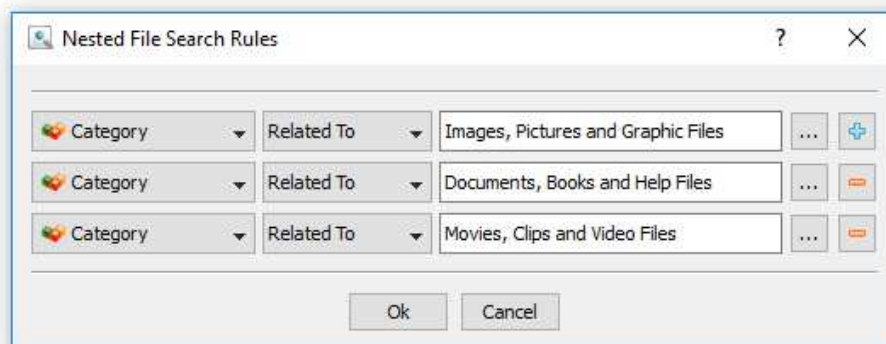
Once finished configuring file extensions and custom commands, press the 'Add' button in the bottom view and specify one or more text patterns to search in the output generated by the configured custom commands. During runtime, DiskBoss will scan the specified input directories, process all the existing files, execute the configured commands for each file with the specified file extensions and search for the user-specified text patterns in the output generated by the executed custom commands.

17 Using Hierarchical File Matching Rules

Nested, hierarchical file matching rules may be very useful when the user needs to find files related to multiple file categories and one or more additional criteria such as a specific file size or modification date.



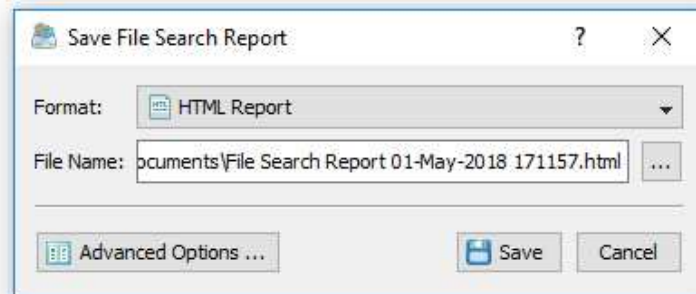
In order to create a nested rule list, press the right mouse button over the top level rule list and select the 'Add Nested Rule List' menu item. On the nested rules dialog, add all the required file matching rules, select an appropriate logical operator and press the 'Ok' button. There are no limits on the number of nested levels and the user can create as many nested levels as required.



DiskBoss provides the ability to configure sophisticated file search queries with multiple levels of hierarchical file matching rules allowing one to precisely search files matching user-specific needs and then generate reports and/or perform file management operations on files matching the user-specified rules.

18 Saving File Search Reports

DiskBoss allows one to save file search reports into a number of standard formats including HTML, PDF, Excel, XML, text and CSV. In the simplest case, perform a file search operation and press the 'Save' button located on the file search 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 short summary reports or longer detailed reports, which may be very long for large reports containing many thousands of files. By default, DiskBoss will save a short, summary file search report in the HTML report format, which will include a list of the first 20 file search results and a list of tables showing the disk space usage and the number of file search results per file extension, file type, top-level directory, user name, etc.

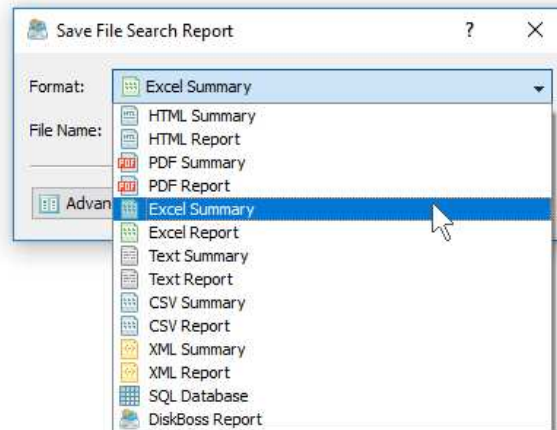
Generated By: [DiskBoss Ultimate v9.3.28](#) 01-May-2018 17:12:08

Date	2018/05/01
Time	17:11:09
Results	285
Disk Space	2.96 GB
Total Files	20746
Total Space	6.20 GB
Performance	7139 Files/Sec
Process Time	2.91 Sec
Host Name	Windows10-64
User Name	alex-s
Input Dirs	d:\
File Filter	Off

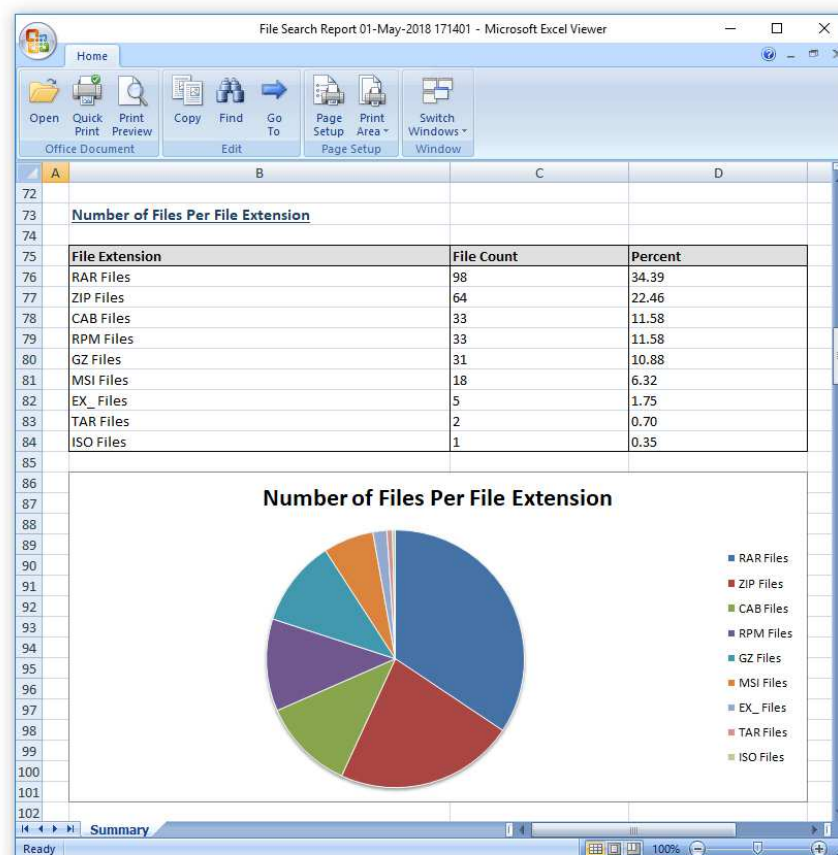
File Size	Last Modified	File Name
13.64 MB	31-Jul-2006 18:42:49	D:\acmega\HR-XML\HRXML200602.zip
1.66 MB	30-Jun-2006 14:28:31	D:\acmega\software\ips\ips_test_gui_v1.0.23.zip
2.59 MB	05-Jul-2006 01:01:54	D:\acmega\software\ips\ips_test_gui_v1.0.25.zip
2.62 MB	10-Jul-2006 02:57:19	D:\acmega\software\ips\ips_test_gui_v1.1.5.zip
574.86 KB	28-Jul-2006 01:06:18	D:\acmega\software\source\ips_v1.1.6.rar
1.92 MB	30-Dec-1999 00:05:50	D:\NTDDK\1\src\mdk\procalc\PROCALC2.CAB
211.24 KB	29-Dec-1999 23:22:52	D:\NTDDK\1\tools\pcitool\data1.cab
312.62 KB	29-Dec-1999 23:22:50	D:\NTDDK\1\tools\pcitool\INST321.EX_
201.45 KB	29-Dec-1999 23:22:50	D:\NTDDK\1\tools\pcitool_sys1.cab
47.26 KB	29-Dec-1999 23:22:50	D:\NTDDK\1\tools\pcitool_user1.cab

In addition, the user is provided with the ability to save file search results to the DiskBoss native report format, which preserves all information related to each specific file search 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 file search results using external tools such as Microsoft Excel. In order to export file search results to the Excel report format, perform a file search operation, press the 'Save' button located on the file search results dialog, select the 'Excel Summary' report format for a short summary report or the 'Excel Report' format for a detailed file search report.

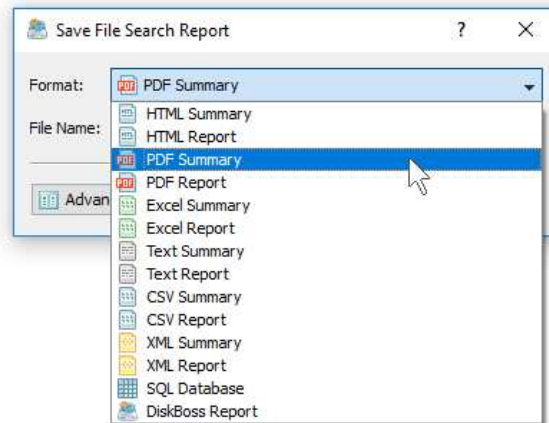


A summary Excel report will include a list of the first 20 file search results and a number of tables showing the used disk space and the number of file search results per file extension, file category, top-level directory, file creation time, last modification time, user name, etc.

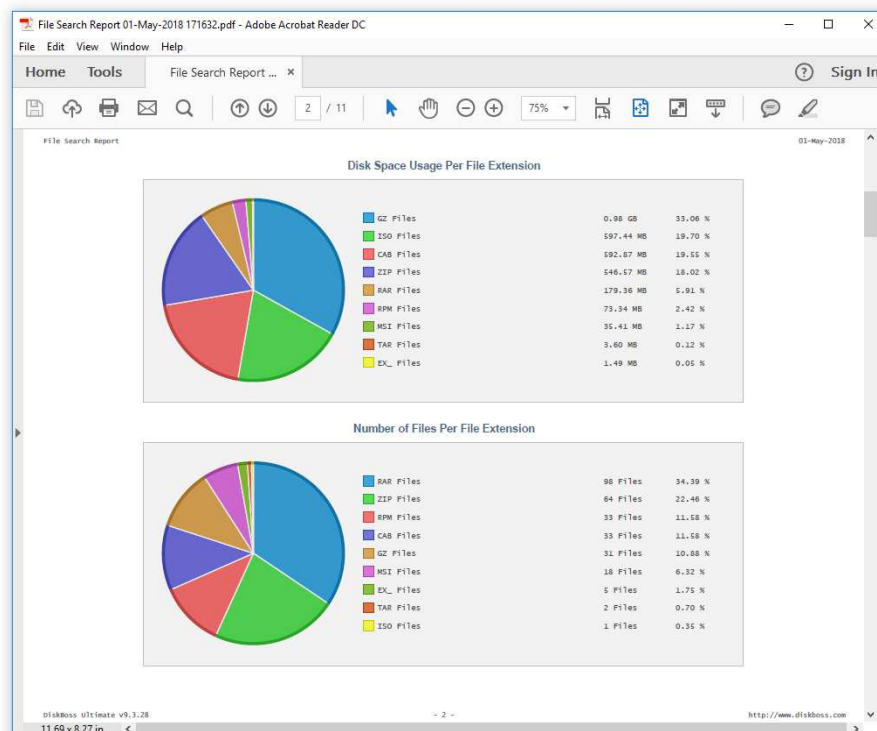


A detailed Excel report will include a list of file categories according to the currently selected file categorization mode and a full list of file search results, which may be very long for large reports containing many thousands of files. In order to control how many files are exported in the detailed report, press the 'Advanced Options' button located on the 'Save Report' dialog and customize the file search report for your specific needs.

One of the most useful ways to export file search 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 file search results per file extension, file category, creation time, last modification time, top-level directory name, user name, etc. In order to save file search results to a PDF report file, press the 'Save' button located on the file search results dialog and select the 'PDF Summary' report format for a short, summary report or the 'PDF Report' format for a detailed file search report.



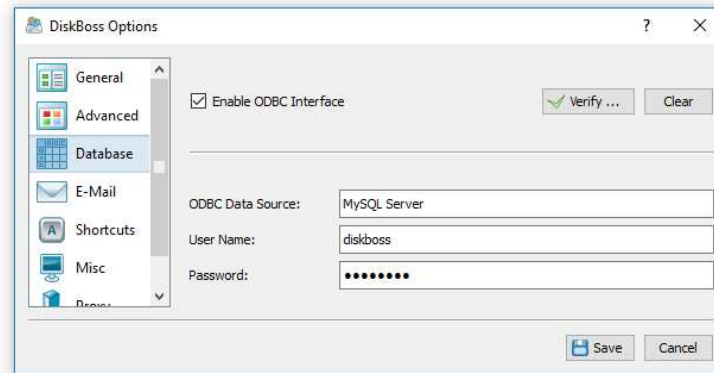
A summary PDF report will include a list of the first 20 file search results and followed by a number of pie charts showing the disk space usage and the number of file search results per file extension, file category, file creation time, last modification time, top-level directory name, user name, etc. A detailed PDF report will include a full list of file search results, which may be very long for large reports containing many thousands of files.



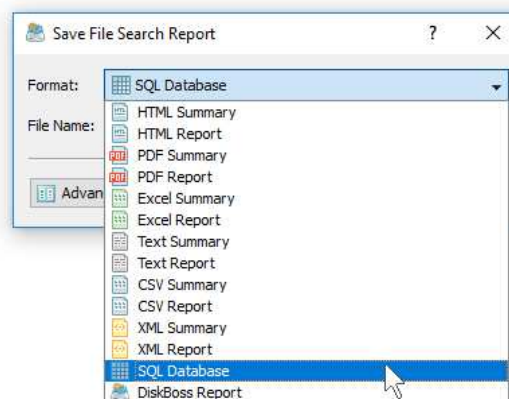
In addition to the list of file search results, detailed PDF reports include pie charts showing the disk space usage per file category and the number of file search results per file category according to the currently selected file categorization mode. For example, if the second-level file categories mode is set to categorize file search 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.

19 Exporting Reports to an SQL Database

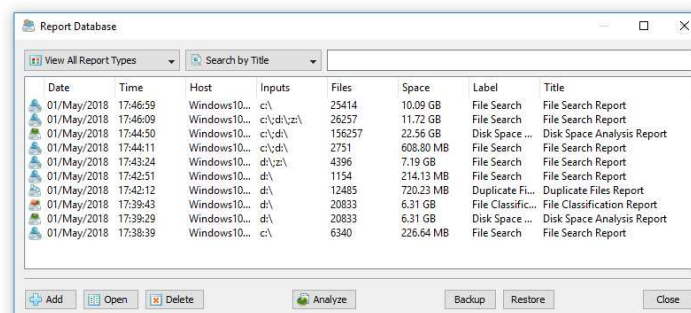
DiskBoss Ultimate and DiskBoss Server allow one to save file search reports into an SQL database. A long-term history of file search reports from multiple servers and desktop computers may be submitted to a centralized SQL database and used to analyze file search results across the entire enterprise.



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



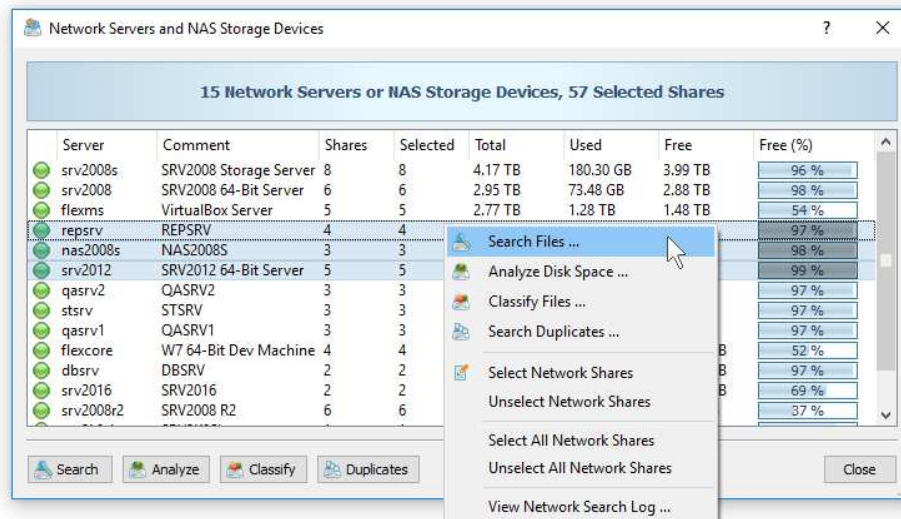
In order to export a file search report to an SQL database, press the 'Save' button located on the file search results dialog and select the 'SQL Database' report format. Optionally, press the 'Advanced Options' button and specify the number of file search results to be exported to the SQL database.



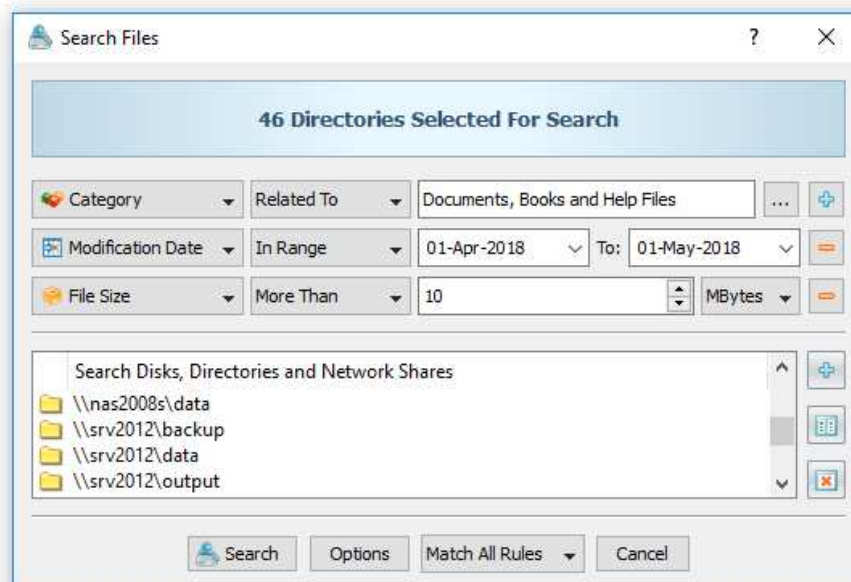
In order to open a previously saved report, press the 'Database' button located on the main toolbar and click on the required report item on the database reports dialog. For each report in the database, DiskBoss displays the report date and time, the host name, the input directories, the number of file search results, the total disk space and the report title.

20 Searching Files in Network Servers

DiskBoss allows one to scan the network, discover network servers and NAS storage devices, automatically detect all accessible network shares and search files 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.



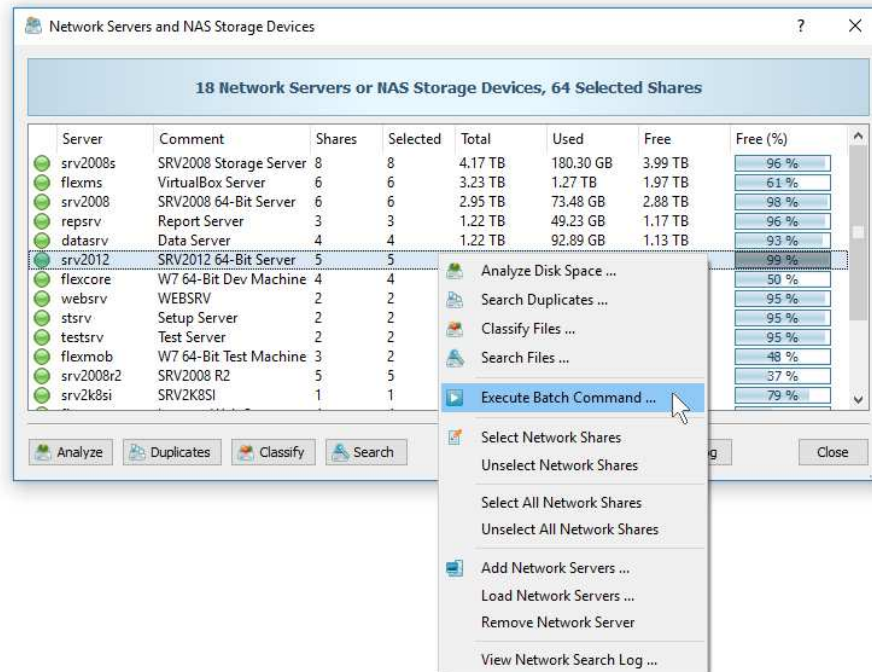
In order to search all network servers and NAS storage devices on the network, press the 'Network' button located on the main toolbar and wait while DiskBoss will scan the network and show a list of detected network servers and NAS storage devices. In order to search files in one or more servers or NAS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



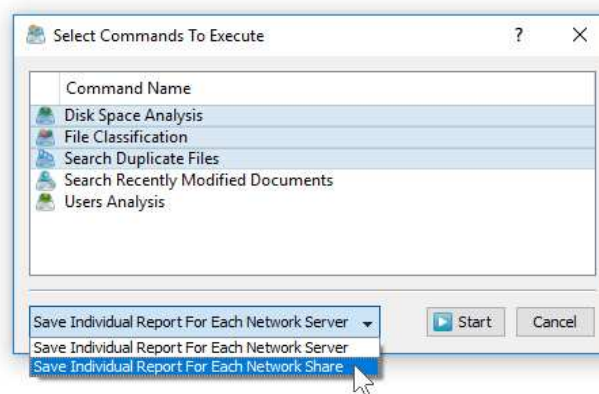
DiskBoss will show all accessible network shares hosted on the selected servers and NAS storage devices allowing one to search files and save various types of file search reports. In addition, the user is provided with the ability to customize a large number of advanced files search options allowing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

21 Batch File Search Operations

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



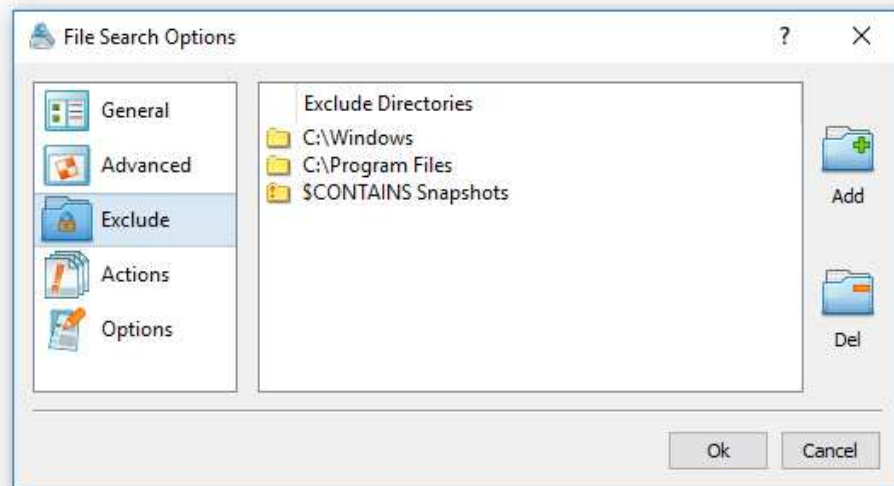
In order to start a batch file search operation, press the 'Network' button located on the main toolbar, search all servers and NAS storage devices on the network, select one or more servers and NAS storage devices, press the right mouse button and select the 'Execute Batch Command' menu item.



DiskBoss will display a list of preconfigured file search 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 file search reports - for each server or for each network share. By default, all file search 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, text, Excel CSV and XML.

22 Excluding Subdirectories

Sometimes, it may be required to exclude one or more subdirectories from the file search process. For example, if you need to search files in 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 file search 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 file search 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.

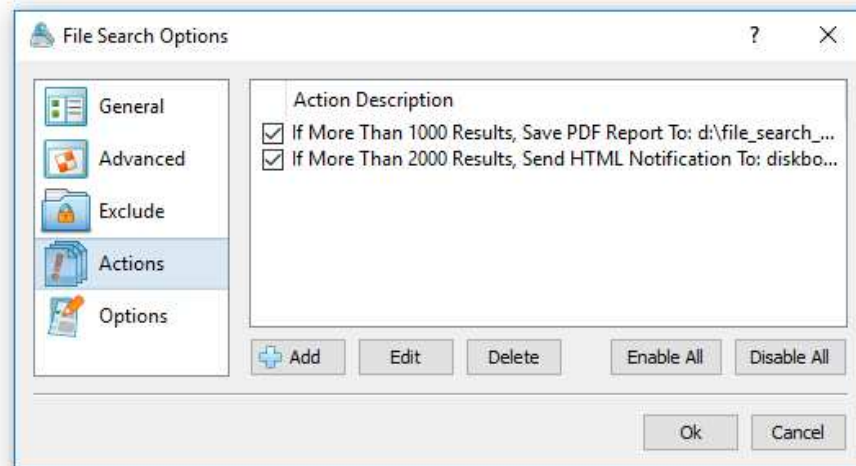
DiskBoss provides the following exclude directories macro commands:

- **\$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.

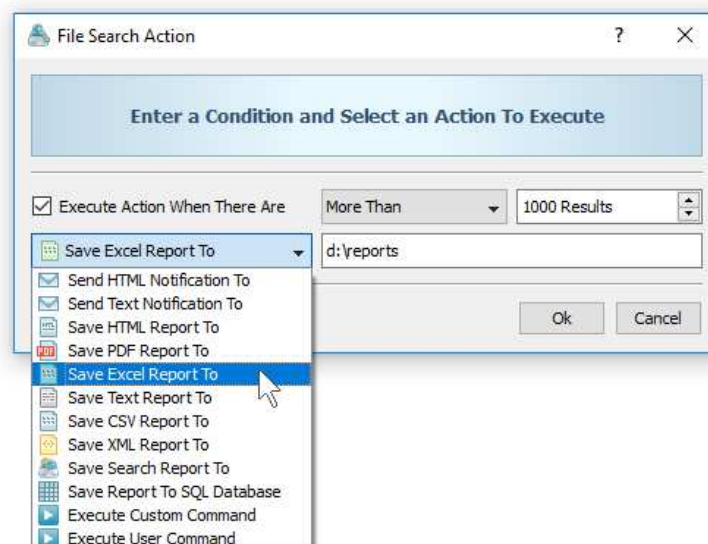
For example, the exclude macro command '\$CONTAINS Temporary Files' will exclude all directories with 'Temporary Files' in the full directory path and the exclude macro command '\$REGEX \.(TMP|TEMP)\$' will exclude directories ending with '.TMP' or '.TEMP'.

23 Conditional File Search Actions

DiskBoss Server and DiskBoss Enterprise provide the ability to automatically save reports, send e-mail notifications, trigger pre-configured file management commands or execute custom commands when a file search command finds a user-specified number of files. In order to configure one or more conditional file search actions, open the file search operation, press the 'Options' button, select the 'Actions' tab and press the 'Add' button.



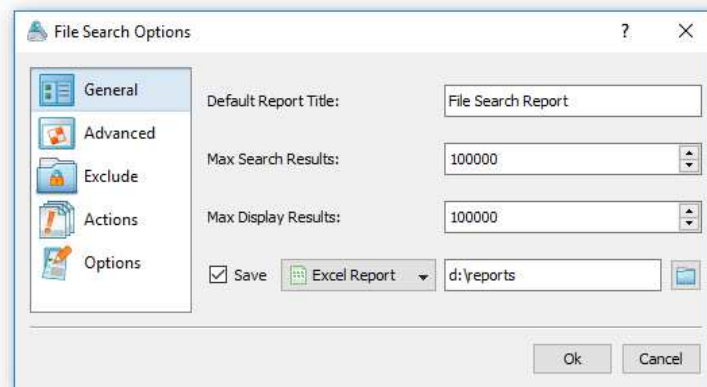
On the conditional file search action dialog, enter the number search results to trigger the action, select an appropriate action type and specify all the required parameters. For automatic reports generation actions, the user needs to specify an existing directory to save file search reports in. In order to be able to save file search reports to an SQL database, the user needs to open the main options dialog and configure an ODBC database to use to save report to the database. For e-mail notification actions, the user needs to specify an e-mail address to send e-mail notifications to and also configure an E-Mail account to use to send notifications on the main options dialog.



In addition, the user is provided with the ability to execute a pre-configured file management operation or a custom command. In this case, the user needs to specify the name of the command to execute. For example, the user may execute a pre-configured file delete command when there are too many specific files in a disk or directory, automatically delete old files and recover the free disk space.

24 Advanced File Search Options

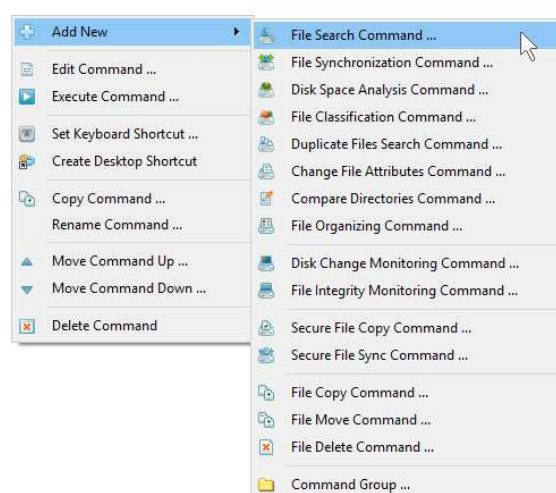
DiskBoss provides a large number of advanced file search options allowing one to customize and tune file search operations for user-specific needs. The 'General' tab allows one to set the default report title, set the maximum number of search results to display and enable the display of files user names. The 'Advanced' tab provides a number of performance tuning options allowing one to intentionally slow-down file search operations in order to minimize the potential impact on running production systems. The 'Exclude' tab allows one to exclude one or more subdirectories from the file search process.



The 'Actions' tab provides the ability to configure one or more conditional file search actions allowing one to automatically save reports, send e-mail notifications, trigger pre-configured file management operations or execute custom commands when a file search operation finds a user-specified number of results.

25 Pre-Configured File Search Commands

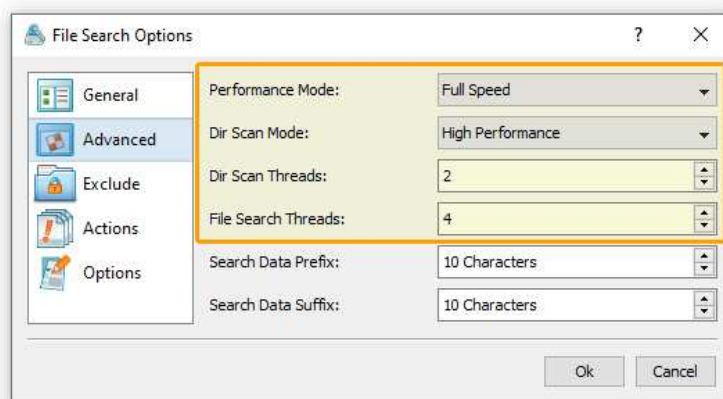
One of the most powerful and flexible capabilities of DiskBoss is the ability to pre-configure custom file search operations as user-defined commands and execute such commands in a single mouse click using the DiskBoss GUI application or direct desktop shortcuts.



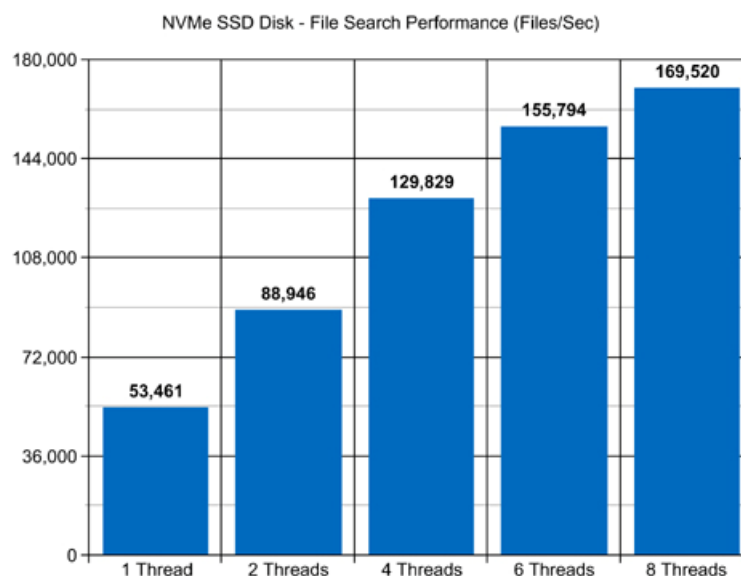
User-defined commands may be managed and executed through the commands dialog or the commands tool pane. In order to add a new command through the commands pane, press the right mouse button over the pane and select the 'Add New - File Search Command' menu item. In order to execute a previously saved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

26 Multi-Threaded File Search Performance

DiskBoss is optimized for modern multi-core and multi-CPU systems and is capable of searching files stored on 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 file search operations for user-specific hardware and storage configurations.

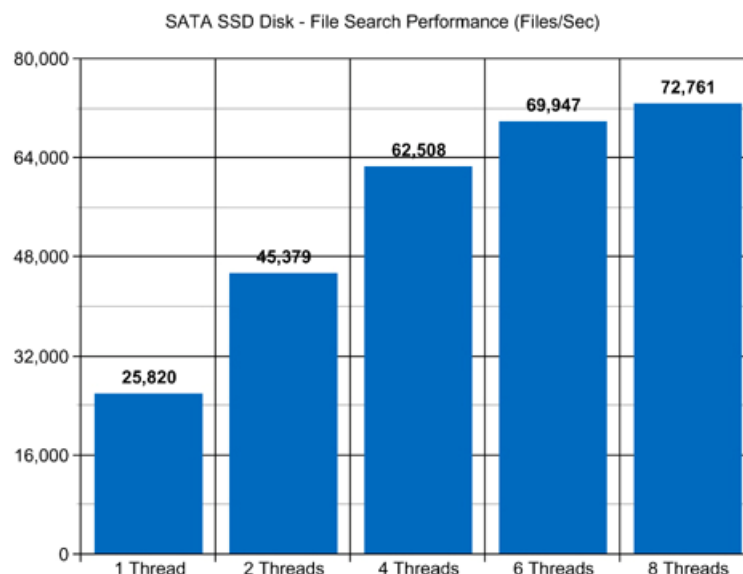


In order to customize the file search performance optimization options, open the file search operation dialog, press the 'Options' button and select the 'Advanced' tab. The 'File Search Threads' option controls how many parallel threads are used to search files. The 'Directories Scanning Threads' option controls how many parallel 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.

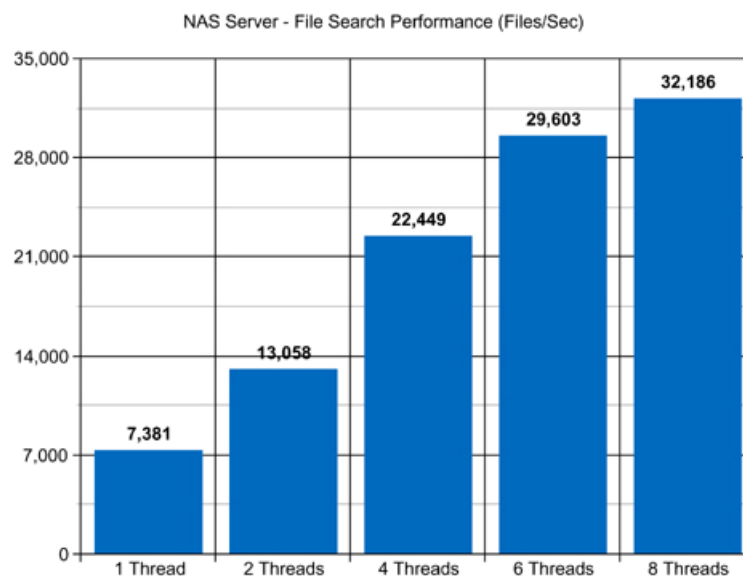


For example, when searching files stored on a high-speed NVMe SSD disk, DiskBoss reaches up to 53,000 files/sec using a single search thread. With two parallel search threads, the performance scales up to 88,000 files/sec and with four parallel search threads, the performance increases up to 129,000 files/sec showing a very good level of multi-threaded performance scalability. With six processing threads the file search performance reaches up to 155,000 files/sec and with eight processing threads the file search performance increases up to 169,000 files/sec allowing one to quickly search huge numbers of files.

When searching files stored on regular SATA SSD drives, which are significantly slower than NVMe SSD drives, the performance of the file search process reaches up to 25,000 files/sec using a single process thread and scales up to 62,000 files/sec with four parallel file search threads. With eight parallel file search threads, the performance reaches up to 72,000 files/sec, which allows to search large numbers of files very fast.

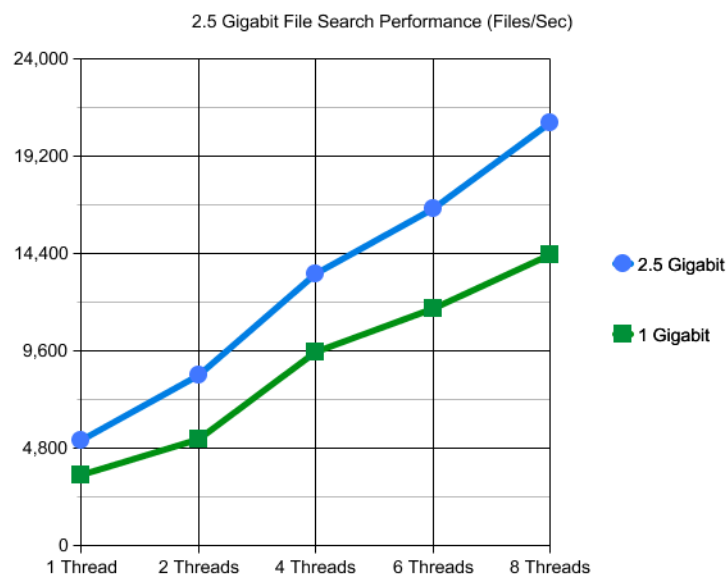


Searching file stored on a NAS storage device via a network is a more complicated task because the user needs to take into account the speed and the latency of the network. If the computer, on which DiskBoss is installed, is connected to the NAS storage device via a high-speed, low-latency network, the performance of the file search operations may reach up to 7,300 files/sec with one file search thread, scale up to 22,400 files/sec with four parallel file search threads and increase up to 32,100 files/sec with eight parallel search threads.

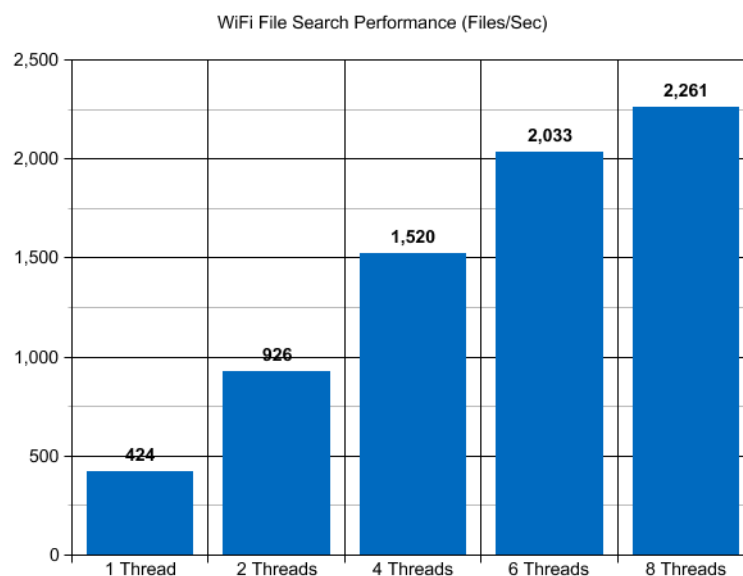


On the other hand, if DiskBoss will need to access network shares via the Internet or via a long-distance, high-latency network, the performance of the file search operations will be relatively slow. One of the options to increase the performance of the file search operations in such configurations is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

Searching millions of files stored in one or more NAS servers may be a very time consuming operation and one of the ways to speed-up the file search process is to use a 2.5 Gigabit Ethernet network. With 2.5 Gigabit Ethernet the performance of the DiskBoss file search operations continues to scale up to 20,800 Files/Sec with 8 parallel file search threads, which represents a 44% improvement compared to the standard Gigabit Ethernet.

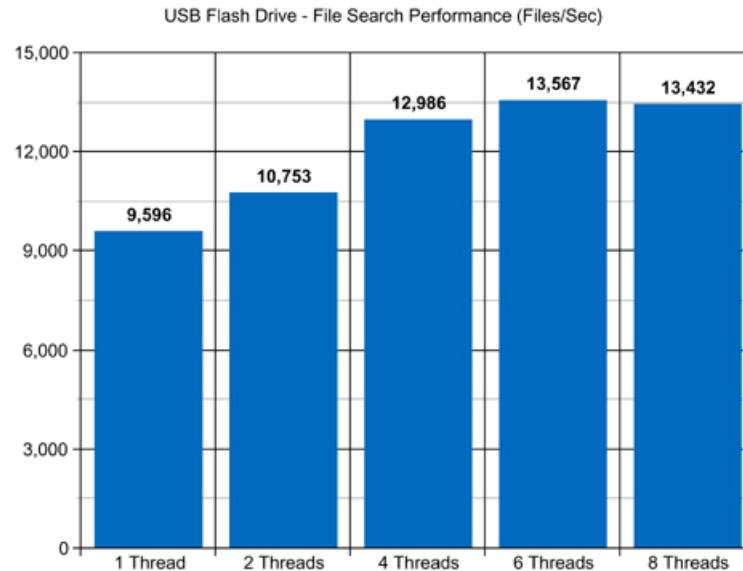


Due to a very wide adoption of laptops and NAS servers with built-in WiFi network interfaces, many users may consider searching files stored in NAS servers via the wireless network. But, the latency of the wireless network is much higher and therefore it will take much more time to complete the file search 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 to search files via a wired network.

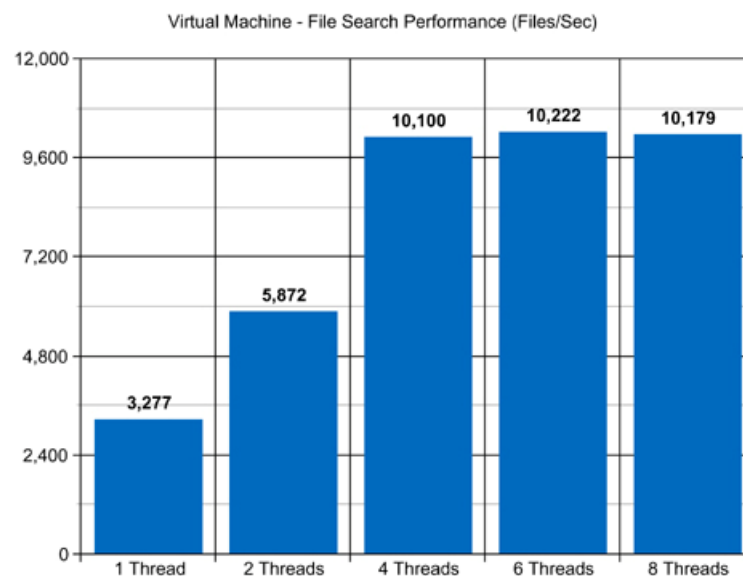


Based on our benchmarks, via a 5 GHz wireless network, DiskBoss reaches up to 424 Files/Sec with a single file search thread and scales up to 2,200 Files/Sec with 8 parallel file search threads, which is approximately 6 times slower compared to the standard Gigabit Ethernet and almost 10 times slower when compared to the 2.5 Gigabit Ethernet. So, if the user needs to search files in a NAS server with 1 million files or more, 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. When searching files stored on a USB flash drive, DiskBoss can reach up to 9,500 files/sec with a single search thread. With two parallel search threads, the performance increases up to 10,700 files/sec, with four parallel threads the performance increases up to 12,900 files/sec and with six parallel file search threads the performance scales up to 13,500 files/sec.



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 depending on the target hardware and software platforms, significant performance degradations are inevitable when a file search operation is executed on a guest virtual machine compared to the same file search operation executed directly on the host computer.



For example, when a virtual machine with 4 virtual CPUs is stored on an SSD disk and searching files stored on a virtual local disk drive, which is physically stored on the same SSD disk, the performance of the file search operations reaches up to 3,200 files/sec using a single search thread. With two parallel search threads, the performance of the file search operations scales up to 5,800 files/sec and with four parallel search threads, the performance of the file search operations increases up to 10,100 files/sec.

27 Using the DiskBoss Command Line Utility

In addition to the DiskBoss GUI application, DiskBoss Ultimate and DiskBoss Server provide power computer users and IT administrators with the ability to execute user-defined file search operations from batch files and shell scripts using the DiskBoss command line utility, which is located in the '**ProductDir\bin**' directory.

Command Line Syntax:

diskboss -execute <Search Command Name>

This command executes a user-defined file search operation pre-configured using the DiskBoss GUI application or imported from an XML file.

diskboss -search -rules <XML File Name> -dir <Dir 1> ... [<Dir X>] [<Options>]

This command executes XML search queries defined according to the DiskBoss XML-Based format using input directories and files specified in the command line. For detailed information about the XML format refer to the DiskBoss XML format specification.

Parameters:

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

This parameter specifies the list of input directories to process.

Options:

-save_html_report [ReportFileName]

This optional parameter instructs DiskBoss to save a summary report and the list of all search results to an external HTML file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_search_[date]_[time].html where [date] and [time] will be substituted by current date and time accordingly.

-save_csv_report [ReportFileName]

This optional parameter instructs DiskBoss to save a summary report and the list of all search results to an Excel CSV file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_search_[date]_[time].csv – just like with the HTML-formatted file.

-save_text_report [ReportFileName]

This optional parameter instructs DiskBoss to save a summary report and the list of all search results to a text report file. If no file name is specified, DiskBoss will automatically generate a file name according to the following template: diskboss_search_[date]_[time].txt

-file_scanner <sequential or parallel>

Specifies the file scanning mode: sequential or parallel. Use the parallel scanning mode when processing multiple input directories.

-v

This command shows DiskBoss' major version, minor version and revision.

-help

This command shows the command line usage information.