

# NI DataFinder Server Edition

Search Engine for Technical Data

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### Technical Support and Professional Services

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# About This Manual

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You can use this manual to familiarize yourself with the DataFinder Server Edition features and how to use them.

The first chapter describes how to create a DataFinder server in a few easy steps and how to connect clients to this DataFinder server. The exercises do not take long, and they make it easier for you to get started with the DataFinder Server Edition.

The second chapter describes how to define search areas for individual DataFinder servers, to plan indexing, to limit access rights, or to optimize custom properties. You will also learn how to use the Server Manager to create and manage DataFinder servers, execute upgrades, export connection parameters, or specify the start options for DataFinder servers.

The third chapter describes how you can use a DataFinder server as an ASAM ODS server. Clients can read the data of the DataFinder server through the ASAM ODS Corba interface. The clients use the ASAM data models available on the DataFinder server to display the data.

The fourth chapter describes the hardware and system requirements, and how you configure your firewall in order to connect DataFinder clients outside the firewall with a DataFinder server within the firewall. The chapter also outlines how to integrate the DataFinder server into archiving systems in order to index and to find archived data.

## Related Documentation

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For more detailed information on the DataFinder Server Edition, refer to the following documentation:

- *NI DataFinder Server Edition Help files*, which you open by selecting **Help»Contents**, or by pressing <F1>.
- *NI DIAdem: Data Mining, Analysis, and Report Generation*  
DIAdem is the interactive National Instruments software for finding and managing technical data, and mathematically and graphically analyzing the data. Chapter 2, *Finding and Managing Data*, describes how to make search entries in DIAdem to find data. DIAdem can access DataFinder servers as a client.
- *NI LabVIEW DataFinder Toolkit*  
Use the LabVIEW DataFinder Toolkit to work with the DataFinder in LabVIEW. You can use the DataFinder to search for simple text in indexed data, or to execute advanced searches for data properties.  
LabVIEW can access the DataFinder server with the DataFinder toolkit as client.

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# Creating and Connecting DataFinder Servers

A DataFinder server is a search engine that you install on a server. The DataFinder server searches for files that contain technical data in specified folders on computers in a network. The DataFinder server indexes the data files to provide the clients with the data properties. The DataPlugins registered in the server manager determine which file types the DataFinder server indexes.

You can define several DataFinder servers in the server manager to provide different data for different work groups. Clients, such as DIAdem or LabVIEW, communicate with the DataFinder servers to query the indexed data and to load search results.

You can use a DataFinder server as an ASAM ODS server to display, browse, and filter data with an ASAM conform data model. All applications which support the ASAM ODS Corba interface can access the ASAM ODS server in order to find and load this data.



**Note** The license specifies how many DataFinder servers you can create and how many users can access the DataFinder server simultaneously. For more information about licensing, refer to the section on *NI License Manager* in Chapter 2, *Configuring DataFinder Servers*.

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## Creating DataFinder Servers

When you start DataFinder Server Edition, the server manager opens. In the server manager you create and configure DataFinder servers and test the functionality of the DataFinder servers. To create a DataFinder server, complete the following steps:

1. To start DataFinder Server Edition, select **Start»All Programs»National Instruments»DataFinder Server Edition»DataFinder Manager**.

If the server manager does not have a DataFinder server, the **New DataFinder Server** dialog box opens automatically the first time you launch the server manager.

2. Enter, for example, `TestRig` as the name of the DataFinder server to be created.
3. Click **Add Search Area** to specify a search area.



Search areas are the file system folders where clients can search for data files.

4. Enter `My_Data` as the alias name for the search area.



5. Click **Choose a Folder**.



- a. Select the folder that you want the DataFinder server to index.
- b. Click **OK** to close the dialog box.

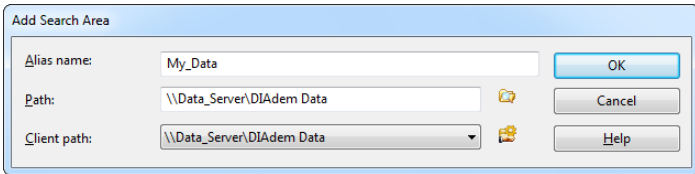
6. Click **Share Folder**.



The server manager opens the Windows share dialog box, where you share folders with other users on the network. You must share the folders in the search area so the clients can read the descriptive information and also load the files found in the search.

- 7. Click **OK** to close the Windows share dialog box.
- 8. Open the list in the **Client path** textbox and select the shared network path. The **Add Search Area** dialog box displays the path of the shared folder, as shown in the following figure:

**Figure 1-1.** Defining a Search Area

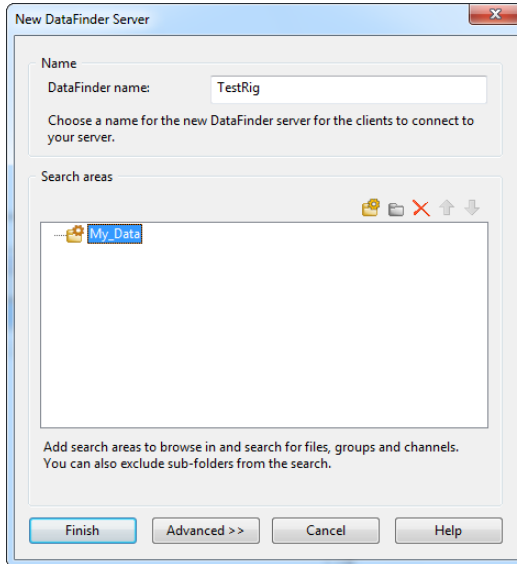


**Note** Use shared folders (\\Data\_Server\..) and not the network drives to which you assigned a drive letter (M:\..). You cannot use these mapped network drives with a letter together with the start option **Run as service**.

9. Click **OK** to close the **Add Search Area** dialog box.

The **New DataFinder Server** dialog box displays the newly created search area `My_Data` as shown in the following figure:

**Figure 1-2.** Creating a New DataFinder Server

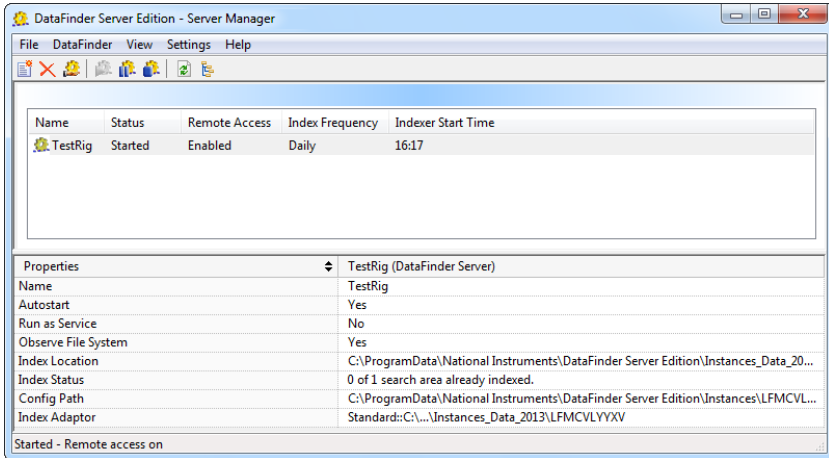


You can now define more search areas where clients can search for data. Select **Exclude Subfolder** from the context menu of a search area to exclude folders from the search. Click **Advanced** to set the service registration, security settings, and desktop shortcuts for the DataFinder server.

10. Click **Finish** to close the dialog box.

The server manager displays the new DataFinder server, as shown in the following figure.

**Figure 1-3.** Server Manager with Configured DataFinder Server



## Exporting Client Configurations

You must connect the clients to a DataFinder server so that they can execute queries on a server and load data. You can export the required connection settings, save the settings in a file, and then enable the settings on the client. To export a client configuration, complete the following steps.

1. Select the **TestRig** DataFinder server in the server manager.
2. Click **Export a Client Configuration** on the toolbar.



1. Accept the suggested name for the export file `TestRig@<Computername>`. The name consists of the name of the DataFinder server and the name of the server that DataFinder Server Edition is installed on.

2. Enable the **Include DataPlugins in client configuration** checkbox to save all the DataPlugins in the export file, as shown in the following figure.

When you export the DataPlugins, you provide the client with all the DataPlugins for loading the files that the DataFinder server `TestRig` indexes and finds.

**Figure 1-4.** Exporting a Client Configuration

The screenshot shows a dialog box titled "Export a Client Configuration". It has a "Name" text box containing "TestRig@Data\_Server". Below it is a "Use IP address" checkbox which is unchecked. The "Include DataPlugins in client configuration" checkbox is checked. Below that is an unchecked "Include ASAM ODS server connection parameters" checkbox. There is a "Timeouts" section with two spinners: "Connection timeout [s]" set to 7 and "Query timeout [s]" set to 20. On the right side, there are three buttons: "OK", "Cancel", and "Help".



**Note** You can integrate only VBScript DataPlugins or VBCrypt DataPlugins in a URF file.

3. Click **OK** to open the **Save As** dialog box.
4. Click **Save** to save the client configuration. The server manager saves the connection parameters in a file that has the extension `.urf`.

## Connecting Clients to DataFinder Servers

For a client to connect to the DataFinder server `TestRig`, you must register the connection configuration on the client computer.

1. Copy the `TestRig@Computer.urf` file to the client computer.
2. Double-click the `TestRig@Computer.urf` file to register the connection parameters and the DataPlugins on the client computer.

If you import DataPlugins that are already registered on this computer when you register the connection parameters, you can specify for each DataPlugin whether the originally installed DataPlugin is overwritten or not.

A message indicates that the connection configuration and the new DataPlugins are registered.

DIAdem and LabVIEW can use any DataFinder server that is connected to the DIAdem or to the LabVIEW computer on a network. You can use security settings to limit the clients' access rights for DataFinder servers.

# DIAdem as a Client of a DataFinder Server

After registering the connection settings on the client computer, you can use DIAdem to navigate in the folders, which the **TestRig** server shares, and search for data.

1. Open **DIAdem**.



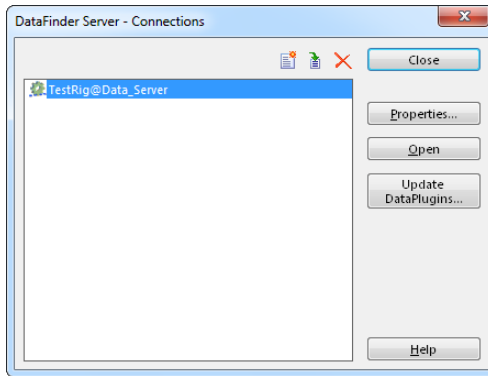
2. Select **DIAdem NAVIGATOR**.



3. Select **Settings»DataFinder Server**.

The following figure shows the **DataFinder Server - Connections** dialog box with all the DataFinder servers registered in DIAdem.

**Figure 1-5.** DataFinder Server Registered in DIAdem

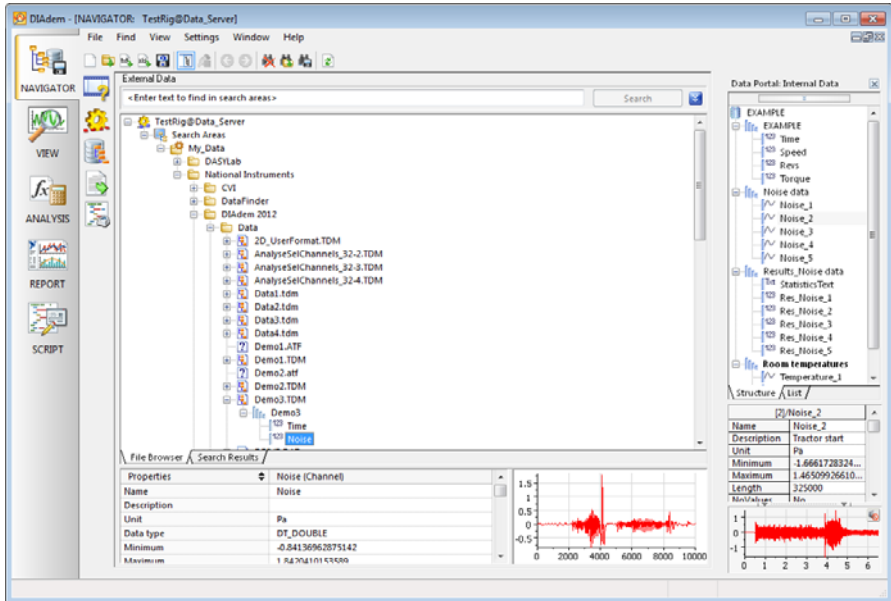


**Note** To import a URF file, click **Import DataFinder Server Connections** in the **DataFinder Server - Connections** dialog box. After importing the file, click **Properties** to open the client configuration settings. Click **Test** to check the connection to the DataFinder server.

- Click **Open** to open the DataFinder server in DIAdem NAVIGATOR.

The file browser in the following figure shows a tree view of the search areas of the DataFinder server. If the associated DataPlugin allows, you can navigate to channel level in the files.

**Figure 1-6.** Navigating in Search Areas of a DataFinder Server



## LabVIEW as a Client of a DataFinder Server

After registering the connection settings on the client computer, you can use LabVIEW to connect the TestRig DataFinder server.

- Open **LabVIEW** with an empty VI.

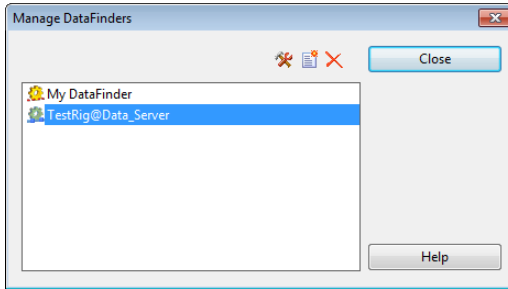


- Right-click the block diagram and select **Connectivity»DataFinder Toolkit** to open the palette.
- Click **Search Text** in the **DataFinder Toolkit** palette and drag and drop the VI into the block diagram.



4. Right-click the **DataFinder reference** terminal and select **Create»Constant** from the context menu.
5. Open the context menu of the previously created constant and select **Manage DataFinders**. LabVIEW opens the **Manage DataFinders** dialog box that you can use to create, delete, or configure DataFinders.

**Figure 1-7.** DataFinder Server Registered in LabVIEW



6. Select the `TestRig` DataFinder server from the list of registered DataFinders.



**Note** The LabVIEW DataFinder Toolkit is not included in the standard LabVIEW package. You can use the functions of the LabVIEW DataFinder Toolkit only when you have installed and activated the Toolkit.

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# Configuring DataFinder Servers

Use the server manager to create, configure, duplicate, or delete DataFinder servers. In the server manager you also can make general settings, export the settings for connecting clients to a DataFinder server, optimize custom properties, and open the search areas of a DataFinder server in a browser view.

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## Configuring DataFinder Servers

To configure a DataFinder server, double-click the DataFinder server in the server manager. In the DataFinder server configuration you can define search areas, export or import DataFinder server configurations, and see which file types the DataFinder server uses for the search. You can define global indexing schedulers for all data files of a DataFinder server, but you also can create individual indexing schedulers for search areas.

You can export and import the configuration of a DataFinder server. The configuration files have the filename extension `.dfc` and contain all DataFinder server settings, for example the search areas, the index path, and the indexing schedule.

In **Settings»Global Options»General** you set the base index path for all DataFinder servers on the **General** tab and specify the editor with which you edit the DataPlugin scripts. On the **New DataFinder Servers** tab, you specify the start settings and the security settings for all new DataFinder servers.

## Defining Search Areas

You select the folders, which the DataFinder server indexes for the search, on the **Search Areas** tab of the configuration dialog box. You can edit and delete search areas and specify the order in which the DataFinder server indexes the search areas and displays the search areas in the browser. You must define the search areas of the DataFinder server with path names that are unique within the network. If you select **Edit Client Path** from the context menu of the DataFinder server, you can see in the **Client path** entry line which path the client uses to access files in the network, for example, `\\Testrig4a\NewCar\DATA`.

Use the Windows share settings to share the folders in the search areas. Clients can load files from the search areas. You define the share mode when you create a search area or edit an existing search area. Click **Share Folder** to open the Windows system dialog box for sharing files. In the Windows sharing settings, you specify which users, and how many simultaneous users, have read and write access. You can enter individual users and user groups that are defined in a network, for example, to provide access rights for an entire department. Refer to the Microsoft Windows program Help for more information about sharing folders.



For each search area, you can define specific security settings which replace the global security settings for this search area. Refer to the section on *Specifying the Security Settings* in this chapter for more information.

To block remote access to all the search areas of a DataFinder server, clear the **Allow remote access to this computer** checkbox on the **General** tab in the configuration dialog box.

## Reading File Types with DataPlugins

DataFinder servers decide on the basis of the filename extension whether to index a file. The **File Extensions** tab has two lists that contain all the filename extensions that the DataFinder server recognizes.

The `Indexable extensions` list displays all the file types that correspond to the TDM data model. In indexable files, the DataFinder server can search for properties of files, groups, and channels. Clients can navigate to channel level in indexed files. Click a filename extension to see which DataPlugins the DataFinder server uses to index these files.

The `Non-indexable extensions` list displays all the file types that do not correspond with the TDM data model. In non-indexable files, the DataFinder server cannot search for properties of groups or channels. The DataFinder server only can search for properties that the file system provides, such as the filename and the creation date.

The registered DataPlugins determine which file types the DataFinder Server can index. A DataPlugin analyzes files that are a specific type and makes the results available to the DataFinder server. The **DataPlugins** tab shows you which DataPlugins the DataFinder uses for indexing.

To add DataPlugins, select **Settings»Global Options»DataPlugins**. In this dialog box, you can define, import, export, update, and delete DataPlugins. If you change the properties of a DataPlugin, these changes apply to all the DataFinder servers. Click **Update** to open the DataPlugin Update Manager. The DataPlugin Update Manager lists the DataPlugins installed on your computer for which later versions are available on the internet site [ni.com/dataplugins](http://ni.com/dataplugins). You can update all listed DataPlugins or only selected DataPlugins. This internet page contains DataPlugins, which have been written and tested by developers and users, for various data formats. The site also provides programming help for the creation of DataPlugins, including a description of the objects, properties, and methods, and many examples.

## Planning Indexing

When indexing, the DataFinder server reads properties from data files and saves this information. When clients search for data files, the DataFinder server browses the index for the properties. DataFinder Server Edition can create parallel indexes and thus profit from the multi-core systems when it indexes and manages large bulks of data.

Click the **Indexer** tab in the configuration dialog box to specify when and how often the DataFinder server indexes all search areas. Click the **Start Now** button to start indexing the DataFinder server immediately. Depending on the amount of data, it can take quite a while to index a search area for the first time. Use the **Scheduler** to start the indexing regularly, for example, daily at 00:00 o'clock when no changes in the search areas and no search queries from clients are expected.

You can enable regular indexing and also automatic indexing. Click the button with the three dots next to **Automatic indexing triggered by** to open the settings. The setting **Data file changes** ensures that a changed or new file is indexed immediately within a search area. Use the **Job file** setting for automation systems. In this case the automation system copies a job file, which contains a list of files and folders to be indexed, to a specific folder. DataFinder servers edit these job files in regular intervals and execute the indexing tasks defined in the job file. After completing the tasks, every DataFinder server deletes the respective job file.

You can specify a schedule for individual search areas in order to index these folders separately from the global schedule. This way, the DataFinder server indexes the folders, in which new files are constantly being created, more often than folders whose contents change only rarely. Switch to the **Search Areas** tab, select the search area to be changed, and click **Search Area Settings**. Enable the setting **Specific schedule** and specify the time point for indexing the search area. Then start the first indexing.

Select **Settings»Schedule Index Optimization** to configure and enable a schedule for the regular optimization of the index. Because the client cannot use the index during optimization, plan the optimization for every Sunday night at 01:00 o'clock, when no search queries are expected.

## Specifying the Security Settings

You can use security settings to limit the clients' access rights to DataFinder servers. If you do not enable the security settings, every client can connect to this DataFinder server and browse and search in all existing search areas. Assign global security settings to restrict access to the entire DataFinder. Assign security settings on the search area to restrict access to specific search areas. A client must have access rights to one search area in order to connect to a DataFinder server. If the security settings in the DataFinder do not match the security settings of the file system, the client receives an error message when he tries to load data from a search area for which he has no access rights.

If the DataFinder is operated as an ASAM ODS server, an ASAM ODS client can access all visible data depending on the security settings made in the DataFinder server. The access rights of the file system are ignored.

You enable the security settings for a DataFinder server either in the **New DataFinder Server»Advanced** dialog box when you create a new DataFinder server, or later on the **General** tab in the configuration dialog box. To use the security settings, you require a network with a domain. After you have enabled the security settings, you can create and edit the global security settings

in this dialog box. To simplify the process, you can import security settings of shared folders. Use the global security settings to restrict access to the entire DataFinder server.

You can also specify security settings for individual search areas in order to manage access to these search areas, regardless of the security settings for the entire DataFinder server. Switch to the **Search Areas** tab, select the search area to be changed, and click **Search Area Settings**. In this dialog box you can provide a group with access to a search area or restrict access to specific users. If specific security settings are assigned to a search area, the global security settings are not applied to this search area.

If possible, use the global security settings in order to ensure the best possible search performance. Note that a DataFinder server needs read rights for all search areas in order to index the search areas.

Note also that the data between client and server is transferred unencrypted, even if the security settings are enabled.

## Optimizing Custom Properties

You can optimize the custom properties for a DataFinder server so that the client finds these custom properties faster. Custom properties are user-defined properties that you can create for files, groups, and channels of the data that is saved in the TDM data model. Custom properties give data additional characteristics that are not included in the standard data model.

To speed up the search for custom properties, select a DataFinder server in the Server Manager and select **Settings»Optimize Custom Properties**. On the tabs **File**, **Group**, and **Channel**, you select custom properties that are to be optimized. If you click **Optimize All**, the Server Manager optimizes all custom properties as soon as you close the dialog box. The DataFinder server always optimizes custom properties for the data type that the DataFinder server used most frequently for indexing the custom property.

If you use DIAdem as the client, you select the custom properties from the properties in the **Advanced Search**. When you select an optimized custom property, you can suggest a value for the search. Which operators you can use for a query depends on the data type of the property searched for. You only can search for date/time custom properties if the DataFinder server has optimized these custom properties.

## Specifying the Start Options of DataFinder Servers

You do not need to open the Server Manager to start a DataFinder server. Select a DataFinder server in the overview, select **Settings»Start Options**, and select the **Enable autostart** checkbox. The DataFinder server now launches automatically every time the operating system starts. This setting also guarantees that the DataFinder server is automatically available when you restart the computer after the server computer was down.

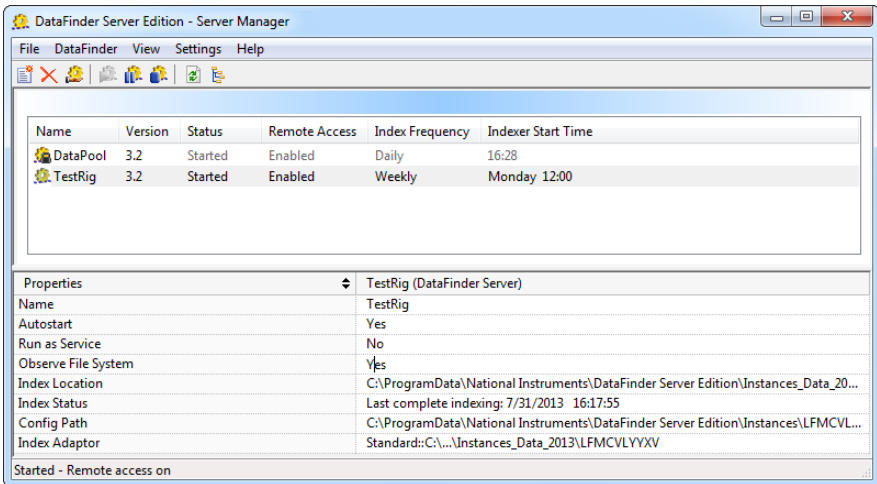
The setting **Run as service** specifies whether the operating system executes a DataFinder server as a Windows service the next time the operating system starts. A service is a Windows

application that starts automatically when Windows starts, and runs in the background until you shut down Windows. You only can run a DataFinder server as a Windows service if you are logged on as an administrator on Windows. In Windows Vista and Windows 7 and Windows 8, you must start the application as an administrator, because the operating system generally starts applications with default rights. If a DataFinder server is running as a service on a network drive to which you have assigned a drive letter, it cannot index search areas. Use an UNC path instead.

## Server Manager

The server manager contains an overview of all DataFinder servers and provides access to the most important settings of every DataFinder server. If you enable the security settings, a little lock is added to the DataFinder symbol. The **Version** lists the version numbers of the DataFinder servers. The **Status** indicates whether the DataFinder server has started, paused, or stopped. The **Remote Access** shows whether clients can access the DataFinder server. The **Index Frequency** and the **Indexer Start Time** show when the regular indexing of this DataFinder server starts. If you disable regular indexing, the entry **Never** appears here.

**Figure 2-1.** The Server Manager Displays All DataFinder Servers



The properties display at the bottom of the Server Manager shows other properties of the DataFinder server selected in the overview. The **Autostart** property provides information on whether the DataFinder starts automatically when the computer launches, and the **Observe File System** property provides information on whether the DataFinder server automatically indexes new and changed files.

If you want to interrupt data file indexing, select a DataFinder server in the server manager and click **Pause Indexing** on the Windows toolbar. If you want to close the selected DataFinder server, click **Stop**. If you close a DataFinder server, the indexing process stops, all clients are disconnected from the server, and the server shuts down. Click **Start** to reactivate a DataFinder server. Clients can now browse in the indexed files again.



You can open the context menu of each activated DataFinder server, independently of the Server Manager, in the information area on the Windows task bar. Select **About** to see when a DataFinder server was last completely indexed and how many files, groups, and channels are indexed. You also can use the context menu to stop the indexing and to configure, start, and close the DataFinder server. The menu **DataFinder»Statistics** in the server manager also contains index information.

If you want to monitor a DataFinder server because of occurring error messages, enable **Help»Diagnosis»Logging** to record all messages. Now the DataFinder manager writes every client access and every DataFinder server reaction in different logfiles. The menu item **Create Diagnosis File** packs all log files, together with the system information, into a ZIP file which the system administrator can use for error analysis. You can delete these files again after the diagnosis in the Help menu because the log files can become very large. Because you have to stop the DataFinder server first in order to delete the log files, only delete the files when you do not expect any more accesses to the DataFinder.

## Duplicating and Upgrading DataFinder Servers

Duplicate a DataFinder server to create a new DataFinder server with the same configuration. To do so, select a DataFinder server in the server manager and select **File»Duplicate**. Then you specify the name of the new DataFinder server and specify whether the server manager also duplicates the index of the DataFinder server. The server manager does not copy the start options of this DataFinder server when duplicating. Observe the license conditions for operating several DataFinder servers.

If you want to replace the existing installation with the current DataFinder Server Edition, you must proceed in two steps. First install the current DataFinder Server Edition. Then you must upgrade the individual DataFinder servers separately. To do so, open the **View»Display all Versions** menu in the current version and display all existing DataFinder servers. The DataFinder servers which are not the same version as the Server Manager have a red exclamation mark. Select **Duplicate/Upgrade** from the context menu to create a duplicate of this DataFinder server in order to upgrade the DataFinder server. You can test the upgraded DataFinder server while the client still has access to the earlier DataFinder server. After deleting the earlier version, assign the name of the deleted DataFinder server to the new DataFinder server to avoid having to make changes to the clients.

If you install a new version of DataFinder Server Edition, you can use the new version with the existing license for 30 days parallel to the earlier version. In this time you can set up the DataFinder server.

## Importing the Local DataFinder

If you are already using a local DataFinder on a computer, create a DataFinder server from My DataFinder in order to use this DataFinder together with other clients. First export the configuration of the local DataFinder to the client. For example, open the configuration in DIAdem in **Settings»My DataFinder»Configure**, click **Export**, and create a configuration file with the filename extension `.dfc`. Then copy this configuration file to the DataFinder server computer. Open the server manager and create a new DataFinder server. Select **Settings»Configure** to open the DataFinder server configuration dialog box. Click **Import** and open the DFC file of the local DataFinder. The new DataFinder server indexes the same search areas as the local DataFinder where clients can now also search for and access data.

## Exporting a DataFinder Server Configuration

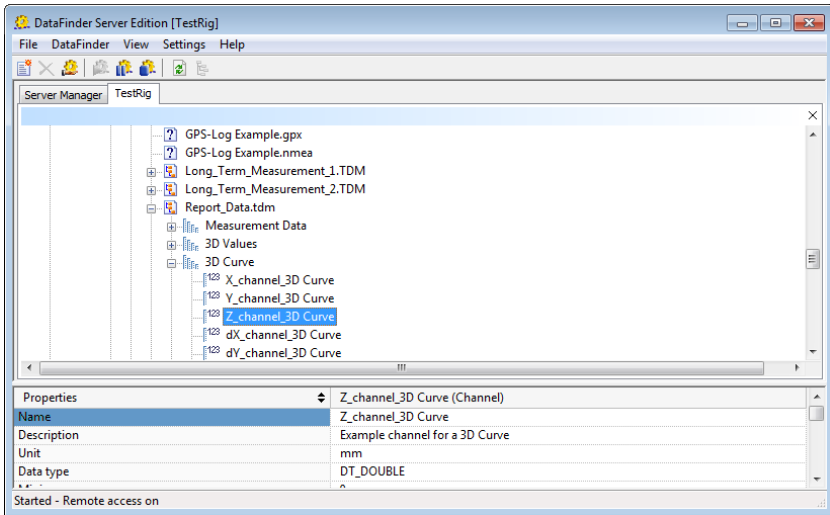
To connect clients with the configured DataFinder server, export the associated connection settings. Select a DataFinder server in the Server Manager and select **Settings»Export Client Configuration**. The server manager creates a URF file with the connection settings, such as the name of the DataFinder server, the IP address of the computer, and the registered DataPlugins. Copy this URF file to the client and double-click the file to transfer the settings. Now the client can search for and load data in the search areas of the DataFinder server if you have specified the necessary share parameters.

## Browsing in Search Areas

---

The server manager provides a browser view of the search areas of the DataFinder servers on separate tabs. To open a tree view, select a DataFinder server in the server manager and click **Open in Browser** in the View menu on the toolbar. If the DataPlugin that is associated with the selected file type allows, you can navigate to channel level in the folders of the search areas and in the indexed files.

The properties display below the tree view shows the properties of the selected file, the selected channel group, or the selected channel. Click one of the indexed files to view the file properties, as shown in the following figure. In the properties display, the server manager displays file properties such as the filename, path, creation date, name, and author. Drag up the top edge of the properties display to view the entire properties list.

**Figure 2-2.** Browsing in the Search Areas of a DataFinder Server

In the browser view, you can open the context menu to define other folders as search areas, to edit and delete existing search areas, and also to exclude subfolders. You also can reindex individual files and folders. You can choose whether the DataFinder reindexes all files in the specified folder or whether only the files that were changed or added since the last indexing process are reindexed. You also can specify whether the DataFinder also includes the subfolders of the specified folder in the indexing process.

If you select **View»Client View**, the server manager displays the selected DataFinder server in the view in which the client sees it. In the client view, the Server Manager displays only the search areas and hides the **My Computer** path. Depending on the security settings, the view of a specific client can differ from the client view of the Server Manager.

## NI License Manager

The NI License Manager helps you manage your NI software product licenses. To work with DataFinder Server Edition after your evaluation version has expired, select **Start»All Programs»National Instruments»NI License Manager** and enter your serial number.

The NI License Manager limits the number of active clients that can access the DataFinder server simultaneously. To increase the number of clients, you must purchase a license that allows more connections. Then select **Help»Activate License** in the Server Manager, click **Next**, and enter the new serial number.

The NI License Manager also limits the number of DataFinder servers that you can create in the Server Manager. If you need more than one DataFinder server, you must purchase a license that allows multiple DataFinder servers.

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# DataFinder as ASAM ODS Server

Use a DataFinder server as ASAM ODS server to read the data from a DataFinder server through the ASAM ODS Corba interface. You can connect programs as ASAM conform clients with this server through the ASAM ODS interface. The client view of the data corresponds with the model hierarchy.

You need a suitable license in order to use a DataFinder server as an ASAM ODS server.

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## Configuring a DataFinder Server as ASAM ODS Server

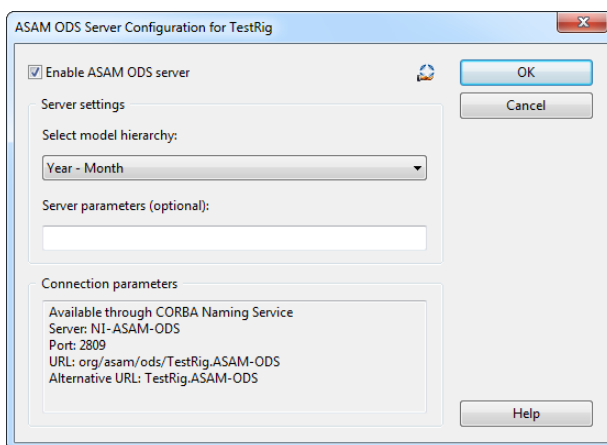
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Open the ASAM configuration dialog box in **Settings»ASAM ODS Server** to specify an existing DataFinder server as ASAM ODS server. Enable the ASAM ODS server and select a model hierarchy for the server, as shown in the following figure. The DataFinder server provides two default model hierarchies for the display of the data: **Year - Month** and **Author - Year - Month**. You can also import user-defined model hierarchies.

---

**Figure 3-1.** ASAM ODS Server Configuration

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## Exporting a Client Configuration

You must connect the ASAM clients with this DataFinder server so that the clients can execute search queries, filter data, and load data on the ASAM ODS server. To do so, you must save the required connection settings in a file and then enable these on the client.



Click **Export Client Configuration** in the configuration dialog box. Select the setting **Include ASAM ODS server connection parameters** in the export dialog box. This name comprises the name of the DataFinder server and the server name. The server manager saves the connection parameters in a file with the extension `.urf`, for example, `engine@test_server.urf`.

## Connecting Clients with ASAM ODS DataFinder Servers

You must register the connection settings on the client computer so that the client can connect with the DataFinder server as ASAM ODS server. To do so copy the `engine@test_server.urf` file to the client computer. Double-click the URF file to transfer the connection parameters to the client computer. DIAdem can now use the DataFinder server as ASAM ODS server over the network.

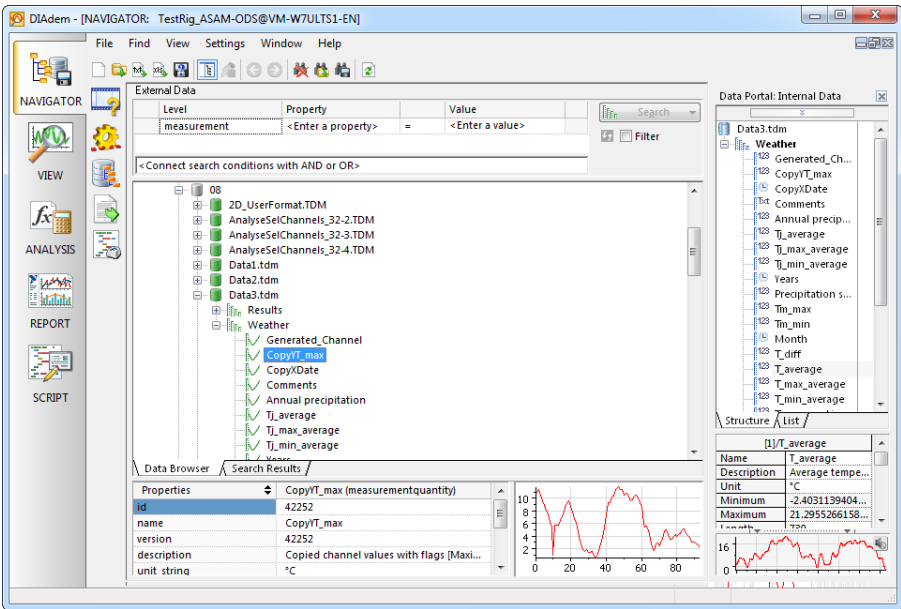
Use the security settings of the DataFinder server to restrict the access rights of the client. Refer to [Specifying the Security Settings](#) in chapter 2, [Configuring DataFinder Servers](#) for further information.

## DIAdem as the Client of an ASAM ODS Server

If you have registered the connection settings on a DIAdem computer, DIAdem can either access the indexed data of the DataFinder server directly or can open the indexed data as ASAM ODS data in the DIAdem NAVIGATOR data browser. Open **Settings»Data Stores** in DIAdem NAVIGATOR in order to use the DataFinder server as ASAM ODS server in DIAdem. Select **engine\_ASAM-ODS@test\_server** from the list of registered data stores. Double-click the data store to view and edit the settings of the ASAM ODS server. If you click **Open**, DIAdem opens the ASAM ODS data store in the data browser.

The data browser in DIAdem NAVIGATOR uses a model hierarchy configured on the DataFinder server to display the data. The following figure shows the model hierarchy **Year - Month** with the hierarchy levels `Year - Month - File - Group - Channel`. You can navigate in the files down to channel level and search for data. You can define search conditions for individual levels of the model hierarchy. DIAdem lists the Tests, Measurements, or MeasurementQuantities it finds in the search results. You also can use search conditions to filter data. The data browser only displays the branches whose data meets the search conditions.

**Figure 3-2.** Navigating in the ASAM ODS Data Display of a DataFinder Server



## Third Party Software as Client

Every program that supports the Corba interface of ASAM ODS can connect to the DataFinder server. In order to access the DataFinder Server as ASAM ODS server use the parameters such as server name, port address, and URL in the configuration dialog box of the ASAM ODS server.

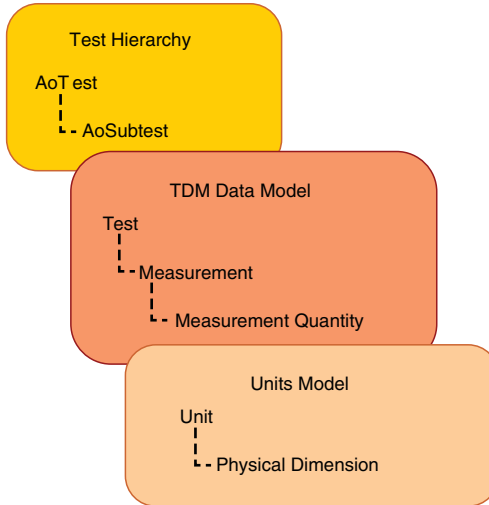
# Properties of the ASAM ODS Server

A DataFinder server as ASAM ODS server has the following functions.

## Structure of the Data Model

The DataFinder server as ASAM ODS server combines the TDM data model with a user-defined test hierarchy and a predefined extendable unit model.

**Figure 3-3.** TDM Data Model with Unit Model



Properties and optimized custom properties of the root level of the TDM data model define the test hierarchy. The DataFinder server has two predefined test hierarchies for displaying data: year month and author year month. You can import further hierarchies for defining the test hierarchy.



**Note** Elements of the test hierarchy cannot be used in requests. Instead, use the properties of the test level in order to get the same search results.

The elements of the TDM data models are below the test hierarchy and are named in the ASAM ODS server according to the ASAM ODS data model. The root level corresponds to the test of the ASAM model, the channel group corresponds to the measurement, and the channel corresponds to the measurement quantity.

1. root → test (AoSubtest)
2. channelgroup → measurement (AoMeasurement)
3. channel → measurementquantity (AoMeasurementQuantity)

If you enable the DataFinder server as ASAM ODS server, you must optimize the custom properties, to make these properties for searching and filtering data available over the ASAM ODS Corba interface.

The measurement quantities are assigned to `units` which are defined in ASAM ODS. A DIAdem units catalog with the filename extension `*.tuc`, which you load, edit, and save in DIAdem, is the basis. The name of the units catalog and its path are in the properties of the DataFinder server in the server manager.

## Further Capabilities of the ASAM ODS Server

In addition to the ASAM ODS standard, the DataFinder server offers a full text search through the ASAM ODS Corba interface as well.

The DataFinder server as ASAM ODS server provides text files in Unicode. Unicode characters include special characters and also Chinese, Japanese, and Arabic characters.

The ASAM ODS server can immediately read data from different ATF-XML files over the ATFX\_TDM DataPlugin installed with the DataFinder server. The ASAM ODS server can also read all the data provided by a DataPlugin.

The ASAM ODS server uses the security settings defined in the DataFinder server. Therefore user accounts in the Windows Active Directory can also be used. As is ASAM ODS standard, the user name and password are transferred unencrypted over the ASAM ODS Corba interface.

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# Integrating the DataFinder Server in the Work Environment

This chapter describes the hardware and system requirements, and how you configure your firewall in order to connect DataFinder clients outside the firewall with a DataFinder server within the firewall. The chapter also outlines how to integrate the DataFinder server into archiving systems in order to index and to find archived data.

## Hardware and System Requirements

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Using the DataFinder Server Edition may place special demands on your system. Refer to the following notes for information about optimizing your work with DataFinder Server Edition:

- Save the index to a hard disk with short access times in order to accelerate access to the index. Furthermore, National Instruments recommends storing the index and the operating system on separate hard disks.
- When accessing the index, DataFinder Server Edition stores parts of the index in the cache. Provide sufficient memory to speed up access.
- The DataFinder Server Edition uses parallel threads to index data. In addition, the indexing service runs on several independent processes. Because of this considerable parallelization, National Instruments recommends the use of a system with several processors. Such a system improves data throughput, because DataFinder Server Edition can process several search and browse requests simultaneously.
- The DataFinder Server Edition contains 32 bit and 64 bit components so that you can use the program on 64 bit operating systems, for example, to utilize more RAM. In this case each process can use up to 2 GB RAM.
- The index may be lost as a result of system errors, for example, if you use RAID level 0 instead of RAID level 5. However, the DataFinder can always create a new index. National Instruments recommends the creation of regular backups. Refer to [Backing Up the Configuration and Indexes](#) in this chapter, for further information about NoValues.
- Minimum system requirements:
  - Processor: 2 processor cores, clock frequency 1.4 GHz
  - RAM: 2 GB
  - Operating system: Windows Server 2003 R2, Windows Server 2008 R2
- Recommended system requirements:
  - Processor: 4 to 8 processor cores, clock frequency 2 GHz
  - RAM: 8 to 16 GB
  - Hard disks for operating system and index: 15.000 rpm SAS drives or SSD drives
  - Operating system: Windows Server 2008 R2, Windows Server 2012

## Backing Up the Configuration and Indexes

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Generate backup copies of the associated files to save the server manager configuration and the indexes of the DataFinders.

The files of DataFinder Server Edition are located below the folder `C:\Documents and Settings\All Users\Application Data\National Instruments\DataFinder Server Edition` or `C:\ProgramData\National Instruments\DataFinder Server Edition`. The subfolder `Config` contains information on the server manager configuration and on which DataFinder server is configured, the subfolder `Instances` contains the configurations of the individual DataFinder servers, and the subfolder `Instances_Data_<Version>` contains the indexes of the DataFinder server.

If you specified a different index path manually, you can find this path in the properties window of the server manager on the **General** tab of the **Configure DataFinder** dialog box.

## Uninstalling DataFinder Server Edition

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When you uninstall DataFinder Server Edition, you can specify whether to also delete an existing configuration and its indexes or whether to keep them for a later reinstallation.

The uninstallation process also removes services and autostart entries. In some cases it might happen that the uninstallation process cannot remove all autostart entries when installing or uninstalling or when DataFinder Server Edition runs with different user accounts. In this case, delete the `ni_..._<DataFinder name>` entries for the respective user account in the Windows registry under `HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run` in order to avoid an error message from the operating system when it restarts.

## Connecting Databases with Adaptors

---

Use adaptors to connect the DataFinder Server Edition with a database and to store the index in this database. The connected databases can differ in their performance and available functions.

The DataFinder Server Edition provides a standard adaptor, and also an adaptor for the connection with the Microsoft SQL server. You can use this adaptor to integrate the DataFinder Server Edition into the existing Microsoft SQL database systems. You can only use the Microsoft SQL server adaptor if you have a license that allows 25 connections.

During a DataFinder server upgrade, you cannot modify the adaptor. Select the required DataFinder server in the server manager and select **File»Duplicate** to select a different adaptor for the existing DataFinder server.

# Configuring Firewalls and Network Address Translating Routers

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DataFinder servers use the TCP port 2343 and the UDP port 2343 and a range of UDP ports beginning at port 6000. The number of UDP ports above 6000, which the DataFinder servers use, depends on the number of servers running on the computer. DataFinder clients, such as DIADEM, use a range of UDP ports beginning with port 5000. The number of UDP ports above 5000 that the DataFinder clients use depends on the number of clients running on the computer.

## Firewalls

Installing DataFinder Server Edition, adds the permission to the firewall rules to connect DIADEM or other DataFinder clients to a DataFinder server. If you suppressed these firewall rules during the installation, execute the `AddDataFinderFirewalls.vbs` script to implement these firewall rules now. The script is at `..\<Program Data>\National Instruments\DataFinder Server Edition\Config\<Version>\FirewallRules`.



**Note** You need administrator rights to execute the script.

If you do not want to execute the script, complete the following steps. The exact steps for configuring the firewall depend on which specific firewall you use. Refer to the documentation for the firewall for specific instructions about opening ports.

1. Open the TCP port 2343 and the UDP port 2343 for incoming packets.
  - a. For LabVIEW DataFinder Toolkit and for DIADEM up to and including DIADEM 2012 SP1:  
Open the UDP port range from 6000 to 6010 for incoming packets.
  - b. From DIADEM 2012 SP2:  
Open one TCP port for each used DataFinder server starting with TCP-Port 59110.

You also can allow clients inside a firewall to connect to a DataFinder server outside the firewall. Some firewalls automatically transmit incoming packets without any configuration. If the firewall does not open the ports automatically, open the UDP port range from 5000 to 5010 for incoming packets.



**Note** If you use a DataFinder server as an ASAM server, you must add the programs `..\National Instruments\DataFinder Server Edition\<Version>\DataFinderNMS.exe` and `...\National Instruments\Shared\CorbaNamingService\OmniNames.exe` to the list of firewall exceptions on the server computer.

## Network Address Translating Routers

Complete the following steps to allow clients outside a NAT router to connect to a DataFinder server inside the router. The exact steps for configuring the router depend on the specific NAT router you use. Refer to the documentation on the router for specific instructions about forwarding ports. Inside the router, only one computer can function as a server.

1. Forward the TCP port 2343 and the UDP port 2343 to the computer with the DataFinder server.
  - a. For LabVIEW DataFinder Toolkit and for DIADEM up to and including DIADEM 2012 SP1:  
Forward the UDP port range from 6000 to 6010 to the computer with the DataFinder server.
  - b. From DIADEM 2012 SP2:  
Transfer one TCP port for each used DataFinder server starting with TCP-Port 59110.

You also can allow clients inside an NAT router to connect to a server outside the router. Some routers automatically forward UDP ports without any configuration. If the router does not forward the UDP ports automatically, forward the UDP port range from 5000 to 5010 to the computer with the client (DIADEM).



**Note** If DataFinder Server Edition is installed on a Windows computer on which a Windows firewall is enabled, you must add the programs `.. \National Instruments\DataFinder Server Edition <Version>\DataFinderSE.exe` and `.. \Windows\System32\lkads.exe` to the firewall exclusion list on the server computer.



**Note** If a client (DIADEM) installed on a Windows computer with an enabled Windows firewall wants to access a DataFinder server, you must add the `.. \Windows\System32\lkads.exe` program to the Windows firewall exception list on the client computer.



# Supporting Archiving Systems

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Many factors, such as powerful multicore processors, increased memory, fast hard drives, and increasing sampling rates, are leading to increasing amounts of data. For easy and economic management of these amounts of data, you can use a backup system or an archiving system.

In a backup system the data that is not needed directly is stored on an inexpensive storage medium with a high storage capacity, usually magnetic tapes. Usually the data must be stored and recovered manually.

Archiving systems provide a more effective management of large amounts of data. In archiving systems, automated and rule-based background processes move the files into the archive. A file with the same name and the same file attributes, but without any contents, remains at the original position in the file system.

The DataFinder Server Edition integrates smoothly into archiving systems. The DataFinder server recognizes archived files and saves the archiving flag together with the descriptive TDM and TDMS file data, in the DataFinder index. If you navigate in data or search for data, the DataFinder server handles archived data the same as all other data. You can also browse and search in files that are stored in an archive, not located in the search areas. The related file symbol denotes whether the file is in the archive. When you access the file, it is automatically restored from the archive.

DataFinder Server Edition supports archiving systems from SER. Archiving systems from other providers were not tested, but can function.



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# Technical Support and Professional Services

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  - **Self-Help Technical Resources**—For answers and solutions, visit [ni.com/support](https://ni.com/support) for software drivers and updates, a searchable KnowledgeBase, product manuals, step-by-step troubleshooting wizards, thousands of example programs, tutorials, application notes, instrument drivers, and so on. Registered users also receive access to the NI Discussion Forums at [ni.com/forums](https://ni.com/forums). NI Applications Engineers make sure every question submitted online receives an answer.
  - **Standard Service Program Membership**—This program entitles members to direct access to NI Applications Engineers via phone and email for one-to-one technical support, as well as exclusive access to self-paced online training modules at [ni.com/self-paced-training](https://ni.com/self-paced-training). All customers automatically receive a one-year membership in the Standard Service Program (SSP) with the purchase of most software products and bundles including NI Developer Suite. NI also offers flexible extended contract options that guarantee your SSP benefits are available without interruption for as long as you need them. Visit [ni.com/ssp](https://ni.com/ssp) for more information. For information about other technical support options in your area, visit [ni.com/services](https://ni.com/services), or contact your local office at [ni.com/contact](https://ni.com/contact).
- **Training and Certification**—Visit [ni.com/training](https://ni.com/training) for training and certification program information. You can also register for instructor-led, hands-on courses at locations around the world.
- **System Integration**—If you have time constraints, limited in-house technical resources, or other project challenges, National Instruments Alliance Partner members can help. To learn more, call your local NI office or visit [ni.com/alliance](https://ni.com/alliance).
- **Declaration of Conformity (DoC)**—A DoC is our claim of compliance with the Council of the European Communities using the manufacturer’s declaration of conformity. This system affords the user protection for electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting [ni.com/certification](https://ni.com/certification).
- **Calibration Certificate**—If your product supports calibration, you can obtain the calibration certificate for your product at [ni.com/calibration](https://ni.com/calibration).

You also can visit the Worldwide Offices section of [ni.com/niglobal](https://ni.com/niglobal) to access the branch office websites, which provide up-to-date contact information, support phone numbers, email addresses, and current events.

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