NI DataFinder Server Edition

Search Engine for Technical Data

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Contents

About This Manual

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

The first chapter shows you 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 the Server Manager and shows you how to configure DataFinder servers.

The third chapter describes how you must configure your firewall to allow DataFinder clients such as DIAdem, which are outside the firewall, to connect to a server that is inside the firewall.

Conventions

The following conventions are used in this manual:

<>	Angles brackets indicate a key you press to perform a function, for example, <Ctrl> for the control key.
»	The » symbol leads you through nested menu items and dialog box options to a final action. If you read **Settings»Global Options»DataPlugins**, you must open the **Settings** menu, select the **Global Options** item, and then select the **DataPlugins** item.
	This icon denotes a note, which alerts you to important information.
bold	Bold text denotes items that you must select or click in the software, such as menu items and dialog box options. Parameters are also bolded.
italic	Italic text denotes a cross-reference.
`monospace`	Text in this font denotes text or characters that you enter from the keyboard, such as dialog box entries and filenames. This font is also used for the names of drives, paths, folders, filenames, and filename extensions.
`monospace bold`	Bold text in this font denotes the settings and messages that the computer displays on the screen.

Related Documentation

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

- *DataFinder Server Edition help files*, which you open by selecting **Help»Contents**, or by pressing <F1>.
- *DIAdem: Data Mining, Analysis, and Report Generation*

  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.

1

Creating and Connecting DataFinder Servers

A DataFinder server is a search engine that you install on a server. The DataFinder server browses computers in a network for files that contain technical data. The DataFinder server indexes data files to provide the clients with the data properties. The DataFinder server indexes files that are the same types as the DataPlugins that are registered in the Server Manager.

You can define several DataFinder servers in the Server Manager to provide different data for different work groups. Clients, such as DIAdem, communicate with the DataFinder servers to browse the indexed data and to load the search results.

Note The license specifies how many DataFinder servers you can create and how many users can access the DataFinder server simultaneously. For further information on licensing refer to the section on the *NI License Manager*.

Creating DataFinder Servers

When you start the DataFinder Server Edition the Server Manager appears. In the Server Manager you create and configure DataFinder servers and test the functionality of the DataFinder servers. Complete the following steps to create a DataFinder server:

1. To start the DataFinder Server Edition, select **Start»All Programs» National Instruments»DataFinder Server Edition 1.1»DataFinder Manager**.

   Because the Server Manager does not have any DataFinder servers when you install Server Manager, Step 1 of the wizard for creating a DataFinder server appears automatically the first time you launch the Server Manager.

2. Enter `TestRig` as the name of the DataFinder server.

3. Click **Add search area** to specify a search area. Search areas are the file system folders that a client can browse 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 share with the client for a search.
   b. Click **OK** to close the dialog box.

6. Click **Share folder**.

   The DataFinder 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 see the descriptive information and can load the files found.

7. Click **OK** to close the Windows share dialog box. The **Add search area** dialog box displays the path of the shared folder as shown in the following figure.

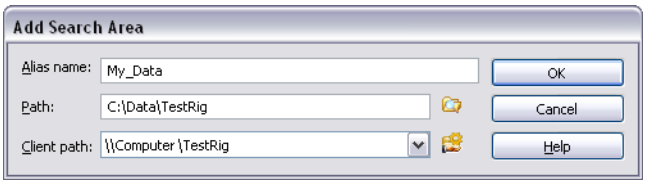

Figure 1-1. Defining a Search Area

8. Click **OK** to close the dialog box.

The first step in the wizard displays the new search area `My_Data` as shown in the following figure.

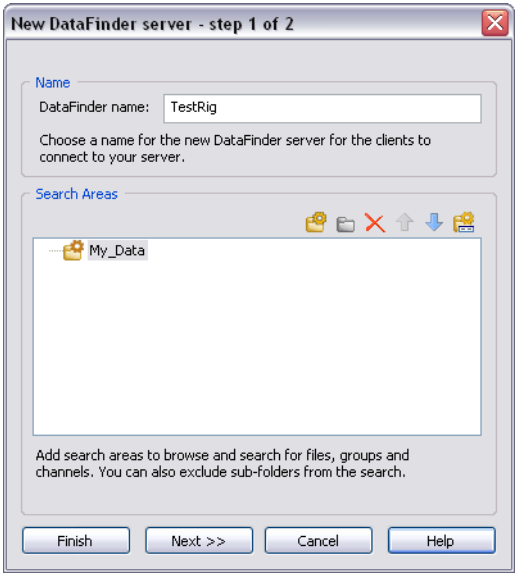

Figure 1-2. Step 1 of the Wizard

You can now define more search areas where a client can search for data. Click **Exclude subfolder** to exclude subfolders of a search area from the search.

9. Click **Next** to open Step 2 of the wizard.
10. If you select **Enable autostart**, Windows launches the DataFinder server automatically every time the operating system starts.
11. Select the Create shortcut on the desktop checkbox to create an icon for the DataFinder server `TestRig` on the desktop.

    You can then double-click the icon to start the DataFinder server `TestRig` without opening the Server Manager. The following figure shows the second step of the wizard.

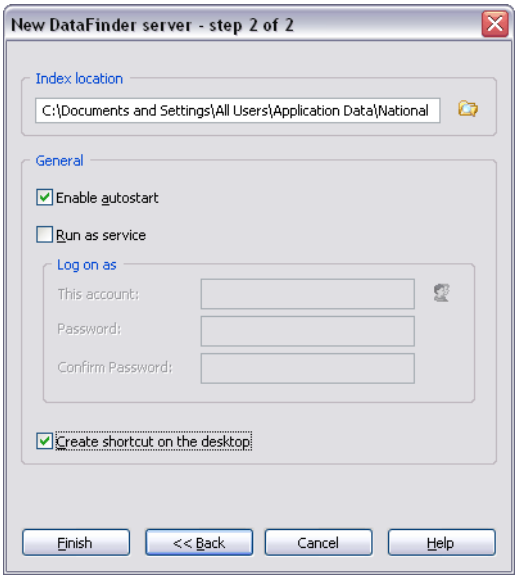

Figure 1-3. Step 2 of the Wizard

12. Click **Finish** to conclude the definition of the DataFinder server.

    The Server Manager immediately starts to index the data files in the search areas.

13. The Server Manager displays the new `TestRig` DataFinder server as shown in the following figure.

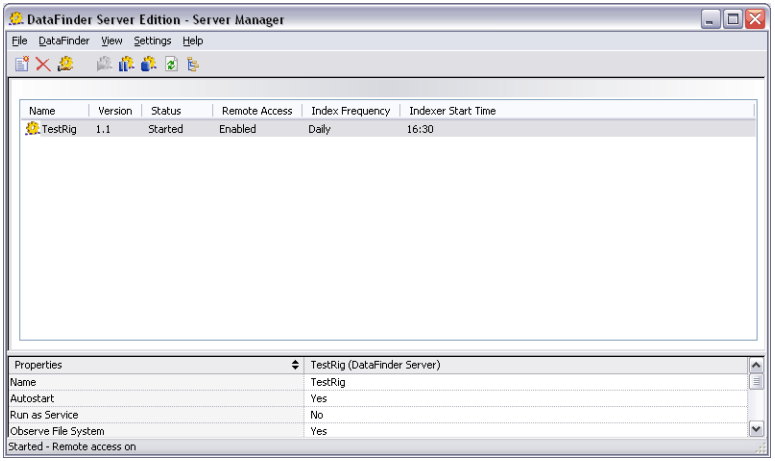

Figure 1-4. Server Manager with Enabled DataFinder Server

If you want to create another DataFinder server, click **New DataFinder** on the toolbar. You only can create more DataFinder servers if your license allows multiple DataFinder servers.

Exporting Client Configurations

For clients to execute queries on the server and to load data, you must connect the clients to a DataFinder server. You can export the required settings in the Server Manager, save the settings in a file, and then execute the settings on the client. Complete the following steps to export a client configuration.

1. Select the **TestRig** DataFinder server in the Server Manager.

2. Click **Export** on the toolbar.
3. Accept the suggested name for the export file `TestRig@computer`. The name consists of the name of the DataFinder server and the name of the server that the DataFinder Server Edition is installed on.
4. Select the **Include DataPlugins in client configuration** checkbox to save all the DataPlugins to 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.

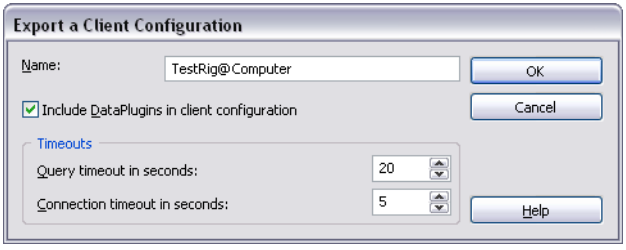

Figure 1-5. Exporting a Client Configuration

   Click **OK** to open the **Save as** dialog box.
5. 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, such as DIAdem, to use the DataFinder server `TestRig`, you must enable the client 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 use the URF file to import DataPlugins that are already registered on this computer, you can specify whether, in the future, the client uses the imported DataPlugins or the DataPlugins that are already on the computer.

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

3. Open **DIAdem**.

4. Select **DIAdem NAVIGATOR**.
5. Select **Settings»Remote DataFinder**.

   The following figure shows the dialog box with all the remote DataFinders that are registered in DIAdem.

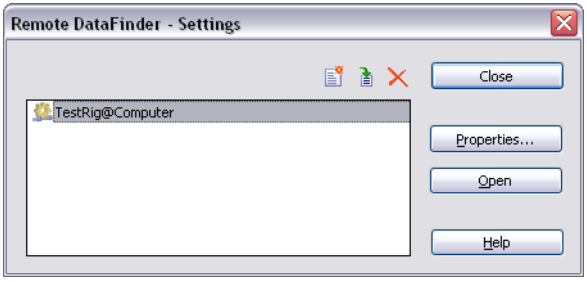

Figure 1-6. Remote DataFinders Registered in DIAdem

DIAdem can use any DataFinder server that is connected to the DIAdem computer on a network, as a remote DataFinder.

Note To load a URF file, you also can click **Import remote DataFinder** in the DIAdem remote DataFinder settings. After you import the file, click **Properties** to open the client configuration settings. Click **Test** to check the connection to the DataFinder server.

6. 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.

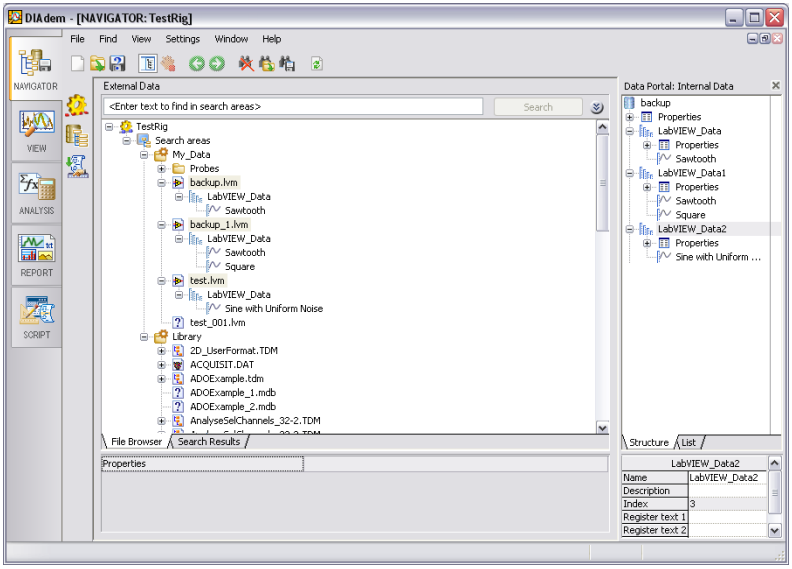

Figure 1-7. Navigating in Search Areas of the DataFinder Server

If you want to open the search areas of the DataFinder server `TestRig` by default in the file browser when you launch DIAdem, select **Settings»Options»NAVIGATOR**. Select the radio button **Start behavior»External data»DataFinder**, click **Browse**, and select the DataFinder server `TestRig`. Save the modified program settings when you close DIAdem.

To access the search areas of various DataFinder servers faster in DIAdem, you can assign DataFinder servers to the buttons on the **DataFinder** function bar. To do this, select **Default setting** from the shortcut menu of a button on the function bar.

2

Configuring DataFinder Servers

Use the Server Manager to create, to edit, to duplicate, or to delete your DataFinder server. In the Server Manager you also can make general settings, export the settings for connecting a client to a DataFinder server, optimize custom properties, and open the search areas of a DataFinder server in a browser.

Server Manager

The following figure shows the Server Manager, which provides an overview of the most important settings of all the DataFinder servers. The version number identifies the DataFinder server. The Server Manager displays the version number only if you open the **View** menu and select **Display all versions**. The status shows whether a DataFinder server is activated. 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 the data files starts. If you disable regular indexing, the entry **`Never`** appears here.

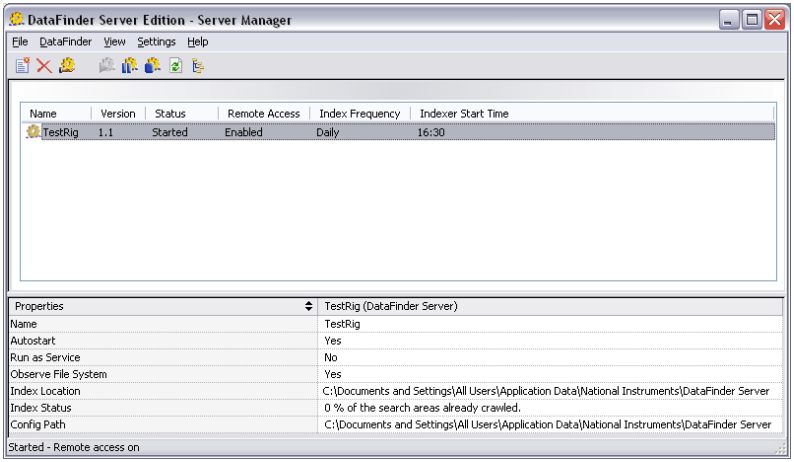

Figure 2-1. The Server Manager Displays all DataFinder Servers

The properties window at the bottom of the Server Manager shows other properties of the DataFinder server that is selected in the overview. The **`Autostart`** property shows, for example, whether the DataFinder server launches automatically when the computer starts. The **`Observe file system`** property shows, for example, whether the DataFinder server automatically indexes each new file and each modified file.

If you want to interrupt data file indexing, select a DataFinder server in the DataFinder Manager and click **Pause indexing** on the toolbar. If you want to close the selected DataFinder server, click **Stop**. If you close a DataFinder server, you not only interrupt indexing, you also interrupt the connection to the client. Click **Start** to reactivate a DataFinder server. Clients can now browse in the indexed files again.

You can open the shortcut menu of each activated DataFinder server from the information area on the Windows task bar. Select **About** to see when the last complete indexing was executed and how many files, groups, and channels are indexed. You also can stop the indexing here and configure, start, and close the DataFinder server. You also can select **DataFinder»Statistics** in the Server Manager for information about indexing data.

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 guarantees that the DataFinder server is automatically available when you restart the computer after the server computer was down.

In the **Start options** dialog box, the setting **Run as service** specifies whether the operating system executes a DataFinder server as a Windows service the next time the server starts. A service is a Windows applications 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 under Windows. In Windows Vista you must start the application explicitly as an administrator because the operating system starts applications with default rights.

Duplicating a DataFinder Server Configuration

Duplicate a DataFinder server configuration to create a new DataFinder server with the same configuration. To duplicate a configuration, select the DataFinder server that you want to duplicate in the Server Manager and select **File»Duplicate**. In the dialog box that opens, specify the name and the index location of the new DataFinder server. If you do not change the name of the new DataFinder server, the Server Manager automatically adds a number to the name. Use a different index path for each DataFinder server. When you duplicate a DataFinder server configuration, the Server Manager does not copy the start options of the DataFinder server.

If you duplicate an earlier version of a DataFinder server, the Server Manager automatically upgrades the duplicated DataFinder server to the current version.

Upgrading an Earlier DataFinder Server

You can upgrade a DataFinder server from an earlier version of the DataFinder server edition. If you select **View»Display all versions**, the Server Manager displays the previous DataFinder server versions. Select **Upgrade** from the shortcut menu of the DataFinder server you want to update. The Server Manager runs the upgrade and refreshes the version number of the selected DataFinder server. If you upgrade a DataFinder server, the Server Manager must reindex all the data of the search areas. Data indexing may take some time. You cannot undo a DataFinder server upgrade.

You also can upgrade the DataFinder server of an earlier version if you duplicate the DataFinder server. The Server Manager automatically runs an upgrade of the duplicated DataFinder server. Delete the previous DataFinder and rename the new DataFinder server.

Defining Global Settings

In the dialog box that opens when you select **Settings»Global options» General**, you can specify the default settings that the Server Manager uses to create new DataFinder servers. You specify whether a new DataFinder server automatically starts with the operating system, whether the DataFinder server is operated as a Windows service, and whether a DataFinder server is given a desktop shortcut. The settings in this dialog box apply for all the DataFinder servers that you create subsequently.

Configuring DataFinder Servers

To configure a DataFinder server, double-click the DataFinder server in the Server Manager. In the configuration of the DataFinder server you specify the search areas and the indexing of the data files. You also can see which file types the DataFinder server includes in the search.

Defining Search Areas

On the **Search areas** tab you select folders that the DataFinder server browses. 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 can exclude subfolders of a search area from the search. A plus sign in front of a search area indicates that the search area contains subfolders that the DataFinder server excludes from the search.

You must share each search area using the Windows share settings, to enable clients to load files from the search areas. You define share mode when you create a search area or edit an existing search area. Click **Share folder** to open the Windows system dialog box with the **Sharing** tab. 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 group. Refer to the Microsoft Windows program help for more information about sharing folders.

You must define the search areas of the DataFinder server with path names that are unique within the network. If you click **Edit search area**, the **Client path** entry is the path for client access to files, for example, `\\Testrig4a\NewCar\DATA`.

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. Clients can no longer access the DataFinder server and all the share settings are hidden in the configuration dialog boxes.

Reading File Types with DataPlugins

DataFinder servers decide which files to index according to the filename extension. The **File extensions** tab has two lists that contain all the filename extensions that each DataFinder server recognizes.

The `Indexable extensions` list shows all the indexable file types, which correspond to the TDM data model. In indexable files the DataFinder server can search for properties of data sets, 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 shows all the non-indexable file types. These file types do not correspond to 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 is a VBScript that analyzes files of a specific file type and provides this information to the DataFinder server. The **DataPlugins** tab shows which filename extensions are assigned to which DataPlugin.

To add DataPlugins, select **Settings»Global options»DataPlugins**. In this dialog box you can define, import, export, and delete DataPlugins. When you define a new DataPlugin, you can edit the associated VBScript. If you change the properties of a DataPlugin, these changes apply for all the DataFinder servers.

The National Instruments internet site `ni.com/dataplugins` offers DataPlugins for various data formats, written and tested by programmers and by users. The site also provides assistance for programming 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.

Click the **Indexer** tab to specify when and how often the DataFinder server indexes the search areas. To immediately start indexing a DataFinder server that is activated in the Server Manager, click the **Start now** button. Depending on the amount of data, it can take quite a while to index a search area for the first time.

Select the checkbox **Update index immediately when files are created or modified** to ensure that clients always search current data. The **Idle time** specifies the time that the DataFinder server waits after the last keyboard entry or mouse movement, before the indexing process continues. You limit the time that the DataFinder server spends indexing a specific file, for example, to prevent the DataFinder server from continually trying to index a file that cannot be read.

You can use the **Scheduler** to start indexing regularly. For example, the DataFinder server can browse the search areas at 12 AM daily, when no changes to the search areas and no client queries are expected.

If you shut down the computer during a scheduled indexing process or while an indexing process is running, the DataFinder server starts indexing at the next scheduled time, after you restart the computer.

On the **General** tab, the **Index location** displays the folder where the DataFinder server saves the index. Generally, you should not change the index location that is created during installation. However, if the drive with the index has less than 20 MB free memory space, the DataFinder server stops indexing and displays an error message. You must then either delete files to make more space available, or change the index path. If you change the index path, the DataFinder server reindexes the search areas. To avoid changing the index path during the working process, install the DataFinder Server Edition on a server that has sufficient hard disk memory space.

Optimizing Custom Properties

You can optimize the search for custom properties for a DataFinder server so that the DataFinder server finds these custom properties faster. Custom properties are user-defined properties that you can create for data sets, 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. Do not optimize more than 100 custom properties per file, group, or channel. If you click **Suggest**, the Server Manager makes a suggestion for optimizing the custom properties. When you close the dialog box, the DataFinder server optimizes the selected custom properties. Optimizing custom properties can take quite a long time. You cannot interrupt the optimizing process and during this process you cannot work with the DataFinder server.

In a client, such as DIAdem, select the custom properties from the properties in the **Advanced search**. If you select an optimized custom property, you can click the button shown on the left, which is at the end of the entry field, to apply a suggested value in the search. Which operators you can use for a search entry depends on the data type of the property searched for. The DataFinder server always optimizes custom properties for the data type that the DataFinder server used most frequently to index the custom property.

Note You only can search for date type custom properties if the DataFinder server has optimized these custom properties.

Exporting a Client Configuration

To export the settings for a client connection to a DataFinder server that you have selected in the Server Manager, click **Export** on the toolbar. You also can export the DataPlugins of the DataFinder server together with the client configuration, to provide the client with all the DataPlugins for loading the indexed files.

In the export dialog box you also can set connection parameters. You can limit the amount of time that the clients may take to connect to the DataFinder server, and the maximum time that the clients wait for the results of a search. When the Server Manager exports the client configuration, it saves the connection parameters and the DataPlugins in a file that has the extension `urf`.

To provide the connection settings for a client such as DIAdem, you copy the URF file to the DIAdem computer. Double-click the URF file to register the settings and the DataPlugins on the client computer. If you use the URF file to import DataPlugins that are already registered, you can specify whether you want the client to use the imported DataPlugins in the future.

Then start DIAdem and open DIAdem NAVIGATOR. Select **File»Open DataFinder**. Select the new remote DataFinder that you have registered and click **OK**. DIAdem opens the search areas of the remote DataFinder in the file browser. You can navigate in the search areas of the remote DataFinder and load data.

To modify the connection parameters in DIAdem, select **Settings»Remote DataFinder** and click **Properties**. Click **Test** to check the connection to the DataFinder server.

Browsing in Search Areas

The Server Manager provides a tree view of the search areas of the DataFinder servers. If the DataPlugin allows, you can navigate to channel level in the folders of the search areas and in the indexed files.

Select a DataFinder server in the Server Manager and click **Open in browser** on the toolbar. The Server Manager opens a tab with a tree view of the search areas of the selected DataFinder server.

The properties window at the bottom displays the properties of the file, of the channel group, or of the channel, that is selected in the tree view. Click one of the indexed files to view the file properties as shown in the following figure. In the properties window, the Server Manager displays file properties such as the filename, path, creation date, name, and author. Drag the top edge of the properties window up to view the entire properties list.

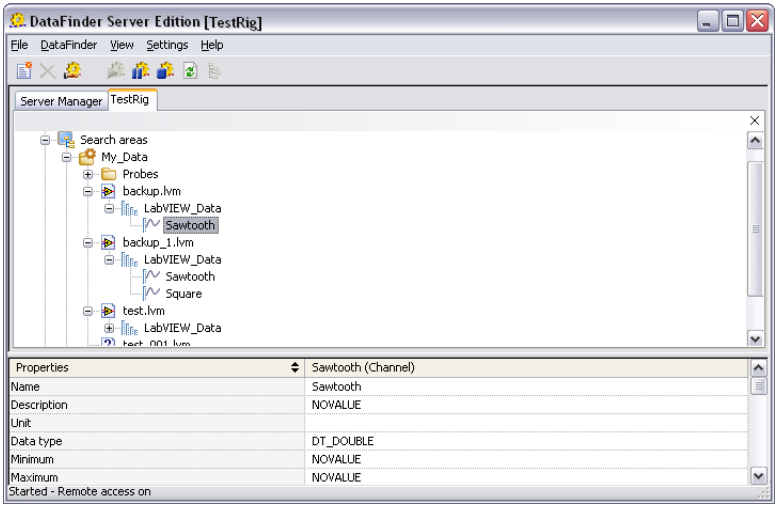

Figure 2-2. Browsing in the Search Areas of a DataFinder Server

In the tree view you can open the shortcut menu to define other folders as search areas, and to edit and to delete existing search areas. You also can exclude subfolders from indexing.

To display the selected DataFinder server as the client sees the DataFinder server, select **View»Client view**. In the client view, the Server Manager displays all the search areas and hides the path **`MyComputer`**.

NI License Manager

The NI License Manager helps you manage your NI software product licenses. To work with the DataFinder Server Edition after your Evaluation version expires, 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 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.

3

Configuring Firewalls and Network Address Translating Routers for DataFinder Servers

DataFinder servers use the UDP port 2343 and a range of UDP ports beginning with port 6000. The number of UDP ports above 6000 that 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

Complete the following steps to allow DIAdem or other DataFinder clients outside a firewall to connect to a DataFinder server inside a firewall. The exact steps for configuring the firewall depend on which specific firewall you use. Refer to the documentation on the firewall for specific instructions about opening UDP ports.

1. Open the UDP port 2343 for incoming and outgoing packets.
2. Open the UDP port range 6000 to 6010 for incoming packets.

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.

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 router you use. Refer to the documentation on the router for specific instructions about forwarding ports. Only one computer inside the router can function as a server.

1. Forward the UDP port 2343 to the computer with the DataFinder server.
2. Forward the UDP port range 6000 to 6010 to the computer with the DataFinder server.

You also can allow clients inside a 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 you installed the DataFinder Server Edition on a Windows machine with an enabled Windows firewall, you must add the programs `..\National Instruments\DataFinder Server Edition 1.1\DataFinderSE.exe` and `..\Windows\System32\lkads.exe` to the Windows firewall exception list.

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

A

Technical Support and Professional Services

Visit the **Support** section of the National Instruments Web site at `ni.com` for technical support and professional services. Online technical support resources at `ni.com/support` include the following:

- **Self-Help Resources**—For answers and solutions, visit the award-winning National Instruments Web site 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.
- **Free Technical Support**—All registered users receive free Basic Service, which includes access to hundreds of Application Engineers worldwide in the NI Discussion Forums at `ni.com/forums`. National Instruments Application Engineers make sure every question receives an answer.

For information about other technical support options in your area, visit `ni.com/services` or contact your local office at `ni.com/contact`.

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