# Creating a NI-DAQmx Task, Channel, or Scale in a Project

To create a NI-DAQmx task, channel, or scale in a LabVIEW project, complete the following steps:

- 1. Click **Empty Project** in the Getting Started window. The Project Explorer window opens.
- 2. Right-click **My Computer** in the project tree.
- 3. Select **New**, then **NI-DAQmx Task**, **NI-DAQmx Channel**, or **NI-DAQmx Scale**. The DAQ Assistant opens.
- 4. Create the NI-DAQmx task, channel, or scale. Refer to the *DAQ Assistant Help*.

After the task, channel, or scale is created, you can drag and drop it onto either the front panel or block diagram for use in a VI.



**Note** If you create a task, channel, or scale in a project with the same name as a task, channel, or scale in MAX, the project-based object takes priority. The MAX task, channel, or scale is disabled.

# Editing a NI-DAQmx Task, Channel, or Scale in a Project

To edit a NI-DAQmx task, channel, or scale in a LabVIEW project, complete the following steps:

1. Right-click the NI-DAQmx task, channel, or scale you want to configure. Select **Properties**.

-or-

Double-click the NI-DAQmx task, channel, or scale you want to configure.

- 2. The DAQ Assistant opens.
- 3. Make the desired changes to the NI-DAQmx task, channel, or scale. For more information on editing a NI-DAQmx task, channel, or scale, refer to the *DAQ Assistant Help*.

# Renaming a NI-DAQmx Task, Channel, or Scale in a Project

To rename a NI-DAQmx task, channel, or scale in a LabVIEW project, complete the following steps:

1. Right-click the NI-DAQmx task, channel, or scale you want to rename. Select **Rename**.

-or-

Select the NI-DAQmx task, channel, or scale you want to rename. Press <F2>.

- 2. Type the new name, using the following guidelines:
  - Use any alphanumeric characters.
  - You can use dashes and spaces, but other nonalphanumeric characters, including punctuation, are not allowed.
  - You can use underscores within the name of the device, but you cannot use leading underscores, such as \_Dev1.
  - You must use no more than 256 characters.
- 3. Press <Enter> or click anywhere on the screen when finished to apply the new name.

# Deploying a NI-DAQmx Task, Channel, or Scale to a Remote Target

<u>Deploying</u> a NI-DAQmx task, channel, or scale downloads it to memory on the remote target. A task, channel, or scale is automatically deployed to **My Computer**. To deploy a NI-DAQmx task, channel, or scale to a remote target, complete the following steps:

- 1. Right-click the task, channel, or scale you want to deploy. Select **Deploy**.
- 2. The Deploy window opens. By default, the window closes upon successful completion of the deployment. To keep the window open, uncheck **Close on successful completion**. To close the window, click **Close**.

## **Exporting NI-DAQmx Tasks, Channels, and Scales in a Project**

Both MAX and LabVIEW Project support exporting configurations. MAX exports system configuration information, including NI-DAQmx devices, tasks, channels, and scales. The configuration is exported in the machine-readable .nce format. You also can choose either of two plain text formats, .ini or .csv (tab-delimited), for export. Neither of these formats includes device information, only task, channel, and scale configurations. For more information on exporting from MAX, refer to the *Measurement and Automation Explorer Help for NI-DAQmx*.

LabVIEW Project exports configuration information for only tasks, channels, and scales. When exporting from LabVIEW, you can save the configuration in either the .ini or .csv format.



**Note** If a task, channel, or scale is exported from LabVIEW Project and imported in MAX, later changes to the configuration in LabVIEW are not reflected in the corresponding item in MAX. Similarly, changes in LabVIEW to an item exported from MAX and imported into a project are not reflected in MAX.

The following examples demonstrate possible uses for the import and export functions.

- In an environment with multiple systems running the same hardware configuration, it might be desirable to use the same global channels. If the channels are defined in a project, the configuration can be exported as an .ini or tab-delimited file, then imported into MAX.
- If a system is set up with a large number of NI-DAQmx tasks, channels, or scales, the configuration can be exported as a tab-delimited file and batch edited in a spreadsheet application, instead of editing each instance separately. The edited file can then be imported back into either MAX or LabVIEW.
- If the system configuration needs to be documented for reference or certification, a plain text format export can be used for report generation.

To export NI-DAQmx tasks, channels, and scales from a LabVIEW project, complete the following steps:

- 1. Right-click **My Computer**.
- 2. Select Export»Export NI-DAQmx Configuration.
- 3. Browse to the directory to contain the configuration file. Type a filename.
- 4. Click **Export**.

## Importing NI-DAQmx Tasks, Channels, and Scales in a Project

Both MAX and LabVIEW Project support importing configurations. MAX imports system configuration information, including NI-DAQmx devices, tasks, channels, and scales. The configuration is imported in the machine-readable .nce format. You also can choose either of two plain text formats, .ini or .csv (tab-delimited), for import. Neither of these formats includes device information, only task, channel, and scale configurations. For more information on importing from MAX, refer to the *Measurement and Automation Explorer Help for NI-DAQmx*.

The following examples demonstrate possible uses for the import and export functions.

- In an environment with multiple systems running the same hardware configuration, it might be desirable to use the same global channels. If the channels are defined in a project, the configuration can be exported as an .ini or comma-delimited file, then imported into MAX.
- If a system is set up with a large number of NI-DAQmx tasks, channels, or scales, the configuration can be exported as a comma-delimited file and batch edited in a spreadsheet application, instead of editing each instance separately. The edited file can then be imported back into either MAX or LabVIEW.
- If the system configuration needs to be documented for reference or certification, a plain text format export can be used for report generation.

To import NI-DAQmx tasks, channels, and scales into a LabVIEW project, complete the following steps:

- 1. Right-click My Computer.
- 2. Select Import»Import NI-DAQmx Configuration.
- 3. Browse to the directory that contains the configuration file. Select the file.
- 4. Click Import.

If the selected configuration file contains tasks, channels, or scales with the same names as ones in your current project, a confirmation window opens. Click either **Replace Entire Configuration** or **Cancel**.



**Note** LabVIEW Project imports only tasks, channels, and scales.

# Removing a NI-DAQmx Task, Channel, or Scale in a Project

To remove a NI-DAQmx task, channel, or scale in a LabVIEW project, complete the following steps:

1. Right-click the NI-DAQmx task, channel, or scale you want to remove. Select **Remove**.

-or-

Select the NI-DAQmx task, channel, or scale you want to remove. Press the <Delete> key.

2. A dialog box prompts you to confirm removal of the task, channel, or scale. Click **OK** to remove the task, channel, or scale. To prevent the dialog box from appearing the next time, check **Do not show this dialog again**.

#### **Using Application Builder with NI-DAQmx**

When using the Application Builder to create either a stand-alone application or an installer, you can choose to include or exclude project-defined tasks, channels, and scales.

To create an application, complete the following steps:

- 1. <u>Create</u> a task, channel, or scale.
- 2. Add the task, channel, or scale to a VI by dragging and dropping the object onto the front panel or block diagram.
- 3. Right-click **Build Specifications**. Select **New»Application (EXE)**.
- 4. The Application Builder window opens. Refer to <u>Building a Stand-Alone Application</u> for more information on setting up an application build.
- 5. Select **Source Files** from the Category list. Move the desired VI to the Startup VIs list box.
- 6. Select **Advanced** from the Category list. The option **Include hardware configuration files** is selected by default. If you build with the option checked, daqmx.ini is created in the support directory path. The .ini file contains task, channel, and scale configuration data in plain text format. When you run the application, the application references the .ini file to set up tasks, channels, and scales in the VI.

To create an installer, complete the following steps:

- 1. Right-click **Build Specifications**. Select **New»Installer**.
- 2. Refer to <u>Building an Installer</u> for more information on setting up an installer build.
- 3. Select **Advanced** from the Category list. Click **Include hardware configuration from MAX**. The MAX hardware configuration includes device information, in addition to NI-DAQmx task, channel, and scale configurations.
- 4. Click **Configure**. The Configuration Export Wizard opens. For more information on exporting a hardware configuration, refer to *Measurement & Automation Explorer Help for NI-DAQmx*. When you run the installer, the installer references the .nce file to set up devices, tasks, channels, and scales in MAX.

#### Using the NI-DAQmx I/O Server

In NI-DAQmx 8.0 or later, you can set up distributed applications to combine remote data applications using the NI-DAQmx I/O Server. For instance, you can configure a central computer to monitor other computers that control hardware sensors by using <u>shared variables</u>. You can connect to the NI-DAQmx I/O Server through LabVIEW 8.0, but LabVIEW is not required. If you use a third-party OPC client, you also can access DAQ channels.



**Note** You must have at least one global virtual channel defined either in the project or in Measurement & Automation Explorer (MAX) to use the NI-DAQmx I/O Server. Global virtual channels of any I/O type can be bound to shared variables, but tasks cannot.

Complete the following steps to bind a DAQ channel to a shared variable in LabVIEW Project:

- 1. Open LabVIEW.
- 2. Click **Empty Project**.
- 3. Right-click **My Computer**. Select **New»Variable**.
- 4. Name the variable in the Shared Variable Properties dialog box that opens.
- 5. Select **Network-Published** as the variable type from the drop-down list.
- 6. Select the **Bind to Source** checkbox. The Access Type and data type are automatically selected for variables bound to NI-DAQmx channels.
- 7. Click **Browse**.
- 8. The Select Source Item dialog box opens. In the Network-Published Source drop-down list, select either **Project Items** or **Network Items**.



**Note** Project items include the global virtual channels defined in the project. Network items include items found on the network, such as the MAX channels on the local or remote computer and deployed project channels.

- 9. Browse to the NI-DAQmx channel to which you want to bind. After binding, the access type and data type are automatically selected.
- 10. Click **OK**.

To use the variable in a VI, drag the variable from the Project Explorer to the front panel or block diagram. A <u>status indicator</u> appears next to the front panel

#### object. Run the program.



**Note** NI-DAQmx provides a default variable in MAX called the Server Polling Rate which determines how fast the data acquisition software-timed loop runs. You can change this setting by adding the server polling rate variable to the VI.

Refer to the *LabVIEW Help* for more information about using <u>shared variables</u> in LabVIEW.

When using a third party OPC client, connect to the variable engine server to access DAQ channels on the network.



**Note** Most NI-DAQmx-supported devices work with the NI-DAQmx I/O Server, but DSA devices do not. Refer to the *NI-DAQmx Readme* for a list of NI-DAQmx-supported devices.

#### **Special Considerations with Counter Output Channels**

The following special considerations apply when using counter output channels:

- If you bind a shared variable to a counter output global virtual channel, the datatype is a 1D array of double-precision floating-point values with two elements. The array maps to the pulse specifications of the counter output channel. The units of those array elements vary depending on the output type (high/low time, frequency/duty cycle, high/low ticks) of the counter output channel you created.
- The pulse specification you specify when you first create the global virtual channel determines which internal counter timebase the device uses. If you write a pulse specification outside the range supported by the internal timebase the driver chooses, an error occurs.
- One output period must complete before you write a new pulse specification. For instance, if your pulse specification defines a period of 1 second, you must set up your application to write new pulse specifications to the shared variable at a period greater than 1 second.

For more information about generating pulses, refer to the NI-DAQmx Help.