Wonderware InTouch Client Driver Help

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Wonderware InTouch Client Driver Help

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Overview

The Wonderware InTouch Client Driver provides an easy and reliable way to connect Wonderware InTouch applications to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications.

This driver can be used to expose Wonderware InTouch tag databases to OPC clients. This includes all I/O and memory tags in the InTouch Tag Database, including those configured as local and remote tags. This driver can import tags defined in the InTouch applications, greatly reducing the project development effort. Wonderware InTouch 7.1 or higher is required.

The OPC server and an InTouch node must exist on the same machine. Data from remote InTouch nodes can be accessed via the local InTouch node or with multiple OPC servers.

Driver Setup

Before live data can be accessed with this driver, InTouch must be added to the system path. Server projects may be created before this is done, however. For more information, refer to **System Configuration**.

The first step in creating a server project is to create a channel that uses this driver. Next, add a device to that channel. This device will act as a client of InTouch WindowViewer, which must be running on the same machine. Data in remote InTouch nodes can be accessed only if it is linked to the local InTouch node with remote tags. For more information, refer to **Optimizing Your Wonderware InTouch Client Driver Communications**.

The device object can be configured to import tags from an InTouch project, which will greatly reduce the project development time. For more information, refer to **Tag Import Settings** and **Automatic Tag Database Generation**.

The device object can obtain data from InTouch by polling, data change notifications or a combination method. For more information, refer to **Mode**.

System Configuration

System Path

In order to access live data with this driver, the system path environment variable must include the location of the "wwheap.dll" and "ptacc.dll" files that were installed with InTouch. When InTouch is installed before the driver, the server installation program will automatically add the files' location. When InTouch is installed after the driver, it is recommended that the server installation program be run again in order to update the path variable. The path may also be updated manually. For more information, follow the instructions below.

1. To start, locate wwheap.dll and ptacc.dll on the machine.

   - For InTouch 7.1, both files can typically be found in **C:\Program Files\FactorySuite\InTouch**.
   - For InTouch 8.0 and higher, wwheap.dll can typically be found in **C:\Program Files\Common Files\Archestra** and ptacc.dll can typically be found in **C:\Program Files\Wonderware\InTouch**.

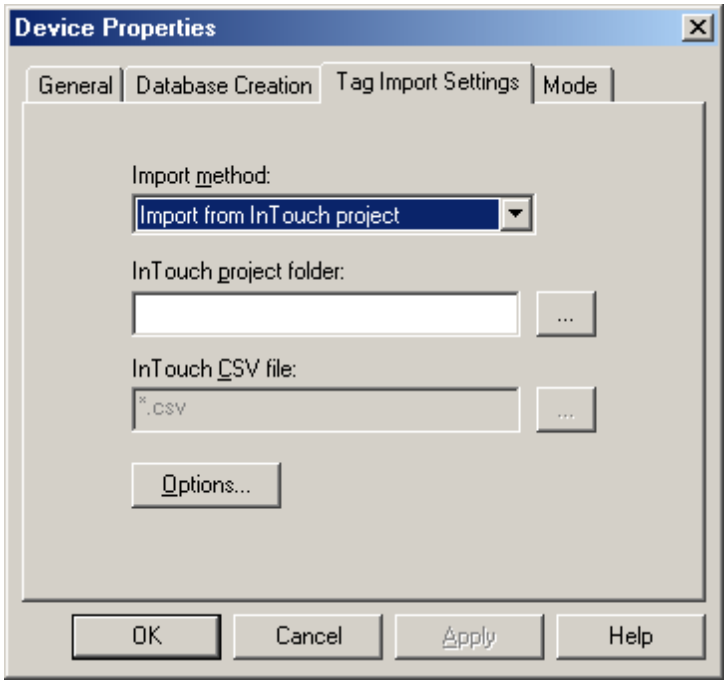
2. Next, invoke the **Control Panel** dialog and then select **System**.

3. Click **Advanced** | **Environment Variable** and then select **Path**.

4. Next, click **Edit**. Append the current setting with the location(s) of wwheap.dll and ptacc.dll, separating each with a semicolon.

Tag Import Settings

The InTouch Driver can import tags from the InTouch project, thus reducing project development time. To access these settings after the Device Wizard has completed, click **Edit** | **Device Properties** and then select **Tag Import Settings**.



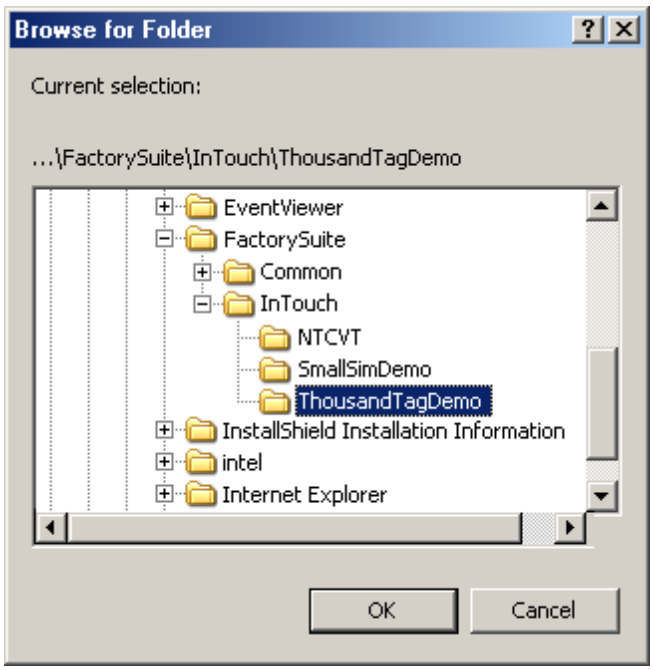
Import Method

There are two methods that may be used to import tags. Descriptions of the options are as follows:

- **Import from InTouch Project:** This option allows tags to be imported directly from an InTouch project. This is the default setting.
- **Import from InTouch CSV File:** This option requires that the tag database be exported to a CSV file first through the use of the InTouch DBDump utility. This method is recommended for larger projects.

InTouch Project Folder

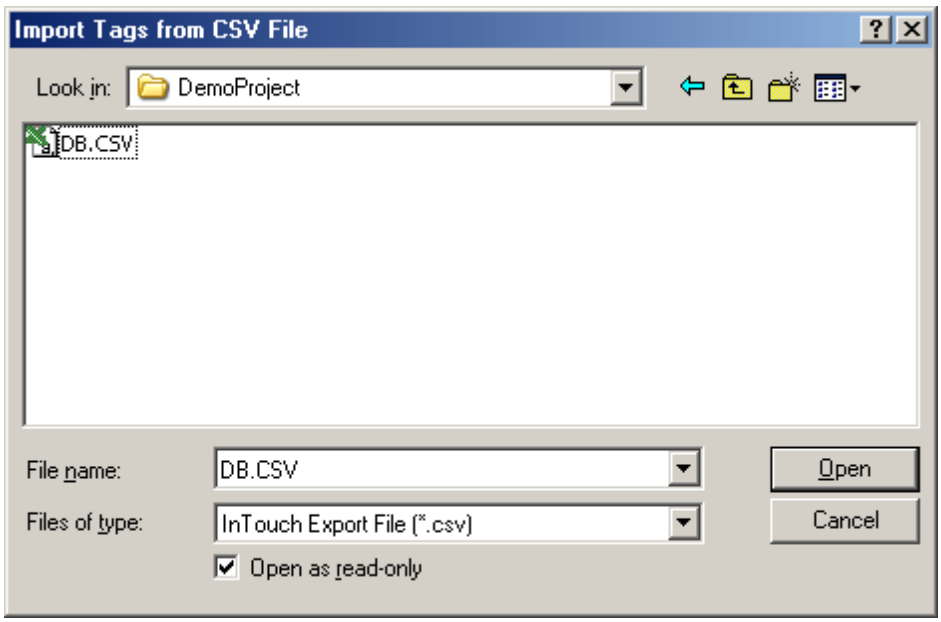
This setting specifies the root folder of the InTouch project from which tags will be imported, and is used in conjunction with the **Import from InTouch project** method. The file path can be typed manually or browsed for using the Browse button. If no folder is specified, the most recent InTouch project will be used. The folder browser should appear as shown below.



In this example, the root folder of an InTouch project called "ThousandTagDemo" has been selected. Once **OK** is clicked, the full path to this folder will automatically be placed in the InTouch project folder box.

InTouch CSV file

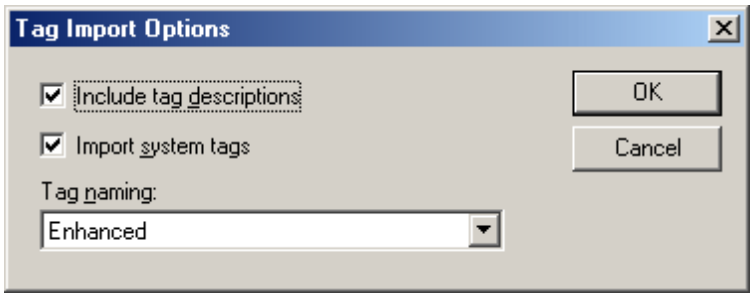
This setting specifies the name and path of the InTouch CSV file from which tags will be imported, and is used in conjunction with the **Import from InTouch CSV file** method. The file path and name can be typed manually or browsed for using the Browse button. The file browser should appear as shown below.



In this example, the file in an InTouch project folder called "DB.CSV" has been selected. Once **OK** is clicked, the full path and file name will automatically be placed in the InTouch CSV file box.

Options

To view more options, click the **Options** button at the bottom of the **Tag Import Settings** tab. The window should appear as shown below.



Descriptions of the parameters are as follows:

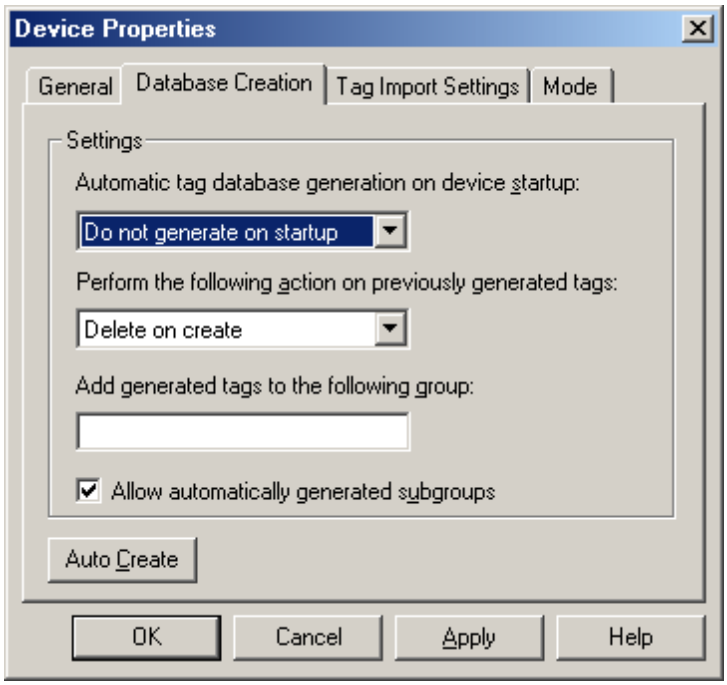
- **Include Tag Descriptions:** When selected, this option will include the descriptions attached to each InTouch tag included with tags generated in the OPC server.
- **Import System Tags:** When selected, this option will import the InTouch system tags (such as $Application-Version, $Date, $Time and so forth). Remember that since tag names in the OPC server must start with an alphanumeric character, the dollar sign in each imported system tag name will be changed to a zero (0).
- **Tag Naming:** This parameter specifies one of the two tag naming options: Enhanced or Legacy. Enhanced has fewer naming constraints and is consistent with the naming requirements of the current OPC server. Tag names cannot have a period, double quotes or start with an underscore. Legacy enforces the stricter naming requirements of previous versions of this driver. Tag names must start with a letter, and the name must consist of letters and digits only.

Note: When changing any of the settings in the Tag Import Settings tab, click **Apply** in order to apply the changes before proceeding.

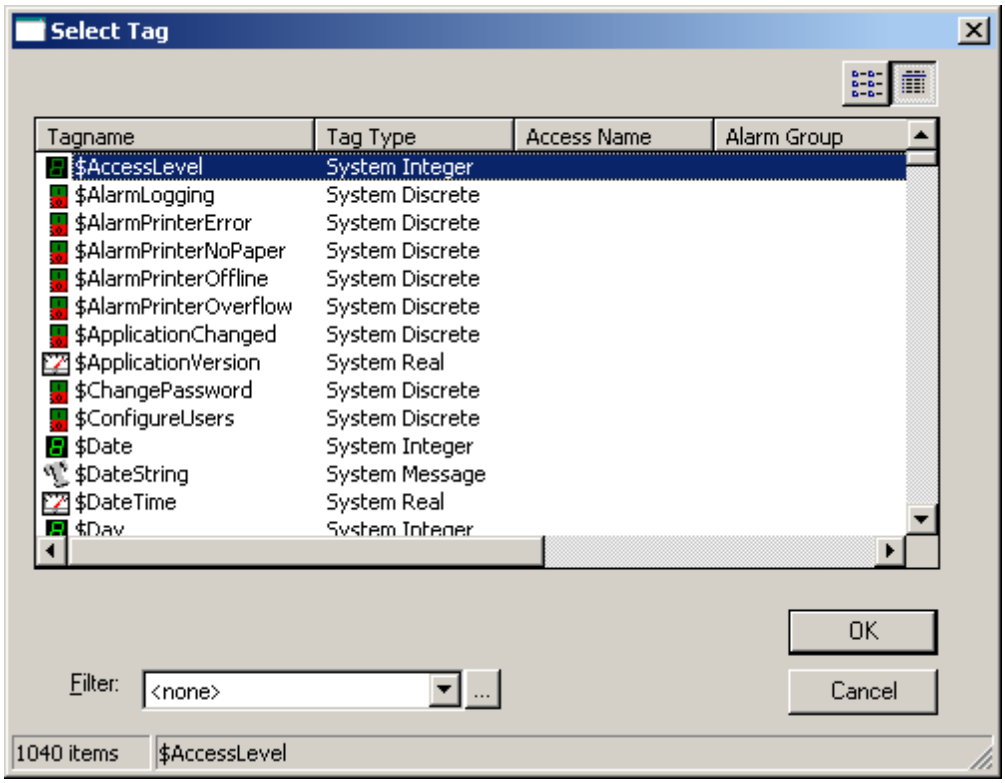
Database Creation

Once the settings described above are configured, the OPC server's automatic tag database generation feature may be invoked. It may be configured to run automatically or be triggered manually. For more information, refer to **Automatic Tag Database Generation**.

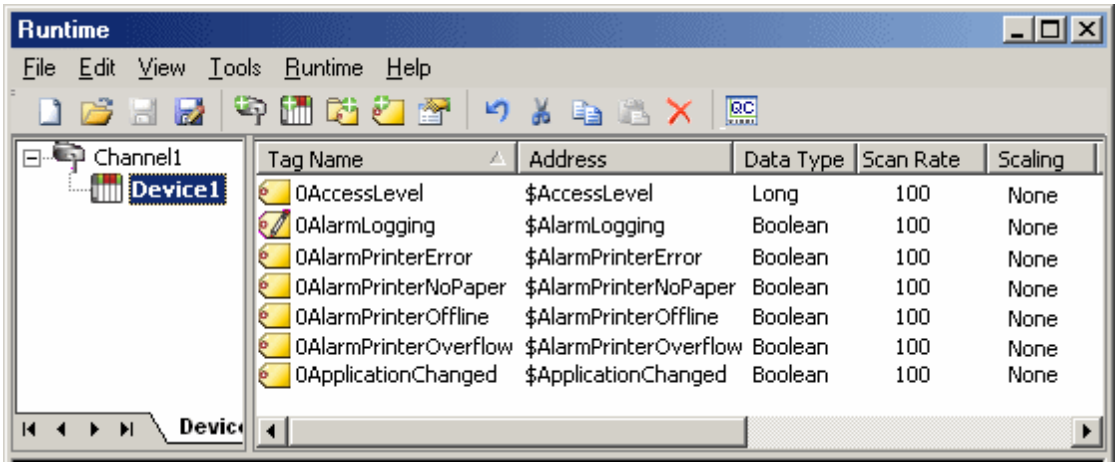
Example
1. To start, specify the **Tag Import Settings** as described above.
2. Next, click **Auto Create** in order to trigger automatic tag database generation manually.



3. The tags defined in InTouch should appear as shown below.



4. After the tags have been imported into the OPC server, the dialog should appear as shown below.



Note: Generated tag names are essentially the same as the tag names in InTouch. Minor name modifications may be required and are indicated in the Event Log when they occur. The addresses in the OPC server are the same as the tag names in InTouch.

Supported InTouch Tag Types

The following InTouch tag types can be imported into to the server with this driver.

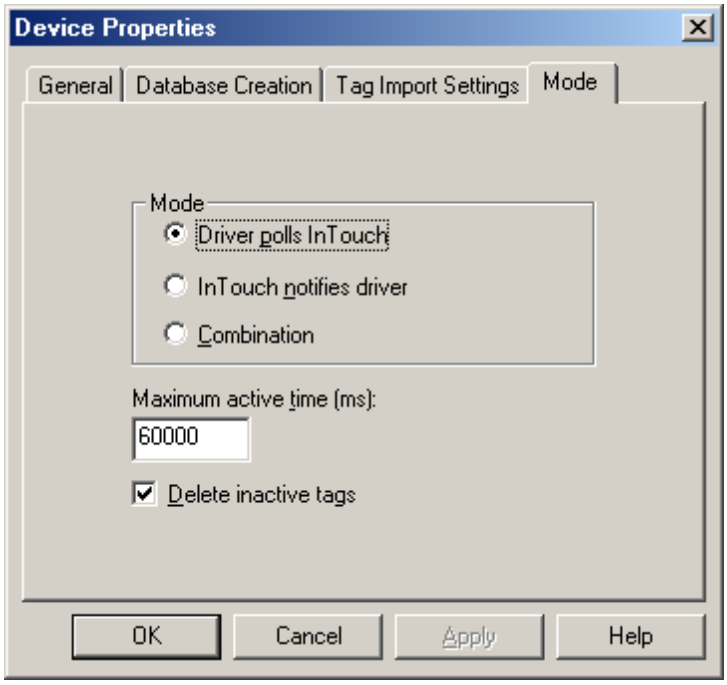
InTouch Type	Data Type	Access
I/O Discrete	Boolean	Read Only or Read/Write*
I/O Integer	Long	Read Only or Read/Write*
I/O Real	Float	Read Only or Read/Write*
I/O Message	String	Read Only or Read/Write*
Memory Discrete	Boolean	Read/Write
Memory Integer	Long	Read/Write
Memory Real	Float	Read/Write
Memory Message	String	Read/Write
Indirect Discrete	Boolean	Read/Write
Indirect Analog	Float	Read/Write
Indirect Message	String	Read/Write

*Depending on access configured in InTouch.

Mode

Servicing data requests from an external application (such as this driver) can place a significant work load on the InTouch application. In some cases, it will even cause WindowViewer to slow down. Therefore, three modes of data access are offered that can be used to optimize communications with InTouch. These settings affect how data is acquired for all tags associated with the device. It is possible to override the mode for individual tags using addressing options. For information on choosing the settings in Device Properties (and other project design considerations) refer to **Optimizing Your Wonderware InTouch Client Driver Communications**.

See Also: **Address Descriptions**



Descriptions of the parameters are as follows:

- **Driver Polls InTouch:** When selected, the driver will issue a read request to InTouch once per update interval for each tag associated with the device. This option is recommended for rapidly changing data because it has the greatest impact on InTouch performance. If the scan period of a tag is greater than the **Maximum active time** parameter, the driver will deactivate the tag in between reads in order to reduce InTouch's processing load.
- **InTouch Notifies Driver:** When selected, InTouch will send the driver a notification when a data value has changed. The driver will not interrupt InTouch with repeated read requests as it does in **Polled Mode**. This option is recommended for slowly changing data.
- **Combination:** When selected, the driver will set the update mode for each tag depending on its scan rate (as defined in the OPC client) and the **Maximum active time**. If the time between scans is less than or equal to the maximum active time, the tag will be placed in Polled Mode. Otherwise, the tag will be placed in **Notified Mode**.
- **Maximum Active Time xx (ms):** This parameter specifies how long the driver should keep tags active. Since many active tags can burden the InTouch memory manager, tags associated with slowly changing data should not be kept active. Care should be taken not to make this value too low, however, since repeated activation/re-activation requires processing time.
- **Delete Inactive Tags:** When checked, tags are completely deleted in between reads. This reduces the work load on InTouch. Users should use this option with care, however, since the repeated creation and destruction of tags requires processing time.

Note 1: Each of these settings can be changed on-the-fly.

Note 2: InTouch will stop polling a tag's data source if all of its clients (including the driver) have deactivated the tag and if that tag's value is not currently displayed in the active WindowViewer window. As a result, the most current value in the data source may not be returned through InTouch the next time this tag is reactivated and read. This should be kept in mind when adjusting the Maximum active time parameter.

Automatic Tag Database Generation

The Wonderware InTouch Client Driver's automatic tag database generation feature has been designed to make the OPC application setup a plug and play operation. This drivers can be configured to automatically build a list of OPC tags within the server that correspond to application specific data.

OPC Server Configuration

The automatic tag database generation features can be customized to fit specific needs. The primary control options may be set during the Database Creation step of the Device Wizard or later by selecting **Device Properties** | **Database Creation**. For more information, refer to the OPC server's help documentation.

Many basic settings are common to all drivers that support automatic tag database generation. This driver requires additional settings, including the location of the InTouch project from which tags will be imported. This information may be specified during the Tag Import step of the Device Wizard or later by clicking **Device Properties** | **Tag Import Settings**. For more information, refer to **Tag Import Settings**.

Operation

Depending on the configuration, tag generation may start automatically when the OPC server project starts or be initiated manually at some other time. The OPC server's Event Log will show when the tag generation process started, any errors that occurred while importing the tag information, and when the process completed. Imported tag names may be altered for compatibility. For example, an InTouch tag named "$Date" will appear as "0Date" in the OPC server. Such name changes will be noted in the server's Event Log.

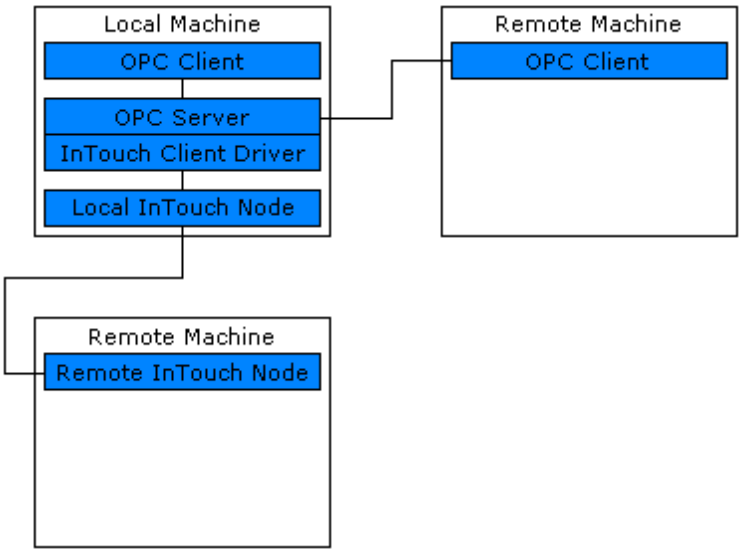
Optimizing Your Wonderware InTouch Client Driver Communications

Servicing data requests to an external application (such as this driver) can add a significant work load on WindowViewer. For suggestions on optimizing Wonderware InTouch Client Driver communications, refer to the notes below.

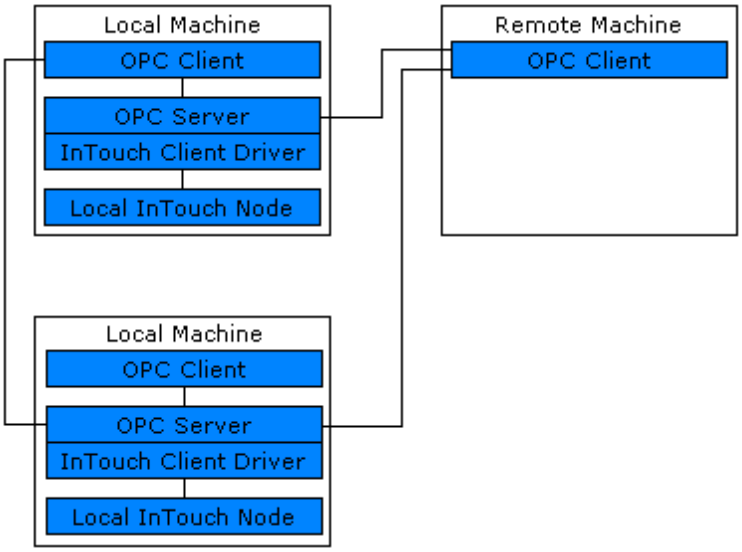
- Unless the tags' data changes slowly, the Polled Mode should be used. When doing so, the OPC scan rate should be kept down. Furthermore, the **Maximum active time** device mode property should be adjusted so that tags with slow update rates are deactivated in InTouch between reads.
- Users should not add tags to the Wonderware InTouch Client Driver project unless they are needed. A practical limit on the number of tags is on the order of 10,000. If the InTouch application is busy and/or the computer is heavily burdened, the number of tags should be much lower.
- When there is a variety of slowly and rapidly changing data, it may be beneficial to separate the tags into two devices that operate in notified and polled mode, respectively. Overall server performance may be improved by placing these devices on separate channels, as well.

  Note: The Wonderware InTouch Client Driver supports 16 channels.
- Instead of passing large amounts of remote data through the local InTouch node, users should consider using multiple OPC servers. For more information, refer to the images below.

Channeling Remote Data Through the Local InTouch Node



Channeling Remote Data Through Multiple OPC Servers


Local Machine
OPC Client
OPC Server
InTouch Client Driver
Local InTouch Node
Remote Machine
OPC Client
Local Machine
OPC Client
OPC Server
InTouch Client Driver
Local InTouch Node

Data Types Description

Data Type	Description
Boolean	Single bit
Byte	Unsigned 8 bit value bit 0 is the low bit bit 7 is the high bit
Char	Signed 8 bit value bit 0 is the low bit bit 6 is the high bit bit 7 is the sign bit
Word	Unsigned 16 bit value bit 0 is the low bit bit 15 is the high bit
Short	Signed 16 bit value bit 0 is the low bit bit 14 is the high bit bit 15 is the sign bit
BCD	Two byte packed BCD Value range is 0-9999. Behavior is undefined for values beyond this range.
DWord	Unsigned 32 bit value bit 0 is the low bit bit 31 is the high bit
Long	Signed 32 bit value bit 0 is the low bit bit 30 is the high bit bit 31 is the sign bit
LBCD	Four byte packed BCD Value range is 0-9999. Behavior is undefined for values beyond this range.
Float	32 bit floating point value
Double	64 bit floating point value
String	Null terminated ASCII string

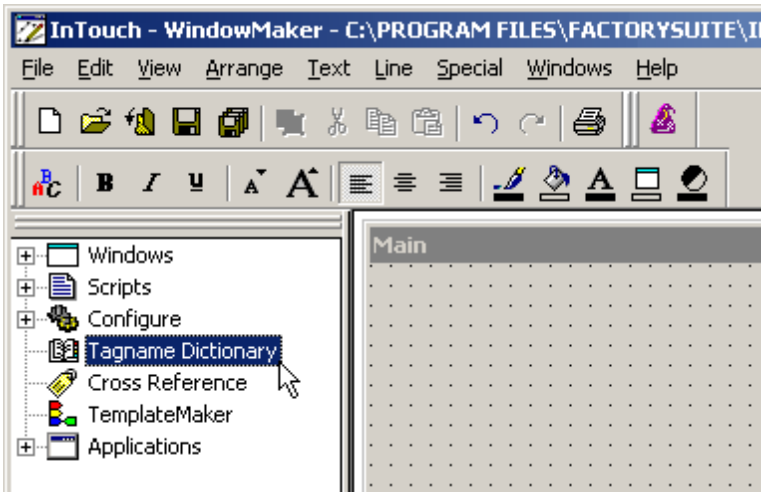
Address Descriptions

Basic Addresses

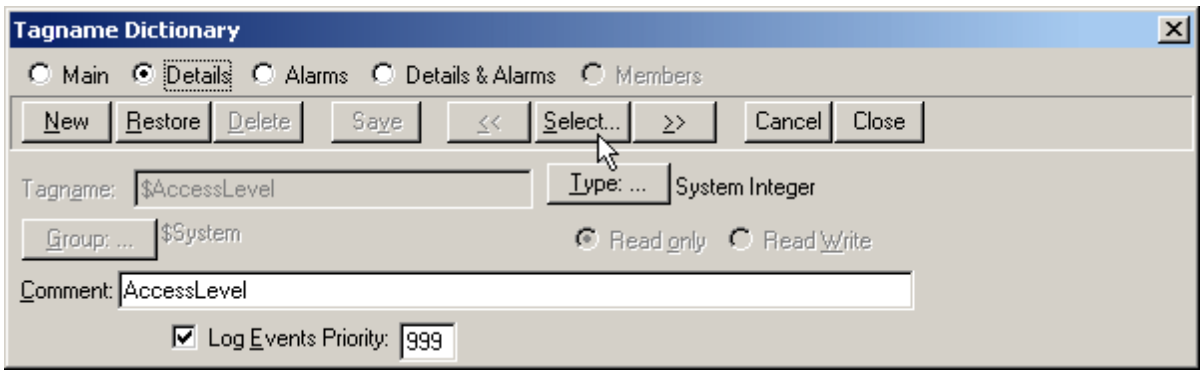
The address of a tag in the OPC server must be the name of that tag in the InTouch Tagname Dictionary. The driver will not be able to validate addresses during configuration. During Runtime, a tag with an invalid address will show bad quality and display an unknown value.

The easiest way to create tags in the OPC server is to import them directly from InTouch. For more information, refer to **Automatic Tag Database Generation**. To create the tags manually, browse the names of all defined tags by following the instructions below.

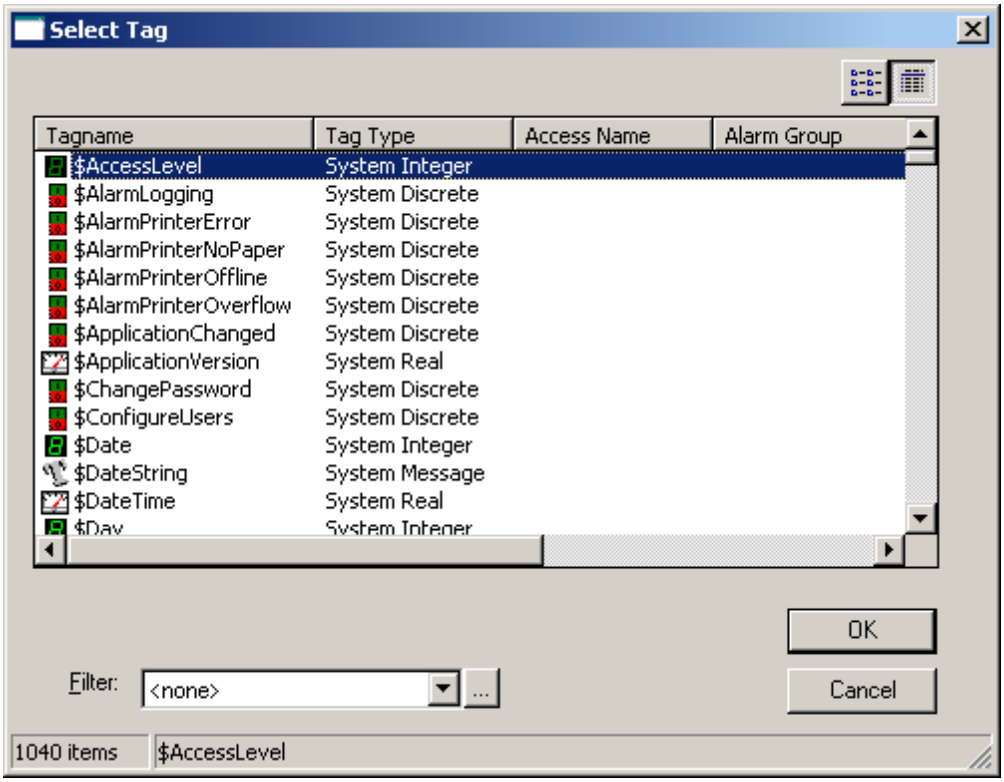
1. To start, load the project into WindowMaker and then select **Tagname Dictionary**.



2. Click **Select**.



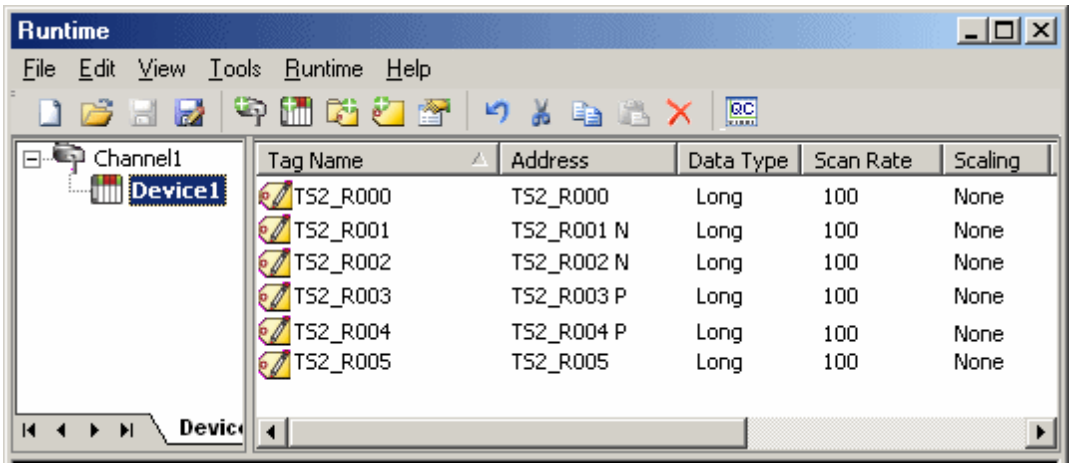
3. The tags should be displayed as shown below.



4. Name the tags in the OPC server as desired. The addresses in the OPC server, however, must be the InTouch tag names shown above.

Addresses with Mode Override

A basic address may be appended with a mode override character. An address followed by a space and "N" places that tag in Notified Mode, regardless of the device mode settings. An address followed by a space and "P" places that tag in Polled Mode, regardless of the device mode settings. For more information, refer to **Mode**.



Here, tags TS2_R001 and TS2_R002 will be placed in notified mode regardless of the device level settings. Tags TS2_R003 and TS2_R004 will be placed in polled mode regardless of the device level settings. All other tags shown above will use the default mode specified in Device Properties.

Error Descriptions

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation

Missing address
Device address '<address>' contains a syntax error
Address '<address>' is out of range for the specified device or register
Data Type '<type>' is not valid for device address '<address>'
Device address '<address>' is Read Only
Array size is out of range for address '<address>'
Array support is not available for the specified address: '<address>'

Device Status Messages

Device '<device name>' is not responding
Unable to write to '<address>' on device '<device name>'

Driver Error Messages

Low resources (OS error: <error code>)
Connection to InTouch failed. Server runtime process must be configured for interactive mode

Automatic Tag Database Generation Messages

Tag import failed (OS error: <error code>)
Tag '<tag name>' could not be imported due to unresolved datatype
Tag '<tag name>' could not be imported due to name conflict
Tag '<tag name>' could not be imported due to address length limitation
Imported tag name changed from '<original name>' to '<new name>'
Tag browser error

Address Validation

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation

Missing address
Device address '<address>' contains a syntax error
Address '<address>' is out of range for the specified device or register
Data Type '<type>' is not valid for device address '<address>'
Device address '<address>' is Read Only
Array size is out of range for address '<address>'
Array support is not available for the specified address: '<address>'

Missing address

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically has no length.

Solution:
Re-enter the address in the client application.

Device address '<address>' contains a syntax error

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically contains one or more invalid characters.

Solution:
Re-enter the address in the client application.

Address <address>' is out of range for the specified device or register

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically references a location that is beyond the range of supported locations for the device.

Solution:
Verify that the address is correct; if it is not, re-enter it in the client application.

Data Type '<type>' is not valid for device address '<address>'

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically has been assigned an invalid data type.

Solution:
Modify the requested data type in the client application.

Device address '<address>' is Read Only

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically has a requested access mode that is not compatible with what the device supports for that address.

Solution:
Change the access mode in the client application.

Array size is out of range for address '<address>'

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically is requesting an array size that is too large for the address type or block size of the driver.

Solution:
Re-enter the address in the client application to specify a smaller value for the array or a different starting point.

Array Support is not available for the specified address: '<address>'

Error Type:
Warning

Possible Cause:
A tag address that has been specified statically contains an array reference for an address type that doesn't support arrays.

Solution:
Re-enter the address in the client application to remove the array reference or correct the address type.

Device Status Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Device Status Messages
Device '<device name>' is not responding

Unable to write to '<address>' on device '<device name>'

Device '<Device name>' is not responding

Error Type:
Serious

Possible Cause:
1. InTouch WindowViewer is not running.
2. The system is not configured correctly.
3. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device setting.

Solution:
1. Verify that InTouch WindowViewer is running.
2. Verify that the system is configured correctly.
3. Increase the Request Timeout setting so that the entire response can be handled.

See Also:
System Configuration

Unable to write to '<address>' on device '<device name>'

Error Type:
Serious

Possible Cause:
1. InTouch WindowViewer is not running.
2. The system is not configured correctly.

Solution:
Verify that WindowViewer is running.

See Also:
System Configuration

Driver Error Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Driver Error Messages
Low resources (OS error: <error code>)
Connection to InTouch failed. Server runtime process must be configured for interactive mode

Low resources (OS error: <error code>)

Error Type:
Serious

Possible Cause:
The driver could not access necessary system resources.

Solution:
Shut down unnecessary applications and retry. The returned error code will provide specific information.

Connection to InTouch failed. Server runtime process must be configured for interactive mode

Error Type:
Fatal

Possible Cause:
The server runtime process is configured to run as a service. The inter-process communication mechanism used by this driver and InTouch requires that the server run as an interactive process.

Solution:
Use the server administration tool to configure the runtime process for interactive mode.

Note:
For more information, refer to the OPC server's help documentation section on Runtime Process.

Automatic Tag Database Generation Messages

The following error/warning messages may be generated. Click on the link for a description of the message.

Automatic Tag Database Generation Messages
Tag import failed (OS error: <error code>)
Tag '<tag name>' could not be imported due to unresolved datatype
Tag '<tag name>' could not be imported due to name conflict
Tag '<tag name>' could not be imported due to address length limitation
Imported tag name changed from '<original name>' to '<new name>'
Tag browser error

Tag import failed (OS error: <error code>)

Error Type:
Serious

Possible Cause:
The driver could not perform tag import due to a system level error condition, such as an attempt to read a corrupted file.

Solution:
The returned error code will provide specific information.

Tag '<tag name>' could not be imported due to unresolved datatype

Error Type:
Warning

Possible Cause:
The data type assigned to the tag in InTouch is not compatible with any of the data types supported by the server.

Solution:
None.

Tag '<tag name>' could not be imported due to name conflict

Error Type:
Warning

Possible Cause:
The imported tag name could not be coerced into a valid server tag name.

Solution:
1. Rename the tag in InTouch if possible.
2. Define the tag in the OPC server manually.

Tag '<tag name>' could not be imported due to address length limitation

Error Type:
Warning

Possible Cause:
The server limits the address length to 128 characters. InTouch tag names are used as the address, and therefore must not exceed this limit.

Solution:

This error is not expected with the present version of InTouch, 7.1, where names are limited to 32 characters. If this error occurs with later version of InTouch, rename the tag in InTouch if possible.

Imported tag name changed from '<original name>' to '<new name>'

Error Type:
Warning

Possible Cause:
The InTouch tag name is not a valid OPC server tag name.

Solution:
The driver will automatically modify the name to make it compatible with the OPC server.

Tag browser error

Error Type:
Warning

Possible Cause:
The driver's InTouch tag browser utility failed.

Solution:
Reinstall the driver to ensure that all necessary components are properly installed.

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