# OPC UA Client Driver Help

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Below average

## OPC UA Client Driver Help

Help version 1.028

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## Overview

The OPC UA Client Driver acts as a tunneling solution between servers, easily connecting two OPC servers on the same network, through VPNs or over the internet. It supports OPC Unified Architecture specification, a new technology that expands upon OPC Data Access. OPC UA provides plug-and-play capabilities without DCOM configuration and also provides secure and reliable connections between OPC servers. For more information on OPC UA, refer to the OPC UA Configuration Manager help file under the Runtime's **File** | **Contents** menu.

## Profiles

OPC UA is a multi-part specification that defines a number of services and information models referred to as features. Features are grouped into Profiles, which are then used to describe the functionality supported by a UA server or client. For a full list and a description of each OPC UA profile, refer to **http://www.opc-foundation.org/profilereporting/index.htm**.

### Fully Supported OPC UA Profiles

- AddressSpace Lookup Client Facet
- Attribute Read Client Facet
- Attribute Write Client Facet
- Core Client Facet
- DataAccess Client Facet
- Discovery Client Facet
- UA-TCP UA-SC UA Binary
- SecurityPolicy - Basic128Rsa15
- SecurityPolicy - Basic256
- SecurityPolicy - None

### Partially Supported OPC UA Profiles

- Base Client Behavior Facet. This profile does not support 'Security Administrator – XML Schema'.
- DataChange Subscriber Client Facet. This profile does not support 'Monitor Client by Index'.

## Tunneling

The OPC UA Client Driver creates a tunnel between two OPC servers. For example, imagine that there is an OPC Server A and OPC Server B. To create a tunnel, users would create an OPC UA Client Driver channel on OPC Server

B and then configure that channel to connect to the OPC UA Server Interface running on OPC Server A. Once a Data Client is connected to OPC Server B, a tunnel would exist between the two OPC servers. Although the Data Client may not be able to receive data from OPC Server A on its own, it can easily receive the data with the help of the OPC UA Client Driver.

**Note:** The OPC UA Client Driver supports security through the use of certificates. When security is enabled, all information exchanged between the OPC server and driver is protected. For more information, refer to **Certificate Model**.
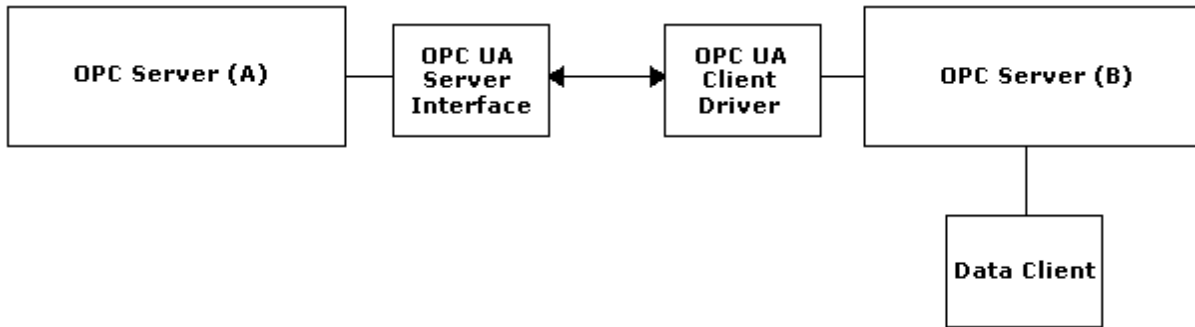
## Channel Setup

A channel represents a connection between the OPC UA Client Driver and an OPC UA Server. Its properties are first set during the Channel Wizard and may be accessed later by clicking **Channel** | **Properties**. For more information on a specific tab, select a link from the list below.

**UA Server**
**UA Session**
**Authentication**

## UA Server

The UA Server dialog is used to specify the UA Server endpoint to which the OPC UA Client Driver will be connected. OPC UA servers can have one or more UA endpoints, each of which is hosted on a different port or contains a different set of security options.
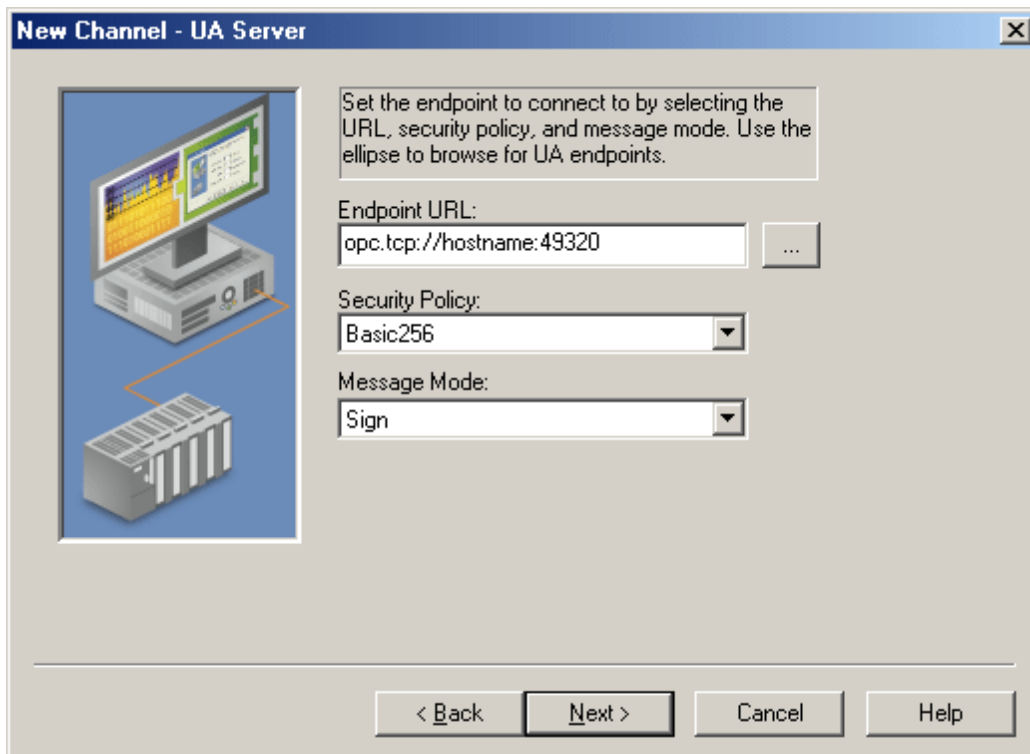


Descriptions of the parameters are as follows:

- **Endpoint URL:** This parameter specifies the endpoint's URL. Each endpoint has a unique URL. To locate a URL, click **Browse(...)** to invoke the OPC UA Server Browser. The browser will return the selected endpoint's URL, Security Policy, and Message Mode.

  **Note:** It is not possible to browse for OPC UA Endpoints when connecting across the internet or multiple domains. For remote connections, the endpoint must be entered manually. To do so, users need the endpoint type ("opc.tcp"), the endpoint host name (IP address, URL, or DSN), and the endpoint's port number.

- **Security Policy:** This parameter specifies the endpoint's security policy. There are three options: **Basic128Rsa15**, **Basic256** and **None**. The default setting is Basic256. When the other options are chosen, the connection requires that the OPC UA Client Driver and the UA Server swap certificates. For more information, refer to **Certificate Model**.

- **Message Mode:** This parameter specifies the mode of encryption that will be used when messages between the driver and server are sent. There are three options: **None**, **Sign** and **SignAndEncrypt**. The default setting is Sign. Descriptions of the options are as follows:

- **None:** This mode is the least secure, but is also the fastest.
- **Sign:** This mode is more secure but can slow down communications. When used, a checksum is added to the end of the message to ensure that the contents arrive clear and unaltered.
- **SignAndEncrypt:** This mode is more secure but can slow down communications. When used, a checksum that has been encrypted using the encryption method selected in Security Policy is added to the end of the message to ensure that the contents arrive clear and unaltered.

**Note:** UA endpoints support pairs of security policies and message modes. For example, a server might support a security policy None and a message mode of None in order to form a 'None, None' pair. Likewise, an endpoint might support a 'Basic128Rsa15, SignAndEncrypt' pair. When configuring the Security Policy and Message Mode, make sure that the UA endpoint supports the pair.

### OPC UA Server Browser

The OPC UA Server Browser is used to locate OPC UA servers and to select an OPC UA endpoint for connection.
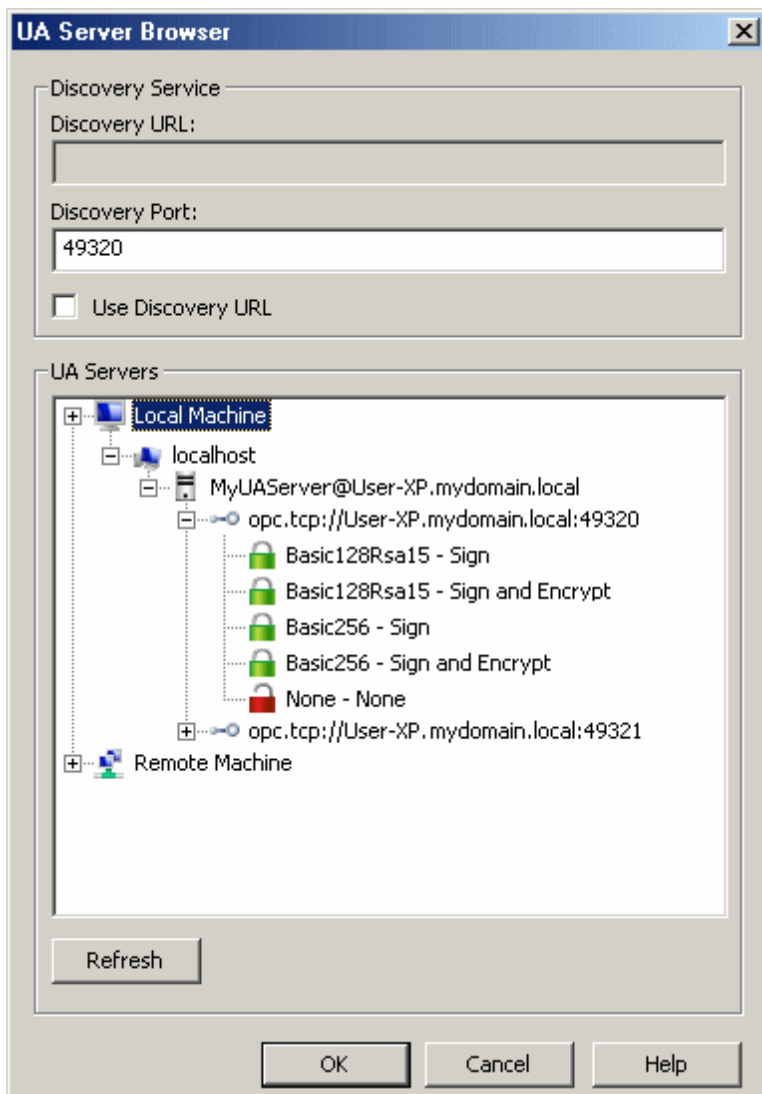


Descriptions of the parameters are as follows:

- **Discovery URL:** This parameter is used to browse for OPC UA servers. The URL may be set to automatically browse a specific Discovery Service or OPC UA server on the network, thus causing the browser to always begin browsing at that location. This parameter will be disabled if **Use Discovery URL** is disabled.

- **Discovery Port:** This parameter specifies the discovery port of the endpoint of interest. The discovery port is the OPC UA port that will be scanned on remote machines when browsing machines through the UA Servers tree.
- **Use Discovery URL:** When checked, the UA Servers tree will be filled with OPC UA Servers located through the Discovery URL. When unchecked, the UA Server's tree will be filled with network nodes, thus allowing users to browse the network for UA servers. When browsing, only the Discovery Port and Local Discovery Service port (4840) will be scanned for UA servers.
- **UA Servers:** This parameter is used to browse for OPC UA servers and OPC server endpoints. To select an endpoint, users may either double-click on an endpoint policy or select it and then press **OK**. To refresh the selected node, users may right-click on it and then select **Refresh**.
- **Refresh:** This parameter refreshes the entire UA Servers tree. It will apply any setting changes made in the Discovery Service group.

## UA Session

The UA Session dialog is used to configure connection timeouts and retry intervals settings.
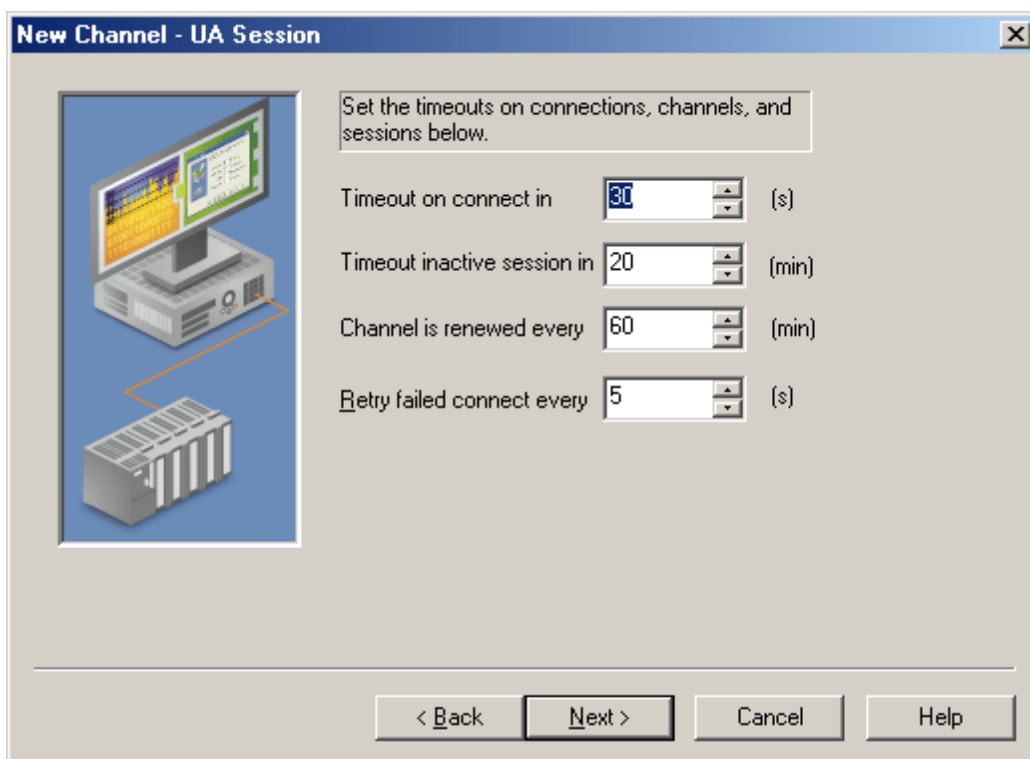


Descriptions of the parameters are as follows:

- **Timeout on connect in ___ (s):** This parameter specifies the maximum amount of time that the channel will wait to successfully connect after making a connect call. A shorter timeout makes the application more responsive; a longer timeout gives the channel a better chance of connecting. The valid range is 1 to 30. The default setting is 30 seconds.
- **Timeout inactive session in ___ (min):** This parameter specifies the maximum number of minutes that a session will remain open without activity. If the client fails to issue a request within this interval, the server will automatically terminate the connection. The valid range is 1 to 20. The default setting is 20 minutes.
- **Channel is renewed every ___ (min):** This parameter specifies the time period between channel renewals. The driver automatically renews the security of the channel after 75% of this time expires. Decreasing this time will make the channel/connection more secure, but it may also slow the transfer of information. The valid range is 10 to 60. The default setting is 60 minutes.
- **Retry failed connect every ___ (s):** This parameter specifies the rate at which the channel will attempt to reconnect if it either fails to connect or becomes disconnected. The valid range is 5 to 600. The default setting is 5 seconds.

## Authentication

OPC UA supports user authentication for increased security. The Authentication dialog is used to set a valid user-name and password, which are required for certain OPC UA endpoints.
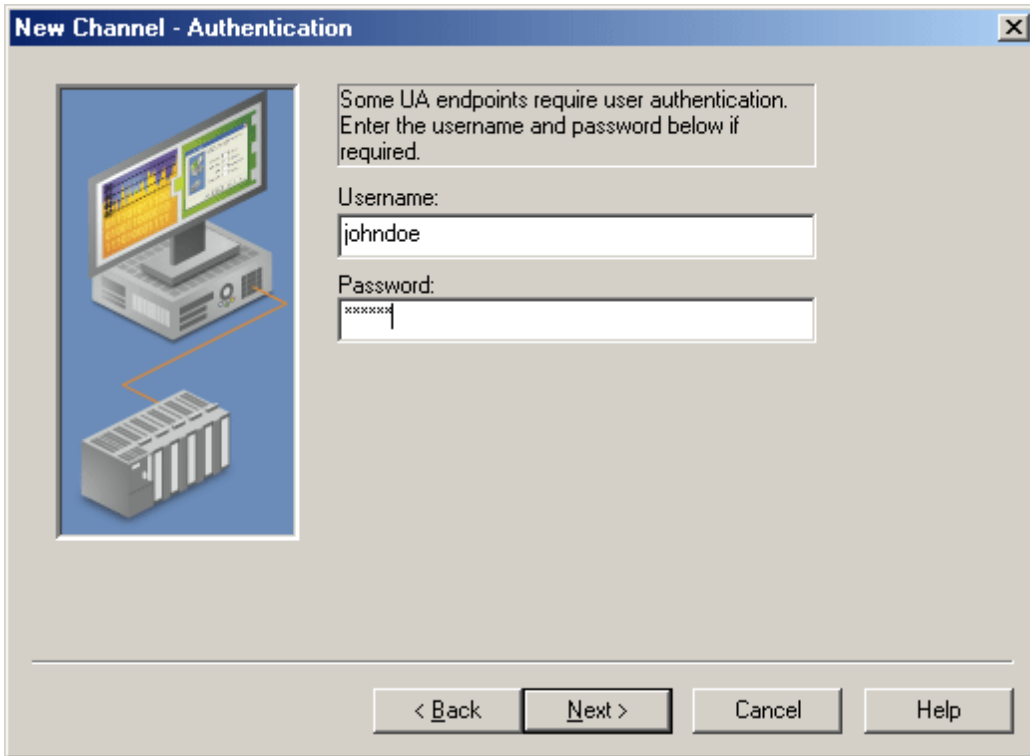
## Device Setup

A device is equivalent to an OPC UA subscription: it subscribes to specified OPC UA items/tags and then receives data. Its properties are first set during the Device Wizard and may be accessed later by clicking **Device** | **Properties**. For more information on a specific tab, select a link from the list below.

**Subscription**
**Connection**
**Communications Parameters**
**Monitored Items**
**Import**

### Maximum Number of Channels and Devices

The maximum number of channels supported by this driver is 128. The maximum number of devices is 256.

## Subscription

The Subscription dialog is used to configure data updates that will be received for monitored items.



Descriptions of the parameters are as follows:

- **Publishing Interval (ms):** This parameter specifies the speed at which tags are updated by the driver. The value may not be supported by the OPC UA Server; in that case, the value will be negotiated during the connection. The valid range is 100 to 60000. The default setting is 1000 milliseconds.
- **Max Notifications Per Publish:** This parameter specifies the maximum number of notifications that the OPC UA Server will send to the driver in a single publish response. If the value is too low, the OPC UA Server may drop tag updates if it cannot send them fast enough. A value of 0 means there is no limit. The valid range is 0 to 9,999,999,999. The default setting is 0.
- **Update Mode:** This parameter specifies the subscription's update mode. There are two options: **Exception** and **Poll**. In Exception Mode, a subscription tag is updated at the publishing interval if the data changes. In Poll Mode, an asynchronous read is performed on all subscription tags at the rate of the publishing interval. The default setting is Exception.

## Connection

The Connection dialog is used to configure subscription timeout and connection settings.
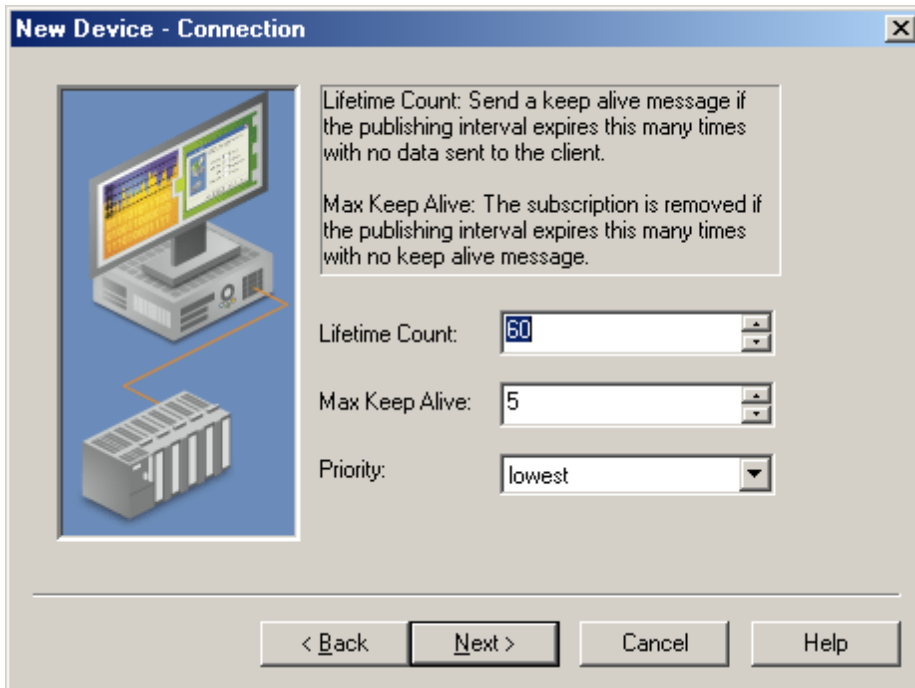
Descriptions of the parameters are as follows:

- **Lifetime Count:** This parameter specifies how many times the publishing interval can expire without the OPC UA Client Driver sending data updates or keep alive messages before the server deletes the subscription. The larger the lifetime count, the longer the subscription will remain running if communication is interrupted. The valid range is 3 to 300. The default setting is 60.
- **Max Keep Alive:** This parameter specifies the number of publishing intervals that must expire before a keep alive message is sent. The valid range is 1 to 10. The default setting is 5.

  **Note:** Smaller Max Keep Alive counts increase the amount of communication during periods when little data is transferred between the OPC UA Client Driver and UA Server. Larger Max Keep Alive counts decrease the amount of communication during these periods but also make the driver less responsive when the connection is interrupted.
- **Priority:** This parameter specifies the relative priority of the subscription. When more than one subscription needs to send notifications, the OPC UA Server sends data from the subscription with the highest priority first. Applications that do not require special priority should be set to the lowest priority possible. The default setting is lowest.

## Communications Parameters

The Communications Parameters dialog is used to configure the subscription's Read/Write parameters.
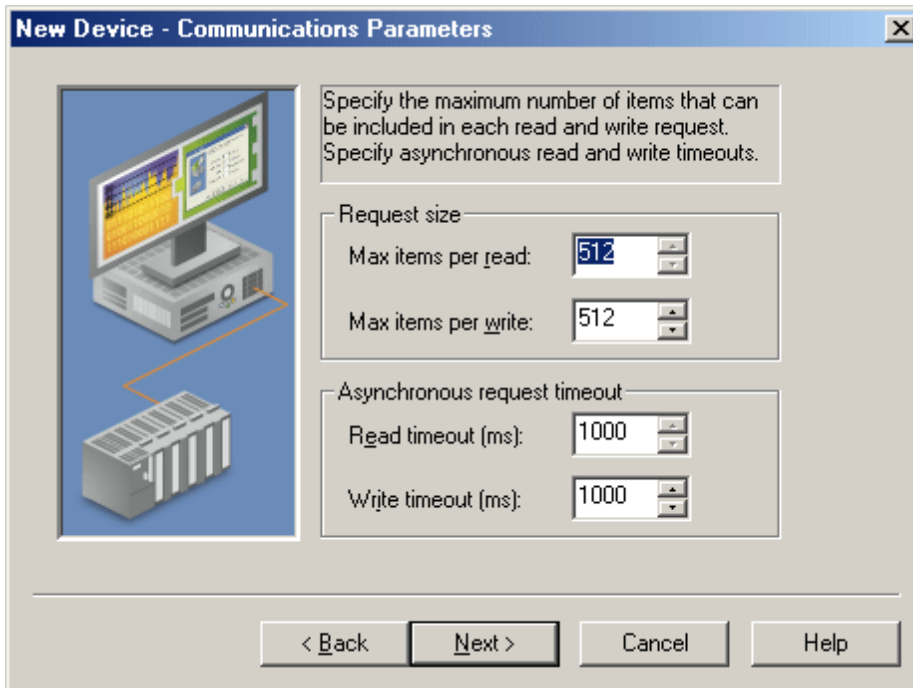
Descriptions of the parameters are as follows:

- **Max items per read:** This parameter specifies the maximum number of items per read call to the server. This parameter is only enabled when the subscription is in Polled mode. Since reads are more efficient when grouped together, this value should be kept as high as possible in order to decrease read times. The valid range is 1 to 512. The default setting is 512.
- **Max items per write:** This parameter specifies the maximum number of items per write call to the server. Since writes are more efficient when grouped together, this value should be kept as high as possible in order to decrease write times. The valid range is 1 to 512. The default setting is 512.
- **Read Timeout (ms):** This parameter specifies the timeout period on each read call (in seconds). Shorter timeouts may cause reads to timeout; however, longer timeouts may cause the driver to be less responsive if communication is interrupted. The valid range is 100 to 30000. The default setting is 1000.
- **Write Timeout (ms):** This parameter specifies the timeout period on each write call (in seconds). Shorter timeouts may cause writes to timeout; however, longer timeouts may cause the driver to be less responsive if communication is interrupted. The valid range is 100 to 30000. The default setting is 1000.

## Monitored Items

Subscriptions contain monitored items, which are also called tags. The Monitored Items dialog is used to configure how fast tags are updated as well as how tag updates will be handled by the OPC UA Server.
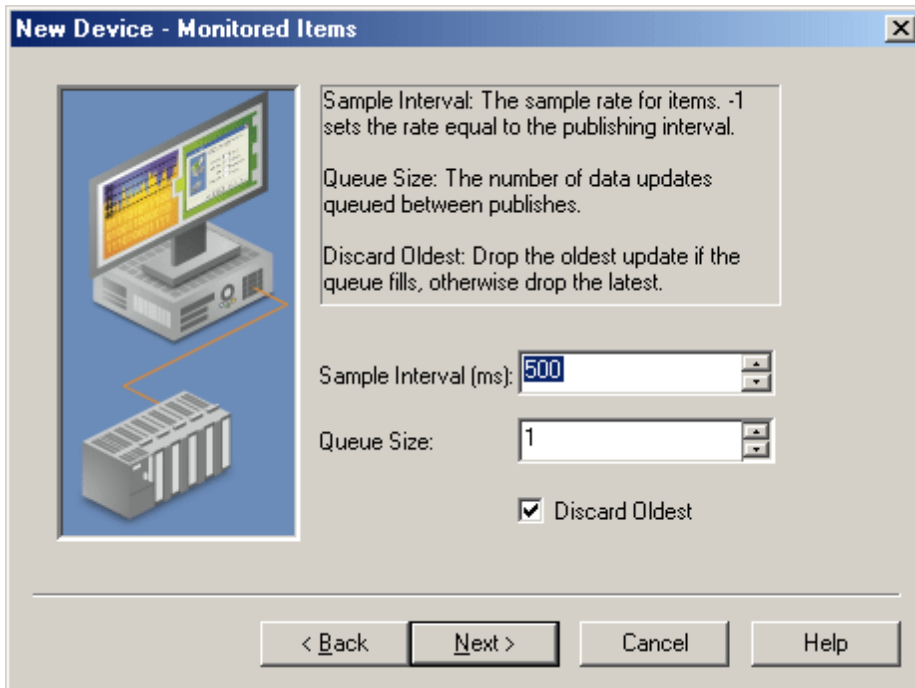
Descriptions of the parameters are as follows:

- **Sample Interval (ms):** This parameter specifies the fastest rate at which the monitored items will be updated. A value of -1 will default the interval to the subscription's Publishing Interval. A value of zero indicates that the OPC UA Server should use the fastest practical rate. The valid range is -1 to 50000. The default setting is 500 milliseconds, which is half of the default Publishing Interval.

  **Important:** If data is changing faster than the Publishing Interval, the Sample Interval must be set to half the Publishing Interval. This will guarantee data updates at the Publishing Interval. For example, if the Publishing Interval is 10000 ms and data is changing every 100 ms, the Sample Interval must be at least 5000 ms. This will guarantee data updates every 10000 ms.

- **Queue Size:** This parameter specifies the number of data updates that the OPC UA Server will queue for the subscription. A value of 1 will disable queuing. Values greater than 1 will enable queuing. The valid range is 1 to 100. The default setting is 1.

- **Discard Oldest:** This parameter specifies the discard policy of the queue. When checked, the oldest notification in the queue will be discarded and will not be sent to the driver. When unchecked, the newest notification will be discarded and will not be sent to the driver. The default setting is enabled.

  **Note:** Notifications are only discarded if the queue fills up before the Publishing Interval expires.

## Deadband
Deadband is supported for all monitored items in a subscription.
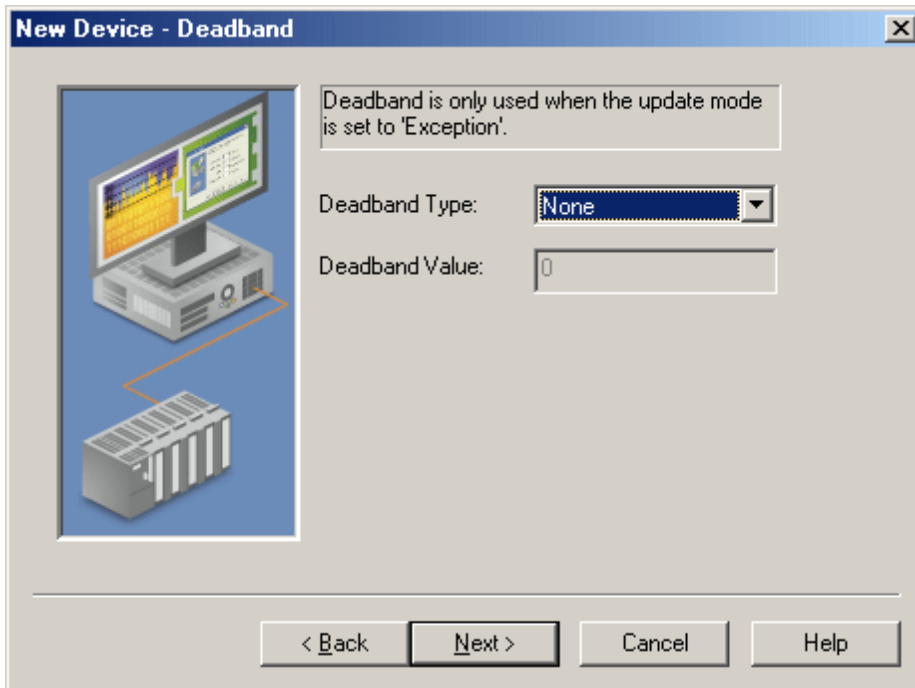
Descriptions of the parameters are as follows:

- **Deadband Type:** This parameter specifies the type of deadband filter to be applied to data changes. There are three options: None, Percent and Absolute. None will disable deadband. Percent will send data changes if the change is larger than a percentage of the maximum range for the tag. Absolute will send data changes if the change is greater than some absolute value. The valid range is 0 to 9,999,999,999. The default setting is None.
- **Deadband Value:** This parameter specifies the value of the deadband. If the Deadband Type is set to Percent, this value is a percentage (such as, 10=10%). If the Deadband Type is set to Absolute, this value is the absolute value.The valid range is 0 to 9,999,999,999. The default setting is 0.

## Import

The Import dialog is used to launch a browser through which tags may be imported from the OPC UA Server. Click **Select import items...** to launch the browser.
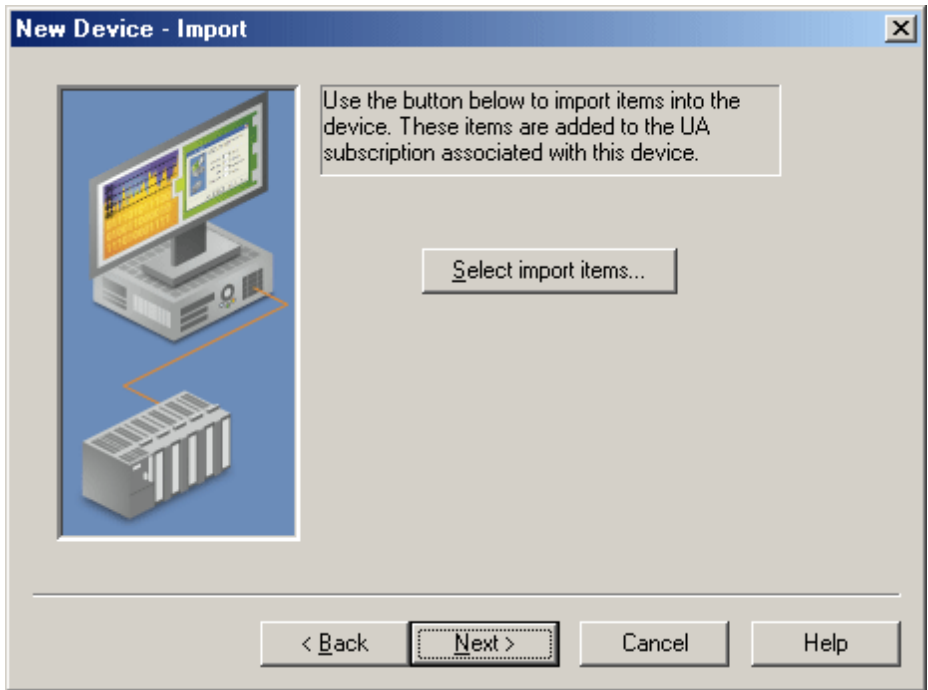
**OPC UA Tag Browser**

The OPC UA Tag Browser is used to browse the OPC UA Server that is connected to the parent channel.
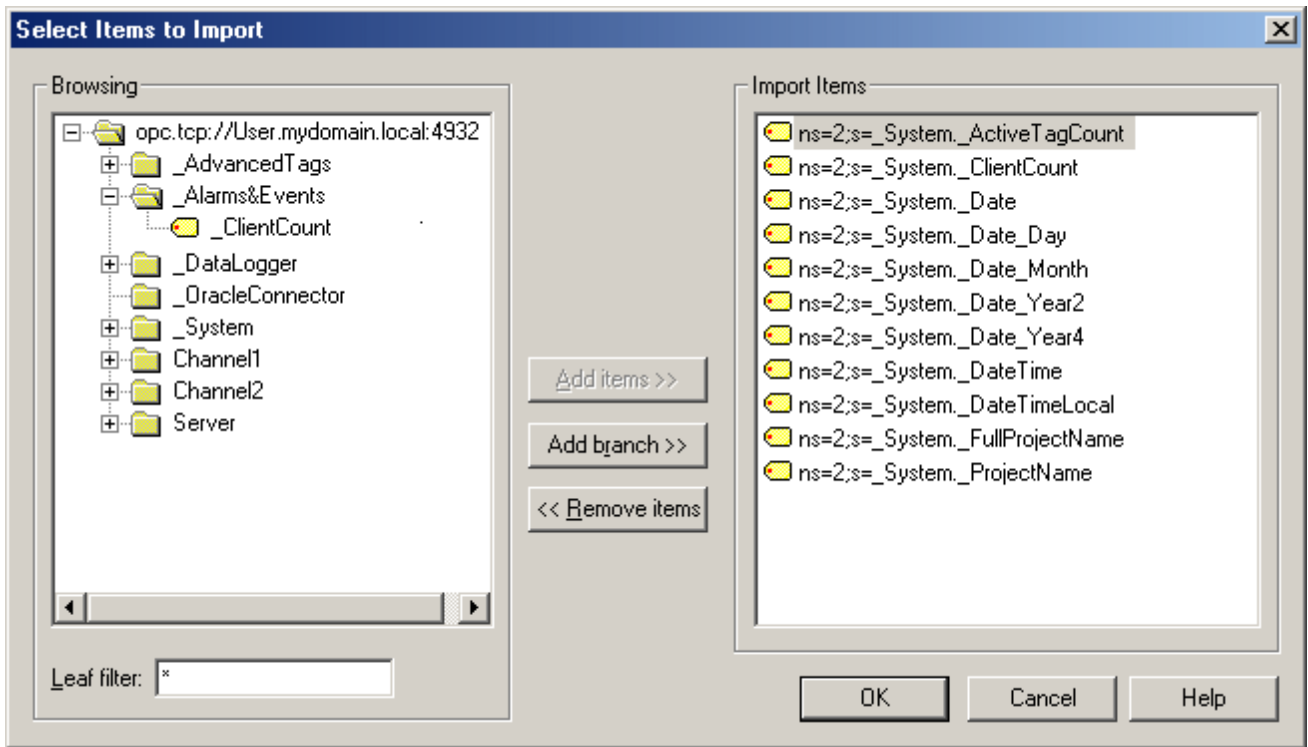


Descriptions of the parameters are as follows:

- **Browsing:** This parameter contains a tree that represents the OPC UA Server's hierarchy. It includes all OPC UA Server tags and tag groups.
- **Leaf Filter:** This parameter limits the items shown in the Browsing tree to only those that match the filter. For more information on syntax, refer to the table below.

| Characters in Pattern | Matches in String |
|---|---|
| ? | Any single character. |
| * | Zero or more characters. |
| # | Any single digit (0-9). |
| [charlist] | Any single character in charlist. |
| [!charlist] | Any single character not in charlist. |

- **Add Items:** This button adds the items selected in the Browsing tree to the Import Items list.
- **Add Branch:** This button adds all items under the selected branch in the Browsing tree to the Import Items list.
- **Remove Items:** This button removes the items selected from the Items list.
- **Import Items:** This parameter contains a list of all the items imported by the device.

## Certificate Model

Certificates are used for any channel whose security policy is set to Basic128Rsa15 or Basic256 in order to secure connections between the OPC UA Client Driver and OPC UA Servers. To establish a secure UA connection, the OPC UA Client Driver needs access to the OPC UA Server's certificate. Likewise, the OPC UA Server needs access to the OPC UA Client Driver's certificate. Their relationship is as displayed in the image below.
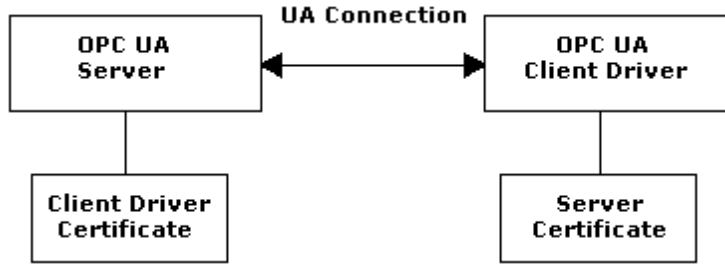


**Note:** The certificate swap must occur before the connection is made. The OPC UA Configuration Manager is a tool used to make certificate swaps between clients and servers easy. For more information on this tool and how to perform swaps, refer to the OPC UA Configuration Manager help file in the Runtime's **Help** | **Contents** menu.

## Data Types Description

| Data Type | Description |
|---|---|
| Boolean | Single bit |
| Byte | Unsigned 8 bit value<br><br>bit 0 is the low bit<br>bit 7 is the high bit |
| Char | Signed 8 bit value<br><br>bit 0 is the low bit<br>bit 6 is the high bit<br>bit 7 is the sign bit |
| Word | Unsigned 16 bit value<br><br>bit 0 is the low bit<br>bit 15 is the high bit |
| Short | Signed 16 bit value<br><br>bit 0 is the low bit<br>bit 14 is the high bit<br>bit 15 is the sign bit |
| DWord | Unsigned 32 bit value<br><br>bit 0 is the low bit<br>bit 31 is the high bit |
| Long | Signed 32 bit value<br><br>bit 0 is the low bit<br>bit 30 is the high bit<br>bit 31 is the sign bit |
| Float | 32 bit floating point value.<br><br>The driver interprets two consecutive 16 bit registers as a floating point value by making the second register the high word and the first register the low word. |
| Double | 64 bit floating point value |
| String | Zero terminated character array |
| Date | Date YYYY-MM-DDTHH:MM:SS.MMM |

## Address Descriptions

OPC UA Client Driver addresses have the following syntax: *ns=<namespace index>;<type>=<value>*. For more information, refer to the table below.

**Note:** Arrays are supported for all data types.

| Field | Description |
|---|---|
| Namespace Index | The index of the OPC UA Server namespace in which the address resides. If the index is 0, the entire *ns==<namespace index>;* clause will be omitted. |
| Type | The type of address. OPC UA supports the following four address types:<br><br>i: A numeric address.*<br>s: A string address.<br>g: A GUID address.<br>b: An opaque address (such as a byte string). |
| Value | The address that is formatted as a string.** |

*Unsigned integer.
**The address may be numeric, string, GUID or opaque.

### Examples

| Address Type | Namespace | Example |
|---|---|---|
| Numeric | 2 | ns=2;i=13 |
| String | 3 | ns=3;s=Channel1.Device1.Tag1 |
| GUID | 0 | g=C496578A-0DFE-4B8F-870A-745238C6AEAE |
| Opaque | 2 | ns=2;b=M/RbKBsRVkePCePcx24oRA== |

**Note:** For more examples of OPC UA addresses, refer to the image below.
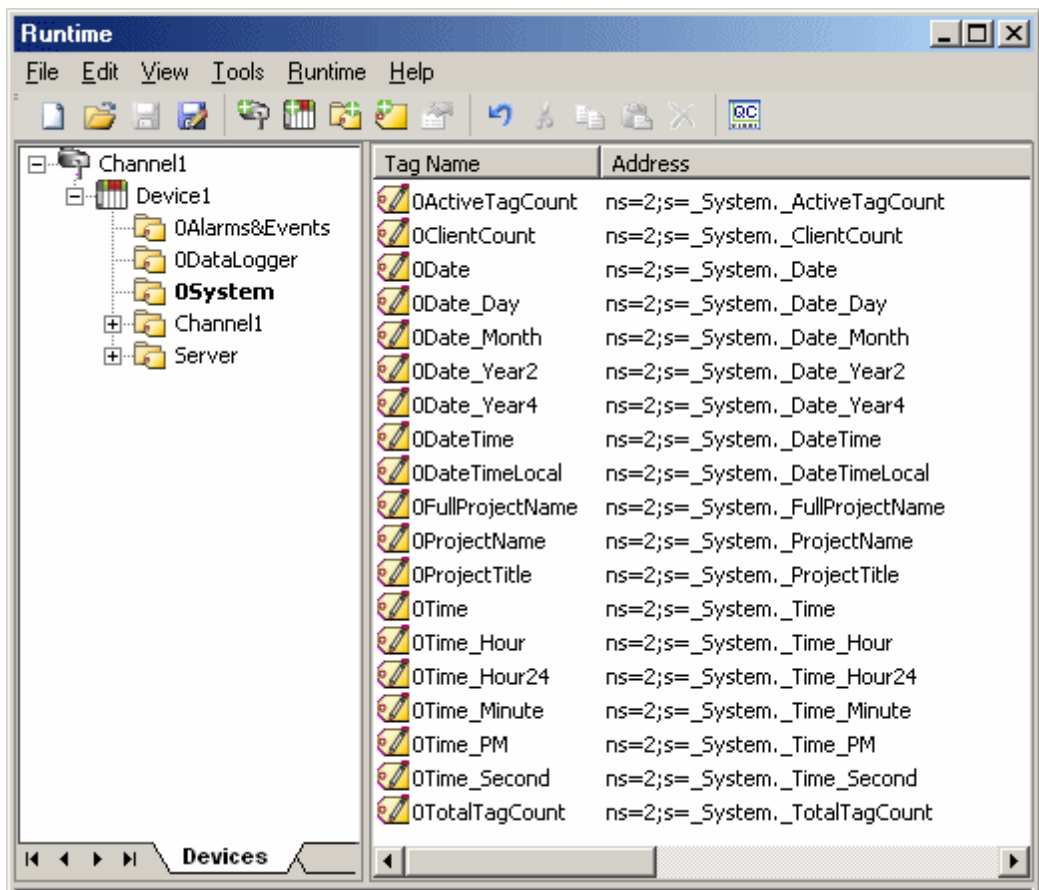
## Error Descriptions

The following errors, message boxes and explanations may be generated. Click on the link for a description.

### Error Messages

**Add item failed for '<address>' on device '<device>'. <explanation>**
**Address '<address>' is not valid on device '<device>'**
**Async Write failed for '<tag>' on device '<device>'. Callback item error: 0x%08X**
**The authentication information for channel '<channel>' was cleared because a password was provided with no username**
**Deadband was not applied to item '<item>' on device '<device>'. The item does not support deadband**
**Failed to add subscription for device '<device>'. <explanation>**
**Failed to connect to server on channel '<channel>'. <explanation>**
**Failed to remove items on device '<device>'. <explanation>**
**Failed to setup security on channel '<channel>' to make a connection. Please use the OPC UA Configuration Manager to ensure your client/server certificates are valid**
**Item '<address>' on device '<device>' is write only**
**The lifetime count for device '<device>' has been set to '<new count>' by the server. The requested value was '<old count>'**
**The max keep alive count for device '<device name>' has been set to '<count>' by the server. The requested value was '<count>'**
**The publishing interval for device '<device>' has been set to '<new time>' ms by the server. The requested value was '<old time>' ms**
**Read request timeout on device '<device>'**
**Reconnecting server on channel '<channel>' due to shutdown notification**
**Remove item failed for '<tag>' on device '<device>'. <explanation>**
**The renewal period for channel '<channel>' has been set to '<new time>' ms by the server. The requested value was '<old time>' ms**
**The session timeout for channel '<channel>' has been set to ' <new time>' ms by the server. The requested value was '<requested time>' ms**
**Tag '<tag>' on device '<device>' was not imported. Data type is not supported by this driver**
**Tag '<tag>' on device '<device>' was not imported. The item failed validation**
**Write request timeout on device '<device>'**

### Message Boxes

**Error encountered during import item browse. Server '<server>' may have stopped running**
**Failed to connect to UA server '<server>' for browsing**
**Items on this page may not be changed while the driver is processing tags**
**The Lifetime Count must be a minimum of three times the Max Keep Alive Count (Lifetime Count = <count>)**
**Please enter a username**

### Explanations

**Cannot connect to the server**
**The client certificate has expired. Please use the OPC UA Configuration manager to create a new certificate**
**The client certificate is invalid. Please use the OPC UA Configuration Manager to update the client certificate**
**The server certificate is revoked. Please use the OPC UA Configuration manager to update the certificate**
**The server certificate is untrusted. Please use the OPC UA Configuration Manager to add the certificate to the client's trusted store**
**Timeout trying to perform the operation**

## Error Messages

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

**Error Messages**

**Add item failed for '<address>' on device '<device>'. <explanation>**
**Address '<address'> is not valid on device '<device>'**
**Async Write failed for '<tag>' on device '<device>'. Callback item error: 0x%08X**
**The authentication information for channel '<channel>' was cleared because a password was provided with no username**
**Deadband was not applied to item '<item>' on device '<device>'. The item does not support deadband**
**Failed to add subscription for device '<device>'. <explanation>**
**Failed to connect to server on channel '<channel>'. <explanation>**
**Failed to remove items on device '<device>'. <explanation>**
**Failed to setup security on channel '<channel>' to make a connection. Please use the OPC UA Configuration Manager to ensure your client/server certificates are valid**
**Item '<address>' on device '<device>' is write only**
**The lifetime count for device '<device>' has been set to '<new count>' by the server. The requested value was '<old count>'**
**The max keep alive count for device '<device name>' has been set to '<count>' by the server. The requested value was '<count>'**
**The publishing interval for device '<device>' has been set to '<new time>' ms by the server. The requested value was '<old time>' ms**
**Read request timeout on device '<device>'**
**Reconnecting server on channel '<channel>' due to shutdown notification**
**Remove item failed for '<tag>' on device '<device>'. <explanation>**
**The renewal period for channel '<channel>' has been set to '<new time>' ms by the server. The requested value was '<old time>' ms**
**The session timeout for channel '<channel>' has been set to ' <new time>' ms by the server. The requested value was '<requested time>' ms**
**Tag '<tag>' on device '<device>' was not imported. Data type is not supported by this driver**
**Tag '<tag>' on device '<device>' was not imported. The item failed validation**
**Write request timeout on device '<device>'**

## Add item failed for '<address>' on device '<device>'. <explanation>

**Error Type:**
Warning

**Possible Cause:**
1. The item is invalid.
2. The OPC UA Server is down.
3. The device's call timeout is too short.

**Result:**
The item was not added to the device. Therefore, the item will not receive data updates.

**Solution:**
1. Make sure that the OPC UA Server is running and responsive.
2. Increase the device's call timeout.
3. Make sure that the item is valid for the OPC UA Server.

**See Also:**
**Explanations**

## Address '<address>' is not valid on device '<device>'

**Error Type:**
Warning

**Possible Cause:**
1. The address does not reference a valid data type.
2. The address syntax is invalid.

**Result:**

The tag was not imported by the driver. Therefore, the tag will not receive data updates.

**Solution:**

Verify that the tag address is valid and the data type is supported. If it is not, remove the tag from the driver's import list.

## Async Write failed for '<tag>' on device '<device>'. Callback item error: 0x%08X.

**Error Type:**

Warning

**Possible Cause:**

1. The device's call timeout is too short.
2. The server became unresponsive during the write.

**Result:**

The asynchronous write failed.

**Solution:**

1. Make sure that the OPC UA Server is running and responsive.
2. Increase the device's call timeout.

## The authentication information for channel '<channel>' was cleared because a password was provided with no username

**Error Type:**

Warning

**Possible Cause:**

An XML project contains a channel that has an authentication password but no username.

**Result:**

The password was cleared from the project and will not appear if the project is saved back out.

**Solution:**

1. Edit the XML file in order to add a user name to accompany the password.
2. Configure the password and user name in the Channel Properties and then save the project as XML.

## Deadband was not applied to item '<item>' on device '<device>'. The item does not support deadband

**Error Type:**

Warning

**Possible Cause:**

Although deadband has been enabled for the device, it is not supported by a device tag.

**Result:**

Deadband was not applied to the item.

**Solution:**

1. Disable deadband for the device.
2. Remove the item from the device.

**Note:**

Not all UA Server tags support deadband.

## Failed to add subscription for device '<device>'. <explanation>

**Error Type:**

Warning

**Possible Cause:**

The OPC UA Server is down.

**Result:**

The channel failed to add a subscription for the device. No tags will be updated for the subscription.

**Solution:**

1. Make sure that the OPC UA Server is running.
2. Review the explanation.

**See Also:**
**Explanations**

## Failed to connect to server on channel '<channel>'. '<explanation>'

**Error Type:**

Warning

**Possible Cause:**

The connection to the OPC UA Server failed.

**Result:**

The connection will not be made.

**Solution:**

Review the explanation.

**See Also:**
**Explanations**

## Failed to remove items on device '<device>'. <explanation>

**Error Type:**

Warning

**Possible Cause:**

1. The OPC UA Server is down.
2. The device's call timeout is too short.

**Result:**

The device failed to remove all the items from its subscription. The items are eventually removed when the connection is dropped but not as a result of this call.

**Solution:**

1. Make sure that the OPC UA Server is running and responsive.
2. Increase the device's call timeout.
3. Review the explanation.

**See Also:**
**Explanations**

## Failed to setup security on channel '<channel>' to make a connection. Please use the OPC UA Configuration Manager to ensure your client/server certificates are valid

**Error Type:**

Warning

**Possible Cause:**

1. The OPC UA Driver certificate is missing or invalid.
2. The OPC UA Server certificate is not available.

**Result:**

The channel was not able to initialize security in order to make the connection to the OPC UA Server. The connection failed.

**Solution:**
Use the OPC UA Configuration Manager to verify that the OPC UA Client Driver certificate is valid. Then, swap certificates with the OPC UA Server if required.

## Item '<address>' on device '<device>' is write only

**Error Type:**
Warning

**Possible Cause:**
An item imported manually or through the OPC UA Tag Browser is write only.

**Result:**
The item cannot be read from.

**Solution:**
Remove the item from the device if it is not needed.

## The lifetime count for device '<device>' has been set to '<new count>' by the server. The requested value was '<old count>'

**Error Type:**
Warning

**Possible Cause:**
The device's lifetime count is not supported by the server.

**Result:**
The server revised the lifetime count to a value that it supports. This may have been done in order to enforce a minimum timeout interval.

**Solution:**
Change the lifetime count to one supported by the UA Server. In most cases, the lifetime count should be increased to the minimum requested by the server. Since this is a warning, however, no action is required.

**Note:**
The lifetime count controls the number of subscription publish intervals that can expire before the server deletes the subscription. To prevent subscriptions from being deleted unnecessarily, some servers may enforce a minimum lifetime count to ensure that the timeout interval (publish interval * lifetime count) is reasonable.

This error may occur when connecting to the server (if the timeout interval is less than 30 seconds). If so, the server will adjust the lifetime count so that the timeout interval is exactly 30 seconds.

## The max keep alive count for device '<device name>' has been set to '<count>' by the server. The requested value was '<count>'

**Error Type:**
Warning

**Possible Cause:**
The device's max keep alive count is not supported by the server.

**Result:**
The server revised the max keep alive count to a value that it supports.

**Solution:**
Change the max keep alive count to one supported by the UA Server.

## The publishing interval for device '<device>' has been set to '<new time>' ms by the server. The requested value was '<old time>' ms

**Error Type:**

Warning

**Possible Cause:**
The device's Publishing Interval is not supported by the server.

**Result:**
The server revised the Publishing Interval to a value that it supports.

**Solution:**
Change the Publishing Interval to one supported by the UA Server.

## Read request timeout on device '<device>'

**Error Type:**
Warning

**Possible Cause:**
1. The device is in polled mode and the OPC UA Server has become unresponsive.
2. The device's call timeout is too short.

**Result:**
The read request timed out.

**Solution:**
1. Make sure that the OPC UA Server is running and responsive.
2. Increase the device's call timeout.

## Reconnecting server on channel '<channel>' due to shutdown notification

**Error Type:**
Warning

**Possible Cause:**
1. Communication was interrupted.
2. The OPC UA Server was shutdown.

**Result:**
The channel was disconnected from the OPC UA Server. The channel will try to reconnect to the OPC UA Server at the retry interval.

**Solution:**
Make sure that the OPC UA Server is running and responsive.

## Remove item failed for '<tag>' on device '<device>'. <explanation>

**Error Type:**
Warning

**Possible Cause:**
1. The OPC UA Server is down.
2. The tag is invalid.
3. The device's call timeout is too short.

**Result:**
The items are eventually removed when the connection is dropped but not as a result of this call.

**Solution:**
1. Make sure that the OPC UA Server is running and responsive.
2. Make sure that the item is valid.
3. Increase the device's call timeout.
4. Review the explanation.

**See Also:**
**Explanations**

## The renewal period for channel '<channel>' has been set to '<new time>' ms by the server. The requested value was '<old time>' ms

**Error Type:**
Warning

**Possible Cause:**
The channel's renewal time is not supported by the server.

**Result:**
The server revised the renewal time to a value that it supports.

**Solution:**
Change the renewal time to one supported by the UA Server.

## The session timeout for channel '<channel>' has been set to '<new time>' ms by the server. The requested value was '<requested time>' ms

**Error Type:**
Warning

**Possible Cause:**
The channel's session timeout is not supported by the server.

**Result:**
The server revised the session timeout to a value that it supports.

**Solution:**
Change the session timeout to one supported by the UA Server.

## Tag ' <tag>' on device ' <device>' was not imported. Data type is not supported by this driver

**Error Type:**
Warning

**Possible Cause:**
An attempt was made to import an unsupported data type via the OPC UA Tag Browser.

**Result:**
The tag will not be imported because the OPC UA Client driver does not support the data type.

**Solution:**
Remove the tag from the import list in the OPC UA Tag Browser.

**Note:**
For a full list of supported data types, refer to **Data Types Descriptions**.

## Tag '<tag>' on device '<device>' was not imported. The item failed validation

**Error Type:**
Warning

**Possible Cause:**
The driver failed to read the tag's attributes.

**Result:**
The OPC UA Client driver failed to import the tag.

**Solution:**
1. Verify that the tag is valid on the OPC UA Server to which it is being connected.
2. In **Project Properties**, select the **OPC UA** tab. Then, locate and disable **Return Address Hints**.

## Write request timeout on device '<device>'

### Error Type:
Warning

### Possible Cause:
1. The OPC UA Server is unresponsive.
2. The device's call timeout is too short.

### Result:
The driver stopped waiting for the write request to complete. The write could succeed or fail, but the driver will not report the result.

### Solution:
1. Make sure that the OPC UA Server is running and responsive.
2. Increase the device's call timeout.

### Note:
Writes in a transaction may succeed or fail after a timeout.

## Message Boxes

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

### Message Boxes
**Error encountered during import item browse. Server '<server>' may have stopped running**
**Failed to connect to UA server '<server>' for browsing**
**Items on this page may not be changed while the driver is processing tags**
**The Lifetime Count must be a minimum of three times the Max Keep Alive Count (Lifetime Count = <count>)**
**Please enter a username**

## Error encountered during import item browse. Server '<server>' may have stopped running

### Error Type:
Message Box

### Possible Cause:
The OPC UA Server disconnected while the OPC UA Client Driver was browsing for tags.

### Result:
The browse failed.

### Solution:
Make sure that the OPC UA Server is running and available.

## Failed to connect to UA server '<server>' for browsing

### Error Type:
Message Box

### Possible Cause:
1. The OPC UA Server is not available.
2. The channel authentication information is incorrect.
3. The server is using a security policy and the OPC UA Client Driver and OPC UA Server have not swapped certificates.

### Result:
The device failed to connect to the server in order to browse for tags.

### Solution:
1. Make sure that the OPC UA Server is running and available.
2. If the OPC UA Server uses authentication, make sure that the authentication information is valid.

3. If the channel is using a security policy, make sure that the security policy and message mode are supported by the OPC UA Server. Use the OPC UA Configuration manager to swap certificates between the OPC UA Client Driver and OPC UA Server.

## Items on this page may not be changed while the driver is processing tags

### Error Type:
Message Box

### Possible Cause:
The user tried to change a channel or device's configuration while data clients were connected to the server and receiving data from the channel/device.

### Result:
The edits made to the channel or device failed.

### Solution:
Disconnect all data clients from the OPC Server before making any edits.

## The Lifetime Count must be a minimum of three times the Max Keep Alive Count (Lifetime Count = <count>)

### Error Type:
Message Box

### Possible Cause:
The user entered a lifetime count in the Keep Alive tab that is not at least three times the max keep alive count.

### Result:
The edits made to the Keep Alive settings on the device failed.

### Solution:
Enter a lifetime count that is at least three times the max keep alive count.

## Please enter a username

### Error Type:
Message Box

### Possible Cause:
A password was entered without a user name on the channel's Authentication page.

### Result:
The edits made to the UA Authentication configuration failed.

### Solution:
Enter a username along with the password.

## Explanations

Some error messages include additional information under an explanation field. Click on the link for a description of the explanation.

### Explanations
**Cannot connect to the server**
**The client certificate has expired. Please use the OPC UA Configuration manager to create a new certificate**
**The client certificate is invalid. Please use the OPC UA Configuration Manager to update the client certificate**
**The server certificate is revoked. Please use the OPC UA Configuration manager to update the certificate**
**The server certificate is untrusted. Please use the OPC UA Configuration Manager to add the certificate to the client's trusted store**
**Timeout trying to perform the operation**

### Cannot connect to the server

**Possible Cause:**

The OPC UA Server is down or unreachable.

**Result:**

The connection failed.

**Solution:**

Make sure that the OPC UA Server is running and is available via the machine running the OPC UA Client driver.

### The client certificate has expired. Please use the OPC UA Configuration manager to create a new certificate

**Possible Cause:**

The OPC UA Client certificate has expired.

**Result:**

The connection failed.

**Solution:**

Create a new OPC UA Client Driver certificate using the OPC UA Configuration Manager.

### The client certificate is invalid. Please use the OPC UA Configuration Manager to update the client certificate

**Possible Cause:**

The OPC UA Client certificate is missing or invalid.

**Result:**

The connection failed.

**Solution:**

Create a new OPC UA Client Driver certificate using the OPC UA Configuration Manager.

### The server certificate is revoked. Please use the OPC UA Configuration manager to update the certificate

**Possible Cause:**

The OPC UA Client Driver has revoked the OPC UA Server certificate.

**Result:**

The connection failed.

**Solution:**

1. Use the OPC UA Configuration manager to swap certificates between the OPC UA Client Driver and the OPC UA Server.
2. Remove the OPC UA Server's certificate from the OPC UA Client Driver's revoked list.

### The server certificate is untrusted. Please use the OPC UA Configuration Manager to add the certificate to the client's trusted store

**Possible Cause:**

The OPC UA Server certificate is not trusted by the client driver.

**Result:**

The connection failed.

**Solution:**

Use the OPC UA Configuration manager to swap certificates between the OPC UA Client Driver and the OPC UA Server.

### Timeout trying to perform the operation

**Possible Cause:**

1. The call timeout settings are too short.
2. The OPC UA Server is unresponsive.

**Result:**

The operation (which may be a connect, disconnect, read, write and so forth) failed due to a timeout.

**Solution:**

1. Make sure that the OPC UA Server is running and responsive.
2. Increase the channel and device call timeouts.

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