# **MX-AOPC UA Logger User's Manual**

Edition 1.4, May 2017

www.moxa.com/product



# **MX-AOPC UA Logger User's Manual**

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### **Technical Support Contact Information**

#### www.moxa.com/support

| <u>Moxa An</u>         | <u>nericas</u>                     | <u>Moxa China (Shanghai office)</u> |  |  |  |
|------------------------|------------------------------------|-------------------------------------|--|--|--|
| Toll-free:             | 1-888-669-2872                     | Toll-free:                          | 800-820-5036                           |  |  |
| Tel:                   | +1-714-528-6777                    | Tel:                                | +86-21-5258-9955                       |  |  |
| Fax:                   | +1-714-528-6778                    | Fax:                                | +86-21-5258-5505                       |  |  |
| Moxa Europe            |                                    |                                     | <u>Moxa Asia-Pacific</u>               |  |  |
| <u>Moxa Eu</u>         | <u>rope</u>                        | <u>Moxa As</u> i                    | ia-Pacific                             |  |  |
| <u>Moxa Eu</u><br>Tel: | <u>rope</u><br>+49-89-3 70 03 99-0 | <u>Moxa Asi</u><br>Tel:             | i <u>a-Pacific</u><br>+886-2-8919-1230 |  |  |
|                        |                                    |                                     |  |  |  |

Tel:

Fax:

+91-80-4172-9088

+91-80-4132-1045

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# 1 Introduction

The following topics are covered in this chapter:

- Overview
- **System Requirements**
- □ Specifications

### **Overview**

With most remote data acquisition systems, during daily operations additional human resources are needed to collect data manually from remote storage devices for loading into a database. Even with RTUs remotely collecting data over a network, software must be developed to handle the task of converting and uploading data logs. Moxa's MX-AOPC UA Logger not only makes real-time data collection much easier, it also simplifies the conversion of historical data into database-ready formats. Moxa's MX-AOPC UA Logger interacts directly with our MX-AOPC UA Server, working as a bridge between field data and stored databases or spreadsheets. Furthermore, the MX-AOPC UA Logger converts and uploads data logs to the central database. The MX-AOPC UA Logger can collate tags from individual Moxa RTU or remote I/O devices into the same database or spreadsheet, freeing users from the need to manipulate data after processing.

One of the benefits of using RTUs is that data can be collected over a network from a central site. In an ideal operation, following a network failure RTUs should be able to transmit data logs that were collected while the network was offline. Moxa's MX-AOPC UA Logger makes this not only possible, but easy. MX-AOPC UA Loggers provide a standard OPC interface that interacts with MX-AOPC UA Servers for real-time data collection. After each network connection, an MX-AOPC UA Logger will compare historical data stored on the microSD cards located in individual devices with the real time data it has already stored locally, and then supplement any missing data by requesting that the RTU retransmit the lost data.

The MX-AOPC UA Logger includes:

- Logger Runtime Service: Starts as a service by default after installation.
- · Configuration Console: An offline configuration tool for configuring settings.

### System Requirements

#### Hardware Requirements

CPU: Intel Pentium 4 or above RAM: 512 MB (1024 MB recommended) Communication Interface: Ethernet

#### Software Requirements

Operating System: Microsoft Windows 7/8/10, Microsoft Windows Server 2003/2008/2012 Microsoft .NET Framework: v3.5 Service Pack 1 Editor (optional): Microsoft Office 2003 (Access or Excel) or later Database (optional): Oracle database (x86), Microsoft SQL Server (x86), MySQL (x86) Cloud (optional): Microsoft Azure

# **Specifications**

OPC Specifications OPC Unified Architecture: 1.02

#### **Products that Support Data Supplement**

Model Names: ioLogik 2500 series

Note: Please check Moxa's website for the most up-to-date list of supported products.

#### Fully Supported OPC UA Client Profiles

- Core Client Facet
- User Token: User Name Password Client Facet
- User Token: X509 Certificate Client Facet
- Security Policy: Basic128Rsa15
- Security Policy: None
- Data Access Client Facet
- UA-TCP UA-SC UA Binary
- Attribute Write Client Facet
- Data Change Subscriber Client Facet

# **Getting Started**

The following topics are covered in this chapter:

- Designing the System Architecture
- □ Installing the MX-AOPC UA Logger
- Opening the Configuration Console
- Configuring the MX-AOPC UA Logger Settings
- Connecting to the MX-AOPC UA Server
  - > Getting the Server Endpoint from the MX-AOPC UA Server
  - Connecting to MX-AOPC UA Servers
- Creating Loggers
- Starting Runtime Service
- □ Starting Recording
- Testing the Data Supplement Function

### **Designing the System Architecture**

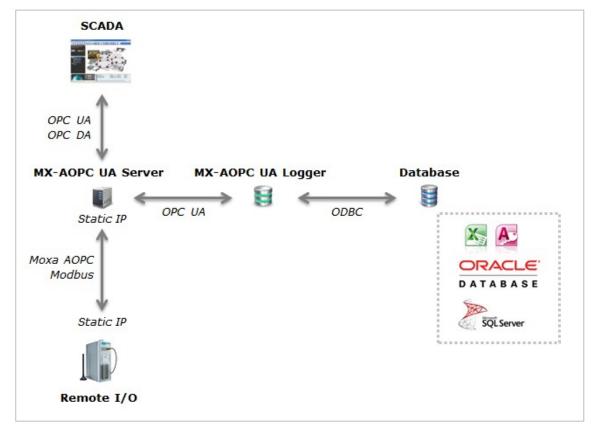
The MX-AOPC UA Logger provides two main functions.

- Storing real-time data collected through an MX-AOPC UA Server from individual I/O devices to a database or spreadsheet.
- Retrieving buffered data stored on a microSD card located in a Moxa device that supports data buffering, such as the Moxa ioLogik 2500 series, and then supplementing the database or spreadsheet with missing data.

We recommend using one of the following two scenarios when designing the system architecture:

#### Scenario 1: Write real-time data to a database or spreadsheet

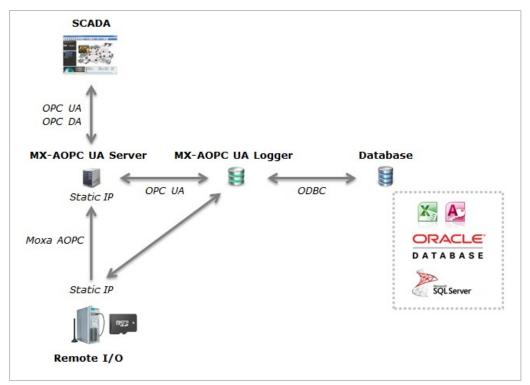
- MX-AOPC UA Logger saves data from selected OPC tags to a database or spreadsheet. The data comes from MX-AOPC UA Server only, which collects data from field devices.
- MX-AOPC UA Server, MX-AOPC UA Logger, and Database can be installed either on the same computer or on different computers. We strongly recommend installing MX-AOPC UA Logger and Database on the same computer.



# Scenario 2: Collect real-time data while the network is up and running, and retrieve buffered data stored in Moxa devices when the network is disconnected

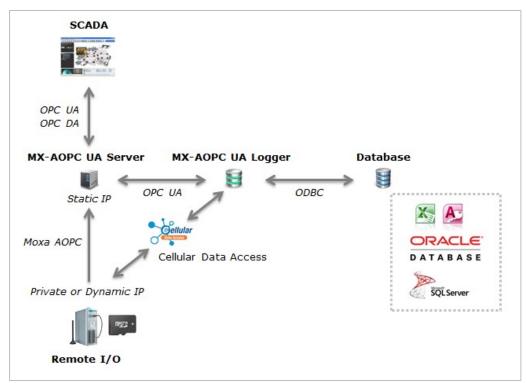
- Refer to Scenario 1 for real-time data collection.
- When network communication is reestablished, the MX-AOPC UA Logger automatically retrieves buffered data saved on microSD cards installed in Moxa's devices when the network was disconnected.
- After retrieving data from the data logs, the MX-AOPC UA Logger automatically saves the data to the database or spreadsheet.
- The MX-AOPC UA Logger supplements data only for OPC tags, which are selected both in the AOPC function
  of the Moxa device with the IOxpress utility (AOPC → Tag Selection), and in the Logger settings of the
  MX-AOPC UA Logger with its configuration console.
- For this scenario, microSD cards must be installed in your Moxa devices.

- The MX-AOPC UA Logger's data supplement function must be enabled (the default), which can be done with the configuration console under **Tools** → **Data Supplement Settings**.
- If the IP address of the Moxa cellular device is private or dynamic, Cellular Data Access software must be used to enable the MX-AOPC UA Logger to access Moxa cellular devices. We recommend installing the Cellular Data Access software and MX-AOPC UA Server on the same computer. Use Moxa's IOxpress utility to enable the Cellular Data Access function on the Moxa cellular device at Network → Cellular → Cellular Data Access. Use the MX-AOPC UA Logger's configuration console at Tools → Data Supplement Settings.



When the Moxa cellular device uses a static IP

When the Moxa cellular device uses a private or dynamic IP



The following software can be downloaded from Moxa's website at <u>www.moxa.com</u>:

- MX-AOPC UA Logger v1.0 or later
- MX-AOPC UA Server v1.4 or later
- Cellular Data Access v1.2 or later
- IOxpress utility v2.0 or later
- Moxa device firmware that supports the data supplement function:
  - ioLogik 2500 series
    - ioLogik 2500-Ethernet V2.0 or later
    - ioLogik 2500-HSPA V2.0 or later
    - ioLogik 2500-GPRS V2.0 or later
    - ioLogik 2500-WL1 V2.0 or later

Refer to the MX-AOPC UA Server User's Manual for instructions on how to install and configure Moxa's MX-AOPC UA Server software.

Refer to your Moxa device's user's manual for instructions on installing IOxpress and Cellular Data Access on a computer, and for updating your Moxa device's firmware.

### Installing the MX-AOPC UA Logger

The MX-AOPC UA Logger can be downloaded from Moxa's website at <u>www.moxa.com</u>.

After downloading the file, unzip it and run **setup.exe**. The installation program will guide you through the MX-AOPC UA Logger installation process.

**NOTE** Microsoft .NET Framework v3.5 Service Pack 1 is required before installing MX-AOPC UA Logger. After the .NET Framework is installed, restart your computer and run setup.exe again to install MX-AOPC UA Logger.

## **Opening the Configuration Console**

Open the MX-AOPC UA Logger's configuration console from the Windows Start menu: Start  $\rightarrow$  All Programs  $\rightarrow$  MOXA  $\rightarrow$  10 Server  $\rightarrow$  MX-AOPC UA Suite  $\rightarrow$  MX-AOPC UA Logger.

Select the appropriate main network adapter the first time you open the configuration console.

| Main Network Adapter: | Intel(R) Ethernet Connection (3) I218-LM 🔹  |
|-----------------------|---|
|                       |   |
|                       | adapter needs to be enabled for starting runtime service.<br>nodified after this configuration. |

The configuration console is an offline configuration tool for configuring Logger Runtime settings. When the configuration console is launched, it will automatically get the latest configurations from the Logger Runtime.

| MX-AOPC UA Logger                             |   |
|---|---|
| <u>File Server Logger Tools Runtime H</u> elp |   |
|   |   |
| Server Group                                  |   |
| S Logger Group List                           |   |
| Date Time Event                               |   |
| ۲   | Þ |
| Service Status : Stopped Time: 11:27:36       |   |

# **Configuring the MX-AOPC UA Logger Settings**

The MX-AOPC UA Logger settings described below can be configured under the Tools menu.



#### Change Password

We strongly recommend changing the password the first time you use the Configuration Console. The default password is **moxa**, which is needed for verification when exporting the system log to a text file.

#### Data Supplement Settings

Select the **Data supplement after network reconnection** checkbox if the Moxa product supporting the data supplement function is connected to an MX-AOPC UA Server.

Select the **Data Supplement through Cellular Data Access** checkbox if the IP address of the Moxa cellular device is private or dynamic.

|                   | nt after network reconnection                |                                |
|-------------------|--|--------------------------------|
| Retry Timeout     | 30   | sec(s) (5 to 600, default: 30) |
| Retries           | 3  | (0 to 10, default: 3)          |
| Data suppleme     | nt <mark>throug</mark> h Cellular Data Acces | s                              |
| IP Address        | 0.0.0.0                                      |                                |
| Port              | 9400   | (0 to 65535, default: 9400)    |
| older for supplem | entary data                                  |                                |
| Path              | C:\Users\Public\Documents\V                  |                                |

#### Certificate Management

If the security policy of the MX-AOPC UA Server is set to **Basic128Rsa15: Sign**, **Basic128Rsa15: Sign and Encrypt**, or both, importing an OPC UA client's CA (Certificate Authority) file into the MX-AOPC UA Server, and exporting the MX-AOPC UA Server's CA file to OPC UA Clients are both required.

Click the **Trust Servers** tab, click **Import**, and select the server's CA file to import it into the MX-AOPC UA Logger.

| -           |               |                                      |
|-------------|---------------|--------------------------------------|
| Server Name |               | URI                                  |
| 있 MX-AOPC   | UA Server     | urn:CHARLESCHEN-NB:MX-AOPC UA Server |
| •           | III           | 4                                    |
| Import      | Export Remove | Trust View Certificate               |
|             |               |                                      |

Select the **Instance Certificates** tab and click on **Export Logger Certificate** to export the MX-AOPC UA Logger's CA file to the OPC UA Server.

| Trust Servers Instance Certificates |   |
|-------------------------------------|---|
| View Logger Certificate             | Certificate MX-AOPC UA Logger is from<br>2016/4/14 上午 06:38:38 to 2021/3/19 |
| Export Logger Certificate           | 2016/4/14 上午 06:38:38 to 2021/3/19<br>上午 06:38:38                           |
| Reissue Certificate                 |   |
|                                     |   |
|                                     |   |
|                                     |   |
|                                     |   |
|                                     |   |
|                                     |   |
|                                     |   |
|                                     | Close   |

**NOTE** After reissuing certificates or re-installing the MX-AOPC UA Logger, you will need to export the Logger Certificate to the OPC UA Server again.

# **Connecting to the MX-AOPC UA Server**

### Getting the Server Endpoint from the MX-AOPC UA Server

Open the MX-AOPC UA Server configuration console and select **Tools**  $\rightarrow$  **OPC UA Settings**  $\rightarrow$  **Server Endpoint Settings** to go to the MX-AOPC UA Server configuration console to copy the MX-AOPC UA Server's Server Endpoint.

Ensure that the status of the Server Endpoint is Valid.

| Server Endpoints Ser | ttings                               | ×            |
|----------------------|--------------------------------------|--------------|
| URL                  |                                      | Status       |
| opc.tcp://192.168    | .34.10:53192/MXAOPC/UAServer         | Valid        |
|                      |                                      |              |
|                      |                                      |              |
|                      |                                      |              |
|                      |                                      |              |
| Network Interface:   | Intel(R) Ethernet Connection (3) I21 | 8-LM 👻       |
| Port Number:         | 53192                                |              |
|                      | opc.tcp://192.168.34.10:53192/MXA    | OPC/UAServer |
|                      | Add Delete                           | Apply Close  |

### **Connecting to MX-AOPC UA Servers**

1. Click the Server Group and then click the Discovery icon to start discovering MX-AOPC UA Servers.

| MX-AOPC UA Logger                           | THE R. P. LEWIS CO., Name of Street, or other |  |
|---|---|--|
| <u>File Server Logger Tools Runtime Hel</u> | elp   |  |
|   |   |  |
| Server Group                                |   |  |
| 🛃 Logger Group List                         |   |  |

 Select the Local Server option if MX-AOPC UA Server and MX-AOPC UA Logger are installed on the same computer. Otherwise, select the Remote Server Endpoint option and paste in the Server Endpoint from the previous step. Type in the MX-AOPC UA Server's password and then click Next.

| overy S | erver          |                |             |        |        |        |        |
|---------|----------------|----------------|-------------|--------|--------|--------|--------|
| ۲       | Local Server   |                |             |        |        |        |        |
|         | opc.tcp://192. | 168.34.10:5319 | 2/MXAOPC/UA | Server |        |        | •      |
| O       | Remote Serve   | r Endpoint     |             |        |        |        |        |
|         | Password       | ••••           |             |        |        |        |        |
|         |                |                |             |        |        |        |        |
|         |                |                |             |        |        |        |        |
|         |                |                |             |        |        |        |        |
|         |                |                |             |        |        |        |        |
|         |                |                |             |        | < Back | Next > | Cancel |

 Modify Server Name, and configure Security Policy and Security Mode, which should be the same as the MX-AOPC UA Server's UA Settings. If necessary, change the Publish Interval, Sampling Interval, Queue Size settings, and select or deselect the Discard Oldest settings checkbox, and then click Finish.

| Server Name                  | Server 1         |                 | (max. length = 30; "." is not allowe |
|------------------------------|------------------|-----------------|--------------------------------------|
| Server Manie                 |                  |                 | (max. lengur = 30, . is not allowe   |
| Server Endpoint:             | opc.tcp://192.16 | 58.34.10:53192/ | MXAOPC/UAServer                      |
| Security Policy              | None             |                 | •                                    |
| Security Mode                | None             |                 | •                                    |
| Subscription Setti           | ngs              |                 |                                      |
| Publish Interva              | al 1000          | 🚔 ms (0         | to 86400000, default: 1000)          |
| Keep <mark>Alive</mark> Coun | t 10             |                 |                                      |
| Lifetime Coun                | t 1000           |                 |                                      |
| Monitored Item S             | ettings          |                 |                                      |
| Sampling Interva             | al 500           | 🔺 ms (-         | 1 to 86400000, default: 500)         |
| Queue Size                   | e 10             | (O              | to 10000, default: 10)               |
| Discard Oldes                | t 🔽              |                 |                                      |

4. Select the server and click the **Connect** icon to connect to the MX-AOPC UA Server.

| MX-AOPC UA Logger                             |                                  |                                |                       | alars 11 per |
|---|----------------------------------|--------------------------------|-----------------------|--------------|
| <u>File Server Logger Tools Runtime H</u> elp |                                  |                                |                       |              |
|   | 8 💱 😭                            | 0033                           |                       |              |
| 🖃 🗝 🔰 Server Group                            |                                  |                                |                       |              |
| Server1(192, 168, 34, 10:53192)               | Server Endpoint:                 | opc.tcp://192.168.34.10:53192/ | MXAOPC/UAServer       |              |
|   | Security Policy:                 | None                           |                       |              |
|   | Security Mode:                   | None                           |                       |              |
| 🚼 Logger Group List                           | Subscription Settings            |                                | Monitored Item Settin | ngs          |
|   | Publi <mark>s</mark> h Interval: | 1000                           | Sampling Interval:    | 500          |
|   | Keep Alive Count:                | 10                             | Queue Size:           | 10           |
|   | Lifetime Count:                  | 1000                           | Discard Oldest:       | Yes          |

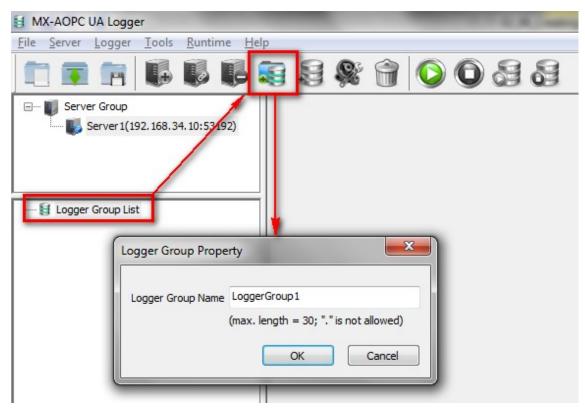
 Once the server is connected, you will not be allowed to change the server connection settings. To change the server connection settings, click the **Disconnect** icon to disconnect the MX-AOPC UA Server, and then click the **Properties** icon to change the server connection settings.

| ile <u>S</u> erver | Logger                           | Tools         | Runtim         | ne <u>H</u> e | lp  |  |  |  |
|--------------------|----------------------------------|---------------|----------------|---------------|-----|--|--|--|
|                    |                                  | ÷             | .0             | 6             |     | 2 🛠 🕯  | 0038   |  |
|                    | r Group<br>Gerver 1 (19          | 92.168.3      | 4.10:531       | .92)          |     | Server Endpoint:   | opc.tcp://192.168.34.10:531                    | 192/MXAOPC/UAServer  |
|                    |                                  |               |                |               |     | Security Policy:   | None   |  |
|                    |                                  |               |                |               |     | Security Mode:   | None   |  |
| 😝 Logger (         | Group List                       | t             |                |               |     | Subscription Settings                                      |  | Monitored Item Settings  |
|                    |                                  |               |                |               |     | Publish Interval:  | 1000   | Sampling Interval: 500   |
|                    |                                  |               |                |               |     | Keep Alive Count:  | 10   | Queue Size: 10   |
|                    |                                  |               |                |               |     | Lifetime Count:  | 1000   | Discard Oldest: Yes  |
| MX-AOPC U          |                                  |               | <u>R</u> untir | me <u>H</u>   | elp | _  | The second                                     | and the set of the set |
| MX-AOPC U          |                                  |               |                | me <u>H</u>   | _   | 8 💱 🕯  |  | 8  |
| ile <u>S</u> erver | Logger                           |               |                | 6             | _   | Server Endpoint:   | opc. tcp://192.168.34,10:5                     |  |
| ile <u>S</u> erver | Logger                           |               |                | 6             | _   | Server Endpoint:<br>Security Policy:                       |  |  |
| ile <u>S</u> erver | Logger<br>Er Group<br>Gerver 1(1 | <u>T</u> ools |                | 6             | _   |  | opc.tcp://192.168.34.10:5                      |  |
| ile <u>S</u> erver | Logger<br>Er Group<br>Gerver 1(1 | <u>T</u> ools |                | 6             | _   | Security Policy:   | opc.tcp://192.168.34.10:5<br>None<br>None      |  |
| ile <u>S</u> erver | Logger<br>Er Group<br>Gerver 1(1 | <u>T</u> ools |                | 6             | _   | Security Policy:   | opc.tcp://192.168.34.10:5<br>None<br>None      | 3192/MXAOPC/UAServer   |
| ile <u>S</u> erver | Logger<br>Er Group<br>Gerver 1(1 | <u>T</u> ools |                | 6             | _   | Security Policy:<br>Security Mode:<br>Subscription Setting | opc.tcp://192.168.34.10:5<br>None<br>None<br>s | 3192/MXAOPC/UAServer<br>Monitored Item Settings  |

**NOTE** Ensure that t spreadsheet.

# **Creating Loggers**

1. To create a data Logger, click Logger Group List, click the New Logger Group icon, and then type in the name of the logger group.



2. Click the logger group, and then click the **New Logger** icon to create a logger.

3. Type in the name of the logger, select **Excel File**, **Access File**, **Database**, or **Azure IoT**, and then modify the root path. Set the source name of the database, or type in the Connection String. Click **Next** to continue.

| MX-AOPC UA Logger   |       |
|---|-------|
| <u>File Server Logger T</u> ools <u>R</u> untime <u>H</u> elp                     |       |
|   |       |
| Server Group Logger Name Type Output  |       |
| Logger Settings   | ×     |
| Logger Group List<br>Logger Group 1<br>(max. length = 30)                         |       |
| Excel File:     Root Path:     C:\Users\Public\Documents\Moxa\MXAOPCLogger\Logger |       |
| C:\Users\Public\Documents\Moxa\MXAOPCLogger\Logger                                |       |
| © Database:<br>Source Name: Setti   | ng    |
| Date     Time     Even     Connection String:                                     | F     |
| 2017/04/16 10:23:56 Co  | ancel |
| III Service Status : Stopped Time: 10:25:30                                       | •     |

4. If necessary, modify the name and order of Table Fields. Add <DATA\_TYPE>, <SERVER\_UTC\_TIMESTAMP>, etc., if they are required to be recorded into the database or spreadsheet, and then click **Finish**.

|   | Data Field  | *Table Field  | Data Type | ^ |
|---|---|---|-----------|---|
|   | <unit></unit>   | <unit></unit>   | String    |   |
|   | <source_utc_timesta< td=""><td><source_utc_timesta< td=""><td>**String</td><td></td></source_utc_timesta<></td></source_utc_timesta<> | <source_utc_timesta< td=""><td>**String</td><td></td></source_utc_timesta<> | **String  |   |
|   | <source_timezone></source_timezone>   | <source_timezone></source_timezone>   | Float     |   |
| 1 | <data_type></data_type>   |   |           | = |
|   | <server_utc_timesta< td=""><td></td><td></td><td>-</td></server_utc_timesta<>   |   |           | - |
|   | <server_timezone></server_timezone>   |   |           |   |
|   | <quality></quality>   |   |           |   |
|   | <. length = 30; ". " [ ]" are no  |   |           |   |

5. Click the **Refresh** button to get the latest MX-AOPC UA Server OPC tags.

| MX-AOPC UA Logger                            | the second division in which the second division is not the second division of the second d |        |
|--|--|--------|
| <u>File Server Logger Tools Runtime Help</u> |  |        |
|  | e e 🎯 🔘 👕 🏶 e e  |        |
|  | Recording           Start         Stop           Automatically start recording when service starts running           Tag Selection   |        |
| 🖃 🗑 Logger Group List                        | Server1  |        |
| E EggerGroup 1                               | Available Tags Selected Tags   |        |
| Logger1                                      | Tag Name Tag Name  |        |
|  | Server Name Description  |        |
|  | Property<br>Type: Excel  |        |
|  | Output: C:\Users\Public\Documents\Moxa\MXAOPCLogger\Logger\Logger1_20160327_1<br>Table: Logger1  | 191752 |
|  | Data Field Table Field Data Type   | Order  |
|  | <tag_id> <tag_id> String</tag_id></tag_id>   | 1      |
|  | <value> <value> String</value></value>   | 2      |
|  | <pre><unit> <unit> String <source_timestamp> SOURCE_TIMESTAMP&gt; DateTime</source_timestamp></unit></unit></pre>  | 3      |
|  | SOURCE_TIMESTAMP> SOURCE_TIMESTAMP> DateTime   | 4      |

6. Click the appropriate arrow buttons to add items to or remove items from the Selected Tags list.

| MX-AOPC UA Logger<br>e <u>S</u> erver <u>L</u> ogger <u>T</u> ools <u>R</u> untime <u>H</u> e | 2   |   |
|---|---|---|
|   |   | 8   |
| 💵 Server Group  | Recording<br>Start Stop   | starts running  |
| 달 Logger Group List<br>금~달 LoggerGroup 1  | Tag Selection           Server1           All Device            Available Tags  | C<br>Selected Tags  |
| Logger1   | Tag Name        Server 00.S01-E1210.Pump        Server 00.SysConnect-00        Server 00.SysIPAddress        Server 00.SysIPAddress        Server 00.SysIPAddress | Tag Name<br>Server 00.Buzzer<br>Server 00.Intrusion alarm<br>Server 00.Level Low<br>Server 00.Level Normal<br>Server 00.S01-E1210.Cabinet |
|   | Server Name Tag Name  | Description   |
|   | Server 1 😵 Server 00.Buzzer<br>Server 1 🧐 Server 00.Intrusion ala<br>Server 1 🧐 Server 00.Level Low   | Desc E  |
|   | Server 1 🧐 Server 00.Level Normal   | Desc  |

# **Starting Runtime Service**

After connecting the MX-AOPC UA Server and creating the Logger, click the **Start Runtime Service** icon to start running the MX-AOPC UA Logger service.

| File Server Logger Tools Runtime Help   Server Group   Server 1(192.168.34.10:53192)    File Logger Group 1   Logger Group 1   Logger Group 1   Logger Group 1   Server 00.501+E1210.Pump   Server 00.501+E1210.Cabinet   Server 00.Evel Iow Server 00.Evel Iow Server 1 Server 00.Buzzer Desc Server 1 Server 00.Evel Iow Server 1 Server 00.Evel Iow Desc Server 1 Server 00.Level Iow Desc Server 1 Serve | MX-AOPC UA Logger                          | -  | A.J. Marry  | States in case of support the local division of   |
|--|--|--|---|---|
| Server Group       Server 1(192, 168, 34, 10:53192)         Start       Stop         Automatically start recording when service starts running         Tag Selection         Tag Name         Server 1         Server 00.SysConnect-00         Server 00.SysIPAddress         Server 00.Suzzer         Server 00.Suzzer         Server 00.Server 00.Level Normal         Server 00.Server 00.Intrusion alarm         Server 1       Server 00.Buzzer         Server 1       Server 00.Buzzer         Server 1       Server 00.Buzzer         Server 1       Server 00.Intrusion alarm         Server 1       Server 00.Level Low         Server 1       Server 00.Level Low         Server 1       Server 00.Level Low  | <u>File Server Logger Tools Runtime He</u> | lp   |   |   |
| Server1(192.168.34.10:53192)       Start       Stop         Automatically start recording when service starts running         Tag Selection         LoggerGroup1         Logger1         Available Tags         Server 00.501-E1210.Pump         Server 00.5ysConnect-00         Server 00.5ysSIPAddress         Server 00.5ysMAC         Server 00.flow         Server 00.flow         Server 1         Server 00.Buzzer         Server 00.sysIPAddress         Server 00.sysErver 00.sysIPAddress         Server 00.sysErver 00.sysIPAddress         Server 1         Server 00.Buzzer         Server 00.sysIPAddress         Server 00.sysIPAddress         Server 00.sysIPAddress         Server 00.flow         Server 00.sysIPAddress         Server 00.flow         Server 00.flow         Server 00.flow         Server 00.flow         Server 1         Server 00.level Low         Server 1         Server 00.level Low         Server 1         Server 00.server         Server 10.server 0.level Low         Desc  |  |  | 10023   |   |
| Available Tags  Available Tags  Selected Tags  Tag Name  Tag Name  Server 00.S01-£1210.Pump  Server 00.SysConnect-00  Server 00.SysPAddress Server 00.SysPAddress Server 00.SysPAddress Server 00.SysMAC Server 00.SysMAC Server 00.Sol-£1210.Cabinet  Server Name Tag Name Description  Server 1 Server 1 Server 00.Buzzer Desc Server 1 Server 1 Server 00.Intrusion alarm Desc Server 1 Server 1 Server 00.Level Low Desc   |  | Start  |   | unning  |
| Server 1     Server 00.Buzzer     Desc       Server 1     Server 00.Intrusion alarm     Desc       Server 1     Server 00.Level Low     Desc   | E-GgerGroup1                               | Available Tags<br>Tag Name<br>% Server 00<br>% Server 00<br>% Server 00<br>% Server 00 | S01-E1210.Pump<br>SysConnect-00<br>SysIPAddress<br>SysMAC | Selected Tags<br>Tag Name<br>Server 00.Buzzer<br>Server 00.Intrusion alarm<br>Server 00.Level Low<br>Server 00.Level Normal |
| Server 1 😵 Server 00.Intrusion alarm Desc<br>Server 1 😵 Server 00.Level Low Desc   |  | Server Name  | Tag Name  | Description   |
| Server 1 Server 00.Intrusion alarm Desc<br>Server 1 Server 00.Level Low Desc   |  |  |   |   |
|  |  |  |   | Desc  |
| Server 1 🤜 Server 00.Level Normal Desc 👻   |  |  |   |   |
|  |  | Server1  | Server 00.Level Normal                                    | Desc  |

A green light next to the logger name indicates that the logger is ready to record.

| MX-AOPC UA Logger                              | 100 March 100 Ma | Stating Soldiers Service Source Strengthenetty, St |
|--|--|--|
| <u>File Server Logger Tools Runtime Hel</u>    | 0  |  |
|  | i 2 % i 0 0 5  | 18   |
| Server Group     Server 1(192.168.34.10:53192) | Recording Start Stop Automatically start recording when servi  | ce starts running  |
|  | Tag Selection  |  |
| 🖃 📲 Logger Group List                          |  |  |
| E  | Available Tags   | Selected Tags  |
| Logger 1                                       | Tag Name   | Tag Name   |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  | Server Name Tag Name   | Description  |
|  | Server 1 👒 Server 00.Buzzer  | Desc E   |
|  | Server 1 🧐 Server 00.Intrusion a   | larm Desc  |
|  | Server 1 🧐 Server 00.Level Low   | Desc   |
|  | Server 1 🧐 Server 00.Level Norm  | al Desc 👻  |

A yellow light next to the logger name indicates that the logger setting is not correct. Check the settings of the logger, and then confirm the database or spreadsheet settings again.

| MX-AOPC UA Logger  | And the second | and the second se |
|--|--|---|
| <u>File Server Logger Tools Runtime H</u> elp  |  |   |
|  | 3 & 9 0 0 3  | 8   |
| Server Group     Server 1(192.168.12.112:53192)  | Recording       Start       Stop       Automatically start recording when service       Tag Selection            |   |
| Coger Group List Coger Group 1 Coger | Available Tags Tag Name  | Selected Tags   |
|  | Server Name Tag Name   | Description   |

You will not be allowed to modify the server connection and logger settings when runtime service is running. To stop runtime service, click the **Stop Runtime Service** icon.

| MX-AOPC UA Logger                                 | And a local division of the local division o | and the set of the local data and the   |
|---|--|---|
| <u>File Server Logger Tools Runtime Hel</u>       | p  |   |
|   |  | 6   |
| Server Group     Server 1(192, 168, 34, 10:53192) | Recording Start Stop Automatically start recording when service Tag Selection  | starts running  |
| Logger Group List     LoggerGroup1     Logger1    | Available Tags   | Selected Tags   |
|   | Server Name Tag Name   | Description   |
|   | Server1     Server 00.Buzzer       Server1     Server 00.Intrusion alarn       Server1     Server 00.Level Low       Server1     Server 00.Level Normal  | m Desc E<br>Desc Desc vertex vert |

**NOTE** Configuration changes will be updated to Logger's runtime service after the runtime service is started. If the runtime service is not started, any change will be discarded when the configuration console is closed. Be sure to save your project file when you close the configuration console.

**NOTE** Stopping Runtime Service will stop both the logger recording and data supplement functions, which may cause data loss.

# **Starting Recording**

To start recording data, click the logger icon and then click the **Start Recording** icon to start recording the selected tags into the database or spreadsheet.

| MX-AOPC UA Logger   |   |                      |   |
|---|---|----------------------|---|
| le <u>S</u> erver <u>L</u> ogger <u>T</u> ools <u>R</u> untime <u>H</u> elp |   |                      |   |
|   |   | 1 <b>a</b>           |   |
| U Server Group<br>U Server1(192, 168, 34, 10:53192)                         | Recording           Start         Stop           Automatically start recording when serviting |                      |   |
| Uogger Group List   | Tag Selection           v           Available Tags  | ▼ C<br>Selected Tags |   |
| Logger1   | Tag Name  | Tag Name             |   |
|   |   |                      |   |
|   | Server Name Tag Name  | Description          |   |
|   | Server 1 🧐 Server 00.Buzzer   | Desc                 | = |
|   | Server 1 🧐 Server 00.Intrusion a  | larm Desc            | = |
|   | Server 1 😵 Server 00.Level Low  | Desc                 |   |
|   | Server 1 🧐 Server 00.Level Norm   | al Desc              |   |

A red light next to the logger indicates that the logger is recording.

| MX-AOPC UA Logger                     |   |
|---------------------------------------|---|
| File Server Logger Tools Runtime Help |   |
|                                       | 1 2 📽 🔒 🔘 🔘 2 3   |
| 🖃 🗤 📳 Server Group                    | Recording   |
| Server 1(192. 168. 12. 112:53192)     | Start Stop<br>Automatically start recording when service starts runni |
| E Logger Group List                   |   |
| EnggerGroup:                          | Available Tags  |
| Logger 1                              | Tag Name  |
|                                       |   |
|                                       |   |

Click the folder icon to check if data is being recorded into the target spreadsheet.

| ile <u>Server Logger T</u> ools <u>R</u> untime <u>H</u> elp |  |  | 9                            |                       |
|--|--|--|------------------------------|-----------------------|
| Server Group     Server 1(192.168.34.10:53192)               | Recording<br>Start                       | Stop   |                              |                       |
| Logger Group List     LoggerGroup1     Logger1               | Available Tags                           | •  | - C<br>Selected Ta           | ags                   |
|  | Tag Name                                 |  | Tag Name                     |                       |
|  | Server Name                              | Tag Name   | Descript                     | ion 🔺                 |
|  | Server1<br>Server1<br>Server1<br>Server1 | <ul> <li>Server 00.Buzzer</li> <li>Server 00.Intrusion alarm</li> <li>Server 00.Level Low</li> <li>Server 00.Level Normal</li> </ul> | Desc<br>Desc<br>Desc<br>Desc | E                     |
|  | Property<br>Type: Excel                  |  |                              |                       |
|  | Output: C:\User                          | s\Public\Documents\Moxa\MXAC   | PCLogger\Logger\Log          | ger 1_20160327_191752 |

**NOTE** Be sure to close the target spreadsheet listed in the target root path before starting to record. If the target spreadsheet is open, the MX-AOPC UA Logger will not be able to record data to the target file.

**NOTE** DO NOT open the spreadsheet while recording is under way. Doing so will cause the spreadsheet file to become corrupted because it is in use by the MX-AOPC UA Logger service. To open the spreadsheet, stop the MX-AOPC UA Logger's runtime service and then click the folder icon to access the file.

# **Testing the Data Supplement Function**

Take the following steps to test the data supplement function.

- 1. Insert a microSD card into your Moxa device.
- 2. Use IOxpress to configure the Moxa device to allocate data buffer size for network failure and to enable connection to the MX-AOPC UA Server.

| System                      |                       |                          |                              |                        |      |   |   |     | _ |
|-----------------------------|-----------------------|--------------------------|------------------------------|------------------------|------|---|---|-----|---|
| Security                    | Enable connection to  | AOPC Server with hear    | tb <mark>eat interv</mark> a | al 30 sec(             | s)   |   |   |     |   |
| I/O<br>SNMP                 | Server Mode           |                          |                              |                        |      |   |   |     |   |
| Modbus<br>AOPC              | Single Server         |                          |                              | 1st AOPC Server        | 0    |   | 0 | . 0 | 0 |
| Server Connection           | Dual Server           |                          |                              | 2nd AOPC Server        | 0    | ÷ | 0 | . 0 | 0 |
| Serial Port<br>Data Logging | 🔘 Failover            |                          |                              | Port                   | 9900 |   |   |     |   |
| Click&Go Plus               | Retry Times           | 3                        |                              |                        |      |   |   |     |   |
|                             | Retry Interval        | 3                        | sec(s)                       |                        |      |   |   |     |   |
|                             | Data buffer for netwo | rk failura               |                              |                        | _    |   |   |     |   |
|                             | Maximum 1             |                          | ,000 record                  | s (1 to 20, default: 2 | 20)  |   |   |     |   |
|                             | Note the local state  | nterval for recording ea |                              |                        |      |   |   |     |   |

3. Select the checkboxes of the tags associated with the data you would like the MX-AOPC UA Server to update.

| Setting     | Click&Go F | Plus          | Click&G  | o Plus Simulator | Peer-to- | Peer             |                    |      |
|-------------|------------|---------------|----------|------------------|----------|------------------|--------------------|------|
| System      | Select Mod | ule All       |          |                  | - Sel    | ect All Unselect | t All Apply to All |      |
| Network     | I/O Type   | AI            |          |                  | •        |                  |                    |      |
| MP<br>odbus | Slot       | No.           |          | Channel No.      | Name     | Description      | On Change          | Perc |
|             | Slot       | 00 Model: 254 | 12-HSPA] | 0                | Flow     | Desc             | Disabled           | 50   |
| oppection   | Slot       | 00 Model: 254 | 12-HSPA] | 1                | AI-01    | Desc             | Disabled           | 50   |
| on          | Slot       | 00 Model: 254 | 12-HSPA] | 2                | Pressure | Desc             | Disabled           | 50   |
|             | Slot       | 00 Model: 254 | 12-HSPA] | 3                | AI-03    | Desc             | Disabled           | 50   |
| ging        |            |               |          |                  |          |                  |                    |      |
| Plus        |            |               |          |                  |          |                  |                    |      |

4. If the cellular device's SIM card uses a private or dynamic IP address, enable the Cellular Data Access function. If the SIM card is using a public IP address, continue with step 5.

| Setting  | Click&Go Plus | Click&Go Plus Sin | ulator       | Peer-to-Peer    |      |                      |
|--|---------------|-------------------|--------------|-----------------|------|----------------------|
| <ul> <li>Bystem</li> <li>B Security</li> </ul>   | General       | VPN               | Reconnection | Port Forwarding | DDNS | Cellular Data Access |
| <ul> <li>Network</li> <li>General</li> <li>LAN</li> </ul>  | Enable Cellul | ar Data Access    |              |                 |      |                      |
| Cellular   | IP Address    | 192 . 168 . 12    | . 112        |                 |      |                      |
| SNMP Modbus AOPC   | Port          | 9401              |              |                 |      |                      |
| <ul> <li>Image: Book C</li> <li>Image:</li></ul> | Unique ID     | 0                 |              |                 |      |                      |
| ⊞ 🗎 Click&Go Plus  | Heartbeat     | 30                |              |                 |      |                      |
|  |               |                   |              |                 |      |                      |

5. Update the device's configuration.

| Woxa IOxpress - C:\Users\Public\Docum<br>Project Device Configuration Online De |           |                             |           |                       |                   |              |
|---|-----------|-----------------------------|-----------|-----------------------|-------------------|--------------|
| <ul> <li>Online Device</li> <li>2542-HSPA - 192, 168, 12, 230</li> </ul>        | Mass      | Deployment                  |           |                       |                   |              |
|   | Select Fu | nction Update Configuration | to Device | Select All            | Unselect All App  | ly to All    |
|   | V Over    | write Network Setting       |           |                       |                   |              |
|   | No        | . Server Name               | Model     | (Cellular) IP Address | MAC Address       | Configure De |
|   | 0         | ioLogik 2542 Demo Kit       | 2542-HSPA | 192.168.12.230        | 00-90-E8-46-FB-BE | ioLogik 2542 |
|   |           |                             |           |                       |                   |              |

6. Conduct a **Time Sync** on the device to ensure that the device, MX-AOPC UA Server, and MX-AOPC UA Logger are time synchronized.

| Moxa IOxpress - C:\Users\Public\Docum       | ents\Moxa\I | Oxpress\Database\IOxpress | prj             |                       |                   |             |
|---|-------------|---------------------------|-----------------|-----------------------|-------------------|-------------|
| Project Device Configuration Online De      | evice Optio | ns Help                   |                 |                       |                   |             |
| Online Device<br>2542-HSPA - 192.168.12.230 | Mas         | s Deployment              |                 |                       |                   |             |
|   | Select Fu   | Inction Time Sync         |                 | ▼ Select All          | Unselect All Ap   | ply to All  |
|   | 🖲 Sy        | nc with PC 🛛 🔘 Manual Se  | etting Date: 20 | D16/ 5/ 5             | 13:13:21 (UTC     | I:)         |
|   | No          | . Server Name             | Model           | (Cellular) IP Address | MAC Address       | Lock/Unlock |
|   | <b>V</b> 0  | ioLogik 2542 Demo Kit     | 2542-HSPA       | 192.168.12.230        | 00-90-E8-46-FB-BE | Unlock      |
|   |             |                           |                 |                       |                   |             |

 If Cellular Data Access software is required, enable the MX-AOPC UA Logger's Data supplement through Cellular Data Access option at Tools → Data Supplement Settings. If Cellular Data Access software is not required, continue with step 8.

| a Supplement Sett  | ings                            |                                |
|--------------------|---------------------------------|--------------------------------|
| 🔽 Data suppleme    | nt after network reconnection   |                                |
| Retry Timeout      | 30                              | sec(s) (5 to 600, default: 30) |
| Retries            | 3                               | (0 to 10, default: 3)          |
| 🛛 🔽 Data suppleme  | nt through Cellular Data Acces  | 5                              |
| IP Address         | 192 . 168 . 12 . 112            |                                |
| Port               | 9400                            | (0 to 65535, default: 9400)    |
| Folder for supplem | nentary data                    |                                |
| Path               | C: \Users \Public \Documents \M | oxa\MXAOPCLI 💿 🔳               |
|                    |                                 |                                |
|                    |                                 | OK Cancel                      |

8. Ensure that the logger is in recording mode.

| MX-AOPC UA Logger                                   |  |
|---|--|
| <u>File Server Logger Tools Runtime Help</u>        |  |
|   | 3 🖇 🔒 🔘 🔘 🏭 🛃  |
| Server Group     Server 1(192, 168, 12, 112; 53192) | Start       Stop         Automatically start recording when service starts running |
| □… 😫 Logger Group List                              | Tag Selection  |
| E LoggerGroup1                                      | Available Tags Se  |
| Logger 1  | Tag Name   |

9. Disconnect the Ethernet connection between the Moxa device and the MX-AOPC UA Server. Wait longer than the heartbeat interval (the ioLogik 2500's default heartbeat interval is 30 sec.) plus the heartbeat tolerance (the MX-AOPC UA Server's default heartbeat tolerance is 30 sec.), and then check if the tag status is "Disconnected" on the MX-AOPC UA Viewer. If it is disconnected, wait longer than the update interval of the tags, and then reconnect the connection between the Moxa device and MX-AOPC UA Server.

| 10013 1                  | lelp   |           |  |                |        |                         |           |               |              |             |
|--------------------------|--|-----------|--|----------------|--------|-------------------------|-----------|---------------|--------------|-------------|
| 🖃 👍 Active D             |  | Tag Name  | Description                              | Data Type      | Value  | Device timestamp (UTC)  | Time Zone | Access Rights | Quality      | Update Cour |
|                          | -01 (00:90:e8:21:4a:ea)                          | 🧐 ioLogik | Desc                                     | Boolean        | 0      | 06:01:37.000 2016/04/25 | UTC+8     | Read/Write    | Disconnected | 4           |
|                          | 2-01 (00:90:e8:16:e7:15)                         | Shint and |  | Float          | 2.531  | 06:28:32.000 2016/04/25 | UTC+8     | Read-only     | Disconnected | 1938        |
|                          | gik 2542 Demo Kit (00:90:e8<br>Device Group List | ioLogik   | Desc                                     | Boolean        | 0      | 06:01:37.000 2016/04/25 | UTC+8     | Read/Write    | Disconnected | 4           |
| Modbus                   | Device Group List                                | 🧐 ioLogik |  | Boolean        | 1      | 06:01:37.000 2016/04/25 | UTC+8     | Read/Write    | Disconnected | 17          |
|                          |  | 🧐 ioLogik | Desc                                     | Boolean        | 0      | 06:01:37.000 2016/04/25 | UTC+8     | Read/Write    | Disconnected | 17          |
|                          |  | 🧐 ioLogik | Desc                                     | Float          | 10.000 | 06:28:32.000 2016/04/25 | UTC+8     | Read-only     | Disconnected | 1938        |
|                          |  | 🧐 ioLogik | Desc                                     | Boolean        | 0      | 06:01:37.000 2016/04/25 | UTC+8     | Read/Write    | Disconnected | 6           |
|                          |  | 🧐 ioLogik | Desc                                     | Boolean        | 0      | 06:01:37.000 2016/04/25 | UTC+8     | Read-only     | Disconnected | 4           |
|                          |  | 🧐 ioLogik | Desc                                     | Boolean        | 0      | 06:01:37.000 2016/04/25 | UTC+8     | Read-only     | Disconnected | 6           |
|                          |  | 🤏 ioLogik | System Conn                              | Boolean        | 0      | 06:28:42.629 2016/04/25 | UTC+8     | Read-only     | Good         | 4           |
|                          |  | 🧐 ioLogik | Device IP Ad                             | String         | 192.16 | 06:28:42.629 2016/04/25 | UTC+8     | Read-only     | Disconnected | 4           |
|                          |  | 🧐 ioLogik | Device MAC                               | String         | 00:90: | 06:28:42.629 2016/04/25 | UTC+8     | Read-only     | Disconnected | 4           |
|                          |  |           |  |                |        | III                     |           |               |              |             |
| Date                     |  | ent       |  |                |        |                         |           |               |              |             |
| 2016/04/25               |  | -         | 3 changes the val                        |                |        |                         |           |               |              |             |
| 2016/04/25               |  | -         | 2 changes the val                        |                |        |                         |           |               |              |             |
| 2016/04/25               |  | -         | 1 changes the val                        |                |        |                         |           |               |              |             |
| 2016/04/25               |  | -         | 00 changes the val                       |                |        |                         |           |               |              |             |
| 2016/04/25               |  | -         | 3 changes the val                        |                |        |                         |           |               |              |             |
| 2016/04/25               |  | -         | 2 changes the val                        |                |        |                         |           |               |              |             |
| 2016/04/25<br>2016/04/25 |  | -         | )3 changes the val<br>)1 changes the val |                |        |                         |           |               |              |             |
|                          |  | -         | -  |                |        |                         |           |               |              |             |
| 2016/04/25<br>2016/04/25 |  |           | )1 changes the val<br>)3 changes the val |                |        |                         |           |               |              |             |
|                          |  | -         | -  | ue from 0.0011 |        |                         |           |               |              |             |
| 2016/04/25               | 14:29:31 Th                                      |           |  |                |        |                         |           |               |              |             |

10. The pink and gray flashing light indicates that the logger is performing the data supplement process.

| MX-AOPC UA Logger                             |  |
|---|--|
| <u>File Server Logger Tools Runtime H</u> elp |  |
|   | 1 2 % 6 0 0 2 3  |
| E Server Group                                | Recording       Start       Start       Automatically start recording when service starts runn |
|   | Tag Selection  |
| ⊡… 😫 Logger Group List<br>⊡… 🙀 LoggerGroup 1  | Available Tags   |
| Logger1                                       | Tag Name   |
|   |  |

11. After the data supplement process is complete, the light will change to red. The event log will show how long the data supplement process took to perform, and the result of the supplement process.

| MX-AOPC UA Logger                           |  |
|---|--|
| <u>File Server Logger Tools Runtime H</u>   | elp  |
|   | a 2 % 🕆 🛇 🔾 2 2  |
| Server Group Server 1(192.168.12.112:53192) | Recording Start Stop Automatically start recording when service starts running Tag Selection Available Tags Selected Tags Tag Name Tag Name Tag Name |
|   | Server Name     Tag Name     Description       Server 1     Image: Server 1     Image: Server 1  |
| Date Time Event                             |  |
|   | d retrieving log [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-fb-be].  |
|   | Group 1. Logger 1: supplement data is saved to C: \Users \Public \Documents \Moxa \MXAOPCLogger \Logger \Logger 1_20160506_1139                      |
|   | ing log 1/1 [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-fb-be]  |
|   | ting to the device [MAC:00-90-e8-46-fb-be] for retrieving log from 2016/05/06 03:44:05 to 2016/05/06 03:44:27  |
|   | cording logger 'Logger 1'  |
| 2016/05/06 11:43:37 Logger                  | Group 1.Logger 1 sucessfully connected to database!  |
|   | PC UA Logger runtime service is running.   |
|   | ng database  |
| 2016/05/06 11:43:16 MX-∆O                   | PC11&1 onner runtime service is ston   |
| Service Status : Running Time: 11:45:45     |  |

12. Open the database folder and note which files the supplementary data has been saved to.

| MXAOP               | CLogger > Logger1_20160420_054556               | - 4- Search |
|---------------------|---|-------------|
| Organize 👻 🔀 Open 👻 | Share with 🔻 Print E-mail New folder            |             |
| 🔶 Favorites         | Name  | Date modi   |
| 🧮 Desktop           | B Logger1_20160425_093251_00_90_e8_46_fb_be.xls | 2016/4/25   |
| Downloads           | Logger1_20160425_172841.xls                     | 2016/4/25   |

# **Configuration Console**

The following topics are covered in this chapter:

- Main Screen Overview
- Menu I tems
  - ≻ File
  - > Server
  - > Logger
  - > Tools
  - > Runtime
  - > Help

# Main Screen Overview

The MX-AOPC UA Logger's configuration console displays settings for connected MX-AOPC UA Servers and loggers. It also shows the logger runtime status.

|  | JA Logger <b>1</b>   |  |                                |
|--|--|--|--------------------------------|
| <u>File</u> <u>Server</u>  | Logger <u>T</u> ools   | <u>R</u> untime <u>H</u> elp <mark>2</mark>  |                                |
|  |  | i i i i i i i i i i i i i i i i i i i  |                                |
|  | r Group<br>erver 1(192. 168. 12.<br><mark>4</mark>                               | 112:53192)     Recording       Start     Stop       Automatically start recording when service starts running       Tag Selection  |                                |
| 🖃 🗑 Logger 🛛   |  | Server 1   | =                              |
|  |  | Available Tags Selected Tags   |                                |
| <b>\</b>   | Logger1  | Tag Name 🔺 🕨 Tag Name  |                                |
|  | 5  | Image: System Site Sys | sure                           |
|  |  | Server Name Tag Name Description   |                                |
|  |  | Server 1 🧐 ioLogik 2542 Demo Kit.Pressure Desc   |                                |
|  |  |  |                                |
| Date   | Time   | Event  |                                |
| Date<br>2016/05/06   | Time<br>11:48:07   | Event<br>MX-AOPC UA Logger runtime service is stop.  |                                |
|  |  |  | fb-be].                        |
| 2016/05/06   | 11:48:07   | MX-AOPC UA Logger runtime service is stop.   | -                              |
| 2016/05/06<br>2016/05/06   | 11:48:07<br>11:45:41   | MX-AOPC UA Logger runtime service is stop.<br>Finished retrieving log [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-<br>LoggerGroup 1.Logger 1: supplement data is saved to C:\Users\Public\Pocuments\Moxa\MXAOPCLogger\Logger<br>Retrieving log 1/1 [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-fb-b  | Logger 1_20 160 506_1139<br>e] |
| 2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06                             | 11:48:07<br>11:45:41<br>11:45:41   | MX-AOPC UA Logger runtime service is stop.<br>Finished retrieving log [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-<br>LoggerGroup 1.Logger 1: supplement data is saved to C:\Users\Public\Documents\Moxa\MXAOPCLogger\Logger\<br>Retrieving log 1/1 [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-fb-<br>Connecting to the device [MAC:00-90-e8-46-fb-be] for retrieving log from 2016/05/06 03:44:05 to 2016/05/06  | Logger 1_20 160 506_1139<br>e] |
| 2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06               | 11:48:07<br>11:45:41<br>11:45:41<br>11:45:39                                     | MX-AOPC UA Logger runtime service is stop.<br>Finished retrieving log [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-<br>LoggerGroup 1.Logger 1: supplement data is saved to C: \Users\Public\Documents\Moxa\MXAOPCLogger\Logger\<br>Retrieving log 1/1 [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-fb-b<br>Connecting to the device [MAC:00-90-e8-46-fb-be] for retrieving log from 2016/05/06 03:44:05 to 2016/05/06 0<br>Start recording logger 'Logger 1'   | Logger 1_20160506_1139<br>e]   |
| 2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06 | 11:48:07<br>11:45:41<br>11:45:41<br>11:45:39<br>11:45:37<br>11:43:41<br>11:43:37 | MX-AOPC UA Logger runtime service is stop.<br>Finished retrieving log [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-<br>LoggerGroup 1.Logger 1: supplement data is saved to C: \Users\Public\Documents\Moxa\MXAOPCLogger\Logger\<br>Retrieving log 1/1 [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-fb-<br>Connecting to the device [MAC:00-90-e8-46-fb-be] for retrieving log from 2016/05/06 03:44:05 to 2016/05/06 0<br>Start recording logger 'Logger 1'<br>LoggerGroup 1.Logger 1 sucessfully connected to database!   | Logger 1_20 160 506_1139<br>e] |
| 2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06               | 11:48:07<br>11:45:41<br>11:45:41<br>11:45:39<br>11:45:37<br>11:43:41             | MX-AOPC UA Logger runtime service is stop.<br>Finished retrieving log [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-<br>LoggerGroup 1.Logger 1: supplement data is saved to C: \Users\Public\Documents\Moxa\MXAOPCLogger\Logger\<br>Retrieving log 1/1 [from 2016/05/06 03:44:05 to 2016/05/06 03:44:27] from the device [MAC:00-90-e8-46-fb-b<br>Connecting to the device [MAC:00-90-e8-46-fb-be] for retrieving log from 2016/05/06 03:44:05 to 2016/05/06 0<br>Start recording logger 'Logger 1'   | Logger 1_20 160 506_1139<br>e] |

| No. | Zone                   | Description   |
|-----|------------------------|---|
| 1   | Software Title         | Displays the name of the software: MX-AOPC UA Logger              |
| 2   | Menu Bar               | All configuration functions can be accessed from these menu items |
| 3   | Quick Launch Bar       | Frequently used icons   |
| 4   | Server View            | All MX-AOPC UA Servers  |
| 5   | Logger View            | All Loggers   |
| 6   | Detailed View          | Detailed settings of the servers and loggers                      |
| 7   | Log View               | Logger Runtime logs   |
| 8   | Runtime Service Status | Indicates if the logger runtime service is Running or Stopped     |
| 9   | Logger Time            | Displays the Logger time (same as the PC's time)                  |

## Menu Items

### File

Use the File menu to manage project files.

| <u>F</u> ile | <u>Server</u> Logger <u>T</u> ools <u>R</u> untime | <u>H</u> elp |          |
|--------------|--|--------------|----------|
|              | New  | Ctrl+N       |          |
|              | Open   | Ctrl+O       | 3 980    |
|              | Save   | Ctrl+S       |          |
|              | Save As  |              |          |
|              | 1 AOPC_Logger5.aog                                 |              |          |
|              | 2 AOPC_Logger4.aog                                 |              | <u> </u> |
|              | 3 AOPC_Logger3.aog                                 |              |          |
|              | 4 AOPC_Logger2.aog                                 |              |          |
|              | 5 AOPC_Logger1.aog                                 |              |          |
|              | Exit   |              |          |

- New: Create a new project file.
- **Open:** Open an existing project file.
- Save: Save the current project.
- Save As: Save the current project file as another project with a different filename.
- Previous saved files: Quickly open previously saved project files.
- Exit: Close the Configuration Console.

### Server

Use the Server menu to edit MX-AOPC UA Server connection settings.

| _        | AOPC UA Logger<br>erver Logger Tools                       | Runtime Help |
|----------|--|--------------|
| <b>.</b> | Discovery<br>Connect<br>Disconnect<br>Delete<br>Properties | 112:53192)   |
|          | Logger Group List  |              |

- **Discovery:** Discover MX-AOPC UA Servers and configure its connection settings.
- **Connect:** Connect the selected server.
- **Disconnect:** Disconnect the selected server.
- Delete: Delete the selected server.
- **Properties:** Modify the settings of the selected server.

**NOTE** The properties of a server cannot be modified either when the server is in connecting mode, or runtime service is in running mode. Stop runtime service and disconnect the server connection before modifying the server properties.

### Logger

Use the Logger menu to edit logger settings.



- New Logger Group: Create a new logger group.
- New Logger: Create a new logger.
- Delete: Delete the selected logger.
- Start Recording: Start recording for a selected logger group or a selected logger.
- Stop Recording: Stop recording for a selected logger group or a selected logger.
- Properties: Modify the settings of an existing logger.

**NOTE** The properties of a logger cannot be modified either when the logger is in recording mode, or runtime service is in running mode. Stop runtime service before modifying logger properties.

### Tools

Use the **Tools** menu to configure data supplement settings, for certificate management, to access a system log, to change a password, or to modify console environment settings.

| HX-AOPC UA Logger                           |  |   |  |
|---|--|---|--|
| <u>File</u> <u>Server</u> Logger <u>T</u> o | ools <u>R</u> untime <u>H</u> elp                  |   |  |
|   | Data Supplement Settings<br>Certificate Management |   |  |
| Server Group                                | System Log   | • |  |
|   | Change Password                                    |   |  |
|   | Options  |   |  |
| Cogger Group List                           |  |   |  |

0

#### Data Supplement Settings

| Data suppleme | ent after network reconnection  |                                |
|---------------|---------------------------------|--------------------------------|
| Retry Timeout | 30                              | sec(s) (5 to 600, default: 30) |
| Retries       | 3                               | (0 to 10, default: 3)          |
| Data suppleme | ent through Cellular Data Acces | s                              |
|               |                                 | -                              |
| IP Address    | 0.0.0.0                         |                                |
|               | 0.400                           |                                |
| Port          | 9400                            | (0 to 65535, default: 9400)    |
|               |                                 | (U to 65535, default: 9400)    |
| Port          |                                 | (U to 65535, default: 9400)    |

- Data supplement after network reconnection: Enable this function if the Moxa products connected to an MX-AOPC UA Server support the data supplement function.
  - **Retry Timeout:** The retry timeout interval for retrieving supplementary data from a device's buffer.
  - **Retries:** The number of retries allowed after a retry timeout.
- Data supplement through Cellular Data Access: Enable this function if the Moxa products connected to the Cellular Data Access software support the data supplement function.
  - IP Address: The IP address of the Cellular Data Access software.
  - **Port:** The listen port of the Cellular Data Access software.
- Folder for supplementary data
  - Path: The folder path to which the system can temporarily save supplementary data. Click

to change the folder path. Click to open the folder. Delete the supplementary data files after the data is written to the database.

#### Certificate Management

If the security policy of the MX-AOPC UA Server is set to **Basic128Rsa15: Sign**, **Basic128Rsa15: Sign and Encrypt**, or both, importing an OPC UA client's CA (Certificate Authority) file into the MX-AOPC UA Server, and exporting the MX-AOPC UA Server's CA file to OPC UA Clients are both required.

Click the **Trust Servers** tab, click **Import**, and select the server's CA file to import it into the MX-AOPC UA Logger. Click **Export** to export the selected certificate. Click **Remove** to remove the selected certificate. Click **Trust** to trust the selected certificate. Click **View Certificate** to view the selected certificate.

| Trust Servers | Instance Certificate | 25     |                                      |                  |
|---------------|----------------------|--------|--------------------------------------|------------------|
| Server Name   |                      | URI    |                                      |                  |
| 👷 MX-AOP      | 👷 MX-AOPC UA Server  |        | urn:CHARLESCHEN-NB:MX-AOPC UA Server |                  |
|               |                      |        |                                      |                  |
|               |                      |        |                                      |                  |
|               |                      |        |                                      |                  |
|               |                      |        |                                      |                  |
|               |                      |        |                                      |                  |
| •             |                      |        |                                      | •                |
| Import        | Export               | Remove | Trust                                | View Certificate |
|               |                      |        |                                      |                  |
|               |                      |        |                                      |                  |

Click the **Instance Certificates** tab and click **Export Logger Certificate** to export the MX-AOPC UA Logger's CA file to OPC UA Server.

| Trust Servers | Instance Certificates                            |  |
|---------------|--|--|
|               | View Logger Certificate                          | Certificate MX-AOPC UA Logger is from<br>2016/4/14 上午 06:38:38 to 2021/3/19<br>上午 06:38:38 |
|               | Export Logger Certificate<br>Reissue Certificate |  |
|               |  |  |
|               |  |  |
|               |  |  |

**NOTE** After reissuing certificates or re-installing the MX-AOPC UA Logger, you will need to export the Logger Certificate to the OPC UA Server again.

System Log

| <u>File Server Logger To</u> | ools <u>R</u> untime <u>H</u> elp                  |   |
|------------------------------|--|---|
|                              | Data Supplement Settings<br>Certificate Management |   |
| Server Group                 | System Log   | Save to Text File                       |
|                              | Change Password                                    | Reset System Log<br>System Log Settings |
|                              | Options  | System Log Settings                     |

Save to Text File: Save the MX-AOPC UA Logger's system log to a text file. You will be required to enter a password (default password = moxa).

| rify Password     |     |
|-------------------|-----|
| ease enter passwo | rd: |
| ••••              |     |
|                   |     |
|                   |     |

Reset System Log: Reset the MX-AOPC UA Logger's system log. You will be required to enter a password (default password = moxa).



System Log Settings: Defines the maximum number of records that can be saved in the MX-AOPC UA Logger's system log (values can range from 1 to 30000; the default value is 30000).

| ystem Log Setti | igs   | ×         |
|-----------------|-------|-----------|
| Event Records:  | 30000 | (1~30000) |
|                 |       | OK Cancel |

• **Change Password:** Change the MX-AOPC UA Logger's system password. The password is required when updating configurations to System Runtime, saving system logs to a text file, or resetting the system log (length: 4 to 128; acceptable characters: A to Z, a to z, 0 to 9, Symbols; default: moxa).

| Change Password                | X         |
|--------------------------------|-----------|
| Old Password:<br>New Password: |           |
| Confirm Password:              | OK Cancel |

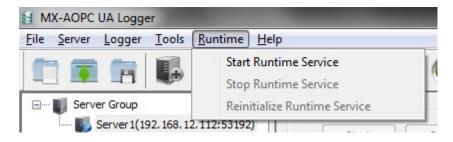
• Options: Configure environment settings for the MX-AOPC UA Logger's configuration console.

| Configuration File                        |        |                          |                              |                  |
|---|--------|--------------------------|------------------------------|------------------|
| Automatically save configuration every    | 10     | ×                        | min <mark>(s) (1 to</mark> : | 30, default: 10) |
| V Automatically save configuration before | exitin | g <mark>this co</mark> r | nsole                        |                  |
|   |        |                          |                              |                  |

**NOTE** If **Automatically save configuration every xx min(s)** is enabled, the configuration file will be automatically saved only when a filename is defined. Be sure to save your configuration file after creating a new project file.

#### Runtime

Use the Runtime menu to Start, Stop, or Reinitialize Server Runtime Service.

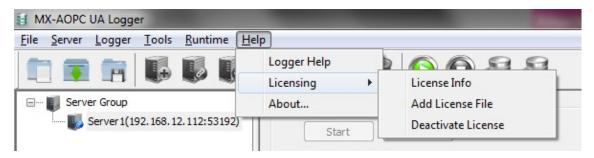


## Help

Use the **Help** menu to launch the Logger's help documentation, to check the Logger's license status, to add a license file, or to check the logger version.

|         | X-AOPC<br>Server | UA Logge   |          | <u>R</u> untime | Help | 1                        |   |
|---------|------------------|------------|----------|-----------------|------|--------------------------|---|
| C       | ]                |            |          |                 |      | Logger Help<br>Licensing | , |
| <b></b> |                  | er Group   |          |                 |      | About                    |   |
|         |                  | Server1(19 | 92.168.1 | 2.112:53192     |      | Start                    |   |

- Logger Help: Launch the MX-AOPC UA Logger's help documentation.
- Licensing



License Info: Displays the Logger's User Code, License Status, and the Time Remaining on the license. Refer to License Registration and Activation to learn how to activate the license.

| User Code:                 | 464EB14358CD |
|----------------------------|--------------|
| License Status:            | Free Version |
| The max. number of Server: | 1            |
| The max. number of Logger: | 1            |

- Add License File: Import a license file after completing the license registration process. Refer to License Registration and Activation to learn how to activate the license.
- Deactivate License: Deactivate the current license version and load factory default settings. Note that when you deactivate the license, your license file and runtime configurations will be deleted. Be sure to back up your runtime configurations before executing a license deactivation procedure.
- About: Displays the MX-AOPC UA Logger's version number and build number.

| About |   | X  |
|-------|---|----|
| 8     | Moxa MX-AOPC UA Logger 1.0 build 16040818<br>Copyright (C) 2016 Moxa Inc. | ОК |
|       |   |    |

# Server Management

The following topics are covered in this chapter:

#### Server Discovery

- > Getting the Server Endpoint from an MX-AOPC UA Server
- Discovering MX-AOPC UA Servers

#### Server Connection

- > Connecting to the discovered MX-AOPC UA Server
- > Editing the connection settings of the discovered MX-AOPC UA Server
- > Deleting the connection settings of the discovered MX-AOPC UA Server

## Server Discovery

In this section we explain how to discover an MX-AOPC UA Server.

An MX-AOPC UA Logger can discover MX-AOPC UA Servers installed on a local or remote computer. First, get the server endpoint, and then follow the onscreen instructions to discover the server. After the server has been discovered, be sure to connect to the server before adding the tags into loggers for recording.

**NOTE** The server discovery or server connection settings can only be configured when runtime service status is stopped. To stop the runtime, click the stop runtime icon on the quick launch bar.

#### Getting the Server Endpoint from an MX-AOPC UA Server

 Open the MX-AOPC UA Server configuration console by clicking Tools → OPC UA Settings → Server Endpoint Settings. Be sure the status of the Server Endpoint is valid, and then copy the Server Endpoint of the MX-AOPC UA Server.

| erver Endpoints Se | ttings                               | ×              |  |  |
|--------------------|--------------------------------------|----------------|--|--|
| URL                |                                      | Status         |  |  |
| opc.tcp://192.168  | .12.112:53192/MXAOPC/UAServer        | Valid          |  |  |
|                    |                                      |                |  |  |
|                    |                                      |                |  |  |
|                    |                                      |                |  |  |
|                    | (                                    |                |  |  |
| Network Interface: | Intel(R) Ethernet Connection (3) I21 | 18-LM 🔻        |  |  |
| Port Number:       | 53192                                |                |  |  |
|                    | opc.tcp://192.168.12.112:53192/MX    | (AOPC/UAServer |  |  |
|                    | Add Delete                           | Apply Close    |  |  |

2. Go to Tools → OPC UA Settings → Security Policy Setting and confirm the MX-AOPC UA Server's security policy settings. The security policy is applied to connections between OPC UA clients and the MX-AOPC UA Server. If Basic128Rsa15: Sign, Basic128Rsa15: Sign and Encrypt, or both of these options are selected, you will need to configure Certificates Management settings on both MX-AOPC UA Server (Tools → OPC UA Settings → Certificates Management) and MX-AOPC UA Logger (Tools → Certificate Management). If only "None" is selected, you only need to know the password of the MX-AOPC UA Server.

| ✓ None                |               |
|-----------------------|---------------|
| Basic 128Rsa 15 - Sig | In            |
| Basic 128Rsa 15 - Sig | n and Encrypt |

## **Discovering MX-AOPC UA Servers**

1. Go to the MX-AOPC UA Logger, right click a Server Group and then click **Discovery** in the pop up menu, or click the Server Group to select it and then click the **Discovery** icon on the quick launch toolbar to start discovering MX-AOPC UA Servers.

| 8 N          | IX-AOPC | UA Logge | er    |                              |    |          |            |   |    |   |
|--------------|---------|----------|-------|------------------------------|----|----------|------------|---|----|---|
| <u>F</u> ile | Server  | Logger   | Tools | <u>R</u> untime <u>H</u> elp |    |          |            |   |    |   |
| C            | 1       |          | -     |                              | 19 | <b>S</b> | $\bigcirc$ | 0 | 36 | 3 |
|              | Serve   | er Group |       |                              |    |          |            |   |    |   |
|              |         |          | Dis   | very                         |    |          |            |   |    |   |
|              |         |          |       |                              |    |          |            |   |    |   |
|              |         |          |       |                              |    |          |            |   |    |   |

2. Select Local Server if the MX-AOPC UA Server and MX-AOPC UA Logger are installed on the same computer, or click Remote Server Endpoint and type in the target Server Endpoint. Next, type in the password of the MX-AOPC UA Server, and then click the Next button.

| Discovery S | Server 📃                                       |
|-------------|--|
| ۲           | Local Server                                   |
|             | opc.tcp://192.168.12.112:53192/MXAOPC/UAServer |
| 0           | Remote Server Endpoint                         |
|             |  |
|             | Password ••••                                  |
|             |  |
|             |  |
|             |  |
|             |  |
|             |  |
|             |  |
|             | < Back Next > Cancel                           |

 Modify Server Name, and configure Security Policy and Security Mode to be the same as the MX-AOPC UA Server's UA Settings. If necessary, update the Publish Interval, Sampling Interval, Queue Size, or Discard Oldest settings, and then click Finish.

|                    | -                |              |                                       |
|--------------------|------------------|--------------|---------------------------------------|
| Server Name        | Server1          |              | (max. length = 30; "." is not allowed |
| Server Endpoint:   | opc.tcp://192.16 | 8.12.112:531 | 92/MXAOPC/UAServer                    |
| Security Policy    | None             |              | •                                     |
| Security Mode      | None             |              | •                                     |
| Subscription Setti | ngs              |              |                                       |
| Publish Interva    | 1000             | in ms        | (0 to 86400000, default: 1000)        |
| Keep Alive Count   | t 10             |              |                                       |
| Lifetime Coun      | t 1000           |              |                                       |
| Monitored Item Se  | ettings          |              |                                       |
| Sampling Interva   | il 500           | 📥 ms         | (-1 to 86400000, default: 500)        |
| Queue Size         | e 10             | *            | (0 to 10000, default: 10)             |
| Discard Oldes      | t 🔽              |              |                                       |

- Server Name: Give a name for the connection of the MX-AOPC UA Server (max. length = 30; a period "." is not allowed). The server name should be unique and cannot be modified after you click Finish.
- > Server Endpoint: The server endpoint of the discovered MX-AOPC UA Server.
- > Security Policy: Configure the same security policy as the MX-AOPC UA Server.
- > Security Mode: Configure the same security mode as the MX-AOPC UA Server.
- Subscription Settings: Configure the subscription settings for MX-AOPC UA Logger to receive OPC tag data from the MX-AOPC UA Server.
  - **Publish Interval:** The publish interval defines the rate at which the Server sends OPC tag data to the Logger (unit: ms; values: 0 to 86400000; default: 1000; 0: the fastest practical rate).
  - Keep Alive Count: The keep alive count defines the number of publish intervals that must expire before a keep alive message is sent to MX-AOPC UA Server.
  - Lifetime Count: The lifetime count defines the number of times of publish interval can expire without the MX-AOPC UA Logger sending data updates or keep alive messages before the server deletes the subscription.
- Monitored Item Settings
  - **Sampling Interval:** The sampling interval defines the rate at which the server checks for changes in the monitored device readings (unit: ms; values: -1 to 86400000; default: 500; the default interval set by the server: -1; the fastest practical rate: 0).
  - Queue Size: The queue size defines the number of data updates that the OPC UA Server will queue for the subscription

Discard Oldest: The discard oldest defines the discard policy of the queue. When checked, the
oldest notification in the queue will be discarded and will not be sent to the MX-AOPC UA Logger.
When unchecked, the latest notification will be discarded and will not be sent to the MX-AOPC UA
Logger (default setting: enabled).

# **Server Connection**

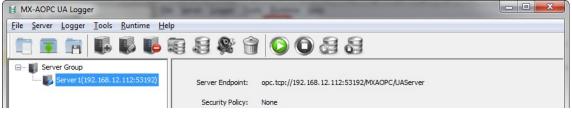
In this section we explain how to connect to the discovered MX-AOPC UA Server, and how to modify the connection settings.

### Connecting to the discovered MX-AOPC UA Server

Before configuring the logger, you must first connect to the discovered MX-AOPC UA Server to get the OPC tag list from the servers.

- 1. Ensure the runtime service is stop.
- Right click the server and click Connect in the pop up menu, or click the server to select it and then click the Connect icon on the quick launch toolbar. The server should now be connected to the MX-AOPC UA Logger.

| Elle       Server       Logger       Tools       Buttime       Help         Server       Forup       Server       Server <td< th=""><th>MX-AOPC UA Logger</th><th></th><th></th><th></th></td<> | MX-AOPC UA Logger                 |   |   |                                      |
|--|-----------------------------------|---|---|--------------------------------------|
| Server Group       cerver Endpoint:       opc. tcp://192.168.12.112:53192/MXAOPC/UAServer         Server1(192.168,12.112:53192/MXAOPC/UAServer       Connect       Security Policy:       None         Delete       Security Mode:       None       None         Properties       Description Settings       Monitored Item Settings         Sampling Interval:       1000       Queue Size:       10         Lifetime Count:       100       Discard Oldest:       Yes         Date       Time       Event       Server1 disconnect!  | <u>File Server Logger Tools R</u> |   |   |                                      |
| Server I (192, 168, 12, 112:53192)       Server Endpoint:       opc. tcp://192, 168, 12, 112:53192/MXAOPC/UAServer         Connect       Disconnect       Delete       Security Policy:       None         Delete       Security Mode:       None       None         Properties       bscription Settings       Monitored Item Settings         Sampling Interval:       1000       Queue Size:       10         Lifetime Count:       1000       Discard Oldest:       Yes         Date       Time       Event         2016/05/06       14:42:35       Server1 disconnect!  |                                   | 6 6 6 8 <b>8 6</b>  | 660   |                                      |
| 2016/05/06 14:42:35 Server 1 disconnect!   | Server 1 (192, 166, 12.1          | Connect Security Policy:<br>Delete Security Mode:<br>Properties bscription Settings<br>Publish Interval:<br>Keep Alive Count: | None None Monitored Item 1000 Sampling Int 10 Queue | n Settings<br>erval: 500<br>Size: 10 |
|  | Date Time                         | Event   |   |                                      |
|  |                                   |   | stop.   |                                      |
|  | •                                 |   |   | F                                    |
| Service Status : Stopped Time: 14:43:40  | Service Status : Stopped Time     | :: 14:43:40   |   | .4                                   |



## Editing the connection settings of the discovered MX-AOPC UA

#### Server

Take the following steps to edit the connection settings of the discovered MX-AOPC UA Server:

- 1. Ensure the runtime service is stopped.
- 2. Right click the server and click **Disconnect** in the pop up menu, or click the server to select it and then click the **Disconnect** icon on the quick launch toolbar.

| MX-AOPC                   | UA Logger                    |  |  |                                  |                  |                      |     | - • × |
|---------------------------|------------------------------|--|--|----------------------------------|------------------|----------------------|-----|-------|
| <u>File</u> <u>Server</u> | <u>L</u> ogger <u>T</u> ools | <u>R</u> untime <u>H</u> elp                       |  |                                  |                  |                      |     |       |
|                           | er Group                     |  |  | 00                               | 88               |                      |     |       |
|                           | Server 1(192, 168, 1         | 2.112:53192) Se<br>Connect<br>Disconnect<br>Delete | rver Endpoint:<br>ecurity Policy:<br>ecurity Mode: | opc.tcp://192.16<br>None<br>None | 58.12.112:53192/ | MXAOPC/UAServer      |     |       |
| 🗄 🗃 Lo                    | ggerGroup1                   | Properties   | cription Settings                                  |                                  |                  | Monitored Item Setti | ngs |       |
|                           | Logger1                      | F  | Publish Interval:                                  | 1000                             |                  | Sampling Interval:   | 500 |       |
|                           |                              | Ke   | ep Alive Count:                                    | 10                               |                  | Queue Size:          | 10  |       |
|                           |                              |  | Lifetime Count:                                    | 1000                             |                  | Discard Oldest:      | Yes |       |
| Date                      | Time                         | Event  |  |                                  |                  |                      |     |       |
| 2016/05/06                | 14:50:08                     | Connect to Server1 su                              | iccess!  |                                  |                  |                      |     |       |
| 2016/05/06                | 14:42:35                     | Server1 disconnect!                                |  |                                  |                  |                      |     |       |
| 2016/05/06                | 14:42:15                     | MX-AOPC UA Logger r                                | untime service is                                  | stop.                            |                  |                      |     |       |
| 4                         | _                            |  |  |                                  |                  |                      |     | +     |
| Service Status            | : Stopped Ti                 | me: 14:50:26                                       |  |                                  |                  |                      |     | d     |

3. Right click the server and click **Properties** in the pop up menu, or click the server to select it and then click the **Properties** icon on the quick launch toolbar. Follow the onscreen instructions to edit the settings.

| <u>File</u> <u>Server</u> <u>Logger</u> <u>T</u> ool | s <u>R</u> untime <u>H</u> elp |                     |   |
|--|--------------------------------|---------------------|---|
|  |                                | 2 🙊 😭               | 6 6 6                                   |
| 🖃 🗤 🔰 Server Group                                   |                                | _                   |   |
| Server 1(192. 168                                    | .12.112:53192)                 | Server Endpoint:    | opc.tcp://192.168.12.112:53192/MXAOPC/L |
|  | Connect<br>Disconnect          | Security Policy:    | None                                    |
|  | Delete                         | Consulty Made       | None                                    |
|  | Delete                         | Security Mode:      | None                                    |
| 😝 Logger Group List                                  | Properties                     | bscription Settings |   |

**NOTE** The server name cannot be modified after the initial setting. To change the server name, delete the original server settings and then use the server discovery process to create a new one. Note that deleting the server connection settings will delete all of the related logger settings at the same time.

## Deleting the connection settings of the discovered MX-AOPC

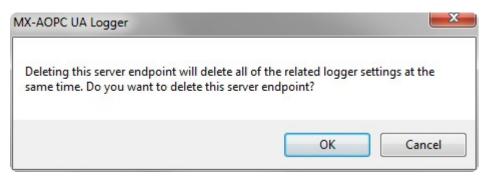
## **UA Server**

Take the following steps to delete the connection settings of the discovered MX-AOPC UA Server:

- 1. Ensure the runtime service is stopped.
- 2. Right click the server and click **Delete** in the popup menu, or click the server to select it and then click the **Delete** icon on the quick launch toolbar.

| MX-AOPC UA   | A Logger                                     |   |   |  | • X |
|--|--|---|---|--|-----|
| <u>File</u> <u>Server</u> <u>L</u>                   | ogger <u>T</u> ools <u>R</u> u               | intime <u>H</u> elp   |   |  |     |
|  |  |   | 8 😭 🔾 🖓 🖇   |  |     |
| ⊡… 😫 Logger Gi<br>Ė 😜 Logge                          | rver 1(192.168.12.11                         | Connect<br>Disconnect<br>Delete<br>Properties<br>Publis<br>Keep A                                   | Fordpoint: opc.tcp://192.168.12<br>Policy: None<br>None<br>Settings<br>h Interval: 1000<br>live Count: 10<br>me Count: 1000 | Monitored Item Settings<br>Sampling Interval: 500<br>Queue Size: 10<br>Discard Oldest: Yes |     |
| Date   | Time   | Event   |   |  |     |
| 2016/05/06<br>2016/05/06<br>2016/05/06<br>2016/05/06 | 14:52:40<br>14:50:08<br>14:42:35<br>14:42:15 | Server1 disconnect!<br>Connect to Server1 succes<br>Server1 disconnect!<br>MX-AOPC UA Logger runtim |   |  |     |
| •  |  | ш   |   |  | •   |
| Service Status : St                                  | topped Time:                                 | 14:52:46  |   |  |     |

3. Click **OK** to confirm that you would like to delete logger settings at the same time.



# Logger Management

The following topics are covered in this chapter:

#### Logger Group

- > Adding a Logger Group to a Logger Group List
- Editing a Logger Group
- > Deleting a Logger Group

#### Loggers

- > Adding a Logger to a Tag Group
- Editing a Logger
- > Deleting a Logger

#### Logger Recording

- Select Tags for Recording
- Start or Stop Recording
- Logger Status

# Logger Group

In this section we explain how to use the configuration console to add, edit, and delete logger groups.

## Adding a Logger Group to a Logger Group List

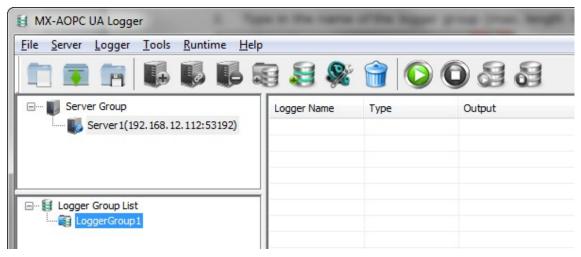
- 1. Ensure that the runtime service is stopped.
- 2. Right click the Logger Group List and then click **New Logger Group** in the popup menu, or click the Logger Group List to select it and then click the **New Tag Group** icon on the Quick Launch toolbar.

| MX-AOPC UA                         | A Logger                        |  |
|------------------------------------|---------------------------------|--|
| <u>File</u> <u>Server</u> <u>L</u> | ogger <u>T</u> ools <u>F</u>    | luntime <u>H</u> elp                                 |
|                                    |                                 |  |
| Errer Server                       | Group<br>rver 1(192. 168. 12. 1 | 12:53192)  |
| ····· 🛐 Logger G                   | 6                               | gger Group   |
|                                    | Start Re                        | cording  |
|                                    |                                 |  |
| Date                               | Time                            | Event  |
| 2016/05/06                         | 16:19:09<br>14:52:40            | Connect to Server1 success!<br>Server1 disconnect!   |
| 2016/05/06<br>2016/05/06           | 14:52:40                        | Server 1 disconnect!<br>Connect to Server 1 success! |
| 2016/05/06                         | 14:42:35                        | Server 1 disconnect!                                 |
| 2016/05/06                         | 14:42:15                        | MX-AOPC UA Logger runtime service is stop.           |
| •                                  |                                 | III  |
| Service Status : St                | topped Time                     | e: 16:19:20  |

3. Type in the name of the logger group (max. length = 30 characters; "." is not allowed) and then click OK.

| ogger Group Prope | rty 📃                                  |
|-------------------|--|
| Logger Group Name | LoggerGroup1                           |
|                   | (max. length = 30; "." is not allowed) |
|                   | OK Cancel                              |

4. The new logger group will be added to the Logger Group List.



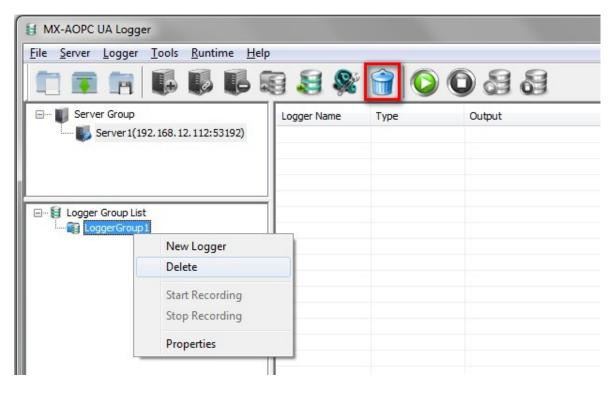
## Editing a Logger Group

Right click the logger group and then click **Properties** in the popup menu, or click the logger group to select it and then click the **Properties** icon on the Quick Launch toolbar.

| MX-AOPC UAL            | ogger   |                                       |      |        |
|------------------------|---|---------------------------------------|------|--------|
| <u>File Server Log</u> | ger <u>T</u> ools <u>R</u> untime <u>H</u> el | р                                     |      |        |
|                        |   | i i i i i i i i i i i i i i i i i i i |      | 022    |
| 🖃 📲 Server Gro         | pup   | Logger Name                           | Type | Output |
| Serve                  | er 1(192.168.12.112:53192)                    |                                       |      |        |
|                        |   |                                       |      |        |
|                        |   |                                       |      |        |
|                        |   | 11                                    |      |        |
|                        |   |                                       |      |        |
| 🖃 🔠 Logger Grou        | up List                                       |                                       |      |        |
| Engger Grou            |   |                                       |      |        |
|                        |   |                                       |      |        |
|                        | Group1  |                                       |      |        |
|                        | Group1<br>New Logger<br>Delete                |                                       |      |        |
|                        | Group 1 New Logger Delete Start Recording     |                                       |      |        |
|                        | Group1<br>New Logger<br>Delete                |                                       |      |        |
|                        | Group 1 New Logger Delete Start Recording     |                                       |      |        |

## **Deleting a Logger Group**

Right click the logger group and then click **Delete** in the popup menu, or click the logger group to select it and then click the **Delete** icon on the Quick Launch toolbar.



# Loggers

In this section we explain how to use the configuration console to add, edit, and delete loggers.

## Adding a Logger to a Tag Group

- 1. Ensure the runtime service is stopped.
- 2. Right click on the logger group that the logger will be added to and then click **New Logger** in the popup menu, or click the logger group to select it and then click the **New Logger** icon on the Quick Launch toolbar.

| H MX-AOPC UA              | Logger                            |  |                  |        | - • • × |
|---------------------------|-----------------------------------|--|------------------|--------|---------|
| <u>File</u> <u>Server</u> | ogger <u>T</u> ools <u>R</u> ui   | ntime <u>H</u> elp                                 |                  |        |         |
|                           |                                   |  | f 😭 🔕            | 0 2 2  |         |
| E Server (                | Group<br>-ver 1(192. 168. 12. 112 | Logger Name  | Туре             | Output |         |
| E S Logger Gr             |                                   |  |                  |        |         |
|                           | New Lo                            | ogger  |                  |        |         |
|                           | Delete                            |  |                  |        |         |
|                           | Start Re                          | ecording   |                  |        |         |
|                           | Stop Re                           | ecording   |                  |        |         |
|                           | Propert                           | ies  |                  |        |         |
|                           |                                   |  |                  |        |         |
| Date                      | Time                              | Event  |                  |        |         |
| 2016/05/06                | 16:19:09                          | Connect to Server 1 success!                       |                  |        |         |
| 2016/05/06 2016/05/06     | 14:52:40<br>14:50:08              | Server1 disconnect!<br>Connect to Server1 success! |                  |        |         |
| 2016/05/06                | 14:42:35                          | Server 1 disconnect!                               |                  |        |         |
| 2016/05/06                | 14:42:15                          | MX-AOPC UA Logger runtime                          | service is stop. |        |         |
| •                         |                                   | ш  |                  |        | Þ       |
| Service Status : St       | topped Time: 1                    | 16:23:03   |                  |        |         |

3. Type in the name of the logger, configure the data file type, database or Azure IoT, and then click Next.

| tting |
|-------|
|       |
|       |
|       |

- Logger Name: The naming rules of the logger name depend on the specifications of Microsoft Excel, Access, SQL Server, Oracle Database, or Azure IoT. The naming rules can be summarized as follows:
  - Microsoft Excel (max. length = 30; the first four characters: a-z, A-z; the following characters: 0-9, a-z, A-Z, \_)
  - Microsoft Access (max. length = 30; the following characters are NOT allowed: . ! ` [ ] ' ,)
  - Database Source Name (DSN) and Azure IoT (max. length = 30; the following characters are NOT allowed: . []',")
- Excel File: Select this option if you would like to record data into Excel files. Configure the root path for saving those files.
- Access File: Select this option if you would like to record data into Access files. Configure the root path for saving those files.
- Database: Select this option if you would like to record data into a Microsoft SQL Server or Oracle database. Refer to Appendix B for details on how to configure the database connection settings.
- Azure IoT: Select this option if you would like to record data in a Microsoft Azure IoT Cloud. Copy the Connection String you got from Microsoft Azure and paste it into this field.

4. Select the Data Field items, change the default names in the Table Field, change the order of the items, and if necessary change the time format for the timestamp. Click **Finish** to save the settings.

|      | TAG_ID><br>VALUE><br>JNIT><br>SOURCE_UTC_TIMESTA<br>SOURCE_TIMEZONE>                   | <tag_id><br/><value><br/><unit><br/><source_utc_timesta< th=""><th>String<br/>String<br/>String</th><th>=</th></source_utc_timesta<></unit></value></tag_id> | String<br>String<br>String   | =    |
|------|--|--|--|------|
|      | UNIT><br>SOURCE_UTC_TIMESTA  | <unit></unit>  | String   | E    |
| <    | SOURCE_UTC_TIMESTA   |  | The second s | =    |
| <:   |  | <source_utc_timesta< td=""><td></td><td>- 10</td></source_utc_timesta<>  |  | - 10 |
| <[   | SOURCE_TIMEZONE>   |  | **DateTime   |      |
|      |  | <source_timezone></source_timezone>  | Float  |      |
|      | DATA_TYPE>   |  |  |      |
| <    | SERVER_UTC_TIMESTA   |  |  |      |
| <    | SERVER TIMEZONE>   |  |  | *    |
| ptio | ngth = 30; ". " [ ]" are noi<br>n: DateTime or String<br>natically start recording whe |  |  |      |

- Data Field: By default, data of <TAG\_ID>, <VALUE>, <UNIT>, <SOURCE\_UTC\_TIMESTAMP>, <SOURCE\_TIMEZONE> will be recorded into the database. Data of <DATA\_TYPE>, <SERVER\_UTC\_TIMESTAMP>, <SERVER\_TIMEZONE>, and <QUALITY> are optional. The time data of <SOURCE\_UTC\_TIMESTAMP> and <SOURCE\_TIMEZONE> in an OPC tag is added by Moxa's I/O device when the event occurs. The time data of <SERVER\_UTC\_TIMESTAMP> and <SERVER\_UTC\_TIMESTAMP> in an OPC tag is added by the MX-AOPC UA Server when the tag is received.
- Table Field: The name of each data field, which can be defined by the user, will be the column name of the table in the database. The max. length is 30 characters. The following characters are not allowed: , "[].
- Data Type: The data type of the timestamp can be either DateTime or String type. If the second value of the timestamp has decimal points, select String type to record the decimal point value into the database. The DateTime format only supports integer values.
- > A love the selected item up.
- Move the selected item down.
- Automatically start recording when service starts running: Enable this function if you want the logger to start recording automatically whenever the runtime service starts running.

## **Editing a Logger**

Take the following steps to edit a logger's properties:

- 1. Ensure the runtime service is stopped.
- 2. Right click the logger and then click **Properties** in the popup menu, or click the logger to select it and then click the **Properties** icon on the Quick Launch toolbar.

| MX-AOPC UA Log          | gger  |   |     |
|-------------------------|---|---|-----|
| <u>File Server Logg</u> | er <u>T</u> ools <u>R</u> unt                   | ntime <u>H</u> elp  |     |
|                         |   |   |     |
|                         | 1(192.168.12.112:                               | Start Stop  | E   |
| E S Logger Group        |   | Server1   All Device   C  |     |
|                         |   | Available Tags Selected Tags                                      | _ U |
|                         | Delete<br>Start Reco<br>Stop Reco<br>Properties | cording % DAC-01.AI-02<br>% DAC-01.AI-03                          |     |
|                         |   | Server Name Tag Name Description                                  |     |
|                         |   |   | •   |
| Date 1                  | Time  | Event   |     |
|                         | 16:19:09  | Connect to Server1 success!                                       |     |
|                         | 14:52:40  | Server 1 disconnect!  |     |
|                         | 14:50:08  | Connect to Server 1 success!<br>Server 1 disconnect!              |     |
|                         | 14:42:35<br>14:42:15                            | Server Laisconnect:<br>MX-AOPC UA Logger runtime service is stop. |     |
| 2010/03/06              |   |   |     |
| *                       |   |   | P.  |
| Service Status : Stopp  | oed Time: 17                                    | 17:53:16  |     |

## **Deleting a Logger**

Take the following steps to delete a logger:

- 1. Ensure the runtime service is stopped.
- 2. Right click the logger and click **Delete** in the popup menu, or click the logger to select it and then click the **Delete** icon on the quick launch toolbar.

| MX-AOPC UA Logger                          |   |  |            |  |  |  |
|--|---|--|------------|--|--|--|
| <u>File Server Logger Too</u>              | ols <u>R</u> untime <u>H</u> elp                |  |            |  |  |  |
|  |   | 2 & 😭 🔾 🤇 😭  |            |  |  |  |
| Server Group                               | 8. 12. 112: 53192)                              | Start Stop   | E          |  |  |  |
| 🖃 📲 Logger Group List                      |   | Server 1   |            |  |  |  |
| LoggerGroup 1                              |   |  | ted Tags   |  |  |  |
|  | Delete  |  | Name       |  |  |  |
|  | Start Recording<br>Stop Recording<br>Properties | Image: Specific conduction       Image: Specific conduction |            |  |  |  |
|  |   | Server Name Tag Name De  | escription |  |  |  |
|  | <   | m  |            |  |  |  |
| Date Time                                  | Event   |  |            |  |  |  |
| 2016/05/06 16:19:09                        | Connect to Serv                                 | er 1 success!  |            |  |  |  |
| 2016/05/06 14:52:40                        |   |  |            |  |  |  |
| 2016/05/06 14:50:08                        |   | Connect to Server 1 success!   |            |  |  |  |
| 2016/05/06 14:42:35<br>2016/05/06 14:42:15 |   | ect!<br>gger runtime service is stop.  |            |  |  |  |
| 2010/05/06 14:42:15                        | MA-AOPC OA LO                                   | yger runnine service is stop.  |            |  |  |  |
| •  | III   |  | ۶.         |  |  |  |
| Service Status : Stopped                   | Time: 17:54:54                                  |  |            |  |  |  |

3. Click **OK** to confirm that you would like to delete this logger.

| MX-AOPC UA Logger           | ×               |
|-----------------------------|-----------------|
| Do you really want to delet | te this logger? |
| ОК                          | Cancel          |

# Logger Recording

In this section we explain how to use the configuration console to select tags for recording, to start or stop recording, and to check the status of a logger.

## Select Tags for Recording

- 1. Ensure the runtime service is stopped.
- 2. Ensure that the server is connected.
- 3. Click the refresh button to get the updated tags from the server.

| MX-AOPC UA Logger                       |   | x  |  |  |
|---|---|----|--|--|
| <u>File Server Logger To</u>            | ıls <u>R</u> untime <u>H</u> elp  |    |  |  |
|   |   |    |  |  |
|   | Recording       8.12.112:53192)     Start     Stop       Automatically start recording when service starts running       Tag Selection       Server 1   | E  |  |  |
| LoggerGroup1                            | Available Tags Selected Tags  |    |  |  |
|   | Tag Name     Tag Name       Sp DAC-01.AI-00     Image: Constraint of the second secon |    |  |  |
|   | Server Name Tag Name Description  |    |  |  |
|   |   | -  |  |  |
|   | •   | Þ  |  |  |
| Date Time                               | Event   |    |  |  |
| 2016/05/06 16:19:09                     |   |    |  |  |
| 2016/05/06 14:52:40                     |   |    |  |  |
| 2016/05/06 14:50:08                     |   |    |  |  |
| 2016/05/06 14:42:35 Server1 disconnect! |   |    |  |  |
| 2016/05/06 14:42:1                      | MX-AOPC UA Logger runtime service is stop.  |    |  |  |
| 4                                       | III   | ۱. |  |  |
| Service Status : Stopped                | Time: 18:04:17  |    |  |  |

4. Select the tag in the Available Tags list and click the arrow button to add it into the Selected Tags list.

| Server1         | ▼ All Device |          | - C           |     |   |
|-----------------|--------------|----------|---------------|-----|---|
| vailable Tags   |              |          | Selected Tags |     |   |
| Tag Name        |              | <u> </u> | Tag Name      |     |   |
| 🕸 DAC-01.AI-00  |              |          |               |     |   |
| 😵 DAC-01.AI-01  |              |          |               |     |   |
| 🥸 DAC-01.AI-02  |              |          |               |     |   |
| 👒 DAC-01.AI-03  |              | <b>-</b> |               |     |   |
| <               |              | +        | •             | III | • |
| Server Name Tag | ) Name       |          | Description   | ĺ   |   |
|                 |              |          |               |     |   |
|                 |              |          |               |     |   |
|                 |              |          |               |     |   |

- is add all tags into the Selected Tags list.
- into the Selected Tags list.
- > : removed all tags from the Selected Tags list.
- 5. The data from the tags in the list shown below will be recorded after the logger is in recording mode.

| Server1   | <ul> <li>All Device</li> </ul> | - C              |   |
|---|--------------------------------|------------------|---|
| Available Tags  |                                | Selected Tags    |   |
| Tag Name  |                                | Tag Name         | * |
|   |                                | DAC-01.AI-00     |   |
|   |                                | 🗛 👒 DAC-01.AI-01 |   |
|   |                                | CALC-01.AI-02    |   |
|   |                                |                  |   |
|   |                                | 🔍 🥎 DAC-01.AI-03 | - |
| ٠ [   | III                            |                  | • |
| <ul> <li>✓</li> <li>✓</li></ul> | III<br>Tag Name                | AC-01.AI-03      |   |
|   |                                | ▲                |   |
| Server Name   | Tag Name                       | DAC-01.AI-03     |   |
| Server Name<br>Server1  | Tag Name                       | DAC-01.AI-03     |   |

## Start or Stop Recording

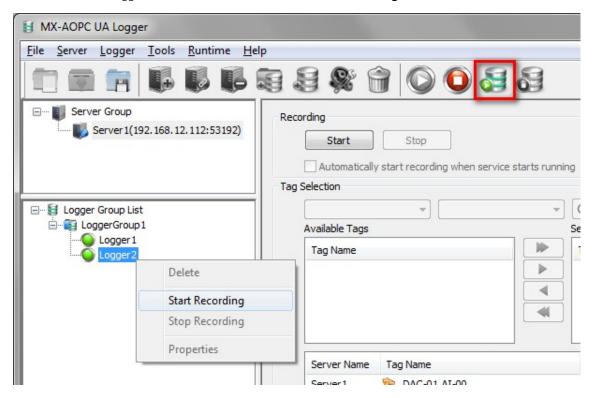
- 1. Ensure the runtime service is running.
- 2. Ensure the server is connected.
- 3. Ensure the logger is in ready mode (indicated by green lights).
- 4. To start recording all loggers in one logger group, right click on the logger group and then click **Start Recording** in the popup menu, or click the logger group to select it and then click the **Start Recording** icon on the Quick Launch toolbar.

| MX-AOPC UA L                  | ogger                          |  |                             |  |
|-------------------------------|--------------------------------|--|-----------------------------|--|
| <u>File</u> <u>Server</u> Log | iger <u>T</u> ools <u>R</u> un | time <u>H</u> elp                            |                             |  |
|                               |                                |  | <b>*</b> 🔒 🕻                |  |
| 🖃 🗤 🚺 Server Gro              | pup                            | Logger Nam                                   | пе Туре                     | Output   |
| erve                          | er 1(192. 168. 12. 112:        | E53192) Logger1<br>Logger2                   | Excel<br>Excel              | C:\Users\Public\Documents\Moxa\MXAOPCLogger\Logger\Logger1_20160420_05<br>C:\Users\Public\Documents\Moxa\MXAOPCLogger\Logger\Logger2_20160424_22 |
| E S Logger Grou               |                                |  |                             |  |
| O Logo                        |                                |  |                             |  |
|                               | Start R                        | ecording                                     |                             |  |
|                               | Stop R                         | ecording                                     |                             |  |
|                               | Proper                         | ties   |                             |  |
|                               |                                |  |                             |  |
|                               |                                |  |                             |  |
|                               |                                |  |                             |  |
|                               |                                |  |                             |  |
|                               |                                |  |                             |  |
| Date                          | Time                           | Event  |                             |  |
| 2016/04/24                    | 22:17:27                       |  | sucessfully connected t     |  |
| 2016/04/24                    | 22:17:27                       |  | sucessfully connected t     |  |
| 2016/04/24<br>2016/04/24      | 22:17:25                       | MX-AOPC UA Logger ru<br>Initializing service | intime service is running.  |  |
| 2016/04/24                    | 22:17:25                       | MX-AOPC UA Logger ru                         | intime service is stop      |  |
| 2016/04/24                    | 22:16:57                       |  | sucessfully connected t     | o database!  |
| 2016/04/24                    | 22:16:57                       |  | is invalid. No tag is selec |  |
| 2016/04/24                    | 22.10.07                       | MY AODC LIA Langer PL                        |                             |  |
|                               |                                | Ш  |                             | •  |
| Service Status : Run          | ning Time: 2                   | 2:17:32                                      |                             | al.  |

5. All of the loggers in the logger group will be in recording mode (indicated by red lights).

| MX-AOPC UA Logger                          | -           |       |                            |
|--|-------------|-------|----------------------------|
| <u>File Server Logger Tools Runtime He</u> | elp         |       |                            |
|  |             |       | 0 😂 🚭                      |
| 🖃 🗤 💵 Server Group                         | Logger Name | Туре  | Output                     |
| Server 1(192, 168, 12, 112: 53192)         | Logger 1    | Excel | C:\Users\Public\Documents\ |
|  | Logger2     | Excel | C:\Users\Public\Documents\ |
|  |             |       |                            |
|  |             |       |                            |
| 🖃 🗑 Logger Group List                      |             |       |                            |
| i → ··· ··· ··· ··· ···················    |             |       |                            |

6. To start recording a specific logger, right click on the logger and then click **Start Recording** in the popup menu, or click the logger to select it and then click the **Start Recording** icon on the Quick Launch toolbar.

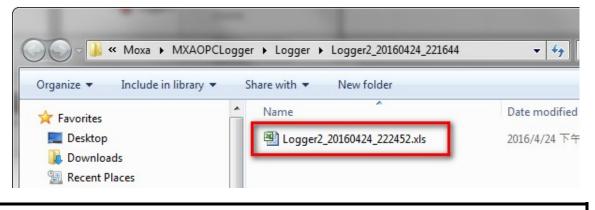


7. To stop recording, right click on the logger group or the logger and then click **Stop Recording** in the popup menu, or click the logger group or the logger to select it and then click the **Stop Recording** icon on the Quick Launch toolbar.

| MX-AOPC UA Logger           |   |             |       |                         |
|-----------------------------|---|-------------|-------|-------------------------|
| <u>File Server Logger T</u> | ools <u>R</u> untime <u>H</u>           | elp         |       |                         |
|                             |   |             | f 🕯 🤇 | 0 🕹 🛃                   |
| 🖃 🗤 🗊 Server Group          |   | Logger Name | Туре  | Output                  |
| Server 1(192.1              | 168.12.112:53192)                       | Logger 1    | Excel | C:\Users\Public\Documen |
|                             |   | Logger2     | Excel | C:\Users\Public\Documen |
| Logger Group List           | New Logger<br>Delete<br>Start Recording |             |       |                         |
|                             |   |             |       |                         |
|                             | Stop Recording                          |             |       |                         |
|                             | Properties                              |             |       |                         |
|                             |   |             |       |                         |

8. To check the recorded data, stop the runtime service and click the data folder of the logger. Open the data file in the folder to check the recorded data.

| MX-AOPC UA Logger                              |  | x |
|--|--|---|
| <u>File Server Logger Tools Runtime Help</u>   | 0  |   |
|  | e e 🖇 🗑 🔾 e e  |   |
| Server Group<br>Server 1(192.168.12.112:53192) | Recording         Start       Stop         Automatically start recording when service starts running         Tag Selection         Image: Selected Tags         Selected Tags         Selected Tags         Server Name         Image: Server Name         Server Name         Image: Server Name | E |
|  | Data Field Table Field Data Type Orde ^  | - |
| Date Time Event                                |  |   |
|  | UA Logger runtime service is stop.<br>rding logger group 'LoggerGroup 1'   |   |
| 2016/04/24 22:47:20 Startrecord                |  |   |
| Service Status : Stop Time: 23:12:13           |  |   |



- **NOTE** Be sure to close the Excel or Access file at the target root path before starting to record. Otherwise, the MX-AOPC UA Logger will not be able to record data to the target file.
- **NOTE** DO NOT open the spreadsheet when recording. Doing so will cause the file to be corrupted because it is already opened by the MX-AOPC UA Logger service. To open the spreadsheet, stop the runtime service of the MX-AOPC UA Logger, and then click the folder icon to access the file.

## Logger Status

The following table gives the meanings of the logger status indicator lights.

| Light | Color         | Status                     | Note   |
|-------|---------------|----------------------------|--|
|       |               |                            | The logger can be configured only when           |
|       |               |                            | runtime service stops.                           |
|       |               |                            | Any configuration change will be updated to the  |
| 6     |               |                            | Logger's runtime service after starting the      |
|       | Solid Gray    | Configurable Mode          | runtime service. Without starting the runtime    |
|       |               |                            | service, any change will be discarded after the  |
|       |               |                            | configuration console is closed. Be sure to save |
|       |               |                            | your project file when you close the             |
|       |               |                            | configuration console.                           |
|       | Solid Green   | Ready Mode                 | The logger is ready for recording.               |
| ۲     | Solid Red     | Recording Mode             | The logger is recording.                         |
|       |               |                            | The logger is not configured correctly, and data |
|       | Solid Yellow  | Error Mode – Configuration | is not being saved to the database.              |
|       | Solid Tellow  |                            | Check the tag selection or database connection   |
|       |               |                            | of the logger.                                   |
|       |               |                            | A server related to some selected tags is        |
|       | Flashing Red  | Error Mode – Server        | disconnected.                                    |
|       | and Yellow    |                            | Check the server connection or server's          |
|       |               |                            | Endpoint settings.                               |
|       | Flashing Pink |                            | The logger is retrieving supplementary data      |
|       | and Gray      | Data Supplement Mode       | from device's buffer storage or supplementing    |
|       | ana oray      |                            | data into the database.                          |

# **License Registration and Activation**

Three versions of the MX-AOPC UA Logger are available. The trial version, which supports up to 1 MX-AOPC UA Server connection and up to 1 data logger, can be installed and used for 30 days without registration. To use the free and paid versions you must submit a license registration. Both free and paid versions can be used indefinitely, but the free version only supports up to 1 MX-AOPC UA Server connection and up to 1 data logger. The three versions are summarized in the following table:

| Version | MX-AOPC UA Server connection | Data Logger | Run Time  | License File |
|---------|------------------------------|-------------|-----------|--------------|
| Trial   | Up to 1                      | Up to 1     | 30 days   | Not Required |
| Free    | Up to 1                      | Up to 1     | Unlimited | Required     |
| Paid    | Up to 2                      | Up to 10    | Unlimited | Required     |

Take the following steps to register a license.

#### Step 1:

Get the PC User Code from the MX-AOPC UA Logger's configuration console by clicking  $Help \rightarrow License$ . For the paid version, you will need to purchase a registration code from your Moxa distributor. The Registration Code can be found on the product label.

| User Code:                 | 464EB14358CD |
|----------------------------|--------------|
| User Code.                 | 101201133000 |
| License Status:            | Free Version |
| The max. number of Server: | 1            |
| The max. number of Logger: | 1            |
|                            |              |
|                            | ОК           |

| ΜΟΧΛ°                               |                                      |
|-------------------------------------|--------------------------------------|
| MN:                                 |                                      |
| Product S/N:                        |                                      |
| Rev.: 1.0.0                         |                                      |
|                                     | Made in Taiwan<br>P/N: 3093018000021 |
| Registration Code: TZAD010000001231 |                                      |

#### Step 2:

Go to Moxa's Software Licensing website (<u>http://license.moxa.com</u>) and log in with your Moxa account and password, or apply for an account if this is your first visit to the site.

#### Step 3:

On the Software Licensing website, navigate to Activate Your Software  $\rightarrow$  Software Package  $\rightarrow$  MX-AOPC UA Logger. Select Free Version and enter the User Code, or select Paid Version and enter both the User Code and Registration Code.

| Μ      |  | Software Licensing                   |
|--------|--|--------------------------------------|
| Home 2 | > Activate Your Software >                       | Software Package > MX-AOPC UA Logger |
| ٢      | Free Version<br>User Code:                       |                                      |
| ۲      | Paid Version<br>Registration Code:<br>User Code: | Submit                               |

#### Step 4:

Download the license file to a folder on your PC and unzip it.

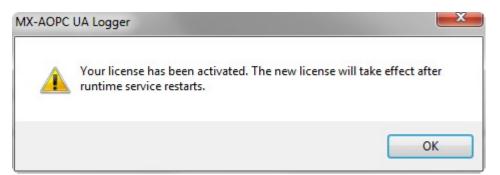
#### Step 5:

From the MX-AOPC UA Logger's configuration console, click Help  $\rightarrow$  Licensing  $\rightarrow$  Add License File to add the license file (.lic) to the MX-AOPC UA Logger.

| ile <u>S</u> erver <u>L</u> ogger <u>T</u> ools <u>R</u> untime <u></u> | lelp        |                    |
|---|-------------|--------------------|
|   | Logger Help | AARR               |
|   | Licensing   | License Info       |
| 🖃 🗤 📳 Server Group  | About       | Add License File   |
| 퉳 Server 1 (192. 168. 12. 112: 53192)                                   |             | Deactivate License |

#### Step 6:

After license activation is complete, go to  $Help \rightarrow License Info$  to check the current license status.



| OK        |
|-----------|
|           |
|           |
| ×         |
| ×         |
|           |
| <b></b> X |
|           |

# **System Performance Reference**

These performance results provide a reference for evaluating MX-AOPC UA Logger's capability when designing a system architecture. The results show the maximum number of tags of data that can be recorded into the database without resulting in a data queue.

- CPU: i7-4790, 3.60 GHz
- **RAM:** 8 GB
- Operating System: Microsoft Windows 7
- Editor: Microsoft Office 2010 Access and Excel
- Database: Oracle database, Microsoft SQL Server, MySQL
- OPC UA Software: MX-AOPC UA Server & MX-AOPC UA Logger
- Cloud: Azure IoT
- Test Case:
  - > One database at a time
  - Disabled data supplement function
  - > Only running real-time data recording function

| Database Type | Database      | Max. No. of Tags | Max. No. of Tags |
|---------------|---------------|------------------|------------------|
|               |               | (per 1 second)   | (per 5 seconds)  |
| File          | Excel         | 600              | 3000             |
| File          | Access        | 600              | 3000             |
| DSN           | Excel         | 600              | 3000             |
| DSN           | Access        | 600              | 3000             |
| DSN           | Microsoft SQL | 400              | 2000             |
| DSN           | Oracle        | 400              | 2000             |
| DSN           | MySQL         | 10               | 50               |
| Cloud         | Azure IoT     | 50               | 250              |

# **Database Connection Settings**

In this chapter, we explain how to connect a Logger to a Microsoft SQL Server or Oracle database.

1. Open **ODBC Data Source Administrator** by typing "ODBC" in the Windows Start search field, and then click **Data Sources (ODBC)**.

| Dragrams (1)                  |
|-------------------------------|
| Programs (1)                  |
| Data Sources (ODBC)           |
| Control Panel (1)             |
| 💮 Set up data sources (ODBC)  |
|                               |
|                               |
|                               |
|                               |
|                               |
|                               |
|                               |
|                               |
|                               |
|                               |
|                               |
| See more results              |
|                               |
| odbc × Shut down +            |
| 🚱 😥 Local Disk (C:) 🔰 Windows |

2. Click the System DNS tab and then click Add.

| ser DSN  | System DSN                     | File DSN    | Drivers  | Tracing   | Connection Poolin      | g About      |
|----------|--------------------------------|-------------|----------|-----------|------------------------|--------------|
| System D | ata Sources:                   |             |          |           |                        |              |
| Name     | Driver                         |             |          |           |                        | A <u>d</u> d |
|          |                                |             |          |           |                        | Remove       |
|          |                                |             |          |           | C                      | onfigure     |
|          |                                |             |          |           |                        |              |
|          |                                |             |          |           |                        |              |
|          |                                |             |          |           |                        |              |
|          |                                |             |          |           |                        |              |
|          | A 0000 C                       |             |          |           | tion about how to c    |              |
|          | the indicated<br>on this machi | data provid | er. A Sy | stem data | source is visible to a | all users    |

 Select ODBC driver for Oracle if you are using an Oracle database, and select ODBC Driver xx for SQL Server if you are using a Microsoft SQL Server. In the example shown below, "ODBC Driver 11 for SQL Server" is selected. Click Finish to go to the next step.

| Create New Data Source | Select a driver for which you want  | to set up a data source. |
|------------------------|-------------------------------------|--------------------------|
|                        | Name                                | V ^                      |
|                        | Microsoft Text Driver (*.txt; *.csv | ) 6                      |
| 011 0                  | Microsoft Text-Treiber (*.txt; *.cs |                          |
|                        | Microsoft Visual FoxPro Driver      | 1                        |
|                        | Microsoft Visual FoxPro-Treiber     | 1                        |
|                        | ODBC Driver 11 for SQL Server       |                          |
|                        | SQL Server                          | 6 ≡                      |
|                        | SQL Server Native Client 11.0       | 2 +                      |
|                        | < III                               | - F                      |
|                        | < Back                              |                          |

**NOTE** MX-AOPC UA Logger supports Oracle database (x86) and Microsoft SQL Server (x86) connections.

4. Type a name for the data source in the **Name** field. Click the **Server** field down arrow to search for instances of SQL Server. Select your target SQL Server, and then click **Finish**.

| Create a New Data Sou | irce to SQL Server   |
|-----------------------|--|
| 1 Alexandre           | This wizard will help you create an ODBC data source that you can use to connect to<br>SQL Server. |
| SOL Server            | What name do you want to use to refer to the data source?  |
|                       | Name: MSSQL  |
|                       | How do you want to describe the data source?   |
|                       | Description:   |
|                       | Which SQL Server do you want to connect to? Server: IE11WIN7\SQLEXPRESS                            |
|                       |  |
| prozeste concorte     |  |
|                       |  |
|                       |  |
|                       |  |
|                       | Finish Next > Cancel Help  |

5. Click Test Data Source to test the connection, or click OK to proceed.

| ODBC Microsoft SQL Server Setup   | ×   |
|---|-----|
| A new ODBC data source will be created with the following configuration   | on: |
| Microsoft ODBC Driver for SQL Server Version 12.00.2000<br>Data Source Name: MSSQL<br>Data Source Description:<br>Server: IE11WIN7\SQLEXPRESS<br>Use Integrated Security: Yes   | *   |
| Use Integrated Security: Yes<br>Database: (Default)<br>Language: (Default)<br>Data Encryption: No<br>Trust Server Certificate: No<br>Multiple Active Result Sets(MARS): No<br>Translate Character Data: Yes<br>Log Long Running Queries: No<br>Log Driver Statistics: No<br>Use Regional Settings: No<br>Use Regional Settings: No<br>Use ANSI Quoted Identifiers: Yes<br>Use ANSI Quoted Identifiers: Yes<br>Server Service Principle Name(SPN):<br>Mirror Server Service Principle Name(SPN): |     |
| Test Data Source OK Cancel  |     |

6. Click  ${\bf OK}$  to complete the ODBC Data Source settings.

| Sources:<br>iver<br>DBC Driver 1 | 11 for SQL  | Seaver                  |                                 | Add   |
|----------------------------------|-------------|-------------------------|---------------------------------|---|
|                                  | 11 for SQL  | Capitar                 |                                 | Add   |
| BC Driver 1                      | 1 for SQL   | Conver                  |                                 |   |
|                                  |             | Server                  |                                 | Remove  |
|                                  |             |                         |                                 | Configure   |
| e indicated                      | data provid | ler. A Sys              | stem data                       |   |
| ١                                | e indicated | e indicated data provid | e indicated data provider. A Sy | n ODBC System data source stores information about how t<br>le indicated data provider. A System data source is visible<br>n this machine, including NT services. |

7. Select the Database option when setting the Logger's data destination, and then click Setting.

| Logger Name | Logger 1     |  |        |
|-------------|--------------|--|--------|
|             | (max. leng   | th = 30)   |        |
| C Excel Fi  | le:          |  |        |
| Root Path:  |              | C: \Users \Public \Documents \Moxa \MXAOPCLogger \Logger |        |
| -           |              |  |        |
| Access      | File:        |  |        |
| Root Path:  |              | C: \Users \Public \Documents \Moxa \MXAOPCLogger \Logger |        |
| Databa      | se:          |  |        |
|             | e Name:      | S  | etting |
| 🔘 Azure I   | oT:          |  |        |
| Conne       | ction String | :  |        |
|             |              |  |        |

8. Click the Machine Data Source tab, select the SQL Server data source, and then click OK.

|   | L                              |             |  |
|---|--------------------------------|-------------|--|
| Data Source Name  | Туре                           | Description |  |
| dBASE Files<br>Excel Files<br>MS Access Database<br>MSSQL | User<br>User<br>User<br>System | New         |  |
|   |                                |             |  |

**NOTE** DO NOT click **NEW** from this window to configure ODBC Data Source settings. You will not be able to successfully connect the logger with the database.

 The data source name is displayed in the Source Name field. Click NEXT to continue the Logger Settings. Refer to Chapter 5 for information about the following settings.

| Logger 1    |   |
|-------------|---|
| (max. leng  | gth = 30)   |
| e:          |   |
| ath:        | C:\Users\Public\Documents\Moxa\MXAOPCLogger\Logger  |
|             |   |
| -ile:       |   |
| ath:        | C: \Users\Public\Documents\Moxa\MXAOPCLogger\Logger |
| e:          |   |
| Name:       | MSSQL Setting                                       |
| T:          |   |
| tion String | g:  |
|             | e:<br>ath:<br>iile:<br>ath:<br>e:<br>Name:<br>T:    |