MX-AOPC UA Server User's Manual

Edition 3.3, February 2018

www.moxa.com/product



MX-AOPC UA Server User's Manual

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1 Introduction

The following topics are covered in this chapter:

- Overview
- **System Requirements**
- Specifications

Overview

Moxa has pioneered the concept of "active type" OPC software in the automation industry. The patented MX-AOPC UA Server offers both polling (Modbus protocol) and non-polling (Moxa AOPC protocol) architectures alongside the standard OPC UA protocol, giving users the alternative of pull or push-based communication from Moxa's devices. OPC UA (Unified Architecture), which features more secure and reliable data communication between OPC servers and clients, is the next generation OPC standard (IEC 62541). By using Moxa's MX-AOPC UA Server, users can enjoy more secure and reliable data exchange and control.

The MX-AOPC UA Server includes:

- Server Runtime Service: Starts as a service by default after installation.
- Configuration Console: An offline configuration tool for configuring server settings.
- Viewer: An OPC client that allows developers, testers, and integrators to easily view tag values and test MX-AOPC UA Server and connections.

System Requirements

Hardware Requirements

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

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 Excel or later

Specifications

OPC Server Specifications

OPC Unified Architecture: 1.02 OPC Data Access: 1.0a, 2.0, 2.05a, 3.0 Device Protocols: Moxa AOPC, Modbus/TCP (master), Modbus/RTU (master)

Products that Support AOPC Protocol

ioLogik: ioLogik 2500 Series, ioLogik E1200 Series, ioLogik E1500 Series, ioLogik E2200 Series, ioLogik E4200, ioLogik W5300 Series, ioPAC 8500 Series, ioPAC 8600 Series

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

Fully Supported OPC UA Server Profiles

Standard UA Server Profile

Core Server Facet

- User Token User Name Password Server Facet
- SecurityPolicy None
- Data Access Server Facet

UA-TCP UA-SC UA Binary

User Token - X509 Certificate Server Facet

SecurityPolicy - Basic128Rsa15

SecurityPolicy - None

2

Getting Started

The following topics are covered in this chapter:

- Installing MX-AOPC UA Server
- Configuring Active Tags
- **Opening the Configuration Console**
- Configuring Server Settings
- Configuring Devices and Tags
 - Adding a Modbus Device
 - Creating Modbus Tags
- Updating Configurations to the Server
- Using the Viewer to Check Tag Values
- Configuring OPC UA Settings

Installing MX-AOPC UA Server

MX-AOPC UA Server can be downloaded from the Moxa website at www.moxa.com.

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

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

Configuring Active Tags

MX-AOPC UA Server will automatically receive active tags from Moxa's remote devices through the Moxa AOPC protocol once the tags are created. Refer to the device's user's manual to learn how to use the device's configuration utility to create active tags.

Opening the Configuration Console

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

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

Main Network Adapter:	Intel(R) Ethernet Connection (3) I218-LM
Note: The main network	adapter peeds to be enabled for starting runtime service
	adapter needs to be enabled for starting runtime service. nodified after this configuration.

The configuration console is an offline configuration tool for configuring Server Runtime settings. When the configuration console is launched, it will automatically get the latest configurations from the Server Runtime. If any active tag is received, the device will be listed in the **Active Device List**. To manually get the latest configurations from the Server Runtime, click the **Get Configuration from Server** icon on the MX-AOPC UA Server menu bar. To manually update the settings to the Server Runtime, click the **Update Configuration to Server** icon on the menu bar.

MX-AOPC UA Server	
<u>File Edit View Tools Runtime He</u>	elp
1 🗊 💼 🗊 🌒 🗟	a 🕸 🛠 🗡 🖻 🛱 🗿 🗿 🧶
Active Device List	Group No Group Name
Date Time Eve	nt
4	111
Service Status: Running Time: 16:02:4	
Service States Hamming Time 10.02.	

NOTE The first time you use MX-AOPC UA Server, we recommend turning off, or adding rules to, the Windows Firewall and then checking to see if MX-AOPC UA Server is able to receive active tags. If it can, turn the Windows Firewall back on and check it again. If MX-AOPC UA Server does not receive any active tags after you turn on the Windows Firewall, add aopcservice.exe in the Firewall Inbound Rules, and set it to Allow for Private, Public, and Domain network profiles.

NOTE Be sure to update the settings to the Server Runtime after changing the configuration. Otherwise, the Server Runtime will not reflect the configuration changes made using the configuration console.

Configuring Server Settings

Before configuring devices and tags, configure the server settings described below under the **Tools** menu.

<u>File Edit View To</u>	ools <u>R</u> untime <u>H</u> elp		
	Serial Port Settings		X
Active Device E2242-01 Modbus Device	AOPC Settings DCOM Configuration OPC UA Settings	•	
	Viewer System Log Change Password	•	
	Options		

• 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 updating configurations to the Server Runtime or exporting the system log to a text file.

NOTE When connecting an OPC UA client to MX-AOPC UA Server, use account name "admin" (the account name cannot be changed) and whatever the password is. The password is the same as the system password, which can be updated using Tools → Change Password.

• Serial Port Settings

Configure the PC's Serial Port Settings if a serial device is connected to MX-AOPC UA Server.

)ata Bits:	8	▼ 5	top Bits: 1	•	Parity: None	-
ud Rate:	115200		Control: None	•	r	
0140	115000	N		•	NI	
COM9	115200	None	8	1	None	
COM8	115200	None	8	1	None	
COM7	115200	None	8	1	None	
COM6	115200	None	8	1	None	
COM5	115200	None	8	1	None	
COM4	115200	None	8	1	None	
COM3	115200	None	8	1	None	
COM2	115200	None	8	1	None	
COM1	115200	None	8	1	None	

• AOPC Settings

Configure **AOPC Settings** if a Moxa device updates Active Tags to MX-AOPC UA Server.

AOPC Settings		
Default Network Interface:	Intel(R) 82	577LM Gigabit Network Connection
Active Tag Listen Port:	9900	Enabled
Command Timeout:	30	sec(s)
Heartbeat Tolerance:	30	sec(s)
		OK Cancel

Configuring Devices and Tags

Adding a Modbus Device

1. Click the **Modbus Device Group List** to select it and then click the **New Device Group** icon and type in the name of the device group.

MX-AOPC UA Server	
<u>File Edit View Tools Runtime Help</u>	
💼 🗊 📻 🖬 🗊 🗊 🔊	🔊 📽 👗 🖻 🛙
Active Device List 2542-01 (00:90:e8:5a:21:6e) E2242-01:00:90:e8:21:b3:91) Modbus Device Group List	Group No Grou
Device Group Property	OK Cancel

2. Click the **New Device** icon and then configure the device properties.

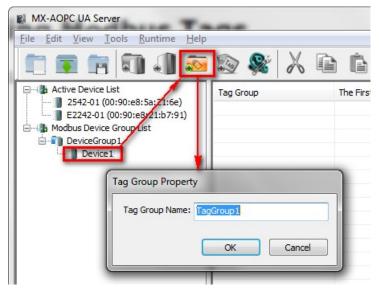
MX-AOPC UA Server	Figure 10-Magnes 1	i Mara I	Mars Maral	1.10.00
<u>File Edit View T</u> ools <u>Runtime H</u> elp				
🗐 🗊 🖀 🗊 🚺 题	🔊 🕵 🗶 🖻 🖻	😭 🖣 🦣		
Active Device List 2542-01 (00:90:e8:5a:21:6e) E2242-01 (00:90:e8:21:17:91) A Modbus Device Group List DeviceGroup1	Device Name Enabled	1	Communication Port	Protocol
Prot	Iame: Device] Port: Intel(R) Ethernet Connection (5 ▼ icocol: Modbus/TCP protocol	Enable Data Colle	ction	
Device Settings		Timeout Settings		
Device ID: 1	▼	Reconnect Delay:	3000	ms
IP Address:	0.0.0.0	Reconnect Cycles:	3	
Port: 502	2	Cycle Delay:	3	sec(s)
Delay between Polling; 100	00 (ms, 100 to 3600000; 0 disabled)	Polling Timeout:	3000	ms
Delay between Polining. 100	(IIIS, 100 to 3000000, 0 disabled)	Polling Retries:	3	
Date 2018/01/16				
2018/01/16 2018/01/16 2018/01/16			ОК	Cancel

3. Click the device group you just created to display a list of the devices in this group.

MX-AOPC UA Server			Public further		
<u>File Edit View Tools Runtime H</u> elp					
🗊 🗊 📅 🗊 🌒 🔊	🔊 💸 🗡 🖻	à 🔓 🔒 🐌			
Active Device List	Device Name	Enabled	Communication Port	Protocol	Device ID
2542-01 (00:90:e8:5a:21:6e) 2542-01 (00:90:e8:5a:21:67:91) E2242-01 (00:90:e8:21:b7:91) Modbus Device Group List DeviceGroup1 Device1	Device1	Yes	Intel(R) Ethernet Connect	Modbus/TCP protocol	1

Creating Modbus Tags

1. Click the device name to select it and then click the **New Tag Group** icon and type in the name of the tag group.



2. Click the **New Tag** icon and then configure the tag properties.

MX-AOPC UA Server						-	
<u>File Edit View T</u> ool	s <u>R</u> untime <u>H</u> elp						
	1 1 2	<u> 8</u>	8 X	Þ	Ô		-
□····································	oup List	The First Ta	g Name		'he Last '	Tag Nam	
	Tag Property						
	Function Code:	01: Read/V	Vrite Coils (Oxxxx)		•	
	Access:	Read/Write					
	Tag Name:	Tag1				_	
						_	
	Description:					_	
	Start Address:	0					
	Coil Length:	1	(1 to 200	00)			
	Data Type:	Boolean				•	
Date Time	Start Number:	0	(0 to 99)			
2018/01/16 10:52	2						
2018/01/16 10:52		None				_	
2018/01/16 10:52	Tag Quantity:	1					
2018/01/16 10:52							
2018/01/16 10:52 2018/01/16 10:52			Oł		Cano	el	
2018/01/16 10:52	C	2042-01.AI-	ULISTIPAD	-0.	_	_	J.

3. The tag will be listed in the tag group.

MX-AOPC UA Server					
<u>File Edit View T</u> ools <u>R</u> untime	<u>H</u> elp				
🔁 🖬 🖀 🗊 🗐	🔊 📚 🕵 📈	🖻 🖻 🔐 都			
Active Device List	The First Tag Name	The Last Tag Name	Tag Type	Function Code	Access
Modbus Device Group List	🤏 Tag 1		Polling	1	Read/Write
🖃 🗐 Device 1					

Updating Configurations to the Server

When you finish updating the configuration, click the **Update Configuration to Server** icon to update the configuration to the Server Runtime. When the **Verify Password** window pops up, enter the correct password and then click **OK** to activate the changes.



Using the Viewer to Check Tag Values

After completely updating the Server Runtime settings, click the **Viewer** icon to open the viewer to check that the tag value is correct.

MX-AOPC UA Server			
<u>File Edit View Tools Runtime Help</u>			
🗐 🗊 💼 🗊 🗊 🔊	🔊 📽 🗡 🗈	È 🔐	A 🖉
Active Device List	Group No 1	Group Name DeviceGroup1	

<u>F</u> ile <u>T</u> ools <u>H</u> e	lp								
E Active Dev		Tag Name	Data Type	Value	Device timestamp (UTC)	Time Zone	UTC+T.Z.	Quality	Update Coun
E2242 Modbus De Device	Group1	🗞 Tag1	Boolean	1	05:20:34.118 2018/01/16	UTC+8	13:20:34.118 2018/01/16	Good	405
< [•	•			m				
Date	Time	Event							
2018/01/16	13:20:32		-01.AI-01 changes						
2018/01/16	13:20:27		-01.AI-03 changes						
2018/01/16	13:20:23		-01.AI-03 changes						
2018/01/16	13:20:23		-01.AI-01 changes						
2018/01/16	13:20:18		-01.AI-03 changes						
2018/01/16 2018/01/16	13:20:18 13:20:13		-01.AI-01 changes -01.AI-03 changes						
2018/01/16	13:20:13		-01.AI-03 changes -01.AI-01 changes						
2018/01/16	13:20:13		-01.AI-01 changes -01.AI-03 changes						
2018/01/16	13:20:04				ag1 changes the value from 0 to	1			
2010/01/10	13.20.01		01 AT 02			-			

The device tree in the left panel should be the same as the tree displayed by the configuration console. Click a tag group name to display the group's tag values in the right panel.

Configuring OPC UA Settings

You should configure OPC UA settings before connecting an OPC UA client to MX-AOPC UA Server. To access OPC UA Settings options, click **Tools** \rightarrow **OPC UA Settings**. Instructions for each option are given below.

MX-AOPC UA Sen	ver								
<u>File Edit View T</u>	ools <u>R</u> untime <u>H</u> elp								
	Serial Port Settings		X		Ê		4	-	<u>La</u>
Active Device	DCOM Configuration		Group Name						
Modbus Devic	OPC UA Settings		Server Endpoints Settings						
in T	Viewer System Log		Security Policy Certificates Management						
	Change Password								
	Options								

• Server Endpoints Settings

"Server Endpoints Settings" are a list of interfaces that UA clients can use to communicate with MX-AOPC UA Server. MX-AOPC UA Server supports Universal Resource Locator (URL) binary type protocols.

To add a new interface to the list, select the appropriate network interface in the **Network Interface** drop-down box and type the port number for the URL in the **Port Number** input box. Click **Add** to add this new server endpoint to the list.

Server Endpoints S	ettings	×	
URL		Status	
opc.tcp://192.168	.12.112:53192/MXAOPC/UAServer	Valid	
Network Interface:	Intel(R) 82577LM Gigabit Network Cor	nnection 🔻	
Port Number:	53192		
r or critainiber.			
	opc.tcp://192.168.12.112:53192/MXA	OPC/UAServer	
Add	Delete Apply	Close Help	

• Security Policy

The security policy is applied to connections between OPC UA clients and MX-AOPC UA Server. Security options that can be selected are **None**, **Basic128Rsa15: Sign**, or **Basic128Rsa15: Sign and Encrypt**. If Basic128Rsa15: Sign, Basic128Rsa15: Sign and Encrypt, or both of these options are selected, you will need to configure **Certificates Management** settings (see below).



NOTE The default Account and Password for connecting an OPC UA client to the server are:

Account: admin

Password: moxa

The account name cannot be changed. To change the password, click **Tools** \rightarrow **Change Password**.

• Certificates Management

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

Click the **Trust Clients** tab, click **Import**, and select the client's CA file to import it into MX-AOPC UA Server.

rust Clients Instance Certificates	
Client Name	URI
👷 UA Local Discovery Server	um:charleszk-chen.moxa.com:UALocalDiscovery
٠ (الله الله الله الله الله الله الله ال	4
Import Export Remove	Reject View Certificate

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

Certificates Management		×
Trust Clients Instance Certificates		
View Server Certificate Export Server Certificate	Certificate MX-AOPC UA Server is from 2014/10/28 09:42:23 AM to 2019/10/2 09:42:23 AM	
Reissue Certificate		
	Close	elp

Click the **Update Configuration to Server** icon to enable any changes that have been made to the OPC UA configuration.

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

3

Configuration Console

The following topics are covered in this chapter:

- Main Screen Overview
- Menu Items
 - > File
 - ≻ Edit
 - > View
 - > Tools
 - > Runtime
 - > Help

Main Screen Overview

MX-AOPC UA Server's configuration console displays the mapped I/O device with the settings of every I/O tag. It also shows the Server Runtime status and number of OPC clients.

ile <u>E</u> dit <u>V</u> i	iew <u>T</u> ools <u>R</u> ur	ntime <u>H</u> elp <mark>2</mark>				
	E		2 📽 🗡 🗈	ê 🔒 🐌 🦊	3 🍯	
- Active D		Т	ag Name	Data Type	Access Rights	Description
	42-01 (00:90:e8:16:	e7:15)	> E2242-01.DI-00	Boolean	Read-only	DI
Moabus ∰	Device Group List	ę	E2242-01.DI-01	Boolean	Read-only	DI
È II I			E2242-01.DI-02	Boolean	Read-only	DI
	TagGroup1	9	E2242-01.DI-03	Boolean	Read-only	DI
	i ugoroup i	ę	E2242-01.DI-04	Boolean	Read-only	DI
		4	> E2242-01.DI-05	Boolean	Read-only	Door Status
		ę	> E2242-01.DI-06	Boolean	Read-only	DI
		ę	E2242-01.DI-07	Boolean	Read-only	DI
	4	ę	E2242-01.DI-08	Boolean 5	Read-only	DI
			E2242-01.DI-09	Boolean	Read-only	DI
			E2242-01.DI-10	Boolean	Read-only	DI
		¥	> E2242-01.DI-11	Boolean	Read-only	DI
			E2242-01.SysConnect-00	Boolean	Read-only	System Connection
Date	Time	Event				
	Time 13:22:01	Event	the tag 'E2242-01.DI-11' is c	hanged to 0		
2014/12/29		Event The value of				
2014/12/29 2014/12/29	13:22:01	Event The value of The value of	- the tag 'E2242-01.DI-11' is c	hanged to 0		
2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01	Event The value of The value of The value of	the tag 'E2242-01.DI-11' is c	hanged to 0 hanged to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01	Event The value of The value of The value of The value of	the tag 'E2242-01.DI-11' is c the tag 'E2242-01.DI-10' is c the tag 'E2242-01.DI-09' is c	hanged to 0 hanged to 0 hanged to 0 hanged to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01	Event The value of The value of The value of The value of The value of	the tag 'E2242-01.DI-11' is of the tag 'E2242-01.DI-10' is of the tag 'E2242-01.DI-09' is of the tag 'E2242-01.DI-08' is of	hanged to 0 hanged to 0 hanged to 0 hanged to 0		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	Event The value of The value of The value of The value of The value of	the tag 'E2242-01.DI-11' is c the tag 'E2242-01.DI-10' is c the tag 'E2242-01.DI-09' is c the tag 'E2242-01.DI-08' is c the tag 'E2242-01.DI-07' is c	hanged to 0 hanged to 0 hanged to 0 hanged to 0 hanged to 0 6		
2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	Event The value of The value of The value of The value of The value of The value of	the tag 'E2242-01.DI-11' is c the tag 'E2242-01.DI-10' is c the tag 'E2242-01.DI-09' is c the tag 'E2242-01.DI-08' is c the tag 'E2242-01.DI-07' is c the tag 'E2242-01.DI-06' is c	hanged to 0 hanged to 0 hanged to 0 hanged to 0 hanged to 0 hanged to 0		
Date 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01 13:22:01	Event The value of The value of The value of The value of The value of The value of The value of	the tag 'E2242-01.DI-11' is of the tag 'E2242-01.DI-10' is of the tag 'E2242-01.DI-09' is of the tag 'E2242-01.DI-09' is of the tag 'E2242-01.DI-07' is of the tag 'E2242-01.DI-06' is of the tag 'E2242-01.DI-05' is of	hanged to 0 hanged to 0 hanged to 0 hanged to 0 hanged to 0 hanged to 0 hanged to 0		
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No.	Zone	Description
1	Software Title	Displays the name of the software: MX-AOPC UA Server
2	Menu	All configuration functions
3	Quick Launch Bar	Frequently used icons
4	Device View	All devices and tags
5	Detailed View	Detailed settings of the devices and tags
6	Log View	Server Runtime logs
7	Server Runtime Status	Shows if the Server Runtime Service is Running or Stopped
8	Server Time	Displays the server time (same as the PC's time)
9	Numbers of Device	Displays the number of devices listed in Device View
10	Numbers of OPC Client	Displays the number of OPC clients connected to MX-AOPC UA Server

Menu Items

All operations can be accessed from the following Menu items.

File

Use the **File** menu to manage project files, device tags, and server configuration.

<u>F</u> ile	<u>Edit View Tools Runtime</u>	<u>H</u> elp	
	New	Ctrl+N	6
	Open	Ctrl+0	8
	Save	Ctrl+S	10
	Save As		Ŀ
	Import	•	
	Export	+	Ŀ
	Get Configuration from Server		Ŀ
	Update Configuration to Server		Ŀ
	1 AOPC_Srv1.aop		Ŀ
	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.
- Import:
 - > Ethernet Modbus Device (.csv): Import Ethernet Modbus devices into device groups from a csv file.

Item	Format	Length	Note
DeviceGroupName	0 to 9, A to Z, a to z, Symbols	30	"." is not allowed.
DeviceName	0 to 9, A to Z, a to z, Symbols	30	"." is not allowed.
Enable	0: disable; 1: enable	-	
CommunicationPort	Network adapter name	-	
DeviceID	1 to 247	-	
IPAddress	xxx.xxx.xxx	-	
Port	0 to 65535	-	
ReconnectDelay(ms)	0 to 30000	-	
ReconnectCycle	0 to 10	-	
CycleDelay(sec)	0 to 86400	-	
PollingTimeout(ms)	0 to 30000	-	
PollingRetries	0 to 10	-	
DelayBetweenPolls(ms)	100 to 3600000; 0 disabled	-	

> Serial Modbus Device (.csv): Import Serial Modbus devices into device groups from a csv file.

Item	Format	Length	Note
DeviceGroupName	0 to 9, A to Z, a to z, Symbols	30	"." is not allowed.
DeviceName	0 to 9, A to Z, a to z, Symbols	30	"." is not allowed.
Enable	0: disable; 1: enable	-	
CommunicationPort	Serial port name	-	
DeviceID	1 to 247	-	
ResponseTimeout(ms)	0 to 30000	-	

> Device Tags (.csv): Import device tags into a Modbus device from a csv file.

Item	Format	Length	Note
GroupName	0 to 9, A to Z, a to z, Symbols	30	"." is not allowed.
TagName	0 to 9, A to Z, Symbols	30	"." is not allowed.
FunctionCode	1 to 4	-	1: Read/Write Coils
			2: Read Discrete Inputs
			3: Read/Write Holding
			Registers
			4: Read Input Registers
Address	0 to 65535	-	
DataType	Boolean	-	Use Boolean with
	Unsigned short integer		FunctionCode 1 or 2.
	Unsigned integer		• Use other DataTypes with
	Float		FunctionCode 3 or 4.
Description	0 to 9, A to Z, a to z, Symbols	25	
TagQuantity	1 to 2000 when function code is 1 or 2.	TagQuantity	
	1 to 125 when function code is 3 or 4.		
DataConversion	None	-	
	"LoByte & HiByte" (if Unsigned Short		
	Integer is defined)		
	"HiByte & LoByte" (if Unsigned Short		
	Integer is defined)		
	"LoWord & HiWord" (if Unsigned		
	Integer or Float is defined)		
	"HiWord & LoWord" (if Unsigned		
	Integer or Float is defined)		
StartNumber	0 to 99	-	

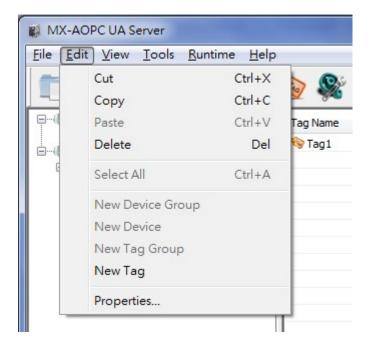
• Export:

- > Ethernet Modbus Device (.csv): Export Ethernet Modbus devices from device groups to a csv file.
- > Serial Modbus Device (.csv): Export Serial Modbus devices from device groups to a csv file.
- > Device Tags (.csv): Export device tags from a Modbus device to a csv file.
- **Get Configuration from Server:** Get the latest configuration from the Server Runtime.
- **Update Configuration to Server:** Update the configuration to the Server Runtime from the Configuration Console.
- Previous saved files: Quickly open previously saved project files.
- **Exit:** Close the Configuration Console.
- **NOTE** Active Tags cannot be imported into an Active Device folder in the Configuration Console from a csv file, or vice versa. Active Tags are automatically created by a Moxa active tag device. Refer to the **Specifications** section for the **Products that Support AOPC Protocol**, and refer to the device's user's manual to see how to create active tags using the device's configuration utility.

NOTE Execute the **Export** function to get a csv template.

Edit

Use the **Edit** menu to edit settings of devices and tags.



- **Cut:** Cut a tag group or selected tags.
- Copy: Copy a tag group or selected tags.
- Paste: Paste a cut or copied tag group into a device, or paste cut or copied tags into a tag group.
- Delete: Delete the selected device, a selected tag group, or selected tags.
- Select All: Select all tags in a tag group.
- New Device Group: Create a new device group.
- New Device: Create a new Modbus device.
- New Tag Group: Create a new tag group.
- New Tag: Create a new tag.
- **Properties:** Modify the settings of an existing device group, device, tag group, or tag.

NOTE The properties of an active device or active tag cannot be modified from the configuration console. Refer to the device's user's manual to see how to use the device's configuration utility to change active device or active tag settings.

View

Use the **View** menu to change the display settings of the Device View panel.

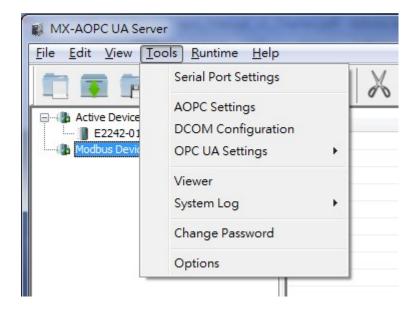
MX-AOF	C UA Server	
<u>File</u> <u>E</u> dit	<u>View</u> <u>T</u> ools <u>R</u> untime <u>H</u>	elp
	Expand All Devices	Ctrl+H
	Collapse All Devices re Device List	Ctrl+H Group No

• Expand All Devices: Expand all devices in the Device View panel.

• **Collapse All Devices:** Collapse all devices in the Device View panel.

Tools

Use the **Tools** menu to configure serial ports, OPC settings, system log, password, console environment settings, or to launch Viewer.



• Serial Port Settings

	Baudrate	Parity	Data Bits	Stop Bits	Flow Control	· · · · · · · · · · · · · · · · · · ·
COM1	115200	None	8	1	None	
COM2	115200	None	8	1	None	
COM3	115200	None	8	1	None	
COM4	115200	None	8	1	None	
COM5	115200	None	8	1	None	
COM6	115200	None	8	1	None	
COM7	115200	None	8	1	None	
COM8	115200	None	8	1	None	
COM9	115200	None	8	1	None	
0140	11000	N1	0	4	M	
	115200		Control: None	•		
Data Bits:	8	▼ S ¹	top Bits: 1	T	Parity: None	-

- > Baud Rate: 300 to 921600 bps; default: 115200 bps
- > Flow Control: None, RTS/CTS, or XON/XOFF; default: None
- > Data Bits: 5, 6, 7, or 8; default: 8
- Stop Bits: 1 or 2; default: 1
- > Parity: Even, Odd, or None; default: None

AOPC Settings

AOPC Settings		
Default Network Interface:	Intel(R) 825	77LM Gigabit Network Connection 🔹
Active Tag Listen Port:	9900	Enabled
Command Timeout:	30	sec(s)
Heartbeat Tolerance:	30	sec(s)
		OK Cancel

- Default Network Interface: Select a network interface that remote devices can use to connect to MX-AOPC UA Server.
- Active Tag Listen Port: The preferred TCP socket port for receiving active tags from remote devices (default: 9900).
- Command Timeout: The socket timeout interval (Port: 9500 and 9900) for controlling output channels on remote devices: 0 to 60; default: 30 sec.
- Heartbeat Tolerance: An additional timeout interval to wait for a heartbeat signal from remote devices: 0 to 60; default: 30 sec.
- DCOM Configuration: Configure DCOM settings for your security policy. Refer to Appendix A for details.

• OPC UA Settings

MX-AOPC UA Serve	er	And in case of the local division of the loc				
<u>File Edit View To</u>	ools <u>R</u> untime <u>H</u> elp					
	Serial Port Settings				4	1
	AOPC Settings			9	C.G.	
	DCOM Configuration	-	Group	Name		_
	OPC UA Settings	Server Endpoints Settings				
	Viewer System Log	Security Certifica	y Policy ates Mana	gemen	t	
	Change Password					
	Options					

> Server Endpoints Settings:

"Server Endpoints Settings" are a list of interfaces that UA clients can use to communicate with MX-AOPC UA Server. MX-AOPC UA Server supports Universal Resource Locator (URL) binary type protocols.

To add a new interface to the list, select the appropriate network interface in the **Network Interface** drop-down box and type the port number for the URL in the **Port Number** (default: 53192) input box. Click **Add** to add this new server endpoint to the list.

Server Endpoints S	ettings		×
URL		Status	
opc.tcp://192.168	. 12. 112: 53192/MXAOPC/UAServ	ver Valid	
Network Interface:	Intel(R) 82577LM Gigabit Netw	ork Connection	•
Port Number:	53192		
	opc.tcp://192.168.12.112:531	92/MXAOPC/UAServer	
Add	Delete Apply	Close	Help

> Security Policy

The security policy is applied to connections between OPC UA clients and MX-AOPC UA Server. Security options that can be selected are None, Basic128Rsa15: Sign, or Basic128Rsa15: Sign and Encrypt. If Basic128Rsa15: Sign, Basic128Rsa15: Sign and Encrypt, or both of these options are selected, you will need to configure Certificates Management settings (see below).

Security Policy Setting
✓ None
Basic 128Rsa 15 - Sign
Basic128Rsa15 - Sign and Encrypt
OK Cancel

NOTE The default Account and Password for connecting an OPC UA client to the server are:

> Account: admin Password:

moxa

The account name cannot be changed. To change the password, click **Tools** \rightarrow **Change Password**.

> Certificates Management

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

Click the Trust Clients tab, click Import, and select the client's CA file to import it into MX-AOPC UA Server.

Client Name			URI	
👷 UA Local Discovery Server		urn:charleszk-chen.n	um:charleszk-chen.moxa.com:UALocalDiscover	
•				,
Import	Export	Remove	Reject	View Certificate

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

Certifica	tes Management		X
Trust	t Clients Instance Certificates		
	View Server Certificate Export Server Certificate	Certificate MX-AOPC UA Server is from 2014/10/28 09:42:23 AM to 2019/10/2 09:42:23 AM	
	Reissue Certificate		
		Close	elp

Click the **Update Configuration to Server** icon to enable any changes that have been made to the OPC UA configuration.

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

- **Viewer:** Open the viewer to check that the tag value is correct.
- System Log

MX-AOPC UA Serve			And in case of the local division of the loc		
<u>File Edit View To</u>	ols <u>R</u> untime <u>H</u> elp				
	Serial Port Settings		XD	Ĝ 🔒 🖣	
Active Device	AOPC Settings			Group Name	
i i i i i i i i i i i i i i i i i i i		×		DeviceGroup1	
	Viewer				
	System Log	•	Save to Te	ext File	
	Change Password		Reset System Log System Log Settings		
	Options		-,	5 5 -	

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

Verify Password	J
Please enter password:	
••••	
OK Cancel	

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

ActiveOPC	
Do you want to reset system log?	Verify Password Please enter password:
Yes No	OK Cancel

System Log Settings: Defines the maximum number of records that can be saved in the MX-AOPC UA Server's system log: 1 to 30000; default: 30000.

System Log Sett	ings		
Event Records:	30000		(1~30000)
		ОК	Cancel

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

Change Password	×
Old Password:	
New Password:	
Confirm Password:	
	OK Cancel

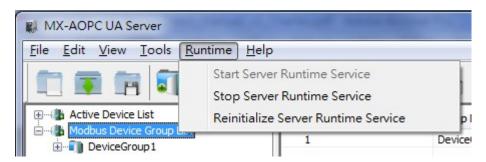
• **Options:** Configure environment settings for the server's configuration console.

otions	
Startup	
Get configuration from Server	
Open previous configuration file	e
Configuration File	
Automatically save configuration	n every 10 min(s)
Automatically save configuration	on before updating to server
Automatically save configuration	on before exiting this console
	OK Cancel

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

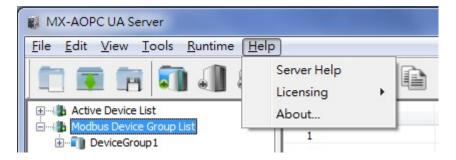
Runtime

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



Help

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



• **Server Help:** Launch MX-AOPC UA Server's help documentation.

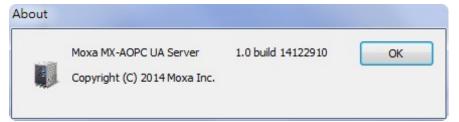
• Licensing

e Edit View Tools Runtime	Help			
h 🕿 📩 🗊 🕕	Server Help			
	Licensing	•	License Info	4
Active Device List	About		Add License File	•
Modbus Device Group List		-	Deactivate License	

License Info: Displays the server's User Code, License Status, and the Time Remaining on the license.
 Refer to Chapter 6: License Registration and Activation to learn how to activate the license.

User Code		×
User Code:	1613EB128766	
License Status:	Trial Version	
Time Remaining:	11 days	
		ОК

- Add License File: Import a license file after completing the license registration process. Refer to Chapter 6: License Registration and Activation to learn how to activate the license.
- Deactivate License: Deactivate the current paid license version and load factory default settings. Note that when you deactivate the license, your license file and runtime configurations will be deleted. Please backup your runtime configurations before executing a license deactivation procedure.
- About: Displays MX-AOPC UA Server's version number and build number.



Device Management

The following topics are covered in this chapter:

Device Group

- ➢ Adding a Device Group
- ➢ Editing a Device Group
- > Deleting a Device Group

Active Devices

> Deleting an Active Device from the Active Device Group List

Modbus Devices

- > Adding a Modbus Device to a Device Group
- > Importing a List of Modbus Devices into Device Groups
- > Editing a Modbus Device
- Deleting a Modbus Device
- > Moving a Modbus Device to a Different Device Group

Device Group

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

MX-AOPC UA Server's design logic is user-application oriented. As seen below, device groups can be created based on application, such as **SiteA** or **SiteB**.

ile <u>E</u> dit <u>V</u> i	iew <u>T</u> ools <u>R</u> ur	ntime <u>H</u> elp							
	Ē		😰 🕵				1	La contraction de la contracti	
🗐 📲 Active D			Group No		Group Name				
	42-01 (00:90:e8:16:	e7:15)	1		SiteA				
Modbus	Device Group List		2		SiteB				
	ioLogik E2242								
	Pump								
Site	3								
	ioLogik E2242								
	Pump								
			-						
			_						
Date	Time	Event					_		
	Time 13:22:01		e of the tag 'E	:2242-01.DI-11'	is changed to 0				
2014/12/29		The valu			is changed to 0 is changed to 0				
2014/12/29 2014/12/29	13:22:01	The valu The valu	e of the tag 'E	2242-01.DI-10					
2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01	The valu The valu The valu	e of the tag 'E of the tag 'E	2242-01.DI-10' 2242-01.DI-09'	is changed to 0				
2014/12/29 2014/12/29 2014/12/29 2014/12/29	13:22:01 13:22:01 13:22:01	The valu The valu The valu The valu	e of the tag 'E e of the tag 'E e of the tag 'E	2242-01.DI-10 2242-01.DI-09 2242-01.DI-08	is changed to 0 is changed to 0				
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Adding a Device Group

 Right click Modbus Device Group List and then click New Device Group in the popup menu, or click Modbus Device Group List to select it, and then click the New Device Group icon on the Quick Launch toolbar.



2. Type in the name of the device group (max. length = 30 characters; "." is not allowed), and then click **OK**.



3. The new device group will be added to the **Modbus Device Group List**.



Editing a Device Group

Right click the device group you would like to edit and then click **Properties** in the popup menu, or click the device group to select it and then click the **Properties** icon on the Quick Launch toolbar to open the properties window.



Deleting a Device Group

Right click the device group you would like to delete and then click **Delete** in the popup menu, or click the device group to select it and then click the **Delete** icon from the Quick Launch toolbar.



Active Devices

In this section we explain how to use the configuration console to delete active devices.

MX-AOPC UA Server will automatically receive the registration from a Moxa active device located at a remote site. Refer to the Moxa I/O device's user's manual to learn how to use the device's configuration utility to create active tags.

Deleting an Active Device from the Active Device Group List

Right click the active device you would like to delete and then click **Delete** in the popup menu, or click the active device to select it and then click the **Delete** icon from the Quick Launch toolbar.



NOTE After an active-device name is changed through the web console or configuration utility, delete the active device on the MX-AOPC UA Server and execute "Update Configuration to Server." The change will take effect the next time the device creates active tags to the MX-AOPC UA Server.

Modbus Devices

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

Adding a Modbus Device to a Device Group

Right click the device group you would like to add a new Modbus device to and then click **New Device** in the popup menu. You may instead click the device group to select it and then click the **New Device** icon on the Quick Launch toolbar.



Ethernet Communication Port

If an Ethernet communication port is selected, the **Device Property** configuration window will appear as shown below:

Device	e Name:	Device 1	✓ Enable Data Collect	tion	
Communicati	ion Port:	Intel(R) Ethernet Connection (3 💌]		
P	Protocol:	Modbus/TCP protocol			
Device Settings			Timeout Settings		
Device ID:	1	•	Reconnect Delay:	3000	ms
IP Address:	ο.	. 0 . 0 . 0	Reconnect Cycles:	3	
Port: !	502		Cycle Delay:	3	sec(s)
Delay between Polling:	1000	(ms. 100 to 3600000: 0 disabled)	Polling Timeout:	3000	ms
		····, ·····, · ·····,	Polling Retries:	3	
Delay between Polling:	1000	(ms, 100 to 3600000; 0 disabled)	-		m

- Device Name: Name of the Modbus device (max. length = 30; "." is not allowed).
- Enable Data Collection: Enable or disable data collection for this Modbus device.
- Communication Port: Select the communication interface of this Modbus device.
- Device ID: The device ID of this Modbus device (options: 1 to 247).

- IP Address: The IP Address of this Modbus device.
- Port: The TCP port of this Modbus device (options: 0 to 65535).
- **Delay between Polling:** The delay time after the server polls Modbus register(s) of this device (options: ms, 100 to 3600000; 0 disabled).
- **Reconnect Delay:** The delay time after the server tries to reconnect this Modbus device (options: 0 to 30000; default: 3000).
- Reconnect Cycles: The maximum number of reconnect cycles (options: 0 to 10; default: 3).
- **Cycle Delay:** The delay time after reaching the maximum number of reconnect cycles (options: 0 to 86400; default: 3).
- **Polling Timeout:** The timeout value when the server polls data from this Modbus device (options: 0 to 30000; default: 3000).
- **Polling Retries:** The maximum number of retries after a polling timeout occurs (options: 0 to 10; default: 3).

Polling Retry	Reconnect Cycle
Polling → When no response, waiting → Reached until Polling Timeout → Polling Retries	Reconnect \rightarrow When failure, waiting until Reconnect Delay Reached Reconnect Cycles Waiting until Cycle Delay
	Retry

Serial Communication Port

If a serial communication port is selected, the **Device Property** configuration window will appear as shown below:

Device Name:	Device1	Enable Data Collect	tion	
Communication Port:	COM1	•		
Protocol:	Modbus/RTU protocol			
evice Settings		Timeout Settings		
Unit ID: 1	•	Response Timeout:	3000	ms
		Polling Delay:	10	ms

The following configuration items only appear when a serial communication port is selected.

- **Response Timeout:** The timeout value when the server polls the data of this Modbus device (options: 0 to 30000; default: 3000).
- Polling Delay: The delay time after a polling timeout occurs (0 to 60000; default: 10).

The newly created device group will now be shown as belonging to this group.

MX-AOPC UA Server File Edit <u>V</u> iew <u>T</u> ools <u>R</u> untime <u>H</u> elp					
		n 🔿 🔊 🕷			
	🔊 📽 🗡 🖻				
Active Device List	Device Name	Enabled	Communication Port	Protocol	U
E2242-01 (00:90:e8:16:e7:15)	Device1	Yes	Intel(R) 82577LM Gigabit	Modbus/TCP protocol	1
Device Group 1	Device2	Yes	COM1	Modbus/RTU protocol	1
Device1					
Device2					

Importing a List of Modbus Devices into Device Groups

Right click the Modbus Device Group List and then click **Ethernet Modbus Device (.csv)** or **Serial Modbus Device (.csv)** in the popup menu to import a list of Modbus devices into device groups. Select a csv file on your PC to import the devices listed in the csv file into the Device Groups. Refer to **Chapter 3: Configuration Console** \rightarrow **Menu Items** \rightarrow **File** for detailed csv file formats.

ile <u>E</u> dit <u>V</u> iew <u>T</u> ools <u>R</u>	untime <u>H</u> elp							
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Active Device List		Group No		Group	Name			
E2242-01 (00:90:e8: E2242-01 (00:90:e8 Modbus Device Group Li	:21:b7:91)	1		Device	Group 1			
DeviceGroup1	New Devi	ce Group						
	Import	•	Ether	net Mod	lbus Dev	vice (.csv)		
	Export	. • Serial Modbus Device (.		1 3				

Editing a Modbus Device

Right click the Modbus device you would like to edit and then click **Properties...** in the popup menu, or click the Modbus device to select it and then click the **Properties** icon in the Quick Launch toolbar to open the properties configuration window.

MX-AOPC UA Server	-		
<u>File Edit View Too</u>	ols <u>R</u> untime <u>H</u> elp	5	
	D 🕕 🔊	N	Xe
Active Device List	· · · · · · · · · · · · · · · · · · ·	Tag Group	
Device.	New Tag Group Move to Device	Group	
	Paste Delete		Ctrl+V Ctrl+D
	Import Device Ta Export Device Ta		
Date Time	Properties		

NOTE You are not allowed to cut, copy, or paste a Modbus device.

Deleting a Modbus Device

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

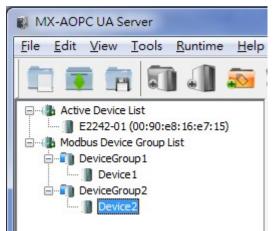
MX-AOPC UA Server				
<u>File Edit View T</u> oo	ls <u>R</u> untime <u>H</u> elp	1		
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Active Device List		Tag Group		Tag Name
Device2	New Tag Group Move to Device	Group	•	
	Paste		Ctrl+V	
	Delete		Ctrl+D	
	Import Device Ta	ags (.csv)		
	Export Device Ta	ags (.csv)		III
Date Tin	Properties			

Moving a Modbus Device to a Different Device Group

1. Right click the Modbus device and then click the target device group in the popup menu.

<u>File Edit View Too</u>	ols <u>R</u> untime <u>H</u> e	elp	XP	Ê. 🎱 🔊	
Active Device List		Tag Group	XB	Tag Name	Tag
Device2	New Tag Grou	p			
	Move to Devic	e Group	•	DeviceGroup1	
	Paste		Ctrl+V	DeviceGroup2	
	Delete		Ctrl+D		
	Import Device Export Device			m	
Date Tir	Properties				

2. The Modbus device will be moved to the target device group.



Tag Management

The following topics are covered in this chapter:

Tag Groups

- > Adding a Tag Group to a Device
- Editing a Tag Group
- Cutting a Tag Group
- > Copying a Tag Group
- Pasting a Tag Group
- > Deleting a Tag Group

Modbus Tags

- > Adding a Modbus Tag to a Tag Group
- > Importing a List of Modbus Tags into a Modbus Device
- Editing a Modbus Tag
- > Deleting a Modbus Tag

Tag Groups

In this section we explain how to use the configuration console to add, edit, cut, copy, paste, and delete tag groups.

Adding a Tag Group to a Device

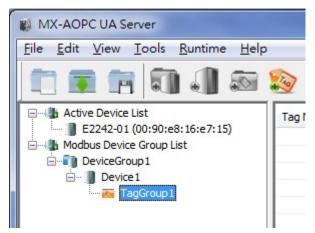
1. Right click the device that the tag group will be added to and then click **New Tag Group** in the popup menu, or click the device to select it and then click the **New Tag Group** icon on the Quick Launch toolbar.



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

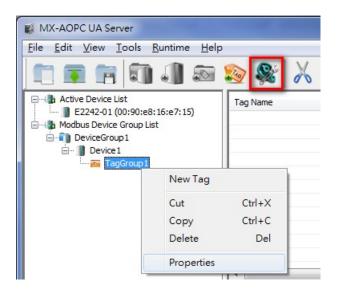
Tag Group Proper	ty	
Tag Group Name:	TagGroup 1	
	ОК	Cancel

3. The new tag group will be added to the device.



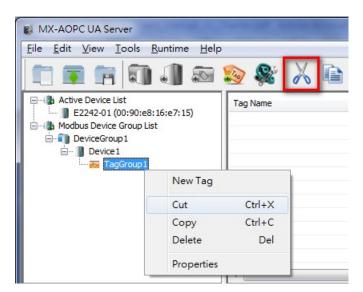
Editing a Tag Group

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



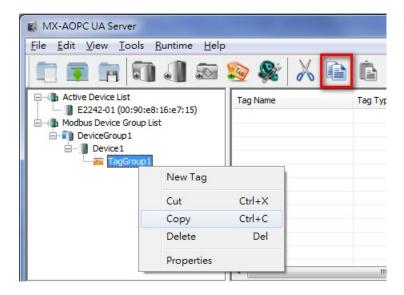
Cutting a Tag Group

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



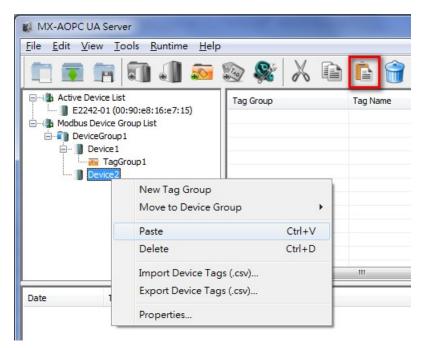
Copying a Tag Group

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



Pasting a Tag Group

Right click the Tag Group and then click **Paste** in the popup menu, or click the tag group to select it and then click the **Paste** icon on the Quick Launch toolbar.



Deleting a Tag Group

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

MX-AOPC UA Server				
<u>File Edit View Tools Runtime Help</u>	6			
	S 😵	XI	ì 🔓 😭	
Active Device List E2242-01 (00:90:e8:16:e7:15) Modbus Device Group List OviceGroup 1 Device1 MagGroup 1	Tag Name		Tag Type	
New Tag	-			
Cut Copy	Ctrl+X Ctrl+C			
Delete	Del			
Properties				

Modbus Tags

In this section we explain how to use the configuration console to add, edit, delete, and move a Modbus tag.

Adding a Modbus Tag to a Tag Group

 Right click the tag group that the Modbus tag will be added to and then click **New Tag** in the popup menu, or click the tag group to select it and then click the **New Tag** icon on the Quick Launch toolbar.



2. Edit the items in the **Tag Property** window as needed.

Function Code:	01: Rea	ad/Write Coils (0xxxx)
Access:	Read/W	rite
Tag Name:	Tag1	
Description:		
Start Address:	0	
Coil Length:	1	(1 to 2000)
Data Type:	Boolear	1
Start Number:	0	(0 to 99)
ata Conversion:	None	
Tag Quantity:	1	

- Function Code: Select the function code for this Modbus tag (options: 01: Read/Write Coils; 02: Read Discrete Inputs; 03: Read/Write Holding Registers; 04: Read Input Registers).
- > Address: Show Read/Write or Read-only attribute of this tag(s).
- **Tag Name:** The name of the Modbus tag (max. length = 30; "." is not allowed).
- **Description:** Description of this Modbus tag (max. length = 25).
- Start Address: Define the start address of this Modbus tag (0 to 65535).
- > Coil Length / Register Length: Define the length of the coil (1 to 2000) or the register (1 to 125).
- Data Type: Selecting the data type of this Modbus tag (options: Boolean; Unsigned short integer; Unsigned integer; Float).
- Start Number: Define the start number of the continuous coils or registers. The continuous coils or registers will be divided into different tags with unique name based on this number definition.
- > Data Conversion: Define the sequence of the High/Low Bytes or Words for the register(s).
- > **Tag Quantity:** Show the quantity of the tag(s).
- 3. Click the tag group to verify that the Modbus tag was added to this group.

K MX-AOPC UA Server											- C X
File Edit View Tools Runtime He	lp										
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Active Device List	The First Tag Name	The Last Tag Name	Tag Type	Function Code	Access	Start Address	Tag Qty	Data Type	Start Number	Data Conversion	Description
2542-01 (00:90:e8:5a:21:6e) E2242-01 (00:90:e8:21:b7:91)	🥎 Tag 1		Polling	2	Read-only	0000	1	Boolean	0	None	
Modbus Device Group List	🥸 Tag2_0000	Tag2_0002	Polling	1	Read/Write	0007	3	Boolean	0	None	
DeviceGroup1											
Device 1 TagGroup 1											

Importing a List of Modbus Tags into a Modbus Device

To import a list of Modbus tags into a Modbus device, right click the Modbus device and then click **Import Device Tags (.csv)** in the popup menu. Select a csv file on your PC to import the tags listed in the csv file into the Modbus device. Refer to **Chapter 3: Configuration Console** \rightarrow **Menu Items** \rightarrow <u>File</u> for detailed csv file formats.



Editing a Modbus Tag

Click the Modbus tag to select it and then click the **Properties** icon on the Quick Launch toolbar.

MX-AOPC UA Server			Paste		- C X
Eile Edit View Icols Runtime Help Image: State	SS 🕵 🗶 🗈	Ê 🔒 🐺	1		
Active Device List 2542-01 (00:90:e8:5a:21:6e) 2542-01 (00:90:e8:21:b7:91) BeviceGroup List DeviceGroup 1 DeviceT DeviceT Device1 TagGroup1	The First Tag Name	The Last Tag Name	Tag Type Polling	Function Code	Access Read-only

Deleting a Modbus Tag

Click the Modbus tag to select it and then click the **Delete** icon on the Quick Launch toolbar.

MX-AOPC UA Server					
<u>File Edit View Tools Runtime Help</u>					
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- Active Device List	The First Tag Name	The Last Tag Name	Tag Type	Function Code	Access
2542-01 (00:90:e8:5a:21:6e) E2242-01 (00:90:e8:21:b7:91)	🕸 Tag1	8	Polling	2	Read-only
🖻 📲 Modbus Device Group List					
DeviceGroup1					
TagGroup1					

License Registration and Activation

Three versions of MX-AOPC UA Server are available. The trial version, which supports up to 30 connected devices, 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 30 connected devices. The three versions are summarized in the following table:

Version	Connected Devices	Run Time	License File
Trial	Up to 30	30 days	Not Required
Free	Up to 30	Unlimited	Required
Paid	Unlimited	Unlimited	Required

Take the following steps to register a license.

Step 1: Get the PC User Code from the MX-AOPC UA server'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: User Code: License Status: Time Remaining:	1613EB128766 Trial Version 11 days		MOXA® MN: MX-AOPC UA Server Product S/N: IZAD010000001 Rev.: 1.0.0 Made in Taiwar P/N: 3093018000021
		ОК	Registration Code:

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 Server**. Select **Free Version** and enter the User Code, or select **Paid Version** and enter both the User Code and Registration Code.

ΜΟΧΛ	
Home > Activate Your Software >	Software Package > MX-AOPC UA Server
 Free Version User Code: Paid Version Registration Code: User Code: 	Submit

Step 4: Download the license file to a folder on your PC and unzip it.

Step 5: From MX-AOPC UA server's configuration console, click **Help** \rightarrow **Licensing** \rightarrow **Add License File** to add the license file (.lic) to MX-AOPC UA Server.

ile Edit View Tools Runtime 🛛	Help	
	Server Help	
	Licensing 🕨 🕨	License Info
Active Device List	About	Add License File
Modbus Device Group List		Deactivate License

Step 6: After license activation is complete, go to **Help** \rightarrow **License Info** to check the current license status.

ActiveOPC	User Code
Complete license activation.	User Code: 1613EB128766 License Status: Free Version Max. Device Count: 30
Finish	ОК
User Code 📃	×
User Code: 1613EB128766 License Status: Paid Version OK	

A Appendix

Port Usage

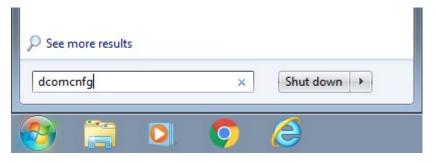
Port	Туре	Usage			
502	ТСР	Modbus Communication			
53192	ТСР	Default UA Server Endpoint			
9500	ТСР	Moxa AOPC protocol			
9900	ТСР	Moxa AOPC protocol			

Configuring DCOM Settings

If the OPC client only supports the OPC Data Access (DA) standard, you will need to configure DCOM settings. Before launching MX-AOPC UA Server, configure the DCOM settings for your security policy.

NOTE If the OPC Client and Server software are installed on different servers, the DCOM, WORKGROUP, System Account, and Password settings should be the same.

1. Go to the START menu and type dcomcnfg to activate the Component Services dialog box.



 Right click My Computer under Console Root → Component Services → Computers, and click Properties to open the My Computer Properties dialog box.



3. Click the **COM Security** tab and edit who is allowed by default to access, launch, or activate the applications or objects.

	ess to applications. You ma ne their own permissions.
	issions can affect the ability function and/or run
Edit Limits	Edit Default
ility of applications to ecurely.	o start, connect, function
Edit Limits	Edit Default
hese properties.	
	Edit Limits Permissions Illowed by default to may also set limits o ermissions. difying launch and a ility of applications t ecurely. Edit Limits

4. Add **Everyone**, **INTERACTIVE**, **NETWORK**, and **SYSTEM**, and set **Allow** permission to all of these groups.

ccess Permission		? 🛃
Default Security		
Group or user names:		
Section Everyone		
SELF		
SYSTEM		
S NETWORK		
& INTERACTIVE		
	A <u>d</u> d	<u>R</u> emove
Permissions for Everyone	Allow	Deny
Local Access	1	
Remote Access	\checkmark	
	and the set	
Learn about access control and	permissions	
	ОК	Cancel

fault Security		
roup or user names:		
Sveryone		
SYSTEM		
RETWORK		
👫 Administrators (IE11WIN7\	Administrators)	
	Add	Remove
ermissions for Everyone	Allow	Deny
Local Launch	1	
Remote Launch	1	
Local Activation	1	
Remote Activation	1	
	nominina	
earn about access control and	permissions	

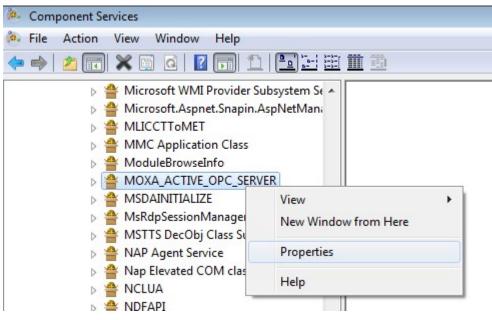
5. Click the **Default Properties** tab and check if the settings are the same as shown in the screenshot below.

	Options M on this computer Services on this compute	Default Properties
Enable COM Internet		
Enable COM Internet		
	Services on this compute	
of sult Distributed COM		:r
Verault Distributed CON	A Communication Properti	ies
The Authentication Lev	el specifies security at th	e packet level.
Default Authentication	n Level:	
Connect		•
Default <u>I</u> mpersonation	1 Level:	•
and that the default imp	acking can be provided i personation level is not an security for reference tra	nonymous.
and the second second second	the second se	
am more about <u>setting</u>	these properties.	

6. Click $\ensuremath{\textbf{Yes}}$ when the following warning message appears.

DCOM Ma	achine wide settings		8
Â		nachine wide DCOM settings, this machine, some applications may e DCOM settings?	
		Yes	No

 Go back to the Component Services dialog box, and right click MOXA_ACTIVE_OPC_SERVER under Console Root → Component Services → Computers → My Computer → DCOM Config, and then click Properties.



8. Click the General tab, and set the Authentication Level to Connect.

MOXA_ACTIVE_OPC_SER\	/ER Properties
General Location Secu	rity Endpoints Identity
General properties of th	is DCOM application
Application Name:	MOXA_ACTIVE_OPC_SERVER
Application ID: {6cbf6ab8-1ba8-4a2b-8b92-554d29d378f9}	
Application Type:	Local Service
Authentication Level:	Connect
Service Name:	MOXA_MX-AOPC_UA_SERVER
Leam more about <u>setting</u>	these properties.
	OK Cancel <u>A</u> pply

9. Click the Security tab. You may either apply the default settings of Access, Launch, and Activation Permissions to the MX-AOPC UA Server or customize the permission settings. If you would like to customize the settings, make sure that Everyone, INTERACTIVE, NETWORK, and SYSTEM are added, and the permission for these groups is set to Allow.

NOXA_ACTIVE_OPC_SERVER Properties	? 💌
General Location Security Endpoints Identity	
Launch and Activation Permissions	
O Use Default	
Customize	
Clatomizo	Edit
Access Permissions	
Ose Default	
Customize	Edit
Configuration Permissions	
Use Default	
O Customize	Edit
Learn more about <u>setting these properties</u> .	
OK Can	cel Apply

10. Click the **Identity** tab and make sure **The system account** is selected. Now DCOM is ready to accept all incoming connections.

General	Location	Security	Endpoints	Identity	
Which	user accou	nt <mark>do you</mark> v	vant to use to	o run this ap	plication?
🔵 The	interactive	user.			
The	launching	user.			
This	user.				
User		[Browse
Pass	word:	[
Confi	rm passwor	d: [
The	system acc	count (serv	ices only).		
Learn n	nore about s	setting thes	se properties.		