

# Quick Start

## EdgeLink- IoT Gateway Software

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**ADVANTECH**

*Enabling an Intelligent Planet*

## Revision History

Date	Version	Author	Reviewer	Description
Jan. 26,2022	1.0	Lili.Zheng	Greta Lieske-Dumelle	Initial Release
Dec.21,2022	1.1	Lili.zheng		Add WISE-Edge365 supported

## **TABLE OF CONTENTS**

<b>1 SOFTWARE OVERVIEW .....</b>	<b>4</b>
<b>1.1 What is EdgeLink? .....</b>	<b>4</b>
<b>1.2 System Architecture.....</b>	<b>4</b>
<b>1.3 Features of EdgeLink.....</b>	<b>5</b>
<b>1.4 EdgeLink Instructions .....</b>	<b>5</b>
1.4.1 Software Installation .....	5
1.4.2 Project Implementation.....	6
1.4.3 Remote Maintenance .....	6
<b>1.5 Function List of Project Configuration.....</b>	<b>8</b>
<b>1.6 Southbound Driver List.....</b>	<b>12</b>
<b>1.7 Northbound Service List .....</b>	<b>20</b>
<b>2 DEMO SCENARIO .....</b>	<b>21</b>
<b>2.1 Demo Scenario Diagram.....</b>	<b>21</b>
<b>2.2 Scenario Description.....</b>	<b>21</b>
<b>2.3 Physical Device Connection.....</b>	<b>21</b>
<b>2.4 EdgeLink Studio Configuration .....</b>	<b>22</b>
2.4.1 Create a New Project .....	22
2.4.2 Modbus Collection Configuration .....	25
2.4.3 MQTT Forwarding Configuration .....	28
2.4.4 4G Dialer Configuration .....	30
2.4.5 Project Download .....	30
<b>2.5 Results Display .....</b>	<b>31</b>
<b>3 HARDWARE PLATFORMS .....</b>	<b>33</b>
<b>3.1 Hardware with Built-in EdgeLink.....</b>	<b>33</b>
<b>3.2 Hardware from Other Manufacturers.....</b>	<b>35</b>

# 1 Software Overview

## 1.1 What is EdgeLink?

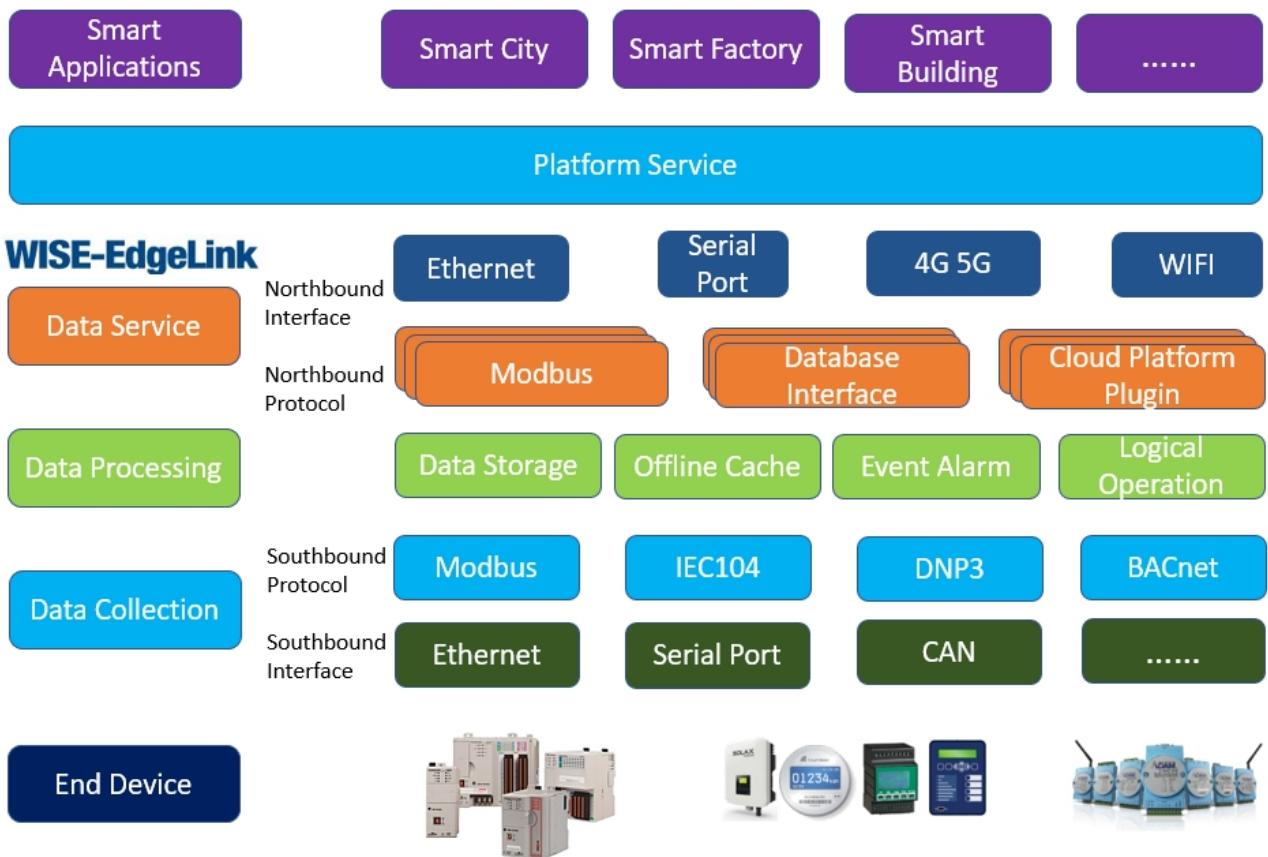
In application scenarios, a gateway connects to various smart devices via the southbound interface and connects with different platforms via the northbound interface. In IoT-based businesses, a gateway acts as the IoT big data core hub, which manages data collection, processing, and forwarding, and is located in the middle layer between devices and platforms.

EdgeLink is a software system applied to Advantech gateway. It consists of EdgeLink Studio and EdgeLink Runtime.

**EdgeLink Studio:** a gateway configuration tool for off-line communication and network interface configuration. It supports one-click downloads to the gateways and supports online device status management and monitoring.

**EdgeLink Runtime:** EdgeLink services running on the gateway. It implements configurations set by EdgeLink Studio.

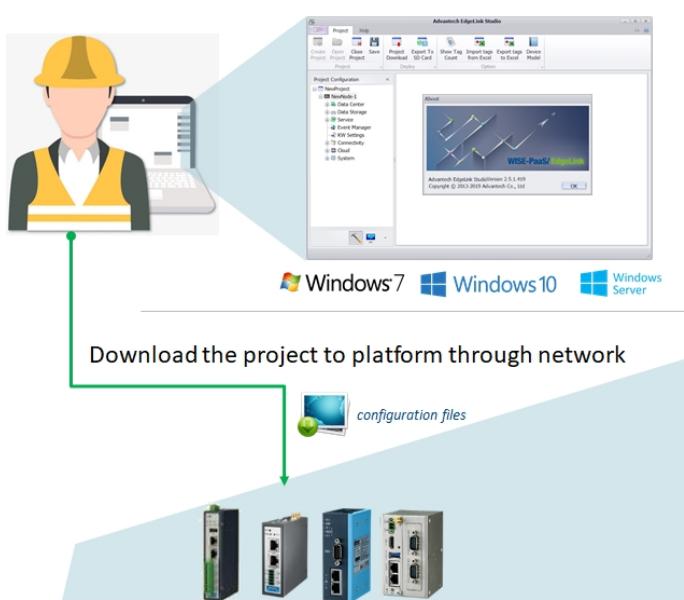
## 1.2 System Architecture



## 1.3 Features of EdgeLink

- Configure a gateway with Windows utility
- Support the collection and forwarding of multiple southbound and northbound communication protocols, such as MQTT, AMQP, LwM2M, OPC UA, Modbus, IEC-104, DNP3.0, etc.
- ‘One-click’ downloads for data communication and network configurations
- Unified device networking management
- Real-time gateway status monitoring

## 1.4 EdgeLink Instructions



### EdgeLink Studio (For Windows)

- Project Configuration
- Online Device Monitoring
- Device Communication Setup
- Data Forwarding Settings
- System Setting



### EdgeLink Runtime (For Linux)

- Connect end devices
- Data acquisition and transmission
- Support 200+ device drivers
- Real-time and historical data log
- Connectivity to the Cloud and 3<sup>rd</sup> party systems

#### 1.4.1 Software Installation

The software install file name is: **SetupEdgeLinkStudio\_xxxx\_v2.x.x.exe**. Double click on the file to bring up the installation interface and click on ‘Next’ on each page. The default installation path is: C:\Program Files (x86)\Advantech\EdgeLink Studio.

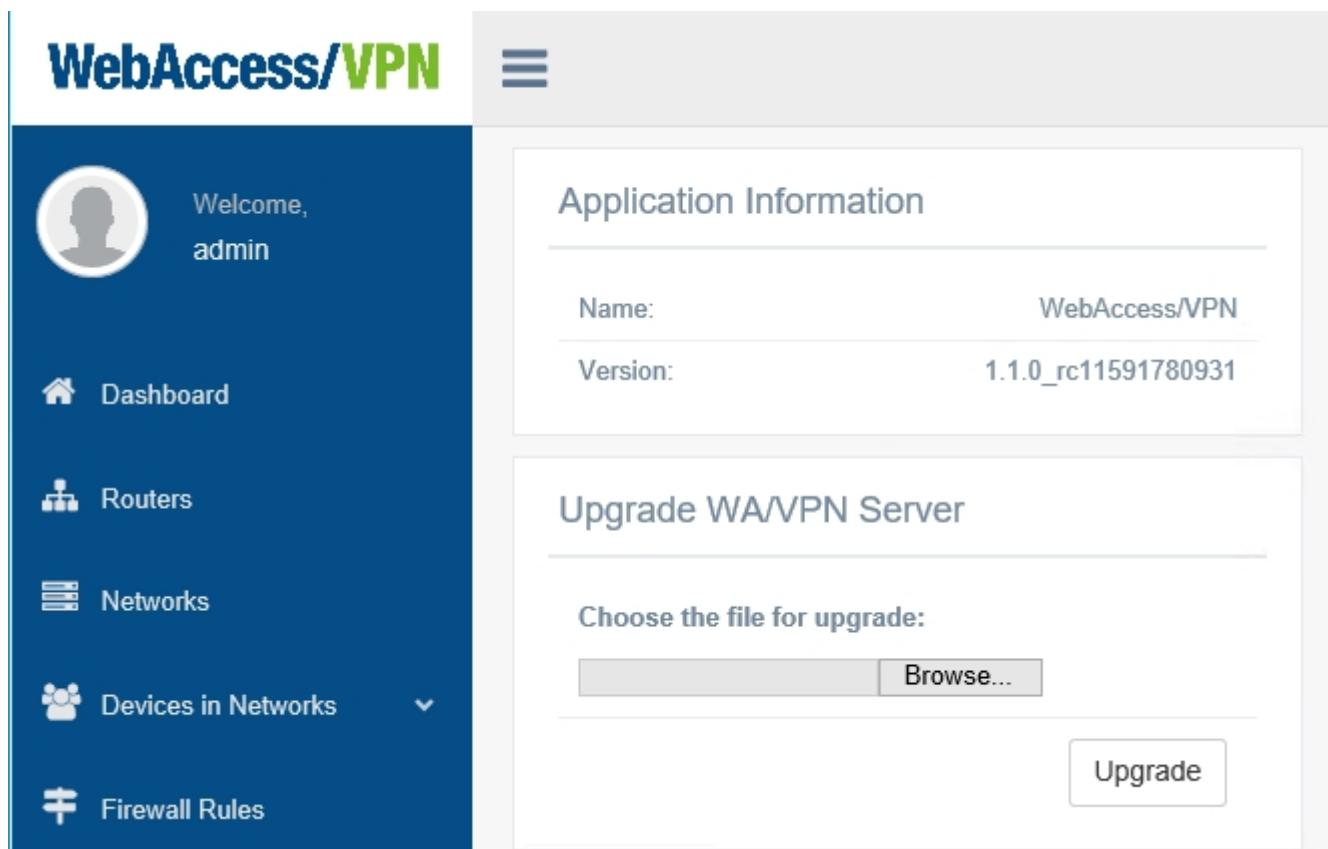
#### 1.4.2 Project Implementation

The project file is the file created by Advantech EdgeLink Studio. It is a set of a single or multiple network configurations. By using the project file, users can efficiently manage different project configurations. Please refer to the [Demo Scenario](#) section for configuration methods.

#### 1.4.3 Remote Maintenance

In application scenarios, the gateway is used to connect to the 4G network. Because the data center cannot recognize the gateway, a VPN needs to be built to connect the PC and gateway. The gateway can be remotely maintained by the data center through any authorized VPN. The following is an example of Advantech WebAccess/VPN configuration:

**Step 1:** Apply for an account and password via the WebAccess/VPN contact window, and then log in to at WebAccess/VPN homepage.



The screenshot shows the WebAccess/VPN interface. On the left, there's a sidebar with a user profile icon and the text "Welcome, admin". Below it are links for "Dashboard", "Routers", "Networks", "Devices in Networks", and "Firewall Rules". The main content area has a header "Application Information" with fields for "Name: WebAccess/VPN" and "Version: 1.1.0\_rc11591780931". Below that is a section titled "Upgrade WA/VPN Server" with a "Choose the file for upgrade:" input field, a "Browse..." button, and an "Upgrade" button.

**Step 2:** Enable WebAccess/VPN in EdgeLink Studio, fill in the related information, and download the project to the gateway.

The screenshot shows the Advantech EdgeLink Studio interface. On the left, the 'Project Configuration' sidebar lists various project components like Data Center, Service, Event Manager, KW Settings, and Connectivity. A sub-section under Connectivity shows Active Connection, Dandelion VPN, Advantech/VPN, Remote.it, and Serial Port Bridge. The main area displays a configuration dialog for 'Advantech/VPN(NewNode)\*'. It includes fields for 'Device Name' (NewNode), 'Syslog Level' (Notice), and 'Primary Local DS' (ec2-52-83-178-249.cn-northwest-1.compute.amazonaws.com.cn). The 'General Information' tab is selected. To the right, the 'WebAccess/VPN - Advantech...' dashboard is shown, featuring a header with the URL https://ec2-52-83-178-249.cn-northwest-1.compute.amazonaws.com.cn:9090/. The dashboard displays statistics: Total Routers (118), Online Routers (65), Non-validated Routers (118), and Validated Routers (65). Below these are sections for Routers, Networks, Devices in Networks, Firewall Rules, Standalone VPN Clients, and Administration.

**Step 3:** Click on 'Validate' on the WebAccess/VPN configuration page.

The screenshot shows the WebAccess/VPN dashboard. The top navigation bar includes links for Dashboard, Routers, Networks, Devices in Networks, Firewall Rules, Standalone VPN Clients, and Administration. Key statistics are displayed: Total Routers (120), Online Routers (65), Offline Routers (44), Server Uptime (527d 21:10h), Validated Routers (109), and Non-validated Routers (47). The main content area is titled 'Non-validated Routers' and contains a table of routers. The table has columns for Router Name, IP Address, Label, and Actions. The 'Actions' column includes links for Validate / Delete. A red box highlights the 'Validate' button in the toolbar above the table. Another red box highlights the 'Validate' link in the Actions column for the first router listed, which has an IP address of 125.33.197.27.

**Step 4:** Validate in the 'Router' list.

The screenshot shows the WebAccess/VPN interface with a sidebar containing navigation links: Dashboard, Routers (selected), Networks, Devices in Networks, Firewall Rules, Standalone VPN Clients, and Administration. The main area displays a table of network nodes with columns: Name, IP Address, Label, Networks, Connected, Sync, and actions. One row, 'NewNode\_ADAM3600...', is highlighted with a red border.

	Name	IP Address	Label	Networks	Connected	Sync
<input type="checkbox"/>	ALL_ECU-1051BF_ECU1051BF_40:06:a0:2c:63:e7_996ebf381c8955cf72a12d8451ca2311@14	10.8.15.1		1	Online	Pending
<input type="checkbox"/>	All_1051BGF_ECU1051BGF_40:06:a0:2c:5c:e8_996ebf381c8955cf72a12d8451ca2311@14	10.8.11.1		1	Online	Pending
<input type="checkbox"/>	ECU-1051_kunshan_ECU1051_fc:45:c3:5d:03:e6_996ebf381c8955cf72a12d8451ca2311@28	10.8.12.1		1	Online	Synced
<input type="checkbox"/>	ECU4553_ECU4553_c4:f3:12:6e:5c:b0_996ebf381c8955cf72a12d8451ca2311@14	10.8.6.1		1	Online	Synced
<input type="checkbox"/>	FUKE_ECU1251_6c:c3:74:5c:41:b1_996ebf381c8955cf72a12d8451ca2311@30	10.8.55.1		1	Online	Synced
<input type="checkbox"/>	NewNode_ADAM3600_60:64:05:34:93:0c_996ebf381c8955cf72a12d8451ca2311	10.8.35.1		0	Online	Synced
<input type="checkbox"/>	all_1251D_New_ECU1251D_f8:33:31:a0:58:50_996ebf381c8955cf72a12d8451ca2311@14	10.8.33.1		1	Online	Synced
<input type="checkbox"/>	allfunction1152_ECU1152_6c:c3:74:5b:69:d0_996ebf381c8955cf72a12d8451ca2311@14	10.8.19.1		1	Online	Pending
<input type="checkbox"/>	allfunction1051_ECU1051_04:79:b7:e7:52:e5_996ebf381c8955cf72a12d8451ca2311@14	10.8.14.1		1	Online	Pending
<input type="checkbox"/>	allfunction1251_ECU1251_6c:c3:74:5c:23:4f_996ebf381c8955cf72a12d8451ca2311@14	10.8.52.1		1	Online	Pending

### Step 5: Connect to the gateway through putty and get a VPN IP.

```
tun5      Link encap:UNSPEC  HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
          inet addr:10.8.35.1  P-t-P:10.8.35.1  Mask:255.248.0.0
                  inet6 addr: fe80::2d7:e8db:1742:5b30/64 Scope:Link
                      UP POINTOPOINT RUNNING NOARP MULTICAST MTU:1500 Metric:1
                      RX packets:6 errors:0 dropped:0 overruns:0 frame:0
                      TX packets:10 errors:0 dropped:0 overruns:0 carrier:0
                      collisions:0 txqueuelen:100
                      RX bytes:385 (385.0 B)  TX bytes:661 (661.0 B)
```

## 1.5 Function List of Project Configuration

Functions included in a project file include the following: project management, data collection, data processing, data forwarding, remote management, connection mechanism, system configuration, and security mechanism.

Function List	Function Classification	Function Description	Supported by container or not
Project Management	Project Setup	Setup a new project: Create a project file via EdgeLink Studio.	Yes
		Upload current projects of the gateway by using on-line devices.	
	Implementation methods: Single gateway download	On-line implementation There are 3 ways to recognize the node: <b>Node ID (Gateway hardware DIP switch for identifying the gateway)</b>	

	Batch gateway download	<p><b>IP/domain name (Gateway network information which can be obtained by searching)</b></p> <p><b>Azure connection string (Connection string provided by Microsoft Azure)</b></p> <p>Off-line implementation: Export the project to SD card, and manually import it to the device.</p>	
	Gateway replication	Make a copy of gateway configuration in the project.	
	Show project tag count	Show the total number of tags in the project. (System tags are not included.)	
	Add and delete device	Devices connected to the gateway can be managed flexibly.	
	Excel import and export (all tags)	Export tags to Excel for further editing and import tags into the project.	
	Export to WISE-Edge365	Upload the project file generated by Studio to WISE Edge365 for remote deployment of the gateway from WISE Edge365	Yes
Data Collection	Collect data from southbound interface	Ports: Ethernet Serial port CAN USB	Yes
		Devices: Southbound protocol Parameter configuration Add tag Tag property Device template	
	System tag	Basic information and hardware status of the gateway.	Yes
	User tag	Virtual IO tag which can be selected and configured by the user.	
	Calculated tag	Calculated results of an expression.	
Data Processing	Data storage	Store data to the expansion card. Store data of Container to the /data path.	Yes
		Resume broken transfer:	Yes

		When network interrupt/recovery occurs during data forwarding, the data generated during the interrupt can be retransferred.	
	Logic operation	Support complex logical operations.	No
	Event trigger (alarm)	Alarm modes: Sending SMS Sending e-mail Writing tag	No
	Data transmission	Different devices in the field can assign each other.	Yes
Data Forwarding	Industry protocol	Electric power: DNP3	No
		Electric power: IEC104	Yes
		BA: BACnet	Yes
		Common industrial protocol: Modbus	Yes
		Advantech Proprietary protocol: WASCADA	Yes
		OPC-UA	Yes
	Cloud connection	MQTT: WISE-Edge365 AWS Azure Cumulocity DeviceOn/BI Google Cloud IoT Core IoTConnect iSysCore OS MindSphere SimpleMQTT Sparkplug(B) T-System WebAccess WISE-PaaS/DataHub Ali Cloud Baidu Tiangong Lanzhuo supOS	Yes

	Proudsmart		
	Lightweight M2M	LwM2M	Yes
	Excel import /export (northbound protocol and cloud connection tags)		Yes
	Database transmitting	SQL Server	No
		MySQL	
		ORACLE	
		FTP Server	
Remote management	VPN	Open VPN	No
		WebAccess/VPN	
		EdgeLink/VPN	
	On-line monitoring	Tag read/write	Yes
		I/O status: I/O status monitoring of the gateway	Yes
		System information: Cellular status	No
		System log	Yes
		Storage data query	Yes

		System configuration: System upgrade Time setting	No
Connection mechanism	System connection	VPN: OpenVPN (user-built) Dandelion VPN (user-built) Advantech VPN WebAccess/VPN (user-built) EdgeLink/VPN (Provide free trial within 10 gateways for domestic users)	No
		L2TP/IPsec	No
		PPPOE	No
	TCP connection	Active connection: Connect WebAccess/SCADA Connect Four-Faith Other customized connections	No
	Serial port bridging		No
System Configuration	Network configuration	Basic configuration: DHCP Fixed IP WIFI/4G Reconnect: Network status monitoring and real-time repair Routing configuration Priority configuration Port forwarding NAT DHCP Server	No
	LED configuration	RUN Program Error	
	Time configuration	Date Time Time zone	
	Service configuration	SSH HTTPS Telnet	

		FTP Server	
	Firewall configuration		
Security Mechanism	Project download	Set password	Yes
		File transfer encryption TLS1.2	Yes
	On-line monitoring	Login with password	Yes
	Security strategy	Regular vulnerability scan	Yes
		Vulnerability repair	Yes

## 1.6 Southbound Driver List

EdgeLink Driver List			
►Standard Protocol			
Device Type	Models	EdgeLink Driver	Interface
Power Industry Protocol	DNP 3.0	DNP 3.0 (Only ADAM-3600/ECU-1051/ECU-1251/ECU-4553 supported)	SERIAL & TCP/IP
	IEC 60870-5-101	IEC 60870-5-101	SERIAL
	IEC 60870-5-103	IEC 60870-5-103	SERIAL
	IEC 60870-5-104	IEC 60870-5-104	TCP/IP
Power Meter	DL/T 645-2007	DL/T 645-2007	SERIAL
	DL/T 645-1997	DL/T 645-1997	SERIAL
	IEC 62056-21	IEC 62056-21	SERIAL
	WISE-M500 series(Advantech)	Modbus/RTU	SERIAL
Database	MS SQL Server	ODBC for Microsoft SQL Server	TCP/IP
	ORACLE	JDBC for ORACLE Database	TCP/IP
OPC UA	OPCUA Client	OPC UA	TCP/IP
BACnet	Standard protocol for building controllers	BACnet IP	TCP/IP
		BACnet MS/TP	SERIAL

SNMP	Simple Network Management Protocol	SNMP	TCP/IP
Modbus	Modbus GW	Modbus TCP with limited connections	TCP/IP
►PLC Driver			
Manufacturer	Models	EdgeLink Driver	Type
ABB	Advant Controller models: AC31, AC80, AC410, AC450. Modbus via MVI module.	Modicon (Modbus RTU)	SERIAL
	4600 Dissolved Oxygen Analyzer	Modicon (Modbus RTU)	SERIAL
	Commander 1900 Controller Recorders.	Modicon (Modbus RTU)	SERIAL
	INSUM Modbus-LON Network Gateway	Modicon (Modbus RTU)	SERIAL
	MODCELL, MOD 30ML and Commander 100, 150, 200, and 300 Loop Controllers.	Modicon (Modbus RTU)	SERIAL
Advantech	ADAM-2000 series	Advantech ADAM 2000 Series (ADAM ASCII/Modbus RTU)	SERIAL
	ADAM-4000 series	Advantech ADAM 4000 Series (ADAM ASCII/Modbus RTU)	SERIAL
	ADAM-5000 series Ethernet	Advantech ADAM-5000 Ethernet (Modbus TCP)	TCP/IP
	APAX series Controller	Advantech APAX Series PLC (CODESYS API)	SERIAL & TCP/IP
	WebCon 2000 Series	Advantech WebCon 2000 Series	SERIAL & TCP/IP
	WebOP HMI	Advantech WebOP HMI (Modbus)	SERIAL & TCP/IP

		RTU/TCP)	
Allen-Bradley	PLC-5 Series Models: PLC-5/11, 5/20, 5/30, 5/40, 5/40L, 5/60, 5/60L, Serial DF1 full duplex	Allen-Bradley PLC-5 Series (DF1 Protocol over Serial)	SERIAL
	SLC-500 Series Models: SLC 5/03, 5/04, 5/05, Serial DF1 full duplex	Allen-Bradley SLC-500 Series (DF1 Protocol over Serial)	SERIAL
	Micro Logix Series PLC	Allen-Bradley Micro Logix Series PLC (DF1 Protocol over Ethernet)	TCP/IP
	Allen Bradley CSP to Modbus Ethernet	Modicon (Modbus TCP/RTU)	SERIAL & TCP/IP
	ControlLogix series, CompactLogix series PLC	Allen-Bradley ControlLogix&Com pactLogix Series PLC (Ethernet/IP)	TCP/IP
BECKHOFF	BECKHOFF TwinCAT PLC	BECKHOFF TwinCAT PLC (BECKHOFF ADS API)	TCP/IP
DELTA	DVP series PLC	Delta DVP Series PLC (Modbus RTU/TCP)	SERIAL & TCP/IP
FATEK	FACON FB series PLC	Fatek and Facon PLCs	SERIAL & TCP/IP
GE	GE Fanuc Series 90-30 via SNP, Serial SNP	GE Fanuc Series 90-30 via SNP, Serial SNP (SNP and SNP-X serial)	SERIAL & TCP/IP
	GE Fanuc Series 90-70 via SNP, Serial SNP	GE Fanuc Series 90-70 via SNP, Serial SNP (SNP and SNP-X serial)	SERIAL & TCP/IP
	FieldServer Modbus	Modicon (Modbus	SERIAL & TCP/IP

		TCP/RTU)	
	GE Multilin Power Management Modules via Modbus	Modicon (Modbus RTU)	SERIAL
	FieldServer Modbus Ethernet	Modicon (Modbus TCP/RTU)	SERIAL & TCP/IP
Honeywell	7800 series Burner Controls with S7810M ModBus Networking module	Modicon (Modbus RTU)	SERIAL
	DCP100 with Modbus communications	Modicon (Modbus RTU)	SERIAL
	DPR100 DPR180/250 Recorders with Modbus	Modicon (Modbus RTU)	SERIAL
	DR 4300/4500 Recorders with Modbus	Modicon (Modbus RTU)	SERIAL
	UDC700 UDC1000 UDC1500 Loop Controller with Modbus	Modicon (Modbus RTU)	SERIAL
	UDC 3000, UDC 3300 Loop Controllers with Modbus	Modicon (Modbus RTU)	SERIAL
	UDC 6000 Loop Controller with Modbus	Modicon (Modbus RTU)	SERIAL
	UMC800 Setpoint Programmer / Controller with Modbus	Modicon (Modbus RTU)	SERIAL
	VPR/VRX Recorders with Modbus	Modicon (Modbus RTU)	SERIAL
	Honeywell HC900 Hybrid Control System	Modicon (Modbus TCP)	TCP/IP
Keyence	Keyence KV-700/ KV-1000 Serial	KEYENCE KV-700/ KV-1000 Serial (Host Link)	SERIAL
	Keyence KV-700/1000/3000/5000/5500/7500 TCP/IP	KEYENCE KV-700/ KV-1000 TCP/IP (Host Link)	TCP/IP
Mitsubishi	Melsec A	Mitsubishi MELSEC-A Series PLC(MC Protocol)	SERIAL & TCP/IP
	Melsec A1S	Mitsubishi MELSEC-AnS Series PLC(MC Protocol)	SERIAL & TCP/IP

	MitsuA2	Mitsubishi MELSEC-AnN Series PLC(MC Protocol)	SERIAL
	MitsuAnA	Mitsubishi MELSEC-AnA Series PLC(MC Protocol)	SERIAL & TCP/IP
	MitsuAnAD	Mitsubishi MELSEC-AnAD Series PLC(MC Protocol)	SERIAL
	Melsec FX Series PLC	Mitsubishi MELSEC-Fx Series PLC (MC Protocol)	SERIAL & TCP/IP
	Melsec FX - Series MultiDrop IO	Mitsubishi MELSEC-Fx Series PLC (MC Protocol)	SERIAL
	Melsec FX2 Series PLC	Mitsubishi MELSEC-Fx2 Series PLC (MC Protocol)	SERIAL & TCP/IP
	Melsec FX3 Series PLC	Mitsubishi MELSEC-Fx3 Series PLC (MC Protocol)	SERIAL & TCP/IP
	Melsec FX5 Series PLC	Mitsubishi MELSEC-Fx5 Series PLC (MC Protocol)	SERIAL & TCP/IP
	Melsec Q	Mitsubishi MELSEC-Q Series PLC with Extension Module(MC Protocol)	SERIAL & TCP/IP
	Melsec QCPU	Mitsubishi MELSEC-Q Series PLC(MC Protocol)	SERIAL
Omron	Omron C Series PLCs	Omron C Series PLC (HostLink)	SERIAL & TCP/IP

	Omron CJ Series PLCs	Omron CJ Series PLC (HostLink)	SERIAL & TCP/IP
	Omron CP Series PLCs	Omron CP Series PLC (HostLink)	SERIAL & TCP/IP
	Omron CS Series PLCs	Omron CS Series PLC (HostLink)	SERIAL & TCP/IP
	Omron CV Series PLCs	Omron CV Series PLC (HostLink)	SERIAL & TCP/IP
	Omron E5 Series PLCs	Omron E5 Series PLC (HostLink)	SERIAL
	Omron NX/NJ Series PLCs	Omron NX/NJ Series PLC (EtherNet/IP)	TCP/IP
Panasonic	FP3 Serial via Modbus MB Link module AFP3492	Modicon (Modbus RTU)	SERIAL
	FPSH10 Serial via Modbus MB Link module AFP3492	Modicon (Modbus RTU)	SERIAL
	FP0,FP-X, FP2 series PLC via Mewtocol	Panasonic FP0, FP-X, FP2 Series PLC (Mewtocol)	SERIAL & TCP/IP
	FP7 series PLC via Mewtocol7	Panasonic PLC Mewtocol7-COM	SERIAL & TCP/IP
Schneider	TSX Premium and TSX Micro Series via Modbus	Modicon (Modbus RTU)	SERIAL
	Modcion 484, 584, 884 PLCs	Modicon (Modbus RTU)	SERIAL
	Modicon 984 PLCs	Modicon (Modbus RTU)	SERIAL
	Quantum PLCs	Modicon (Modbus RTU)	SERIAL
	AEG Compact PLC	Modicon (Modbus RTU)	SERIAL
	ION6200	Schneider ION6200 (Modbus RTU)	SERIAL
	Modicon Momentum M1E PLCs	Modicon (Modbus TCP)	TCP/IP
	Modicon Quantum PLCs	Modicon (Modbus	TCP/IP

		TCP)	
Sharp	Sharp JW series PLC	Sharp JW series PLC	SERIAL
Siemens	Siemens Cerberus MXL	Modicon (Modbus TCP/RTU)	SERIAL & TCP/IP
	Siemens S7-200 PLC	Siemens S7-200 PLC	Serial
	Siemens S7-200 PLC via Modbus	Modbus RTU (Modicon)	RS-232, RS-485
	Siemens S7-200 smart	Siemens S7-300/1200/1500 PLC (S7Comm TCPIP)	TCP/IP
		Siemens S7-200 PLC	Serial
	Siemens S7-300	Siemens S7-300/1200/1500 PLC (S7Comm TCPIP)	SERIAL & TCP/IP
	Siemens S7-1200	Siemens S7-300/1200/1500 PLC (S7Comm TCPIP)	SERIAL & TCP/IP
	Siemens S7-1500	Siemens S7-300/1200/1500 PLC (S7Comm TCPIP)	SERIAL & TCP/IP
	Siemens LOGO! PLC via Ethernet	Siemens LOGO! PLC via Ethernet	TCP/IP
Toyopuc	Toyopuc PLCs	Toyopuc 2PORT-EFR PLC via Ethernet	SERIAL & TCP/IP
Wago 750	WAGO I/O System 750 Fieldbus Coupler for Modbus Serial. Models 750-312, 750-314, 750-315, 750-316, 750-812, 750-814, 750-815	WAGO I/O System 750	SERIAL
	WAGO I/O System 750 Fieldbus Coupler for Modbus. Models 750-342	WAGO I/O System 750	TCP/IP

Yaskawa	YASKAWA MP series	YASKAWA MP Series Ethernet (Extension)	TCP/IP
	MP900 series	YASKAWA MP900 series, MemoBus Modbus compatible (Modbus RTU/TCP)	SERIAL & TCP/IP
	MP3000 series	YASKAWA MP3000 series	TCP/IP
Yokogawa	FA-M3 RS-232 Factory ACE PLCs	Yokogawa FA-M3 Ethernet Factory ACE PLC	SERIAL & TCP/IP

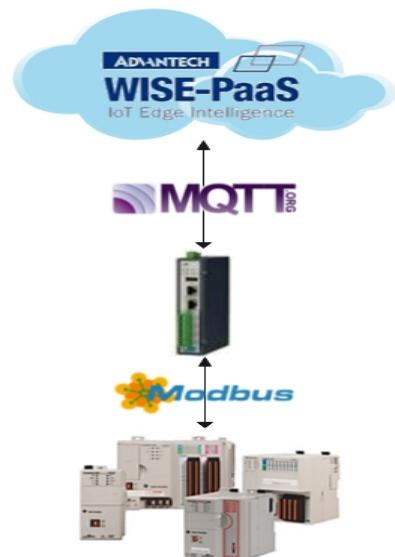
## 1.7 Northbound Service List

Service Classification	Service List
Northbound protocol and platform	ActiveConnection (WASCADA) MQTT Modbus RTU Modbus/TCP BACnet OPC UA IEC-104 DNP3 (Only for ADAM-3600 and ECU Series)
Northbound database	SQL Server MySQL ORACLE FTP Server
Cloud Platform	WISE-Edge365 Aliyun AWS Baidu Tiangong Cumulocitylot CustomMQTT DeviceOn/BI Google Cloud IoT Core

	IoTConnect
	iSysCore OS
	MindSphere
	Lanzhuo supOS
	Proudsmart
	SimpleMQTT
	Sparkplug(B)
	T-System
	WebAccess
	WISE-PaaS/DataHub
	Azure
	LwM2M

## 2 Demo Scenario

### 2.1 Demo Scenario Diagram



### 2.2 Scenario Description

The gateway collects PLC data with Modbus RTU protocol and transmits data to the WISE-PaaS could platform with MQTT protocol.

**ModbusRTU PLC device information:**

**Serial port:** RS485; baud rate: 9600; no parity; stop bit: 1.

**Modbus info:** DeviceID is 1 and data point address is 40001.

## 2.3 Physical Device Connection

1. The LAN1 port of the gateway is directly connected to the PC with EdgeLink Studio installed. (Win10 is recommended)

(Note: When the gateway is directly connected, the LAN1 IP is 10.0.0.nodeid.)

2. In RS-485 mode, the COM1 of the gateway is connected to the PLC's data collection serial port.

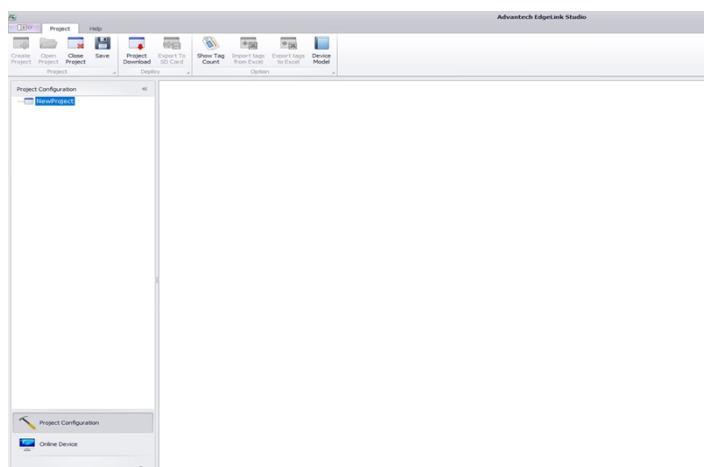
(Note: Please refer to the hardware manual for the configuration method for RS-485 mode and confirmation of jumper position.)

3. 4G module Internet access

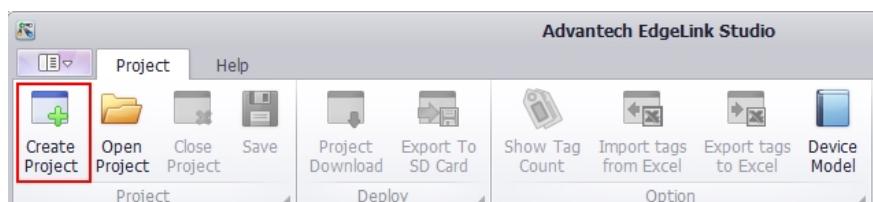
## 2.4 EdgeLink Studio Configuration

### 2.4.1 Create a New Project

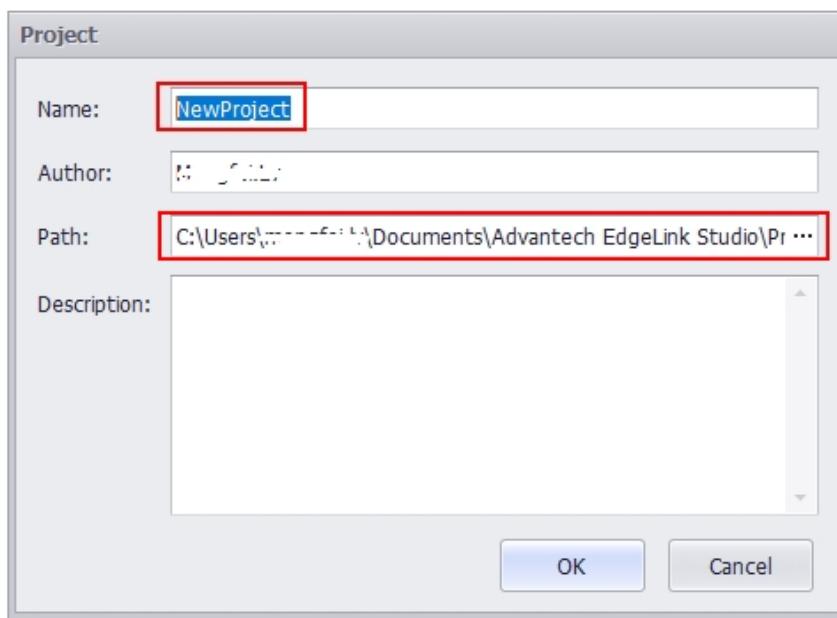
**Step 1:** Open Advantech EdgeLink Studio.



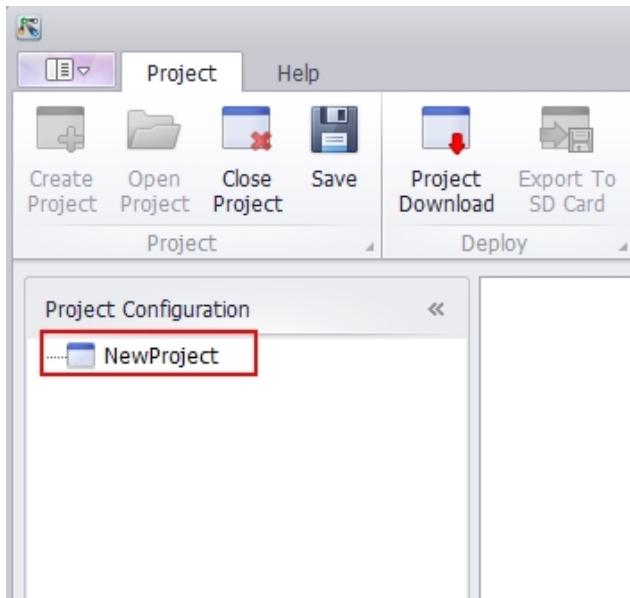
**Step 2:** Click on 'New Project.'



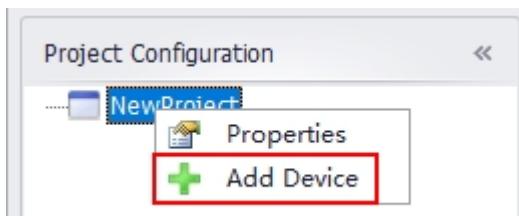
**Step 3:** Edit the project name, storage path, and project description. Click on 'OK.'



**Step 4:** A new project will display on the project management page.



**Step 5:** Next, users can add a device to the project. Right-click on the project name and select the device to be added. (The device here refers to the gateway, which is the node mentioned below.)



**Step 6:** The 'Create New Tag' page will pop up:

Name: Set by the customer

Type: Device type of the gateway

Password: Project download password. Default is 00000000.

Node identification mode: Node ID

The screenshot shows a software interface titled 'New Node' with a 'General Information' tab selected. The configuration fields are as follows:

Name:	NewNode
Model:	...
Password:	*****
Identity:	Node ID
Node ID:	1
IP Address/Domain Name:	10.0.0.1
Time Zone:	(UTC+08:00) Beijing, Chongqing, Hong Kong, Urumqi
Description:	[Empty text area]

At the top right are 'Apply' and 'Discard' buttons.

**Step 7:** An ADAM-3600 device is used as an example. Click on 'Apply' after the configuration is complete.

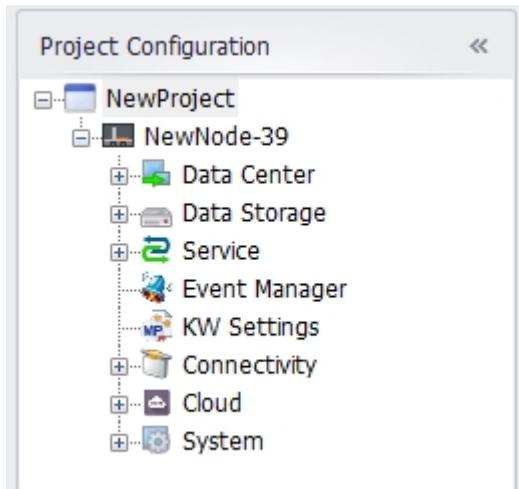
New Node\*

Apply Discard

General Information

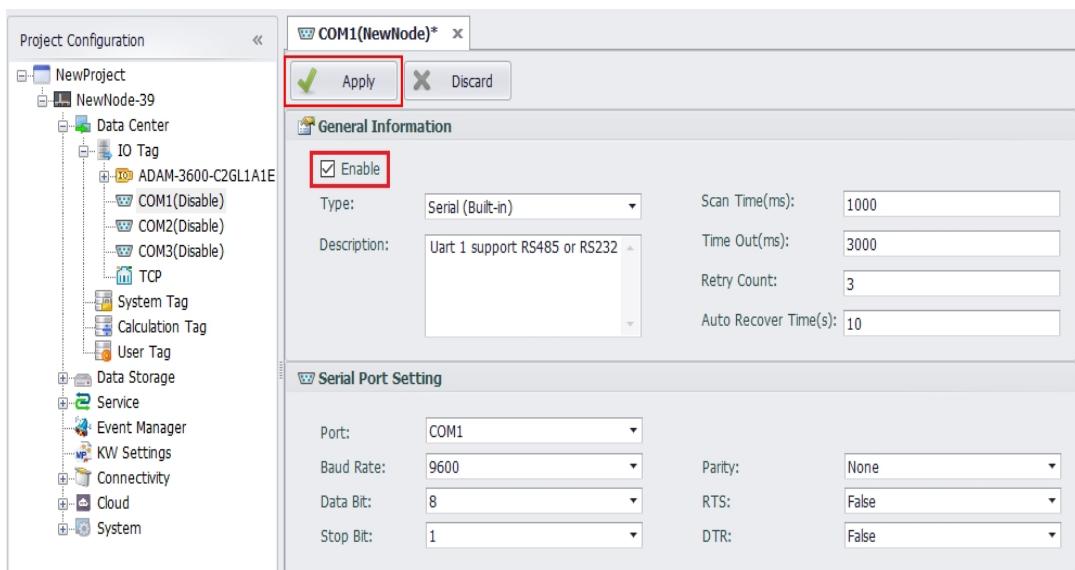
Name:	NewNode
Model:	ADAM-3600-C2GL1
Password:	*****
Identity:	Node ID
Node ID:	39
IP Address/Domain Name:	10.0.0.1
Time Zone:	(UTC+08:00) Beijing, Chongqing, Hong Kong, Urumqi
Description:	

**Step 8:** A new project has been created successfully.

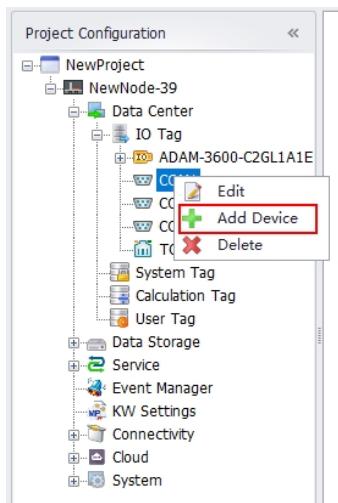


#### 2.4.2 Modbus Collection Configuration

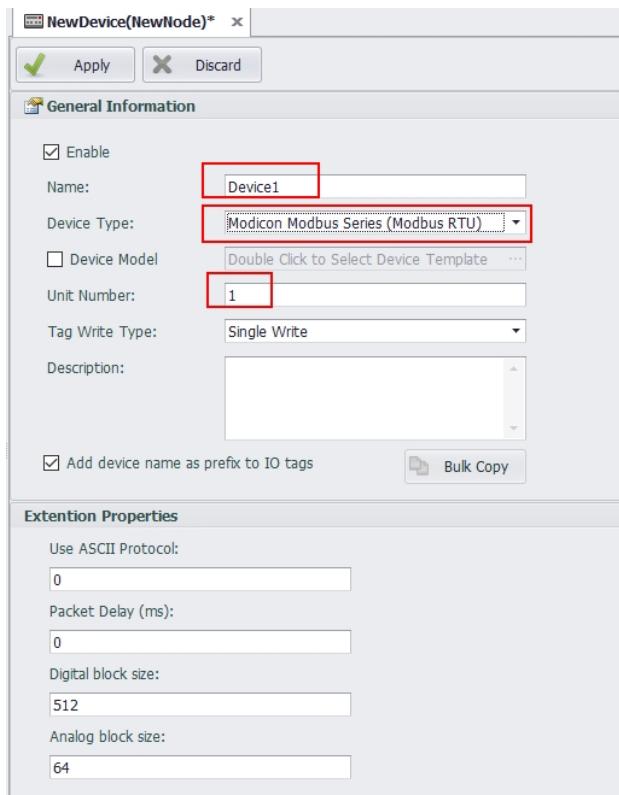
**Step 1:** Enable COM1 in the project and set the serial port settings so they are consistent with the serial port of Device1. Click on 'Apply'.



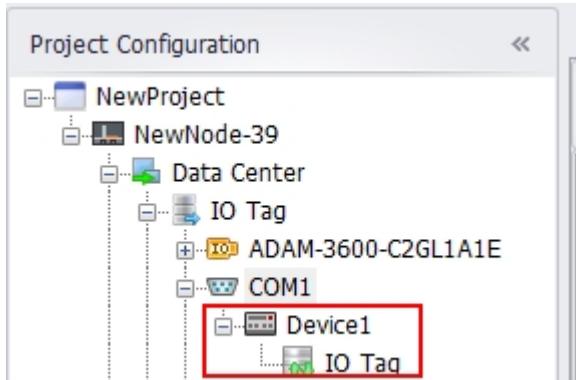
**Step 2:** Right-click on 'COM1' to add the device. (The device is the PLC connected to the serial port.)



**Step 3:** In the pop-up dialog box, enter the information of Device1, the customizable name, and click on 'Apply'. Select the device type Modicon Modbus Series (Modbus RTU). Unit number: 1.



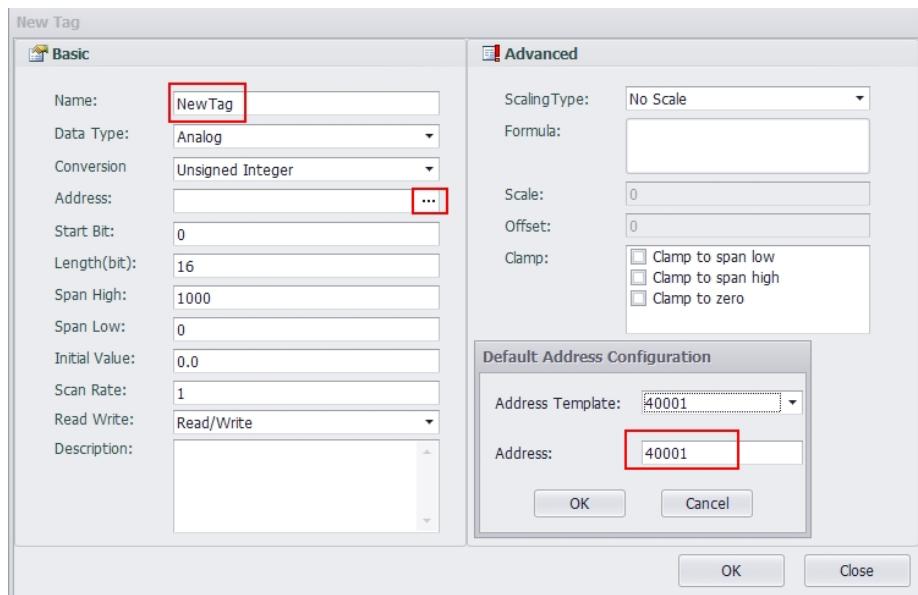
**Step 4:** The device has been added successfully.



**Step 5:** Add an I/O tag.



**Step 6:** Add the address of Device1 in the pop-up dialog box.



**Step 7:** The I/O tag has been added successfully.

IO Tag(Device1)								
Add...		Delete		Modify...				
Name	Data Type	Source	Initial Value	Scan Rate	Address	Conversion Type	Scale Type	Read Write
Device1:NewTag	Analog	Custom-add	0.0	1	40001	Unsigned Integer	No Scale	Read/Write

#### 2.4.3 MQTT Forwarding Configuration

**Step 1:** Apply for an account and password through the WISE-PaaS contact window. Then, log in to the WISE-PaaS homepage.

Project Id	Description	Detail	Delete
test_project		...	>
PROJECT_GOLDENWELL	KUO_JIN	...	>
MCM_test		...	>

**Step 2:** After a new project is created, click ‘Project Name’ to show the Node List page.

Node List							
Name	Filter	Node Name	Description	Status	Detail	Move to	Lock Config
1251				●	...	↑	OFF
3600				●	...	↑	OFF

**Step 3:** Create a new node. Related information will be displayed and the user can click ‘Detail’ to get detailed information after a node has been created.

### New Node List

Node Name test3600

Node ID 01000001-0000-0000-0000-000000000001

Credential Key 21100001-0000-0000-0000-000000000003

DCCS API Url <http://192.168.1.100:8080/>





**Step 4:** No device should be added because the “plug-and-play” function of the gateway device has been enabled. Once the device is online, a new device will be created under the node and the user can monitor the device separately.

**Step 5:** Return to the project configuration page of EdgeLink Studio.

**Step 6:** Activate WISE-PaaS/DataHub connection.

Project Configuration

WISE-PaaS/DataHub(NewNode)

Note: When enabling SSL, please ensure that the device time is consistent with the server time!

WISE-PaaS\_0

Tag Name	Alias	Tag Type	Deadband	Deadband Type
Device1:NewTag		analog	0	Absolute

Connect Type: MQTT  
Enable:   
Use Socks5 Proxy:  Edit  
host: iot.advantech.com  
Port: 1883  
SSL Enable:   
SSL Scenario: Anonymous conne...  
MQTT Version: 3.1.1  
Client ID: edgelink202203241120:  
User Name:  
Password:  
Keep Alive(s): 60  
Retry Interval(s): 60  
Timeout(s): 30  
Periodic Publish: True  
Select Control Tag: Double click to edi...  
Publish Period(s): 60  
Diff Publish: False

**Step 7:** Enter the information of the corresponding parameters on the project configuration page and add the tag that will be uploaded.

Enable data resume:

Data before break(s): 0

Data after reconnect(s): 0

Delay before resume(s): 120

Topic/Payload Schema: WISE-PaaS/Da...

Node ID: 12345678-abcd-dcba-1:

Credential Key: 5b61e30bdff259c3852:

DCCS API Url: https://api-dccs.wise-p...

SCADA Name:

Bad Quality Tag: Pub '\*' once

**Step 8:** Click on 'Apply' to finish the configuration.

WISE-PaaS/DataHub(NewNode) Apply Discard

Note: When enabling SSL, please ensure that the device time is consistent with the system time.

WISE-PaaS\_0 +

Tag Name	Alias
Device1:NewTag	
* Double click to edi...	

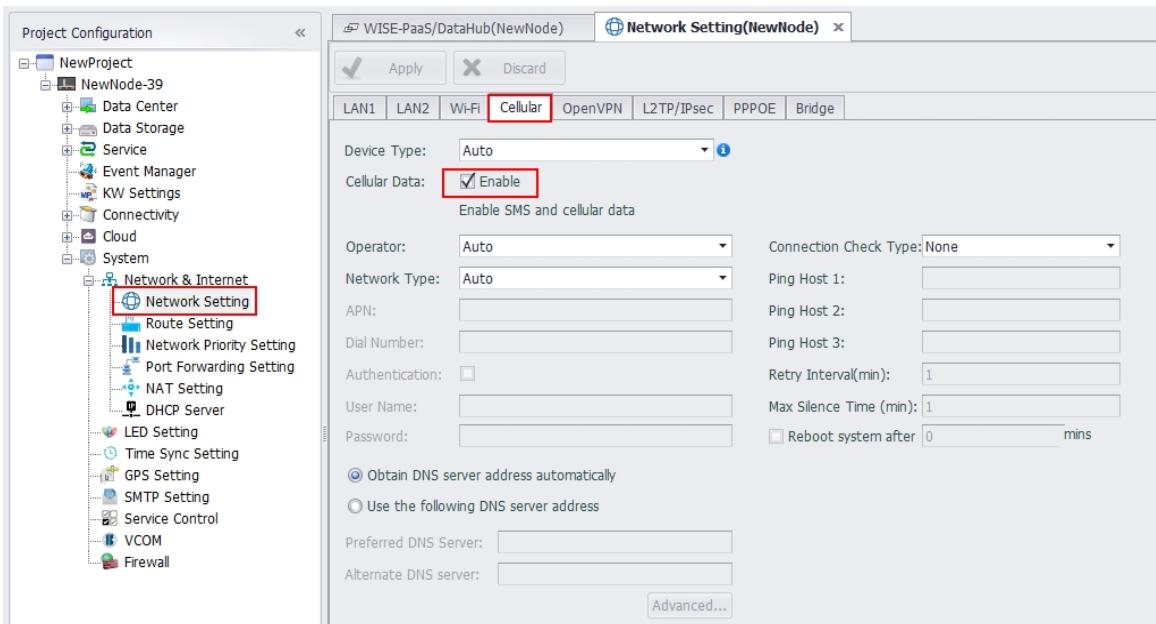
Connect Type: MQTT

Enable:

Use Socks5 Proxy:  Edit

#### 2.4.4 4G Dialer Configuration

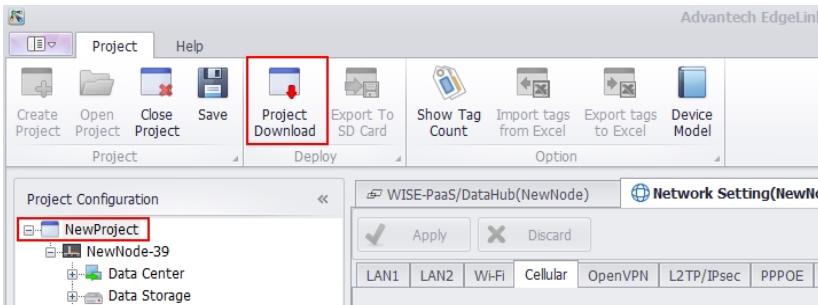
**Step 1:** Click on 'System Settings' → 'Network Settings' → 'Enable Cellular Dialer'



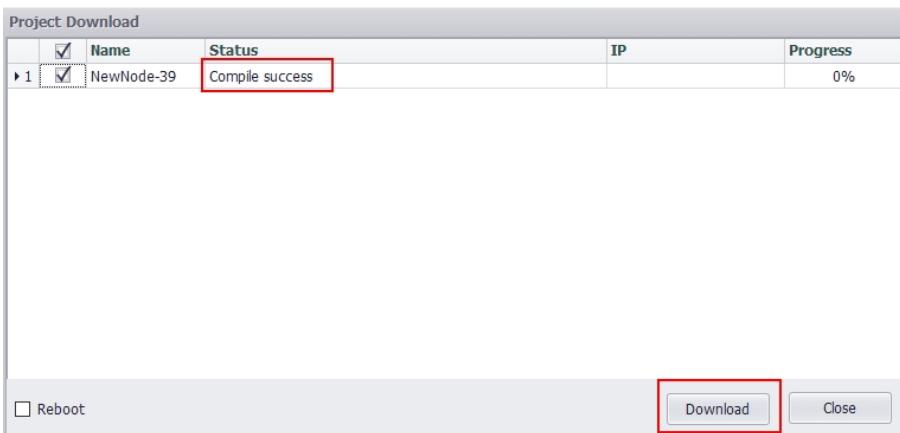
#### 2.4.5 Project Download

After the configurations above have been completed, download the project to the gateway.

**Step 1:** Click on ‘Download Project’ to bring up the following dialog box.

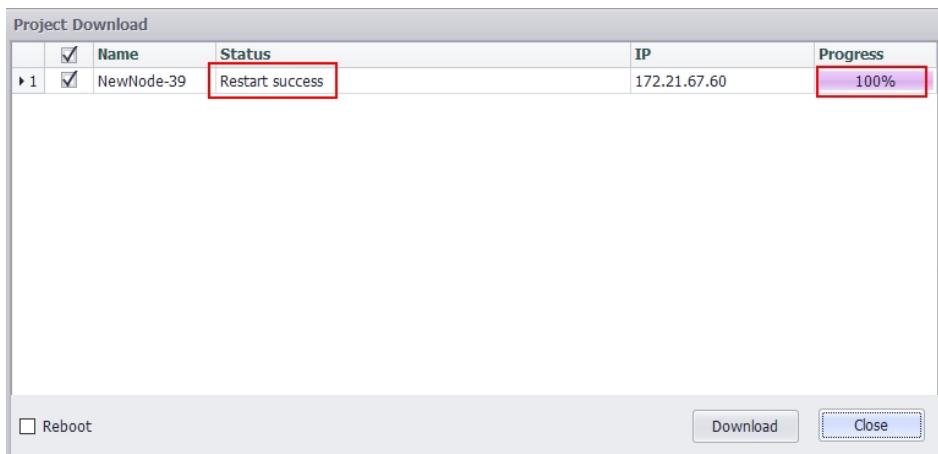


**Step 2:** Wait for the “Compiled Successfully” message to appear and then click on ‘Download.’



**Step 3:** Wait until the download is finished. The download is complete when the applications on the

gateway have restarted successfully.



**Step 4:** Close the download window.

## 2.5 Results Display

After the configurations above are complete, the PLC data can be shown in WISE-PaaS.

The screenshot shows a 'Tag List' page. At the top, there is a breadcrumb navigation: Home / test / test3600 / Device1. Below it is a search bar with 'Filter' and a dropdown menu for 'Name'. A 'Convert' toggle switch is also present. The main area is a table with columns: Tag Name, Tag Type, Description, Value, Update Time, Detail, and Delete. One row is visible, showing 'NewTag' under Tag Name, 'Analog' under Tag Type, an empty field under Description, '10' under Value, '2022-01-17 02:21:51' under Update Time, and three dots and a trash icon under Detail.

Name	Filter	Convert				
Tag Name	Tag Type	Description	Value	Update Time	Detail	Delete
NewTag	Analog		10	2022-01-17 02:21:51	...	trash

# **3 Hardware Platforms**

## **3.1 Hardware with Built-in EdgeLink**

**Hardware Information (OS with EdgeLink built-in)**

	CPU*	system Storage	RAM	SRAM	I/O	Mini-PCIe*	SIM Card Slot	LAN	COM	CAN	USB	Max tags	Linux Kernel Version	Supported Cellular Modules	Supported WiFi Modules
ADAM-3600-C2GL1	Cortex-A8 600 MHz	1G TF Card	256 MB	32 KB	OnBoard 8 AI 8 DI 4 DO Expansion ADAM-3613 (4 RTD) ADAM-3617 (4 AI) ADAM-3618 (4 TC) ADAM-3651 (8 DI) ADAM-3656 (8 DO) ADAM-3624 (4 AO) ADAM-3668 (4 Relay Output)	1x Half-Size 1x Full-Size	1	2	3	-	1x Type-A USB	3000	4.9		
ADAM-3600-D1GL1	Cortex-A8 600 MHz	1G TF Card	256 MB	32 KB	OnBoard 8 AI 8 DI 4 DO Expansion ADAM-3613 (4 RTD) ADAM-3617 (4AI) ADAM-3618 (4 TC) ADAM-3651 (8DI) ADAM-3656 (8DO) ADAM-3624 (4AO) ADAM-3668 (4 Relay Output)	1x Full-size	2	2	2	-	1x Type-A USB	3000	4.9	CU101-GL(UNICOM) EC20CEFA-512-STD(Quetel) EC25EFA-512-STD(Quetel) EC25-J(Quetel) BG96 NB-IoT(Quetel) EC2005 iot (Quetel) EWM-C109F601E(Advantech)(EOL) EWM-C109F661E(Advantech)(EOL)	EWM-W150H02E(RT5390) 96PD-RYUW131 RS9113-NB0-SON RS9113-NBZ-D3N RYWD800(RS9116) EWM-W172H01E EWM-W172
ADAM-6717	Cortex-A8 1GHz		512 MB		5 DI 4 DO 8 AI			2		-	1x Type-A USB 1x Micro USB	3000	4.9	EWM-C117FL04E(Advantech) EWM-C117FL06E(Advantech) EWM-C118HD01E(Advantech) EWM-C128FG01E(Advantech)	EWM-W150H02E(RT5390) 96PD-RYUW131 RS9113-NB0-SON RS9113-NBZ-D3N RYWD800(RS9116) EWM-W172H01E EWM-W172
ADAM-6750	Cortex-A8 1GHz		512 MB	-	12 DI 12 DO			2		-	1x Type-A USB 1x Micro USB	3000	4.9	EWM-C176FL07E(Advantech) MC509-a V2(Huawei)(EOL) MDG100 MDG200	ME3630-J2A ME3630-J2AS(ZTE) ME3760(ZTE) ME9095-120(Huawei) ME9095-821(Huawei) NL668
ADAM-6760D	Cortex-A8 1GHz		512 MB	-	8 DI 8 SSR Relay			2		-	1x Type-A USB 1x Micro USB	3000	4.9		
ECU-1050TL	Cortex-A8 600MHz	512 MB NAND	256 MB	-	-	2x Full-size	2	1	0	-	1x Type-A USB	2000	4.9		
ECU-1051TL-R10A	Cortex-A8 600 MHz	512 MB NAND	256 MB	-	-	1x Full-size	2	2	2	-	-	2000	4.9	968AD00589(Quetel EG25-G) MU609(Huawei)(EOL) MU7095-2(Huawei)	
ECU-1051B	Cortex-A8 600 MHz	512 MB NAND	256 MB	-	-	1x Full-size	2	2	2	-	-	2000	4.9	UC20GB-128-STD(Quetel)	
ECU-1051BF	Cortex-A8 600 MHz	512 MB NAND	256 MB	128 KB	-	1x Full-size	2	2	2	-	-	2000	4.9	FM150-AE QMI(wwan0)	
ECU-1051BF	Cortex-A8 600 MHz	1 GB NAND	256 MB	128 KB	-	1x Full-size	2	2	2	-	-	500	4.9	RM500Q-GL	
ECU-1051E-R10AAE	Cortex-A8 300 MHz	512 MB NAND	128 MB	-	-	1x Full-size	1	2	2	-	-	-	4.9		
ECU-1152TL-R11A	Cortex-A8 800 MHz	1G TF Card	512 MB	-	-	1x Full-size	1	2	6	-	-	2000	4.9		
ECU-1251TL-R10A	Cortex-A8 800 MHz	1G TF Card	256 MB	-	-	1x Full-size	1	2	4	-	1x Type-A USB	2000	4.9		
ECU-1251B	Cortex-A8 800 MHz	1G TF Card	256 MB	-	-	1x Full-size	1	2	4	-	-	2000	4.9		
ECU-1251D	Cortex-A8 600 MHz	1G TF Card	256 MB	-	4 GPIO	1x Full-size	1	2	2	-	-	2000	4.9		
ECU-1252	Cortex A9 600 MHz	16GB eMMC	2 GB	-	-	1x Full-size	1	2	2	-	-	2000	4.9		
EKI-183	Cortex 1GHz A35 4Core	4GB eMMC	1 GB	-	-	1x Full-size	1	2	3	1	-	20000	4.9		
ECU-150	Cortex A53 1.3G	16GB eMMC	2 GB	-	-	1x Full-size	1	2	2	-	1x Type-A USB	20000	4.9		
ECU-4553TL	Cortex-A8 800 MHz	1G TF Card	1 GB	-	-	1x Full-size	1	4	16	2	1x Type-A USB	3000	4.9		
ECU-4553L	Cortex-A8 600 MHz	8GB eMMC	512 MB	-	-	1x Full-size	1	4	16	2	1x Type-A USB	2000	4.9		
UNO-2271	Intel® Atom™ E3825, 1.33GHz Processor	32GB eMMC	DDR3L 4GB	-	-	1x Full-size	-	2	2	-	1	3000			
UNO-1372G	Intel® Celeron J1900, 2.0GHz processor	1 x mSATA / 1 x SATA	DDR3L 4GB	-	4DI/4DO	2x Full-size	1	2	2	-	4	5000			
UNO-2372G	Intel® Celeron J1900, 2.0GHz processor	1 x mSATA / 1 x SATA	DDR3L 4GB	-	-	2x Full-size	1	2	4	-	4	5000		FWM-C117FL03F(Advantech)	968AD00605(爱坦 RYWD800 RS-9116)
UNO-2484G	Intel® Core™ i5-7300U, 2.6GHz Processor	1 x mSATA / 2 x SATA	DDR4 8GB	-	-	1x Full-size	1	4	4	-	4	8000		EWM-C117FL04E(Advantech)	FWM-W192M201E(intel AC9260)
UNO-420	Intel Atom™ E3815 Processor	2GB DDR3L	-	8 x GPIO		1x Full-size 1x Half-size	2 (1 x PoE)	3	-	1 x USB 3.	5000			EWM-C117FL06E(Advantech)	EWM-W163M201E(Atheros QCA6174A-S)
UNO-137	Intel® Atom® E3940 processor (1.6 GHz)	8GB DDR3L	-	8DI/8DO		1x M.2 1x mPCIe	1	2	2	-	3 x USB 3.0 1 x USB 2.0	5000		EWM-C117FL03E(Advantech)	EWM-W157H01E(Realtek RTL8821AE)
WISE-710	CPU Freescale i.MX 6 Dual Lite A9	8GB eMMC	DDR3 1GB	-	4DI/4DO	1x Full-size	-	2	3	1	1x Micro USB2.0	3000		EWM-C117FL04E(Advantech)	EWM-W172
ICR-3200 Series	Cortex A8 CPU at 1GHz	4GB eMMC	512 MB		1DI/1DO			2	2	2		3000		ICR-3201(G) (Global)	968AD00605(爱坦 RYWD800 RS-9116)
WISE-6610	TI AM3352 CPU at 1GHz	256MB NOR Flash	DDR3 4GB	-	1DI/1DO	1x mPCIe	-	1	-	-	-	3000		ICR-3231(EMEA)	EWM-W172
Note	*无特殊说明, CPU为32bit					*无特殊说明, Signal为USB								ICR-3232(AU/NZ/BRA)	ICR-3232W(AU/NZ/BRA)
														ICR-3241(NAM)	ICR-3241W(NAM)

## **3.2 Hardware from Other Manufacturers**

The Container version of EdgeLink can be deployed across platforms. EdgeLink can be installed in x86 platform hardware through a few simple steps. Please refer to the “EdgeLink\_Container\_Deployment Instructions”.