

NexAloT Co., Ltd. NexUA Server User Manual

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PREFACE

Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from NexAloT Co., Ltd. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: https://www.nexaiot.com. NexAloT shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

Acknowledgements

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Revision History

Version	Date	Description
v1.04	June 2018	Initial release
v1.06	February 2019	 Support alarm notification and historical data logging. Support anonymous login.
v1.07	September 2019	 Released NexUA version 1.20.037. Support ODBC interface for MySQL and MSSQL. Support online or offline activation.

CHAPTER 1: USING THE NEXUA SERVER

1.1 Introduction

NexAloT NexUA Server is an Open Platform Communications Unified Architecture (OPC UA) server package with the focus on communicating with systems for data collection. Based on the OPC UA information model, NexAloT NexUA provides the platform required for information collection and allows users to leverage the service-oriented architecture of OPC UA to organize their complex data into an OPC UA namespace. With features such as tag subscriptions and real-time updates, NexAloT NexUA Server plays a key role as a communication portal that allows OPC UA clients to manipulate HMI or PLC data. NexAloT NexUA Server consists of a configurable GUI for parameters and settings as well as an OPC UA server service to act as a hub for gathering data and sending them to OPC UA client applications, enabling a streamlined OPC UA system operation.

Check the operating system requirement before installing the NexUA Server. The following are the supported operating systems:

- Microsoft Windows 10, Windows 8.1, Windows 7 with Service Pack 1, Windows Embedded Standard 7 with Service Pack 1
- Microsoft Windows Server 2016, Windows Server 2012 R2

1.2 Installing NexUA Server

1. Double click on the filename of the NexUA Server setup file, select the language for the installation, and click **OK**.



2. The installation wizard will prepare the setup process.

NexUA Server - InstallShield Wi	zard
2	Preparing to Install
	NexUA Server Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
	Extracting: NexUA Server.msi
	Cancel



3. Click **Next** to proceed, or click **Cancel** to quit.



4. Check the **I accept the terms in the license agreement** option, and click **Next** to proceed.





5. Enter the user information and the **Serial Number**.

		R
Please enter your information	1.	
User Name:		
David		
Organization:		
NEXCOM		
Serial Number:	Trial Version	



Note: You can check the **Trial Version** option and enter the serial number later. The entered product key will introduce a respective version of NexUA Server displayed on the title of the GUI.



*A warning message will be prompted if the serial number is invalid.



6. Click **Install** to begin installation.

😸 NexUA Server - InstallShield Wizard	×
Ready to Install the Program	4
The wizard is ready to begin installation	<i>.</i>
Click Install to begin the installation.	
If you want to review or change any one exit the wizard.	of your installation settings, click Back. Click Cancel to
InstallShield	
	< Back Install Cancel

7. The installation will begin and may take a while.





8. Once completed, click **Finish** to exit the installation wizard.



1.2 Launching NexUA Server

Once installed, you should be able to find the program named **NexUA Utility** in the **All Programs** list as shown.



1. Click on the icon or **NexUA Utility** to launch NexUA Server.

*Actual location varies from operating systems. The screenshot above depicts the program in Windows 7.

2. Enter the password in the respective field and click **OK**.

NexUA Serve	r Utility Login	×
Password:		
	ОК	Cancel



Note:

- 1. Use the default Password: *0000* to log in if you are logging in for the first time.
- 2. Remember to change the password frequently and keep it in a safe place to avoid hacking. Refer to *2.4 License* for setting the password.



*A warning message will be prompted if an incorrect password is entered.



3. The GUI of NexUA Server will be displayed on the screen.

NexUA Server Utility: Trial Version (< 0 days)	×
Show the status of NexUA server.	
Status License About	
NexUA Server Status	
Status: Running	
UA TCP: opc.tcp://DESKTOP-NQMM9FK:48010	
HTTPS: https://DESKTOP-NQMM9FK:58010	
Information	
Server Config: ServerConfig.xml	
Node NodeConfig.xml	
Server Operation: Restart Start Stop]
確定 取消 套用(A)	

CHAPTER 2: NEXUA SERVER BASICS

NexAloT NexUA Server consists 5 pages of information and menus for server status and configurable parameters. Simply click on the respective tab for further configuration purposes with NexUA Server.

NexUA Server Utility: Trial Version (< 8 days) Status Show the status of NexUA server. Status Endpoints Users Node Config ODBC Database License About NexUA Server Status Status: Stopped				
_	Status Show the status of NexUA server.	_		
0	Status Endpoints Users Node Config ODBC Database License About			
	NexUA Server Status			
	Status: Stopped			
	UA TCP: Not Supported.			
	HTTPS: Not Supported.			
	Information			
	Server Config: ServerConfig.xml			
	Node Config: NodeConfig.xml			
	Server Operation: Restart Start Stop			
	OK Cancel Apply			



Item	Name	Description
1	NexUA Server	Move the cursor onto the connection
1	Status	address and right click to copy it.
2	OK/Cancel	Click OK or Cancel to hide the interface in the background. NexUA Server Utility ** NexUA Server Utility ** NexUA Server Utility is running here. To bring the interface back to the screen, click on Show hidden icons in the taskbar, and click on the icon of NexUA Server. A message will prompt you to enter the password. NexUA Server Utility Customize
3	Apply	Click Apply to make the configured parameters take effect. A message will prompt you with the option to restart the server.
4	X	Click on the ${f X}$ button to exit NexUA Server.



2.1 Status

The Status page displays brief information about the current server status. When NexUA Server is launched, the server operation is initially stopped by default. Once NexUA Server is up and running, the connection addresses for **UA TCP:** and **HTTPS:** will be displayed respectively, allowing client applications to use the addresses to connect to NexUA Server.

NexUA	Server Utility	y: Trial V	ersion (< 8 da	ys)			×
Ś	Status Show	the stat	us of NexUA	server.			
Status	Endpoints	Users	Node Config	ODBC Database	License	About	
Nex	UA Server St	tatus					
	Status:	Stopped	I				
	UA TCP:	Not Sup	ported.				
	HTTPS:	Not Sup	ported.				
Info	ormation						
	Server Conf	îg: Ser	verConfig.xml				
	Node Config): No	deConfig.xml		•		0
Ser	ver Operation	n:	Resta	art	Start		Stop
				ОК	Ca	ancel	Apply



Item	Name	Description
1	Start	Click Start to get the server running.
2	Stop	Click Stop to stop the server operation.
3	Restart	Click Restart to stop and start the server operation.

2.2 Endpoints

The Endpoints page allows you to configure all affiliated settings of connections between endpoints. You can edit the settings and save them by clicking **Apply** at the bottom of the user interface. The settings are applied once the server has been restarted.

	e the Nexua Serv	/er.		
tus Endpoints Use	ers Node Config	ODBC Database	License About	
UA TCP				
opc.tcp://DESKTOP	-3SF4O0N:48010			_
2 Port:	48010]
3 Server Name:	DESKTOP-3SF400	N		
Security Modes:	✓ None	🗸 Sign	✓ SignEncrypt	
5 Security Policies:	Basic128Rsa15	✓ Basic256	Basic256Sha256	
HTTPS				
https://DESKTO	-3SF4O0N:48011			
2 Port:	48011]
3 Server Name:	DESKTOP-3SF400	N		



Item	Name	Description
1	Connection Address	UA TCP is the default network protocol for the endpoints. You can choose to enable or disable the HTTPS protocol by checking/unchecking the checkbox on the left of the HTTPS connection address.
2	Port	Enter a number in the Port field to set the dedicated port for the connection address.
3	Server Name	Enter a name in the Server Name field to set the hostname for the connection address.
4	Security Modes	 Check either of the checkboxes in Security Modes to set the method for authenticating the connection. None: The connection does not require authentication. Sign: The connection requires sign-in information. SignEncrypt: The connection requires and encrypts sign- in information.
5	Security Policies	 Check either of the checkboxes in Security Policies to set the encryption algorithm used for the connection. Basic128Rsa15: The connection adopts RSA15 as the key wrap algorithm and 128-bit Basic as the message encryption algorithm. Basic256: The connection adopts 256-bit Basic as the message encryption algorithm. Basic256Sha256: The connection uses SHA256 for the signature digest and 256-bit Basic as the message encryption algorithm.



Note:

- 1. HTTPS is designed to secure against attackers gaining access to website accounts and sensitive information. Thus, there are no security settings in the HTTPS section.
- 2. If both ports of UA TCP and HTTPS are identical, an error message will prompt you to reset the ports.





2.3 Users

The Users page displays user authentication settings. Connections to NexUA Server can be authenticated with username/password, Windows Logon, or Certification.

us En	dpoints Users	Node Config	ODBC Databas	e License	About
dminist	trator			1	
Name:	root		Password:	Reset	
erver l	Jsers				
# Name Dead Write Eventship					
-	TVGITIC			with the	Executable
			2		
			•		



Item	Name	Description				
1	Reset	Click Reset to change the password of the Administrator .				
2	Server Users	Right click on the table in Server Users to Add a user, Delete one or multiple users, Change Password of a user, and Change Access Right of a user. Note: Press and hold the Shift key and click on the name of the user to select multiple users. Add User Delete User(s) Change Password Change Access Right				
	Add User	Select Add User in the pop-up window to add a new account. Enter the required information in the respective fields, and select the required Access Right option by selecting the respective checkboxes. Click OK when done.				
3	Enable Windows Logon	Check the checkbox on the left of Enable Windows Logon to enable or disable Windows logon, which is a feature that uses username and password of the local windows installation for NexUA Server connection.				
4	Enable Certification	installation for NexUA Server connection. Check the checkbox on the left of Enable Certification to enable or disable asymmetrical cryptography to authenticate with the self-signed certificate for NexUA Server connection. The trusted self-signed public key is stored in the following path: C:\Program Files\NEXCOM\NexUA Server\pkiuser\trusted\certs The rejected self-signed public key is stored in the following path: C:\Program Files\NEXCOM\NexUA Server\pkiuser\trusted\certs The rejected self-signed public key is stored in the following path: C:\Program Files\NEXCOM\NexUA Server\pkiuser\rejected Note: Moving a rejected self-signed public key from the "rejected"				
5	Anonymous	Check the checkbox on the left of Anonymous to enable or disable anonymous login.				

2.4 Node Config

The Node Config page displays and configures alarm and historical data settings of the NexUA Server. An alarm is an abnormal condition aimed to notify relevant users that special attention is required. The historical configuration is used to provide historical data for a variable from the NexUA Server.





Item	Name	Description					
1	Alarm & HA List	 1-1. The icon represents an alarm field. 1-2. The represents a field and the value of the field will be stored to the server. 1-3. Displays the attributes of the selected fields in the Alarm & HA List table. 					
2	Start Logging	Starts or stops the logging of historical data. After starting the logging, the value of nodes will be historized to the server.					
3	Configure	You can edit the alarm and historical data settings by clicking Configure at the bottom of the Node Config page. Alarms & Historical Data × Node Configuration Node Configuration					



Item	Name	Description
		Right-click on the element to select the Add Alarm Event or Add Historical Data menu item. Select Add Alarm Event to set the element with alarm notification, or select Add Historical Data to ask server for historical data buffering.
		Add Alarm Event Add Historical Data
		 1-1 The icon represents a node without alarm and historical data setting. 1-2 The icon represents a node with alarm notification setting. 1-3 The icon represents that the server will save historical data for this node. 1-4 The icon represents this node provides both alarm notification and historical data buffering. 2. Alarm Event: Allows users to browse all the nodes with alarm notification setting. Right-click on the element to select the Edit Condition or Remove Alarm menu item
		Edit Condition Remove Alarm
		3. Historical Data: Allows users to browse all the nodes with historical data buffering setting.
		Right-click on the element and select the Remove Historical menu item to remove setting.
		Remove Historical
		4. Attribute List: The Attribute window shows the attributes of the node that is selected in the Objects window.



ltem	Name	Description				
		5. Alarm Condition: The Alarm Condition window shows the conditions of alarm notification. If the node's data type is Boolean, there is no need to set the alarm condition.				
		Alarm Condition HighHighLimit HighLimit LowLimit LowLowLimit				
4	Import	Click Import to select configuration files in the File Explorer. Select the file and click Open. A message will prompt you to restart the NexUA Server. After restarting the NexUA Server, the new configuration will be applied to the server's address space.				
5	Export	Click Export to save the current configuration to an external XML file.				

2.5 NexUA ODBC SOP

This section describes the procedures for setting up ODBC in MySQL and MSSQL.

MySQL

Step 1: Environment Setup

1-1 Please download MySQL and ODBC drivers from the below URLs: <u>https://dev.mysql.com/downloads/mysql/</u> <u>https://dev.mysql.com/downloads/connector/odbc/</u>

Note: The ODBC driver cannot be higher than the fifth version.

Generally Available (GA) Releases	
Connector/ODBC 5.3.13	
Select Version:	
5.3.13	T
Select Operating System:	
Microsoft Windows	۲
Select OS Version:	

1-2 Open **MySQL Workbench** and connect to the target server.





Step 2: Create the user and give the user permission to access the DB

2-1 Go to Server > Users and Privileges on the top menu bar.



2-2 Click Add Account.





2-3 Fill in the Login Name and Password.

.ogin	Account Limits	Administrative Roles	Schema Privileges	
	Login Name	e: ulahsieh		You may create multiple accounts with the same name to connect from different hosts.
Au	uthentication Type	e: Standard	~	For the standard password and/or host based authenticatio select 'Standard'.
Limit	to Hosts Matching	g:		% and _ wildcards may be used
	Password	d: **********		Type a password to reset it.
		Medium strength	password.	
	Confirm Password	d: **********		Enter password again to confirm.
		Expire F	Password	

2-4 To allow access to the database from any network, please enter the percentage sign "%" in **Limit to Hosts Matching**. This will grant MySQL remote access to any IP or network.

Jser Accounts		Details	for account ula	hsieh@%		
User	From Host	Login	Account Limits	Administrative Roles	Schema Privileges	
mysql.infoschema mysql.session mysql.sys	localhost localhost localhost		Login Name	: ulahsieh		You may create multiple accounts with to connect from different hosts.
root ulahsieh	%	Au	uthentication Type	: Standard	×	For the standard password and/or ho select 'Standard'.
		Limit	to Hosts Matching	: %		% and _ wildcards may be used
			Password	***********	:8888	Type a password to reset it.
				Consider using a mixed case letter	password with 8 or r s, numbers and pun	more characters with ctuation marks.
			Confirm Password	***********	****	Enter password again to confirm.
				Expire F	Password	



2-5 Change the tab to **Administrative Roles** and select the first role **DBA**, then click **Apply**.



Step 3: Turn off the firewall setting in Control Panel

3-1 Go to Control Panel > System and Security > Windows Defender Firewall, and click Turn Windows Defender Firewall on or off.



3-2 Select Turn off Windows Defender Firewall and click OK.



Step 4: NexUA Server Utility Settings - Node Config

4-1 Open the NexUA Server Utility and click **Start** to run the server.

NexUA Server Utility	<
Show the status of NexUA server.	
Status Endpoints Users Node Config ODBC Database License About	
NexUA Server Status	
Status: Running	
UA TCP: opc.tcp://DESKTOP-28S9JGH:48010	
HTTPS: https://DESKTOP-28S9JGH:48011	
Information	
Server Config: ServerConfig.xml	
Node Config: NodeConfig.xml	
Server Operation: Restart Start Stop	
OK Cancel Apply	

4-2 Switch to the Node Config tab and click Import to add your XML address space file.

NexUA Server Utility				×
Specifies ala	g rm and historica	I settings for N	lexUA Server	
Status Endpoints Users	Node Config O	DBC Database	License About	
- Current Configuration -				
Config File Name: No	deConfig.xml			
Alarm & HA List		_		
# Node Nar	e	Attribute	Value	
Start Logging		Impo	Configure	
		OK	Cancel Apply	



4-3 Click **Configure** to show the **Alarm & Historical Data** window.

NexUA	Server U	Itility				×
*	Noc Sp	le Config ecifies alar) m and histor	rical settings for	r NexUA Serv	er
Status Cur Co	Endpoi rrent Con onfig File	nts Users figuration Name: Nod	Node Config eConfig.xml	ODBC Database	License Abo	ut
Ala	rm & HA I	List				
	#	Node Name		Attribute	Value	
	Start Lo	ogging		Im	port	onfigure Export
				ОК	Cancel	Apply

4-4 Expand the node tree. Right-click the node and choose the **Alarm Event** or **Historical Data** you would like to add, then click **OK**.

de Configuration			
⊡ <mark> </mark> Objects ⊡ ! est		Attribute	Value
		NodeID NamespaceIndex	NS1
🖶 는 Alarm Ev	Add Alarm Event	IdentifierType	Numeric
1	Add Historical Data	Identifier	6002
🖃 🛑 Historical 느	Add Historical Data	NodeClass	Variable
		BrowseName	ns=0,"2"
		DataType	Double
		DisplayName	** , *2*
		Description	
		WriteMask	0
		UserWriteMask	0
		Alarm Condition	
		HighHighLimit	
		HighLimit	
		LowLimit	
		LowLowLimit	



4-5 You can view the Alarm & HA List's changes below. Check the Start Logging checkbox to log the data into database. Click Apply to apply the settings to the server.

tatus E	Endpoi	ints Users Node Co	nfig ODBC Database	License About
Currer	nt Con	figuration		
Confi	ig File	Name: NodeConfig.x	nl	
Alarm	& HA	List		
	#	Node Name	Attribute	Value
2012	01	6001		
Ē	02	6001		
P	03	6002		
	tart L	ogging		Configure



Step 5: NexUA Utility Settings - ODBC Database

5-1 Switch to the **ODBC Database** tab and check the **Activate SQL** checkbox.

NexUA Server Utility				×
ODBC Datal Create an OD	Dase BC connection	on to a SQL Serv	ver databa	se
Status Endpoints Users	Node Config	ODBC Database	License A	About
Active SQL				
SQL Server:	SQL Server is	Disconnect		
SQL Type:	MySQL		~	
SQL Driver:			~	
Server:			~	•
Port:	3306]
User:				
Password:				
Database:			~	
		ОК	Can	cel Apply

5-2 Choose **MySQL** and the suitable **ODBC SQL Driver** in the first two drop-down lists. Fill in the IP address of your **SQL Server**, the default port number "**3306**" and the **user login information**. Click the **magnifier icon** to search the databases from the designated SQL server and choose your target database.

NexUA Server Utility		×
ODBC Data Create an OL	base DBC connection to a SQL Server database	
Status Endpoints Users	Node Config ODBC Database License About	
Active SQL		
SQL Server:	SQL Server is Disconnect	
SQL Type:	MySQL ~	
SQL Driver:	MySQL ODBC 5.3 ANSI Driver \sim	
Server:	10.0.75.1 ~	
Port:	3306	
User:	ulahsieh	
Password:	•••••	
Database:		
	information_schema mysql performance_schema sakila sys el App uatest	ly

5-3 Click **Apply** and restart the Utility.

NexUA Server Utility	/ ×	Ċ
ODBC Create	Database an ODBC connection to a SQL Server database	
Status Endpoints	Users Node Config ODBC Database License About	
Active SQL SQL Server: SQL Type: SQL Driver:	Information! × NexUA Service has been restarted!	
Server: Port:	ОК	
User: Password: Database:	uansien uatest	
	OK Cancel Apply	1
		-

The Utility will display that the connection is connecting.

NexUA Server Utility

	ODBC Data Create an O	base DBC connection to a SQL Server database
Status	Endpoints Users	Node Config ODBC Database License About
\square	Active SQL	
	SQL Server:	SQL Server is Connecting
	SQL Type:	MySQL ~
	SQL Driver:	MySQL ODBC 5.3 ANSI Driver \sim
	Server:	10.0.75.1 ~
	Port:	3306
	User:	ulahsieh
	Password:	•••••
	Database:	uatest 🗸 🗸
		OK Cancel Apply

 \times



Step 6: Start logging the data

6-1 Prepare the dataflow on IoT Studio.

~ IoT Studio	
Q filter nodes	Flow 3 +
~ input	
🖨 inject 🛛	
catch	
🚦 status 💿	
😝 link 🛛	
)) mqtt o	🔲 💠 tmestamp U
🌍 http 🛛	opc UA Item 🛞
📀 websocket 🛛	
Q watch	

6-2 Look up the database. Two new tables has been created, with the data successfully recorded to the tables as well.

Navig	ator			
SCHE	MAS	49		
Q Filt	er objects			
	sakila			
	svs			
V	uatest			
	Tables			
— Г	historizedevent			
	historizedvariabl	e		
	Views	_		
	🐨 Stored Procedures			
	Functions			
	world			
historize	edevent historizedvaria	ble ×		
	- 1 🗲 🜴 🔕 🕐 1		📓 🛛 Limit to 1000 rows 🛛 🔸 🛛 🚿	1 7
1.0	CELECT * FROM upt	ost biston	izadvaniable:	
1.0	SELECT FROM UNC	est.mistor	Izedvariable;	
<				
Result (Grid 📗 🚷 Filter Rows:		🛛 🛛 🖾 🔹 🔚 🛛 Export/Import: 🏭	Wrap Cell Conte
id	nodeid	value	ts	
109	6002	57	2019-08-06 23:05:14.738	
110	6001	90	2019-08-06 23:05:24.741	
111	6002	95	2019-08-06 23:05:24.744	
112	6001	28	2019-08-06 23:05:34,738	
113	6002	12	2019-08-06 23:05:34,741	
115	6002	86	2019-08-06 23:05:44.743	
116	6001	24	2019-08-06 23:05:54.739	
117	6002	15	2019-08-06 23:05:54.742	
118	6001	41	2019-08-06 23:06:04.741	
119	6002	57	2019-08-06 23:06:04.743	
120	6001	43	2019-08-06 23:06:14 743	



his	torizede	vent × histori	zedvariable				
C		🗲 🖌 🔍	0 8	🛛 💿 💿 😿 🛛 Limit to 1000 rows 🔹	🏡 🕑 🍳 🔳 🛙	a)	
1 • SELECT * FROM watest.historizedevent;							
Re	id	I 🔢 🚷 Filt	er Rows:	Edit: 🔏 🔜 Expo	ort/Import: 💼 🐻 Wr	ap Cell Cont	sourcer
•	1	0x61459481	10060	Non exclusive level alarm active in Low	2019-08-0705:56:54	400	1
,	2	0x50F0A88E	10060	Non exclusive level alarm inactive	2019-08-07T05:57:14	100	1
	3	0x53AF38D	10060	Non exclusive level alarm active in Low	2019-08-07T05:57:24	400	1
	4	0xD0F69CD	10060	Non exclusive level alarm active in HighHigh	2019-08-07T05:57:34	800	1
	5	0xC3CB181	10060	Non exclusive level alarm active in LowLow	2019-08-07T05:57:44	800	1
	6	0xFD699A8	10060	Non exclusive level alarm inactive	2019-08-07T05:57:54	100	1
	7	0x4F2718F1	10060	Non exclusive level alarm active in High	2019-08-07T05:58:04	400	1
	8	0x0CB2B7F1	10060	Non exclusive level alarm inactive	2019-08-07T05:58:14	100	1
	9	0x6E4B4D07	10060	Non exclusive level alarm active in Low	2019-08-07T05:59:14	400	1
	10	0xAC83F33	10060	Non exclusive level alarm active in High	2019-08-07T05:59:24	400	1
	11	0x54B90639	10060	Non exclusive level alarm inactive	2019-08-07T05:59:34	100	1

.



MSSQL

Step 1: Environment Settings

- 1-1 Please download SQL Server, SQL Server Management Studio and ODBC drivers from below URLs: <u>https://www.microsoft.com/zh-tw/sql-server/sql-serverdownloads#</u> <u>https://docs.microsoft.com/zh-tw/sql/ssms/download-sqlserver-management-studio-ssms?view=sql-server-2017</u> <u>https://www.microsoft.com/zh-tw/download/details.</u> <u>aspx?id=56567</u>
- 1-2 Open SQL Server Management Studio (directly enter "**SSMS**" in the Windows search box to locate it) and connect to the target SQL Server.

All Apps Documents Settings	iotos More V Feedback …
6 Best match	
Microsoft SQL Server Management Studio 18 Desktop app	⇒ 😹
Apps	Microsoft SQL Server Management Studio 18
SSMS-Setup-ENU.exe	> Desktop app
SSMS-Setup-CHT.exe	Ci Open Ci Run as administrator Dipen file location -41 Pin to Start -42 Pin to Start -41 Pin to Start -62 Pin to Start
Nicrosoft SQL Server Management Studio	Quick Lsunch (Ctrl+Q) P = \square X
File Edit View Project Tools Wind	/ Help Query 율요요요요
Object Explorer ▼ Connect ▼ ♥ ♥ ■ ▼ Ô ↔	< compared with the second secon
	cg ^B Connect to Server ×
	SQL Server
	SQL Server Server hpe: Database Engine
	Sever type: Database Engine v Sever name: BESKTOP-20531(3)
	Severspe: Database Engine v Seversname: BisKitOPA265306tt v Authentication: Windows Authentication v Upersname: DESKITOPA263306Huser v
	Sever type: Database Engine v Sever name: EESKT0P2853051 v Authentication: Windows Authentication v User name: DESKT0P285306Huser v Password: Remember password
	Sever type: Database Engine v Sever name: EESKTOP-20530510 v Authentication: Workdows Authentication v User name: DESKTOP-205305Huaer v Password: Cancel Help Options >>



Step 2: Create the user and give the user access permission

2-1 At the **Object Explorer** section, expand **Security** and rightclick the **Logins** folder, then click **New Login...**.



2-2 Fill in the **Login Name**, select the **SQL Server authentication** checkbox and enter the **Password** twice for confirmation.

Select a page I Script ▼ P Help ✓ General Server Roles ✓ User Mapping ✓ Securables ✓ Status ✓ Windows authentication Password: •••• Confirm password: •••• Connection Specify old password old password old password old password: ✓ Berver: Enforce password expiration ✓ Berver: Mapped to certificate ✓ Mapped to certificate ✓ ✓ Mapped Credential ✓ Mapped Credentials Credential Progress Default database: Ørage: Default language:	Login - New				-		\times
Server: Desktoral Securities Status	Select a page	🖵 Script 🔻 🕜 Help					
▶ User Mapping Login name: usef Search > Status ○ Windows authentication ○ ● SQL Server authentication Password: ••••• Confirm password: ••••• ○ ○ Specify old password: ••••• ○ ○ Specify old password: ••••• ○ ○ Specify old password: ●•••• ○ ○ Old password: ●•••• ○ ○ User must change password expiration ○ ∪ User must change password at next login ○ Mapped to certificate ○ ○ ○ DESKTOP-28S9JGH ○ Map to Credential Mapped Credentials ○ ○ Progress ○ Pefault database: ○ ○ Ready ○ Default database: ○ ○ Pefault database: ○ ○ ○	Server Roles						
✓ Securables ✓ Windows authentication ✓ Status ④ SQL Server authentication Password: ●●●●● Confirm password: ●●●●● ○ Specify old password: ●●●●●● ○ Specify old password: ●●●●●● ○ Connection ○□ ter must change password at next login ○ Mapped to certificate ● ○ Mapped to certificate ● ○ Mapped to asymmetric key ● ○ Server: DESKTOP-28S9JGH DESKTOP-28S9JGH Mapped Credential Connection: DESKTOP-28S9JGH/user ♥ New connection properties ● ● Frogress ● ● Progress ● ○ Ready ● ● Default database: ● □ Default language: ●	👂 User Mapping	Login name:	user			Search	
● SQL Server authentication Password: Confirm password: Old password: Defrorce password expiraton User must change password at next login Mapped to certificate Mapped to asymmetric key DESKTOP-28S9JGH Connection: DESKTOP-28S9JGH Mapped Credential Mapped Credentials Credential Provider V ^I View connection properties View connection properties Default database: Default database: Default language:	Securables	 Windows authentication 					
Password: ●•••• Confirm password: ●••••	- Claudo	SQL Server authentication					
Confirm password: ●●●●● Specify old password: ● Old password: ● Enforce password policy ● Enforce password expiration ● User must change password at next login ● Mapped to certificate ● DESKTOP-28S9JGH ● V* View connection properties ● Progress ● Default database: ● Default database: ● Default language:		Password:	••••				
□ Specify old password ○ Old password: □ Enforce password policy □ Enforce password expiration □ User must change password at next login ○ Mapped to certificate ○ Mapped to asymmetric key Server: DESKTOP-28S9JGH ○ Mapped to credential Mapped Credential Mapped Credentials Credential Progress ♥ New connection properties Default database: Default language:		Confirm password:	••••				
Old password: □ Enforce password policy □ Enforce password expiration □ User must change password at next login ○ Mapped to certificate ○ Mapped to asymmetric key ○ Map to Credential DESKTOP-28S9JGH Mapped Credentials Connection: DESKTOP-28S9JGH\user ♥ View connection properties Progress Default database: © Remove Default datapage:		Specify old password					
□ Enforce password policy □ Enforce password expiration □ User must change password at next login ○ Mapped to certificate ○ Mapped to asymmetric key Server: DESKTOP-28S9JGH DESKTOP-28S9JGH Mapped Credential Progress Mapped Credentials V [*] View connection properties Progress Default database: Default datapage:		Old password:					
□ Enforce password expiration □ User must change password at next login ○ Mapped to certificate ○ Mapped to asymmetric key ○ Map to Credential Connection: Mapped Credentials Connection: Mapped Credentials Verevent Mapped Credentials Progress ■ ✓ Pefault database: Default datapage:		Enforce password policy					
□ User must change password at next login ○ Mapped to certificate ○ Mapped to asymmetric key ○ Server: DESKTOP-28S9JGH ○ Mapped to asymmetric key ○ Mapped to asymmetric key ○ Mapped to asymmetric key ○ Mapped Credential ○ Mapped Credentials ○ Credential Progress ○ Ready ○ Default database: □ Default language:		Enforce password expiration					
Connection Mapped to certificate Server: Mapped to asymmetric key DESKTOP-2859JGH Map to Credential Connection: Mapped Credentials DESKTOP-2859JGH\user Mapped Credentials V ^I Y View connection properties Progress Default database: Default language: Master		User must change passv	vord at next login				
Connection Mapped to asymmetric key Map to Credential Mapped Credentials Credential Provider Add Mapped Credentials Credential Provider Remove Remove Remove Cefault database: Default language: Cefault > Add 		 Mapped to certificate 			\sim		
Server: DESKTOP-2859JGH Image to Credential Image to Credentia Image to Credentia Ima	Connection	 Mapped to asymmetric key 			\sim		
Connection: DESKTOP-2859JGH\user Mapped Credentials Credential Provider Y Mew connection properties Mapped Credentials Credential Provider Progress Remove Remove Default database: master Default language:	Server: DESKTOP-28S9JGH	Map to Credential			~	Add	
Yiew connection properties Remove Progress Remove Progress Default database: Default language:	Connection: DESKTOP-28S9JGH\user	Mapped Credentials	Credential	Provider			
Progress Remove Ready Default database: Default language:	View connection properties						
Progress Remove Ready Default database: Default language:							
Progress Remove Ready Default database: master Default language:							
Ready Default database: master Default language:	Progress					Remov	e
Seas Seas Seas Seas Seas Seas Seas Seas	Ready	Default database:	master		~		
	Vege ^y	Default language:	<default></default>		~		



2-3 Switch to the **Server Roles** page and check the **sysadmin** role checkbox.

Login Properties - user		-	\times
Select a page General Server Roles User Mapping Securables Statue	Server role is used to grant server-wide security privileges to a user.		
	Server roles: bulkadmin dbcreator diskadmin processadmin yublic secuntyadmin serveradmin setupadmin v sysadmin		

2-4 Switch to the **User Mapping** page. Select the target database and enable all the roles for the user, then click **OK**.

Login Properties - user			_	n x
Select a page	🖵 Script 🔻 😮 Help			
 General Server Roles User Mapping 	Users mapped to this login:			
SecurablesStatus	Map Database master	User	Default Schema	
	model msdb			
	tempdb	user	user	
Connection				
Server: DESKTOP-28S9JGH	Guest account enabled for: te	est st		
Connection: DESKTOP-28S9JGH\user	db_accessadmin db_backupoperator			
Y View connection properties	 ✓ db_datareader ✓ db_datawriter ✓ db_ddladmin ✓ db_denydatareader ✓ db_denydatawriter 			
Progress	✓ db_owner ✓ db_securityadmin			
Heady	Depublic			
			ОК	Cancel



Step 3: Set the TCP port for the SQL Server

3-1 Open SQL Server Configuration Manager. Navigate to SQL Server Network Configuration > Protocols for MSSQLSERVER, and double click TCP/IP.



Change the **Enabled** option to **Yes**.

TCP/IP Properties			?	×
Protocol IP Addresses				
General				
Enabled	Yes			-
Keep Alive	30000			
Listen All	Yes			
Enabled Enable or disable TCP/IP prot	ocol for this sen	ver instance		
ОК	Cancel	Apply	Н	elp



3-2 Switch to the **IP Address** tab. Find the IP address you'd like to connect and choose **Yes** in the **Enabled** field to enable it. Click **OK** after complete.

_	Activo	Vor
	Enabled	No
	Enabled ID Addross	1
	TCD Duramic Barts	
	TCP Dynamic Ports	1422
	1042	1433
-	IP12 Active	Ver
Г	Enabled	Vec -
L	IP Address	127.0.0.1
	TCP Dynamic Ports	121101011
	TCP Port	1433
Ξ	IP13	
_	Active	Yes
	Enabled	Ne
	IP Address	fe80::c1a6:7edb:2ff8:4e59%14
	TCP Dynamic Ports	
	TCP Port	1/33

3-3 Go back to the main page of Configuration Manager and navigate to SQL Server Services. Right-click on SQL Server (MSSQLSERVER) and select Restart to apply all the changes to the server.



Step 4: Turn off the firewall setting in Control Panel

4-1 Go to Control Panel > System and Security > Windows Defender Firewall, and click Turn Windows Defender Firewall on or off.

🔗 Windows Defender Firewall					
← → · ↑ 🔗 > Control Pa	anel > System and Security > Windows Defend	ler Firewall	~ Ū		
Control Panel Home	Help protect your PC with Windov Windows Defender Firewall can help prevent	vs Defender Firewall hackers or malicious software from gaining access to y	our PC		
Allow an app or feature through Windows Defender Firewall Change notification settings Turn Windows Defender	through the Internet or a network. Update your Firewall settings Windows Defender Firewall is not usin recommended settings to protect you	g the SUse recommended se	ttings		
Firewall on or off Restore defaults	What are the recommended settings?				
Advanced settings Troubleshoot my network	Private networks	Connec	ted 🔿		
	Networks at home or work where you know and trust the people and devices on the network				
	Windows Defender Firewall state:	Off			
	Incoming connections:	Block all connections to apps that are not on of allowed apps	the list		
	Active private networks:	Network			
	Notification state:	Notify me when Windows Defender Firewall b new app	olocks a		
	Guest or public networks	Connec	ted 🔿		
	Networks in public places such as airports o	r coffee shops			
	Windows Defender Firewall state:	Off			
	Incoming connections:	Block all connections to apps that are not on of allowed apps	the list		
See also	Active public networks:	H Unidentified network			
Security and Maintenance	Notification state:	Notify me when Windows Defender Firewall b new app	olocks a		
Network and Sharing Center					

4-2 Select Turn off Windows Defender Firewall and click OK.



Step 5: NexUA Server Utility Settings - Node Config

5-1 Open the NexUA Server Utility and click **Start** to run the server.

NexUA Server Utility	×
Show the status of NexUA server.	
Status Endpoints Users Node Config ODBC Database License About	
NexUA Server Status	
Status: Running	
UA TCP: opc.tcp://DESKTOP-28S9JGH:48010	
HTTPS: https://DESKTOP-28S9JGH:48011	
Information	
Server Config: ServerConfig.xml	
Node Config: NodeConfig.xml	
Server Operation: Restart Start Stop]
OK Cancel Apply	/



5-2 Switch to the **Node Config** tab and click **Import** to add your XML address space file.

NexUA S	erver U	Jtility							\times
Specifies alarm and historical settings for NexUA Server									
Status	Endpoi	ints Users	Node Config	ODE	3C Database	License	e About		
Curr	ent Con nfig File	figuration Name: Nod	eConfig.xml	•					
Alarr	n & HA I	List							
	#	# Node Name		Attribute	Value				
	Start L	ogging				[Confi	igure	
					Imp	port	E	xport	
					ОК		Cancel	Apply	

5-3 Click **Configure** to show the **Alarm & Historical Data** window.

NexUA	Server U	Itility				×
×	Not Sp	de Config ecifies alar) m and histor	ical settings for	NexUA Server	
Status	Endpoi	ints Users	Node Config	ODBC Database	License About	
Cur	rent Con onfig File	figuration Name: Nod	eConfig.xml			
Alar	rm & HA I	List				
	#	Node Name	:	Attribute	Value	
]Start L	ogging		Im	Configure port Export	
				ОК	Cancel Ap	ply



5-4 Expand the node tree. Right-click the node and choose the **Alarm Event** or **Historical Data** you would like to add, then click **OK**.

Alarms & Historical Data		
Node Configuration		
□ Objects □	Attribute NodeID	Value
	NamespaceIndex	NS1
Alarm Ev	IdentifierType	Numeric
	Identifier	6002
Historical Historical Data	NodeClass	Variable
2	BrowseName	ns=0,"2"
	DataType	Double
	DisplayName	"" , "2"
	Description	
	WriteMask	0
	UserWriteMask	0
	Alarm Condition	
	HighHighLimit	
	Lowlimit	
	LowLowLimit	
	ОК	Cancel



5-5 You can view the Alarm & HA List's changes below. Check the Start Logging checkbox to log the data into database. Click Apply to apply the settings to the server.

tatus E	Indpoi	ints Users Node Conf	ODBC Databas	se License	About	
Currer	it Con	figuration				
Alarm	o u a i	NodeConing.xmi				
Alarm	α ΠΑ Ι	List			v-L	
3126	#	Node Name	Attribute		value	
	01	6001				
H.	02	6001				
	03	6002				
⊻s	tart L	ogging			Configure	



Step 6: NexUA Utility Settings - ODBC Database

6-1 Switch to the **ODBC Database** tab and check the **Activate SQL** checkbox.

NexUA Server Utility				×
ODBC Datal Create an OD	BC connection	on to a SQL Serv	ver databas	se
Status Endpoints Users	Node Config	ODBC Database	License A	bout
Active SQL				
SQL Server:	SQL Server is I	Disconnect		
SQL Type:	MySQL		~	
SQL Driver:			~	
Server:			~]
Port:	3306			
User:				
Password:				
Database:			~	
		ОК	Canc	el Apply



6-2 Choose MSSQL and the suitable ODBC SQL Driver in the first two drop-down lists. Fill in the IP address of your SQL Server, the default port number "1433" and the user login information. Click the magnifier icon to search the databases from the designated SQL server and choose your target database.

NexUA Server Utility		\times					
ODBC Database Create an ODBC connection to a SQL Server database							
Status Endpoints U	Jsers Node Config ODBC Database License About						
Active SQL							
SQL Server:	SQL Server is Disconnection						
SQL Type:	MSSQL 🗸						
SQL Driver:	ODBC Driver 17 for SQL Server \sim						
Server:	127.0.0.1 🗸						
Port:	1433						
User:	user						
Password:	••••						
Database:	✓						
	master tempdb model msdb						
	test ei <u>A</u> ppiy						

6-3 Click **Apply** and restart the Utility.

NexUA Se	erver Utility						×
	ODBC I Create	Datab an ODE	ase 3C connectio	n to a SQL Serv	ver databa	ase	
Status	Endpoints	Users	Node Config	ODBC Database	License	About	
Ac	tive SQL	Inform	nation!		>	<	
S	QL Server:						
S	QL Type:		Nevilla Co	nico bac baan ray	tartad		
S	QL Driver:		Nexua Se	rvice has been res	started:		
S	erver:						
P	ort:				ОК		
U	ser:		user				
P	assword:		••••				
D	atabase:		test		`	- 🕰	
				OK	Car	ncel	Apply

The Utility will display that the connection is connecting.

NexUA S	Server Utility	,					\times
- 4	ODBC Create	Datal an OD	BC connection	on to a SQL Serv	ver datal	oase	
Status	Endpoints	Users	Node Config	ODBC Database	License	About	
V.	Active SQL						
	SQL Server:		SQL Server is	Connecting			
	SQL Type:		MSSQL			\sim	
	SQL Driver:		ODBC Driver	17 for SQL Server		\sim	
	Server:		127.0.0.1			~ 💐	
	Port:		1433				
	User:		user				
	Password:		••••				
	Database:		test			~ 💐	
				ОК	Ca	ancel	<u>A</u> pply



Step 7: Start logging the data

7-1 Prepare the dataflow on IoT Studio.

~~; IoT S	tudio	T Deploy	≡
Q filter nodes		Flow 3	+
~ input	<u>^</u>		*
😫 injec			
cate	•		
1 statu	5		
😝 link			
)) mqt		C CPC UA Client 🛞 msg payload 📱	
l 💮 http		OPC UA Item ()	
📀 webso	ket 💿		
Q wate	n 🔒 🗌		

7-2 Look up the database. Two new tables has been created, with the data successfully recorded to the tables as well.



E	III	Results	В	Messages
		1 ICOCILO	± •	Messaues

	id	eventid	eventtype	message	receivetime
1	1	0x8621C64B8DB26D40AC3C6A0728D992D9	10060	Non exclusive level alarm active in HighHigh	2019-08-28T03:43:11.419Z
2	2	0x23E4669F139C80419F717E2A6B6B5046	10060	Non exclusive level alarm active in High	2019-08-28T06:07:02.497Z
3	3	0x381F25F1F7D451438DE28CB6374EB12E	10060	Non exclusive level alarm active in Low	2019-08-28T06:07:08.082Z
4	4	0xE29410A46DA2CE4AB812BB976397EB24	10060	Non exclusive level alarm active in LowLow	2019-08-28T06:07:12.330Z
5	5	0xE5456CFCEE295147A4DEEC16438F15BD	10060	Non exclusive level alarm inactive	2019-08-28T06:07:18.027Z
6	6	0x6C72F65B3B1C8C41B778A10DC6EED987	10060	Non exclusive level alarm active in High	2019-08-28T08:09:53.235Z
7	7	0x6B5D15CD4FA2D94BA45D750B51D81AEF	10060	Non exclusive level alarm active in Low	2019-08-28T08:09:58.009Z
8	8	0x0308F4ECAA2CBC45B8C06212C305F274	10060	Non exclusive level alarm inactive	2019-08-28T08:10:04.113Z
9	9	0x1441A6A94CC5A94BAF43D93D5A6B4234	10060	Non exclusive level alarm active in LowLow	2019-08-28T08:10:14.265Z
10	1	0xD86E500ABCFCA24B85E14047B5D8FE59	10060	Non exclusive level alarm active in HighHigh	2019-08-28T08:10:21.921Z
11	1	0x528D9FCF24880341A34E7B016332A1B6	10060	Non exclusive level alarm inactive	2019-08-28T08:10:28.146Z

	Results	el Me	essages	
	id	nodeid	value	ts
36	36	6002	0	2019-08-28 00:08:19.497
37	37	6001	85	2019-08-28 00:09:53.490
38	38	6002	40	2019-08-28 00:09:55.990
39	39	6001	11	2019-08-28 00:09:58.497
40	40	6002	65	2019-08-28 00:10:01.493
41	41	6001	74	2019-08-28 00:10:04.500
42	42	6002	34	2019-08-28 00:10:06.990
43	43	6001	49	2019-08-28 00:10:09.497
44	44	6002	55	2019-08-28 00:10:11.997
45	45	6001	7	2019-08-28 00:10:14.490
46	46	6002	47	2019-08-28 00:10:17.990
47	47	6001	99	2019-08-28 00:10:21.993
48	48	6002	3	2019-08-28 00:10:25.000
40	40	0004	74	2010 00 20 00 10 20 407



2.6 License

The License page displays the NexUA Server Version Information and the Product details. Also, this page allows you to register the product key online or offline.

NexUA Server Utility: Trial Version (< 8 days)				
🔬 🔪 License				

MA .	Descr	ipt the v	ersion inform	nation and its fe	atures.	
Status	Endpoints	Users	Node Config	ODBC Database	License	About
Nex	UA Server V	ersion In	formation			
	Version: Number:	Standard	l Version (Unac 7	tivated, Trial Versio	on Only)	
	Libraries:	libxml2 2	, 9.4, openssl-1.	.0.2 Embedded.		
Proc	luct details					
	Max Conne	ctions:				
	Max Nodes	:				
	Expiration:		Unlimited			



NexUA Server Utility: Trial Version (< 8 days)

 \times

License

Descript the version information and its features.

Status	Endpoints	Users	Node Con	fig ODBC	Database	License	About		
Nex	UA Server Ve	rsion Inf	formation -						
	Version: Standard Version (Unactivated, Trial Version Only)								
	Number: 1	1.20.037	,						
	Libraries: li	bxml2 2	9.4, openss	l-1.0.2 Emb	oedded.				
Prod	luct details								
	Max Connect	tions:							
	Max Nodes:								
	Expiration:		Unlimited						
Licer	nse								
	Software Ke	y: XXX	x-xxxx-xxx	XXXXX	Li	cense			
	Activate:	0	Online (Offline	E	xport	Im	port	
				ß					
					OK	Ca	ancel	Apply	



Item	Name	Description
		Click License and enter your software key in the respective fields. Click OK when done.
1		Please input software key: X
	License	Software Key: OK Cancel
2	Online Activation	Change the radio button to Online . Click Activate directly after entering the software key. You'll see the below message box when the activation succeeds. Question × The software key has been successfully activated. Please restart NexUA service!
		The entered product key will introduce a respective version of NexUA Server displayed in NexUA Server Version Information and on the title of the GUI.
3	Offline Activation	Offline activation is designed for the fields where gateways cannot connect to the Internet. Change the radio button to Offline . Click Export and save the software key file(.nlm). Espot Activate

.







Item	Name	Description					
		Go back to the utility and click Import to put the file					
		you've just downloaded on Key Server. You'll see the					
		below message box when the activation succeeds.					
		Question					
		The software key has been successfully activated. Please restart NexUA service!					
		Yes No					
		The entered product key will introduce a respective					
		version of NexUA Server displayed in NexUA Server					
		Version Information and on the title of the GUI.					

After completing the license activation, you can view the changes on **NexUA Server**.

NexUA Server Version Information and Product details sections.

NexUA Server Utility	×
Elicense Descript the version information and its features.	
Status Endpoints Users Node Config ODBC Database License About	
NexUA Server Version Information Version: Standard Version Number: 1.20.037 Libraries: libxml2 29.4, openssl-1.0.2 Embedded.	
Product details Max Connections: 100 Max Nodes: 100 Expiration: Unlimited	
License Software Key: B771-XXXX-XXX60E8 License Activate: Online Offline Activate 	
OK Cancel Apply	



2.7 About

In this page, you can view copyright notice and change the login password for NexUA Server management.

NexUA Server Utility	×
About Change login password and copyright	
Status Endpoints Users Node Config ODBC Database License About	
Change Login Password: Login Password Copyright Copyright(C) 2019, NexAIot Co., Ltd. The program is provided AS IS with NO WARRANTY OF ANY KIND, INCLUDING THE WARRANTY OF DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.	
OK Cancel App	ly



Item	Name	Description
		Click Login Password to change the login password. Enter the text in the respective fields, and click OK when done. A message will prompt you that the password has been changed.
1	Login Password	Old Password: New Password: Confirm Password: OK Cancel Information The password has been changed! OK
		If the input password is invalid, please enter it again. Warning Image: Constraint of the old password is not correct! Please input it again. OK