# Monigear Network Equipment Discovery and Configuration Tool User Guide

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Monigear network equipment because of the powerful network related functions and the corresponding configuration items are more, this tool is developed to facilitate the configuration of equipment, in addition to the local equipment can also be used to use this tool to centrally manage the device. Due to the consideration of security, the communication between the device and the software of this tool uses TLS, and we provide a set of X509 self-signed certificates in the default installation package, and customers can also use openssl to issue their own certificates instead to ensure their own security.

# **1. Installation of Device Configuration Tool**

You can download the software here: http://www.monigear.com/download/devcfg\_setup.exe.

1. Run the installation software and select the installation language.

	Select the language to use during the installation.
~	English
	English

2. Choose the installation path.

Setup - Monigear device configure tool version 1.0	-		×
Select Destination Location Where should Monigear device configure tool be installed?		(	(0))
Setup will install Monigear device configure tool into the following folder.			
To continue, click Next. If you would like to select a different folder, click Browse.			
C:\Program Files (x86)\devcfg	Br	owse	
			~
At least 72.9 MB of free disk space is required.			
English		-	
	Next	Car	icel

3. Follow the steps to complete the installation.

Setup - Monigear device configure tool version 1.0		_		×
Select Additional Tasks Which additional tasks should be performed?			(	(n)
Select the additional tasks you would like Setup to perform while then click Next.	installing Monig	ear <mark>device config</mark> u	ure tool,	
Additional shortcuts:				
Create a desktop shortcut				
English	r e	·	-	
	Back	Next	Ca	ncel

Setup - Monigear device configure tool version 1.0 —		×
Ready to Install Setup is now ready to begin installing Monigear device configure tool on your computer.		
Click Install to continue with the installation, or click Back if you want to review or change any set	tings.	
Destination location: C:\Program Files (x86)\devcfg Additional tasks: Additional shortcuts: Create a desktop shortcut		•
English	•	
Back Install		Cancel

When the program is started for the first time, there will be a firewall prompt, at this time, you must accept it, let the firewall accept the network communication of the tool through, otherwise it will not work normally. For more details, refer to Appendix B - Common Issues: Unable to Discover Devices via Network.

After installation, the system interface will display as shown below. The top section contains system tools, the left side shows the device group node tree, and the right side displays the list of Monigear devices with corresponding brief information. If an error occurs when opening the program, refer to Appendix A - Common Issues: System Error Solutions or contact technical support.

⊙ D	evice configurat	ion to	ol						– 🗆 X
Syster	m Device config	jure -	Tool						
Broa Ne	dcast Search twork interface	192.	168.10.39 🔻 Fir	Add Remove Configure	First setup				
+	× ×		IP	Device type	Device name	MAC	Serial number	nfigure versi	UID
F	- Found devices	1	192.168.10.24	GNC-N Serial, NCO2 IoT Sensor	NCO2	00:bd:3b:00:30:fe	0805CEADCC0285	2	c4710405016414c0c000005000000000
		2	192.168.10.17	GNC-N Serial, NTHM2 IOT Sensor	NTHM2	00:bd:3b:00:01:7e		2	90814801304414b0c00f000000000000
		3	192.168.10.14	GNC-N Serial, NAM3 IOT RTU	NAM3-Test	00:bd:3b:00:01:70		2	5c514401304414b0c00f000000000000
		4	192.168.10.26	4,GNC Video box	VideoBox26	00:bd:3b:00:01:9b		2	2ca1c604016414c0c000005000000000
		5	192.168.10.129	GNC-N Serial, NAM3 IOT RTU	NAM3-lvk	00:bd:3b:00:2f:2f	0804CDAJBI0049	2	28410505016414c0c000005000000000
		6	192.168.10.28	GNC-N Serial, NIO3 IOT RTU	NIO3	00:bd:3b:00:01:7c		2	50c14401304414b0c00f000000000000
		7	192.168.10.27	4,GNC Video box	VideoBox	00:bd:3b:00:34:0b	0400CEAHDA0766	2	fc618600304c14b0c00900d00000000
		L)							

# **2. Initial Configuration**

## 2.1 Login Password

The first time you run the device configuration tool, you need to set a login password. Subsequent runs will require this password to log in.

## **2.2 Certificate Authentication**

To connect Monigear devices and software, a certificate must be set for authentication. Open the configuration interface from the top left corner of the device configuration tool.

Device configuration	on too	ol		
System Device configu	ure T	ool		
Configure 🖊 🛃				
Exit	192.	168.10.39 🔻 Fi	nd Add Remove Configure	First setup
+ 🗷 🗙		IP	Device type	Device name
└─ Found devices	1	192.168.10.24	GNC-N Serial, NCO2 IoT Sensor	NCO2
	2	192.168.10.17	GNC-N Serial, NTHM2 IOT Sensor	NTHM2
	3	192.168.10.14	GNC-N Serial, NAM3 IOT RTU	NAM3-Test

Sı	pecif	v the	directory	for	the	locally	saved	certificate	file a	and	kev	file.
$\sim$		,	aneerory	101		locally	Javea					

Current ce	rtificates			
Root CA:	D:\devcfg/o	fgcert/gnccfg1ca.pem		a.
Device cor	nfig server cert	: D:\devcfg/cfgcert/gnccfg1svr.pem	Ľ	9
Device cor	nfig server key	D:\devcfg/cfgcert/gnccfg1svr.key		E
Manage cl	ient cert: D	:\devcfg/cfgcert/gnccfg1client.pem	6	9
Manage cl	ient key: D	\devcfg/cfgcert/gnccfg1client.key		E
<b>Previous c</b> Root CA:	ertificates		6	9
Previous c	ertificates –			
Root CA:			6	9
Device cor	fig server cer	· [	Đ	2
Device cor	nfig server key			E
Manage cl	ient cert:		6	9
Manage cl	ient key:			E
Default se	ttings			

The above figure shows the digital certificate generated by us in the installation package after the initial installation, which is convenient for customers to use for testing immediately, and in actual application, customers can generate digital certificates by themselves, and how to generate digital certificates can refer to the OpenSSL documentation for related content.

After the current certificate is invalidated, do not delete the old certificate immediately, it will be displayed in the "Previously Used Certificate File" at the bottom. In this way, after enabling the new certificate, you can find the device, there is a special color in the device list to show the devices that are currently using the old certificate, the tool can connect to these devices with the old certificate, and then there is a special button to update the certificate on the interface to help customers quickly replace the certificate.

# **3.** Discovering/Connecting Devices

# **3.1 Discovering Devices in the LAN with One Click**

There are two ways to configure the device: over the network, or through the serial port. By default, the tool is configured through the network, or you can select the configuration method in the "Device configure" menu.

Oev	ice configurat	tion too	ol					
System	Device config	gure T	ool	~				
Broado Netw	Configu Configu	re via n re via C	otwork	Find	Add	Remove	Configure	First setup
+ @	8 ×		IP		D	evice type	e	Device name
Fou	ind devices	1	192.168.10.2	4 GN	C-N Se	rial, NCO2	loT Sensor	NCO2
		2	192.168.10.1	7 GN	C-N Se	rial, NTHM	2 IOT Sensor	NTHM2
		3	192.168.10.1	4 GN	C-N Se	rial, NAM3	IOT RTU	NAM3-Test

Select the network interface where the host and devices are located.

Device configurat	ion to	ol						
System Device config	jure T	<sup>T</sup> ool		/				
Broadcast Search – Network interface	192.	168.10.39	-	Find	Add	Remove	Configure	First setup
+ 2 ×	192. 192. 127.	168.56.1 168.10.39 0.0.1			D	evice typ	e	Device name
Found devices	2	192.168.	10.1	17 G	NC-N Se	erial, NCO2	101 Sensor 12 IOT Sensor	NTHM2
	3	192.168.	10.1	14 G	NC-N Se	erial, NAM3	IOT RTU	NAM3-Test

click "Find", and devices within the same LAN segment will be discovered.

adcast Search — etwork interface	192.	168.10.39 👻 Fir	nd Add Remove Configure	First setup				
×		IP	Device type	Device name	MAC	Serial number	nfigure versi	UID
Found devices	1	192.168.10.24	GNC-N Serial, NCO2 IoT Sensor	NCO2	00:bd:3b:00:30:fe	0805CEADCC0285	2	c4710405016414c0c0000050000000
	2	192.168.10.17	GNC-N Serial,NTHM2 IOT Sensor	NTHM2	00:bd:3b:00:01:7e		2	90814801304414b0c00f000000000
	3	192.168.10.14	GNC-N Serial,NAM3 IOT RTU	NAM3-Test	00:bd:3b:00:01:70		2	5c514401304414b0c00f000000000
	4	192.168.10.26	4,GNC Video box	VideoBox26	00:bd:3b:00:01:9b		2	2ca1c604016414c0c0000050000000
	5	192.168.10.129	GNC-N Serial, NAM3 IOT RTU	NAM3-lvk	00:bd:3b:00:2f:2f	0804CDAJBI0049	2	28410505016414c0c0000050000000
	6	192.168.10.28	GNC-N Serial, NIO3 IOT RTU	NIO3	00:bd:3b:00:01:7c		2	50c14401304414b0c00f000000000
	7	192.168.10.27	4,GNC Video box	VideoBox	00:bd:3b:00:34:0b	0400CEAHDA0766	2	fc618600304c14b0c00900d0000000

In the list of found devices, the background color of each device is different to indicate different device status, and you can see the current status information of the corresponding device by moving the mouse over the IP column in the first column. The dark gray color indicates that the product of our previous generation can be found but cannot be configured with this tool. The light gray color indicates that the device is configured with a digital certificate that is different from the current tool and cannot be configured. The green one indicates that it is a new device and has not yet been uploaded to the configuration certificate. The yellow one indicates that the factory password is being used, which has security risks. etc...

# 3.2 Adding Devices Across Network Segments via IP

If the device and the host are not in the same LAN, but can communicate through the router, it cannot be discovered in this case, but can be manually added through the device IP address. Select any device group node, click Add, enter the device IP, port number (default 6104), and device connection password. Ensure the input is correct, click Try to Connect. If connect successfully, the device will be added to the list.

Broadcast Search — Network interface	(	92.1	168.10.39 - Fi	nd Add Remove	Configure	First setup				
+ 2 ×			IP	Device typ	e	Device name	MAC	Serial r	umber	nfig
└─ Found devices		1	192.168.10.24	GNC-N Serial, NCO2	IoT Sensor	NCO2	00:bd:3b:00:30:fe	0805CE/	ADCC0285	2
		2	192.168.10.17	GNC-N Serial, NTHM	12 IOT Sensor	NTHM2	00:bd:3b:00:01:7e		-	2
		3	192.168.10.14	GNC-N Serial, NAM	Manual	add device		×		2
	4	4	192.168.10.26	4,GNC Video box	IP 192.1	68.1.22				2
		5	192.168.10.129	GNC-N Serial, NAM	Port 61	nи			JBI0049	2
		6	192.168.10.28	GNC-N Serial, NIO3				-		2
		7	192.168.10.27	4,GNC Video box	Vassword     Use cur	rent certificates			HDA0766	2
	1				O Use pre	vious certificate Try	s Quit			

If the device already exists in another group, it cannot be added to the current group. Remove it from the existing group first. To delete a device, select the target device and click Delete in the top menu.

Devices discovered via LAN can also be added using this method. After deleting a device from any node in the LAN, clicking Search will rediscover the device in the system root node "Found devices".

## **3.3 Connecting Devices via Serial Port**

Select the configuration method from the top menu and choose to configure via serial port. Select the host's serial port. Monigear devices have a default baud rate of 115200. After clicking Connect and entering the username and password, you can connect to the device via serial port. Ensure the correct wiring of the serial port on the device for successful communication.

#### Device configuration tool

		aud 11520	0 8 data	bits, 1	stop bits, No parity	Disconnect
Login	wangkong	Password	•••••	000	Read configure Ap	ply changes
PELECL	Save KEDOOL					

# **4. Configuring Devices**

Devices discovered via network or added via IP can be configured in the network configuration interface. Select the device under the corresponding group and click Configure to enter the device interface. A device password is required to connect.

oadca Vetwo	ork interface	192.	168.10.39 - Fi	nd Add Remove Configure	First setup			
Ø	×		IP	Device type	Device name	MAC	Serial number	nfigure vers
-Found devices 1		1	192.168.10.24	GNC-N Serial, NCO2 IoT Sensor	NCO2	00:bd:3b:00:30:fe	0805CEADCC0285	2
		2	192.168.10.17	GNC-N Serial, NTHM2 IOT Sensor	NTHM2	00:bd:3b:00:01:7e		2
Qu	Use of Us	reviou IO sta Save	certificates s certificates ate Technical s Reboot	assword upport information ad configure Apply changes	Conne	ect		

For new devices, use "Change password" button update the connection password to current used one. Click "Detect" button to access the configuration interface, left part is category, right part is configure item and value.

Configure NTHM2 via networl	k		)			
Quit Use current certificates	s Password ••••••	Disconnect Change password				
Device configure 10 state Techn	ical support information					
Detect Blink Save Reboot	Read configure Apply changes					
	Property	Value				
Basic configure	Host name	NTHM2				
IOT center1 configure	Temperature Unit	Centigrade	-			
IOT center2 configure	DHCP enable	No				
GNC center configure	DHCP dns enable	Yes	Ŧ			
	Host IP	IP:192.168.10.17, Mask:255.255.255.0, GateWay:192.168.10.1				
	DNS server IP	192.168.10.1 cn.pool.ntp.org 123				
	NTP server					
	NTP port					
	Time zone	UTC+8	*			
	COM script show language	Chinese	-			
	Enable SNMP	Yes	~			
	SNMP configure	SNMP configure, file size: 7083, date: 04-12-2024 11:30:17				

Devices connected via serial port can be configured similarly after connecting with username and password.

## 4.1 Basic Device Settings

Click Basic configure - Read Configuration to display the basic settings of the device, show as the above picture. Users can choose to enable or disable DHCP, DNS, BACNET, Modbus TCP etc., and make changes as needed. Click Apply Changes - Save - Restart for the new settings to take effect.

If DHCP is not enabled, you can configure a fixed IP address and click the button on the right to modify the static IP address. The IP address and the gateway must be set in the same subnet, otherwise the setting is invalid. It is worth mentioning that if DHCP is enabled, the IP address displayed on the setting interface does not represent the current IP of the device!

#### 4.2 IoT Settings

Monigear devices can be connected to two independent IoT hubs at the same time to achieve hot data backup.

Click one IoT Center Settings - Read Configuration to display the IoT settings. Apply changes, save, and restart for the new settings to take effect.

ork				×	
Password	•••••	••	Disconnect Change password		
al support info	rmation	Script in	deivce		
Read configur	re Apply	y changes			
Property	y		Value	â	
MQTT version	n	Default		-	
QOS		Almost o	nce	-	
Keep alive tin	ne(sec)	60			
Clean session Retain publish Enable will option		No		-	
		No		+	
		No		-	
Will QOS		Almost o	nce	-	
Will retain		No			
Center type	Standar	rd MQTT			
	Standa	rd MQTT	Value		
Ali IOT Center IP or c Baidu IOT Port Tencent IOT		от	192.168.10.151		
		t IOT	1883		
Client ID	Azure I AWS IO	OT IT	VideoBox ancdevice		
User name	OneNet	t IOT			
Password			wangkong		
Topic prefix			device		
Password			up		
	Password al support info Read configu Property MQTT version QOS Keep alive tir Clean session Retain publis Enable will op Will QOS Will retain Center type Center type Center IP or op Port Client ID User name Password Topic prefix Password	Password •••••• Password •••••• al support information Read configure Apply Property MQTT version QOS Keep alive time(sec) Clean session Retain publish Enable will option Will QOS Will retain Center type Standar I Center IP or c Baidu I Port Azure I Client ID AWS IC User name Password Topic prefix Password	Password Password Password Password Property Property Property Property Property Property Almost or No Retain publish No Center type Standard MQTT Center IP or C Baidu IOT Port Ali IOT Center ID Or Client ID AWS IOT User name Password Topic prefix Password	Password  Password  Password  Password  Password  Property  Property  Value  MQTT version Default QOS Almost once Keep alive time(sec) 60 Clean session No Retain publish No Enable will option No Will QOS Almost once Will retain No Center type Standard MQTT Center IP or Baidu IOT I 92.168.10.151 Port Ali IOT Center IP or Baidu IOT I 92.168.10.151 Port Azure IOT Azure IOT Azure IOT Qiern Ame ID AWS IOT VideoBox VideoBox VideoBox VideoBox ID Compertion ID AWS IOT ID AWS I	

In addition to the standard MQTT protocol support, such as Mosqitto, Emqx and other commonly used MQTT brokers that can build their own services, Monigear devices are also adapted to the connection of several major IoT cloud services, such as AWS/Azure/Ali, etc

# **4.3 GNC Settings**

GNC-SCADA software is a powerful data acquisition and monitoring software developed by our company, and we have our own GNC protocol between the equipment and software, which is set up to connect with 2 active and standby GNC centers.

Click GNC Settings - Read Configuration to display the GNC settings. Apply changes, save, and restart for the new settings to take effect.

Configure VideoBox26 via netwo	ork		×
Quit Use current certificates	Password	Disconnect Change password	
Device configure IO state Technic	al support information Scrip	ot in deivce	
Detect Blink Save Reboot	Read configure Apply chan	nges	
	Property	Value	1
Basic configure	Center1 server	192.168.10.254	
IOT center1 configure	Center1 report port	6101	
IOT center2 configure	Center1 comm key	wangkong	
GNC center configure	Center1 connect type	тср	~
COM1(RS485) configure	Center1 force CA check	No	*
Switch global configure	Center1 TLS verify type	CA only	-
Switch Port1 configure	Center1 root CA file	GNC center1 CA,file size: 0, date: 01-01-1970 08:00:00	
Switch Port2 configure	Center1 client certificate	GNC center1 client certificate,file size: 0, date: 01-01-1970 08:00:00	
Switch Port3 configure	Center1 client key	GNC center1 client key,file size: 0, date: 01-01-1970 08:00:00	
Switch Port4 configure	Center1 key file password		
CPU Port configure	Center1 location comment		
	Center2 server	192.168.10.125	
	Center2 report port	6101	
	Center2 comm key	wangkong	
	Center2 connect type	ТСР	-
	Center2 force CA check	No	-
	Ceter2 TLS verify type	CA only	*
	Center? root CA file	GNC center2 CA file size: 0_date: 01-01-1970 08:00:00	-

The above are the configuration categories that all devices have, and each device has its own unique setting category, and the corresponding configuration refers to the description of the corresponding device, most of which are easy to understand and set up from the graphical interface.

## **4.4 Viewing Running Status**

The running status of the device can only be viewed and configured via network interface. Select the module to view, click "IO Value" tabs - click "Refresh" button to view all AIO and DIO information of the device.

٢	Configure	NCO2 vi	a network
---	-----------	---------	-----------

Quit O Us	se current certif se previous cert	icates Password ificates	•••••	60	Disconnect
Device config Modules Query	ure 10 state 1	fechnical support inf	ormation	onfigure	O configure
Address 0	Running Running	Name Device	Refresh Al1=447.000000,CO	2 concentra	ition,alarm=0

# 5. Device Group Classification Management

In the network configuration interface, device groups can be added/deleted under any node path for bulk management.

Broadcas Networl	t Search k interface	1	92.	168.10.39 - Fi	nd Add Remove Co	onfigure	First se	tup			
+ 8	×			IP	Device type		Device	name	MAC	Serial num	
✓ Found	devices		1	192.168.10.24	GNC-N Serial, NCO2 IoT	Sensor	NCO2		00:bd:3b:00:30:fe	0805CEADC	
		2	192.168.10.17	GNC-N Serial,NTHM210	)T Sensor	NTHM	2	00:bd:3b:00:01:7e			
		3	192.168.10.14	GNC-N Serial, NAM3 101	RTU	NAM3	-Test	00:bd:3b:00:01:70			
			4	192.168.10.26	4,GNC Video box	Devia	rice group X			×	
			5	192.168.10.129	GNC-N Serial, NAM3 IO		• senie group		CDAJB		
			6	192.168.10.28	GNC-N Serial, NIO3 IOT	Device	groupi	d:2			
			7	192.168.10.27	4,GNC Video box	Add gi	roup un	under "Found devices"			
						Group	Group name NAM				
		1						OK	Cancel		

To add a new device group node, click the + sign, enter the desired name, and click OK. To delete, click the  $\times$  sign. If the group contains devices, it cannot be deleted. To add devices to a group, use the Add button to add new device, or drag devices from Discovered Devices to the desired group node.

# FAQ

# **1) System Error Solutions**

If the configuration tool does not open normally and a system error occurs, prompt that VCRUNTIME140.dll missing. Install the VC 2015-2019 redistribute component package will fix it.

#### 2) Unable to Discover Devices via Network

Ensure the firewall is set to a private network. If unable to discover Monigear devices, check if the firewall allows the software to communicate on the private network.

If the system exists another firewall, make sure UDP port 6104 is allowed.

#### 3) Flash quit when connection

If you can't find a device in the Discovered Devices device group node when you find a device over the network, or if the connected device crashes in the device configuration interface. The reason is that the time of the device is abnormal, not the current time but the start time of Unix 1970, which is not within the validity period of the digital certificate, which caused the connection failure. At this time, the device should be restore to factory default, the IP assignment should be reset, and the time synchronization should be re-executed during the application of the new IP to the device, and the modification can be refounded/connected to the device.