






# **VxCollector**

## **User Manual**

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Symbol Definition	
	<b>WARNING:</b> Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	<b>RISK OF ELECTRICAL SHOCK:</b> Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	<b>ESD HAZARD:</b> Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	<b>ATTENTION:</b> Identifies information that requires special consideration.

Symbol Definition	
	<b>TIP:</b> Identifies advice or hints for the user.

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# VxCollector

## Section 1 Overview

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The configuration of remote communication station driver and service can be achieved via the data collector (VxCollector). VxCollector can complete the communication cascade connection with VxSCADA, PIMS, and other softwares, and expand the data acquisition and data transmission.

VxCollector can load various I/O drivers, receive data from third-party and transmit data via the unified protocol of industry.

VxCollector has two main functions, configuration and running.

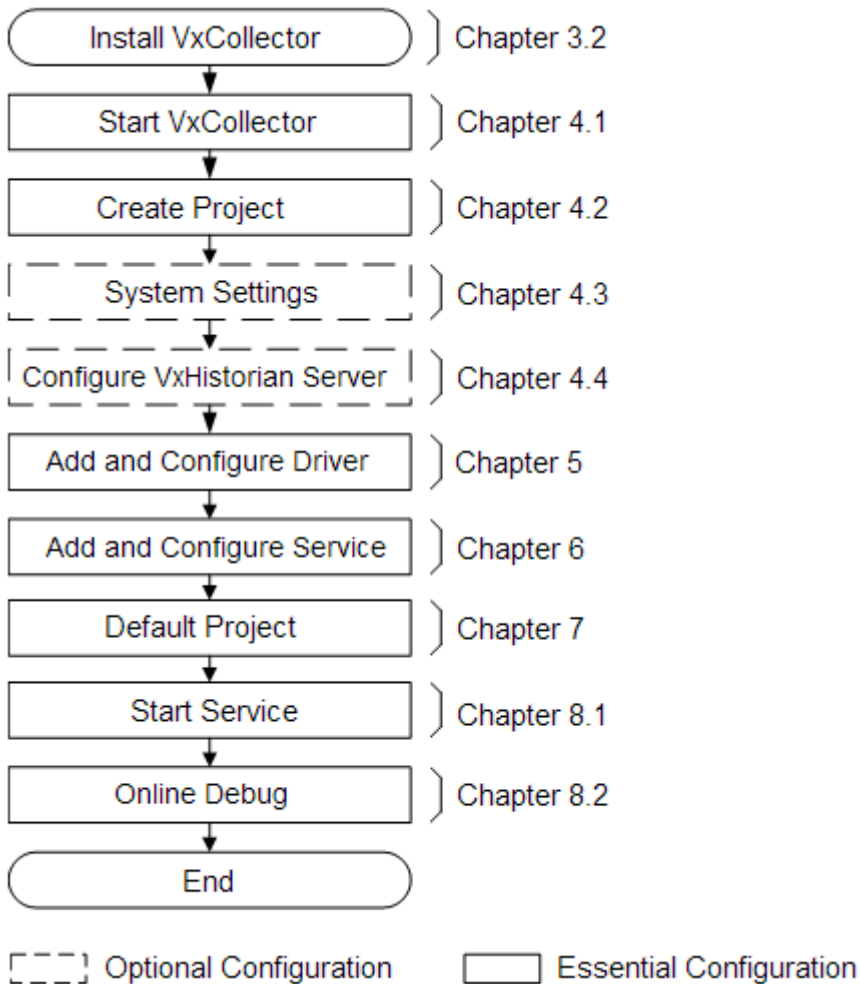
- Configuration refers to configuring the driver, service and tag, and is called as configuration stage.
- Running refers to start the communication service and debug online, etc., and is called as running stage.

VxCollector can manage several drivers and services.

The user manuals of VxCollector includes this text, *VxCollector Project Guide* and *IO Driver User Manual*.

## Section 2 Configuration Flow

Configuration flow for VxCollector is shown below:



**Figure 2-1 Configuration flow for VxCollector**

## Section 3 Install VxCollector

If the PC meet the install requirement of VxCollector, VxCollector can be installed. And this section describes the install requirement and the install steps of VxCollector.

### 3.1 Install Requirement

Before install VxCollector, check the install requirement of PC.

#### 3.1.1 Hardware Configuration Requirements

The hardware requirements to run VxCollector communication server are shown in Table 3-1.

**Table 3-1 Hardware configuration requirements to run VxCollector**

Items	Performance Index
CPU	Later versions of Pentium IV(2G)
Memory	≥512MB
Display Adapter(Display Card)	<ul style="list-style-type: none"> <li>■ Display memory≥16MB</li> <li>■ Display mode can be set as 1024×768</li> <li>■ High color (16 Bytes)</li> <li>■ Update frequency 60Hz~75Hz</li> </ul>
Hard Disk of Host Computer	Hard disk of 80G is recommended.
Display	CRT/Liquid crystal of 17 inches
Network Card	2 to 3 network cards of 10M/100M

Beside of hardware requirements above, serial port should be configured when using RTU serial port for communication.

#### 3.1.2 Software Configuration Requirements

VxCollector supports following operation systems:

Operation System	Language	Patch	Bit
Windows 10 IoT Enterprise	English	-	64 Bit
Windows Server 2008 R2 Standard	English	SP1	64 Bit
Windows Server 2016 Standard	English	-	64 Bit

### 3.2 Install VxCollector

VxCollector can be installed by copy and installation pack. The steps in different systems are



different and the instruction is shown below.

### **In PIMS System**

In PIMS system, by following steps, VxCollector can be installed by disk.

1. Open PIMS install disk, click “Install” after “Remote Data Collector”.
2. Popup the welcome interface, click “Next”.
3. Popup the “License Agreement” interface, click “Yes” to agree the software license and continue the installation.
4. Popup the “Custom Information” interface and input “User Name” and “Company Name”, then click “Next”.
5. Popup the “Choose Destination Location” interface, click “Browser” to select the destination path or default path, then click “Next”.
6. Start to install and popup the installation complete interface, click “Complete” to exit the installation.

### **In VxSCADA Sysetm**

In VxSCADA system, VxCollector is installed as one of components. The installation method please refers to *VxSCADA Software Installation User Manual* and the key steps are shown below.

1. Open VxSCADA system software disk and install the software following tips.
2. Select “VxCollector” in “Select component” interface and click “Next Step”.
3. Continue to install the software following tips until “Finish”.

### **In VxHistorian System**

When using with VxHistorian software, VxCollector is installed as one of components. The installation method please refers to *VxHistorian Software Installation User Manual* and the key steps are shown below.

1. Open VxHistorian system software disk and install the software following tips.
2. Select “VxCollector” in “Select component” interface and click “Next”.
3. Select the drivers which need to be installed in VxCollector and click “Next”.
4. Popup the “Collector Configuration Content” interface, click “Browser” to select the destination path or default path, then click “Next”.
5. Input user name and passwords of remote OPC server and click “Next”.
6. Continue to install the software following tips until “Finish”.

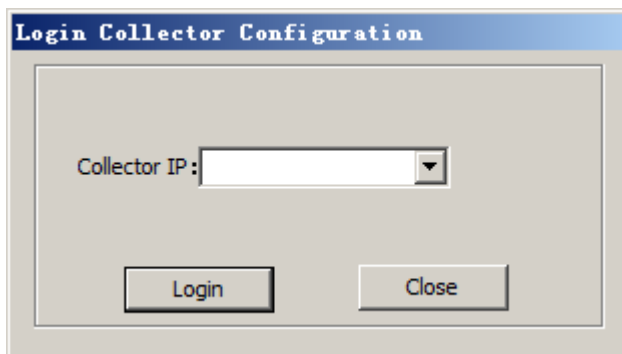
## Section 4 Start VxCollector and Manage Project

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This section describes how to start VxCollector and manage the VxCollector project.

### 4.1 Start VxCollector

Click the command **[Start/ All Programs/ VxCollector/ VxCollectorCfg]** and the "Login Collector Configuration" dialog box shown in Figure 4-1 will pop up. Input computer IP address of the collector you want to log on and click "Login".



*Figure 4-1 Login dialog box of VxCollector*



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**TIP:**

The version of the remote collector you log in to should be the collector in VxSCADA V1.50.03.00 or later. Otherwise, the login fails.

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If you login VxCollector for the first time, the interface will be shown in Figure 4-2. If you have created project, the software will open the default project automatically.

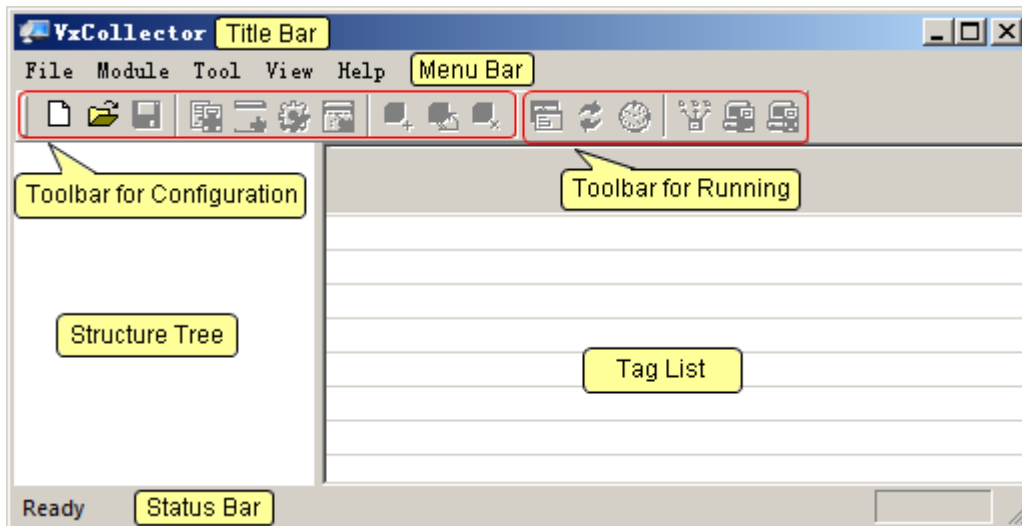


Figure 4-2 VxCollector Configuration Interface

#### 4.1.1 Main Interface

As shown in Figure 4-2, **VxCollector** interface consists of following parts:













- **Title Bar:** shows the software name and project name.
- **Menu Bar:** includes 5 menu items of “File”, “Module”, “Tool”, “View” and “Help”.
- **Toolbar for Configuration:** includes icons of “New”, “Open”, “Save”, “Add Service”, “Add Driver”, “Modify”, “Delete”, “Add tag”, “Modify settings of tags” and “Delete tag”.
- **Toolbar for Running:** includes icons of “Online debug”, “Refresh”, “Timing Refresh”, “Reload”, “Startup”, “Exit” and effectiveness for default project.
- **Structure Tree:** consists of driver and service. Drivers and services added are shown under the driver node and service node respectively.
- **Tag List:** shows the tag information of driver and service. The basic information includes tag name, type, I/O driver, I/O address and description, etc.
- **Status Bar:** shows auxiliary instruction information. When user points to a tool icon by mouse, its function instruction will be shown in status bar.

#### 4.1.2 Menu Bar and Toolbar

Table 4-1 describes the instruction of menu bar and toolbar.

Table 4-1 Instruction Table of Menu Bar and Toolbar

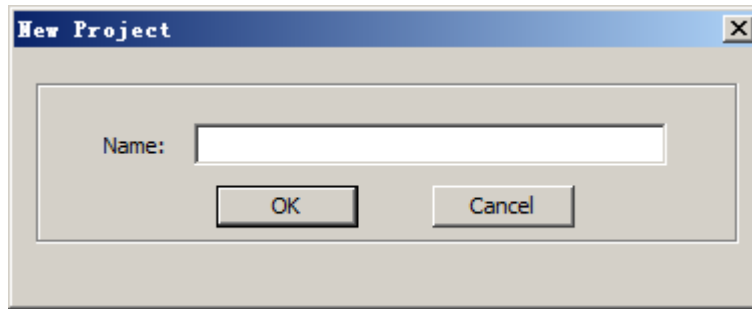
Menu Bar		Toolbar	Instruction
File	New		New project
	Open		Open project
	Save		Save project <ul style="list-style-type: none"> <li>● If current configuration is running, the configuration will be updated synchronously</li> <li>● If current configuration is not running, just save it.</li> </ul>
	Export Database	-	Export data of database

	Import Database		-	Import data of database
	Exit		-	Exit collector
Module	Add Service			Add service
	Add Driver			Add driver
	Modify Module			Modify selected driver or service
	Delete Module			Delete selected driver or service
	Add Tag			Add tag to driver
	Modify Tag			Modify selected tag
	Delete Tag			Delete selected tag
	Export Tag		-	Export tags of all drivers or selected driver
	Import Tag		-	Import tags of all drivers or selected driver
Tool	Debug Online			Debug online
	Refresh Manual			Refresh manual
	Refresh Timing			Refresh timing
	Set the default configuration or replace Configuration			Set the collector current configuration as the default configuration or the currently editable configuration. Note: enable when current editing configuration or the default configuration is not the current running configuration
	Start-up Server			Start server and transmission
	Stop Server		-	Stop server and transmission
	Current Wheeling Configuration		-	View running information
	System Settings		-	Set communication port, redundancy and tag read-write properties
	History Buffer Settings		-	Set saving days and points of buffer data
	OPC Grouping Configuration			Conduct group management to the tags of the collector
	VxHistorian Settings		-	VxHistorian settings
View	Tag Sequence	Default Ascending	-	Tags are sorted ascending
		Default Descending	-	Tags are sorted descending
		Dongle Authority	-	Tags are sorted by adding sequence. Only tags in dongle authority are valid.
	Toolbar		-	Show/ Hide toolbar
	Status Bar		-	Show/ Hide status bar
Help	About		-	Show software version and copyright information.
	Help		-	Open help

## 4.2 Create Project

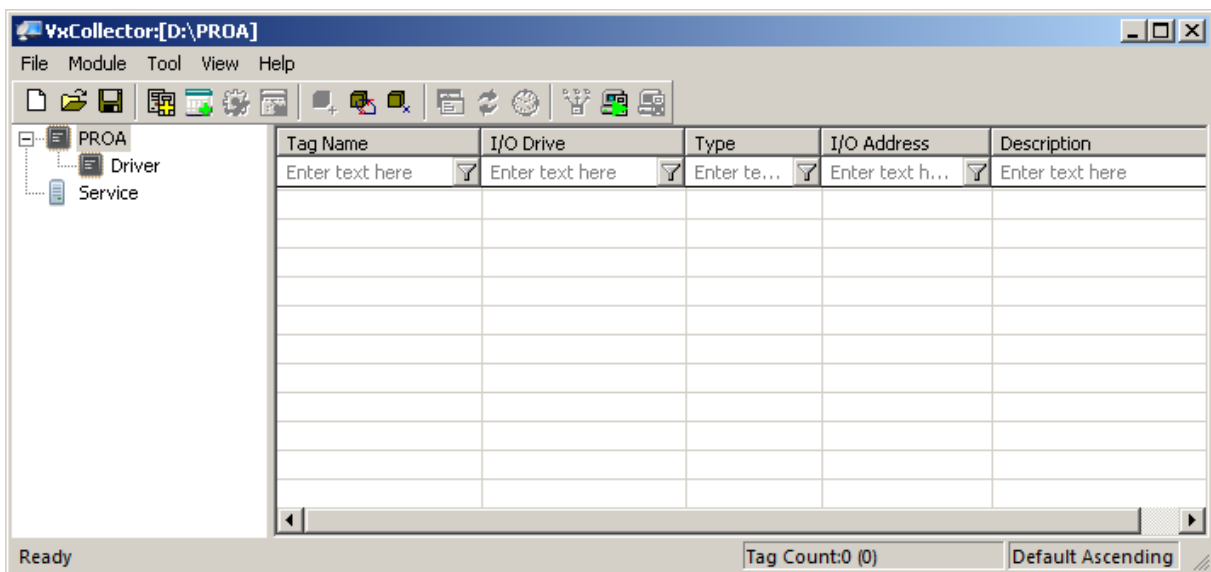
Start **VxCollector** and execute following steps to create VxCollector project:

1. Select **[File/New]** to pop up the dialog as shown in Figure 4-3. Input the configuration name, which starts by letter or number at most. The name can contain maximum 64 characters (only letter, number, \_).



**Figure 4-3 Select a path for VxCollector project**

- Click “OK” to create the VxCollector project, as shown in Figure 4-4.



**Figure 4-4 VxCollector**

## 4.3 System Settings

By system settings, communication port, redundancy mode and other properties of VxCollector can be configured.

By following steps, VxCollector's properties can be configured.

- Select [Tools/ System Settings] to pop up the dialog below, in which user can set communication port, server redundancy and tag read-write properties.

**Figure 4-5 System settings**

2. Configure properties by the following table.

**Table 4-2 Instruction of VxCollector System Settings**

Item		Function	Configuration
Configure Communication Port	Port Number	The port that VxCollector communicate with other system.	The communication port is 23302 in default, generally no need to change.
Redundancy	Server1 IP	<ul style="list-style-type: none"> <li>User should enable the redundancy and set redundant server IP address in software to configure collector redundancy.</li> <li>User should set server redundant IP address to configure network redundancy.</li> </ul>	After selecting "Redundancy", configure the redundant server IP address or redundant IP address, and then click "OK".
	Server1 Redundant IP		
	Server2 IP		
	Server2 Redundant IP		
Tag Read-write Properties	Only Read	VxCollector can control the read-write properties of tags collected together.	If the read-write property of tag is "Only Read", the tag property after transmission is "Only Read" too.
	Read-Write		If the property is "Read-write", the tag property after transmission can be "Only Read" or "Read-write".
Service Settings	User Process	Set the start mode of VxCollector.	Select "User Process", VxCollector will start in user process mode.
	System Service		Select "System Service", VxCollector will start in system service mode.
	Autorun when system start	Set whether VxCollect start with system starting.	Select, VxCollect will start with system starting. Not select, VxCollect will not start with system starting.
	Modify service account and password	Set user of remote OPC server connected with VxCollector.	After select the start mode of VxCollector as "System Service", this configuration is valid.
	Account		The user name of remote OPC server.

	Password		The user password of remote OPC server.
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**Tip:**

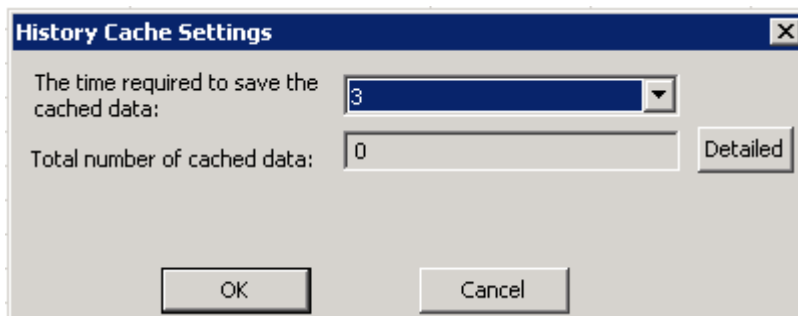
- **Modify the user name and password connected to the remote OPC server, which is only valid for the currently logged-in collectors in the Windows operating system.**
- **After changing the password of the remote OPC server, you need to restart the collector.**

3. Click "OK" to save the current configuration.

## 4.4 Historical Cache Settings

Through the historical cache settings, you can configure the number of days to keep the cache data and points for the historical data of Vxcollectors, and configure the tag table.

Select [Tools / Historical Cache Settings] in the menu bar, the history cache setting interface as shown below will pop up.



**Figure 4-6 Historical Cache Settings**

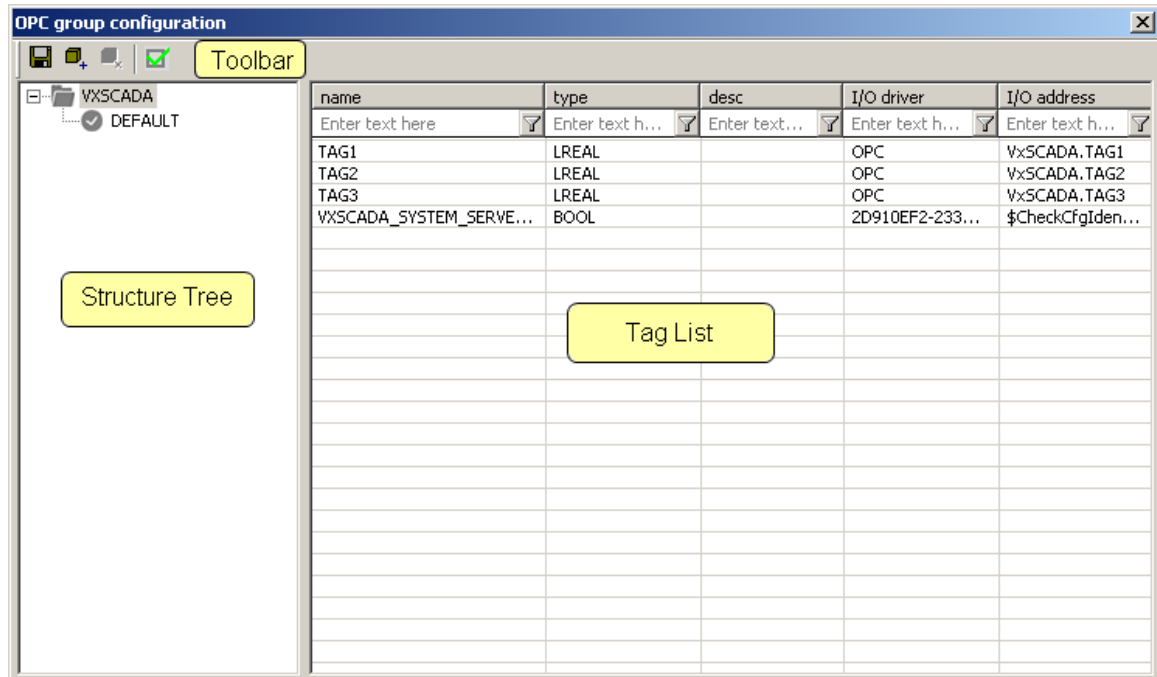
- **Cache data saving days:** the maximum saving days of the historical cache data. The cache data beyond the saving days would be deleted. The default time is 3 days. It can be set from 1 to 7 days.
- **Total points of cache data:** it displays the total tags added in the list. Click "Detailed" button view the added tags in the cache list.
  - **Add cache tags:** in the tag list of collector, after one line of tag information is selected, you can select "Add cache tag" in the right-click menu.
  - **Delete cache tags:** in the tag list of collector, after one line of tag information is selected, you can select "Delete cache tag" in the right-click menu.

After completing the configuration, click the "OK" button to save the changes.

## 4.5 OPC Grouping Configuration

The collector supports group management of all OPC tags. If you need to use it, the configuration steps are as follows:

1) Select the menu bar [Tools/OPC Group Configuration] to bring up the configuration interface, as shown below. All ungrouped tags belong to the default grouping DEFAULT. The default grouping can be renamed, but subgroups cannot be deleted or added.



**Figure 4-7 OPC groped configuration interface**

2) Set the grouping:

New grouping: Select a node in the grouping structure tree, select "Add group" in the right-click menu, or click the toolbar icon to add a group number group under the selected node.

Groups can be renamed via the right-click menu; when there are no tags in the group, you can delete the selected group by selecting "Delete Group" from the right-click menu or by clicking the toolbar button.

3) Grouping of tags: Select the tag that needs to be classified into the group in the right-hand tag list, and select the group to be divided in the "Select Group" in the right-click menu.

Enable/Disable Grouping: Select a group and click the toolbar or button to enable or disable a grouping of numbers. If the tag grouping is enabled, when adding an item to the OPC client, you can view the tag grouping information, as shown in Figure 4-8.



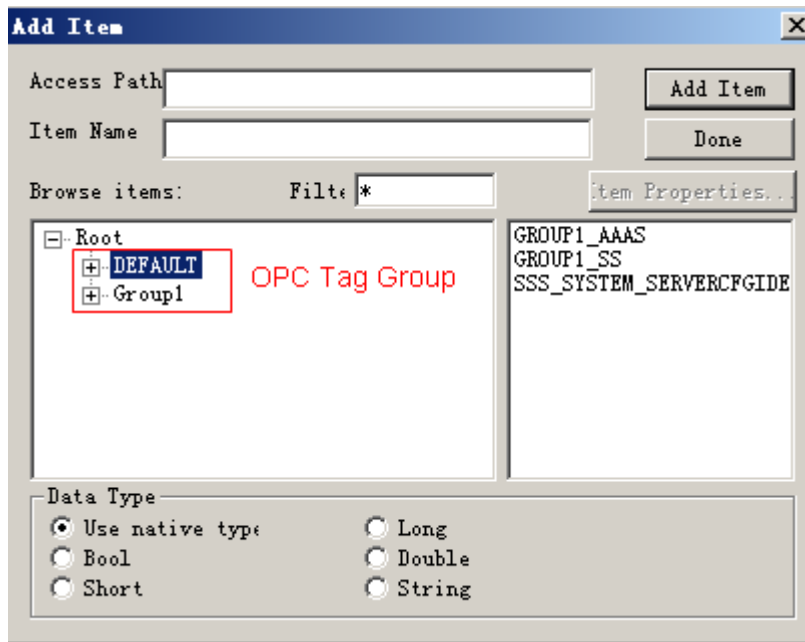


Figure 4-8 OPC grouping configuration effects (in OPC client side)

## 4.6 Configure VxHistorian Server

VxCollector supports VxHistorian. After installing VxHistorian, set the VxCollector as below:

1. Select menu commands [Tool/ VxHistorian Settings] to open the VxHistorian server settings, as shown in Figure 4-9.

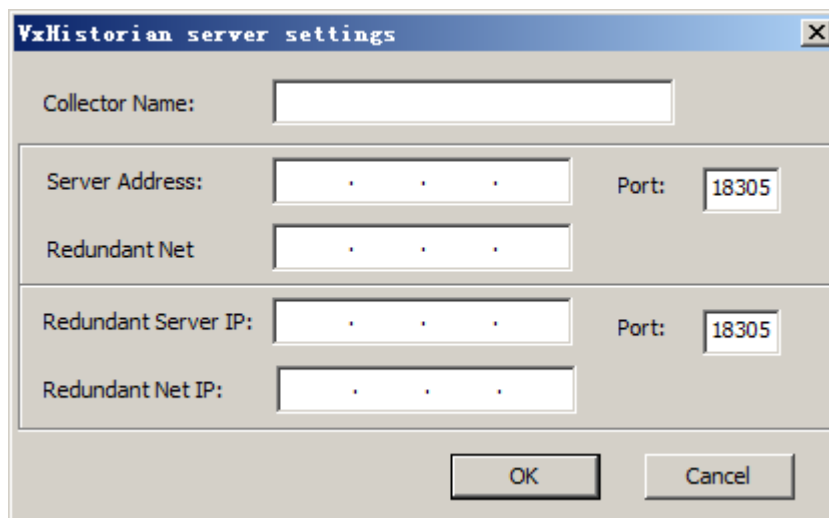


Figure 4-9 VxHistorian server settings

2. Configure VxHistorian server by following items.

Collector Name: collector name.

Server Address, redundant net IP and Port: set server address and port for VxHistorian.

Redundant Server IP, redundant net IP and Port: set redundant address and port for VxHistorian.

3. Click "OK" to save the current configurations.


## Section 5 Add and Configure Driver

VxCollector communicates with field hardware via I/O driver. At present, the drivers of software supports these types:

- Support several kinds of drivers communication protocols, such as CDT driver, IEC104 Master driver, Modbus RTU driver, Modbus TCP driver, OPC DA driver, Trusted Modbus TCP driver, Modbus TCP Slave driver, Modbus RTU Plus driver and DNP3 driver and etc..
- Support several kinds of drivers of the third-party devices, such as GCS driver, TCS-900 driver, ABCONTROLLOGIX driver, Supcon Collector driver, Siemens FetchWrite driver, SiemensPLCS7CommDriver and etc.
- Support several kinds of drivers of diagnosis information, such as SNMP driver, NodeSniffer driver and etc.
- Support several kinds of inner simulation variable driver (Memory driver), which can simulate some variables.

This chapter introduces how to add and configure drivers and its tags.

### 5.1 Add Driver

1. Right-click “Driver” on the structure tree and pop up the “Select I/O Driver” dialog box by following ways..
  - Right-click the “Driver” and select “Add Driver” in the right-click menu.
  - Select the menu command [Module/Add Driver].
  - Click  in toolbar.
2. Select a driver from driver list (such as OPC DA) and click “OK” to add the driver.

The added driver will be shown on the structure tree, as shown in Figure 5-1. Driver already existed cannot be added again.



**Figure 5-1 Add OPC driver to structure tree**

### 5.2 Configure Driver

Open the interface of driver configuration by following methods. The details of driver configuration please refer to *IO Driver User Manual*.

- Double-click the driver below “Driver”.

- Right-click the driver below "Driver", and select "Modify driver" in right-click menu.
- Select the menu command [Module/Modify Module].



---


**Tips:**

- If you can't open the interface of driver configuration by double-clicking the driver, it means that the driver needn't configuration, such as Memory driver, NodeSniffer driver and etc.
  - After open the interface of driver configuration, you can get the HELP file of the driver by pressing F1.
- 

## 5.3 Delete Driver

Tag under the driver and the association between the tag and label will be deleted together.

Select the driver which needs be deleted and delete it via following ways.

- Right-click the driver and select "Delete Driver" in right-click menu.
- Select the menu command [Module/ Delete Module].
- Click the button  in toolbar.


## 5.4 Re-load Drivers

When a certain channel of the driver needs to be restarted, it is only necessary to reload the driver without restarting the collector. The steps are as follows:

- 1) Right click on a driver on the tree that needs to restart the channel.
- 2) Select the "Drive Reload" menu in the context menu.

## 5.5 Add and Configure Tag

There are 2 ways to add tags:

- Add tags manually: add the tags one by one via clicking  or selecting the menu command "Add Tag". The steps will be introduced in following description.
- Imported when configuring driver: some drivers support to import tags directly. Select the tags which need to be added in the configuring interface of drivers, save and close the configuring interface, then selected tags will be added to database automatically. The details of drivers please refer to *IO Driver User Manual*.




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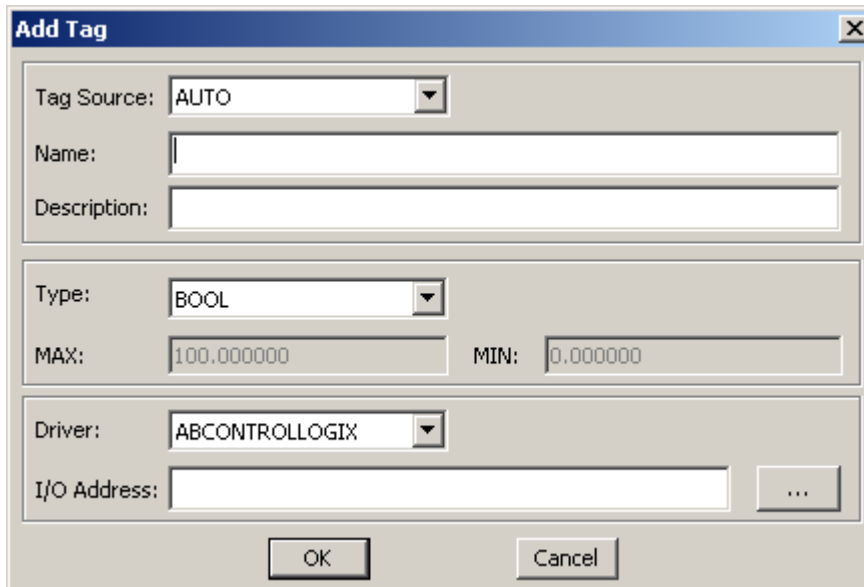
**Tip:**

If there is special sign in the name of tags which are imported by driver, such as \$ and so on, the system will tip you to add these tags manually.

---


### 5.5.1 Operation Steps:

1. Click “Driver” or a driver in structure tree and open the dialog box of adding tag as shown in by following ways:
  - Select the menu command [Module/ Add Tag].
  - Click icon  in toolbar.
  - Right click in the blank place of the tag table and select “Add tag” in the right-click menu.



The image shows a Windows-style dialog box titled "Add Tag". It contains several input fields and dropdown menus. The "Tag Source" dropdown is set to "AUTO". The "Name" and "Description" fields are empty text boxes. The "Type" dropdown is set to "BOOL". Below it, "MAX" is set to "100.000000" and "MIN" is set to "0.000000". The "Driver" dropdown is set to "ABCONTROLLOGIX". The "I/O Address" field is empty, followed by a button with three dots "...". At the bottom are "OK" and "Cancel" buttons.

**Figure 5-2 Add tag**

2. Input tag name and description.
3. Set tag type, maximum and minimum limit. If you select BOOL or STRING in drop-down box, maximum and minimum limit needn't be set. As for tags of other types, maximum and minimum limit should in the range of data type.
4. Set driver and I/O address. As for the same tag type, if driver types are different, configurations of I/O type are different. If you select “Driver” and then add tag, the driver type is selectable. If you select a driver and add tag to the driver, the driver type is the one you selected and can't be changed. I/O address can be input directly, or click  to pop up the interface for configuration. The details please refer to *IO Driver User Manual*.

### 5.5.2 Parameter Illustration

The types of tag supported by the collector are shown in Table 5-1. For details of the configuration of driver tags, please refer to the *IO Driver User Manual*.

**Table 5-1 Detailed description of tag types**

Type	Description	Data Bit	Range
Bit	1 bit	1	0~1
BOOL	BOOL	1	0~1
BYTE	1 byte	8	0~0xFF
WORD	2 bytes	16	0~0xFFFF
DWORD	4 bytes	32	0~0xFFFFFFFF
LWORD	8 bytes	64	0~0xFFFF FFFF FFFF FFFF
SINT	Short integer	8	-128~127
INT	Integer	16	-32768~32767
DINT	Double integer	32	$-2^{31} \sim 2^{31}-1$
LINT	Long integer	64	$-2^{63} \sim 2^{63}-1$
USINT	Long integer without sign	8	0~255
UINT	Integer without sign	16	0~65535
UDINT	Double integer without sign	32	$0 \sim 2^{32}-1$
ULINT	Long integer without sign	64	$0 \sim 2^{64}-1$
REAL	Single precision floating	32	$-2^{32} \sim 2^{32}-1$
LREAL	Double precision floating	64	$-2^{64} \sim 2^{64}-1$

## 5.6 Modify and Delete Tag


### Modify Tag

As for existent tag information, you can modify its properties in pop-up “Modify Tag” interface by following ways.

- Double-click the tag information in the tag list.
- Select the tag information in the tag list, right-click it and select “Modify Tag” in right-click menu.
- Select the tag information in the tag list and click the menu command [Module/ Modify Tag].

### Delete Tag

1. If you want to delete a tag, select the tag in tag list and pop up the secondary confirm dialog box by following ways.
  - Right-click the tag and select “Delete Tag” in right-click menu.

- Select the menu command [Module/ Delete Tag].
  - Click the button  in toolbar.
  - Press the key “Delete” in keyboard.
2. Following operations can be done in pop-up secondary confirm dialog box:
- OK: delete the tag. The operation “Delete” can’t be repealed, please pay attention to the operation.
  - Cancel: cancel to the operation “Delete”.

**Tip:**

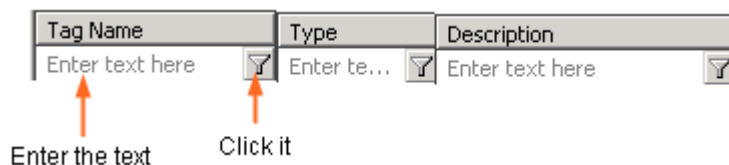
When comes to deleting a structural tag, if its root tag is deleted, then the whole structural tag will be deleted, including pin tags. Pin tags cannot be deleted isolatedly.

## 5.7 Tag Filter

The tag list supports the tag filtering function. “AND” operation is executed between each column of information and filtering conditions. Then the filtered tag information should meet all filtering conditions.

**The operation method is as follows:**

As shown in the figure below, enter the filtered content in the filter item, and then click .



**Figure 5-3 Tag filter**


## Section 6 Add and Configure Service

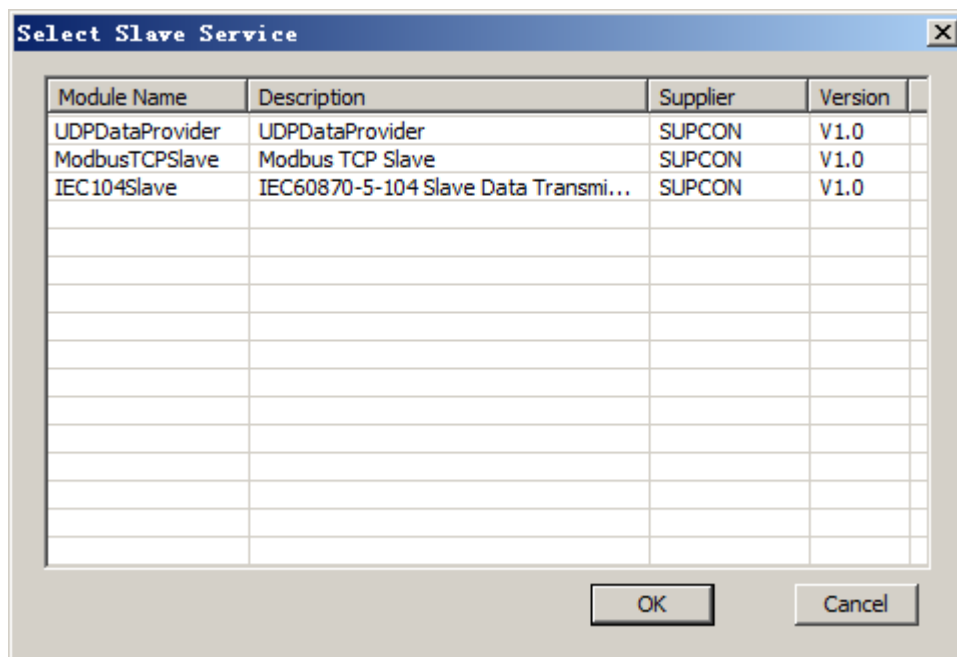
VxCollector supports 4 protocols, OPC, Modbus TCP, IEC 104 currently and UDPDataProvider. OPC is no need to configure, and is supporting in default. But for other 3 protocols, the data can be transmitted to the clients with these drivers only after configuration.

- Through OPC, ModbusTCP, and IEC104 standard protocols, to provide other manufacturers with the selected tag data in the current collector. Server authorization is required;
- UDPDataProvider is a company's private agreement and only provides data for the company's products.

### 6.1 Add Service

Steps to configure VxCollector service:

1. Right-click "Services" on structure tree of "VxCollector" interface and select "Add Service" or  button and the "Select Slave Service" dialog will pop up, as shown in Figure 6-1.



**Figure 6-1 Select Slave Service**

2. Select a service (for example IEC104Save) and click "OK" to add it to "Services".
3. The added service will be shown under the structure tree of VxCollector interface, as shown in Figure 6-2.

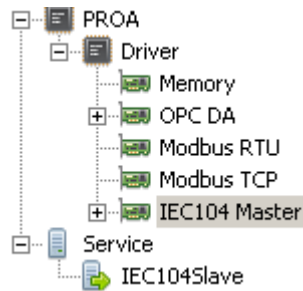


Figure 6-2 Add IEC104Slave to services

## 6.2 Configure ModbusTCPSlave



### Tips:

1. This version only supports Modbus communication in large-end mode.
2. Large-end mode refers to save the high-order of data to low address of memory, and save the low-order of data to high address of memory.

Add ModbusTCPSlave and configure it by following steps:

1. Double-click “ModbusTCPSlave” under “Services” to pop up the “Configure ModbusTCP Service” interface, as shown in Figure 6-3.

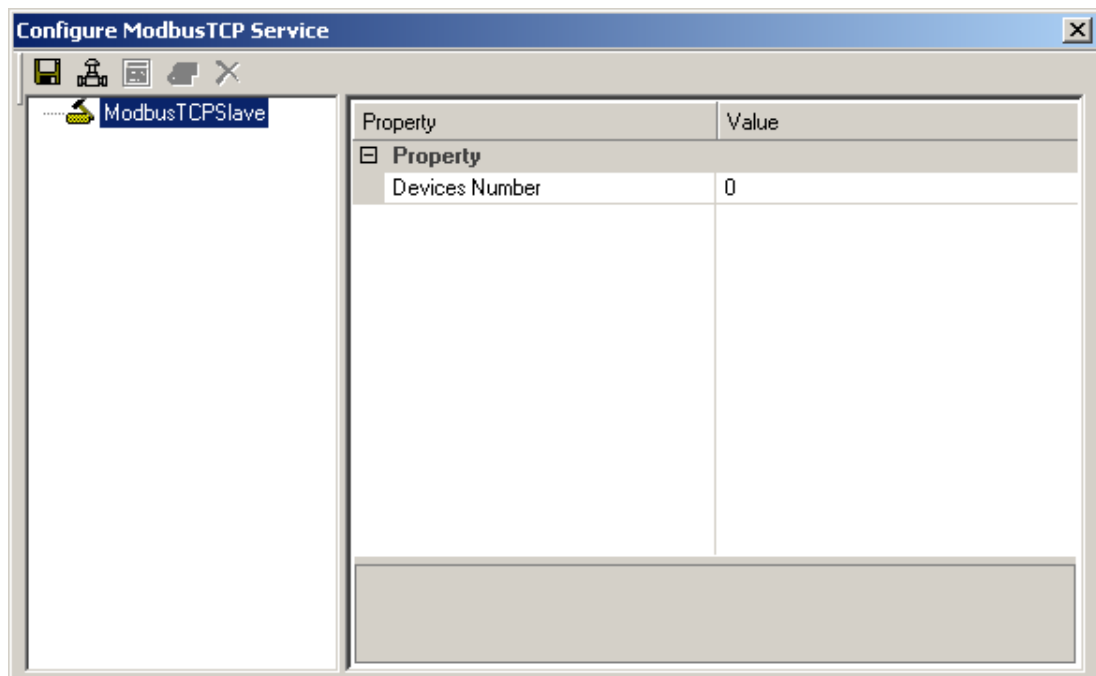



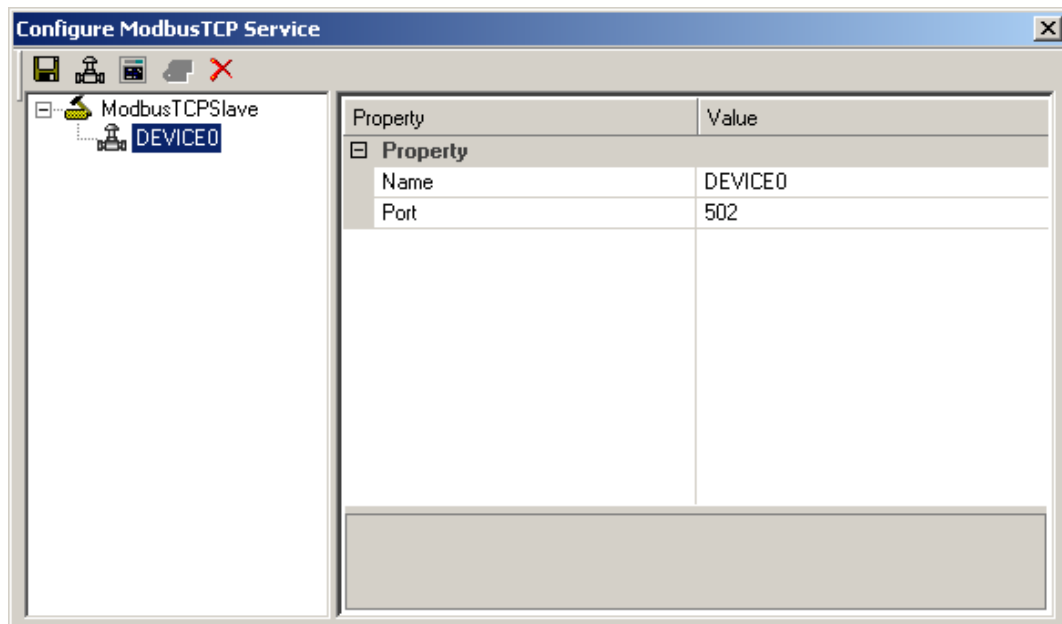
Figure 6-3 Configure ModbusTCP Service

2. Add device and configure its property.

Right-click “ModbusTCPSlave” on structure tree and select “Add Device”, or click  in toolbar, as shown in Figure 6-4.




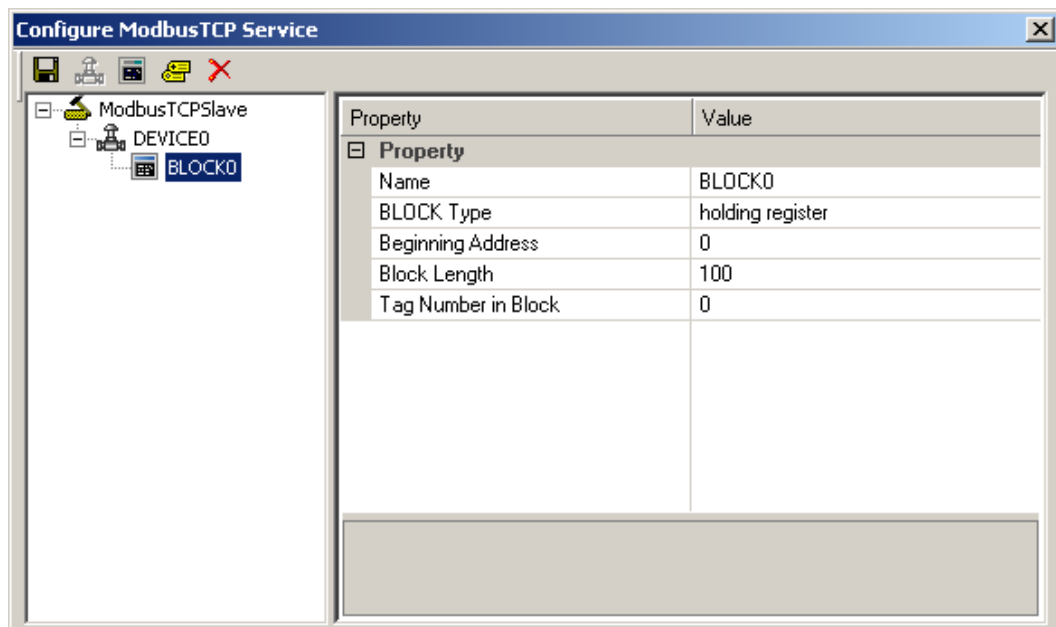
- 1) Input device name in “Name” box.
- 2) Input port used for device communication in “Port” box.



**Figure 6-4 Add device to ModbusTCPSlave**




3. Add block and configure its property.

Right-click the device on structure tree and select “Add Block”, or click  in toolbar, as shown in Figure 6-5.



**Figure 6-5 Add block to ModbusTCP Service**

- 1) Input device name in “Name” box.
- 2) Select tag type in block from drop-down box of “Block Type”. Optional parameters include “Coil”, “Discretes input”, “Holding register” and “Input register”.
- 3) Input beginning address of block in “Beginning Address” box.

- 4) Input offset number of block in “Block Length” box.
- 5) Click  of “Tag Number in Block”, or click  in toolbar, to pop up the “Configure Block Tag” dialog, as shown in Figure 6-6. Select one or several tags from the left pane and click  to add them to right pane. Click “OK” to return to the “Configure ModbusTCP Service” interface as shown in Figure 6-5.

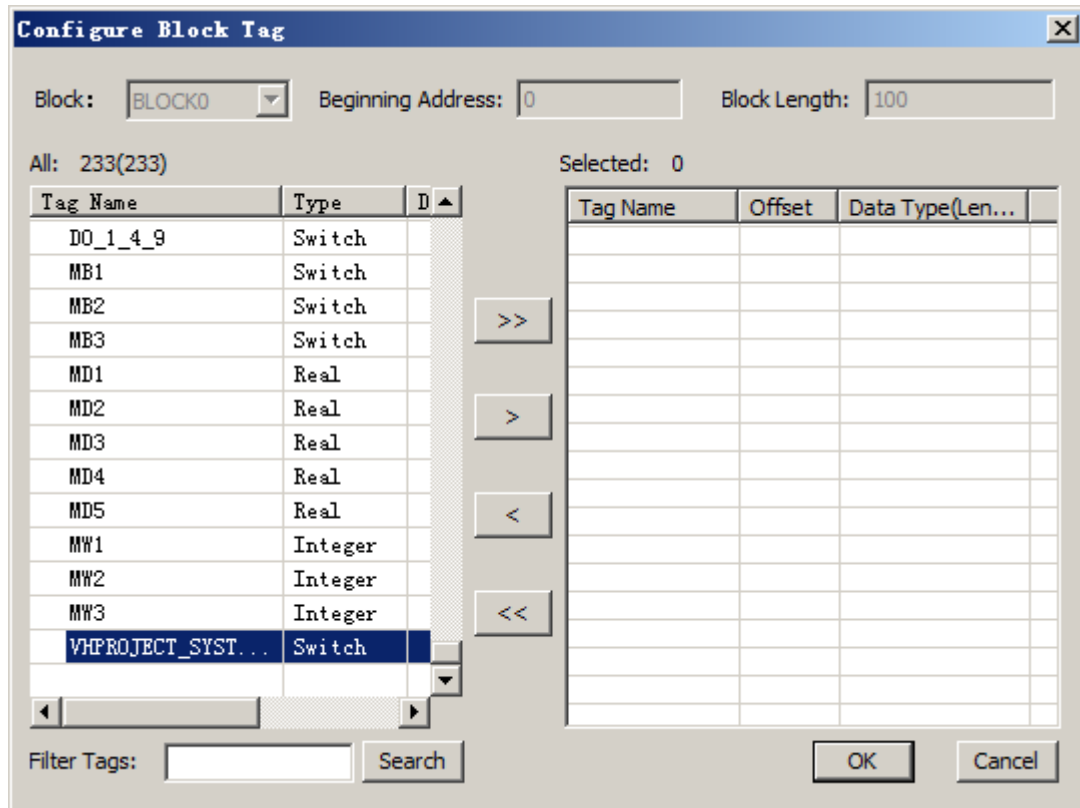



Figure 6-6 Configure Block Tag



Tip:

In Figure 6-6, the tag “\*\*\*\*\*\_SYSTEM\_SERVERCFGIDENTICAL” is diagnosis tag, “\*\*\*\*\*” means the name of connecting collector. When the collector is redundant, this tag can show whether the configurations of the two redundant collectors are the same. If the value of tag is 0, the configurations aren’t the same, otherwise they’re the same.

4. Click  in toolbar to save the configuration.

## 6.3 Configure IEC104Slave



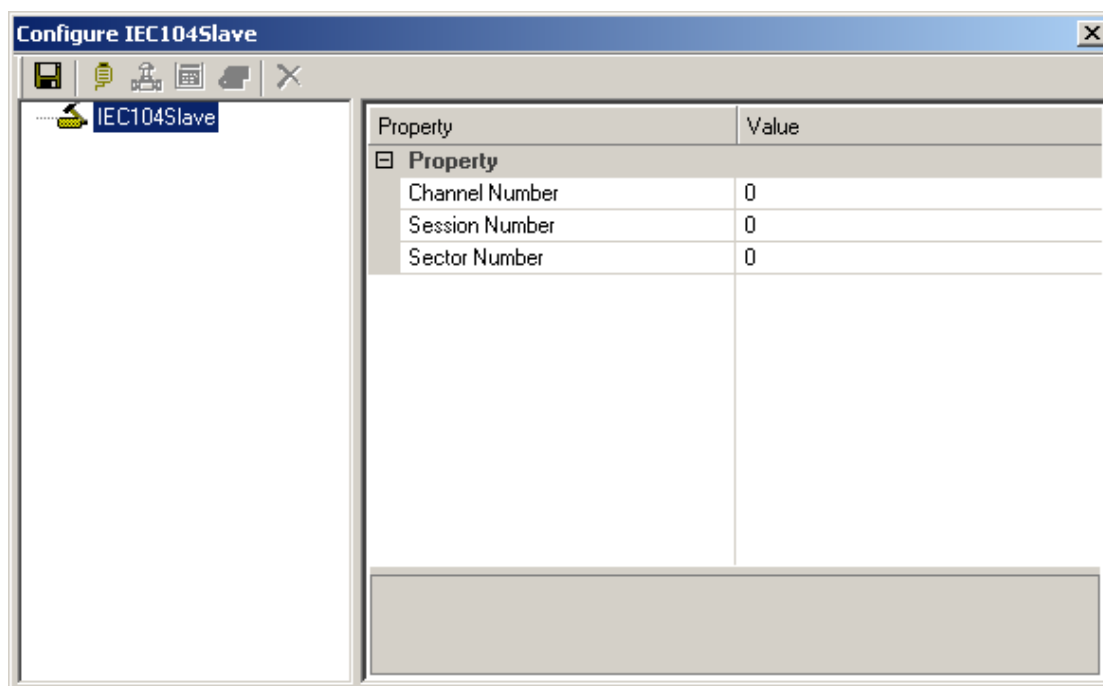
TIP:

IEC104 service cannot support these data types below: LINT、LREAL、LWORD、ULINT、STRING.


The transmission channel of I/O driver tag can be specified via configuring IEC104 service.

Add IEC104Slave and configure it by following steps:

1. Double-click the “IEC104Slave” of “Services” node on structure tree to pop up the “Configure IEC104Slave” interface, as shown in Figure 6-7.



**Figure 6-7 Configure IEC104Slave**

2. Add channel via one of ways below. One channel refers to one connection of IEC104 Slave to IEC104 Master. IEC104 communication server has no limit for channel number.
  - Right-click “IEC104Slave” and select “Add Channel”.
  - Click  in toolbar.
3. Select the Channel node and do these operations:
  - The property of the node can be configured in the right pane. Parameter instruction of channel is shown in Table 6-1.


**Table 6-1 Parameter instruction of channel**

Parameter Name	Definition	Instruction
Name	Channel name	It is in format of string, and its length range is 1~64. Channel names cannot repeat.
IP Address	IP address of IEC104 Master can be connected to.	If the parameter is set as 0.0.0.0, it means that IEC104 Slave can connect to IEC104 Master of all addresses.
Network Port	Port No. of channel for communication.	Its value range is 1000~65535. Channel ports cannot repeat. User can specify maximum 6 ports, and separate them by “,”.
Time Stamp	Whether to take time stamp in real-time data.	Enable: take; Disable: not take.


- Import/Export tags: it is used to synchronize tag information of different nodes fast. Operation method: right click Channel node and select “Import/Export Tag”.
  - Right-click “Channel” and select “Delete” can delete the channel and its session and sector.
4. Add session.

A channel has only one session currently (a communication session between IEC104 Master and IEC104 Slave).

Steps to add session:

- 1) Right-click channel and select Add Session, or click  in toolbar, a session will be added to the structure tree.
  - 2) Click the added session and input its name in property window. It is in format of string, and its length range is 1~64.
5. Add sector

Sector refers to tag group with the same COA (Common address), and tags in sector are distinguished by IOA (Information Object Address). Steps to add and configure sector:



Right-click session and select “Add Sector”, or click  in toolbar, a sector will be added to the structure tree.

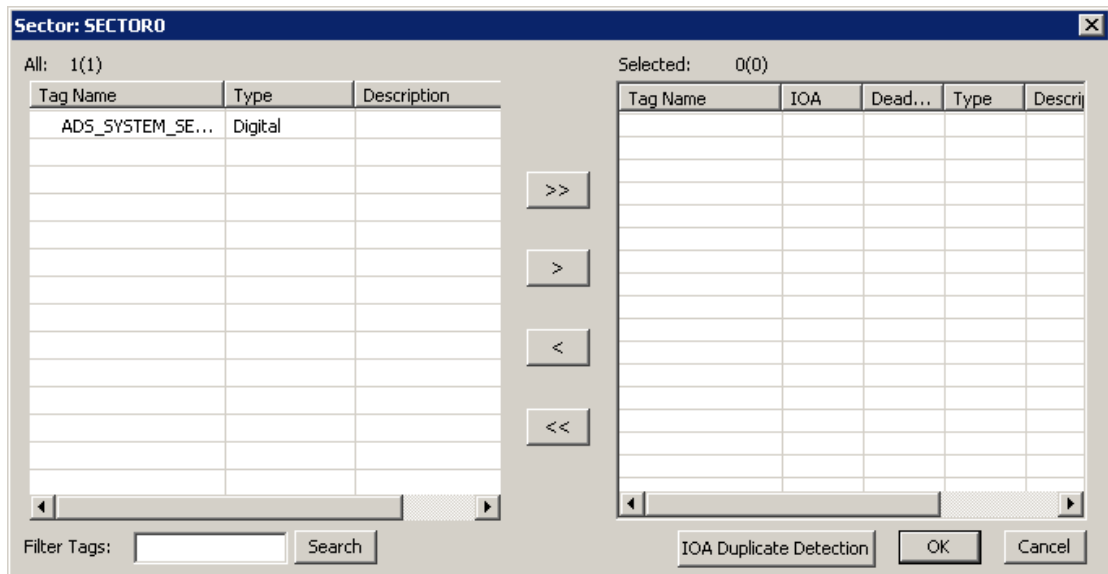
6. Configure sector property

Click the added sector and its property can be configured in the right pane. Parameter instruction of sector is shown in Table 6-2.

**Table 6-2 Parameter instruction of sector**

Parameter Name	Definition	Instruction
Name	Sector name	It is in format of string, and its length range is 1~64. Sector names of the same session cannot repeat.
COA	Common address of sector	It is in format of integer, and its value range is 0~65533. Sector COA of the same session cannot repeat.
Change Giving Cycle	Data change sending period	It is in format of integer, and its value range is 0~86400000. Unit: ms
Circulate Giving Cycle	All data sending period	It is in format of integer, and its value range is 0~86400000. Unit: ms
Number of measure point	Tag count of sector	Configure in following method.

Click  of “**Number of Measure Point**” box, or click  in toolbar, to pop up the “**Sector**” dialog, as shown in Figure 6-8.



**Figure 6-8 Tag select dialog**



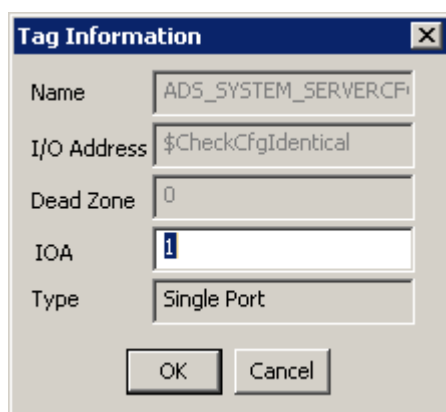
Tip:

In Figure 6-8, the tag "\*\*\*\*\*\_SYSTEM\_SERVERCFGIDENTICAL" is diagnosis tag, "\*\*\*\*\*" means the name of connecting collector. When the collector is redundant, this tag can show whether the configurations of the two redundant collectors are the same. If the value of tag is 0, the configurations aren't the same, otherwise they're the same.

- 1) Select one or several tags to be specified and click to add selected tags to right pane.

Besides, select the tag in right pane and click can delete it. Click can add all tags from left pane to right pane. Click can delete all tags from right pane.

- 2) Double-click the tag in right pane can pop up the tag information dialog, as shown in Figure 6-9.



**Figure 6-9 Tag information**

- 3) Configure tag property

Parameter instruction of tag is shown in Table 6-3.

**Table 6-3 Parameter instruction of tag**

Parameter Name	Definition	Instruction
Name	Tag name	Non-configurable
I/O Address	I/O address corresponds to tag	Non-configurable
Dead Zone	It can generate and send change when tag value change is larger than or equal to dead zone value.	Non-configurable
IOA	Information object address	It is in format of integer and its value range is 0~1000000.
Type	Tag type	Non-configurable

## 6.4 Configure UDPDataProvider

In the field with one-way isolated netgap hardware, the collector can transfer data to VxSCADA software or VxHistorian software through one-way isolated netgap, via UDPDataProvider service.

- “UDP Connection” should be enabled in the port configuring interface of VxHistorian configuration in VxHistorian software, and the port should be the same as the port of collector, then it can receive UDP data. At the same time, in the VxHistorian server configuration interface shown in Figure 4-9, you need to delete the collector name, disconnect the TCP connection between the collector and the VxHistorian, and use the UDPDataProvider service to transfer data.
- User should configure VxCollector driver in VxSCADA software and create the collector whose communication mode is UDP, and then the communication will be normal between both sides. The details please refer to *IO Driver User Manual*.

After adding UDPDataProvider, configure the service by following steps:

1. Double-click the node UDPDataProvider below node “Service” and pop up the settings interface as shown below.

**Figure 6-10 Setting interface**

2. In the interface shown above, collector name is the name of collector configuration which is opened currently and can't be changed. Other parameters can be configured as following description:
  - Receive address and port: IP address and data port of server which receives data and is called as object server. If it's redundant, click the check box of "Redundant Address" and input corresponding IP address and data port. If the status besides port shows "Unknown", it means that the collector hasn't started. The description of other status please refer to following text.



**Tips:**

Generally, the object server is VxHistorian or VxSCADA. The port of object server should be the same as the port of VxCollector:

- VxHistorian: service port of UDP connection in Port Configuration table of VxHistorian Settings.
- VxSCADA: data port set when VxCollector driver adds collector.

- Send cycle:
  - Change send: it's 0 means the data will be sent immediately when tag data is changed. If it isn't 0, the software will check whether the data has changed when period expires. If not, it won't send data, otherwise it will send data to server. The cycle for change send cannot exceed that for loop send.
  - Loop send: if it's 0, only changed tag will be sent, otherwise it will send all tag data when period expires. The cycle setting range is from 0 to 3600 seconds.

- ReTransfer: click the check box besides “ReTransfer” to enable the function, otherwise it’s disabled. When it’s enabled, if collector doesn’t receive feedback data from object server during timeout, it will regard server as offline status and store collected data locally. When server becomes online again, collector will send real-time data and history data of offline time to server. Offline timeout of receiving server can be set in the range of 10~120 seconds.



Tips:

- Please make sure that the object server supports retransfer function of UDP data and then enable the function here, otherwise the function will be useless and take up the network bandwidth and CPU resources.
- At present, only VxHistorian software of V3.00.03.00-M and later version supports breakpoint resume of UDP data.

- UDP configuration publishing status, which is effective when it’s used with VxHistorian. After configuration, the status of data communication will show in the right of port number, as shown below.

The screenshot shows a dialog box titled "Receiver address". It contains two rows of configuration fields. The first row is for the "Address" with IP "172 . 30 . 33 . 133" and Port "18301", with a status of "Checking..". The second row is for the "Redun address" (checked with a checkbox) with IP "172 . 30 . 44 . 144" and Port "18301", also with a status of "Checking..".

**Figure 6-11 Data communication status**



- Checking: check whether the server is online.
  - Check failed: during offline timeout of receiving server, if it’s detected that the receiving server is offline all the time, it will show as “Check Failed”. Then, please check whether IP address has fault, software in receiving server has been started, or software in receiving end supports UDP publishing mode of collector configuration.
  - Configuration consensus: the configuration of collector and the configuration of server are the same.
  - Configuration non-consensus: the configuration of collector and the configuration of server are not the same.
3. After configuration, click “OK” to save the settings.



## Section 7 Set Default Project

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Only the default project can be start and debug online. The software regards the first project as default project. When you create other project, please set the new one as default project by following steps:

- When you open VxCollector software, the default open project is the default project at present. Click the button  in toolbar, select a project file in pop-up interface and click “OK”.
- In open interface of project configuration, the button  in toolbar is enabled, click the button.
- The confirm prompt “Replace configuration may lead to unstable communication, continue?” will pop up, click “OK” to continue replacement or click “Cancel” to cancel the operation.
- After replacing successfully, the current open project is the default project.



## Section 8 Start Service and Online Debug

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After configured drivers and tags, you can start service. Functions of online debug and reload can be achieved after starting the service.



### 8.1 Start/Stop Service

Start service, get the data of other servers and make the other clients to get the data supporting the corresponding protocol. Functions of online debug and reload can be achieved after starting the service.



- Select the menus [Tool/ Start-up Server] or click  to start server.
- Select the menu commands [Tool/ Stop Server] or click  to stop server.

### 8.2 Online Debug

User can view the real-time value of the tag and judge the correctness of the configuration in the configuration interface via the online debug function.

After starting the server, select the menus **[Tool/ Startup online debug]** or click . The real-time value of tag can be viewed in the tag list. For redundant collector, click  to pop up the “Select Connecting Address” interface, in which user can select the collector address for online debugging.

There are 2 ways to update the real-time value of tag:

- Real-time Refresh  
Click  in the toolbar and the tag will be refreshed per 1s automatically.
- Manual Refresh  
Click  in the toolbar and the tag will be refreshed manually.

User cannot modify any driver or tag when debugging online but allowed to delete the selected tags. User can exit the debug mode before modify. For details about operating steps, please refer to “Modify and Delete Tag”.

## Section 9 Export and Import

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This section describes the export and import operations.

### 9.1 Export Existed Tag List of Service

User can export the existed tag list of service to use the exported file in the client of the third party.

After configuring ModbusTCP service and IEC104 service, steps to export existed tag list of service:

1. Select a service in service configuration interface.
2. Right-click the “Service” and select “Export Exist Tag List”.
3. Select save path and input file name to export the existed tag list. Click “Open” to pop up the prompt dialog.
4. Click “OK” to complete the export.

### 9.2 Import/Export Database

The configuration information of the PIMS, VxSCADA and VxCollector are compatible. User can keep the consistency of the database configurations between them by importing and exporting the database. When importing the configuration file exported from the PIMS or VxSCADA to the VxCollector, the software will eliminate the non-VxCollector tag information, such as the alarm tag, non-local node and extend configuration tag, etc.

#### 9.2.1 Import Database

Follow the steps below to import the database configuration file of PIMS or VxSCADA to the VxCollector.

1. Select the menus [File/ Import Database], and select a .vxbk file from the “Open” interface.
2. A prompt will pop up after importing successfully.

#### 9.2.2 Export Database

Follow the steps below to export the database configuration file of the VxCollector.

1. Save the configuration file before exporting. Otherwise, a prompt of “Current configuration has not been saved, to save and export?” will pop up. Click “Yes” to save and export the latest configuration file. Click “No” to not save, and export the configuration file before modifying. Click “Cancel” to cancel the export.
2. Select the menus [File/ Export Database] and select the saving path in the “Save As” interface.

3. A prompt will pop up after importing successfully.

## 9.3 Import/Export Tag

VxCollector supports to import/export tags of one driver or all drivers. Driver tags not configured in project cannot be imported.

### 9.3.1 Import Tag

Follow the steps below to import tag to the configuration:



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**Tip:**

After opening the .csv file as shown in the steps 1 below, the import will cannot be canceled, so the export backup for the existed tags before importing is recommended.

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1. Except for the command access, importing tags of one driver or all drivers are same.

Single driver: Select any driver in the structure tree, right-click and select “Import Tag”, or select the menus [Module/ Import Tag].

All drivers: Select the “Driver” node in the structure tree and select the menus [Module/ Import Tag].

2. Pop up the “Open” window. Select the file in format of .csv and click “Open”.
3. A prompt of “Import” will pop up, user can choose the import style.

Empty import: import after clear all tags.

Append import: not clear tag list before import, if the tag name is duplicated, then “conflict” dialog box will pop up in a bid to guide users to choose append import mode.

- 1) Import and substitute: use the currently imported tags to substitute the existing tags.
- 2) Not to import: cancel importing.
- 3) To import, but keep two tags remained: directly import tags and add numbers after the imported tags like “\_number” to distinguish.

Don't import: Cancel the operation.

4. A prompt showing the number of the tags imported if importing successfully, or of failure if importing failed will pop up.

### 9.3.2 Export Tag

Follow the steps below to export tags:

1. Except for the command access, exporting tags of one driver or all drivers are same.

Single driver: Select any driver in the structure tree, right-click and select “Export Tag”, or select the menus [Module/ Export Tag].

All drivers: Select the “Driver” node in the structure tree and select the menus [Module/ Export Tag].


2. Pop up the “Save As” window. Select the saving path and input the file name. the file format is .csv and can be edited by EXCEL.
3. Click “**Save**” to export the tags from the driver to that file.

## Section 10 Other Operations

This section describes the other operations of VxCollector.

### 10.1 View the Running Information

Click “Tools > Current Wheeling Configuration” in the menu, the dialog box shown as follows popup. In the dialog box, running information and authorities displays in the dialog.



The screenshot shows a dialog box titled "VxCollector". It contains two main sections: "Running information" and "Redundant Information".

**Running information:**

- Configuration: F:\YYFADS\ADS
- Tag number: 1
- Start time: 2016-12-19 14:14:45
- Authorize status: Unauthorized, time left: 02h 00min 00s
- Local Configuration Consistent: Yes

**Redundant Information:**

- Master Slave: 127.0.0.1
- Local server IP: (empty)
- Remote server IP: (empty)
- Local server current status value: 0.000
- Remote server current status value: (empty)

An "OK" button is located at the bottom right of the dialog box.

**Figure 10-1 Running Status of VxCollector**


Tip:



In normal communication status, server status value is 1. When there is failed network communication of driver in the collector, the status value will decline. If the status value isn't 1 during debugging, user should check whether the driver below collector is abnormal.

## 10.2 Update and Replace Configuration

Configuration can be updated or replaced in running, the operation is shown below:

- If the running configuration is changed, and it is can be saved and updated via saving.
- Select the menus [Tool/ Replace Configuration] or click  to replacing the running configuration.

## 10.3 Configure Hot Backup Redundant Collector

1. Set “Enable Redundant” in the system of one of the collector softwares, set the redundant collector IP address by “System Settings”.
2. Set it as default project after completing the configuration in the collector. Then copy all the files below configuration path of this collector to the other one.
3. Open the configuration in the other collector, save it and set it as default project to make the configuration in the two collectors be the same.
4. Finish the configuration and start the service.

## Section 11 Revision

**Table 11-1 Retrofit list of the version**

Document Version	Applicable Product Version	Remarks
V1.0 (20151202)	VxCollector(V2.00.00.00)	Published for the first time.
V1.1 (20161220)	VxCollector (V2.00.00.00) VxSCADA V1.50.02.00	<ul style="list-style-type: none"> <li>● Add instruction of setting default project.</li> <li>● Add ABCONTROLLOGIX driver.</li> <li>● Add SNMP driver.</li> <li>● Add VxCollector driver.</li> <li>● Add NodeSniffer driver.</li> <li>● Contain information of PIMS and VxSCADA.</li> <li>● Change diagnosis information value of IEC104 Master driver.</li> <li>● Add import tag list from slave station of IEC104 Master Driver</li> <li>● Modify the information of import tag</li> </ul>
V1.2 (20180302)	VxCollector (V3.00.00.00) VxSCADA V1.50.03.00	<ul style="list-style-type: none"> <li>● Move all descriptions about drivers to a independent manual named <i>IO Driver User Manual</i>.</li> <li>● Modify the content of chapter “Add and Configure Driver”.</li> <li>● Add description about UDPDataProvider service.</li> <li>● Modify the description about default project.</li> <li>● Add the descriptions about configuration coherence of redundant collectors for ModbusTCP Slave and IEC104 Slave.</li> </ul>
V1.3 (20190708)	VxCollector (V3.00.00.00) VxSCADA V1.90.00.00	Add OPC Grouping Configuration and Reload driver description.
V1.4 (20200707)	VxCollector (V3.20.00.00) VxSCADA V2.00.00.00	Add historical cache settings and tag filtering description; add description of tag types the collector supports.