

OneWireless
Wireless Device Manager User's Guide

OWDOC-X254-en-220A
October 2013

Release 220

| Document | Release | Issue | Date |
|--------------------|---------|-------|--------------|
| OWDOC-X254-en-220A | 220 | 0 | October 2013 |

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1 About this guide

This document describes the procedures to provision, configure, operate, and monitor an ISA100 Wireless wireless field device network using the Wireless Device Manager.

Intended audience

This guide is intended for people who are responsible for planning, configuring, administering, and operating the OneWireless Network.

Prerequisite skills

It is assumed that you are familiar with the operation of OneWireless Network.

How to use this guide

This guide provides guidance on:

- WDM overview
- WDM installation
- WDM configuration
- WDM operations
- WDM administration
- WDM troubleshooting and maintenance

Required Honeywell documentation

The following documents and sources contain additional information required for deploying OneWireless Network. It is recommended to have these documents readily available for reference.

| Document | Document ID | Description |
|--|--------------------|---|
| <i>OneWireless Release Notes</i> | OWDOC-X252-en-220A | This document provides information about the new functions and features in OneWireless. |
| <i>OneWireless Network Planning and Installation Guide</i> | OWDOC-X253-en-220A | This document provides information about planning, designing, and setting up OneWireless Network using WDM, FDAPs, and field devices. |
| <i>OneWireless Wireless LAN Controller Configuration Guide</i> | OWDOC-X255-en-220A | This document provides information about configuring OneWireless network using Cisco 1552S Access Point |
| <i>OneWireless Field Device Access Point (FDAP) User's Guide</i> | OWDOC-X256-en-220A | This document describes the procedures to install, configure, and operate Field Device Access Point (FDAP). |

| Document | Document ID | Description |
|---|--------------------|--|
| <i>OneWireless Parameter Reference Dictionary</i> | OWDOC-X260-en-220A | This document provides information about the parameters associated with the OneWireless devices. |
| <i>OneWireless Migration User's Guide</i> | OWDOC-X258-en-220A | This document assists you in understanding, planning, and performing the migration of the OneWireless Network. |

You can download Honeywell documentation from <http://www.honeywellprocess.com> website.

2 Terms and definitions

| Terms | Definition |
|------------------------------|--|
| WDM | Wireless Device Manager (WDM) is a device that manages the ISA100.11a wireless field device network and all the ISA100.11a components connected to the OneWireless network. |
| FDAP | Field Device Access Point (FDAP) is a wireless infrastructure node that acts as an ISA100.11a access point and a mesh node member. FDAP can only communicate through ISA100.11a. |
| Field device | A general term for process sensor (input) or process actuator (output) device. |
| Provisioning Device handheld | Includes Personal Digital Assistant (PDA), mobile PCs and so on. |
| DD files | Device Description files |
| DSSS | Direct Sequence Spread Spectrum |
| FDN | Field Device Network |
| PCN | Process Control Network |
| HART | Highway Addressable Remote Transducer |
| RSSI | Receive Signal Strength Index |
| RSQI | Receive Signal Quality Index |
| TxFailRatio | Transmit Fail Ratio |
| GCI | Gateway General Client Interface |

3 Introduction

Related topics

“Overview of Wireless Device Manager” on page 12

“About OneWireless user interface” on page 16

“Overview of OneWireless Network setup” on page 17

3.1 Overview of Wireless Device Manager

What is Wireless Device Manager?

The Wireless Device Manager (WDM) allows you to design, commission, configure, and monitor an ISA100 wireless network and associated ISA100 wireless field devices from a centralized location. The WDM acts as a network gateway enabling third-party applications to communicate with ISA100 wireless field devices.

Functions of WDM

The WDM performs the following roles and functions within the ISA100 network.

Table 1: WDM roles and functions

| Role | Functions |
|-------------------------|--|
| Gateway | <ul style="list-style-type: none"> • Acts as the communication interface for the ISA100 wireless field devices. • Provides wireless field device data cache for the OneWireless user interface and the external control systems. • Allows communication between wired HART devices with OneWireless Adapter and the asset management system. |
| System Manager | <ul style="list-style-type: none"> • Manages the ISA100 wireless field device network and the devices. • Establishes communication between the devices. • Performs policy-based control of the network runtime configuration. • Monitors and reports the communication configuration, performance, and operational status. |
| Security Manager | <ul style="list-style-type: none"> • It provides security keys to the Provisioning Device handhelds that are used for issuing security keys to the field devices. • Authenticates the provisioning data with which a field device tries to join the network. • Initiates key rotation for the field devices. • Maintains session key for each device in the network. |

Hardware description of WDM

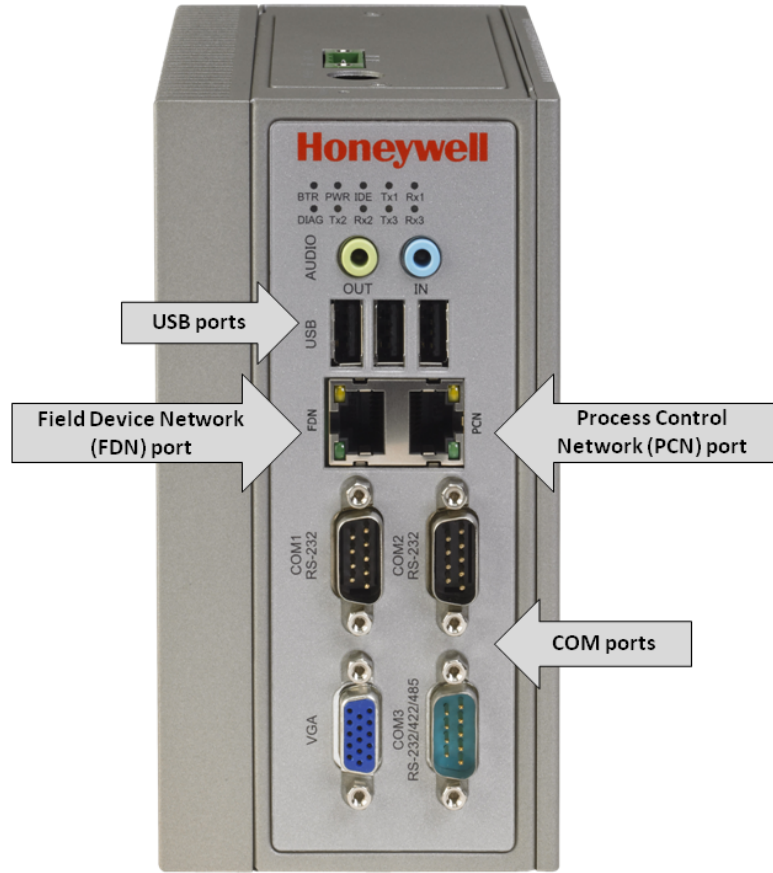


Figure 1: WDM hardware

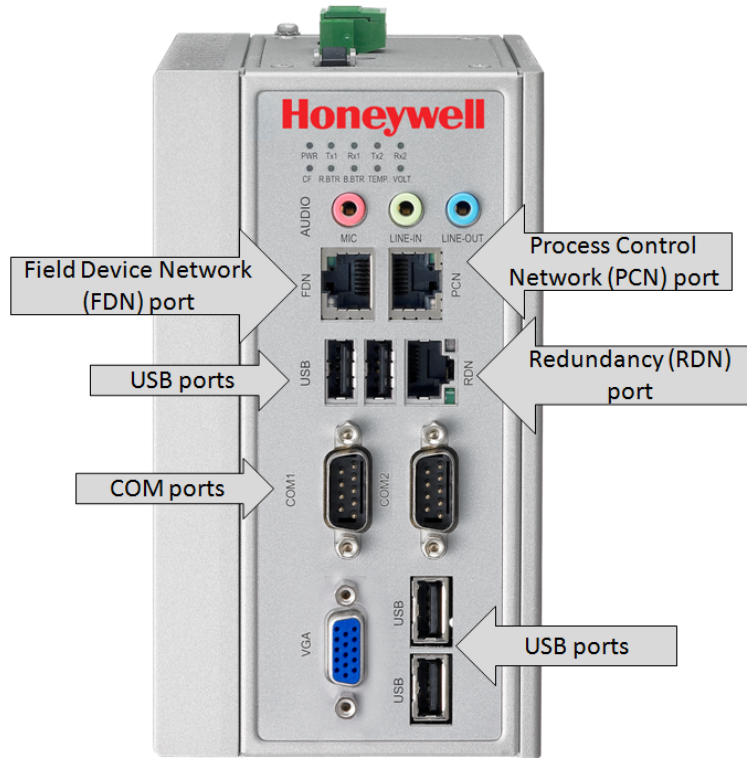


Figure 2: WDMX hardware

Table 2: Description of WDM ports

| Port name | Description |
|------------------------------------|---|
| Field Device Network (FDN) port | Used for connecting the WDM with FDAPs/Access points. Attention • The FDN port is also known as the “FIN – Field Instrument Network” port in some WDMs. |
| Process Control Network (PCN) port | Used for connecting the monitoring clients and external controllers. |
| | Attention • The WDM contains an embedded firewall that restricts the data routing between the two network ports. |
| COM ports | Used for connecting to devices such as modems, terminals and various peripherals. <ul style="list-style-type: none"> • WDMs — Has three serial ports, two of which can be used as standard RS232 ports and the third port can be used as an RS485 port • WDMX — Has two serial ports, one of which can be used as standard RS232 port and the other can be used as an RS485 port. |
| USB ports | Used for connecting USB flash drives. In addition, USB ports are used for connecting the PDA or provisioning device. <ul style="list-style-type: none"> • WDMs — Has three USB ports • WDMX — Has four USB ports |

| Port name | Description |
|-----------------------|--|
| On/Off switch | WDMS — Power plug WDMX — Switch to on/off the WDM |
| RDN (redundancy) port | WDMS — Does not support redundancy. WDMX — Supports redundancy, implements redundant private path over RDN port, which is connected to the partner WDM through a crossover cable. |

For more information about the technical specifications of the WDM models, refer to the specifications document available at Honeywell Process Solutions website.

3.2 About OneWireless user interface

The WDM provides an HTTP/Silverlight-based user interface for configuring and monitoring all the devices connected to the ISA100 Wireless wireless field device network. To start managing the ISA100 Wireless wireless field device network, you first need to configure the WDM. When you access the OneWireless user interface for the first time, the WDM needs to be configured using the First Time Configuration Wizard. After that, you can use the user interface for provisioning, commissioning, configuring, monitoring, and decommissioning of the Field Device Access Points (FDAP), Access Points, and field devices.

In addition, the user interface can be used for performing the following tasks.

- Network maintenance
- Security configuration
- Device configuration and maintenance
- Operator activities

The following are some of the benefits of OneWireless user interface.

- Requires only the installation of a browser plug-in, Silverlight
- Is simple and easy to use
- Reduces commissioning time
- Reduces security threats with secured HTTPS-based user interface
- Provides simultaneous access to WDM using multiple logon sessions
- Supports device diagnostics summary display and related reports capability
- Supports effective node failure diagnosis
- Simplifies integration of the wireless field devices with process control interfaces

3.3 Overview of OneWireless Network setup

Set up the OneWireless Network in the following sequence.

1. Install and configure the WDM.
2. Power up and provision all the Access Points/FDAP access points.
3. Power up and provision all the FDAP routers.
4. Power up and provision all the field devices.

4 Getting started with WDM

Related topics

“Mounting a WDM” on page 20

“Connecting the WDM and the other OneWireless components” on page 23

“Establishing communication between OneWireless Network and Experion system” on page 24

“Configuring network properties on the computer” on page 25

“Logging on to OneWireless user interface” on page 26

“Configuring WDM using the First Time Configuration Wizard” on page 27

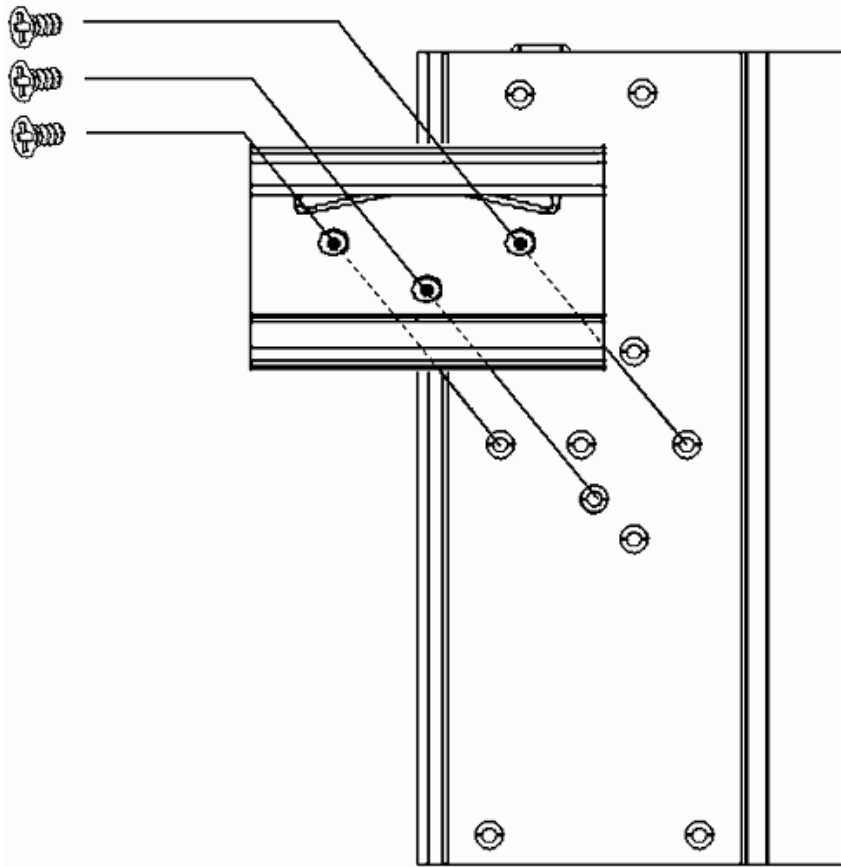
“Understanding the OneWireless user interface” on page 33

“About map view” on page 47

4.1 Mounting a WDM

Mounting a WDM on DIN-Rail

- 1 Screw the provided DIN-Rail Kit onto the rear side of the WDM as illustrated in the following figure.



- 2 Hang the WDM onto the DIN-Rail with an angle of inclination about 30 degrees.
- 3 Lower the WDM straight down to slide over the Rail smoothly.

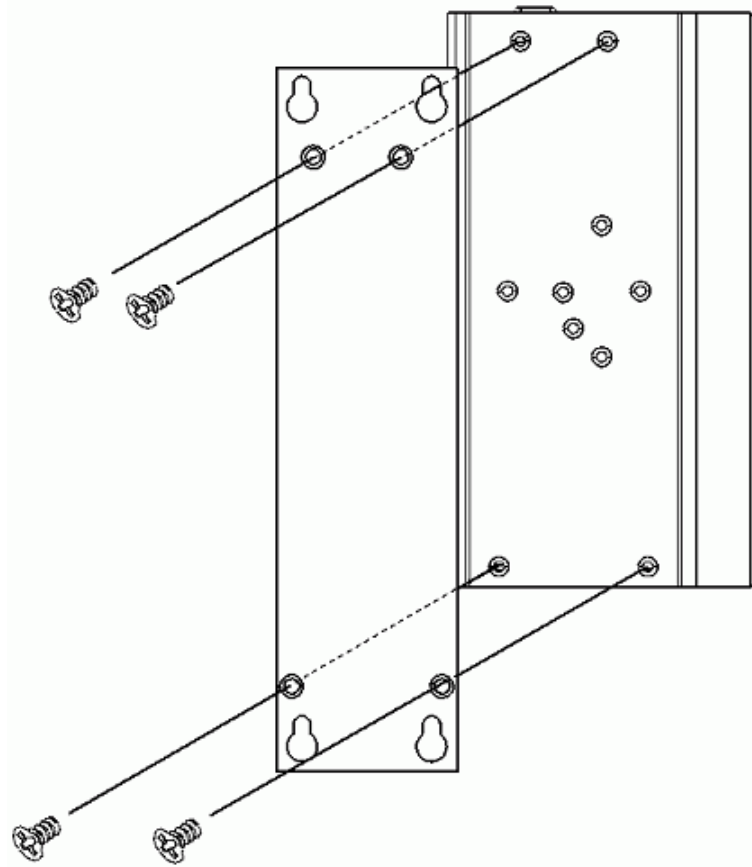


Attention

To remove the WDM from the Rail, push down on the top of the WDM, and then pull the bottom of the WDM away from the Rail to disengage smoothly.

Mounting a WDM on a flat surface

- 1 Screw the provided Wall Mounting Kit onto the rear side of the WDM as illustrated in the following figure.



- 2 Mount the WDM on the wall using the 2 pairs of mounting holes.

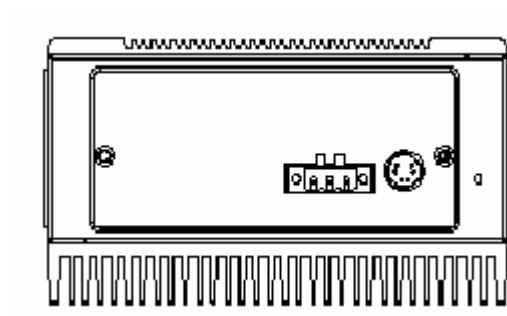


Figure 3: Front view of the WDM

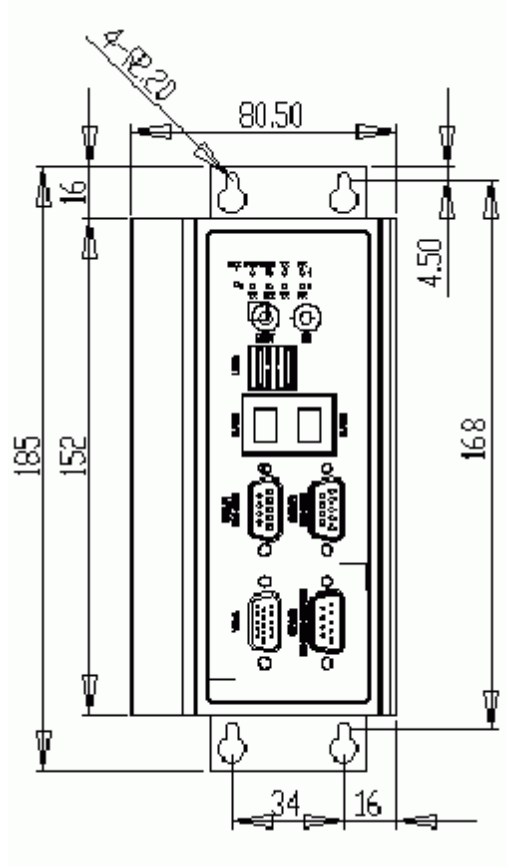


Figure 4: Rear view of the WDM

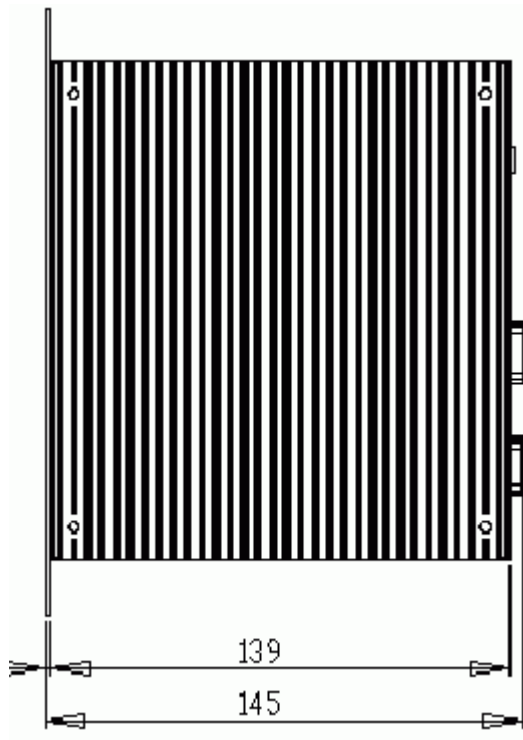


Figure 5: Top view of the WDM

4.2 Connecting the WDM and the other OneWireless components

Prerequisites

- Ensure that you provide the maximum power requirement of 48 W (10 ~ 36 VDC).
- Ensure that you have an FDN Ethernet switch when connecting multiple FDAPs/Access Points to the WDM.
- Ensure that you have Ethernet cables required for connecting the devices.
- Ensure that you have redundancy Ethernet cable for connecting the devices.
- Identify the location for mounting the devices.

Establish physical connection between WDM and Cisco 1552S Access Point

- 1 Connect the Ethernet cable from the Ethernet port on the Cisco 1552S Access Point (AP) to the non-trunk port on the Cisco switch.
- 2 Connect the Ethernet cable from the FDN port on the WDM to the non-trunk port on the Cisco Switch.
For more information about installing a Cisco 1552S AP, refer to the respective Cisco user documentation.

Establish physical connection between WDM and FDAP

- Connect the Ethernet cable from the FDAP to the FDN port on the WDM.
OR

If you are using multiple FDAPs, you can use an Ethernet switch to connect the FDAPs to the WDM.

For more information about installing and setting up the FDAP, refer to the *Field Device Access Point User's Guide*.



Attention

- The WDM has the capability to act as the DHCP Server for the Field Device Network. However, if you are configuring an external DHCP Server for the network, ensure you connect the DHCP Server to the switch during this stage.

Establish physical connection between WDM and a computer

- 1 Connect the WDM power cable to a DC power supply.
- 2 Connect the Ethernet cable from the computer's network port to the PCN port on the WDM or to a switch connected to the PCN port.

Power up the components

- After establishing connection with the WDM, power up the WDM, the FDAPs, and the Access Points.



Attention

- When powering up the WDM, if a duplicate IP address is configured on either the PCN port or the FDN port, the WDM startup operation ends and no IP address is assigned. To recover, you must resolve the duplicate IP address from the network .

4.3 Establishing communication between OneWireless Network and Experion system

To establish communication between OneWireless Network and Experion system, connect an Ethernet cable from the PCN port of the WDM to the top-level yellow Level-2 switch port on the Experion network. If you have a secondary WDM, connect an Ethernet cable from the PCN port of the secondary WDM to the top-level green Level-2 switch port on the Experion network.

! **Attention**

- Ensure that the Experion Level-2 switch port where the WDM is connected, is set to auto speed, auto duplex.
 - Ensure that the Experion Level-2 switch port where the WDM is connected, has spanning-tree portfast enabled.
-

4.4 Configuring network properties on the computer

Before migrating, you must configure the network properties on your computer to use a different IP subnet. This is because you cannot use the default FDN ip address of WDM (192.168.0.1) for migration.

Prerequisites

- A desktop or a laptop computer for accessing the OneWireless user interface.



Attention

The steps in the following procedure are specific to Microsoft Windows XP operating system.

To configure network properties on the computer

- 1 Perform one of the following steps to open the **Network Connections** dialog box.
 - Choose **Start > Settings > Network Connections**.
 - Or
 - Choose **Start > Control Panel > Network Connections**.
- 2 Right-click the network port connected to the WDM and click **Properties**.
- 3 On the **General** tab, select **Internet Protocol (TCP/IP)** check box, and then click **Properties**.



Attention

Note down the current settings in **Internet Protocol (TCP/IP) Properties** so that, if necessary, you can return to their original values.

- 4 Configure the **IP address** and the **Subnet Mask** as *192.168.0.x* and *255.255.255.0* respectively.



Attention

Do not configure the computer with the default IP address of the WDM, 192.168.0.1.

- 5 Click **OK** to close the **Internet Protocol (TCP/IP) Properties** dialog box.
- 6 On the **General** tab, click **Configure**.
- 7 Click the **Advanced** tab and then in the **Property** list, click **Link Speed & Duplex**.
- 8 In the **Value** list, click **Auto Detect** and then click **OK**.
- 9 Click **OK** and close all the open dialog boxes.



CAUTION

You must turn on a single WDM at a time, at the default address because the second WDM removes itself from the network if its duplicate address is detected. The removed WDM does not recover unless power-cycled.

4.5 Logging on to OneWireless user interface

Prerequisites

- One of the following recommended Web browsers must be installed on the computer.
 - Microsoft Internet Explorer 7.0 or higher
 - Firefox 3.6 or higher
 - Google Chrome 12.0 or higher
- Honeywell recommends a browser resolution of 1280 X 1024. Any resolution is supported but it may be necessary to navigate scrollbars or adjust zoom levels to view the entire interface.
- Microsoft Silverlight 5 plug-in is required on the computer used for accessing the user interface. If the computer has a prior version or it is not installed, then you are prompted to install or update the software when you attempt to connect to the WDM. Honeywell is an authorized distributor of the Silverlight software and a copy is maintained on the WDM for installs and upgrades; no internet or external connection is required.



Attention

Silverlight is backwards compatible. You can still run prior applications based on earlier versions of Silverlight. To save some initialization time during the first use on a new computer and if the computer has internet access, you can pre-install the Silverlight 5 runtime environment at any time using the following link: <http://www.microsoft.com/getsilverlight/Get-Started/Install/Default.aspx>.

Perform the following steps to log on to the OneWireless user interface.

To log on to OneWireless user interface

- 1 Open the Web browser and type the URL for the WDM in the address bar.
If you are logging on to the user interface for the first time from the PCN side of the network, use the default address, <https://192.168.1.1> for logging on to the user interface. If you have connected to FDN side of the network, you must use the ip address 192.168.0.1.
- 2 If a security warning appears, confirm or allow the security exception.
- 3 In the **User ID** and **Password** fields, type the user name and password, and then click **Login**.



Attention

The default **User ID** and **Password** configured for the WDM are as follows:

User ID: administrator

Password: password

Note that the **Password** is case-sensitive.

4.6 Configuring WDM using the First Time Configuration Wizard

After installing the WDM, you need to configure the WDM to enable it to function in the OneWireless Network. The **First Time Configuration Wizard** guides you through the initial configuration of the WDM. The **First Time Configuration Wizard** appears ONLY when you log on to the OneWireless user interface for the first time or after the WDM is deleted (returning to factory defaults).

Considerations

The following are some of the network configuration rules that you must follow while configuring the network properties.

- FDN and PCN must be on separate subnets.
- FDN IP address must be outside the FDAP IP address range.
- FDN subnet mask must include FDN IP address and FDAP IP address range.
- Default PCN gateway must be on the same subnet as PCN.

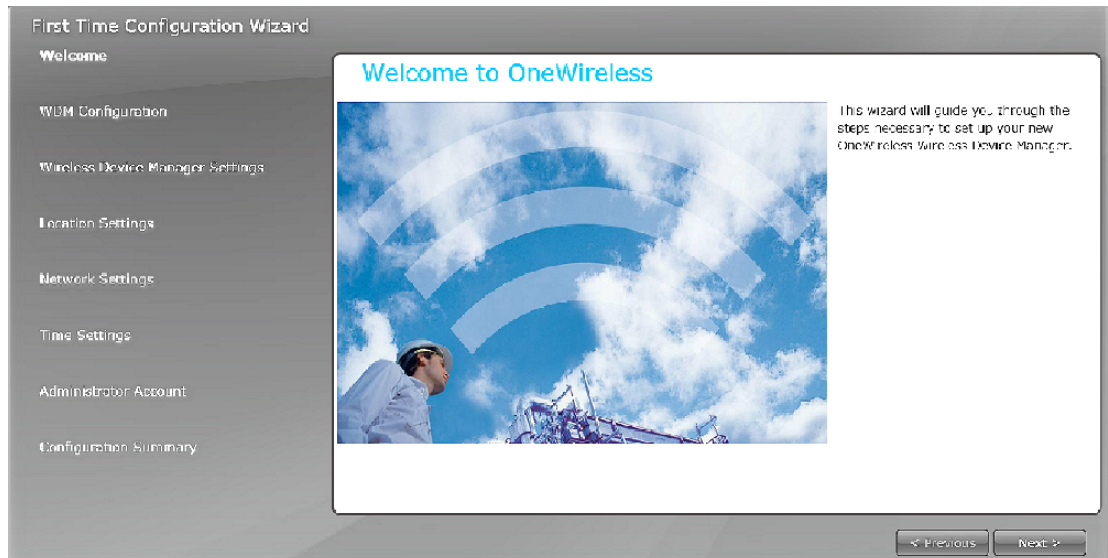


Attention

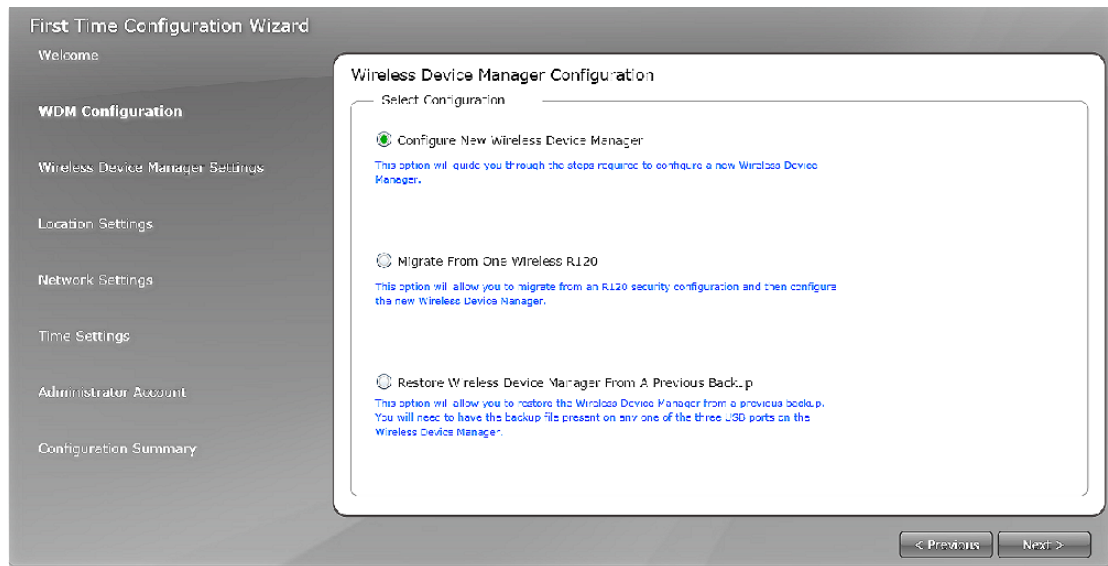
If you are performing a migration, skip this section and proceed with the tasks available in the *OneWireless Migration User's Guide*.

To configure WDM using the First Time Configuration Wizard

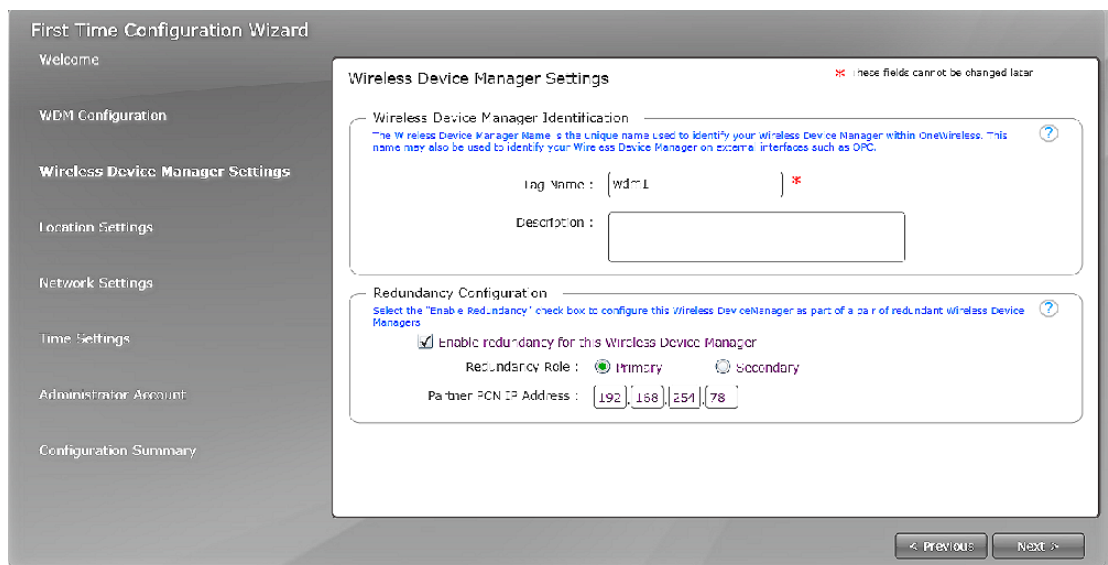
- 1 Log on to the OneWireless user interface using the default **User ID** and **Password**. The **First Time Configuration Wizard** appears.
- 2 On the **Welcome** page of the **First Time Configuration Wizard**, click **Next**.



- 3 On the **Wireless Device Manager Configuration** page, click **Configure New Wireless Device Manager** and click **Next**.



- 4 On the **Wireless Device Manager Settings** page, type the **WDM Tag Name** and the **Description**. The **Tag Name** is the unique name that is used to identify the WDM. It can be up to 16 characters long and must begin with an alphabetic character. Do not use special characters in the Tag Name; underscore is the only acceptable character. After completing the initial configuration, you cannot change the WDM name. The **Description** can be up to 255 characters long.



- 5 If you need to configure redundant WDM, then under **Redundancy Configuration**, configure the following:
- Select **Enable redundancy for this Wireless Device Manager** check box.
 - Click the **Redundancy Role**, as required. You can select either **Primary** or **Secondary** option depending on the redundancy role.
 - In the **Partner PCN IP Address** box, type the PCN IP address of the partner WDM.

**Attention**

If an incorrect partner PCN IP address is configured, WDM does not synchronize. The incorrect PCN IP address can be reconfigured on WDM Property Panel.

**Tip**

When redundancy is enabled, the primary WDM is assigned physical ID A and the secondary WDM is assigned physical ID B. The physical IDs are displayed in the UI during normal operation. Tagging the physical hardware with matching labels makes it easy to distinguish the WDMs later.

6 Click Next.

The **Location Settings** page appears.

**Attention**

- If you have selected the **Redundancy Role as Secondary** in the **Wireless Device Manager Settings** page, then the **Location Settings** page options are disabled.

7 Under Location, select the Country Code.

The country code is used to define any location-specific settings within the OneWireless Network. For example, radio frequency options are location dependent and vary depending on the country code setting. After completing the first time configuration, you cannot modify the **Country Code**.

8 Under ISA 100 Network ID, type the Network ID.

The ISA100 Network ID is the unique identifier for the network. It must contain a value between 2 (default) and 65535. After completing the first time configuration, you cannot change the **Network ID**.

9 Click Next.

The **Network Settings** page appears.

10 Under Field Device Network (FDN), configure the network settings for the wireless field device network as follows.

- **Field Device Network IP Address:** These settings are used to configure the wireless field device network Ethernet connection for the WDM. This is used for communication with FDAP.

**Attention**

- The IP address must be unique on the network, even if a redundant WDM pair is being configured.
 - After completing the initial configuration, you cannot change the **Field Device Network IP Address** specified in the **First Time Configuration Wizard**.
- **Subnet Mask:** A subnet mask identifies the bits of an IP address that are reserved for the network address. For example, if the IP address of a particular node is 192.168.2.3 with a subnet mask of 255.255.255.0, the subnet mask indicates that the first 24 bits of the address represent the network address. The last 8 bits can be used for individual node addresses on that network.

- **Assign Addresses to Field Device Access Points (Enable DHCP Server):** Select this check box to enable the WDM to act as the DHCP Server. Ensure you do not select the check box if the network has another DHCP Server. It is recommended to enable the WDM to act as the DHCP Server.
- **Field Device Access Point IP Address:** This option is enabled only if you have selected the **Enable DHCP Server** check box. Accept the default range or configure the IP address range according to the network settings in the plant network. The WDM that acts as the DHCP Server assigns IP addresses based on the range specified. Ensure that the IP addresses of the Access Points are not within the DHCP address range.

If you do not enable DHCP Server during the first time configuration, it is possible to enable this at a later stage using the Property Panel.



Attention

- DHCP server configuration option is disabled on a secondary WDM.

First Time Configuration Wizard

Welcome

WDM Configuration

Wireless Device Manager Settings

Location Settings

Network Settings

Time Settings

Administrator Account

Configuration Summary

Network Settings * These fields cannot be changed later

Field Device Network (FDN)

The Field Device Network is the network connecting the Wireless Device Manager with one or more Field Device Access Points. The Wireless Device Manager will assign IP addresses to Field Device Access Points based on the address range specified below. The Wireless Device Manager must be connected to your Field Device Network using the FDN connection.

Field Device Network IP Address : 192 | 168 | 0 | 1 *

Subnet Mask : 255 | 255 | 255 | 0

Assign Addresses to Field Device Access Points (Enable DHCP Server).

Field Device Access Point IP Address : 192 | 168 | 0 | 10 T0 192 | 168 | 0 | 200

Process Control Network (PCN)

The Process Control Network is the network connecting the Wireless Device Manager to a process control system, including external controllers or monitoring applications. The Wireless Device Manager must be connected to your Process Control Network using the PCN connection.

Process Control Network IP Address : 192 | 168 | 254 | 79

Subnet Mask : 255 | 255 | 255 | 0

Default Gateway : 0 | 0 | 0 | 0

< PREVIOUS NEXT >

11 Under **Process Control Network (PCN)**, configure the process control network settings as follows.

- **Process Control Network IP Address:** The process control network settings are used to configure the process control network Ethernet connections for the WDM. This is used for communication with monitoring applications and external controllers.



Attention

- The IP address must be unique on the network, even if redundant WDM pair is being configured.

- **Subnet Mask**

- **Default gateway:** Used to access the subnets outside the PCN subnet. This is an optional configuration option.

12 Click **Next**.

The **Network Time** page appears.



Attention

- The network time settings configuration is disabled on the secondary WDM. Upon synchronization, the secondary WDM syncs time from primary over the FDN interface.



Attention

- Network time settings configuration is disabled on the secondary WDM. Upon synchronization, the secondary WDM syncs time from primary over the FDN interface.

13 Click **Use NTPServer** or **Use System Time**, as required.

You can use either the NTP server or system time to configure the network time of the OneWireless Network.



Attention

- By default, the network time is configured as the system time.
- Consider the following while configuring an external NTP server.
 - NTP server should be on the PCN or FDN.
 - NTP server IP address must be within FDN or PCN subnet unless a default gateway has been configured on the PCN subnet and the NTP server is accessible through the default gateway.
 - NTP server IP address should not overlap with the FDN and PCN IP addresses.
 - NTP server IP address should not overlap with FDAP IP address range, if DHCP Server is enabled.

14 If you are selecting NTP server, enter the **NTP Server IP Address** and click **Next**.

The **Administrator Information** page appears.

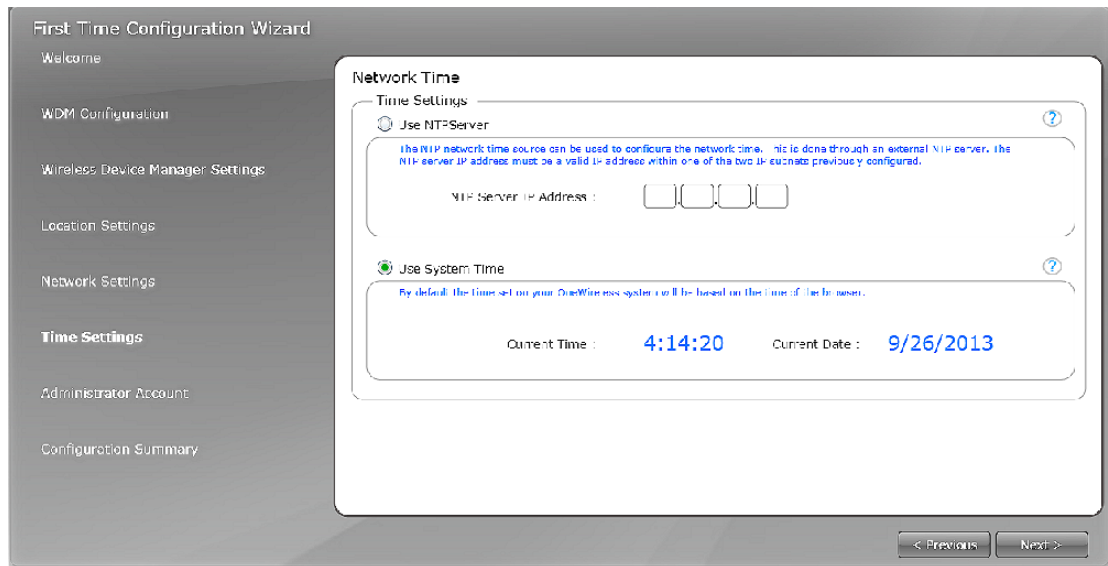
15 Type the user name and password in the **Administrator Name**, **New Password**, and **Confirm Password** fields.

- The default user name configured for the WDM is **administrator**. You can change the default user name in the **First Time Configuration Wizard**, if required. However, you cannot change the user name after completing the initial configuration.
- The password must contain at least one character and can contain up to 32 characters. It should not start or end with a space and must not contain single quote (').



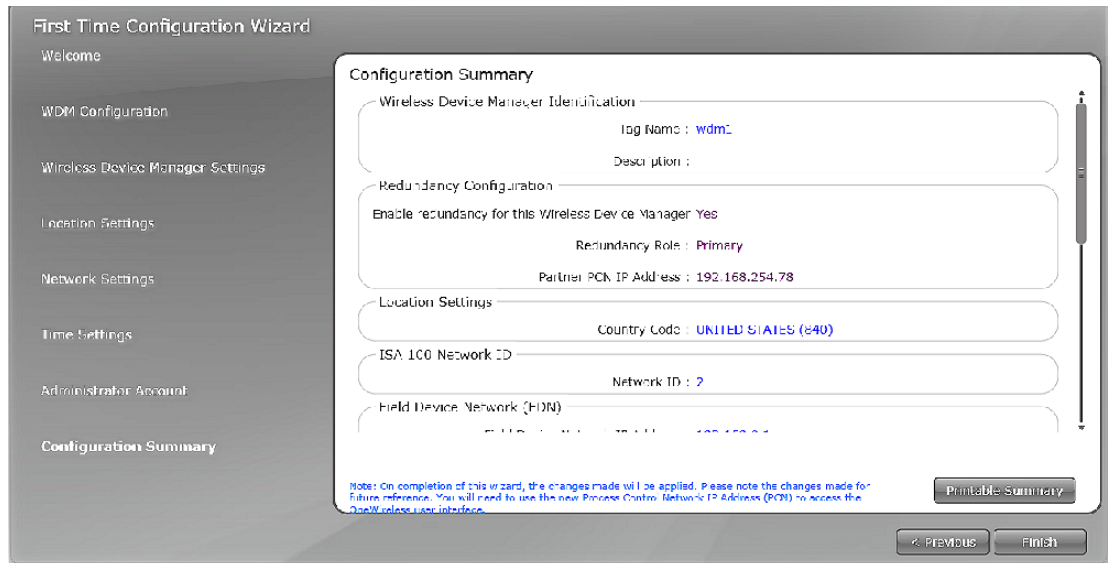
Attention

- When setting up a redundant WDM pair, it is recommended that the same default user name and password are configured on primary and secondary WDM. This is because when the primary and secondary WDMs synchronize, the secondary WDM's user account information is overwritten by the user accounts configured in the primary. Providing identical configuration on both WDMs, avoids confusion related to login credentials when the WDMs synchronize.



16 Click Next.

The **Configuration Summary** page appears which displays the summary of all the configuration information specified in the **First Time Configuration Wizard**. An incorrect entry is indicated by a warning icon. Hovering the mouse over the icon displays a tooltip with the information about the incorrect entry.



17 Verify the WDM settings, correct errors if any, and then click Finish.

If there are any errors in the configuration information that you have provided, then the system does not allow you to click **Finish**.

18 On the Browser Redirect dialog box, click OK.

The wizard redirects the Web browser to the revised process control network IP address.

Attention

- If you are configuring the WDM to use the same process control network IP address, then the wizard redirects the Web browser.
- If you have configured the WDM using a different PCN IP subnet than the computer, then you need to reconfigure the network settings of the computer to access the user interface using the IP address on the new subnet.

4.7 Understanding the OneWireless user interface

After configuring the WDM using the First Time Configuration Wizard, the following OneWireless user interface displays.

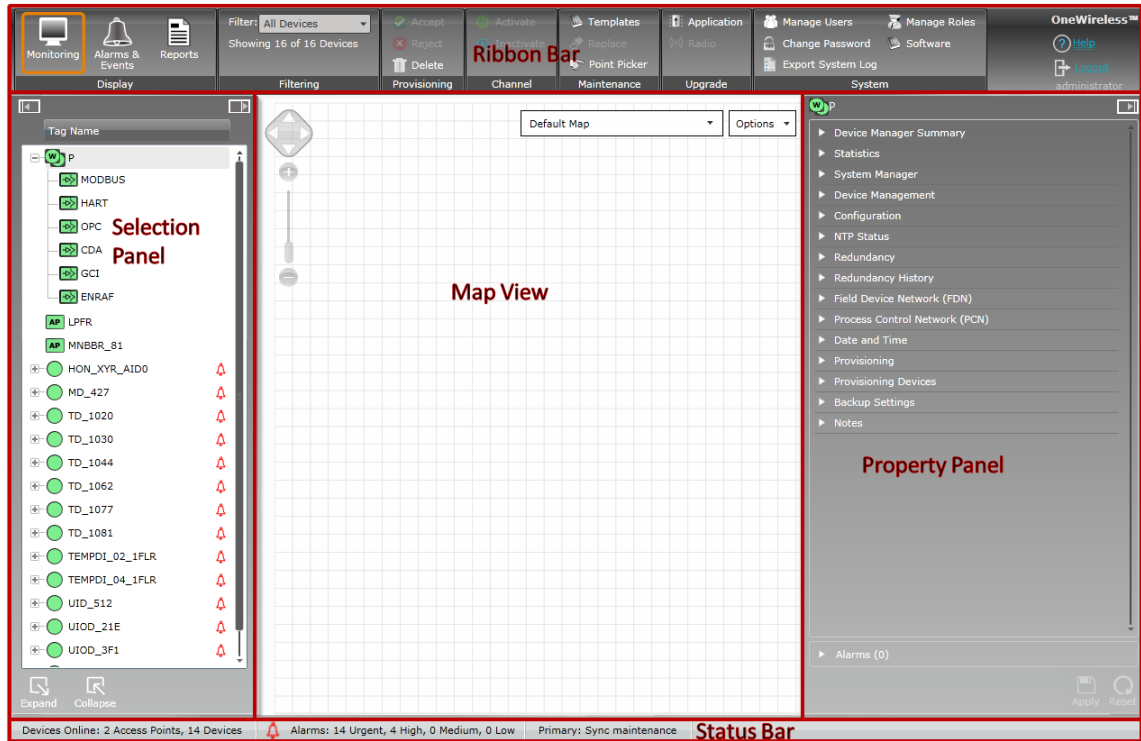


Figure 6: OneWireless user interface

OneWireless user interface comprises of the following main elements.

- **Ribbon bar** — Consists of the **Monitoring** tab, **Alarms/Events** tab and the **Reports** tab. It consists of groupings of user interface controls for controlling display elements and accessing various functions for monitoring and maintaining the OneWireless Network. These user interface controls are contextual and are enabled based on user role and devices/channels selected in the Selection Panel or the Map view.
- **Map view** – Provides a visual representation of the OneWireless Network.
- **Selection Panel** – Displays a list of all the devices that are configured in the OneWireless Network.
- **Property Panel** – Contains configuration properties of all the devices configured in the OneWireless Network.
- **Status bar** – Provides an overview of the network status by displaying the number of online devices, active alarms, WDM redundancy status, and the progress of any maintenance operation.

The following sections explain each element of the user interface in detail.

4.7.1 Ribbon bar

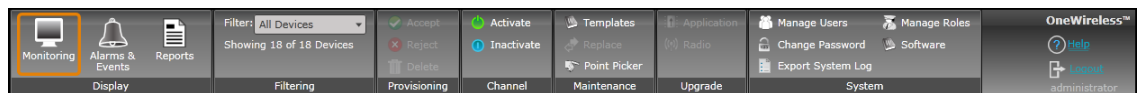



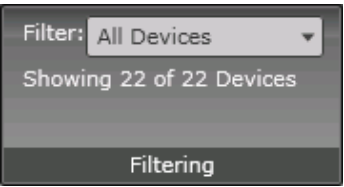
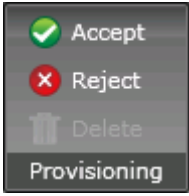

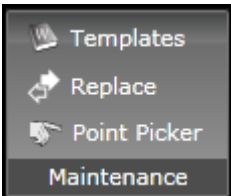
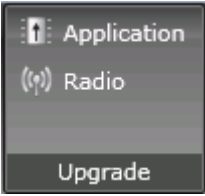


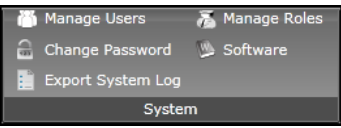



Figure 7: Ribbon bar

The ribbon bar in the user interface contains the following tabs and icons.

Table 3: Ribbon bar elements

| Tab/icon | Description |
|---|--|
| Display group | |
|  | <p>Monitoring tab displays the topological view of the OneWireless Network.</p> <p>Use the Monitoring tab to add, configure, and commission wireless field devices and monitor the devices in a topological view. The topological view of the network is known as the map view. For more information about the map view, refer to the section, “About map view” on page 47.</p> <hr/> <p>Attention</p> <ul style="list-style-type: none"> The Monitoring tab is disabled on the secondary WDM. |
|  | <p>The Alarms & Events tab displays the alarms and system events generated by the wireless field devices in a tabular format. An alarm is generated whenever an abnormal condition occurs. An event is any significant change in the system, and includes alarms and operator actions. The Alarms & Events tab contains the following sub elements.</p> <ul style="list-style-type: none"> The Active Alarms tab: Lists the devices, device diagnostic alarms and their respective location, source, start time, priority, and description. The Alarms/Events History tab: Provides a tabular view of the events. It is possible to export the alarm log and the event log for a particular period. |
|  | <p>Reports tab displays device performance and connectivity reports.</p> <p>Use the Reports tab to generate and view predefined reports that are used to maintain and optimize the network and the field devices.</p> <p>The following are the reports that can be generated:</p> <ul style="list-style-type: none"> Battery Life Device Health Overview Device Summary Device History Connection Summary Connection History |
| Filtering group | |
|  | <p>The Filter option in the ribbon bar allows you to customize the device list by filtering the devices. By default, all the devices appear in the device list. You can filter by Device Type, Device Status, Vendor, Model, Power Source, Alarm Priority, Hop Level, and Maps.</p> <hr/> <p>Attention</p> <ul style="list-style-type: none"> When you set a filter, various system views are altered. For example, the map highlights only the devices for which the filter option is applied. All the filtered out devices appear as blurred in the map. <p>Filter includes an option to filter by Map. This includes the Unplaced map so any device that has not been placed on a map can easily be detected. Note that since a device can be placed on more than one map, it can appear in the set of filtered devices for different maps.</p> |
| Provisioning group | |

| Tab/icon | Description |
|---|---|
|  | <ul style="list-style-type: none"> • Accept: Accepts devices that can be provisioned using over-the-air provisioning method. • Reject: Rejects devices that are attempting to join the network using over-the-air provisioning method. • Delete: Removes a provisioned device from the network. Removing a device from the network clears the provisioning data and restores the device to factory default state. It can also be used to remove a rejected unprovisioned device from the user interface in case you have mistakenly rejected a device earlier. Removing a rejected device enables the device to rejoin as an unprovisioned device. You can then accept the unprovisioned device to join the network. <p>Note the following points while deleting a device from the network.</p> <ul style="list-style-type: none"> – Deleting a joined device removes the provisioning data and the configuration data from the device and the WDM. Also, the device restores to factory default state. – Deleting an offline device removes the provisioning data and the configuration data of the device only from the WDM. The provisioning data and the configuration data needs to be manually cleared from the device using the PDA. <p>Only the Delete option is available on the secondary WDM.</p> |
| Channel group | |
|  | <ul style="list-style-type: none"> • Activate: Activates all the channels of the selected field device. Clicking the Activate transitions the field device channel state from OOS to the currently configured Normal mode. • Inactivate: Inactivates all the channels of the selected field device. Clicking the Inactivate button transitions the field device channel state from AUTO to OOS. <p>Attention</p> <ul style="list-style-type: none"> • This group is disabled on the secondary WDM. |
| Maintenance group | |
|  | <ul style="list-style-type: none"> • Templates: Uploads the vendor supplied DD file to the WDM. • Replace: Displays the help information for performing the replace operation. • Point Picker: Enables you to browse parameters on all devices and then drag and drop parameter into MODBUS coil or register configuration. <p>Attention</p> <ul style="list-style-type: none"> • This group is disabled on the secondary WDM. |
| Upgrade group | |
|  | <ul style="list-style-type: none"> • Application: Initiates firmware upgrade operation for the WDM and the application firmware of the field devices. • Radio: Initiates firmware upgrade operation for the access points and the radio firmware of the field devices. |
| System group | |

| Tab/icon | Description |
|---|--|
|  | <ul style="list-style-type: none"> • Manage Users: Opens the Manage Users dialog box that contains the options to add, delete, or edit new user accounts. • Change Password: Enables you to change the current user’s password. • Export System Log: Exports and saves the system logs that record information about events in the application instances. • Manage Roles: Opens the Manage Roles dialog box that enables you to modify the configured user-permitted operations. • Software: Enables you to download software provided on WDM. <hr/> <p>Attention</p> <ul style="list-style-type: none"> • Only the Export System Log option is available on the secondary WDM. |
|  | <p>Displays the user who has currently logged on to the OneWireless user interface.</p> |
|  | <p>Click the icon to log out of the OneWireless user interface.</p> |
|  | <p>Invoke the context-sensitive help. Note that this functionality is currently not supported.</p> |

4.7.2 Selection Panel

The Selection Panel in the OneWireless user interface provides a list of all the devices configured in the OneWireless Network. It is docked to the left of the user interface window and is horizontally expandable and collapsible. It also provides an option to view the extended view of the Selection Panel known as the extended Selection Panel. The extended Selection Panel displays the device information in a tabular format.

The default view of the Selection Panel displays all the devices arranged in the order - WDM, FDAPs, Access Points, and field devices. You can configure multiple locations for organizing the devices. The following illustrations depict the default view of the Selection Panel.

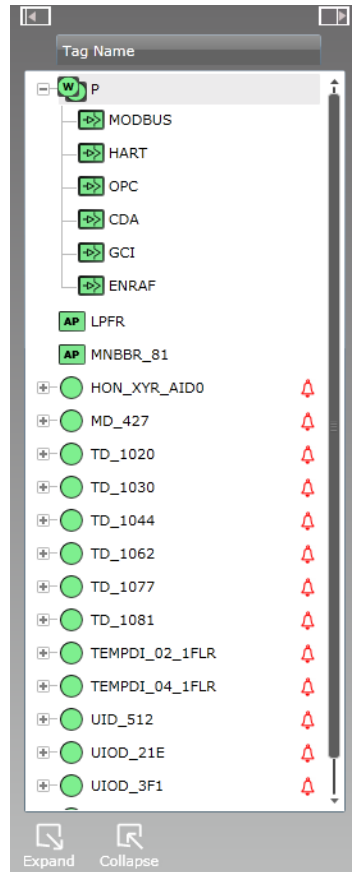
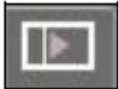







Figure 8: Selection Panel

The following table describes the different elements/icons available in the Selection Panel.

Table 4: Selection Panel elements

| Element | Function |
|---|---|
|  | Click to expand the Selection Panel. |
|  | Click to collapse the Selection Panel. |
|  | Click to view the extended Selection Panel. It provides information about the properties of the devices such as device type, status, vendor, model, serial number, and so on. |
|  | Click to collapse the extended Selection Panel. |

| Element | Function |
|---|---|
|  | Click to collapse the devices in the Selection Panel. |
|  | Click to expand the devices in the Selection Panel. |

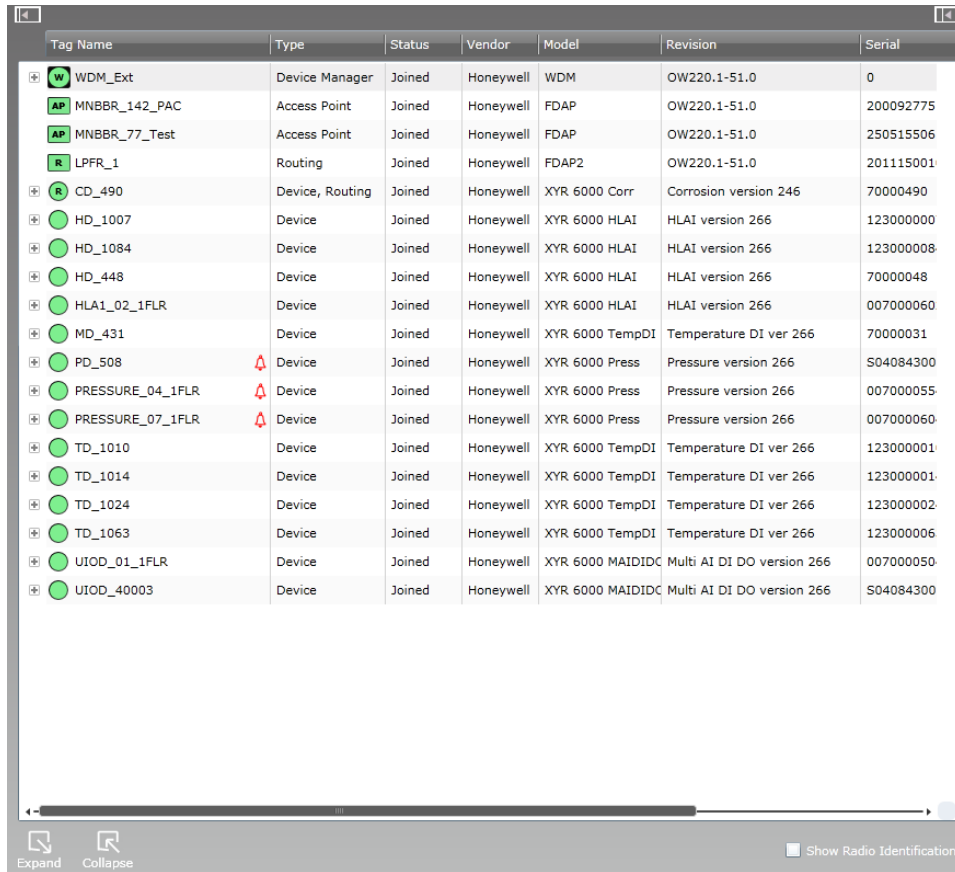


Figure 9: Extended Selection Panel

The **Show Radio Identification** check box allows you to view the radio related details about the field devices. The following illustration depicts the extended Selection Panel with **Show Radio Identification** check box selected.

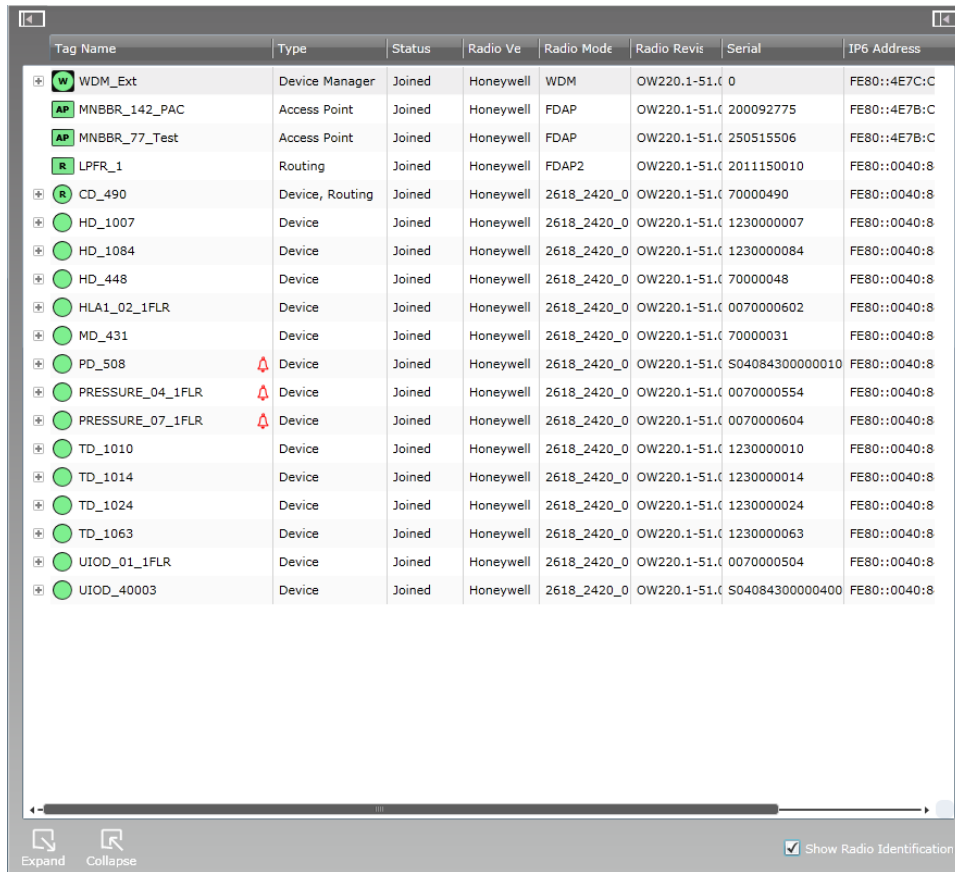


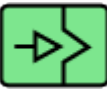


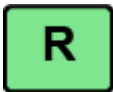
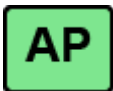









Figure 10: Extended Selection Panel with radio details of the devices




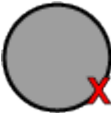





4.7.3 Understand the device icons











The Selection Panel, map view, and the Property Panel display various device icons for representing the network components. The following table summarizes the appearance of the device icons and their corresponding description/state.








Table 5: Device state icons

| If the device icon is... | Then it represents... |
|---|--|
|  | WDM |
|  | Redundant WDM |
|  | External interfaces By default, the external interfaces appear within the WDM icon. |

| If the device icon is... | Then it represents... |
|---|--|
|  | FDAP router |
|  | Access Point or FDAP access point |
|  | Offline FDAP access point |
|  | Offline FDAP router |
| Over-the-air provisioning icons | |
|  | Access point with OTAP enabled |
|  | FDAP router with OTAP enabled |
|  | Access point in unprovisioned state |
|  | FDAP router in unprovisioned state |
|  | Field device in unprovisioned state |
|  | Access point in joining/provisioning state |
|  | FDAP router in joining/provisioning state |

| If the device icon is... | Then it represents... |
|---|---|
|  | Field device in joining/provisioning state |
|  | Access point in rejected state |
|  | FDAP router in rejected state |
|  | Field device in rejected state |
| Field device icons | |
|  | Routing field device (field device with routing capability) |
|  | Routing field device with an active alarm |
|  | Field device that has joined the network |
|  | Field device in offline state |
|  | Field device in joining/provisioning state |
| Channel icons | |

| If the device icon is... | Then it represents... |
|---|--|
|  | Channel in Auto/MAN mode |
|  | Channel in inactive/OOS mode |
|  | Channel becomes grey when the data is being fetched from the device. For a digital output channel, grey indicates the MAN mode, where you can manually set the output value. |
|  | Offline channel |
| WDM redundancy icons | |
| Primary view | |
|  | Primary is Unknown (default Secondary). |
|  | Primary is Offline (default Secondary). |
|  | Primary is Joining (default Secondary). |
|  | Primary is Joined, redundancy sync state (secondary) is NoPartner or Unknown (default Secondary). |
|  | Primary is Joined, Partner is visible over private path but not synced. Partner may be incompatible. |
|  | Primary is Joined, Initial sync is in progress. |

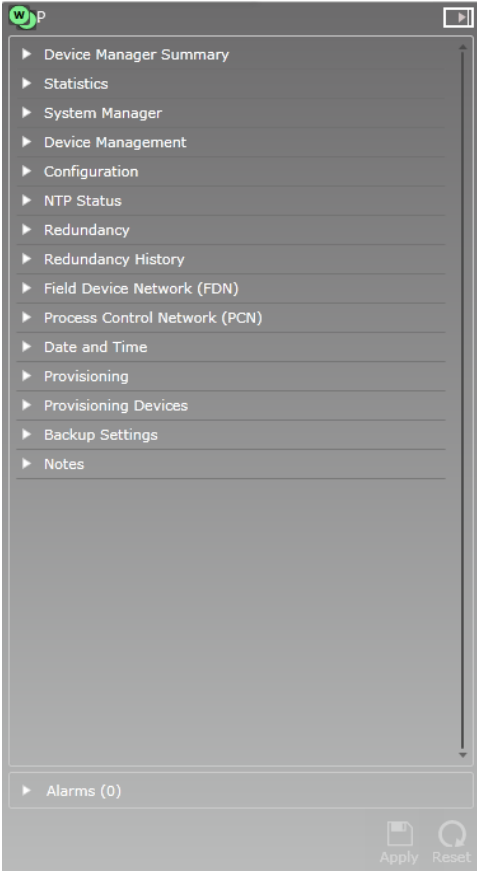
| If the device icon is... | Then it represents... |
|---|---|
|  | Primary is Joined, WDMs are synchronized. |
| Secondary view | |
|  | Secondary is Unknown (default Primary). |
|  | Secondary is Offline (default Primary). |
|  | Secondary is Joining (default Primary). |
|  | Secondary is Joined, Redundancy sync state NoPartner or unknown (default Secondary). |
|  | Secondary is Joined, Partner is visible over private path but not syncd. Partner may be incompatible. |
|  | Secondary is Joined, Initial sync is in progress. |
|  | Secondary is Joined, WDMs are synchronized. |

4.7.4 Property Panel

The Property Panel in the OneWireless user interface provides configuration properties of all the devices configured in the OneWireless Network. The Property Panel is docked to the right of the user interface window and is horizontally expandable and collapsible.

The Property Panel allows you to perform configuration tasks pertaining to WDM, FDAPs, Access Points, and field devices and their channels. It also allows monitoring the configuration attributes of the devices such as PV, communication links, signal quality, and so on.

Selecting the required device in the Selection Panel, automatically displays all the configuration parameters of the devices that are accessible from the Property Panel. These configuration parameters are grouped into accordion panels that can be individually expanded or collapsed.



Attention

On the secondary WDM UI, some accordion panels like System Manager, Configuration, Date and Time, Provisioning, Provisioning Devices, and Notes are not displayed. For example, refer to the following figure.

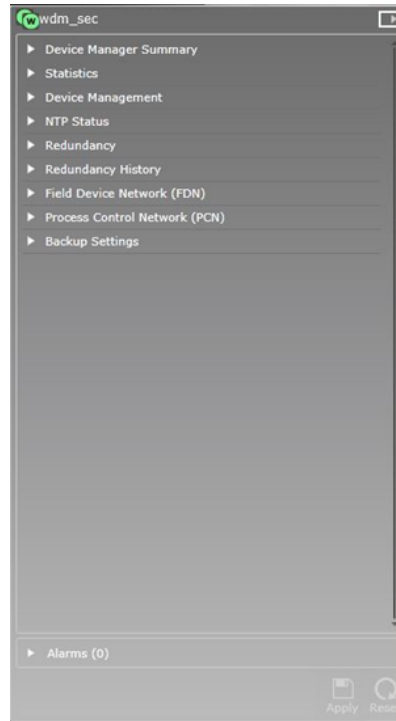
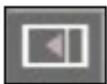






Figure 11: WDM Property Panel

The following table describes the different elements/icons available in the Property Panel.

Table 6: Property Panel elements


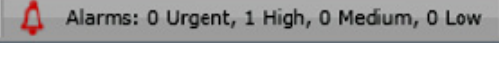
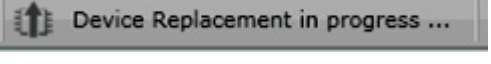


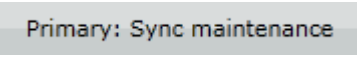
| Element | Function |
|---|---|
|  | Click to expand the Property Panel. |
|  | Click to collapse the Property Panel. |
|  | Apply icon. Click to save any configuration changes applied. This icon is enabled only if you have made any changes in the user interface. |
|  | Reset icon. Click to reset any unsaved changes made to the devices through the Property Panel. This icon is enabled only if you have made any changes in the user interface. |

| Element | Function |
|---|--|
|  | Alarms panel allows to view the alarm details (Priority, Start Time, and Description) for any device selected in the Selection Panel. |

4.7.5 Status bar

The status bar that is located at the bottom of the user interface window displays messages that indicate the overall status of the network. These status messages are grouped into different panes in the status bar.

Table 7: Status bar panes

| Pane | Description |
|---|---|
|  | Number of online devices. |
|  | Displays all the active alarms. Click the Alarms box to open the Active Alarms table in the Alarm/Events tab. |
|  | Device replacement status is displayed when you have initiated a device replacement operation. Since the status bar displays the progress, you can close the Device Replacement dialog box to allow the replacement operation to run in the background. Click this box to open the Device Replacement dialog box. |
|  | Firmware upgrade status is displayed when you have initiated a firmware upgrade of any device. Since the status bar displays the progress, you can close the Firmware Upgrade dialog box to allow the operation to run in the background. Click this box to open the Firmware Upgrade dialog box. |
|  | Method status is displayed when you have initiated a scripted operation, such as calibration or diagnostics on a field device. Methods are defined in the DD file of a field device. Click the box to open the Method dialog box. |
|  | Displays the redundancy role and sync status. |

4.8 About map view

Use the map view to create a visual topology map of the network. The devices can be arranged in a map view according to the plant network topology. The map view allows you to create a real plant topology by dragging and dropping the devices from the device list in the Selection Panel. Arrange the devices on the map according to the plant setup and set the map visibility and overlays such as connection strength and publishing rate. For more information about creating a map view, refer to the section “Setting up the monitoring area” on page 94.

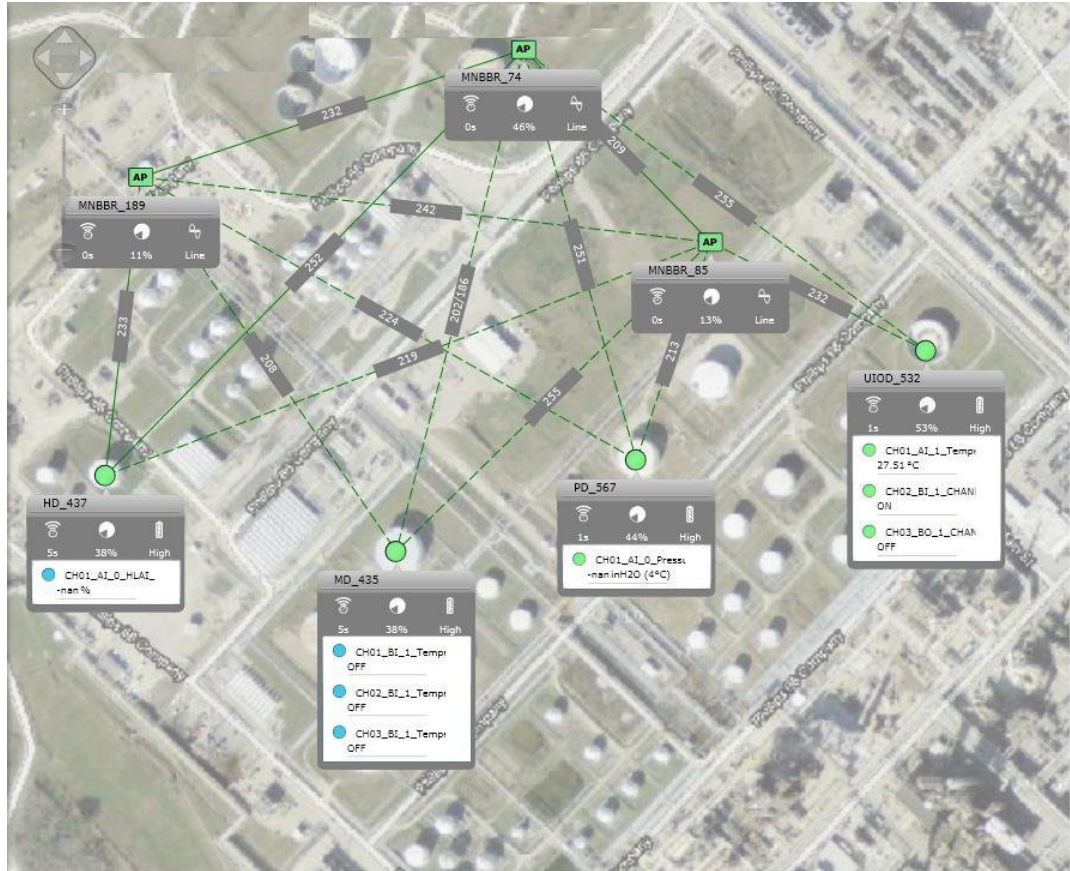



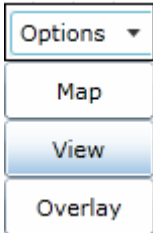

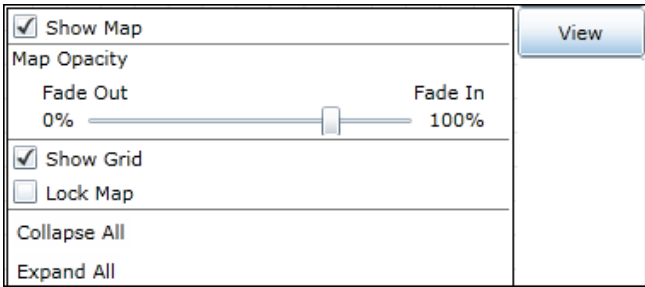


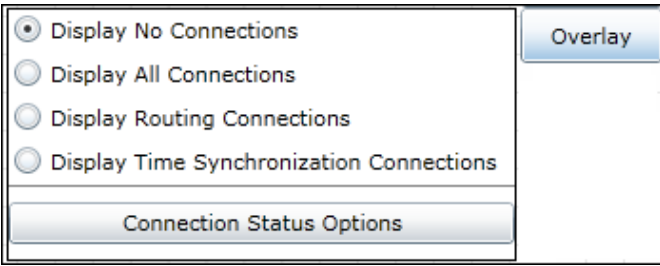
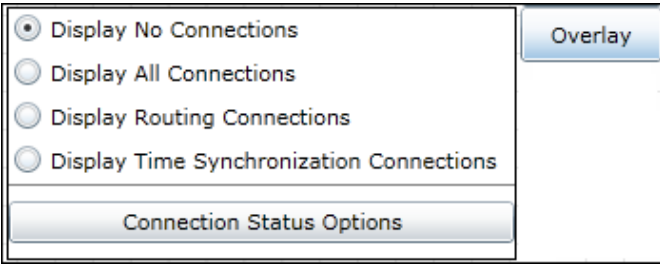
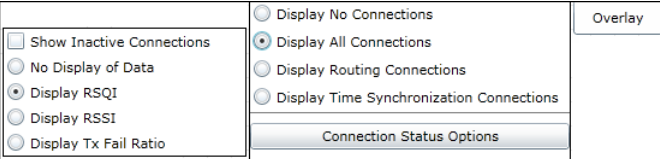
Figure 12: Map view

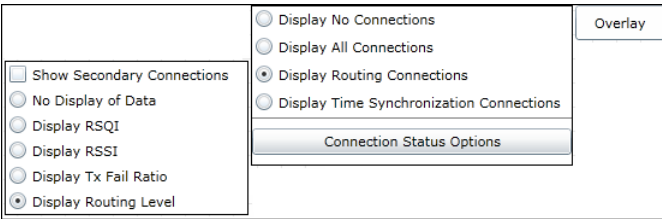
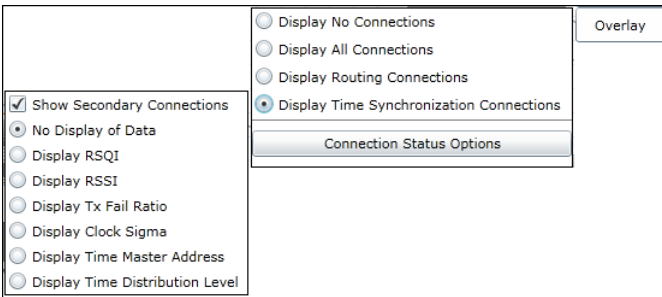
The following are the map navigation controls that are available in the map view.

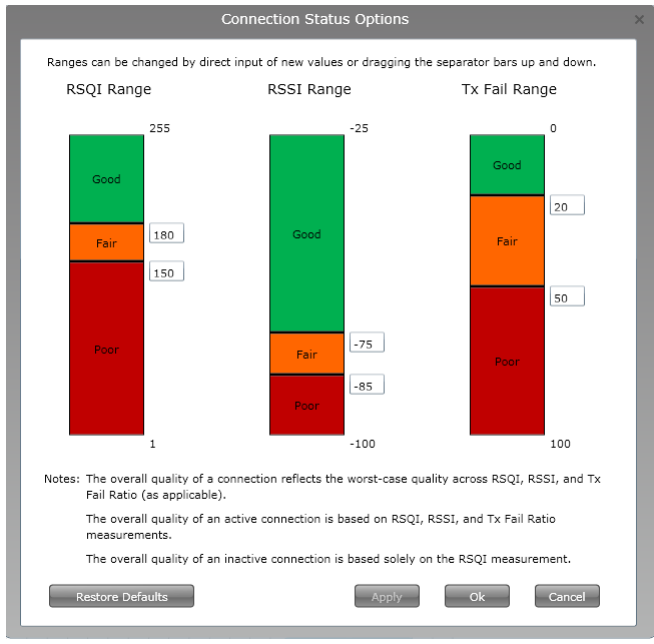
Table 8: Map navigation controls

| Map navigation control | Description |
|---|---|
|  | Pan control is used to move the map in the up, down, left, and right directions. You can also pan the map by clicking and dragging on the map view. |

| Map navigation control | Description |
|---|---|
|  | <p>Zoom control is used to zoom in or zoom out the map view. You can also use the scroll button on the mouse, to zoom in or zoom out the map view.</p> |
|  | <p>WDM allows you to configure multiple maps to reflect the real plant topology. By default, the Default Map appears.</p> <p>On the top-right of Map view, click the map list and select the required map to be displayed.</p> |
|  | <p>Options: On the top-right of Map view, click the Options list. The following are the options:</p> <ul style="list-style-type: none"> • Map • View • Overlay |
|  | <p>Map: On the top-right of Map view, click Options > Maps to view map options, the following are the map options.</p> <ul style="list-style-type: none"> • Manage Maps: Enables you to Add, Edit, and Delete maps. • Remove Devices: Enables you to remove the selected devices from the current map. |
|  | <p>View: On the top-right of Map view, click Options > View to view the View options. The View option provides options for controlling the map displayed.</p> <p>The following are the View options:</p> <ul style="list-style-type: none"> • Show Map: Select the Show Map check box to display the map image. • Map Opacity: Move the slider to adjust the opacity of the map. Move the slider left to increase the visibility (fade in) of the map and move the slider right to decrease the visibility (fade out) of the map. • Show Grid: Select the Show Grid check box to display grid overlay on the map. • Lock Map: Select the Lock Map check box to lock the map, locking of the map prevents moving of devices. • Collapse All: Click the Collapse All option to collapse all expanded devices on the map. • Expand All: Click the Expand All option to expand all collapsed devices on the map. |




| Map navigation control | Description |
|---|--|
|  <p>The screenshot shows a control panel with four radio button options: 'Display No Connections' (selected), 'Display All Connections', 'Display Routing Connections', and 'Display Time Synchronization Connections'. Below these is a 'Connection Status Options' button. An 'Overlay' button is located to the right of the panel.</p> | <p>Overlay: On the top-right of Map view, click Options > Overlay to view the Overlay options. The Overlay options provides options for controlling connections displayed.</p> <p>The following are the Overlay options:</p> <ul style="list-style-type: none"> • Display No Connections • Display All Connections • Display Routing Connections • Display Time Synchronization Connections • Connection Status Options <hr/> <p>Attention</p> <ul style="list-style-type: none"> • Depending on the Overlay option selected, the other options available are displayed. |
|  <p>This screenshot is identical to the one above, showing the 'Display No Connections' option selected.</p> | <p>Click the Display No Connections option for not displaying any connections on the map.</p> |
|  <p>The screenshot shows a control panel with a list of checkboxes on the left: 'Show Inactive Connections' (unchecked), 'No Display of Data' (unchecked), 'Display RSQI' (checked), 'Display RSSI' (unchecked), and 'Display Tx Fail Ratio' (unchecked). On the right, there are four radio button options: 'Display No Connections', 'Display All Connections' (selected), 'Display Routing Connections', and 'Display Time Synchronization Connections'. Below these is a 'Connection Status Options' button. An 'Overlay' button is located to the right of the panel.</p> | <p>Click the Display All Connections option for displaying all connection details on the maps. The following are the options:</p> <ul style="list-style-type: none"> • Show Inactive Connections: Select the Show Inactive Connections check box to display inactive connections. • No Display of Data: Click No Display of Data for not displaying the data. • Display RSQI: Click Display RSQI to display RSQI. • Display RSSI: Click Display RSSI to display RSSI. • Display Tx Fail Ratio: Click Display Tx Fail Ratio to display Tx Fail Ratio. |

| Map navigation control | Description |
|--|---|
|  | <p>Click the Display Routing Connections option for displaying all routing connection details on the maps. The following are the options:</p> <ul style="list-style-type: none"> • Show Secondary Connections: Select the Show Secondary Connections check box to display secondary connections. • No Display of Data: Click No Display of Data for not displaying the data. • Display RSQI: Click Display RSQI to display RSQI. • Display RSSI: Click Display RSSI to display RSSI. • Display Tx Fail Ratio: Click Display Tx Fail Ratio to display Tx Fail Ratio. • Display Routing Level: Click Display Routing Level to display routing level. |
|  | <p>Click the Display Time Synchronization Connections option for displaying all clock connection details on the maps. The following are the options:</p> <ul style="list-style-type: none"> • Show Secondary Connections: Select the Show Secondary Connections check box to display secondary connections. • No Display of Data: Click No Display of Data for not displaying the data. • Display RSQI: Click Display RSQI to display RSQI. • Display RSSI: Click Display RSSI to display RSSI. • Display Tx Fail Ratio: Click Display Tx Fail Ratio to display Tx Fail Ratio. • Display Clock Sigma: Click Display Clock Sigma to display clock sigma. Clock sigma represents the standard deviation of clock corrections with respect to a node and a neighbor in units of micro seconds. • Display Time Master Address: Click Display Time Master Address to display time master address. The Time Master Address is the network address of the time master access point. • Display Time Distribution Level: Click Display Time Distribution Level to display time distribution level. The Time Distribution Level is the distance to the time master. <p>For more information about connectivity option ranges, refer to “Verifying connectivity using maps” on page 99.</p> |

| Map navigation control | Description |
|---|---|
|  <p>Connection Status Options</p> <p>Ranges can be changed by direct input of new values or dragging the separator bars up and down.</p> <p>RSQI Range RSSI Range Tx Fail Range</p> <p>Good Good Good</p> <p>Fair Fair Fair</p> <p>Poor Poor Poor</p> <p>1 -100 100</p> <p>180 -75 20</p> <p>150 -85 50</p> <p>255 -25 0</p> <p>Notes: The overall quality of a connection reflects the worst-case quality across RSQI, RSSI, and Tx Fail Ratio (as applicable).</p> <p>The overall quality of an active connection is based on RSQI, RSSI, and Tx Fail Ratio measurements.</p> <p>The overall quality of an inactive connection is based solely on the RSQI measurement.</p> <p>Restore Defaults Apply Ok Cancel</p> | <p>Connection Status Options enables you to define the quality thresholds for link quality. On the top-right of Map view, click Options > Overlay > Connection Status Options.</p> <p>For more information about Connection Quality Options, refer to “Configuring Connection Quality Options” on page 98.</p> |

The device icons in the map view contain the following indicators using which you can analyze the battery level, the publishing rate, and the bandwidth usage of devices.

Table 9: Field device performance indicators

| Device performance indicators | Description |
|---|--|
|  | <p>Displays the battery level as low, medium, high, or unknown.</p> |
|  | <p>Displays the publishing rate at which the PV data is published.</p> |
|  | <p>Displays the bandwidth usage of the devices. This attribute is used to determine the communication resource usage of field devices. It is computed based on the percentage of active neighbors and the percentage of links allocated. When the bandwidth usage becomes 100%, the device will no longer be able to handle additional communication requests.</p> |

5 Configuration

Related topics

“Configuring a Provisioning Device handheld” on page 54

“Loading the Device Description file” on page 59

“Provisioning the OneWireless Network components” on page 60

“Configuring the WDM” on page 65

“Configuring the WDM redundancy” on page 68

“Monitoring the WDM redundancy status” on page 73

“Configuring device communication redundancy” on page 78

“Configuring field devices” on page 80

“Configuring field device channels” on page 85

“Adding notes for devices” on page 91

5.1 Configuring a Provisioning Device handheld

OneWireless Network uses Provisioning Device handheld for authenticating the devices in the network. This section describes the tasks that must be performed to configure a Provisioning Device handheld.

This section is not applicable if you are provisioning the devices in the network using over-the-air provisioning method. For more information about over-the-air provisioning, refer to the section “Provision the devices using over-the-air provisioning method” on page 60.

Related topics

- “Install synchronization software on the computer” on page 54
- “Install Microsoft .NET Compact Framework 3.5 on the Provisioning Device handheld” on page 54
- “Install Provisioning Device Application on the Provisioning Device handheld” on page 56
- “Generate and transfer the provisioning keys to the Provisioning Device handheld” on page 57
- “Remove Provisioning Device handheld” on page 58

5.1.1 Install synchronization software on the computer

You must install synchronization software such as Microsoft ActiveSync or Windows Mobile Device Center on the computer. Microsoft ActiveSync is compatible only with Windows XP or earlier. If you are using a Windows 7 or Windows Vista system, download and install Windows Mobile Device Center.

To install synchronization software on the computer

- 1 Using the following link, download the Microsoft ActiveSync 4.5 setup file (**setup.msi**) and save it to the computer.
<http://www.microsoft.com/downloads/en/details.aspx?familyId=9E641C34-6F7F-404D-A04B-DC09F8141141&hash=ZXcqOkIz1vPfw73vwJQbLTHV8Xwio8UMvRuVGUr1w8v5qUjfU8QzIwuUfUo4uwyiyTbYehsyK3L1OUi7TYCd6g%3d%3d>
 For Windows Mobile Device Center, use the following link.
<http://www.microsoft.com/downloads/en/details.aspx?FamilyId=46F72DF1-E46A-4A5F-A791-09F07AAA1914&displaylang=en>
- 2 Browse to the hard disk drive location where the setup file is saved.
- 3 Run the setup file and follow the on-screen instructions to complete the installation.

5.1.2 Install Microsoft .NET Compact Framework 3.5 on the Provisioning Device handheld

To install Microsoft .NET Compact Framework 3.5 on the Provisioning Device handheld

- 1 On the ribbon bar, in the **System** group, click **Software**.
 The **Support Software** dialog box appears.



- 2 From the **Select Software** list, select the **MS .NET Compact Framework v3.5** software.
- 3 Click **Save To** to save the software to the computer.
A confirmation message *Do you want to save the NETCFSetupv35?* appears.
- 4 Click **OK**.
The **Save As** dialog box appears.
- 5 Browse to a location on the hard drive to save the MS .NET Compact Framework v3.5 software.
 - By default, the file name appears as NETCFSetupv35, if you want to change the file name, then type the **File name**.
- 6 Click **Save**.
- 7 Connect the Provisioning Device handheld's docking station to a USB port on the computer.
- 8 Place the Provisioning Device handheld on the docking station.
- 9 Switch on the Provisioning Device handheld.
- 10 The computer detects the Provisioning Device handheld and the **Synchronization Setup Wizard** dialog box appears.
- 11 Click **Cancel** to continue.
It is not necessary to complete the synchronization setup before installing the Provisioning Device Application.
The **Microsoft ActiveSync** dialog box appears with the status as connected.
- 12 On the computer, browse to the location where Microsoft .NET Compact Framework 3.5 setup file is saved.
- 13 Run the setup file on the computer and follow the on-screen instructions to complete the installation.
The Provisioning Device handheld displays the progress of the installation.

**Attention**

If Microsoft .NET Compact Framework 3.5 is already installed on the computer, in order to reinstall, you must remove it using **Add/Remove Programs**.

5.1.3 Install Provisioning Device Application on the Provisioning Device handheld

Prerequisites

- Ensure that you have logged on to the OneWireless user interface.
- Ensure that the Provisioning Device handheld is connected to the computer and the connection status appears as green in ActiveSync on the computer.

To install Provisioning Device Application on the Provisioning Device handheld

- 1 On the ribbon bar, in the **System** group, click **Software**.
The **Support Software** dialog box appears.
- 2 From the **Select Software** list, select the **Provisioning Device Application** software.
- 3 Click **Save To** to save the software to the computer.
A confirmation message *Do you want to save the ProvDevInstaller?* appears.
- 4 Click **OK**.
The **Save As** dialog box appears.
- 5 Browse to a location on the hard drive to save the Provisioning Device Application.
 - By default, the file name appears as *ProvDevInstaller*, if you want to change the file name, then type the **File name**.
- 6 Click **Save**.
The Provisioning Device Application is saved on the hard disk drive with a *.cab* extension. An example for the file name is *ProvDevInstaller.cab*.
- 7 Browse to the location on the hard disk drive where you have saved the *.cab cabinet file and copy the file.
- 8 Open **My Computer** and double-click **Mobile Device** to open **My Documents** folder on the Provisioning Device handheld.
- 9 Paste the *.cab file on **My Documents** folder of the Provisioning Device handheld. Note that you can save the Provisioning Device Application in any directory location on the handheld.
You can now remove the Provisioning Device handheld from the computer.
- 10 On the Provisioning Device handheld, tap **Start > File Explorer** and browse to **My Documents**.
- 11 Tap the *.cab cabinet file.
The message ***.cab was successfully installed on your device** appears.
- 12 To use the Provisioning Device Application, tap **Start > Programs > Provisioning Device**.
Before running the Provisioning Device Application, ensure you perform the following steps.
 - Disable **Receive all incoming beams** option
 1. Tap **Start > Settings**.
 2. On the **Connections** tab, tap **Beam**.
 3. Clear the **Receive all incoming beams** check box.
 4. Tap **Ok**.
 - Enable RNDIS Sync Mode on devices using Windows Mobile 5.x
 1. Tap **Start > Settings**.
 2. On the **Connections** tab, tap **ActiveSync Mode**.
 3. Under **USB ActiveSync Interface**, select **RNDIS Sync Mode**.

4. When the device prompts for soft reset, tap **OK**.
- Enable advanced network functionality on devices using Windows Mobile 6.x
 1. Tap **Start > Settings > Connections > USB to PC**.
 2. Select **Enable advanced network functionality**.
 3. Tap **OK**.

5.1.4 Generate and transfer the provisioning keys to the Provisioning Device handheld

Prerequisites

- Ensure that the Provisioning Device Application is installed on the Provisioning Device handheld.
- Ensure that the Provisioning Device Application is running on the Provisioning Device handheld.

To generate and transfer the provisioning keys to the Provisioning Device handheld

- 1 Connect the Provisioning Device handheld's docking station to the USB port on the WDM.
- 2 In the OneWireless user interface, select the WDM on the Selection Panel.
- 3 On the Property Panel, expand **Provisioning**.

- 4 Click **Transfer to PDA** and type the following information under **Settings**.
 - **Name**: Unique name used to identify the Provisioning Device handheld.
 - **Number of Keys**: The number of provisioning keys to be transferred to the Provisioning Device handheld. These keys are deployed to FDAPs, Access Points, and field devices through the IR port. Maximum number of keys that can be transferred at a time is 100.
 - **Expiration (days)**: The expiration period for the provisioning keys in the Provisioning Device handheld. The maximum expiration period is 31 days. To calculate the expiration period correctly, ensure that the PDA time is manually synchronized with the system time.

Attention

- If the Provisioning Device handheld is already configured with the provisioning keys from another OneWireless Network or from the same network, the provisioning data from the earlier configuration is displayed on the **Provisioning** panel. To transfer the new keys, rewrite the values in the fields with the new values.

- 5 Click **Transfer Settings**.

The security keys are transferred from the WDM to the Provisioning Device handheld.

- 6 On the Provisioning Device handheld, tap **Start > Programs > Provisioning Device**.
The **Provisioning Device** screen appears.
- 7 Verify **Network ID**, **No. of keys**, and **Expiry** that appears on the Provisioning Device handheld.

5.1.5 Remove Provisioning Device handheld

To remove Provisioning Device handheld

- 1 On the Selection Panel, select the WDM.
- 2 On the Property Panel, expand **Provisioning Devices**.
- 3 Select the check box for the Provisioning Device handheld to be removed.
- 4 Click **Delete Selected Devices**.
Deleting a Provisioning Device handheld, makes the security keys on the handheld device invalid. However, keys that have already been used to provision a device are still valid provided those devices has already joined the network at least once after provisioning.

5.2 Loading the Device Description file

A Device Description (DD) file is usually a zip file that is available on the disk supplied in the Honeywell Process Solutions website. It contains information about the device type, commands that are supported by the device, and other device-specific data. A DD file for a particular field device is used to describe the device and to interpret messages and the device status.

 **Attention**

- DD files loaded prior to migrating the WDM to R220 are discarded to resolve the R2xx to R220 migration anomaly. Note that this is a one time behavior that is not repeated after migration to future releases.
 - To ensure consistency in the channel names, load the DD files before the device joins the network.
-

To load the Device Description file

- 1 On the ribbon bar, in the **Maintenance** group, click **Templates**.
The **Load DD File** dialog box appears.
- 2 Click **Load DD File**.
- 3 Browse to the directory location of the DD file.
- 4 Select the DD file and click **Open**.
The DD file is uploaded to the WDM and an upload success message appears.
- 5 Click **Close** to close the **Load DD File** dialog box.
- 6 Repeat steps to load the DD files for all the device types.

5.3 Provisioning the OneWireless Network components

Related topics

“Provision the devices using Provisioning Device handheld” on page 60

“Provision the devices using over-the-air provisioning method” on page 60

5.3.1 Provision the devices using Provisioning Device handheld

FDAPs/Access Point/field devices must be securely provisioned before adding them to the OneWireless Network. Provisioning involves the process of downloading the security keys from the WDM to the Provisioning Device handheld and then transferring them to the FDAPs, Access Point, or field devices through their Infrared (IR) ports. In addition, from OneWireless R210 release onwards, over the air provisioning is supported. This allows the devices to join the secure OneWireless Network and establish communication with other devices and the WDM.

Prerequisites

- Ensure that the FDAP/Access Point/field device is powered on.
- Provisioning Device Application must be installed on the Provisioning Device handheld.
- Provisioning Device handheld must be configured with valid keys from the WDM.

To provision an FDAP/Access Point/field device using Provisioning Device handheld

- 1 On the Provisioning Device handheld, tap **Start** > **Provisioning Device**.
The **Provisioning Device** screen appears.
- 2 Tap **Provisioning**.
The **Provisioning** screen appears.
- 3 Hold the Provisioning Device handheld in line with the IR port of the FDAP/Access Point/field device and tap **Provision a Device**.
The **Device provisioned successfully** message appears.
- 4 Tap **Ok**.
The device joins the network and appears in the Selection Panel with a default name assigned by the WDM.

Attention

If the FDAP/Access Point/field device is already provisioned, a message displays on the Provisioning Device handheld screen, prompting to reset the device to default and try again. To restore the device settings:

1. Hold the Provisioning Device handheld in line with the IR port of the device to be provisioned.
2. Tap **Reset to defaults** on the Provisioning Device handheld.

- 5 Repeat the procedure to add the other FDAPs/Access Point/field devices to the network.

5.3.2 Provision the devices using over-the-air provisioning method

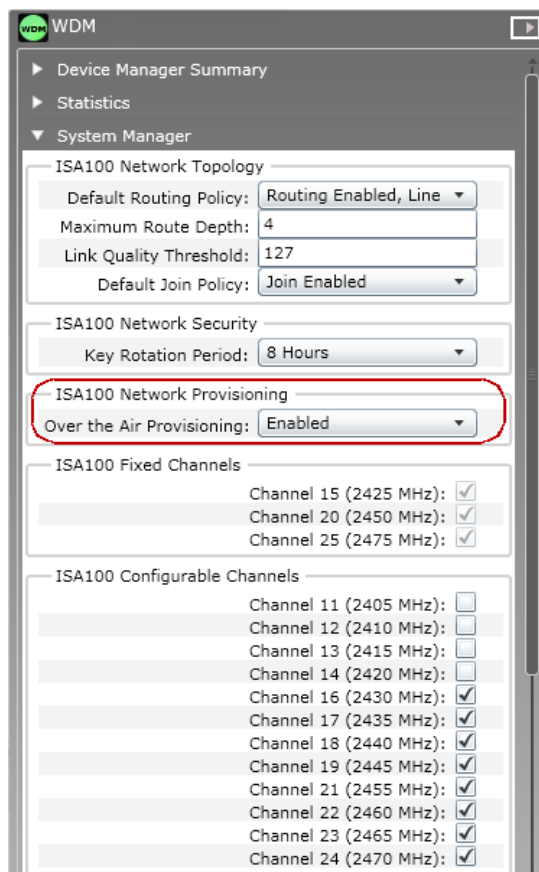
Devices in the OneWireless Network can be provisioned using over-the-air provisioning method. WDM provisions the access points and the access points that are enabled to function as provisioning devices can provision the field devices/line-powered FDAPs. Provisioning role can be enabled in Honeywell FDAPs when acting as a back bone router or line-powered field router. To enable over-the-air provisioning capability, you must enable this feature in the user interface.

Any access point that is in the factory default state, when connected to the OneWireless Network can join the network as an unprovisioned device. In this state, the WDM contains only the basic details about the device such as the Tag Name, EUI64, and Radio Revision. Also, there is no active data communication between the

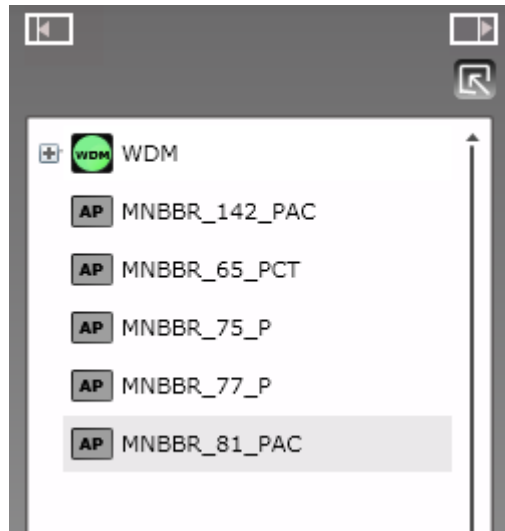
WDM and the device in the unprovisioned state. You can accept or reject an unprovisioned device using the user interface. If accepted, the WDM sends the provisioning data to the device and the device transitions to provisioning state. A device with the new security data sends join request to the WDM. This is similar to the join request received by the WDM when a device is provisioned using a Provisioning Device handheld.

To provision the access points using over-the-air provisioning method

- 1 On the Selection Panel, select the WDM.
- 2 On the Property Panel, expand **System Manager**.
- 3 Under **ISA100 Network Provisioning**, in the **Over the Air Provisioning** group, select **Enabled**.
The WDM is enabled for over-the-air provisioning support.



- 4 Click **Apply**.
The unprovisioned access points start appearing in the Selection Panel. You can filter the device list to view only the unprovisioned access points in the network.

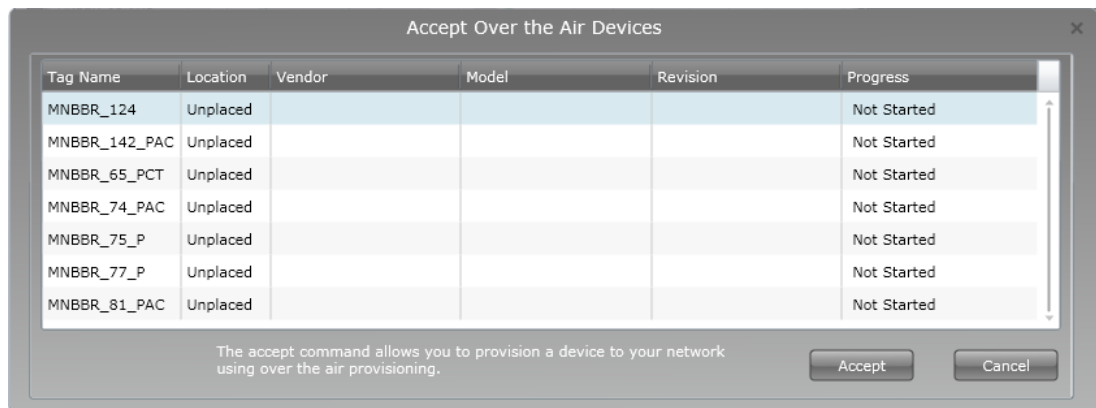


- 5 On the ribbon bar, in the **Filter** group, click **Device Status > Un-Provisioned**.
- 6 Expand the extended Selection Panel to view the available device parameters.
- 7 Select the required access point in the Selection Panel or the map view and then click **Accept** on the ribbon bar.

Attention

- You can select multiple access points using the Selection Panel or the map view. Use *SHIFT+click* to select multiple items in a successive list. Use *CTRL+click* to select multiple items not in succession.
- It is recommended that you select and accept only 10 devices at a time.

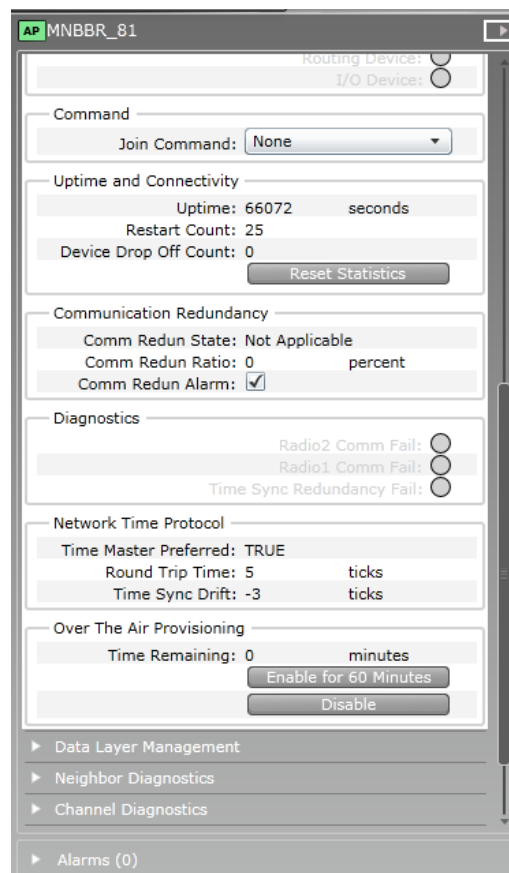
The **Accept Over the Air Devices** dialog box appears. The dialog box displays all the unprovisioned access points that you have selected for enabling over-the-air provisioning.



- 8 Click **Accept**.
The **Progress** column displays the status as **In Progress**, **Provisioning**, and then **Completed** when complete. Do not close the dialog box when over-the-air provisioning is initiated for devices.
- 9 Click **Close**.
The **Accept Over the Air Devices** dialog box closes.

To provision line-powered FDAP routers/ field devices using over-the-air provisioning method

- 1 On the Selection Panel, select the access point.
- 2 On the Property Panel, expand **Device Management**.
- 3 Under **Over The Air Provisioning**, click **Enable for 60 Minutes**.



The access point functions as a provisioning device for 60 minutes. The unprovisioned field devices and the line-powered FDAP routers that are in the factory default state start appearing in the Selection Panel. Note that if you do not accept or reject the devices within 60 minutes, the devices automatically disappear from the user interface.

- 4 To filter the device list:

On the ribbon bar, in the **Filter** group, click **Device Status > Un-Provisioned**.

The unprovisioned devices appear in the Selection Panel. The extended Selection Panel enables you to view the available device parameters.

The device establishes a communication link with the access point after it attains the unprovisioned state. This link persists even if the device is not provisioned using the connected access point. If the device needs to be provisioned using a different access point, reject the device and then delete it from the user interface, so that the device can rejoin through a different access point for provisioning.

- 5 Select the required line-powered FDAP router/ field device in the Selection Panel or the map view and then click **Accept** on the ribbon bar.

Attention

- You can select multiple access points using the Selection Panel or the map view. Use *SHIFT+click* to select multiple items in a successive list. Use *CTRL+click* to select multiple items not in succession.
- It is recommended that you select and accept only 10 devices at a time.

The **Accept Over the Air Devices** dialog box appears. The dialog box displays all the unprovisioned devices that you have selected for enabling over-the-air provisioning.

! Attention

To reject a device from joining the network using over-the-air provisioning method.

1. Select the required device and click **Reject** in the ribbon bar.

The **Reject Over the Air Devices** dialog box displays.

2. Click **Reject**.

The **Progress** column displays the status as **In Progress**, and then **Completed**, when complete.

3. Click **Close**.

The **Reject Over the Air Devices** dialog box closes.

- 6 Click **Accept**.

The **Progress** column displays the status as **In Progress**, **Provisioning**, and then **Completed**, when complete. Do not close the dialog box when over-the-air provisioning is initiated for devices.

- 7 Click **Close**.

The **Accept Over the Air Devices** dialog box closes.

All the line-powered FDAP routers and the field devices that you have selected for over-the-air provisioning are provisioned.

! Attention

Repeat the procedure to enable over-the-air provisioning capability in line-powered FDAP routers. This enables the line-powered FDAP routers to provision distant nodes in the network.

5.4 Configuring the WDM

Related topics

“Configure default routing policy” on page 65

“Configure key rotation period” on page 66

“Configure channel blacklisting” on page 66

5.4.1 Configure default routing policy

The default routing policy defines the routing behavior of a field device that is capable of operating as a router as well as an I/O device, after it joins the network.

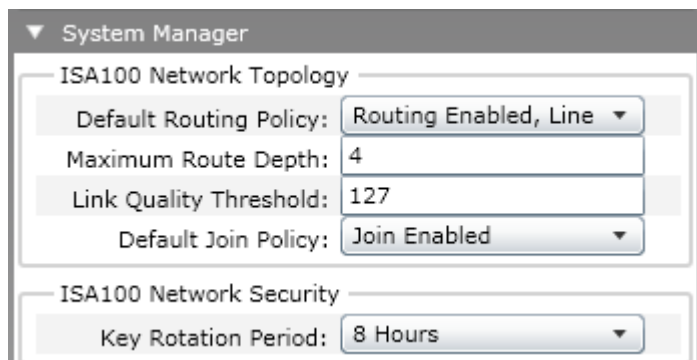
Considerations

The default routing policy is not applicable for the following devices.

- Devices capable of operating as access points (Access Points and FDAPs when connected to the backbone network).
- Devices capable of operating only as routers (FDAPs when not wired to the backbone network).
- Devices capable of operating only as I/O devices.

To configure default routing policy

- 1 On the Selection Panel, select the WDM.
- 2 On the Property Panel, expand **System Manager**.
- 3 Under **ISA100 Network Topology**, select **Default Routing Policy**, as appropriate.



The following are the routing policy options available.

- **Routing Enabled** — Enables all the routing field devices to function as a router and an I/O device.
 - **Routing Enabled, Line Powered Only** — Enables all the line-powered routing field devices to function as a router and an I/O device. In this case, the battery powered routing field devices function only as I/O devices.
 - **Routing Disabled** — Disables the ability of the routing field devices to function as routers. The field devices with routing capability can function only as I/O devices.
- 4 Type the **Maximum Route Depth**, as appropriate.
The **Maximum Route Depth** parameter specifies the maximum number of hops. Hops are defined as the number of routing devices through which the data must pass to reach its destination. By default, this parameter is set to four.
 - 5 Type the **Link Quality Threshold**, as appropriate.

This corresponds to the RSQI value between the devices. The link between the devices is established only if RSQI is equal to or greater than the **Link Quality Threshold** limit. By default, **Link Quality Threshold** is set to 127.

**CAUTION**

Honeywell recommends that you set the **Link Quality Threshold** as 127. To set the **Link Quality Threshold** to any other value other than 127, you must contact a Honeywell technical support representative for assistance.

The **Link Quality Threshold** does not apply if the device has only one primary link.

- 6 Select one of the following **Default Join Policy** options, as required.

The **Default Join Policy** specifies the system-wide join policy for the routing devices (FDAP routers and routing field devices). The system – wide join policy can be overridden by the join policy of the device.

By default, the join policy for the devices is configured as **Join Enabled**.

- **Join Enabled** — Enables the devices to join the network through FDAP routers and routing field devices.
- **Join Enabled, Line Powered Only** — Enables the devices to join the network only through FDAP routers.

- 7 Click **Apply**.

The configured routing policy is applicable only for devices that are joining the network for the first time.

5.4.2 Configure key rotation period

To configure key rotation period

- 1 On the Selection Panel, select the WDM.
- 2 On the Property Panel, expand **System Manager**.
- 3 Under **ISA100 Network Security**, select the **Key Rotation Period**.
The following are the options available for configuring the key rotation period.
 - 8 Hours
 - 1 Day
 - 1 Week
 - 1 Month
 - Infinite – The default setting, which implies that key rotation is disabled.
- 4 Click **Apply**.

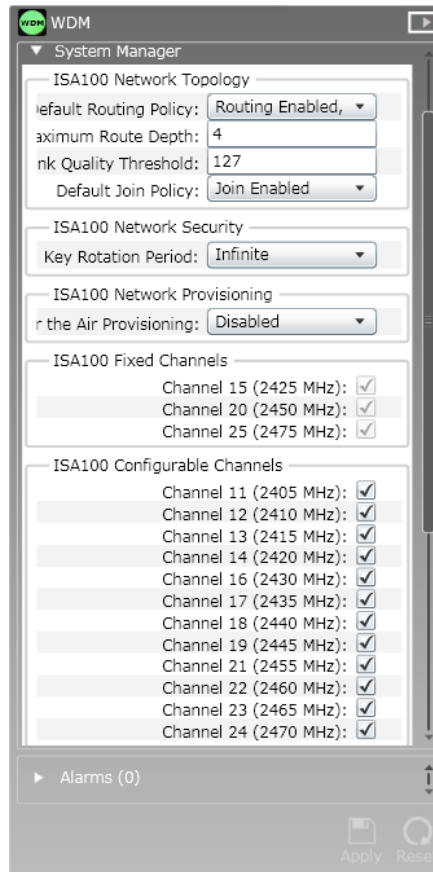
5.4.3 Configure channel blacklisting

The data communication in the OneWireless Network takes place through 15 channels of the wireless frequency spectrum. Each channel is of 5 MHz bandwidth, and with a center frequency starting from 2405 MHz to 2475 MHz. Of the 15 channels, three channels of frequency 2425 MHz, 2450 MHz, and 2475 MHz, are fixed and are not user configurable. The remaining 12 channels are user configurable and by default are available for data communication. You can determine and configure the channels that would be available for communication in the network. The method of removing the channels that can cause interference in the data communication is referred to as channel blacklisting.

In a plant scenario, there can be various wireless devices communicating in specific channels, which may cause interference. In such situations, you can configure channel blacklisting to avoid interference and have reliable data communication network.

To configure channel blacklisting

- 1 On the Selection Panel, select the WDM.
- 2 On the Property Panel, expand **System Manager**.



The fixed channels appear under **ISA100 Fixed Channels** and the user configurable channels appear under **ISA100 Configurable Channels**.

- 3 Select the check boxes for the channels, as required.
- 4 Click **Apply**.
It takes approximately 90 seconds for the changes to reflect.

5.5 Configuring the WDM redundancy

A OneWireless redundant system consists of two identical WDMs, one acts as a primary and the other acts as a secondary (redundant backup). In a redundant system, the secondary is actively linked to the primary (running), so that it can take control whenever the primary fails or is shut down. The primary and the secondary WDMs are connected to each other through the RDN Ethernet port.

Attention

- Redundancy is supported only on the WDMX hardware (with three Ethernet ports).

The following are the redundancy features:

- Provides an uninterrupted view to the ISA100 wireless network in the event of a hardware or a software failure.
- Synchronize process data, alarms and events, ISA100 network databases, and WDM configuration in real time.
- Enables transparent switchover with no loss of view to the ISA100 network across all external interfaces.
- Enables you to implement the network topology with no single point of failure, including the network switches. The following figure describes a dual switch network topology without a single point of failure.

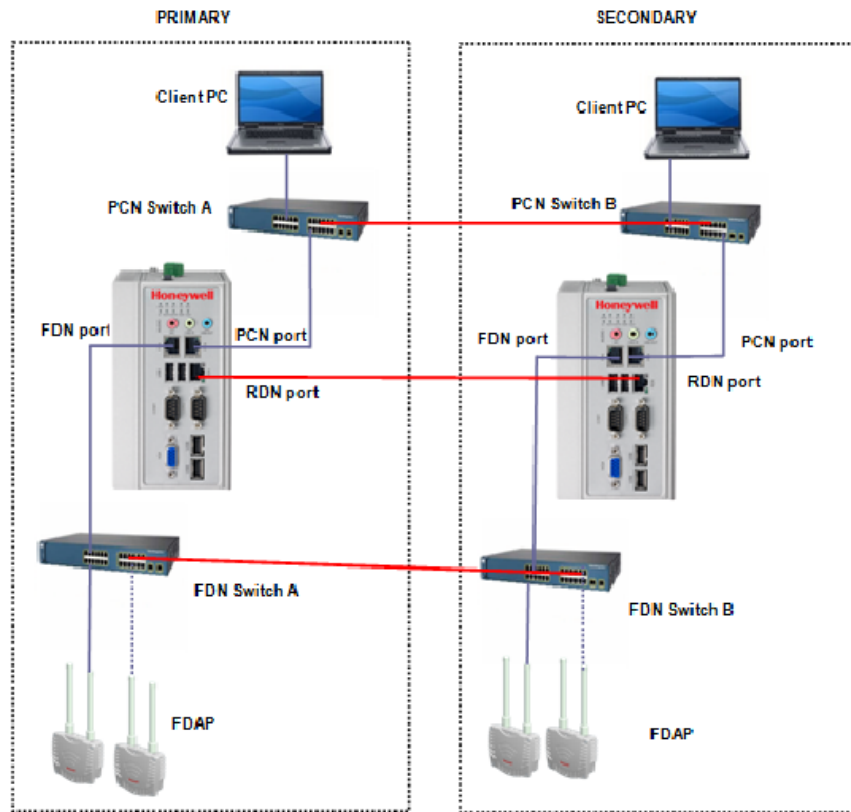


Figure 13: Redundant Network Topology with FDAP

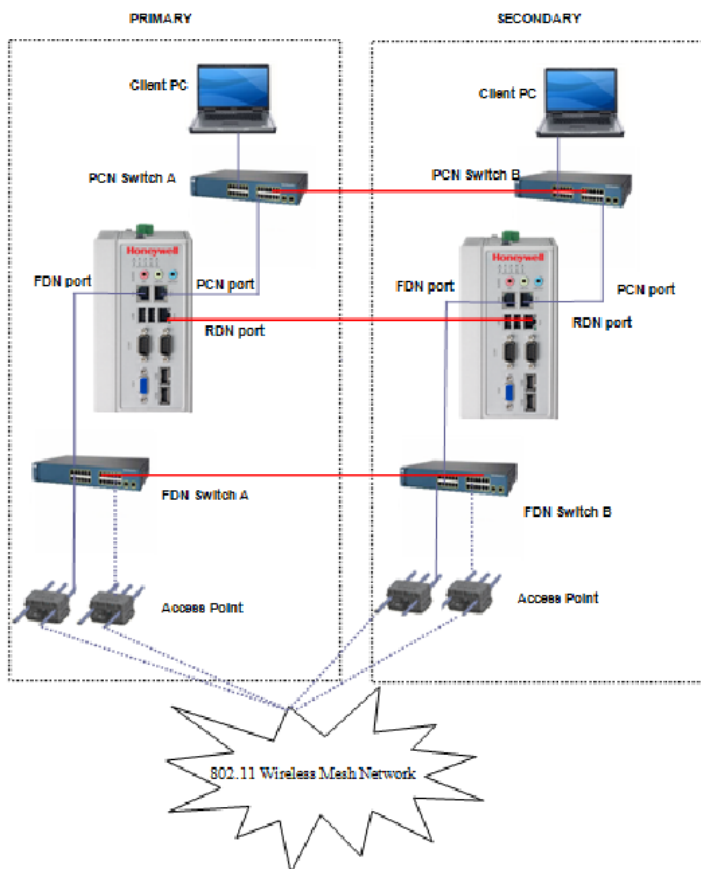


Figure 14: Redundant Network Topology with Access Point

Attention

- Cisco Catalyst 2960 Series 8 port switches and Cisco Catalyst 2960G Series 24 port switches are the supported FDN switches. For more information, refer to the Cisco Catalyst 2960 Series documents.
- For information about the Cisco Access Point configuration, refer to the OneWireless Wireless LAN Controller Configuration Guide.
- You can use a single PCN/single FDN switch or a dual PCN/dual FDN switches. Single switches are used for simple networks, less expensive, possible single point of failure. Dual switches are used for more robust networks, which are more expensive, but do not contain single point of failure.

In case you plan to set up a redundant WDM, ensure the following:

1. CISCO switch port, where the WDM is connected, is configured to operate in access mode.
2. Spanning-tree portfast feature is enabled.
3. Speed is set to auto.
4. Port is in full duplex mode.

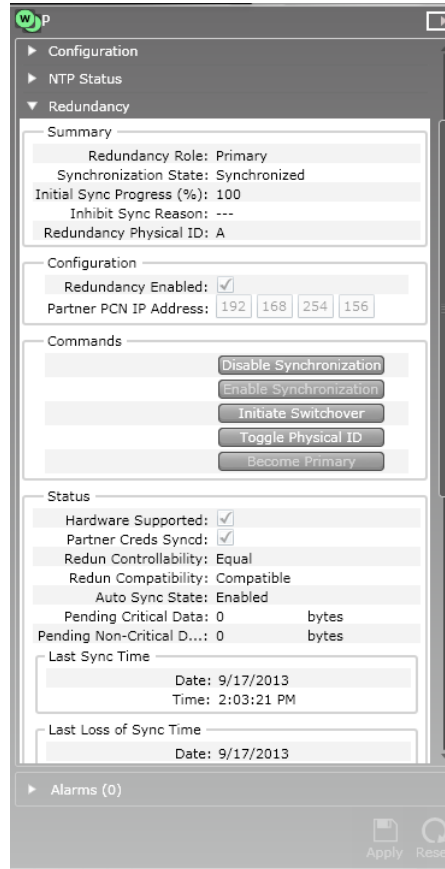
For an example of the CISCO switch configuration for WDM port, refer to the OneWireless Migration User's Guide.

5.5.1 Configure the WDM redundancy from the First Time Configuration Wizard

You can configure the WDM redundancy from the First Time Configuration Wizard (FTCW). For more information, refer to the section “Configuring WDM using the First Time Configuration Wizard” on page 27.

5.5.2 Configure the WDM redundancy from the WDM Properties Panel

Redundancy configuration may be enabled, disabled, or modified on-process from the WDM Properties Panel. Changes performed to redundancy configuration from the WDM Properties Panel only apply to that WDM, and are not automatically cascaded to the redundant partner. For example, if redundancy is disabled on a primary WDM, the redundant partner remains in secondary role.



Enable redundancy from the WDM Properties Panel

To enable redundancy on a primary WDM

1. On the Property Panel, expand **Redundancy**.
2. Select the **Redundancy Enabled** check box.
3. In the **Partner's PCN IP address**, type the partner's PCN IP address.

When the WDM redundancy is enabled, there is no need to specify a redundancy role since it is automatically set to primary. A non-redundant WDM may not be converted into a secondary on-process. To convert a non-redundant WDM into secondary WDM, reset it to defaults, and then configure it as a secondary WDM from the FTCW.

Disable redundancy from the WDM Properties Panel

The WDM redundancy can only be disabled from the WDM Properties Panel, if the WDM is in the primary role and synchronization is disabled. Secondary WDM may not be converted into non-redundant on-process.

To disable redundancy on a primary WDM

1. On the Property Panel, expand **Redundancy**.

2. Clear the **Redundancy Enabled** check box.

Attention

- To disable redundancy on a secondary WDM, reset it to defaults and then configure as non-redundant from FTCW.

Modify partner PCN IP address

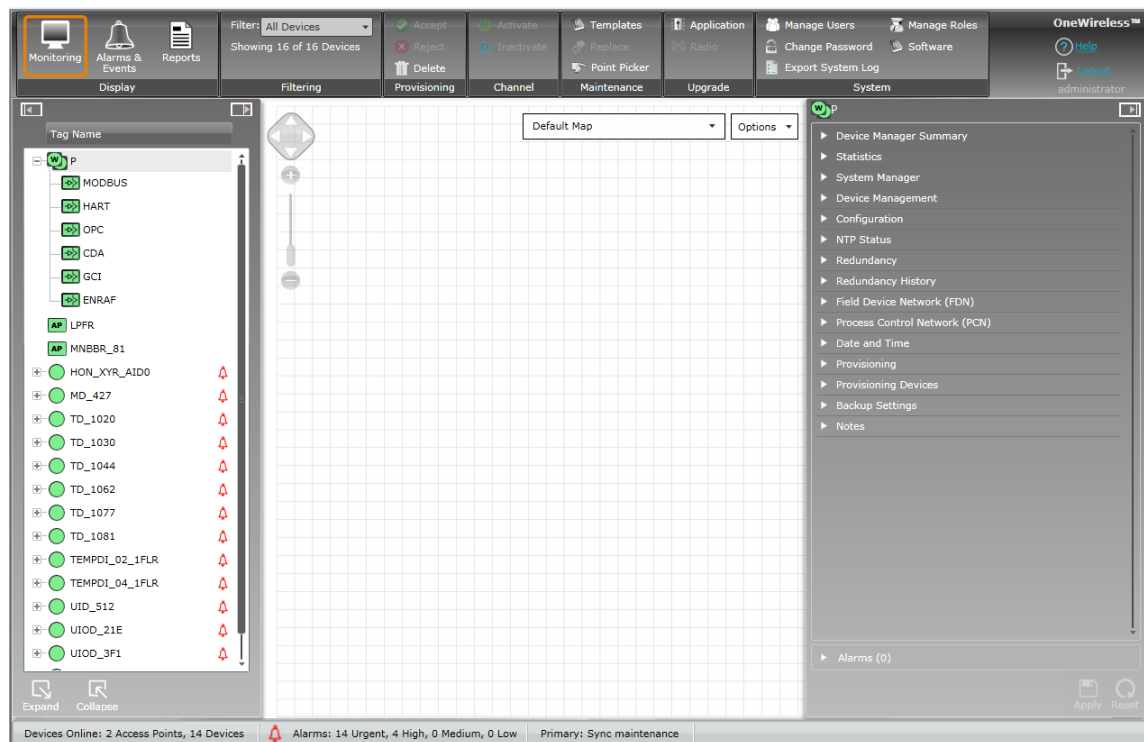
On a redundant WDM (primary or secondary), the partner's PCN IP address may be modified on-process if synchronization is disabled.

Redundancy commands

Refer to the section "Perform redundancy-specific operations" on page 75.

Primary view

The Primary WDM is used for monitoring the ISA100 Wireless field device network and the devices, initiating all the commands, and viewing alarms and events. Primary WDM monitors and reports the communication configuration, performance, and operational status. The external interfaces such as MODBUS, HART, OPC, GCI, and ENRAF are only available on the primary WDM. CDA interface is available on both the primary and secondary WDMs.



Secondary view

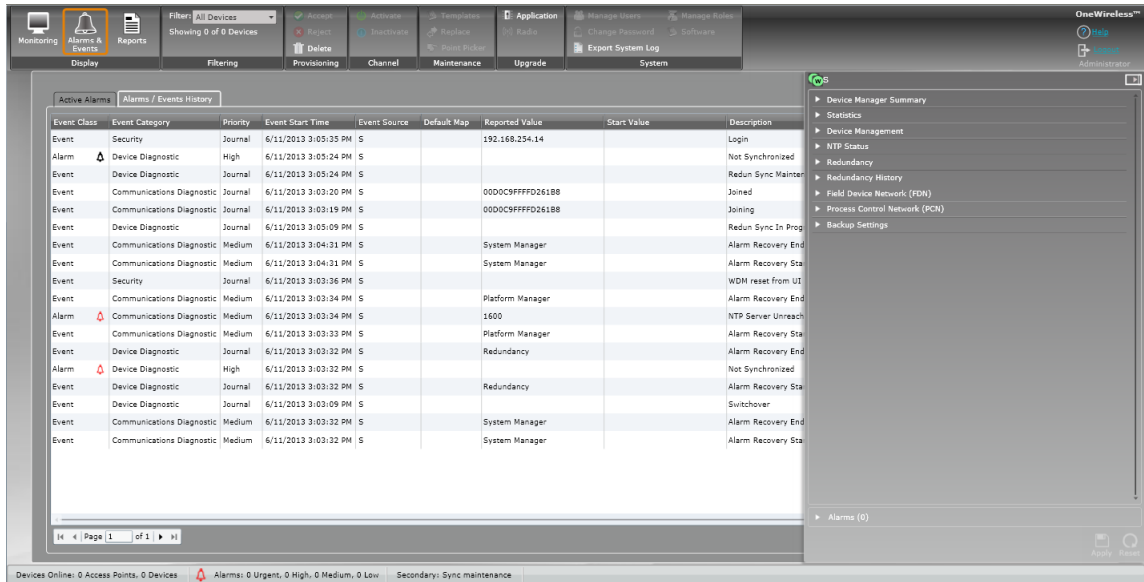
The secondary WDM has limited functionality and is used for monitoring redundancy parameters, initiating redundancy commands, and viewing the secondary WDM alarms and events. The access points, field devices, or external interfaces are not displayed on the secondary WDM. CDA external interface is not displayed on the secondary WDM. However, secondary WDM can be accessed from Experion through CDA interface.

The following are not available in the Properties Panel of the secondary WDM.

- System Manager
- Configuration
- Date and Time

- Provisioning
- Provisioning Devices
- Notes

The external interfaces are only available on the primary WDM (except CDA). External clients cannot connect to the secondary WDM using Modbus, HART, OPC, GCI, and ENRAF. The CDA interface is available on both the primary and the secondary WDMs. The external clients are reconnected to the old secondary/new primary immediately after switchover, using the primary WDM configuration. Redundancy status parameters and commands are available when integrated with Experion R410 and later.

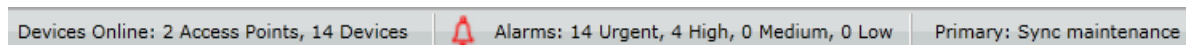


5.6 Monitoring the WDM redundancy status

The redundancy status is displayed on the Status Bar, Property Panel, Selection Panel, and Reports of the OneWireless User Interface.

Status Bar

The Status Bar contains the overall redundancy status as text.



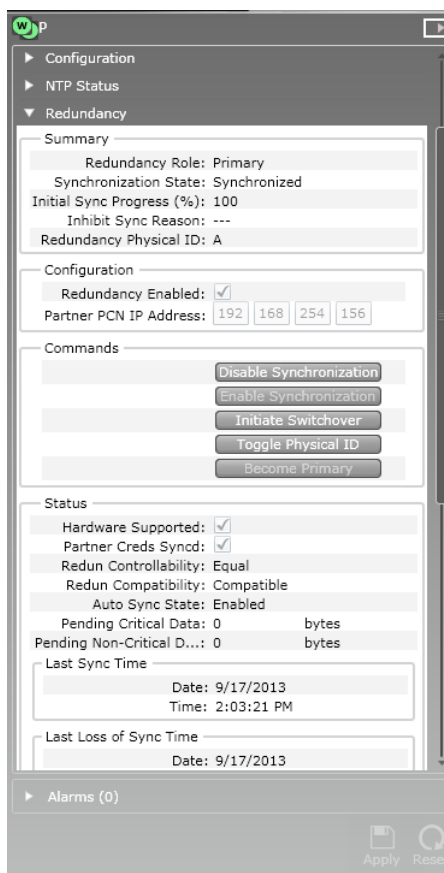
Selection Panel

The WDM icon on the Selection Panel changes depending on the redundancy role. For information regarding the different WDM icons, refer to “Understand the device icons” on page 39.

5.6.1 Monitor the redundancy status from the WDM Property Panel

To monitoring the redundancy status from the WDM Property Panel

- 1 On the Selection Panel, select **WDM**.
- 2 On the Property Panel, expand **Redundancy**.



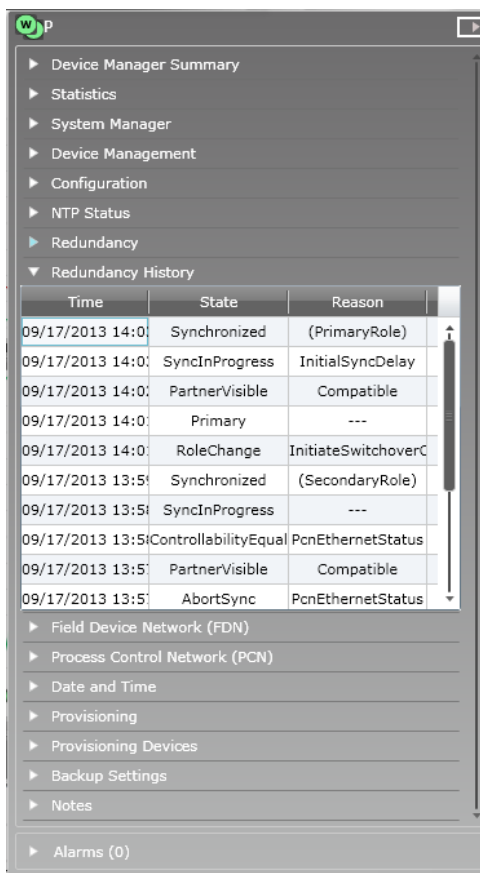
- 3 Under **Summary**, verify the **Redundancy Role**, **Synchronization State**, **Initial Sync Progress**, **Inhibit Sync Reason**, and **Redundancy Physical ID**.
- 4 Under **Status**, verify **Hardware Supported**, **Partner Creds Syncd**, **Redun Controllability**, **Redun Compatibility**, and **Auto Sync State**, **Pending Critical Data**, and **Pending Non-Critical Data**.

The following table describes the attributes displayed in the Redundancy tab of the WDM Property Panel.

| Attributes | Description |
|---------------------------|--|
| Summary | |
| Redundancy Role | Indicates the current redundancy role - primary, secondary, or non-redundant. |
| Synchronization State | Indicates level of module synchronization with redundancy partner as follows: - Partner Visible, Initial Sync Progress, Synchronized, No Partner, Incompatible. <ul style="list-style-type: none"> Partner Visible: Communication is established over the RDN private path, but the WDMs are not yet synchronized. Initial Sync Progress: Initial sync is in progress. Initial sync is complete and WDMs are in sync maintenance state. No communication over RDN private path. Redundant partner is not compatible for synchronization. |
| Initial Sync Progress (%) | Indicates the percentage of initial-sync completion. This is set to zero when initial sync is not in progress and it is set to 100 when initial sync is complete. |
| Inhibit Sync Reason | Indicates the current reason why initial sync is inhibited. |
| Redundancy Physical ID | Used to identify the physical hardware module. The Redundancy Physical ID attribute is used for identifying the physical hardware module. By default, when a WDM is configured in a primary role, the value of its attribute is set to A. When a WDM configured in a secondary role the value of its attribute is set to B. These values are attached to the physical hardware and not the redundancy role. In other words, starting from a redundant synchronized WDM pair, where the WDM with a physical ID A is primary and the WDM with a physical ID B is secondary, if a switchover occurs, the WDM physical ID B will be in primary role and the WDM with physical ID A will reboot into secondary role. If the physical hardware is so labeled, it is possible to identify the WDM currently in Primary role. |
| Status group | |
| Hardware Supported | Indicates whether redundancy is supported on current hardware. WDM redundancy is not supported on WDMS hardware. |
| Partner Creds Syncd | Indicates whether WDMs have synchronized at least once. On a lonely secondary, the become primary command is disabled if this check box is not selected. |
| Redun Controllability | Describes the module's ability to control relative to its redundant partner. For example, on an unsynchronized redundant WDM pair, if the primary's FDN or PCN cable is disconnected, but the secondary's FDN and PCN cables are connected, then the secondary has better control ability than the primary. And the primary WDM's control ability is worse than the secondary. Note that on such a redundant WDM pair, if synchronization is enabled, then the WDMs synchronize and immediately switchover since the secondary's control ability is better than that of the primary. Switchover can be initiated from primary or secondary WDM. The following conditions result in switchover: <ul style="list-style-type: none"> FDN or PCN Ethernet cable is disconnect on the primary WDM. Loss of power on the primary WDM. Software failure on the primary WDM. Hardware failure on the primary WDM. |
| Redun Compatibility | Indicates whether redundant partner modules are compatible and if not compatible, provides a reason. Initial synchronization is disabled on an incompatible WDM pair. |
| Auto Sync State | Indicates whether auto synchronization is enabled or disabled. When disabled, you must explicitly issue the Enable Synchronization command to reset any persistent fault condition and (re)attempt initial synchronization. |

| Attributes | Description |
|---------------------------|--|
| Pending Critical Data | Number of critical sync data bytes yet to be sent to partner. This value is usually 0. An increase may be observed during initial synchronization, which rapidly reduces to 0. |
| Pending Non-critical data | Number of non-critical synchronization data bytes yet to be sent to the partner. This value may increase to a large value during initial synchronization, and gradually reduce to zero. |
| Last Sync Time | Time when the WDM completed initial synchronization. |
| Last Loss of Sync Time | Time when the WDM last lost synchronization. |
| Statistics | The attributes in this group indicate whether redundant WDMs are communicating over the RDN private path. A steadily increasing Tx count indicates that data is successfully being transmitted to partner. A steadily increasing Rx count indicates that data is successfully being received from the partner. |

- 5 On the **Property Panel**, expand **Redundancy History** to view the history details. The **Redundancy History** tab displays the 16 most recent redundancy events along with a reason why the event occurred. For example, in the figure provided below, the **role change** state is reported with reason **InitiateSwitchoverCommand** indicating that a role change occurred at 2 PM on 9/17/2013 due to user-initiated switchover command.



| Time | State | Reason |
|-----------------|----------------------|---------------------|
| 09/17/2013 14:0 | Synchronized | (PrimaryRole) |
| 09/17/2013 14:0 | SyncInProgress | InitialSyncDelay |
| 09/17/2013 14:0 | PartnerVisible | Compatible |
| 09/17/2013 14:0 | Primary | --- |
| 09/17/2013 14:0 | RoleChange | InitiateSwitchoverC |
| 09/17/2013 13:5 | Synchronized | (SecondaryRole) |
| 09/17/2013 13:5 | SyncInProgress | --- |
| 09/17/2013 13:5 | ControllabilityEqual | PcnEthernetStatus |
| 09/17/2013 13:5 | PartnerVisible | Compatible |
| 09/17/2013 13:5 | AbortSync | PcnEthernetStatus |

5.6.2 Perform redundancy-specific operations

Enable Synchronization

The **Enable Synchronization** option enables auto synchronization and is used for initial synchronization. The maximum initial synchronization time is 180 seconds.

The following conditions result in loss of synchronization:

- Disable Synchronization command initiated from primary or secondary WDM.
- FDN or PCN Ethernet cable disconnected on the secondary WDM.
- RDN Ethernet cable disconnected.
- Loss of power on the secondary WDM.
- Software failure on the secondary WDM
- Hardware failure on secondary WDM.
- Redundancy data communication failure (checksum, and so on).

 **Attention**

- Redundancy command buttons are disabled if they do not apply to the current redundancy state. For example, 'Enable Synchronization' is disabled when synchronized.
-

To enable synchronization

- On the Property Panel, expand **Redundancy**, and then click **Enable Synchronization**.

Disable Synchronization

The **Disable Synchronization** option disables auto synchronization and used for drop synchronization.

To disable synchronization

- On the Property Panel, expand **Redundancy**, and then click **Disable Synchronization**.

Initiate Switchover

The **Initiate Switchover** option enables immediate switchover of synchronized WDM pair. The switchover time is 15 seconds.

Switchover can be initiated from the primary or the secondary WDM. The following conditions result in switchover:

- FDN or PCN Ethernet cable is disconnect on the primary WDM.
- Loss of power on the primary WDM.
- Software failure on the primary WDM.
- Hardware failure on the primary WDM.

To initiate switchover

- On the **Property Panel**, expand **Redundancy**, and then click **Initiate Switchover**.

Convert a lonely unsynchronized secondary into a primary

The **Become Primary** option converts a lonely unsynchronized secondary into a primary. The secondary WDM must have synchronized at least once with the primary WDM for this command to be enabled. This is indicated by the **Partner Credentials Syncd** check box in the Status group.

Attention

Since the secondary is not synchronized with the primary when this command is executed, it may have stale configuration data. You must manually check and re-configure devices and other settings as appropriate. The following data is preserved in the secondary WDM since the last sync drop event:

- Primary WDM name.
- Primary WDM FDN IP address.
- Primary WDM PCN IP address.
- Primary WDM external NTP server configuration.
- Primary WDM DHCP server configuration.
- DHCP leases given out by primary WDM.
- Security keys already used by devices to join the network.
- Country code.
- Subnet ID.
- TAI offset.
- User accounts, their roles, and permissions.

To convert a lonely unsynchronized secondary into a primary

- On the **Property Panel**, expand **Redundancy**, and then click **Become Primary**.

Toggle Physical ID

The **Toggle Physical ID** option to toggle physical ID from B to A or A to B.

When the redundant WDMs are communicating over the private path, the physical IDs of both the WDMs is toggled, regardless of whether the command was sent to the primary or the secondary WDM. If redundant WDMs are not communicating over the private path, only the WDM to which the command was sent is affected.

**Tip**

When redundancy is enabled, the primary WDM is assigned physical ID A and the secondary WDM is assigned physical ID B. The physical IDs are displayed in the UI during normal operation. Tagging the physical hardware with matching labels makes it easy to distinguish the WDMs later.

To toggle the physical ID

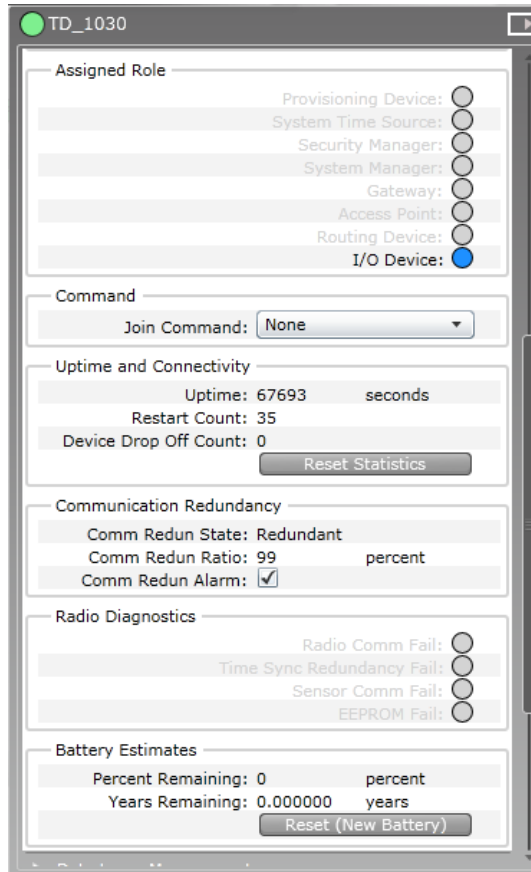
- On the **Property Panel**, expand **Redundancy**, and then click **Toggle Physical ID**.

5.7 Configuring device communication redundancy

The OneWireless user interface displays the communication redundancy state of each device. A communication redundancy ratio statistic is provided to identify devices with frequent non-redundant connectivity over time, even if the device currently has redundant connectivity. In addition, devices may optionally alarm if a non-redundant connection is detected.

5.7.1 Property Panel- device communication redundancy

The Property Panel displays the communication redundancy information.



- Communication Redundancy State identifies if a device is having connectivity issues.
- Communication Redundancy Ratio provides ratio of redundant connectivity versus non-redundant connectivity, used to identify if a device is having connectivity issues over time
- Communication Redundancy Alarm alerts if a device loses redundant connectivity, alarm may be disabled.

5.7.2 Report

The report now displays the communication redundancy information. For example, Connection Summary report.

Reports

- Battery Life
- Device Health Overview
- Device Summary
- Connection Summary
- Connection History
- Device History

Data Preview

Connection Summary

Report Generated By: Administrator
6/4/2013 11:14:58 PM

The Connection Summary Report provides information about communications redundancy, and signal strength and quality

| Device Information | Primary Parent | Secondary Parent |
|--|----------------------|-------------------------|
| Type: Device | Network Address: 3 | Network Address: 17 |
| Network Address: 18 | RSQI: 250 | RSQI: 255 |
| Redundancy State: Redundant | RSSI: -48 | RSSI: ??? |
| Redundancy Ratio: 99 | TxFailRatio: 28 | TxFailRatio: 0 |
| | Overall Status: Fair | Overall Status: Unknown |
| | | |
| Tag Name: UIOD_21E | Tag Name: MNBBR_81 | Tag Name: LPFR |
| Type: Device | Network Address: 3 | Network Address: 4 |
| Network Address: 16 | RSQI: 251 | RSQI: 197 |
| Redundancy State: Redundant | RSSI: -45 | RSSI: -81 |
| Redundancy Ratio: 99 | TxFailRatio: 25 | TxFailRatio: 43 |
| | Overall Status: Fair | Overall Status: Fair |
| | | |
| Tag Name: UIOD_3F1 | Tag Name: MNBBR_81 | Tag Name: TD_1020 |
| Type: Device | Network Address: 3 | Network Address: 17 |
| Network Address: 7 | RSQI: 249 | RSQI: 254 |
| Redundancy State: Redundant | RSSI: -45 | RSSI: -27 |
| Redundancy Ratio: 99 | TxFailRatio: 30 | TxFailRatio: 0 |
| | Overall Status: Fair | Overall Status: Good |
| | | |
| Tag Name: UIOD_534 | Tag Name: MNBBR_81 | Tag Name: |
| Type: Device | Network Address: 3 | Network Address: 0 |
| Network Address: 8 | RSQI: 249 | RSQI: |
| Redundancy State: Non Redundant | RSSI: -40 | RSSI: |
| Redundancy Ratio: 0 | TxFailRatio: 26 | TxFailRatio: |
| | Overall Status: Fair | Overall Status: |

Run Report
Print Report
Export As ...
 Include column headers in exported file

For more information, refer to “Generating reports” on page 188.

5.8 Configuring field devices

Related topics

“Configure field device properties” on page 80

“Configuring routing assignment” on page 80

“Configure publication rate” on page 81

“Calibrate field devices” on page 82

5.8.1 Configure field device properties

To configure tag name and description

- 1 On the Selection Panel, select the field device.
- 2 On the Property Panel, expand **Field Device Summary**.
- 3 Type the required **Tag Name**.



Attention

You can change the Tag Name by double-clicking the field device name in the Selection Panel.

- 4 Type the required **Description**.
- 5 Click **Apply**.

5.8.2 Configuring routing assignment

After joining the network for the first time, a field device capable of operating as a router and an I/O device initializes its routing assignment based on the current default routing policy. It is possible to override the default routing policy by configuring routing assignment for field devices. Configuring device routing assignment results in restarting the device with a new role.

Considerations

- Device routing assignment can be configured only for devices that are capable of operating as routers and I/O devices.

To configure routing assignment

- 1 On the Selection Panel, select the field device.
- 2 On the Property Panel, expand **Device Management**.
- 3 Select **Routing Assignment**, as appropriate.
The following are the **Routing Assignment** options available.

- **Routing Disabled** — Disables the ability of a routing field device to function as a router. The field device can function only as an I/O device.
 - **Routing Enabled** — Enables the routing field device to function as a router and an I/O device. The default join policy configured is **Follow System Manager Policy**.
 - **Not Applicable**
 - Does not apply to devices that are capable of operating as access points.
 - Does not apply to devices that are only capable of operating as routers.
- 4 Select one of the following **Join Assignment** options, as required.

The **Join Assignment** overrides the system manager join policy. This is applicable only for routing field devices.

- **Join Disabled** — Disables device-join through this device.
- **Join Enabled** — Enables device-join through this device.
- **Follow System Manager Policy** — Enables the device to follow the system manager join policy. Device-join through this device depends on the configured system manager join policy.

The **Join Status** is a read-only parameter that indicates the resultant join state for all the devices.

- Access Points, FDAP access points, and FDAP routers have the **Join Assignment** permanently set to **Join Enabled**.
- Non-routing field devices have the **Join Assignment** permanently set to **Join Disabled**.
- Routing field devices have the default **Join Assignment** set to **Follow System Manager Policy**.

- 5 Click **Apply**.

5.8.3 Configure publication rate

The publication data for input and output field devices can be configured using the Input Publication and Output Publication panels in the Property Panel. Depending on the device type, a field device can have an Input Publication panel or an Output Publication panel. This is determined by the DD file for the field device.

The Input/Output Publication panel contains the following configuration options.

- **Contract Status** — A contract is a communication resource (bandwidth) allocation between two devices on the ISA100 network. The following are the status values that are displayed depending on the status of the contract.
 - **Not Configured** - No contract established due to incorrect configuration of the device.
 - **Activating** - Contract establishment is in progress.
 - **Active** - Contract is active.
 - **Active, Negotiated Down** - If a device requests a contract for periodic publications at a fast rate (such as 1 second) and if the communication resources are not available, the contract is negotiated down to a slower publication period (such as 5 seconds).
 - **Terminating** - Contract termination is in progress.
 - **Failed** - Contract establishment is failed.
 - **Inactive** - Contract is inactive.
- **Rate** – The rate at which a field device publishes data.
- **Stale Limit** – Defines the maximum number of stale input values that can be received before the input status is set to Bad. It is recommended that for 1 second publication period, the stale limit should be set to 15 seconds. For all other publication periods (5 seconds, 10 seconds, 30 seconds, and 1 minute), the stale limit should be set to 5.
- **Destination** – Destination of publication for output devices .
- **Channel** – The list of channels for which the publication configuration applies.

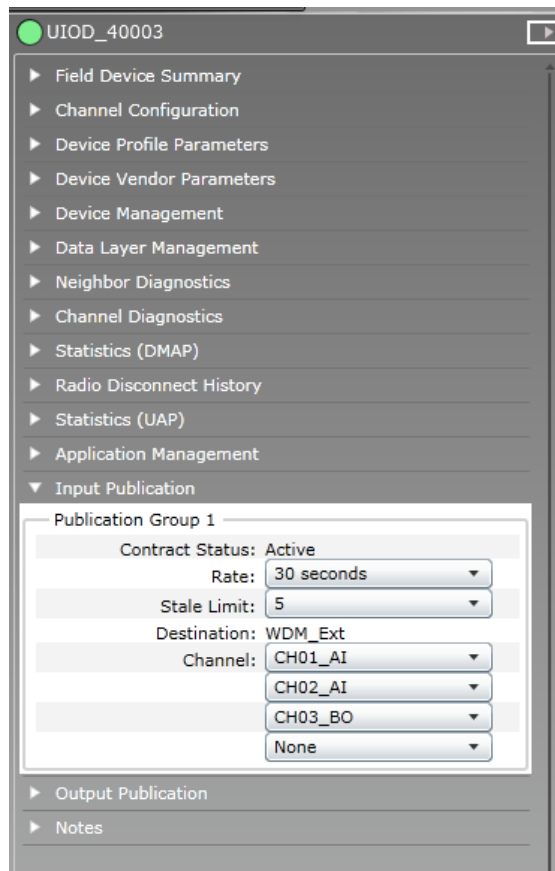


Attention

- When a device joins the network, the WDM automatically configures its publication period as 30 seconds.
-

To configure publication rate and stale limit

- 1 On the Selection Panel, select the field device.
- 2 On the Property Panel, expand **Input Publication** or **Output Publication**.



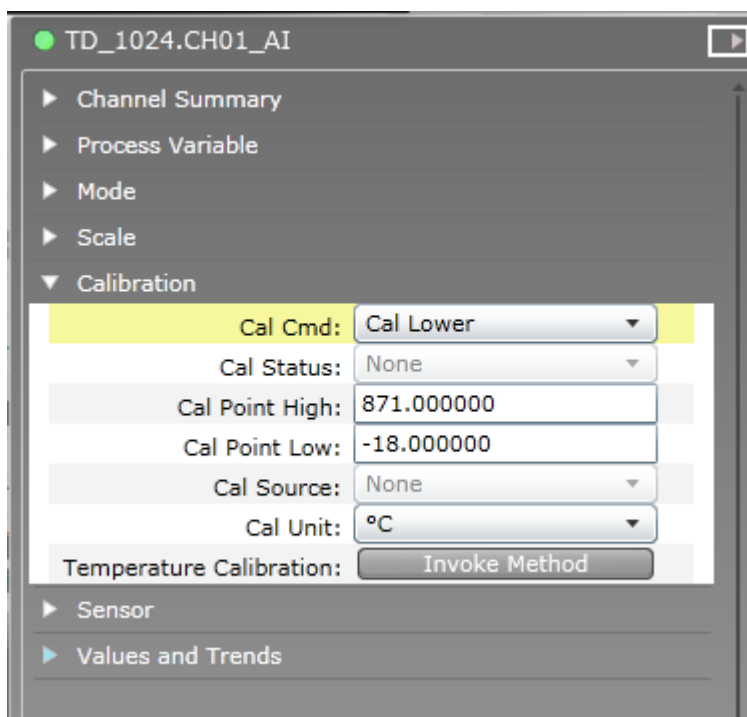
- 3 In the **Rate** field, select the publication rate, as appropriate.
- 4 In the **Stale Limit** field, select the stale limit, as appropriate.
- 5 Click **Apply**.

5.8.4 Calibrate field devices

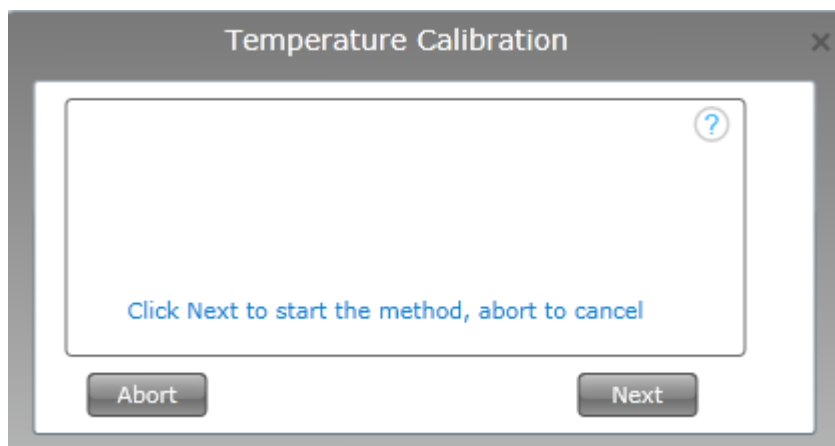
Calibration can be initiated either by manually setting the calibration parameters such as Cal Cmd, Cal Point High, Cal Point Low, and Cal Unit in the **Calibration** panel or by using the **Invoke Method** button. Invoke Method initiates the method manager, which guides you through the calibration process. All the field devices might not necessarily have the ability to calibrate. This is defined in the vendor supplied DD file.

To calibrate field device using Invoke Method

- 1 On the Selection Panel, select the field device channel.
- 2 On the ribbon bar, in the **Channel** group, click **Inactivate**.
Ensure you inactivate the channels before starting calibration. You cannot perform calibration when the channel is online.
- 3 Click **Apply**.
- 4 In the **Property Panel**, expand **Calibration**.



- 5 Click **Invoke Method** to open the method dialog box.

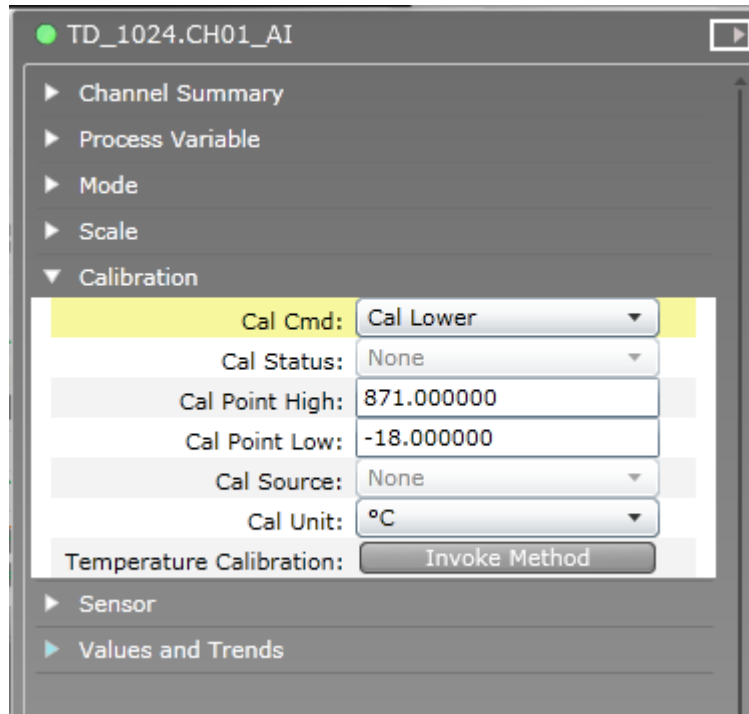


- 6 Click **Next** and follow the instructions on-screen to complete calibration.
To cancel the calibration process at any stage of method execution, click **Abort**.
You can close the method dialog box while the method execution is in progress. To open the method dialog box again, click the method pane in the status bar.
Once complete, a message appears indicating that the calibration process completed successfully.
- 7 On the ribbon bar, in the **Channel** group, click **Activate**.
- 8 Click **Apply**.
 - You can run only one method at a time for a field device using the current login session.
 - If you close the Web browser while a method is running and logon as another user, you can start another method on the same device only after few minutes.

To calibrate field device by setting the calibration parameters

- 1 On the Selection Panel, select the field device channel.

- 2 On the ribbon bar, in the **Channel** group, click **Inactivate**.
Ensure you inactivate the channels before starting calibration. You cannot perform calibration when the channel is online.
- 3 Click **Apply**.
- 4 In the **Property Panel**, expand **Calibration**.



- 5 Set the following calibration parameters:
 - **Cal Cmd** – The options available are **None**, **Cal Lower** (to calibrate device with lower calibration limit), **Cal Upper** (to calibrate device with higher calibration limit), **Cal Restore** (to restore calibration setting), and **Cal Clear** (to clear calibration setting).
 - **Cal Point High**
 - **Cal Point Low**
 - **Cal Unit**
- 6 Click **Apply**.
- 7 On the ribbon bar, in the **Channel** group, click **Activate**.
- 8 Click **Apply**.

5.9 Configuring field device channels

Related topics

- “Configure Mode and Scale” on page 85
- “Add channels to publication groups” on page 85
- “Configure channel instantiation” on page 86
- “Remove channels from publication groups” on page 89
- “Delete (unstantiate) channels” on page 90

5.9.1 Configure Mode and Scale

To configure Scale

- 1 On the Selection Panel, select the field device channel.
- 2 On the Property Panel, expand **Process Variable** to view the following read-only parameters in the OneWireless user interface.
 - **EU at 100%**: Specifies the high range PV value in Engineering Units.
 - **EU at 0%**: Specifies the low range PV value in Engineering Units.
 - **Units Index**: Specifies the unit of the measurement value. The value varies according to the sensor type selected for a channel. For example, in a temperature device, when the sensor type changes to a thermocouple (TC-J) or mV-50 range, the transducer block sets the Units Index to °C or mV.
- 3 Click **Apply**.



Attention

After applying the changes, the newly configured values appear under the **Scale** panel.

To configure Mode

- 1 On the Property Panel, expand **Mode**.
- 2 In the **Target** list, select the mode as required.
The mode types available are **Normal**, **OOS**, and **Auto**. If the device type is Digital Output (DO), an additional mode **Man** is also available in the **Target** list.
- 3 Click **Apply**.

5.9.2 Add channels to publication groups

Perform the following steps to enable/disable the PV publication capability of field devices.

To add channels to publication groups

- 1 On the Selection Panel, select the field device channel.
- 2 On the Property Panel, expand **Input Publication** or **Output Publication** panel.
- 3 In the **Channel** drop-down list, select the channels for which data publication needs to be enabled.

**Attention**

To disable data publication, select **None** in the **Channel** list.

- 4 Click **Apply**.

5.9.3 Configure channel instantiation

OneWireless Network supports block instantiation for field device channels. You can add, remove, and reconfigure channels on supported field devices. An individual channel can be configured for one of the several roles, such as an analog temperature input, an analog current input, or a discrete input.

You can instantiate channels, only for supported field devices from Honeywell.

- XYR 6000 Multi AI DI
- XYR 6000 Multi AI DI DO
- XYR 6000 Temp DI

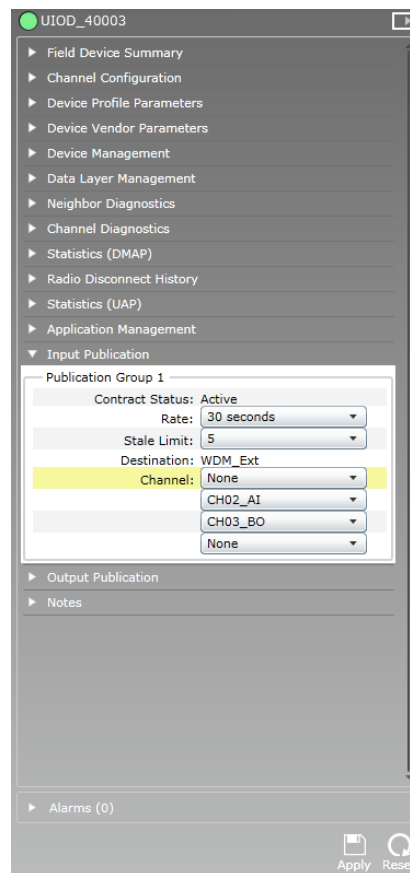
You can add, remove, and reconfigure channels on a supported field device using the user interface.

To inactivate the channel

- 1 On the Selection Panel, select the field device channel.
- 2 Do one of the following:
 - On the ribbon bar, in the **Channel** group, click **Inactivate**.
 - On the Property Panel, expand **Mode** and then in the **Target** list, click **OOS**.
- 3 Click **Apply**.
The channel icon appears as blue indicating the inactive mode.

To remove channel from publication group

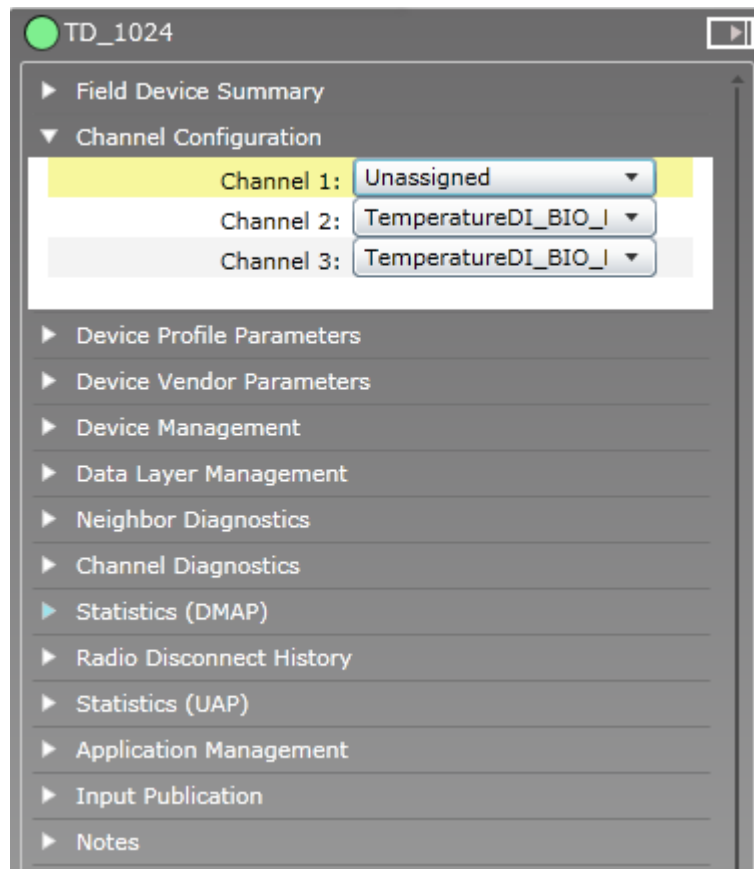
- 1 On the **Selection Panel**, select the field device.
- 2 On the **Property Panel**, expand **Input Publication**.
- 3 For the channel to be removed from the publication group, click **None** in the **Channel** drop-down list.



- 4 Click **Apply**.
Wait for a few seconds to save the changes.

To delete (unstantiate) channel

- 1 Expand **Channel Configuration** and click **Unassigned** in the drop-down list for the channel to be deleted.



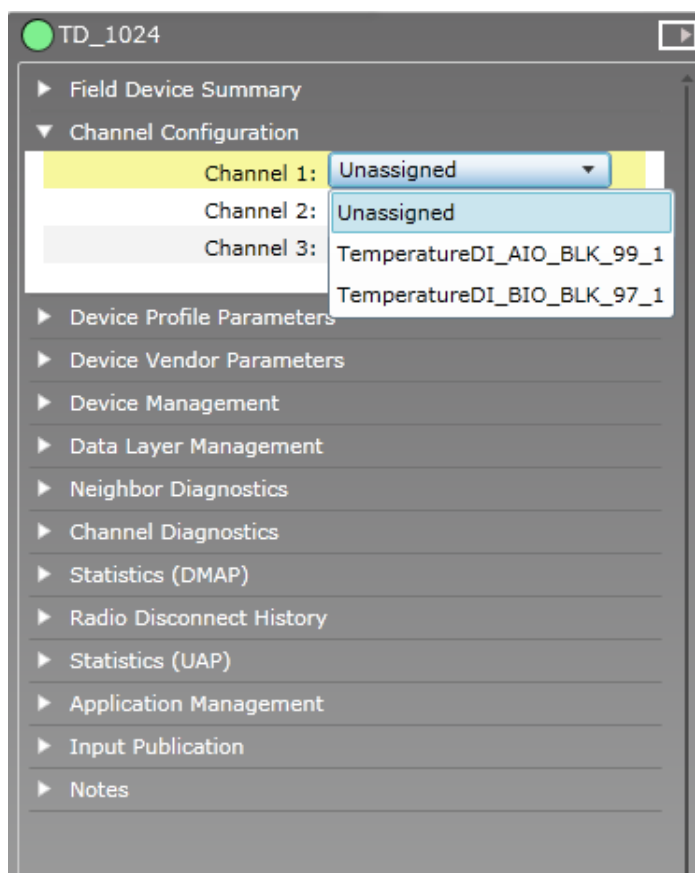
2 Click Apply.

The channel disappears from the map view and the **Selection Panel**.

To instantiate channel

- 1 Expand **Channel Configuration** and click the respective instantiable object type for the channel to be instantiated.

In the following example illustration, the temperature DI field device has three instantiable channels. Each channel can be instantiated as an analog input channel or a binary input channel.



- 2 Click **Apply**.

To add channel to publication group

- 1 On the **Property Panel**, expand **Input Publication** panel.
- 2 In the **Channel** drop-down list, click the channel for which data publication needs to be enabled.
- 3 Click **Apply**.

To activate the channel

- 1 On the Selection Panel, select the field device channel.
- 2 Do one of the following:
 - On the ribbon bar, in the **Channel** group, click **Activate**.
 - On the Property Panel, expand **Mode** and then in the **Target** list, click **Auto**.
- 3 Click **Apply**.
The channel icon appears as green indicating active mode.

5.9.4 Remove channels from publication groups

To remove channels from publication groups

- 1 On the Selection Panel, select the field device channel.
- 2 On the Property Panel, expand **Input Publication**.
- 3 For the channel to be deleted from the publication group, click **None** in the **Channel** drop-down list.

- 4 Click **Apply**.

5.9.5 Delete (uninstantiate) channels

Prerequisites

- Ensure that the channel is set to OOS mode.
- Ensure that the channel is not configured for publication in any of the Input/Output Publication groups. If configured, remove the channel from the Publication group.

To delete channels

- 1 On the Selection Panel, select the field device channel.
- 2 On the Property Panel, expand **Channel Configuration**.
The **Channel Configuration** panel displays a list of instantiated channels.
- 3 Select the channel to delete and select **Unassigned** in the corresponding drop-down list.
- 4 Click **Apply**.

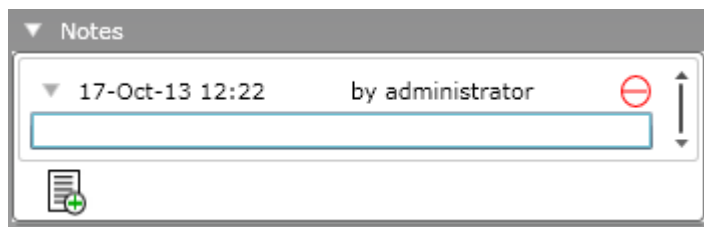
5.10 Adding notes for devices

You can add device notes for WDM, FDAPs, Access Points, or field devices. These notes can be used as a logbook for the device.

Perform the following steps to add notes for any configured device. Note that the notes added for devices are saved on the WDM and not on the device.

To add notes

- 1 On the Selection Panel, select the required device.
- 2 On the Property Panel, expand **Notes**.
- 3 Click the **Add note** icon.
A text box appears.



- 4 Type the note and click **Apply**.

! Attention

- All users can view all the notes added by other users.
- To delete any note added, click delete icon adjacent to the note.
 - Users with User role can delete only notes added by them.
 - Users with Administrator role can delete other user's notes.
- Notes are not restored during a replace operation.

To edit a note already added, double-click on the note that you want to edit, make the necessary changes, and then click **Apply**.

6 Operations

Related topics

“Setting up the monitoring area” on page 94

“Configuring Connection Quality Options” on page 98

“Verifying connectivity using maps” on page 99

“Configuring alerts for Honeywell field devices” on page 101

“Monitoring the network and the devices” on page 102

“Alarm and event management” on page 104

“Viewing time synchronization parameters” on page 118

“Viewing license agreement files” on page 119

6.1 Setting up the monitoring area

About site-specific monitoring

The OneWireless user interface enables you to create multiple maps for setting up site-specific monitoring areas. After the initial configuration, WDM creates a default map. Based on the plant topology, you can create multiple site maps and place the devices under these maps. This enables site specific monitoring of the devices that are placed in different locations of a plant. In addition, a site map of that particular location can be uploaded to the map. You can position the devices on the site map in such a way that it reflects the real plant topology.

You can create a map of entire plant and maps of smaller areas, each containing the same devices. The FDAPs and devices can be placed on multiple maps.

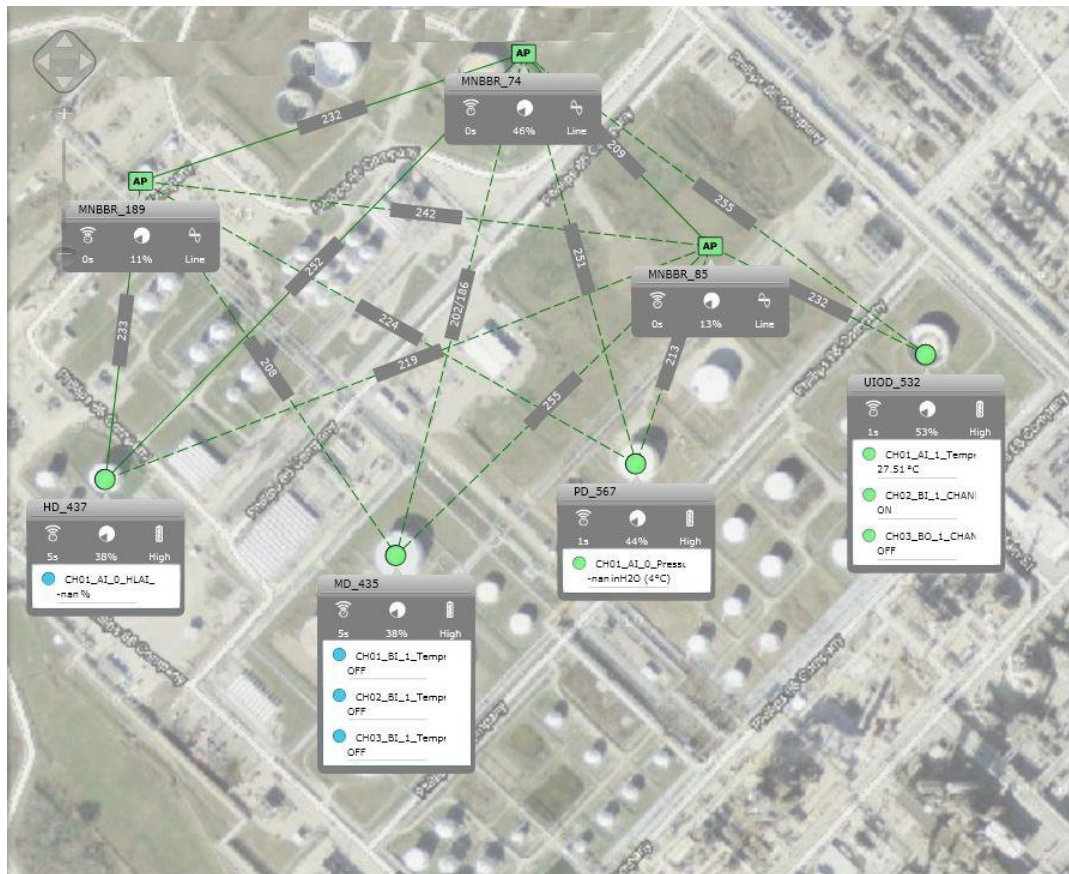
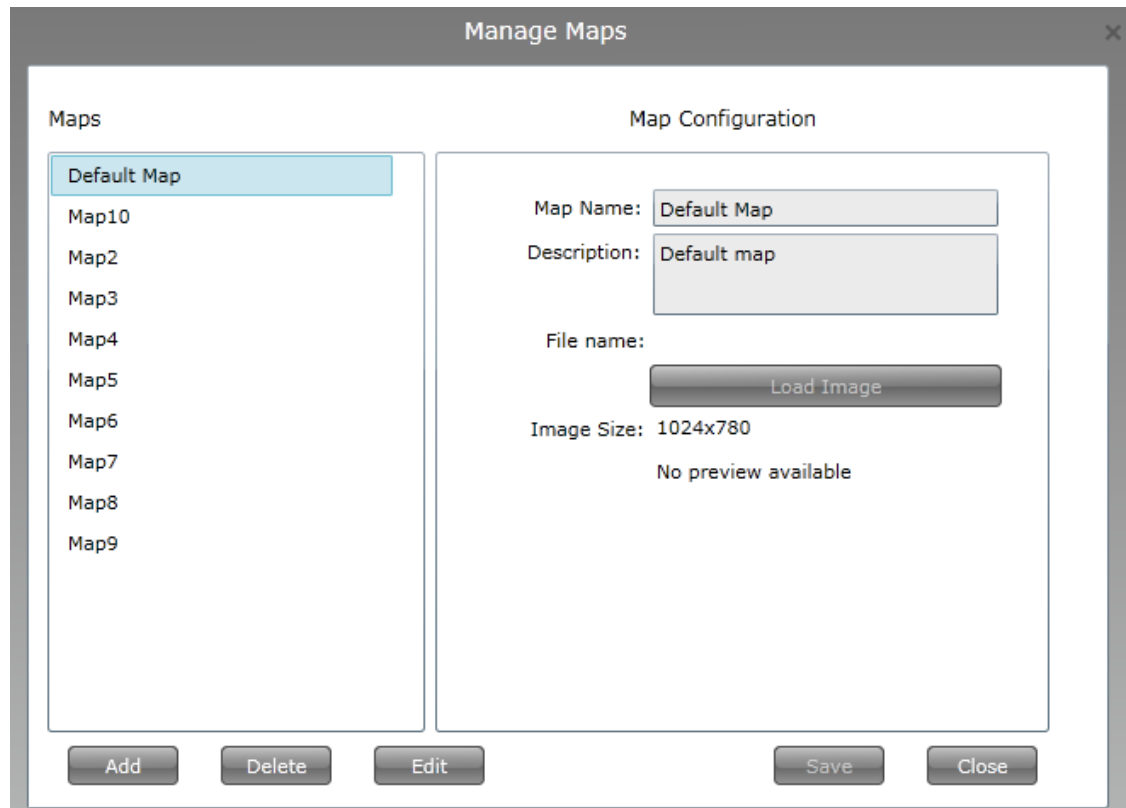


Figure 15: Site-specific monitoring

6.1.1 Configure site maps

To configure site maps

- 1 Click the **Monitoring** tab to view the map view.
- 2 On the top-right of Map view, click **Options** > **Maps** > **Manage Maps**.
The **Manage Maps** dialog box appears.



- 3 Click **Add**.
- 4 Under **Map Configuration**, in the **Map Name** box, type the name of the map.
- 5 In the **Description** box, type the description for the map.
- 6 Click **Load Image**.
The **Open** dialog box appears.
- 7 Browse to the location where the site map is saved, and then select the site map.

Attention

- The site map must be a .jpg file of any size.

- 8 Click **Open** to upload the site map.
In the **Manage Maps** dialog box, under **Image Size** the image appears.

Attention

- By default, the map display is hidden. To display the map, on the top-right of the map view, click **Options>View > Show Map**.
- To increase or decrease map visibility, click **Options > View > Map Opacity > fade in /fade out**.

For more information about map controls, refer to the section, “About map view” on page 47.

- 9 Click **Save**.

Attention

- In the **Manage Maps** dialog box, click **Delete** to remove any previously loaded site map. In the **Manage Maps** dialog box, click **Edit** to edit the site map details.

6.1.2 Position the devices on the map

After uploading the site map for a particular location, you can position the devices on the map to reflect the physical design and structure of your plant. The devices do not appear on the map view, by default.

To position the devices on the map

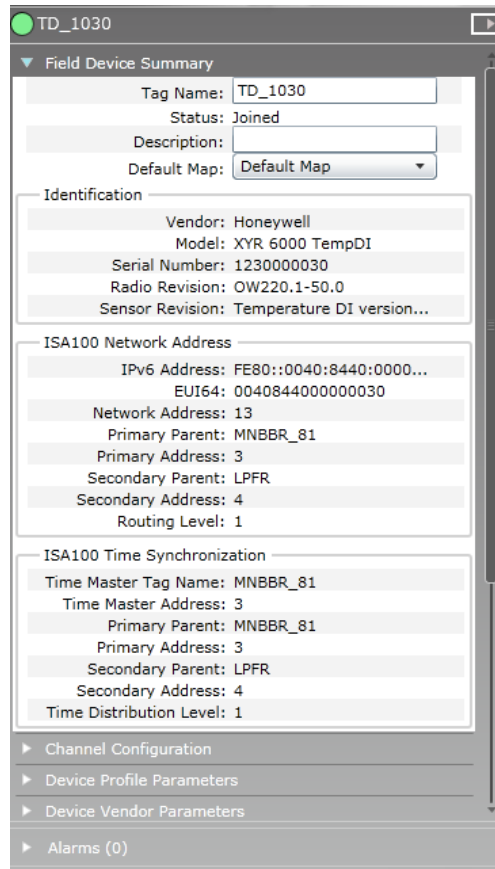
- 1 On the Selection Panel, select the device to be positioned on the map.
- 2 Drag the device and drop it on the required location on the map.
- 3 Repeat steps 1 and 2 to place the other devices.
- 4 On the top-right of Map view, click **Options > View**.
- 5 Select **Lock Map** check box to the lock the map.
You must lock the map to prevent device locations from being accidentally modified.

6.1.3 Change the default map for a device

From the Property Panel, you can only change the default map for an FDAP or a field device. This has no effect on the actual current placement of a device on any map. The default map is only used for display purposes in reporting alarms, reports, and so on. You cannot change any physical placement of a device from the property panel. In fact, only maps on which the device is currently placed appears in the drop down for default map.

To change the default map for a device

- 1 On the Selection Panel, select the required device.
- 2 On the Property Panel, expand the **Device Summary**.
- 3 From the **Default Map** list, select the required map on which the device must be placed.

**Attention**

The **Default Map** list displays all the maps on which the device is placed.

6.1.4 Remove the device from the map

To remove the device from the map

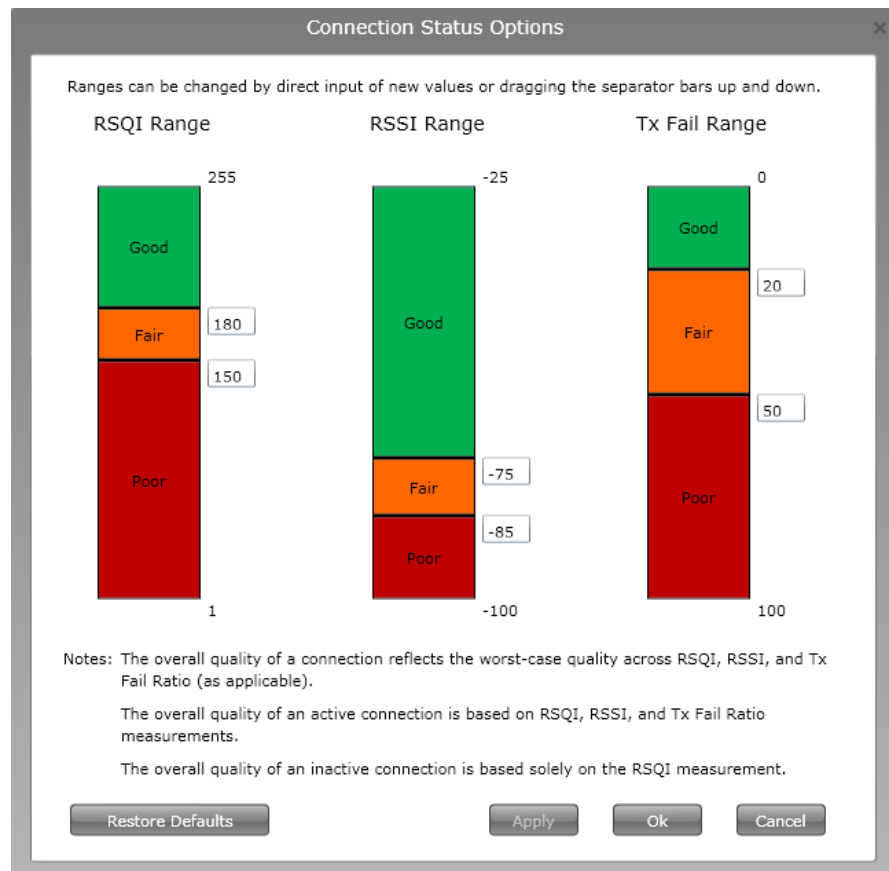
- 1 Click the **Monitoring** tab to view the map view.
- 2 From the **Selection Panel** or map view, select the device.
- 3 On the top-right of Map view, click **Options > Maps > Remove Devices**. The **Remove Devices From Map** dialog box appears.
- 4 Click **Remove** to remove the selected devices from the current map.

6.2 Configuring Connection Quality Options

Connection quality is based on the Receive Signal Strength Index (RSSI), Receive Signal Quality Index (RSQI), and Transmit Fail Ratio (TxFailRatio). Using the **Connection Status Options**, you can configure thresholds for RSQI, RSSI, and TxFailRatio. The overall quality of an active connection is based on RSQI, RSSI, or TxFailRatio. If RSQI, RSSI, or TxFailRatio is poor, connection quality is poor. Connection quality is displayed as good (green), fair (orange), or poor (red).

To configure connection quality options

- 1 On the top-right of Map view, click **Options > Overlay > Connection Status Options**. The **Connection Status Options** dialog box appears.



- 2 In the boxes near the separator bars, type the RSSI, RSQI, and TxFailRatio values or drag the separator bars up and down.
- 3 Click **Apply**, and then click **OK**.



Attention

- Click **Restore Defaults** to restore the Honeywell recommended default values.

6.3 Verifying connectivity using maps

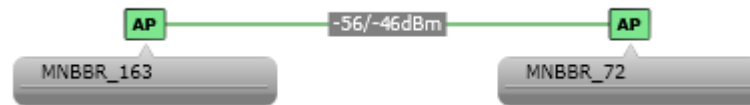
Perform the following steps, to verify mesh connectivity and device connectivity.

To verify mesh connectivity and device connectivity

- 1 Click the **Monitoring** tab to view the map view.
- 2 Visually inspect network topology map and connectivity.
- 3 Navigate to the device in the topology map and check the link signal quality and connectivity.
The RSSI range is displayed in the format -xx/-yy dBm, where -xx and -yy represent the link strength of the devices connected to each other. When the difference between -xx and -yy is less than 5, the lowest of the two values is displayed.

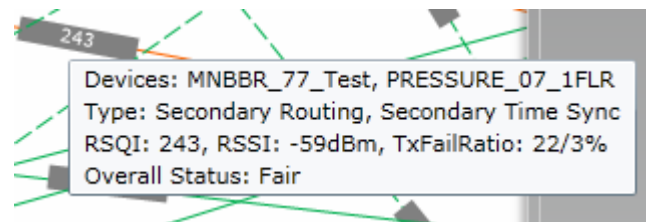
The RSSI range is displayed in the format xx/yy, where xx and yy represent the link quality index of the devices connected to each other. When the difference between xx and yy is less than 10, the highest of the two values is displayed.

For example, in the following illustration, the value -56 represents RSSI of the device (MNBBR_163) and the value -46 represents the RSSI of the device (MNBBR_72).



- 4 Verify device communication statistics information such as RSQI, RSSI, and TxFailRatio.
A green line between the devices in the map view indicates strong signal quality, whereas a red line indicates weak signal quality. A solid line between the devices represents an active connection between the devices and a dotted line represents an inactive connection.

The connection quality details are displayed as tooltip when you hover the mouse over the connection.



| Option | Description |
|--------------------|-----------------------|
| RSQI range | 235 to 255: Excellent |
| | 180 to 235: Good |
| | 150 to 180: Fair |
| | 0 to 150: Poor |
| RSSI range | -75 to -25: Good |
| | -85 to -75: Fair |
| | -100 to -85: Poor |
| TxFailRatio | 0 to 20: Good |
| | 20 to 50: Fair |
| | 50 to 100: Poor |

You can modify connection quality ranges.

-
- **Attention**
While configuring the network, ensure that the lowest RSQI on each active link is greater than 180 and the lowest RSSI on each active link is greater than -80 dbm. An active link with RSQI/RSSI values higher than the specified values protects the signals when the signal strength/quality degrades due to transient environmental conditions.
-

6.4 Configuring alerts for Honeywell field devices

You can configure to enable or disable the following alerts for Honeywell field devices if the DD files for the devices are loaded to the WDM.

- **Maintenance Required alerts:** Generated to indicate low battery or low external power condition.
- **Out of Specification Status alerts:** Generated for calibration errors, thermocouple condition warning, or indeterminate discrete input state.
- **Failure Status alerts:** Generated for fault conditions such as input failure, output failure, or electronic failure.
- **Function Check Status:** Generated for conditions such as device channel out of service.

To configure alerts for field devices

- 1 On the Selection Panel, select the field device.
- 2 On the Property Panel, expand **Device Vendor Parameters**.
- 3 For the type of alert to be configured, perform one of the following.
 - To enable alert generation, clear the **Alert Disable** check box.
 - To disable alert generation, select the **Alert Disable** check box.
- 4 Set the **Alert Priority**.

The **Alert Priority** can contain the following values.

 - 0-2: Journal (only events are reported)
 - 3-5: Low
 - 6-8: Medium
 - 9-11: High
 - 12-15: Urgent
- 5 Click **Apply**.

6.5 Monitoring the network and the devices

You can monitor the performance of the network and the devices that have joined the network. All the devices that have joined the network are accessible from the Selection Panel. The extended Selection Panel allows you to view the details about the devices in the network.

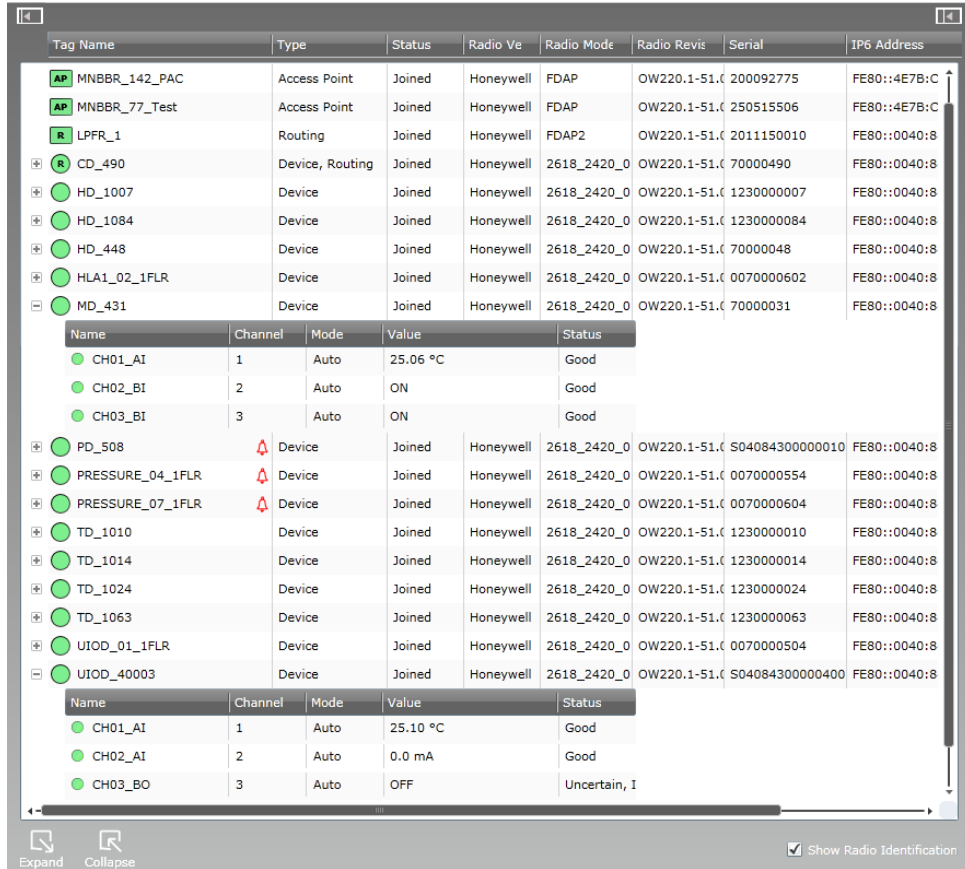


Figure 16: Monitoring the network using extended Selection Panel

The following tables explain the device and the channel attributes that are available in the extended Selection Panel.

Table 10: Device attributes in the extended Selection Panel

| Device attribute | Description |
|------------------|--|
| Tag Name | Name of the device. |
| Type | Device type, which can contain the following values. <ul style="list-style-type: none"> • Device Manager for WDM • Access Point for FDAP and Access Points • Routing for FDAP routers • Device, Routing for field devices • Device for non-routing field devices |
| Status | Device status. The status can be Offline , Joining , or Joined . |
| Vendor | Device vendor name. |

| Device attribute | Description |
|------------------|--|
| Model | Device model. For example, XYR 6000 HLAI is the device model for Honeywell HLAI devices. |
| Revision | Device sensor firmware revision number. To view the radio firmware revision, select the Show Radio Identification check box. |
| Serial | Serial number of the device. |
| IP6 Address | IPv6 address of the device. |
| Power Source | Power source of the device, which can contain the following values. <ul style="list-style-type: none"> • Line for line powered FDAPs or WDM. • High, Low, or Medium for battery powered field devices. |
| Tag Name | Channel name. |
| Channel | Channel number. |
| Mode | Device channel mode, which contains the values AUTO, OOS, or MAN . |
| Value | Process Value. |
| Status | PV status. |

You can view the PV trend in the **Values and Trends** panel of the channel's Property Panel.

6.6 Alarm and event management

Related topics

“Understand alarms and events” on page 104

“Monitor alarms and events” on page 116

6.6.1 Understand alarms and events

The following table provides a summary of the various alarms and events generated by the OneWireless devices and the recommended corrective action to handle the alarms and events.

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------|---------------------------|---|---|--|---------------|--------------------------|---------------|
| WDM | Bad Join Key | FDAP or field device is attempting to join the network with an invalid key. | WDM rejects the join request by the FDAP or the field device. | Locate the devices and reprovision the devices with valid join keys. | N/A | None | N/A |
| WDM | Expired Join Key | FDAP or field device is attempting to join the network with an expired key. | WDM rejects the join request by the FDAP or the field device. | Locate the devices and reprovision the devices with valid join keys. | N/A | None | N/A |
| WDM | Key Authentication Failed | FDAP or field device security confirmation failed due to an invalid master key. | WDM rejects the join request by the FDAP or the field device. | None | N/A | None | N/A |
| WDM | Offline | FDAP or field device is offline. | None | None | N/A | EUI64 of the device | N/A |
| WDM | Joining | FDAP or field device is joining the network. | None | None | N/A | EUI64 of the device | N/A |
| WDM | Joined | FDAP or field device has joined the ISA100 Wireless network. | None | None | N/A | EUI64 of the device | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------|---|--|---|--|---------------|--------------------------|---------------|
| WDM | Not Synchronized | Redundancy enabled, but sync not yet enabled or completed. Error occurred during communication between redundant WDMs over the RDN private path. Sync is disabled. | WDM redundancy is not available and primary WDM failure results in loss of view and/or control. | Enable sync if disabled. Reconnect RDN private path communication cable. If redundancy is no longer required, disable redundancy. | N/A | N/A | N/A |
| WDM | Switchover | Switchover can be initiated from primary or secondary WDM. The following conditions result in switchover: <ul style="list-style-type: none"> • FDN or PCN Ethernet cable is disconnect on the primary WDM. • Loss of power on the primary WDM. • Software failure on the primary WDM. • Hardware failure on the primary WDM. | WDM role change. | If switchover occurred due to FDN and/or PCN cable disconnect on original primary, verify connections. Reason for switchover is available in the redundancy history section in the redundancy tab in the WDM Properties Panel. Take appropriate corrective action to restore WDM redundancy based on this reason. In case of hardware or software failure in the original primary, contact customer support. | N/A | N/A | N/A |
| WDM | Redundant Partner Visible on Redundant Link | Redundant WDM sync state changes to partner visible. | None | None | N/A | N/A | N/A |
| WDM | Redundancy Sync In Progress | Redundant WDM sync state changes to sync in progress. | None | None | N/A | N/A | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------|--------------------------------------|---|-------------------|--|---------------|--------------------------|---------------|
| WDM | Redundancy Sync Maintenance | Redundant WDM sync state changes to sync maintenance. | None | None | N/A | N/A | N/A |
| WDM | Redundant Non-Redundant | During role determination, the WDM configuration is changed from non-redundant to redundant. | None | None | N/A | N/A | N/A |
| WDM | Redundant No Partner | Sync state changes to no partner when WDM is configured as redundant. | None | None | N/A | N/A | N/A |
| WDM | Redundant Incompatible Partner | Redundant WDM sync state changes to incompatible partner. | None | None | N/A | N/A | N/A |
| WDM | Sync Hardware Failure | Redundant WDM serial port initialization fails. | Restart WDM. | Re-enable redundancy, restart WDM | N/A | N/A | N/A |
| WDM | Redundant Physical ID A | Redundant WDM physical ID changes to A due to startup/change. | None | None | N/A | N/A | N/A |
| WDM | Redundant Physical ID B | Redundant WDM physical ID changes to B due to startup/change. | None | None | N/A | N/A | N/A |
| WDM | Redundant Partner not visible on PCN | Primary or secondary WDM communicating with compatible partner and partner is not visible across PCN. | Sync is inhibited | Ensure that primary and secondary are connected to the PCN network. Verify PCN switch connections. | N/A | N/A | N/A |
| WDM | Redundant Partner not visible on FDN | Primary or secondary WDM communicating with compatible partner and partner is not visible across FDN | Sync is inhibited | Ensure that primary and secondary are connected to the FDN network. Verify FDN switch connections. | N/A | N/A | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------------------|-----------------------------|---|--|--|---------------|--------------------------|---------------|
| FDAP, field device | Non-redundant communication | Access point or field device has non-redundant connection to the ISA100 Wireless network. | Single point of failure for device communication in ISA100 Wireless network. | Add an access point, FDAP router, or battery powered router near the source device to enable redundant communication. If the network is designed for non-redundant communication, you can disable the alarm on the Properties Panel. | N/A | N/A | N/A |
| FDAP, field device | Power Status Changed | The power status of FDAP or field device is changed. | Loss of power to the field device | Replace the field device battery | Immediate | POWER_SUPPLY_STATUS | N/A |
| FDAP, field device | Device Restarted | FDAP or field device radio is restarted. | None | None | N/A | RESTART_COUNT | 0 |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------------------|--------------------------|--|--|---|---------------|--------------------------|---------------|
| FDAP, field device | Clock Drift | <ul style="list-style-type: none"> FDAP clock has drifted 200 Ms or greater from the WDM clock. FDAP corrects its clock automatically over a period of time. If the difference between the FDAP clock and the WDM clock is too high, the FDAP may drop from the network. | Loss of communication with the field device and the associated channels. | <ul style="list-style-type: none"> This issue may be caused by delays encountered when installing a wireless system with a third party Wi-Fi (TCP/IP) mesh network. Connect the WDM and at least one FDAP directly to the same Ethernet switch. This allows the WDM and Ethernet-connected FDAPs to synchronize clocks over Ethernet. Position additional FDAPs in such a way that an ISA100 Wireless mesh network is formed between the nodes. Additional FDAPs can synchronize the clocks over the ISA100 Wireless mesh network. | N/A | None | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------------------|---------------------------------------|--|--------------|--|---------------|--------------------------|---------------|
| FDAP, field device | Illegal Use of Port | FDAP received a message (TPDU packet) over the ISA100 Wireless network on an unexpected port. | None | Remove uncertified or incompatible ISA100 Wireless devices from the ISA100 Wireless network. | N/A | 16-bit TL port number | N/A |
| FDAP, field device | TPDU Received on Unregistered Port | FDAP received a message (TPDU packet) over the ISA100 Wireless network on an unexpected port. | None | Remove uncertified or incompatible ISA100 Wireless devices from the ISA100 Wireless network. | N/A | TPDU | N/A |
| FDAP, field device | TPDU Does Not Match Security Policies | <ul style="list-style-type: none"> FDAP received a message (TPDU packet) that does not match the current security policy. Unavailability of session key or configuration of an unsupported security algorithm, or configuration of an unsupported security mode. | None | Remove uncertified or incompatible ISA100 Wireless devices from the ISA100 Wireless network. | N/A | TPDU | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------------------|--------------------------|--|--|---|---------------|--------------------------|---------------|
| FDAP, field device | DL Connectivity | Failure in data transmission between ISA100 Wireless devices, at 90% packet failure rate or greater. FDAP may have a poor communication link with another ISA100 Wireless device on the ISA100 Wireless network. | Loss of communication with the field device and the associated channels. | <ul style="list-style-type: none"> • Reposition the device or the antenna to minimize interference. • Reposition the antenna if the directional antenna is installed. • Remove any strong interference sources near the ISA100 Wireless device or reposition the ISA100 Wireless device to limit interference. | N/A | Neighbor Diag | N/A |
| FDAP, field device | Neighbor Discovery | Discovery of a new neighbor near the FDAP or the field device in the ISA100 Wireless network. | None | None | N/A | DLMO_C AND IDA TES | N/A |
| FDAP, field device | Alarm Recovery Start | Initiation of alarms recovery for FDAP or field device radio. | None | None | N/A | None | N/A |
| FDAP, field device | Alarm Recovery End | Completion of alarms recovery for FDAP or field device radio. | None | None | N/A | None | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------------------|----------------------------|--|--|---|---------------|--------------------------|---------------|
| FDAP, field device | MPDU Failure Rate Exceeded | <ul style="list-style-type: none"> • Occurrence of FDAP or field device security authentication failure for five packets per minute or greater, at the data link layer. • A poor link or strong interference due to frequent packet security failures. | Loss of communication with the field device and the associated channels. | Remove any strong interference sources near the ISA100 Wireless device or reposition the ISA100 device to limit interference. | N/A | Number of failures | N/A |
| FDAP, field device | TPDU Failure Rate Exceeded | <ul style="list-style-type: none"> • Occurrence of FDAP or field device security authentication failure for five packets within five minutes at the transport layer. • Invalid or mismatched session key in the ISA100 Wireless device. | Loss of communication with the field device and the associated channels. | None | N/A | Number of failures | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------------------|----------------------------------|---|--|---|---------------|--|---------------|
| FDAP, field device | Key Update Rate Failure Exceeded | <ul style="list-style-type: none"> Session key update failure in the FDAP or field device. Weak connection between the ISA100 Wireless devices or communication failure with the WDM. | Loss of communication with the field device and the associated channels. | <ul style="list-style-type: none"> Reposition the device or the antenna to minimize interference. Reposition the antenna if a directional antenna is installed. Remove any strong interference sources near the ISA100 Wireless device or reposition the ISA100 Wireless device to limit interference. | N/A | Number of failures | N/A |
| FDAP, field device | Dropped PDU | Failure in data transmission (PDU) by FDAP or field device due to an out-of-memory error (or another reason as reported within the alert). | None | None | N/A | Reason for the drop | N/A |
| FDAP, field device | Malformed APDU Received | FDAP or field device received a message (APDU) with an incorrect length, invalid read/write/execute/publish service, or invalid parameters for the specified service. | None | None | N/A | Device address generating Malformed APDU's | N/A |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|--------------|--------------------------|---|--|---|---------------|--------------------------|---------------|
| Field device | Device Offline | Field device is offline. | Loss of communication with the field device and the associated channels. | <ul style="list-style-type: none"> Verify that there is no loss of communication between the WDM and the field device, specifically loss of power or connectivity to the FDAPs. Physically check the field device. Replace failed battery or failed hardware, as appropriate. | Immediate | EUI64 of the device | N/A |
| Field device | Begin Alert Recovery | Initiation of alarms recovery of field device sensor radio. | None | None | N/A | None | N/A |
| Field device | End Alert Recovery | Completion of alarms recovery of field device sensor radio. | None | None | N/A | None | N/A |
| Field device | Device Restart | Field device sensor is restarted. | None | None | N/A | RESTART_COUNT | 0 |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/ Reported value | Default value |
|--------------|----------------------------|--|---|---|---|------------------------------------|---------------|
| Field device | Maintenance Alert | Critically low battery power or external power is detected by the field device sensor. | Loss of communication with the field device and the associated channels. | <ul style="list-style-type: none"> Replace the batteries. Check the external power 24V supply and wiring. | <ul style="list-style-type: none"> For battery powered devices, replace the batteries within two to four weeks after initial alert. For externally powered devices, immediate action is required. | DIAG_ST ATUS, DIAG_ST ATUS_D ETAIL | 0 |
| Field device | Out of Specification Alert | Invalid or unreadable calibration data. | Channel may report incorrect PV value. | Perform user calibration. | Immediate | DIAG_ST ATUS, DIAG_ST ATUS_D ETAIL | 0 |
| Field device | Failure Status Alert | <ul style="list-style-type: none"> An electronics failure, including NVM fault, RAM fault, program memory fault, or A/D failure is detected by the field device sensor. Cold junction failure. | <ul style="list-style-type: none"> Loss of communication with the field device and the associated channels. Channel reports incorrect PV value. | <ul style="list-style-type: none"> Restart the field device radio and sensor. If condition persists, replace the sensor module. Check the connectors on the terminal board and sensor module. Replace the terminal board. | Immediate | DIAG_ST ATUS, DIAG_ST ATUS_D ETAIL | 0 |

| Source | Alarm/Event notification | Possible cause | Consequences | Recommended corrective action | Response time | Parameter/Reported value | Default value |
|-------------------------|--------------------------|---|--|--|---------------|------------------------------------|---------------|
| Field device AI Channel | OutOfService | Field device AI channel is out-of-service. | None | None | N/A | MODE.ACTUAL | OOS |
| Field device AI Channel | Sensor Over Temperature | The meter body exceeded the maximum temperature as defined by the meter body characterization data. | Channel may report incorrect PV value. | Determine cause of excessive temperature. | Immediate | DIAG_STATUS, DIAG_STATUS_DETAIL | 0 |
| Field device AI Channel | OutOfService | Field device DI channel is out-of-service. | None | None | N/A | MODE.ACTUAL | OOS |
| Field device AI Channel | Input Failure | Cold junction failure. | Channel reports incorrect PV value. | <ul style="list-style-type: none"> Check connectors on the terminal board and the sensor module. Replace the terminal board. | Immediate | DIAG_STATUS, DIAG_STATUS_DETAIL | 0 |
| Field device AI Channel | OutOfService | Field device DO channel is out-of-service. | None | None | N/A | MODE.ACTUAL | OOS |
| Field device AI Channel | Fault Alert | Number of consecutively missed data publication exceeds the stale count limit. The configured output value is not received by the output channel on the field device. | <ul style="list-style-type: none"> Output channel may shed to fault state value. Changes to the configured output value would reflect on the output channel. | Determine the cause of missing the published data or verify the stale count limit. | Immediate | DIAG_STATUS, DIAG_STATUS_DETAIL | 0 |

In addition to the alarms and events listed in the above table, the following user-initiated events are also recorded in the events history.

Table 11: User actions logged in the Alarms/Events History tab

| | | | |
|--------------|----------------------------------|--------------------|---------------------------|
| Login/logout | DHCP server configuration change | Device replacement | Perform manual WDM backup |
|--------------|----------------------------------|--------------------|---------------------------|

| | | | |
|--------------------------------------|---------------------------------------|---|--|
| Failed login attempt | PCN IP address change | Firmware upgrade operation when initiated, completed, aborted, or failed. | Publication period change |
| Create/delete user account | PCN subnet mask change | DD load | Publication stale limit change |
| Password change | PCN default gateway change | Device deletion | PD deletion |
| User role change | Disable/enable external NTP server | Channel instantiation | Security key transfer to the PD for field devices/ infrastructure devices |
| FDN subnet mask change | External NTP server change | Channel deletion | Channel activation/ inactivation |
| Enable/disable publication channel | Enable/disable automatic backup | Channel rename | Attribute write (data may be truncated. Maximum reported size = 308. Maximum old size = 256) |
| Enable/disable DHCP server | Automatic backup configuration change | Method initiation | Method completion/ abortion (data may be truncated; maximum size = 114) |
| Add/remove role permission | Set system time | Accept/reject over-the-air provisioning | Restore WDM from backup |
| Failure in restoring WDM from backup | Configure a new WDM | Reset WDM to factory defaults | Restart WDM |
| FDN IP address changed | Write protect/unprotect | Redundancy enabled/ disabled | Redundant partner PCN IP changed |

6.6.2 Monitor alarms and events

The **Alarm/Events** tab in the user interface allows you to monitor the alarms and events triggered by the devices. The **Active Alarms** tab displays the category, description, priority, default map, source, reported value, and time. The **Alarms/Event History** tab provides a tabular view of the events, displays event class, event category, priority, event start time, event source, location, and description. You can also export the alarm log and event log for a particular period.

Whenever a new alarm is triggered, a pop-up window appears in the user interface displaying the details of the alarm such as source, time, description, and priority. When multiple alarms are reported at the same time, the pop-up displays the message “*You have multiple new alarms?*”. Hovering the mouse over the window changes the appearance of the text displayed to that of a hyperlink. Click on the link to open the alarm display.

To monitor alarms and events

- 1 Click the **Alarm/Events** tab.
The **Alarm/Events** page displays.
- 2 Click the **Active Alarms** tab.
The **Active Alarms** page displays details about the active alarms.
- 3 To view the alarm details, click on any alarm and expand **Alarm Detail** at the bottom of the pane.
The **Alarm Detail** pane displays details such as **Start Time**, **Source**, **Default Map**, **Reported Value**, **Category**, and **Description**, for any selected device.
- 4 Click the **Alarms/Events History** tab.
The **Alarms/Events History** page displays details about all the alarms (active and inactive) and events.

| Event Class | Event Category | Priority | Event Start Time | Event Source | Default Map | Reported Value | Start Value | Description |
|-------------|-------------------|----------|-----------------------|--------------|-------------|----------------|-------------|----------------------|
| Event | Security | Journal | 6/26/2013 2:39:13 PM | WDM_Ext | Unplaced | 192.168.2.45 | | Login |
| Alarm | Device Diagnostic | High | 6/26/2013 2:10:07 PM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 2:05:07 PM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 1:05:07 PM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 1:00:07 PM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Event | Security | Journal | 6/26/2013 12:02:14 PM | WDM_Ext | Unplaced | 192.168.2.45 | | Logout |
| Alarm | Device Diagnostic | High | 6/26/2013 11:30:07 AM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 11:25:07 AM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 10:25:07 AM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 10:20:07 AM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Event | Security | Journal | 6/26/2013 9:31:17 AM | WDM_Ext | Unplaced | 192.168.2.45 | | Login |
| Alarm | Device Diagnostic | High | 6/26/2013 7:35:08 AM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 7:30:08 AM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 7:15:08 AM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 7:10:08 AM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 4:10:08 AM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 4:05:08 AM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 2:40:08 AM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/26/2013 2:35:08 AM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/25/2013 10:50:09 PM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/25/2013 10:45:09 PM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/25/2013 4:05:10 PM | CD_490 | R220 | 10100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/25/2013 4:00:10 PM | CD_490 | R220 | 94100001 | | Failure Status Alert |
| Alarm | Device Diagnostic | High | 6/25/2013 2:35:10 PM | CD_490 | R220 | 10100001 | | Failure Status Alert |

When an alarm is reported, the **Event Class** column displays a red alarm symbol. When the alarm returns to normal, the alarm symbol changes to black.

The following are the events that are reported in the **Alarms/Events History**.

- **Communications Diagnostic:** Reported for events such as device offline, device joining, device online, alarm recovery start, alarm recovery end, and so on.
- **Device Diagnostic:** Reported for events such as device restart, alarm recovery start, and alarm recovery end.
- **Security:** Reported for security-based events.
- **User actions:** Reported for user actions that are captured as events. For a list of user actions that are captured as events, refer to “Table 11: User actions logged in the Alarms/Events History tab” on page 115.

The **Alarms/Events History** page is not updated automatically. Click **Refresh** to manually update the **Alarms/Events History** page.

5 To export an alarm or event log

a Click **Export Alarm Log** or **Export Event Log**.

b On the **Export Logs** dialog box, click the export option using which the log needs to be exported. The following are the available export options.

- **Entire log**
- **From last hours:** Specify the number of hours for which the log needs to be exported.
- **From time period:** Specify the **From Date** and **To Date** to export the log for that particular time period. Note that this is different from the time when an event is detected which is reported in the **Event Start Time** column in the **Alarms/Events History** page.

c Click **Export**.

The alarm or event log is exported in the .csv format.

6.7 Viewing time synchronization parameters

ISA100 time synchronization parameters provide the details of the network clock master which distributes time to all the nodes within the time synchronization cluster.

To view the time synchronization parameters

- 1 On the Selection Panel, select an access point/field device.
- 2 On the Property Panel, expand **Field Device Summary/Access Point Summary**.
- 3 Under **ISA100 Time Synchronization**, review the following time synchronization parameters.
 - **Time Master Tag Name:** The tag name of the device acting as the clock master in the time synchronization cluster.
 - **Time Master Address:** The short address of the clock master.
 - **Time Distribution Level:** The clock hop level in which the device is present.

A time master device (access point) is always at a Time Distribution level of 0. A device that joins directly to this master will always be at level 1 and the devices joining through the level 1 devices will be at level 2 and so on. Other access points in the network, synchronize its time from the clock master directly or indirectly through other access points. Hence they can be at time distribution level of 1, 2, or so on.

6.8 Viewing license agreement files

Honeywell End User License Agreement (EULA) and third-party licenses are available at the following locations.

- Honeywell EULA: https://<WDM IP Address>/licenses/Third_Party_Licenses.txt
- Third-party licenses: https://<WDM IP Address>/licenses/Honeywell_End_User_License_Agreement.txt

7 Activate process control interfaces

Related topics

- “Establishing connection between WDM and external interfaces” on page 122
- “Activating HART in OneWireless Network” on page 126
- “Activating Modbus in OneWireless Network” on page 133
- “Activating OPC in OneWireless Network” on page 142
- “About integrating OneWireless Network with Experion using the CDA interface” on page 157
- “Activating GCI interface on the WDM” on page 159
- “Activate ENRAF Ethernet UDP interface on the OneWireless user interface” on page 160

7.1 Establishing connection between WDM and external interfaces

Perform the following step to connect OPC, Modbus, SmartRadar FlexLine (ENRAF), and HART interfaces to the PCN port of the WDM.

To connect OPC, Modbus, SmartRadar FlexLine (ENRAF), and HART interfaces to the PCN port or the COM1/COM2 of the WDM

- Connect the external interface client to the PCN port of WDM.
You can use a switch if you have multiple interfaces to connect to the WDM.

7.1.1 Serial interface connection

For serial interface connection, connect a serial cable from the interface client to the serial port on the WDM.

RS-232

For RS-232, select the serial port on which the serial cable is connected as COM1.

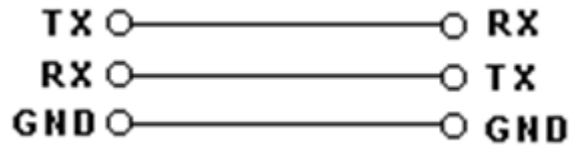


Figure 17: RS-232

Table 12: RS-232 pin connection

| Pin number | Signal Name |
|------------|-------------|
| 1 | DCD |
| 2 | RXD |
| 3 | TXD |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | RI |

For R220, the RS-232 – Half Duplex is supported.

RS232- Half Duplex

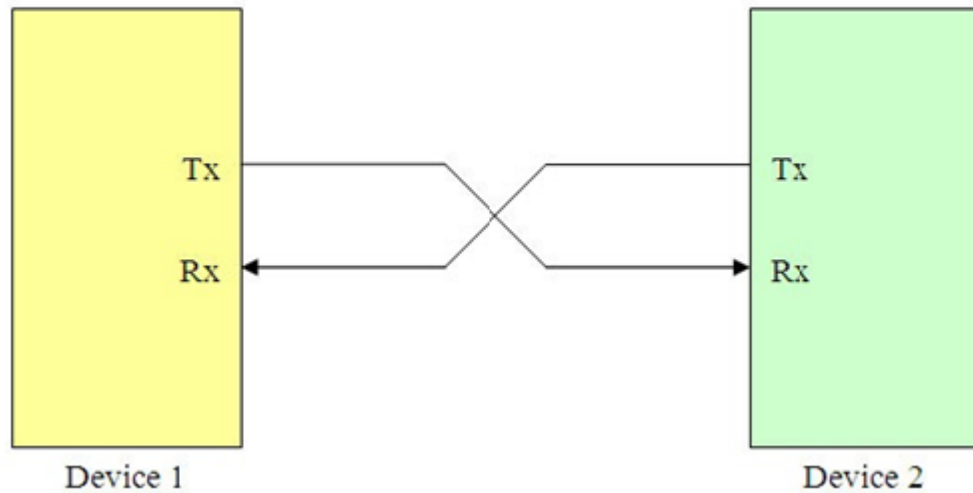
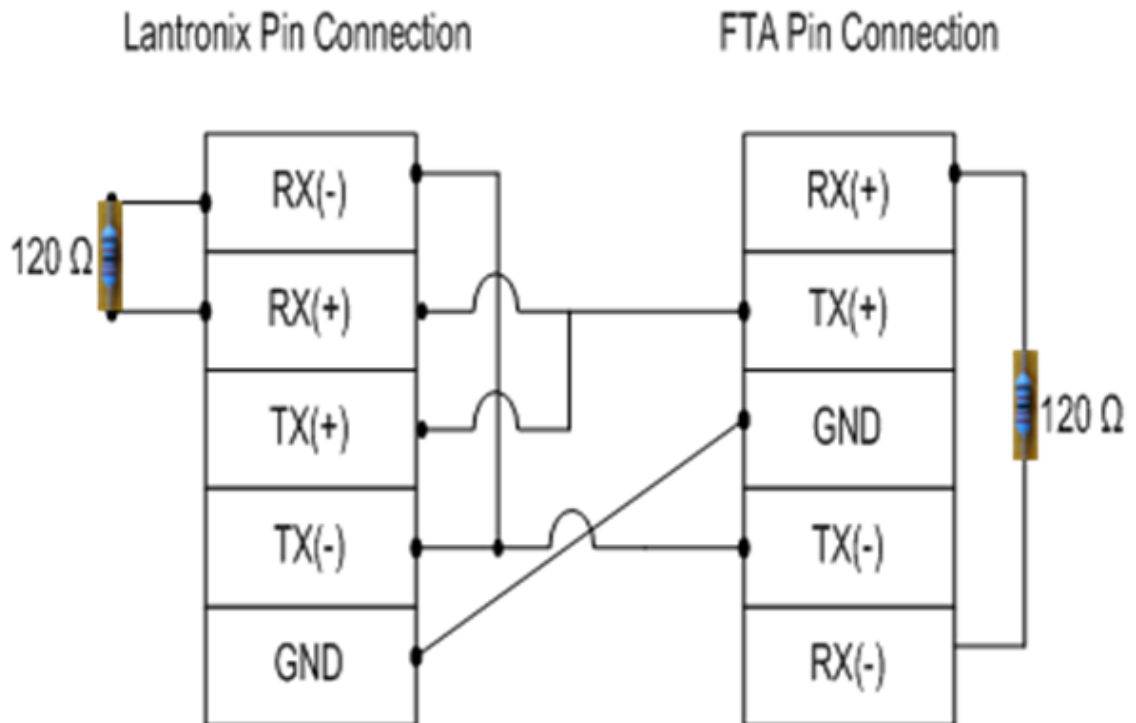


Figure 18: RS-232– Half Duplex

RS-485

The Modbus, HART, and SmartRadar FlexLine (ENRAF) interfaces supports RS-485. For RS-485, select the serial port on which the serial cable is connected as COM2.

Install the Lantronix DeviceInstaller software on the HART client machine using the documentation and media packaged with the device. For more information, refer to “Install and configure the Lantronix device” on page 128.



SI FTA Pin Connection

| | |
|---|-------|
| 1 | RX(+) |
| 2 | TX(+) |
| 3 | GND |
| 4 | TX(-) |
| 5 | RX(-) |

Figure 19: Serial pin out diagram — RS-485

Table 13: RS-485 pin connection

| Pin number | Signal Name |
|------------|-------------------|
| 1 | DATA ⁻ |
| 2 | DATA ⁺ |
| 3 | NC |
| 4 | NC |
| 5 | GND |
| 6 | NC |
| 7 | NC |
| 8 | NC |
| 9 | NC |

For R220, the RS-485 – Half Duplex is supported.

RS485- Half Duplex

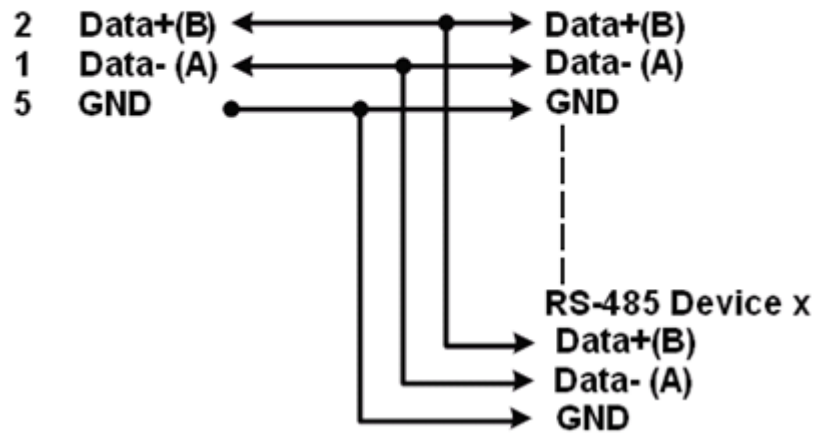


Figure 20: RS-485 – Half Duplex

7.2 Activating HART in OneWireless Network

The ISA100 Wireless field devices maintain a database of process configuration, identification, and diagnostic information in memory. WDM allows accessing this information from asset management systems, such as Field Device Manager (FDM), through a HART interface. This enables monitoring the ISA100 Wireless field devices like any other HART device. OneWireless Network uses serial communication interface to support data transmission between the asset management systems and the WDM.

It also uses Ethernet/UDP interface for data transmission. Ethernet/UDP communication allows users to tunnel serial communication to Ethernet. Serial communication can be tunneled to Ethernet by using a Lantronix device or serial-to-Ethernet/UDP driver on the asset management system.

7.2.1 Configure HART serial interface

Prerequisites

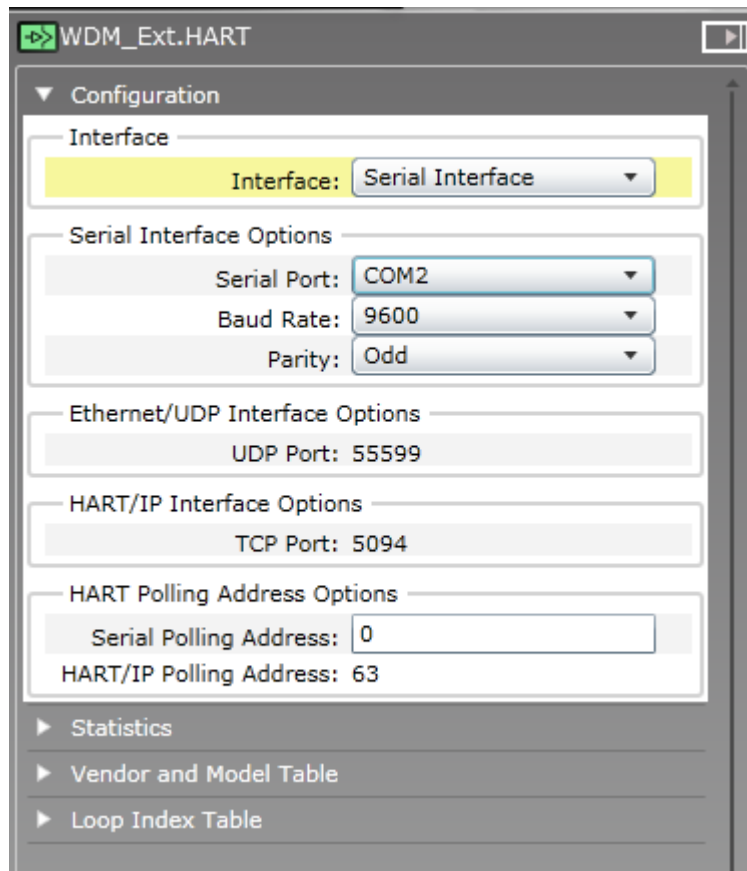
Ensure the following:

- The asset management system is connected to the process control network.
- The asset management system is connected to the WDM using a serial cable.

To access the field device data from the asset management system, you need to configure the HART interface from the OneWireless user interface.

To configure HART serial interface

- 1 On the Selection Panel, expand the WDM icon and select **HART**.
- 2 On the Property Panel, expand **Configuration** panel.
- 3 In the **Interface** list, click **Serial Interface**.



- 4 Configure the following under **Serial Interface Options**.
 - **Serial Port:** Select the serial port on which the serial cable is connected. For RS-232, select the serial port as COM1. For RS-485, select the serial port as COM2.
 - **Baud Rate:** Configure **9600** as the baud rate for HART serial interface.
 - **Parity:** Configure the parity as **Odd**.
- 5 In the **Serial Polling Address** box, type the required polling address value. This represents the polling address of the emulated HART MUX on the HART interface.
- 6 Click **Apply**.
- 7 Expand **Vendor and Model Table**.

The **Vendor and Model Table** is used to configure mapping between ISA100 Wireless vendor and model strings with HART manufacturer ID and device type bytes. This mapping is required for native ISA100 Wireless devices functioning as HART devices. The HART protocol uses a manufacturer ID byte and device type byte when identifying a device. This table is used to configure a lookup table that maps the ISA100 Wireless vendor and model strings with HART manufacturer ID and the device type bytes. The **Vendor and Model Table** contains the following columns.

 - **Vendor String:** The ISA100 Wireless vendor string of the native ISA100 Wireless device.
 - **Model String:** The ISA100 Wireless model string of the native ISA100 Wireless device.
 - **Manufacturer ID:** The HART manufacturer ID byte used to represent the native ISA100 Wireless device.
 - **Device Type:** The HART device type byte used to represent the native ISA100 Wireless device.

**Attention**

The **Vendor and Model Table** is pre-configured for Honeywell field devices. No configuration is required if your device vendor and model is pre-configured. Native HART devices connected using the OneWireless Adapter do not use the **Vendor and Model Table**.

7.2.2 Configure HART Ethernet/UDP interface

You can configure HART Ethernet/UDP interface by using a Lantronix device or a serial-to-Ethernet/UDP driver. Following are the high-level tasks to be performed for configuring the HART Ethernet/UDP interface using a Lantronix device.

- Install and configure the Lantronix device.
- Assign an IP address to the Lantronix device.
- Install the Standard Serial Tunnel firmware on the Lantronix device.
- Configure the Standard Serial Tunnel firmware settings on the Lantronix device.
- Activate HART Ethernet/UDP interface on the OneWireless user interface.

7.2.2.1 Install and configure the Lantronix device

Install the Lantronix DeviceInstaller software on the HART client machine using the documentation and media packaged with the device. After installing the DeviceInstaller software, perform the following tasks to configure it.

- Assign an IP address to the Lantronix device.
- Install Standard Serial Tunnel firmware on the Lantronix device.
- Configure the Standard Serial Tunnel firmware settings on the Lantronix device.

7.2.2.2 Assign IP address to the Lantronix device

Perform the following steps to assign or reassign an IP address to the Lantronix device.

To assign or reassign an IP address to the Lantronix device

- 1 From the **Start** menu, open **Lantronix DeviceInstaller**.
- 2 Click **Device > Assign IP Address**.
- 3 When prompted for device identification, enter the **MAC address** of the Lantronix device and click **Next**. The MAC address is located on a sticker on the side of the device.
- 4 When prompted for the assignment method, choose **Assign a specific IP address** to assign a static IP address to the Lantronix device and click **Next**.
- 5 Enter the **IP address**, **subnet mask**, and **default gateway** for the Lantronix device and click **Next**.
- 6 Click **Assign**.

The device now uses the new IP address and has network access.

7.2.2.3 Install Standard Serial Tunnel firmware on the Lantronix device

The Xpress-DR-IAP Device Server supports different protocols using different firmware images installed on the device. Perform the following procedure to install the Standard Serial Tunnel firmware on the device.

To install the Standard Serial Tunnel firmware on the Lantronix device

- 1 From the **Start** menu, open **Lantronix DeviceInstaller**.
- 2 In the **Lantronix Devices** tree on the left pane, select the Lantronix Xpress-DR-IAP device name.

- 3 Do one of the following:
 - On the menu bar, click **Device > Upgrade**.
 - Click the **Upgrade** icon on the toolbar.
- 4 To select the firmware files, click **Create a custom installation** option and click **Next**.
- 5 Browse and select the firmware file available for Standard Serial Tunnel protocol and click **Next**.
- 6 If there are no additional firmware files to install, select **No other files to install** option and click **Next**.
- 7 If you want to save this installation for a later use, select **Save Installation**.
- 8 To start firmware upgrade, click **Next**.

7.2.2.4 Configure Standard Serial Tunnel settings on the Lantronix device

Configure Standard Serial Tunnel firmware to enable it to properly tunnel HART messages from the RS-232 serial port to the Ethernet port of the WDM.

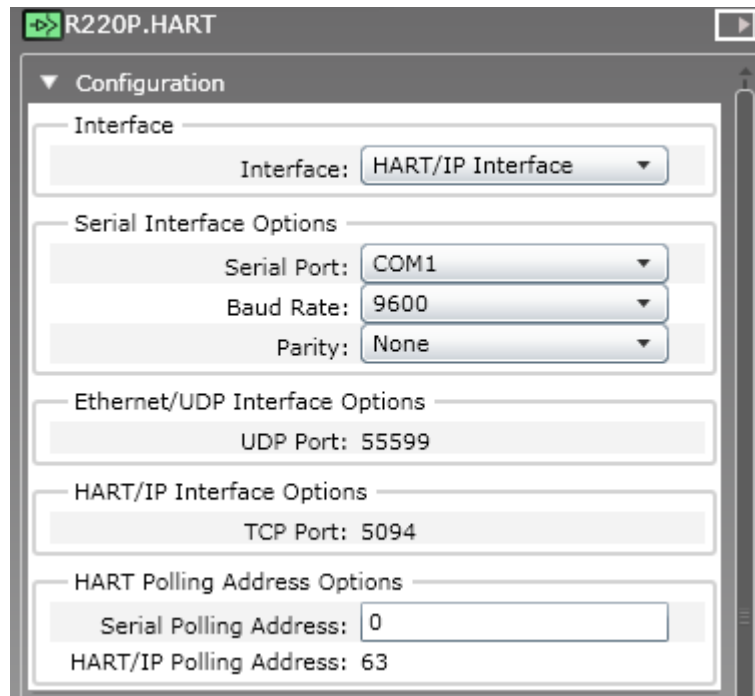
To configure Standard Serial Tunnel settings on the Lantronix device

- 1 From the **Start** menu, open **Lantronix DeviceInstaller**.
- 2 In the **Lantronix Devices** tree on the left pane, select the Lantronix Xpress-DR-IAP device name.
- 3 On the **Telnet Configuration** tab, click **Connect**.
- 4 When prompted, press **Enter** to go to the setup mode.
- 5 On the **Main** menu, press **1** on the keyboard to configure channel 1 and set the configuration parameters as follows:
 - Baud Rate = 9600
 - I/F Mode = 5C
 - Flow = 00
 - Port Number = 34568
 - Connect Mode = CC
 - Datagram Mode = 01
 - Remote IP Address = IP Address of the WDM
 - Remote Port = 55599
 - Packet Control = 00
 - Send Character 1 = 00
 - Send Character 2 = 00
- 6 Click **Save**.
- 7 Press **9** on the keyboard, to save and exit the **Lantronix** main menu.

7.2.3 Configure HART/IP interface

To configure HART serial interface

- 1 On the Selection Panel, expand the WDM icon and select **HART**.
- 2 On the Property Panel, expand **Configuration** panel.
- 3 In the **Interface** list, click **HART/IP Interface**.

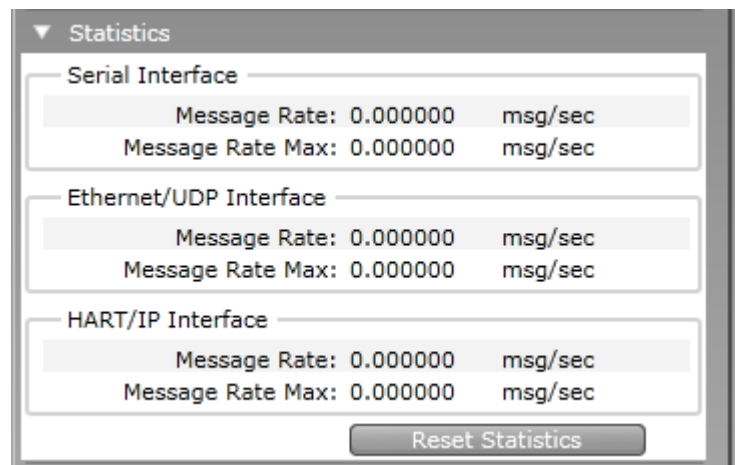


- 4 Configure the following under **Serial Interface Options**.
 - **Serial Port:** Select the serial port on which the serial cable is connected. For RS-232, select the serial port as COM1. For RS-485, select the serial port as COM2.
 - **Baud Rate:** Configure **9600** as the baud rate for HART serial interface.
 - **Parity:** Configure the parity as **Odd**.
- 5 In the **Serial Polling Address** box, type the required polling address value. This represents the polling address of the emulated HART MUX on the HART interface.
- 6 Click **Apply**.

7.2.4 Monitor performance of HART interface

To monitor performance of HART interface

- 1 On the Selection Panel, select the HART interface.
- 2 On the Property Panel, expand **Statistics**.



- 3 Verify the following attributes to monitor the performance of the HART interface.
 - **Message Rate:** Number of messages processed by the interface, per second.
 - **Message Rate Max:** Maximum number of messages processed by the interface, per second.
 - **Reset Statistics:** Resets all HART interface statistics.

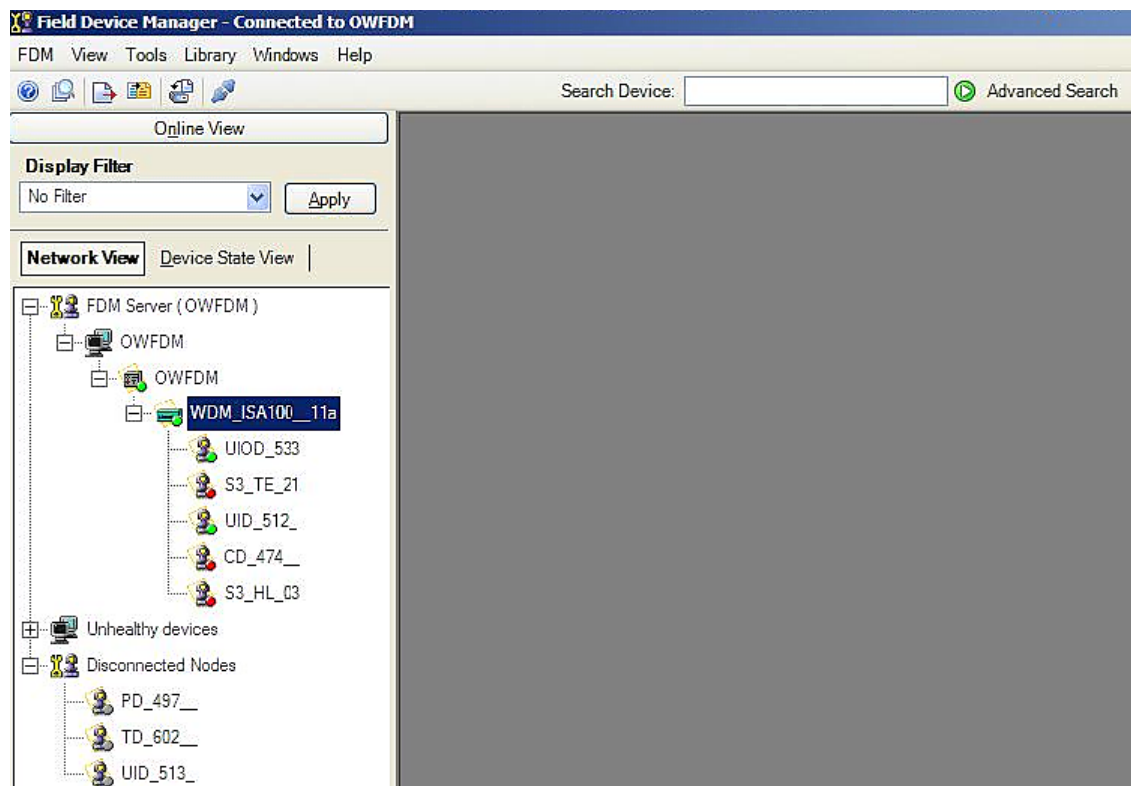
7.2.5 Monitor field devices from an asset management system

FDM supports ISA100 wireless device templates using ISA100 DD files. FDM communicates with ISA100 wireless devices using GCI interface. FDM communicates with OWA/HART devices using HART/IP interface.

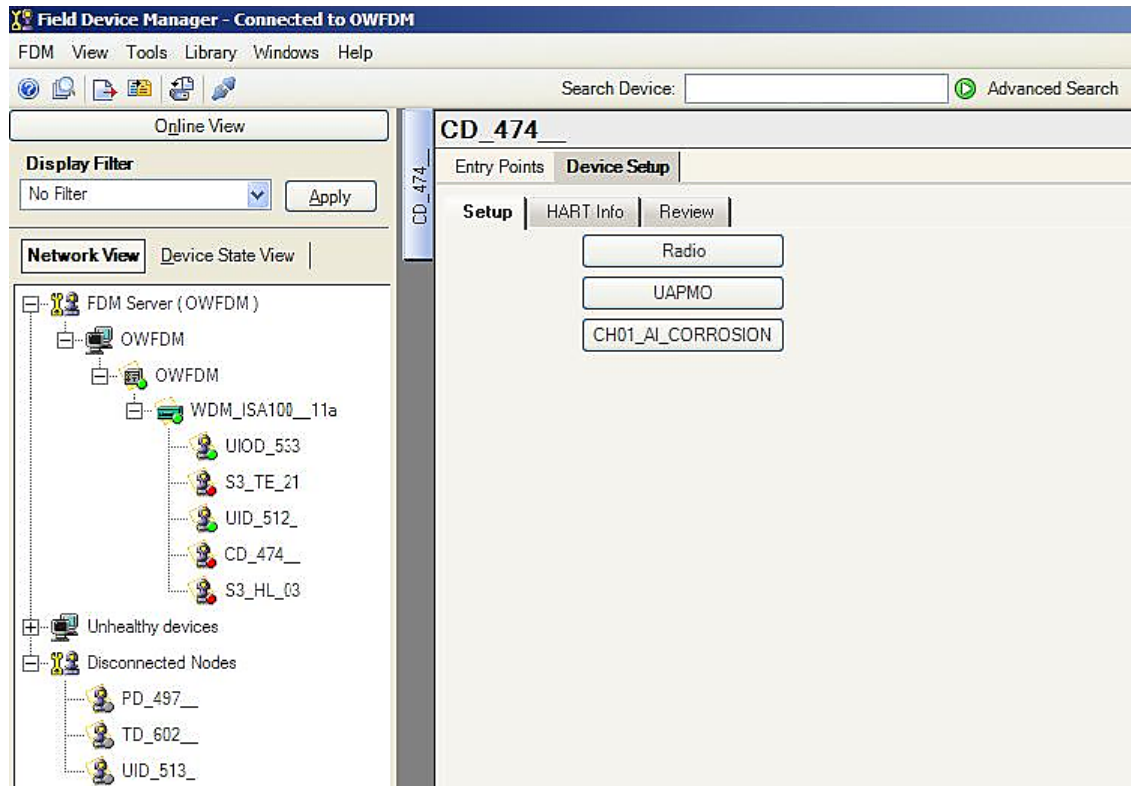
The following procedure describes the steps to access the field devices using FDM. The steps in this procedure provide only an overview of the tasks that you need to perform. For detailed information on the tasks that you need to perform using FDM, refer to the FDM user documentation.

To access the field devices using FDM

- 1 Log on to the FDM server and configure the following using **FDM Server Management Tool**.
 1. Configure RS-485 HART Multiplexer for enabling communication between HART client and the ISA100 Wireless field devices.
 2. Configure the **Network Interface Name** and **Remote Communication Interface Server Name**.
 3. Configure the following network specific parameters.
 - **COM Port:** COM port on the WDM to which the serial cable is connected.
 - **BAUD Rate:** 9600
 - **Start Poll Address and End Poll Address:** 0 to 127
- 2 Start the FDM server using the **FDM Server Management Tool**.
- 3 Log on to the FDM Client and scan for the field devices.
Once the FDM Client scans the devices, the WDM and the devices appear on the FDM Client as displayed in the following illustration.



- For accessing the field device parameters, add HART DD files for the field devices. After accessing the parameters, the HART Client displays the device details as follows.



7.3 Activating Modbus in OneWireless Network

Using any Modbus application, you can read any standard measurement or status of field devices. The WDM functions as the Modbus server and allow clients to access point data. The Modbus interface within the WDM supports Modbus TCP and Modbus RTU. Modbus interface supports coils, discrete inputs, holding registers, or input registers. It can associate only standard measurement and status of field device within the network with a coil, discrete input, holding register, or input register.

The coil and discrete input are used for digital input and output SIGNALS/VALUES. The holding register and input register are used for analog input SIGNALS/VALUES.

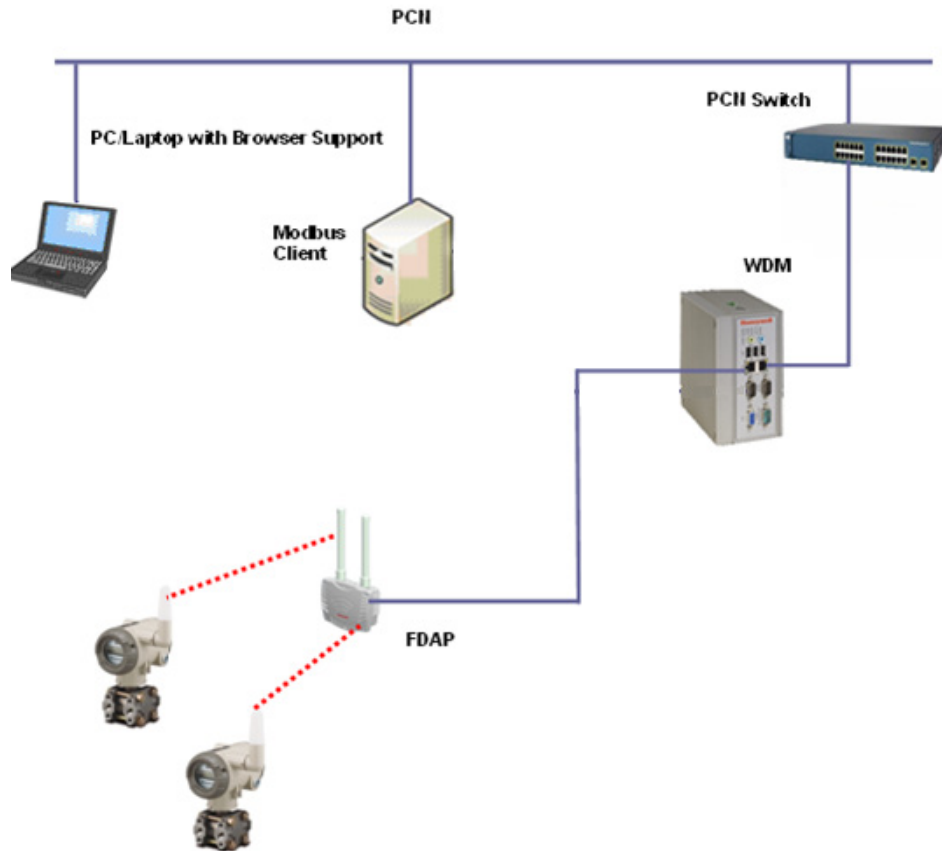


Figure 21: Modbus TCP communication

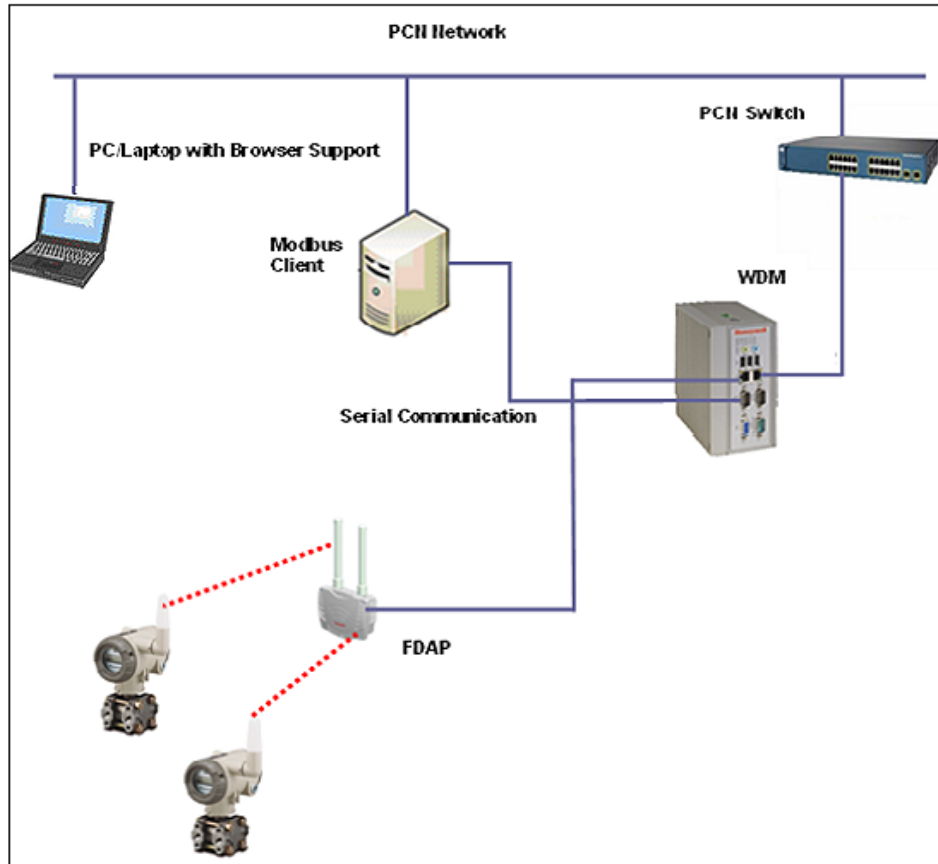


Figure 22: Modbus RTU communication

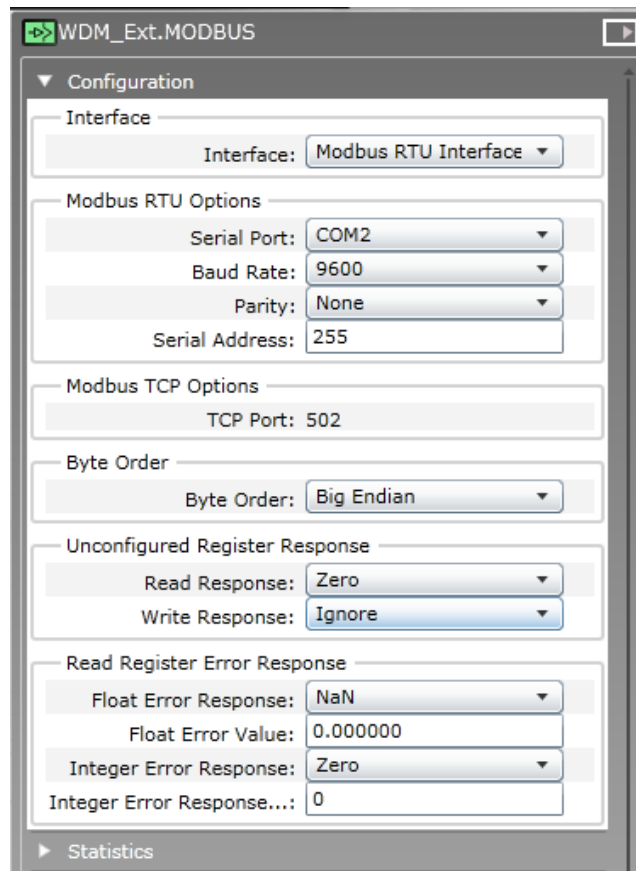
7.3.1 Enable Modbus in OneWireless Network

Prerequisites

- Ensure that you have installed the Modbus client.

To enable Modbus in OneWireless Network

- 1 On the Selection Panel, expand the WDM icon and select **Modbus**.
- 2 On the Property Panel, expand **Configuration**.



- 3 Under **Interface**, in the **Interface** list, click the required option.
The following are the interface options available.
 - **Modbus TCP Interface**
 - **Modbus RTU Interface**
- 4 Configure one of the following depending on the Modbus interface option that you have selected.
 - If you have selected **Modbus TCP Interface**, configure the following under **Modbus TCP Options**.
 - **TCP Port**: The TCP port number used for the configuring the Modbus TCP interface.
 - If you have selected **Modbus RTU Interface**, configure the following under **Modbus RTU Options**.
 - **Serial Port**: The serial port used for the Modbus RTU interface. The available options are COM1 and COM2. For RS-232, select the serial port as COM1. For RS-485, select the serial port as COM2.
 - **Baud Rate**: The baud rate used for the Modbus RTU serial port.
 - **Parity**: The parity used for the Modbus RTU serial port.
 - **Serial Address**: The serial address used for the Modbus RTU serial port. The serial address may be referred to as the unit ID in your MODBUS client.
- 5 Under **Byte Order**, in the **Byte Order** list, click the byte order for 32-bit holding register and input register values.
You should select a byte order that matches the expected byte order of the Modbus client. Options include **Big Endian**, **Big Endian Byte Swapped**, **Little Endian**, and **Little Endian Byte Swapped**.
- 6 Under **Unconfigured Register Response**, click **Read Response** and **Write Response**.
If you select the Read Response as “Zero,” for unmapped registers the Modbus client displays zero. If you select Read Response as “Illegal Exception,” then the server sends an exception response and returns no values.
- 7 Configure the following under **Read Register Error Response**.

- **Float Error Response**
- **Float Error Value**
- **Integer Error Response**
- **Integer Error Response Value**

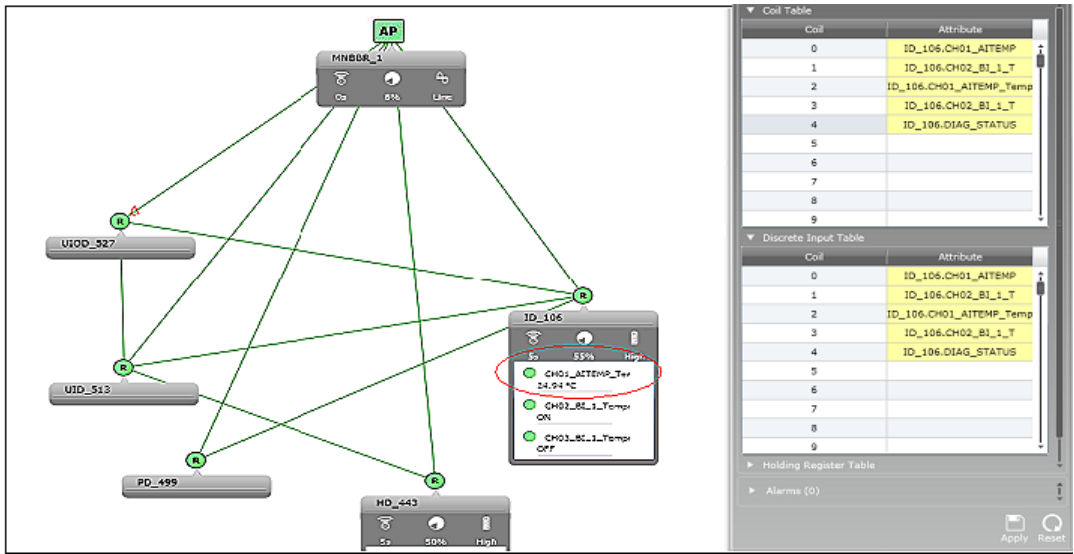
If you have selected the **Float Error Response** as **NAN** and if the floating PV is not available, then the client displays “NAN.”

If you have selected the **Float Error Response** as **Float Error value** and input any value in the **Float Error Value**, it displays the float error value in the client when the floating PV is not available in the client.

If you select the **Integer Error Response** as **Zero** and if the integer PV is not available, then the client displays “Zero.”

If you have selected the **Integer Error Response** as **Integer Error value** and input any value in **Integer Error Response Value**, it displays the integer error value in the client when the Integer PV is not available in the client.

- Using the **Coil Table**, **Discrete Input Table**, **Holding Register Table**, and **Input Register Table** panels, you can configure standard measurement like PV or status of field devices.
 - **Coil Table** and **Discrete Input Table**: These two registers are used to configure the input/output and the status of the Boolean modules as well as the status of the analog devices.
 - **Holding Register Table** and **Input Register Table**: These two registers are used to configure the input of the analog modules and Diag status of the device.



In the example illustration, ID_106.CH01_AITEMP_TemperatureDI_AIO_BL.PV.STATUS indicates that the coil register is configured to read the PV status.

For an Analog input module, you must configure the PV and PV Status as follows:

- PV - TAGNAME.CHANNELNAME.PV (For example, ID_106.CH01_AITEMP_TemperatureDI_AIO_BL.PV.VALUE)

After configuring PV in Modbus registers in the user interface, the PV data starts appearing in the Modbus client. The PV value for a device received at the client is in decimal or hexadecimal format and is displayed in two adjacent registers in the Modbus client.

- If the PV value received is in the hexadecimal format, you need to convert the data in to a float value to read the PV value as displayed in the user interface.
- If the PV value received is in the decimal format, you need to convert the data in to hexadecimal and then to a float value to read the PV value as displayed in the user interface.

- PV STATUS - TAGNAME.CHANNELNAME.PV_B.STATUS (For example, ID_106.CH01_AITEMP_TemperatureDI_AIO_BL.PV.STATUS)

Note the following while configuring a Boolean module.

- For a Boolean input module, you must configure the PV and PV Status as follows:
 - PV - TAGNAME.CHANNELNAME.PV_B (For example, ID_106.CH02_BI.PV_B)
 - PV STATUS - TAGNAME.CHANNELNAME.PV_B.STATUS (For example, ID_106.CH02_BI.PV_B.STATUS)
- For a Boolean output module, you must configure the PV and PV Status as follows:
 - PV - TAGNAME.CHANNELNAME.OP_B (For example, ID_106.CH02_BI.OP_B)
 - PV STATUS - TAGNAME.CHANNELNAME.OP_B.STATUS (For example, ID_106.CH02_BI.OP_B.STATUS)

Similarly, you can configure the device status as TAGNAME.DIAG_STATUS (For example, ID_106.DIAG_STATUS) for the field devices.

After configuring DIAG_STATUS in Modbus registers in the user interface, the DIAG_STATUS data starts appearing in the Modbus client. The DIAG_STATUS data received at the client is in decimal or hexadecimal format and is displayed in two adjacent registers in the Modbus client.

- If the data received is in the hexadecimal format, you need to convert the data in to binary format and then map each bit of the binary data to diag_status bits.
- If the data received is in the decimal format, you need to convert the data in to binary format and then map each bit of the binary data to diag_status bits.

Use the following table as a reference to map the binary data received in the Modbus client.

Table 14: DIAG_STATUS for all XYR 6000 field device types

| Diagnostic status detail | Bits | Diagnostic status detail | Bits |
|----------------------------------|-------|--------------------------|-------|
| FAILURE_STATUS | BIT31 | WCI_RESERVED_15 | BIT15 |
| FUNCTION_CHECK_STATUS | BIT30 | WCI_RESERVED_14 | BIT14 |
| OUT_OF_SPEC_STATUS | BIT29 | WCI_RESERVED_13 | BIT13 |
| MAINTENANCE_REQD | BIT28 | WCI_RESERVED_12 | BIT12 |
| FAULT_IN_ELECTRONICS | BIT27 | WCI_RESERVED_11 | BIT11 |
| FAULT_IN_SENSOR_ACTUATOR | BIT26 | WCI_RESERVED_10 | BIT10 |
| INSTALLATION_CALIBRATION_PROBLEM | BIT25 | WCI_RESERVED_9 | BIT9 |
| OUT_OF_SERVICE | BIT24 | WCI_RESERVED_8 | BIT8 |
| OUTSIDE_SENSOR_LIMITS | BIT23 | DATABASE_ERROR | BIT7 |
| ENVIRON_CONDITIONS_OUT_OF_SPEC | BIT22 | RADIO_IPC_ERROR | BIT6 |
| FAULT_PREDICTED | BIT21 | HEAP_ERROR | BIT5 |
| POWER_CRITICALLY_LOW | BIT20 | DEVICE_FIRMWARE_MISMATCH | BIT4 |
| POWER_LOW | BIT19 | WATCHDOG_ERROR | BIT3 |
| SOFTWARE_UPDATE_INCOMPLETE | BIT18 | OUTPUT_AT_FAILSAFE | BIT2 |
| SIMULATION_ACTIVE | BIT17 | FW_DOWNLOAD_ERROR | BIT1 |
| WCI_RESERVED_16 | BIT16 | DETAIL_INFO_AVAILABLE | BIT0 |

You can read device vendor parameters (DEVICE_TAG.DIAG_STATUS_DETAIL_1) from Modbus client. For example, configure UIOD_06_1FLR.DIAG_STATUS_DETAIL_1 under Holding Register.

Use the following table as a reference to interpret the data received in the Modbus client.

Table 15: DIAG_STATUS_DETAIL_1 for XYR 6000 temperature/Temp DI/Multi DI/HLAI devices

| Diagnostic status detail | Bits | Diagnostic status detail | Bits |
|--------------------------|---------|--------------------------|-------|
| DEV_ST_ELEC_FAIL | BIT0 | DEV_ST_NVM_FAULT | BIT18 |
| DEV_ST_INPUT_FAIL | BIT2 | DEV_ST_AD_FAULT | BIT19 |
| DEV_ST_LOW_BAT | BIT4 | DEV_ST_INPUT_FAIL1 | BIT21 |
| DEV_ST_STACK_ERR | BIT5 | DEV_ST_INPUT_FAIL2 | BIT22 |
| DEV_ST_CONF_ERR | BIT6 | DEV_ST_INPUT_FAIL3 | BIT23 |
| DEV_ST_CAL_ERR | BIT7 | DEV_ST_SUSP_IP1 | BIT24 |
| DEV_ST_RADIO_ERR | BIT8 | DEV_ST_SUSP_IP2 | BIT25 |
| DEV_ST_WDT_ERR | BIT11 | DEV_ST_SUSP_IP3 | BIT26 |
| DEV_ST_LOW_EXT_PWR | BIT12 | DEV_ST_CAL_ERR1 | BIT27 |
| DEV_ST_FAILSTATE | BIT13 | DEV_ST_CAL_ERR2 | BIT28 |
| DEV_ST_ROM_FAULT | BIT16ba | DEV_ST_CAL_ERR3 | |
| DEV_ST_RAM_FAULT | BIT17 | | |

Table 16: DIAG_STATUS_DETAIL_1 for XYR 6000 corrosion devices

| Diagnostic status detail | Bits | Diagnostic status detail | Bits |
|--------------------------|-------|--------------------------|-------|
| DEV_ST_ELEC_FAIL | BIT0 | DEV_ST_RAM_FAULT | BIT17 |
| DEV_ST_INPUT_FAIL | BIT2 | DEV_ST_NVM_FAULT | BIT18 |
| DEV_ST_LOW_BAT | BIT4 | DEV_ST_AD_FAULT | BIT19 |
| DEV_ST_STACK_ERR | BIT5 | DEV_ST_SHORT_PROBE | BIT20 |
| DEV_ST_CONF_ERR | BIT6 | DEV_ST_OPEN_PROBE | BIT21 |
| DEV_ST_CAL_ERR1 | BIT7 | DEV_ST_EXCESS_CAL | BIT24 |
| DEV_ST_RADIO_ERR | BIT8 | DEV_ST_HDM_NOT_PO | BIT25 |
| DEV_ST_HEAP_ERR | BIT9 | DEV_ST_ASM_RESPONSE | BIT26 |
| DEV_ST_IPC_ERR | BIT10 | DEV_ST_DAC_ERROR | BIT27 |
| DEV_ST_WDT_ERR | BIT11 | DEV_ST_CAL_CLEAR | BIT28 |
| DEV_ST_LOW_EXT_PWR | BIT12 | DEV_ST_CJ_FAULT | BIT31 |
| DEV_ST_ROM_FAULT | BIT16 | | |

Table 17: DIAG_STATUS_DETAIL_1 for XYR 6000 pressure devices

| Diagnostic status detail | Bits | Diagnostic status detail | Bits |
|--------------------------|------|--------------------------|-------|
| DEV_ST_ELEC_FAIL | BIT0 | DEV_ST_ROM_FAULT | BIT16 |
| DEV_ST_INPUT_FAIL | BIT2 | DEV_ST_RAM_FAULT | BIT17 |
| DEV_ST_LOW_BAT | BIT4 | DEV_ST_NVM_FAULT | BIT18 |
| DEV_ST_EXT_PWR | BIT5 | DEV_ST_AD_FAULT | BIT19 |
| DEV_ST_CONF_ERR | BIT6 | DEV_ST_CHAR_FAULT | BIT20 |
| DEV_ST_CAL_ERR | BIT7 | DEV_ST_MB_OVT | BIT24 |
| DEV_ST_RADIO_ERR | BIT8 | DEV_ST_MB_OVL | BIT25 |
| DEV_ST_HEAP_ERR | BIT9 | DEV_ST_EXCESS_ZERO | BIT26 |

| Diagnostic status detail | Bits | Diagnostic status detail | Bits |
|--------------------------|-------|--------------------------|-------|
| DEV_ST_IPC_ERR | BIT10 | DEV_ST_EXCESS_SPAN | BIT27 |
| DEV_ST_WDT_ERR | BIT11 | DEV_ST_EXCESS_CAL | BIT28 |
| DEV_ST_LOW_EXT_PWR | BIT12 | DEV_ST_CAL_CLEARED | BIT29 |
| DEV_ST_STACK_ERR | BIT15 | | |

Table 18: DIAG_STATUS_DETAIL_1 for XYR 6000 Multi AI DI/Multi AI DI DO devices

| Diagnostic status detail | Bits | Diagnostic status detail | Bits |
|--------------------------|-------|--------------------------|-------|
| DEV_ST_ELEC_FAIL | BIT0 | DEV_ST_RAM_FAULT | BIT17 |
| DEV_ST_INPUT_FAIL | BIT2 | DEV_ST_NVM_FAULT | BIT18 |
| DEV_ST_LOW_BAT | BIT4 | DEV_ST_AD_FAULT | BIT19 |
| DEV_ST_STACK_ERR | BIT5 | DEV_ST_INPUT_FAIL1 | BIT21 |
| DEV_ST_CONF_ERR | BIT6 | DEV_ST_INPUT_FAIL2 | BIT22 |
| DEV_ST_CAL_ERR | BIT7 | DEV_ST_INPUT_FAIL3 | BIT23 |
| DEV_ST_RADIO_ERR | BIT8 | DEV_ST_SUSP_IP1 | BIT24 |
| DEV_ST_HEAP_ERR | BIT9 | DEV_ST_SUSP_IP2 | BIT25 |
| DEV_ST_IPC_ERR | BIT10 | DEV_ST_SUSP_IP3 | BIT26 |
| DEV_ST_WDT_ERR | BIT11 | DEV_ST_CAL_ERR1 | BIT27 |
| DEV_ST_LOW_EXT_PWR | BIT12 | DEV_ST_CAL_ERR2 | BIT28 |
| DEV_ST_FAILSTATE | BIT13 | DEV_ST_CAL_ERR3 | BIT29 |
| DEV_ST_ROM_FAULT | BIT16 | DEV_ST_CJ_FAULT | BIT31 |

Table 19: DIAG_STATUS_DETAIL_1 for OWA devices

| Diagnostic status detail | Bits | Diagnostic status detail | Bits |
|--------------------------|-------|--------------------------|-------|
| DEV_ST_ELEC_FAIL | BIT0 | DEV_ST_FAILSTATE | BIT13 |
| DEV_ST_INPUT_FAIL | BIT2 | DEV_ST_ROM_FAULT | BIT16 |
| DEV_ST_LOW_VOLT | BIT3 | DEV_ST_RAM_FAULT | BIT17 |
| DEV_ST_LOW_BAT | BIT4 | DEV_ST_NVM_FAULT | BIT18 |
| DEV_ST_STACK_ERR | BIT5 | DEV_ST_AD_FAULT | BIT19 |
| DEV_ST_CONF_ERR | BIT6 | HART_LOOP_ERROR | BIT20 |
| DEV_ST_CAL_ERR | BIT7 | NO_HART_DEV | BIT21 |
| DEV_ST_RADIO_ERR | BIT8 | HART_DEV_MAINT_REQ | BIT22 |
| DEV_ST_HEAP_ERR | BIT9 | HART_DEV_VAR_ALERT | BIT23 |
| DEV_ST_DEV_FW_ERR | BIT10 | HART_DEV_BURST_MODE | BIT24 |
| DEV_ST_WDT_ERR | BIT11 | DEV_ST_CAL_ERR1 | BIT27 |
| DEV_ST_LOW_EXT_PWR | BIT12 | | |

- 9 Expand **Statistics** panel, to monitor the performance of the Modbus interface. Following are parameters available in the **Statistics** panel.
- Under **Modbus RTU Interface** and **Modbus TCP Interface**
 - **Message Count:** Total number of messages processed by the interface. The count should increase with every message sent by a Modbus client. If the count is not incrementing, it indicates that the Modbus interface on the WDM is not receiving messages from the client.

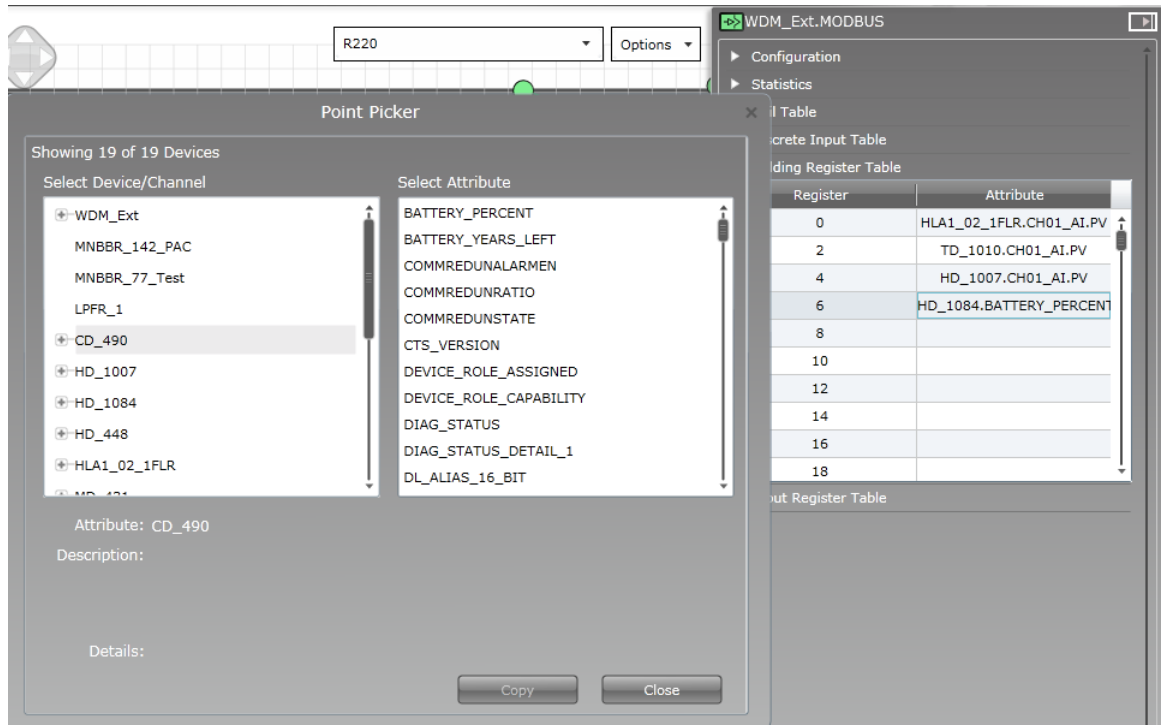
- **Message Rate:** Number of messages processed by the interface per second.
- **Message Rate Max:** Maximum number of messages processed by the interface per second.
- **CRC Error Count:** Total number of CRC errors recorded by the Modbus RTU interface. The count should increase if any CRC errors are detected when receiving a message sent by the Modbus RTU client.
- **CRC Error Rate:** Number of CRC errors recorded by the Modbus RTU interface per second.
- **CRC Error Rate Max:** Maximum number of CRC errors recorded by the Modbus RTU interface per second.
- Under **Coils, Discrete Inputs, Holding Registers, Input Registers, and Exceptions,**
 - **Read:** Total number of read messages processed by the interface.
 - **Write:** Total number of write messages processed by the interface.
 - **Exception:** Total number of exceptions, such as invalid request messages.
 - **Timeout:** Total number of timeouts.

7.3.2 Configure the parameters in the Modbus tables

Point Picker enables you to browse parameters on all devices and then configure the parameters in the Modbus tables. You can drag and drop the information into the appropriate table. You can drag from the actual text next to the **Attribute** label, or dragged from the list of **Select Attribute**. You can drag and drop parameter into the Modbus coil or register configuration or copy and paste the parameter into the Modbus coil or register configuration.

To configure the parameters in the Modbus tables

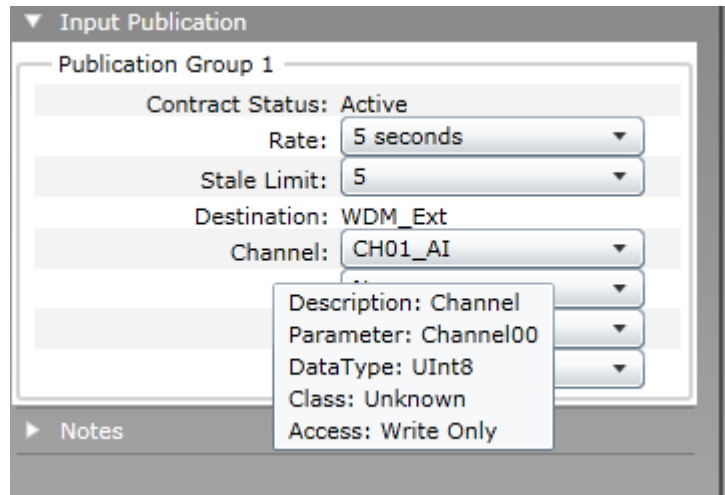
- 1 On the ribbon bar, in the **Maintenance** group, click **Point Picker**.
The **Point Picker** dialog box appears.
- 2 From the **Select Device/Channel** list, select the required Device or Channel.
Under **Select Attribute** list, the corresponding attributes appears.
- 3 From the **Select Attribute** list, select the required attribute.
- 4 Click **Copy**.
- 5 On the Selection Panel, expand the WDM icon and select **Modbus**.
- 6 In the Coil Table, Discrete Input Table, Holding Register Table, or Input Register Table, drag and drop the parameter in to the **Attribute** column or select the **Attribute** column, and then press Control V (Ctrl +V).



- Attention**
The entire set of attributes can be pasted from Excel. Also, you can copy and paste it to Excel. This helps you to save all the attributes in the Excel sheet.

7 Click **Apply**.

- Attention**
In the Property Panel, hover the mouse over a parameter, then a tooltip appears with the details about the attribute. Also, this information is displayed in the Point Picker when an attribute is selected.



7.4 Activating OPC in OneWireless Network

WDM hosts an OPC Unified Architecture (UA) server, which provides open system communication to ISA100 Wireless data (current, historical and alarm/event data). OPC UA provides a Service Oriented Architecture (SOA) for industrial applications.

For the OPC based applications that only support DCOM/COM based OPC (DA), WDM offers an OPC Proxy. OPC Proxy when installed on the client machine enables communication between a DCOM/COM-based OPC client and the WDM.

Several OPC clients are used to connect to the WDM which hosts an OPC server. Honeywell uses Unified AutomationUAExpert as the sample client for configuring OPC UA and OPC Validator as the sample client for configuring OPC DA. The procedures to configure an OPC client (for OPC UA and OPC DA) in this document are based on Unified Automation UAExpert and OPC Validator.

7.4.1 Enable OPC interface

To enable OPC interface

- 1 On the Selection Panel, expand the WDM icon and select **OPC**.
- 2 On the Property Panel, expand **Configuration** panel.
- 3 In the Interface list, click **Enabled**.
- 4 Click **Apply**.

7.4.2 Configure OPC UA client system

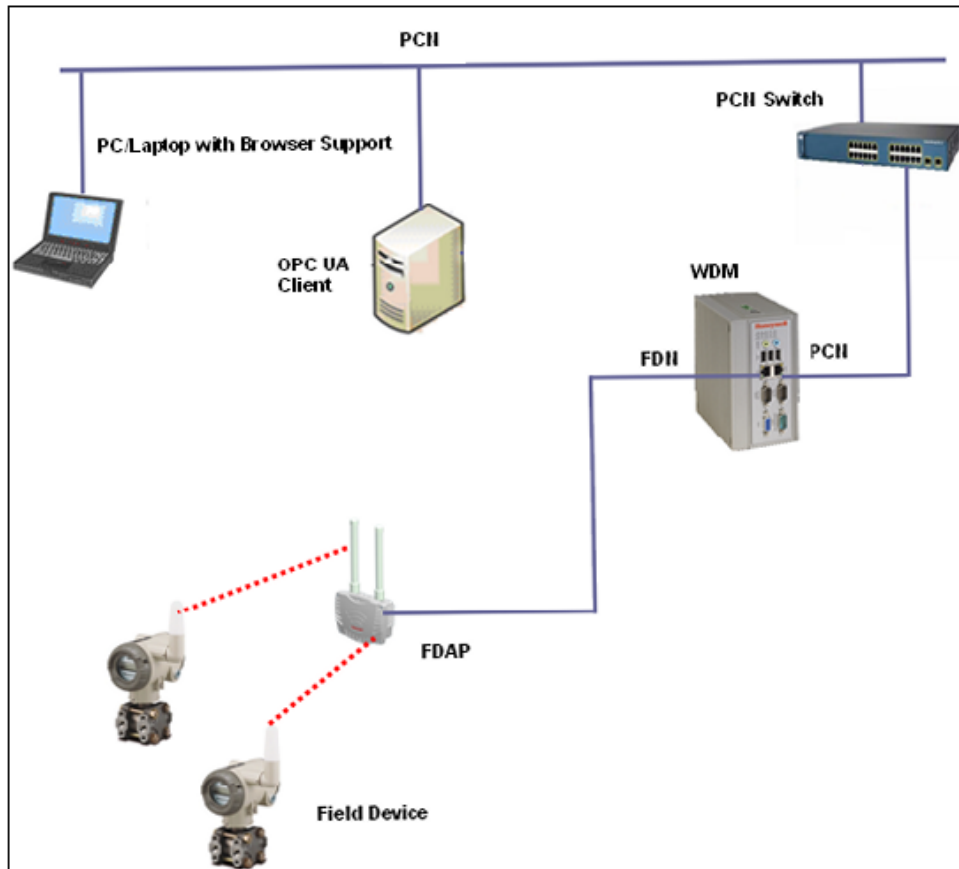


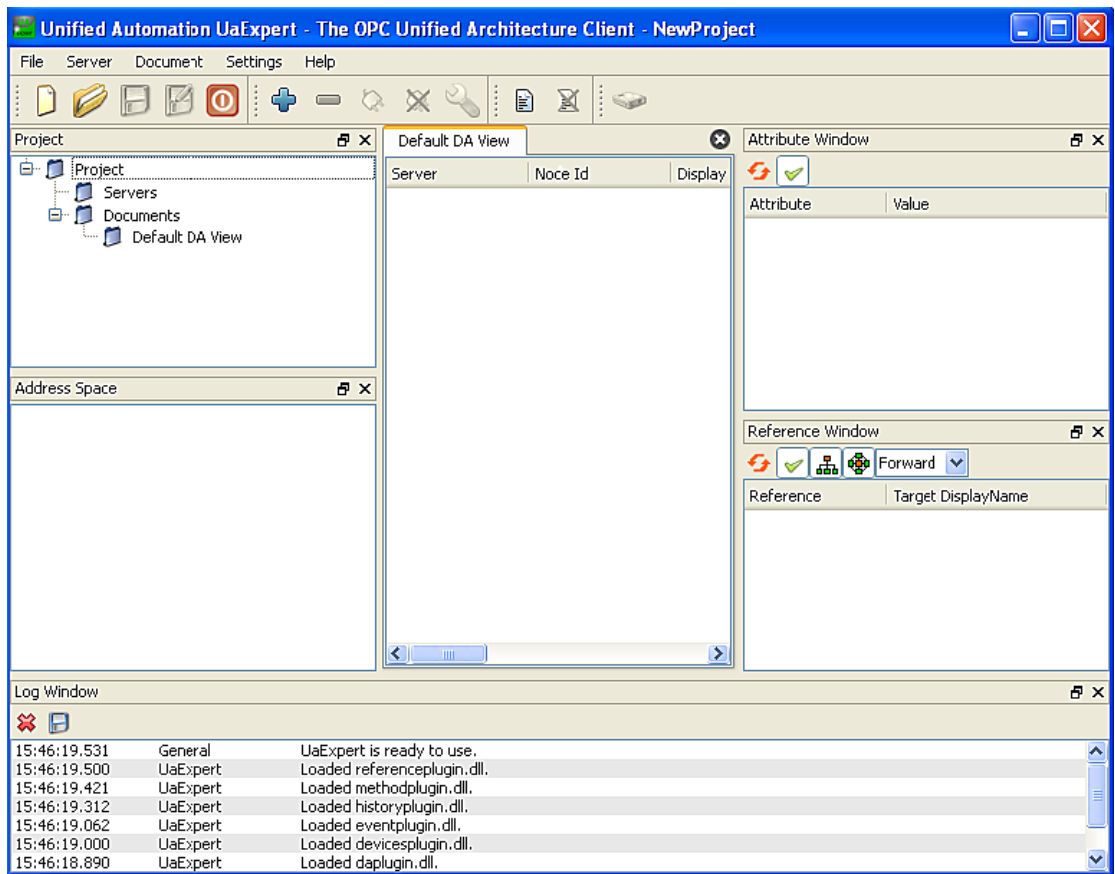
Figure 23: OPC Interface

Prerequisites

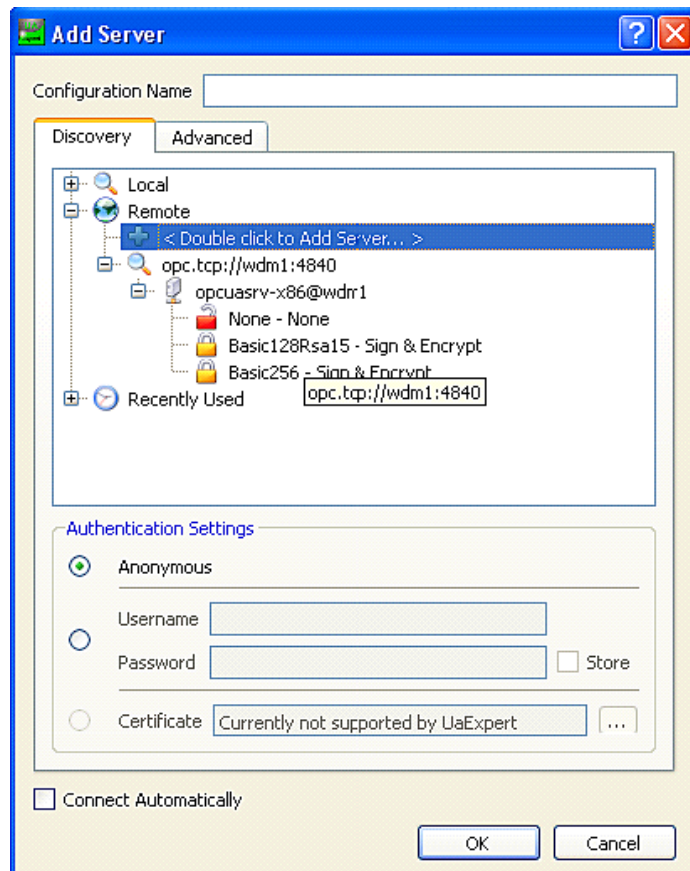
- Install Microsoft .NET Framework 3.5 SP1 and OPC UAExpert Client in the client system.

To configure OPC UA client system

- 1 On the desktop of the client system, double-click **Unified Automation UAExpert** icon. The **Unified Automation UAExpert** window appears.



- 2 On the **Server** menu, click **Add** to add the OPC server to be connected to the client.
The **Add Server** dialog box appears.
- 3 Type the **Configuration Name**.



- 4 Click the **Discovery** tab to view all the available servers. There is only one OPC UA server available for a WDM, and its port number is 4840.
- 5 Click the **Advanced** tab and then type the IP address of the WDM and the port number in the Endpoint url field.
The OPC server IP address with port number is `opc.tcp://WDM IP address:4840`. For example, if the WDM IP address is 192.168.1.1, then type, `opc.tcp://192.168.1.1:4840`.
- 6 Under **Security Settings**, ensure that **Security Policy** and **Message Security Mode** are selected as **None**.
There is only one OPC UA server available for a WDM, but with multiple security modes. Multiple levels of security are allowed in configuring the OPC UA connection to the server.
- 7 Under **Authentication Settings**, click **Anonymous**.
- 8 Select **Connect Automatically** check box.

Add Server

Configuration Name: R200_OWserver

Discovery | **Advanced**

Server Information

Endpoint Url: opc.tcp://192.168.0.1:4040

Security Settings

Security Policy: None

Message Security Mode: None

Authentication Settings

Anonymous

Username: _____

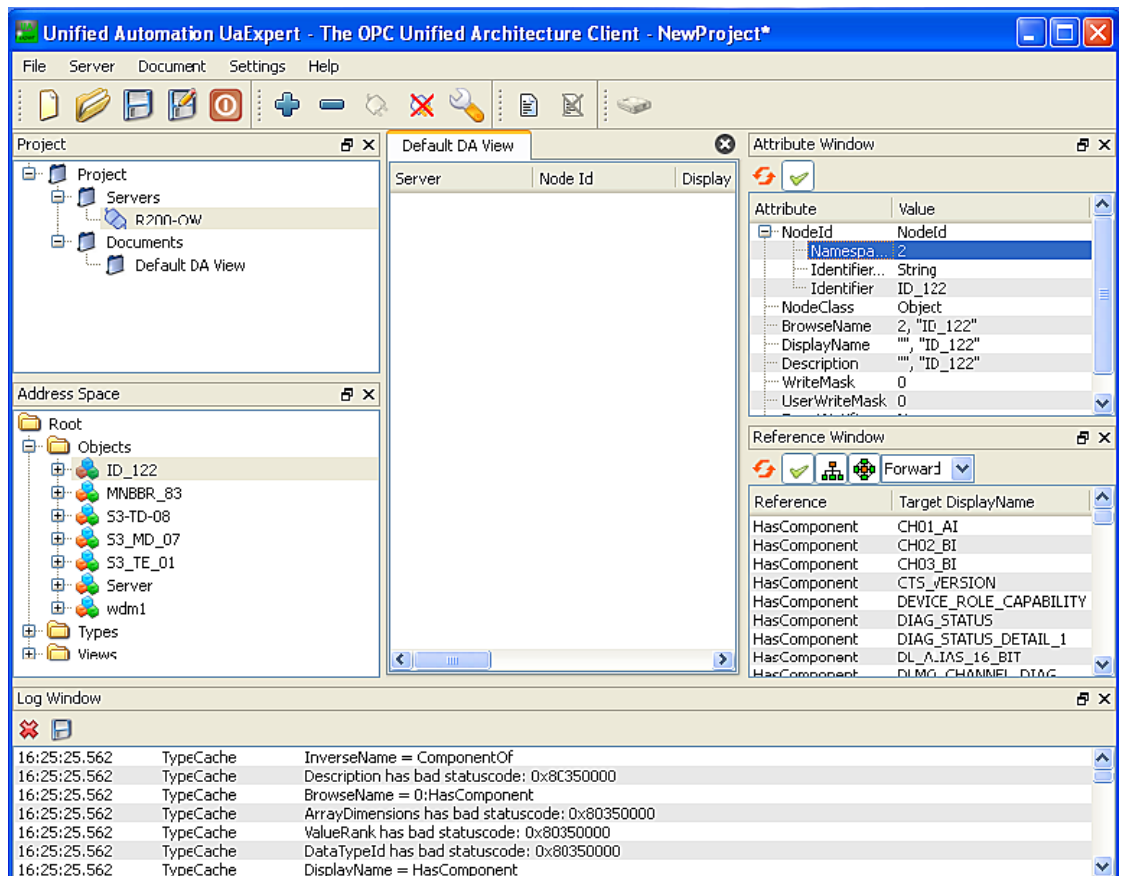
Password: _____ Store

Certificate: Currently not supported by UaExpert ...

Connect Automatically

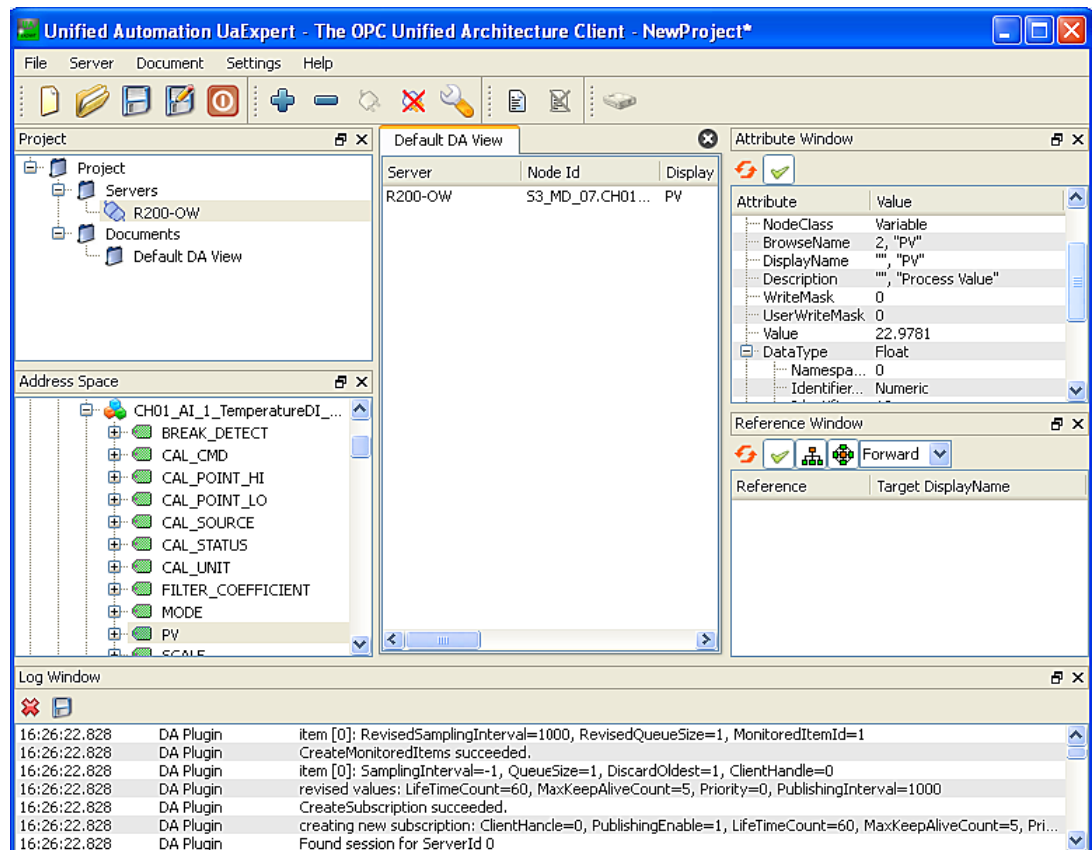
OK Cancel

- 9 Click **OK** and the server automatically connects.
The OPC server appears as connected under **Projects > Servers**.
- 10 Under **Projects**, expand **Project > Server** and select the added server.



- 11 To monitor the PV value of any field device,
1. In the **Address Space** pane, under **Root** expand **Objects** > **Transmitter** > **Transmitter Channel**.
 2. Click **PV**.

The selected PV attributes appear in the **Attribute Window** pane.



- 12 Drag any parameter from the **Address Space** pane to the **Default DA View** to increase the load of the network.

The OPC **Statistics** pane in the OneWireless user interface displays the following information about the loaded parameters.

- **Subscription Rate:** Current rate of OPC subscriptions/attributes/data points that the WDM provides every second. This must be less than or equal to 500 attributes per second.
- **Subscription Rate Max:** Maximum rate of OPC subscriptions/attributes/data points that the WDM provides in a second since OPC statistics reset due to WDM reboot. This can have a higher value because while launching the OPC client, the data rate might increase considerably.

7.4.3 Configure OPC DA client system

You can setup OPC proxies on a client machine so that an OPC DA client (a non-UA client) can connect to the OPC UA server on the WDM. The proxy files are available on the WDM.

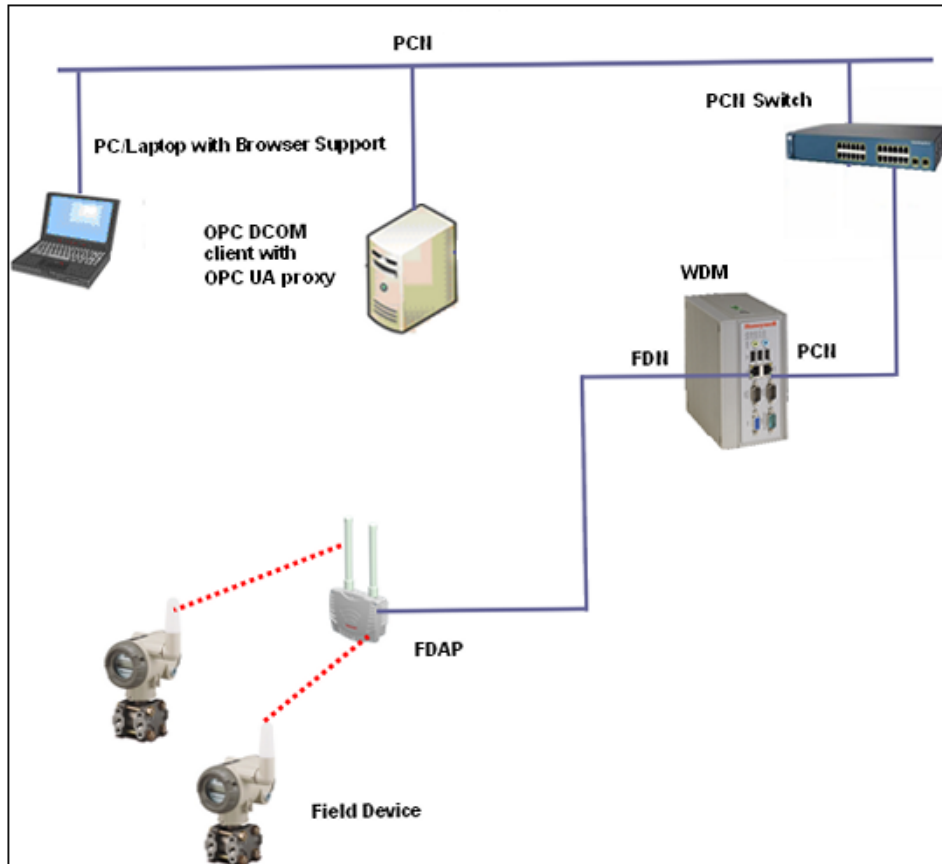


Figure 24: OPC client with OPC DA

Prerequisites

- Connect the OPC DA client system to a switch or to a system connected to the PCN
- Install the OPC Validator Client in the client system.

Install OPC proxies

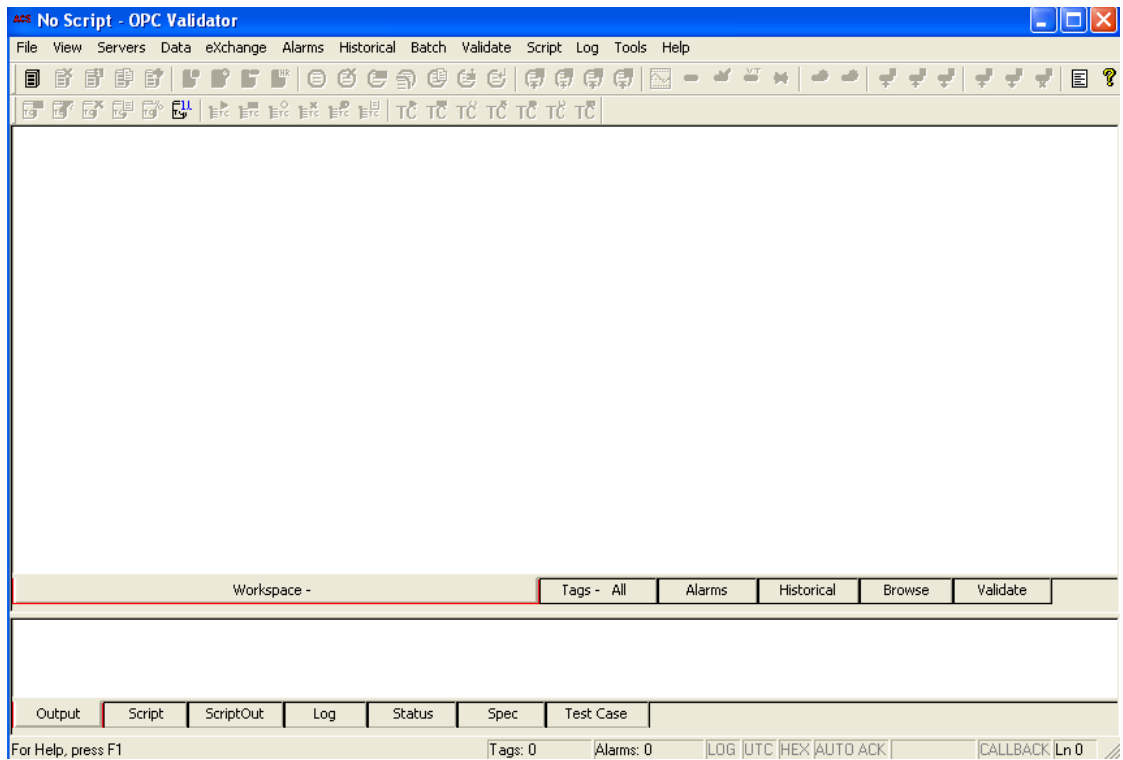
- 1 On the ribbon bar, in the **System** group, click **Software**.
The **Support Software** dialog box appears.
- 2 From the **Select Software** list, select the **OPC UA Proxy** software.
- 3 Click **Save To** to save the software to the computer.
A confirmation message *Do you want to save the OpcProxySetup?* appears.
- 4 Click **OK**.
The **Save As** dialog box appears.
- 5 Browse to a location on the hard drive to save the OPC UA Proxy software.
 - By default, the file name appears as *OpcProxySetup*, if you want to change the file name, then type the **File name**.
- 6 Click **Save**.
- 7 Double-click **OPC UA Proxy.exe**.
- 8 If a security warning appears, confirm or allow the security exception to proceed.
- 9 Click **Run**.
The **InstallShield** wizard appears.



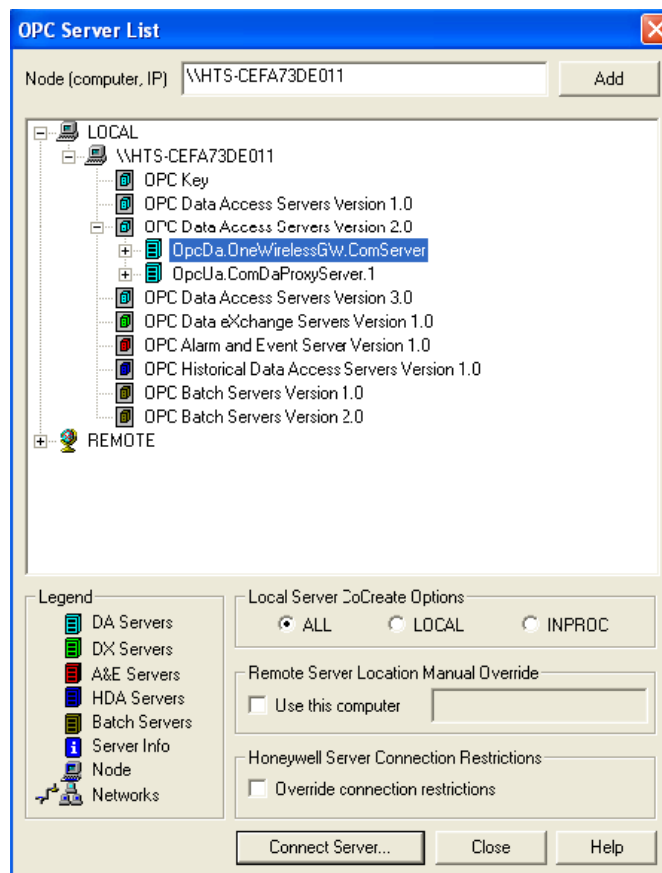
- 10 Click **Next** to proceed with the installation.
The **License Agreement** page appears.
- 11 Click **I accept the terms in the license agreement** and click **Next**.
The **Customer Information** page appears.
- 12 Enter the **User Name** and **Organization** and click **Next**.
The **Setup Type** page appears.
- 13 Click **Complete** and then click **Next**.
The **Ready to Install the Program** page appears.
- 14 Click **Install** and click **Next** to proceed with the installation.
The **OPC Gateway Server Host IP Address** page appears.
- 15 Type the **OPC Gateway Server Host IP Address** (WDM's IP Address) and click **Next**.
The **OPC Gateway Server tcp Port** page appears.
- 16 Type the **TCP Port Value** as 4840 and then click **Next**.
The **InstallShield Wizard Completed** page appears.
- 17 Click **Finish** to load the OPC proxies.

Access WDM using OPC DA

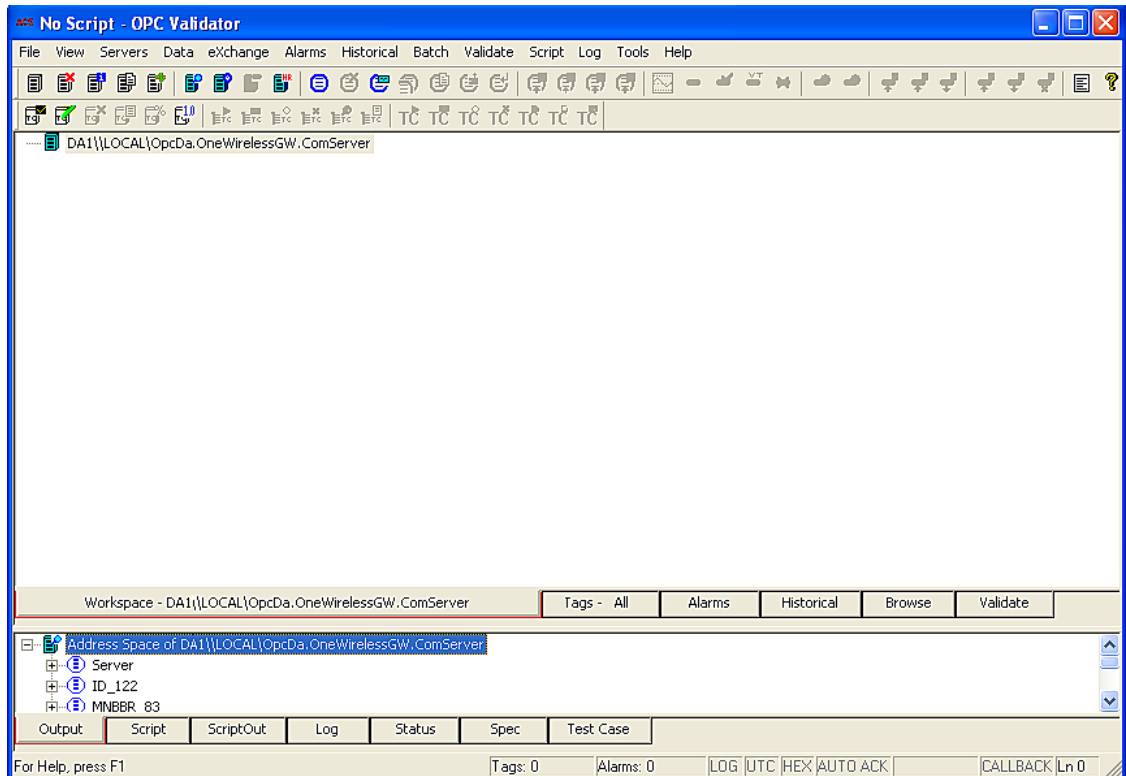
- 1 On the desktop of the client system, double-click **OPC Validator** icon.
The **OPC Validator** window appears.



- 2 Choose **Servers > Connect to Server (Listing)**.
The **OPC Server List** dialog box appears.

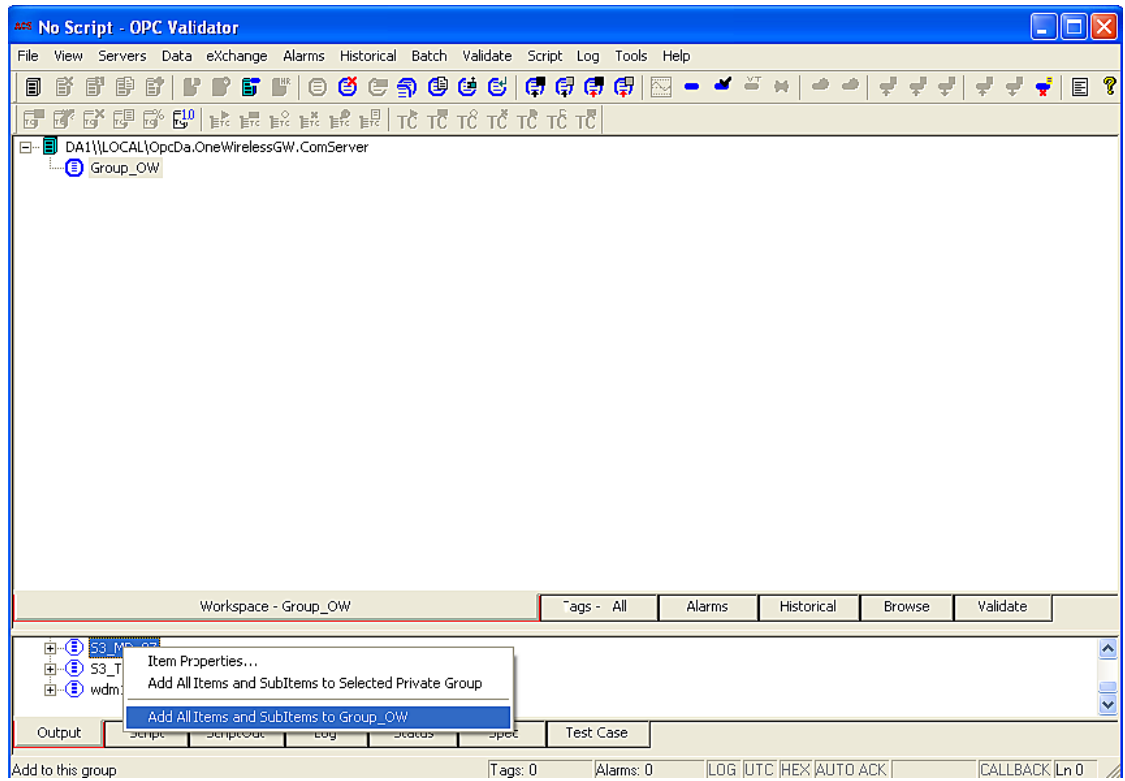


- 3 Double-click **OPC DataAccess Servers Version 2.0** and select **OpcDa.OneWirelessGW.ComServer** from the list, and then click **Connect Server...**
- 4 Once the server is connected, click **Close**.
The **OPC Server List** dialog box closes.
- 5 In the **OPC Validator** window, select **OpcDa.OneWirelessGW.ComServer**.
- 6 Click **Data > Browse Server Address Space**, and then click **Browse Server Address Space All**.
The **Address Space** appears on the lower pane.



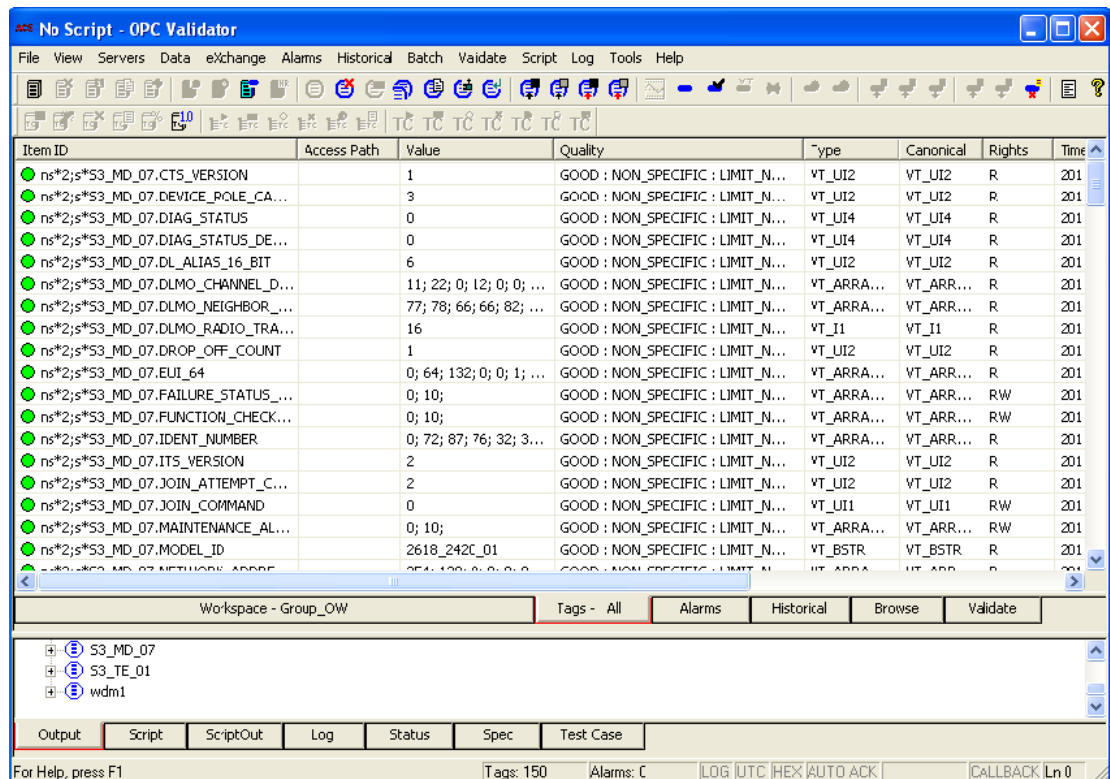
- 7 In the upper pane, right-click **OpcDa.OneWirelessGW.ComServer**, and then click **Add Private Group**.
The **Add Private Group** dialog box appears.

- 8 Type the **Group Name**, and then click **OK**.
- 9 From the lower pane of the **OPC Validator** window, select the OneWireless Network, and then a device.
- 10 To add all the parameters of a device, right-click the device and click **Add All Items and SubItems to Group_OW**.



To add individual parameters for a device, expand the device, right-click the parameter, and then click **Add Item to Group_OW**.

- 11 In the upper pane, expand **Group_OW** to view the items in your group.
- 12 Click **Tags – All** to view all the tags.
- 13 Navigate to the desired value. Identify the OPC item that represents the desired value.



Perform the following steps to edit parameters from OPC DA client. Note that you can only edit the parameters whose access rights are displayed as RW in the **Rights** column of the OPC Validator.

- In the OPC DA client, click the **Tags — All** tab.
- Right-click the parameter that you have added, and then click **Async> Write Item**.

The **Write Async Item Value** dialog box appears.

- In the **Raw** field, type the required value.

You can only edit the mode for all the device types and the output value of the Multi AI DI DO devices.

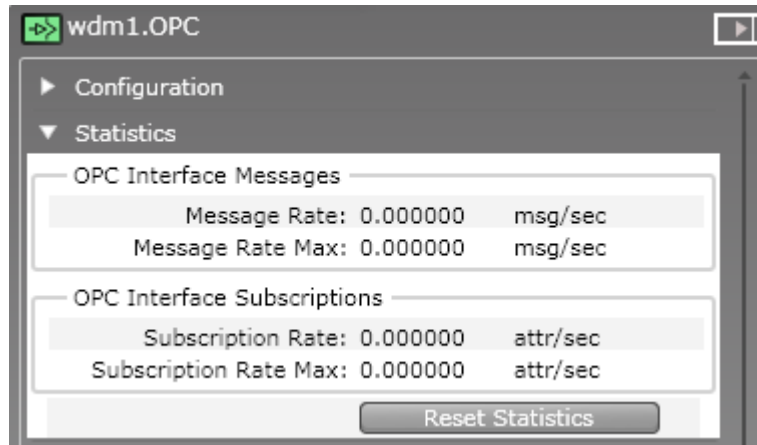
- Click **OK**.

7.4.4 Monitor OPC interface statistics

To monitor OPC interface statistics

- 1 On the Selection Panel, expand the WDM icon and select **OPC**.
- 2 On the Property Panel, expand **Statistics**.

You can view the OPC interface messages totals and OPC interface message rates.



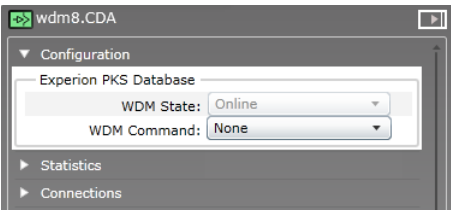
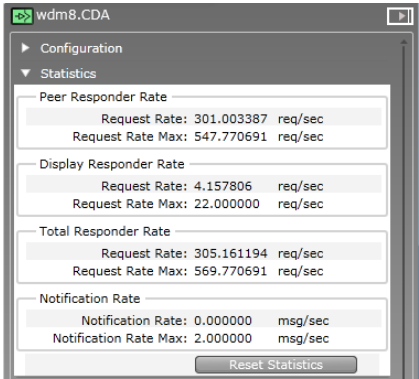
3 Click **Reset Statistics** to reset all the OPC interface statistics.

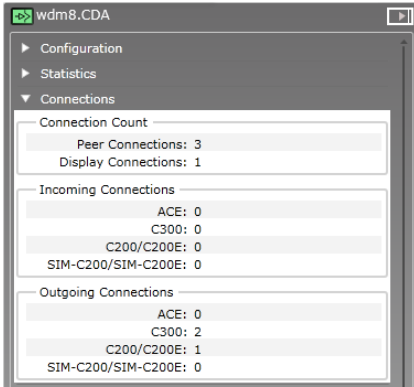
7.5 About integrating OneWireless Network with Experion using the CDA interface

OneWireless Network can be integrated with Experion PKS system using the CDA interface available on the WDM. To establish communication between the Experion system and the OneWireless Network, you must connect the WDM to the Experion network. For more information about connecting WDM with the Experion system, refer to the section “Establishing communication between OneWireless Network and Experion system” on page 24.

After connecting the WDM to the Experion network, you need to configure the OneWireless Network components such as WDM and field devices using the Control Builder. For more information about configuring the OneWireless Network components using Control Builder, refer to the *Experion PKS OneWireless Integration User's Guide*.

After the communication between the Experion system and the OneWireless Network is established, the CDA parameters on the OneWireless user interface provides you information about the WDM state, CDA statistics, and the peer connections of the WDM. Following are the CDA parameters that are available on the user interface.

| Selection Panel element | Parameters and their description |
|--|--|
| <p>Configuration</p>  | <ul style="list-style-type: none"> • WDM State parameter indicates the WDM state in an Experion system. This parameter displays the state as Online, when the WDM is loaded in an Experion system. • WDM Command parameter on the CDA interface consists of the following commands. <ul style="list-style-type: none"> – None – Clear CDA Database: This command is used to clear the CDA interface database from a running WDM. You must clear the CDA interface database when moving the WDM from one Experion PKS system to another. If you do not clear the CDA interface database, you may get an "invalid EEC" error when attempting to load the WDM on a different Experion PKS system. |
| <p>Statistics</p>  | <p>Displays the CDA statistics used for maintenance and performance monitoring of the WDM. For the specifications for peer responder rate and display responder rate, refer to the Technical Specifications document available at the Honeywell Process Solutions website.</p> |

| Selection Panel element | Parameters and their description | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------------------------------|--|-------------------|---|----------------------|---|----------------------|--|------|---|-------|---|-------------|---|---------------------|---|----------------------|--|------|---|-------|---|-------------|---|---------------------|---|--|
| <p>Connections</p>  <p>The screenshot shows a software interface for 'wdm8.CDA'. It has a sidebar with 'Configuration', 'Statistics', and 'Connections'. The 'Connections' section is expanded, showing three sub-sections: 'Connection Count', 'Incoming Connections', and 'Outgoing Connections'. Each sub-section contains a table of connection counts for different categories.</p> <table border="1" data-bbox="349 367 722 640"> <thead> <tr> <th colspan="2">Connection Count</th> </tr> </thead> <tbody> <tr> <td>Peer Connections:</td> <td>3</td> </tr> <tr> <td>Display Connections:</td> <td>1</td> </tr> </tbody> </table> <table border="1" data-bbox="349 441 722 535"> <thead> <tr> <th colspan="2">Incoming Connections</th> </tr> </thead> <tbody> <tr> <td>ACE:</td> <td>0</td> </tr> <tr> <td>C300:</td> <td>0</td> </tr> <tr> <td>C200/C200E:</td> <td>0</td> </tr> <tr> <td>SIM-C200/SIM-C200E:</td> <td>0</td> </tr> </tbody> </table> <table border="1" data-bbox="349 546 722 640"> <thead> <tr> <th colspan="2">Outgoing Connections</th> </tr> </thead> <tbody> <tr> <td>ACE:</td> <td>0</td> </tr> <tr> <td>C300:</td> <td>2</td> </tr> <tr> <td>C200/C200E:</td> <td>1</td> </tr> <tr> <td>SIM-C200/SIM-C200E:</td> <td>0</td> </tr> </tbody> </table> | Connection Count | | Peer Connections: | 3 | Display Connections: | 1 | Incoming Connections | | ACE: | 0 | C300: | 0 | C200/C200E: | 0 | SIM-C200/SIM-C200E: | 0 | Outgoing Connections | | ACE: | 0 | C300: | 2 | C200/C200E: | 1 | SIM-C200/SIM-C200E: | 0 | <p>Displays the number of peer and display connections between the WDM and the controller CEEs. It also displays the details about incoming and outgoing connections between the different CEEs.</p> |
| Connection Count | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peer Connections: | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Display Connections: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Incoming Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ACE: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C300: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C200/C200E: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIM-C200/SIM-C200E: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outgoing Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ACE: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C300: | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C200/C200E: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIM-C200/SIM-C200E: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | |

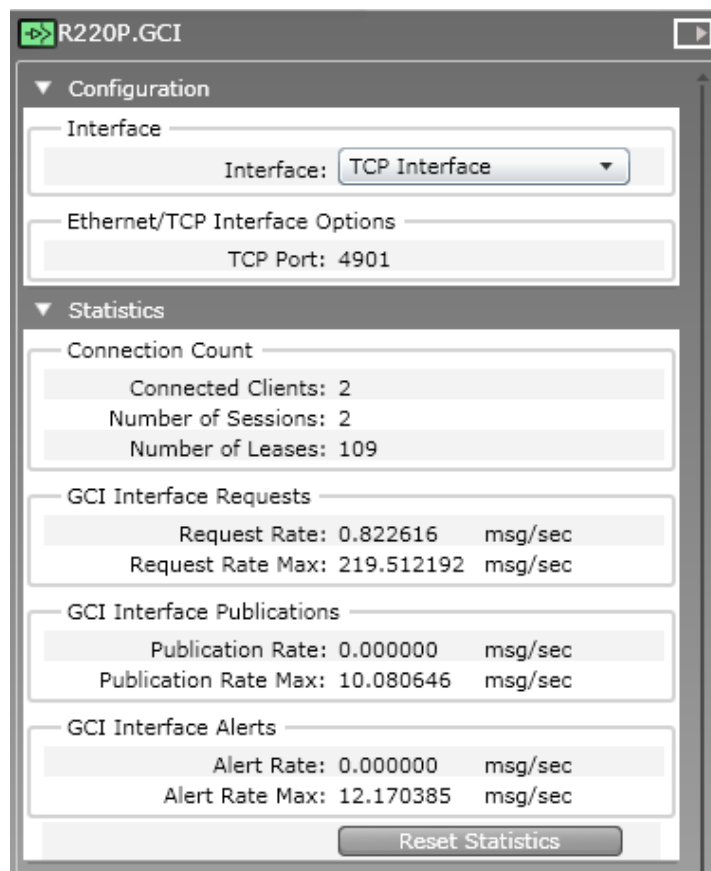
For more information about the CDA parameters, refer to the *OneWireless Parameter Reference Dictionary*.

7.6 Activating GCI interface on the WDM

The Gateway General Client Interface (GCI) is an external interface that is used with GCI-based client applications residing external to the WDM. GCI is a protocol that is used with client applications that communicate with the wireless field devices using ISA100 Wireless standard.

To activate GCI interface on the WDM

- 1 On the Selection Panel, expand the WDM icon and select **GCI**.
- 2 On the Property Panel, expand **Configuration** panel.
- 3 In the **Interface** list, click **TCP Interface**.
- 4 Under **Ethernet/TCP Interface Options**, in the **TCP Port** field, specify the default port number **4901**.
- 5 Click **Apply**.
- 6 Expand **Statistics** to monitor performance of GCI interface.



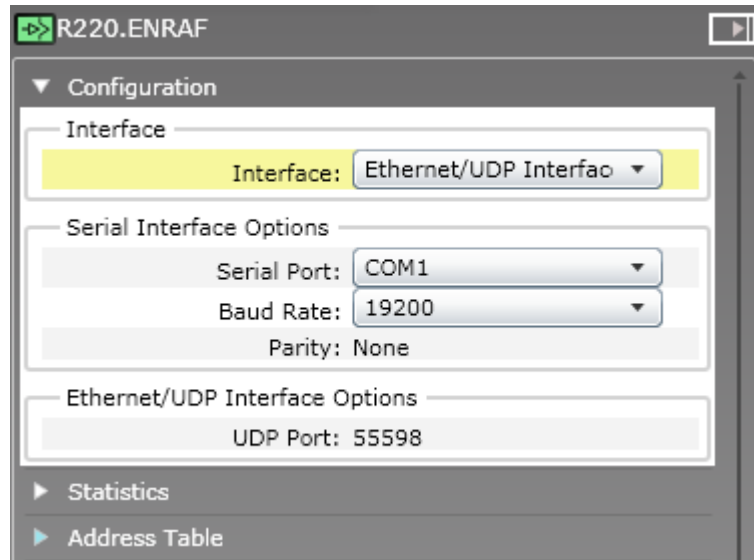
- 7 Verify the following attributes to monitor the performance of the GCI interface.
 - **Message Rate**: Number of messages processed by the interface, per second.
 - **Message Rate Max**: Maximum number of messages processed by the interface, per second.
- 8 Click **Reset Statistics** to reset all the GCI interface statistics.

7.7 Activate ENRAF Ethernet UDP interface on the OneWireless user interface

OneWireless supports integration between WDM, SmartRadar FlexLine field devices, and Enraf applications (CIU Prime hardware, Engauge software). For more information, refer to the *ISA100 SmartRadar FlexLine User's Guide*.

To activate ENRAF Ethernet/UDP interface on the OneWireless user interface

- 1 On the Selection Panel, expand the WDM icon and select **ENRAF**.
- 2 On the Property Panel, expand **Configuration** panel.
- 3 In the **Interface** list, click **Ethernet/UDP Interface**.



- 4 Under the **Ethernet/UDP Interface Options**, the UDP port number of the port on which the WDM is connected is displayed.
- 5 Click **Apply**.

7.7.1 Configure ENRAF serial interface

To access the field device data, you need to configure the Enraf interface from the OneWireless user interface.

Prerequisites

Ensure the following:

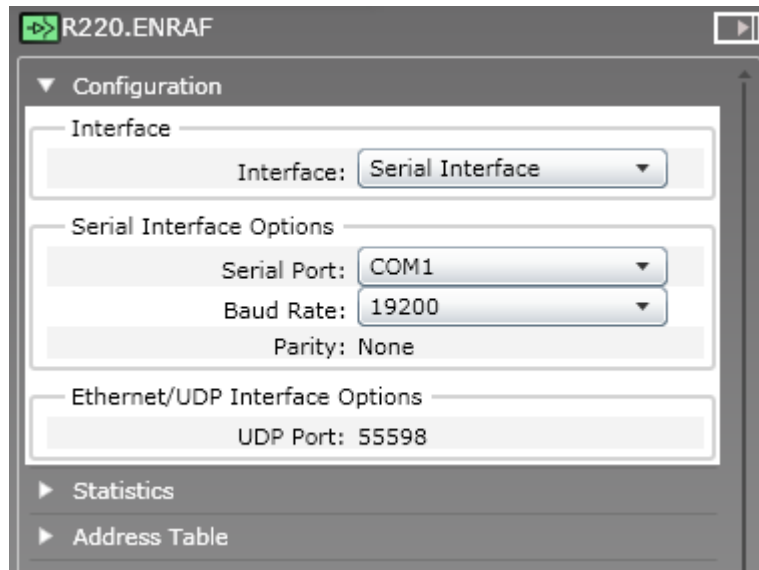
- The SmartRadar FlexLine field devices are connected to the WDM using a serial cable.
- The SmartRadar FlexLine field devices are joined in the ISA100 Wireless network.
- The GPU address and the FlexConn address configured for a SmartRadar FlexLine field device should be unique for each device in the network.

For more information regarding the GPU address and the FlexConn address, refer to the section “Configure SmartRadar FlexLine field device interface”.

- If RS-232 serial communication is required, then connect the RS-232 serial cable between the COM1 port of the WDM and the client .
- If RS-485 serial communication is required, then connect the RS-485 serial cable between the COM2 port of the WDM and the client .

To configure ENRAF serial interface

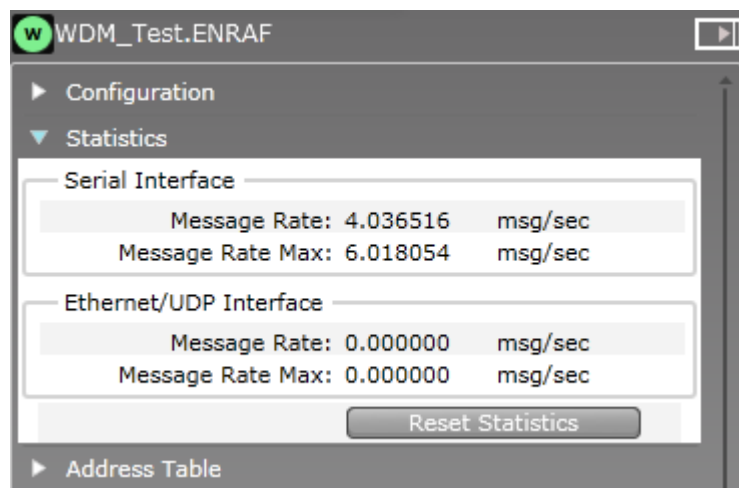
- 1 On the Selection Panel, expand the WDM icon and select **ENRAF**.
- 2 On the Property Panel, expand **Configuration** panel.
- 3 In the **Interface** list, click **Serial Interface**.



- 4 Configure the following under **Serial Interface Options**.
 - **Serial Port**: Select the serial port on which the serial cable is connected. The available options are COM1 and COM2.
 - **Baud Rate**: Select **19200** as the baud rate for ENRAF serial interface.
 - **Parity**: This is a read-only parameter and displays the value as **None**.
- 5 Click **Apply**.

7.7.2 Monitor performance of ENRAF interface**To monitor performance of ENRAF interface**

- 1 On the Selection Panel, select the ENRAF interface.
- 2 On the Property Panel, expand **Statistics**.



- 3 Verify the following attributes to monitor the performance of the ENRAF interface.
 - **Message Rate:** Number of messages processed by the interface, per second.
 - **Message Rate Max:** Maximum number of messages processed by the interface, per second.
- 4 Click **Reset Statistics** to reset all the ENRAF interface statistics.

8 Administration

Related topics

“Administering users” on page 164

“Downloading support software” on page 169

“Upgrading device firmware” on page 170

“Configuring system configuration backup” on page 174

“Restoring the system configuration from a backup” on page 176

8.1 Administering users

Related topics

“About users and user roles” on page 164

“Create user accounts” on page 165

“Edit user account” on page 166

“Delete user account” on page 166

“Change password” on page 167

“Reset password” on page 167

“Change user role” on page 167

“Manage user roles” on page 168

8.1.1 About users and user roles

The WDM enables you to define user-specific settings by creating user accounts with the required user roles.

The following are the user roles defined by the WDM.

- **Administrator** – Authorized to manage the user accounts. Users with user role as administrator can add, delete, or modify user accounts, change existing user’s role, change password for the existing users, upgrade firmware, and provision the infrastructure nodes. Only a user logged on with Administrator role has the ability to provision and upgrade a WDM.
- **View Only** – Authorized only to read/view the device parameters and export the system logs, alarm and event logs, and the reports.
- **Instrument Tech** – Authorized to configure operating mode for the field device channels and provision only the field devices. This role also has privileges to enable/disable write protection for the field devices.

By default, the WDM is configured with an administrator account. You can create multiple user accounts and assign the user role, as required. Users with Administrator role can create new users, delete users, change existing user’s role, and reset password for the existing users.

The following table summarizes the default role-based access privileges enforced by the WDM for performing different operations. Note that a user logged on with Administrator role can override the default privileges, except for the operations that are grayed out in the following table.

Table 20: Default role-based access privileges

| Function | View Only | Instrument Tech | Administrator |
|--|-----------|-----------------|---------------|
| Read | Y | Y | Y |
| Upload DD | N | Y | Y |
| Calibrate Device | N | Y | Y |
| Instantiate/Delete Channel | N | Y | Y |
| Delete Device | N | N | Y |
| Provision Field Device | N | Y | Y |
| Provision FDAP or Wireless Infrastructure Node | N | N | Y |
| Configure Device Publication | N | Y | Y |
| Replace Device | N | Y | Y |
| Upgrade Device | N | N | Y |
| Device Write | N | Y | Y |
| Write Protect Device | N | Y | N |
| Channel In/Out of Service | N | Y | N |
| Download Support Software | N | Y | Y |
| Export Logs/Generate Reports | Y | Y | Y |
| User Management | N | N | Y |
| Configure WDM Backup | N | N | Y |
| Provision WDM | N | N | Y |
| Configure WDM Network Settings | N | N | Y |

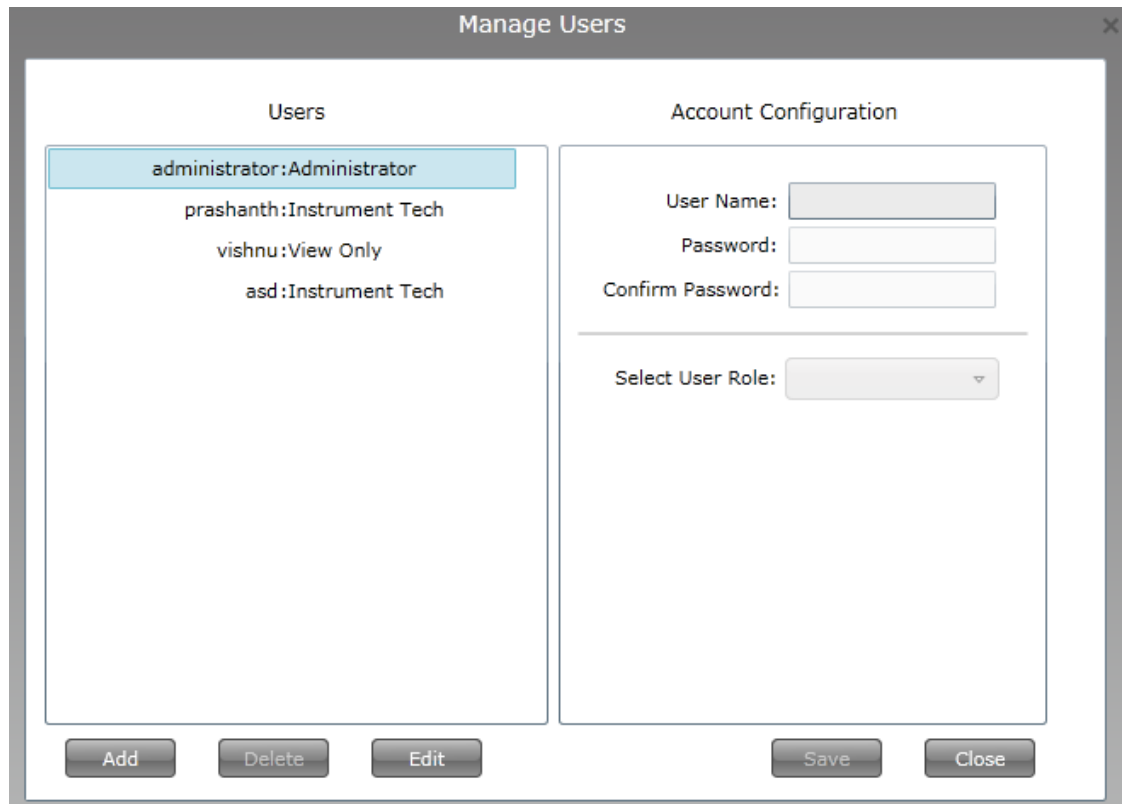
**Attention**

The **Provision WDM** function also enables you to configure the redundant related parameters.

8.1.2 Create user accounts

To create user accounts

- 1 On the ribbon bar, in the **System** group, click **Manage Users**.
The **Manage Users** dialog box appears.
- 2 Click **Add**.
- 3 In the **Account Configuration** pane, in the **User Name**, **Password**, and **Confirm Password** boxes, type the user name and password, respectively.
- 4 In the **Select User Role** list, click the user role as appropriate.



- 5 Click **Save**.
- 6 Click **Close** to close the **Manage Users** dialog box.

8.1.3 Edit user account

To edit user account

- 1 On the ribbon bar, in the **System group**, click **Manage Users**.
The **Manage Users** dialog box appears.
- 2 From the list of users on the **Users** pane, select the user account to edit and click **Edit**.
- 3 Edit the required account details, and then click **Save**.

8.1.4 Delete user account

Attention

- Note that you cannot delete the default user account (administrator) configured by the WDM.

To delete user account

- 1 On the ribbon bar, in the **System group**, click **Manage Users**.
The **Manage Users** dialog box appears.
- 2 From the list of users on the **Users** pane, select the user account to delete, and then click **Delete**.
- 3 Click **OK** in the confirmation dialog box.
- 4 Close the **Manage Users** dialog box.
If you have logged on simultaneously using the user account that you want to delete, you will be automatically logged off.

8.1.5 Change password

To change your own password

- 1 On the ribbon bar, in the **System** group, click **Change Password**.
The **Change User Password** dialog box appears.
- 2 In the **Current Password** box, type the current password and in the **New Password** and **Confirm Password** boxes, type the new password.
- 3 Click **OK**.
The message **Password has been successfully changed** appears.
- 4 Click **Cancel** to close the **Change User Password** dialog box.
- 5 Restart the Web browser and log on to the user interface using the new password.

8.1.6 Reset password

If you are logged on to the user interface with administrative privileges, you can reset the password of any user. For example, using an administrator account it is possible to reset the password for a user who has forgotten the password.

To reset the password of any user

- 1 On the ribbon bar, in the **System** group, click **Manage Users**.
The **Manage Users** dialog box appears.
- 2 From the list of users on the **Users** pane, select the user account for which you need to reset the password and click **Edit**.
- 3 Under **Account Configuration**, in the **Password** and **Confirm Password** boxes, type the new password.
- 4 Click **Save**.
- 5 Close the **Manage Users** dialog box.

8.1.7 Change user role



Attention

Note that you cannot change the user role for the default user account (administrator) configured by the WDM.

To change user role

- 1 On the ribbon bar, in the **System** group, click **Manage Users**.
The **Manage Users** dialog box appears.
- 2 From the list of users on the **Users** pane, select the user account for which the user role needs to be changed.
- 3 In the **Account Configuration** pane, in the **Select User Role** list, click the appropriate user role.
- 4 Click **Save**.
The user account modifies with the new user role. If you have logged on using the user account whose role is modified, you will be automatically logged off. You have to log on to the system again.
- 5 Close the **Manage Users** dialog box.

8.1.8 Manage user roles

To manage user roles

- 1 On the ribbon bar, in the **System** group, click **Manage Roles**.
- 2 Select the required check boxes for the permitted operations for the user roles, as appropriate.
For more information about the default role-based access privileges, refer to the “Table 20: Default role-based access privileges”. Note that a user logged on with Administrator role can override the default privileges, except for the operations that are grayed out in the table available in the section “About users and user roles” on page 164.
- 3 Click **Save**.
The user roles are modified to perform the operations that are configured.

8.2 Downloading support software

The Software option enables you to download software provided on the WDM.

To download support software

- 1 On the ribbon bar, in the **System** group, click **Software**.
The **Support Software** dialog box appears.
- 2 From the **Select Software** list, select the required software to be downloaded. The following software can be downloaded.
 - **Provisioning Device Application:** The Provisioning Device Application is a Windows Mobile PDA application that allows you to transfer network configuration and security keys from your WDM to your access points and field devices.
 - **MS .NET Compact Framework v3.5:** The Microsoft .NET Compact Framework is a system library required to run the Provisioning Device Application on your Windows Mobile PDA.
 - **OPC UA Proxy:** The OPC-UA Proxy is used to connect OPC-DA clients to the OPC-UA server running on your WDM.
 - **Multinode Mesh Firmware, WNMS (Extended Temperature):** Multinode Mesh Firmware is provided for WNMX (standard temperature) Multinodes and WNMS (extended temperature) Multinodes. This firmware replaces any mesh firmware from previous releases.
 - **Multinode Mesh Firmware, WNMX (Standard Temperature):** Multinode Mesh Firmware is provided for WNMX (standard temperature) Multinodes and WNMS (extended temperature) Multinodes. This firmware replaces any mesh firmware from previous releases.
 - **OneWireless R120 Migration Firmware:** Migration Firmware can be used for migrating OneWireless R120 Multinode or field device to the current release of OneWireless.
- 3 Click **Save To** to save the software to the computer.
A confirmation message appears.
- 4 Click **OK**.
The **Save As** dialog box appears.
- 5 Browse to a location on the hard drive to save the software.
- 6 If require, type the **File name**, and then click **Save**.

8.3 Upgrading device firmware

The FDAPs and field devices have radio firmware that can be upgraded. Some field devices may have a separate application firmware, which handles the functioning of the sensor in the device. This can also be upgraded over the wireless network. For more information about upgrading the firmware of field devices, refer to the field device vendor's documentation. Honeywell field devices usually have separate firmware files for radio firmware and application firmware. FDAPs have only radio firmware.

Considerations

Following are some of the considerations for upgrading the device firmware.

- You can upgrade only the application firmware or radio firmware of a device at a time.
- You can upgrade only the firmware of five devices simultaneously.
- Starting the radio firmware upgrade operation of lower hop and upper hop devices simultaneously, results in the failure of upgrade operation of the lower hop device. When the devices are in different hops, it is recommended to perform the upgrade of only one device at a time.
- Upgrading the radio firmware of a device, which routes communication between other devices, results in communication failure as well as firmware upgrade failure.

Related topics

“Upgrading the WDM firmware” on page 170

“Upgrading the FDAP/access point firmware” on page 171

“Upgrading the field device firmware” on page 172

8.3.1 Upgrading the WDM firmware

Download the latest WDM firmware file from the Honeywell Process Solutions website.



Attention

Sync must be disabled on a redundant WDM to allow WDM upgrade. If WDM upgrade is initiated on a WDM when sync is enabled an error is displayed. You must disabled the sync from WDM PP and again re-initiate the WDM upgrade.



CAUTION

- Upgrading the WDM firmware makes the WDM offline for some time. During this operation, all the devices drop and join the network again.
- Once initiated, you cannot abort the firmware upgrade operation.
- The WDM must not be turned on while the upgrade is in progress.

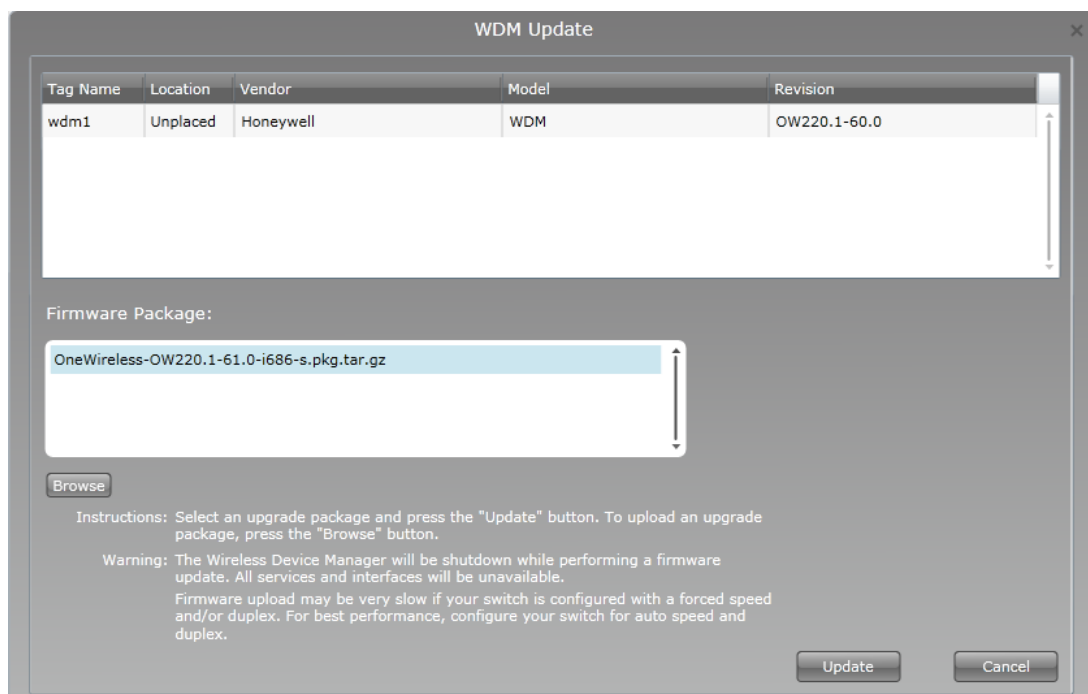
The steps for upgrading the WDM from R202 to R210 and then from R210 to R220 are common.

Prerequisites

Ensure that the speed/duplex setting for the network adapter of the computer is set to Auto.

To upgrade the WDM firmware

- 1 On the Selection Panel, select the WDM.
- 2 On the ribbon bar, in the **Upgrade** group, click **Application**.
The **WDM Update** dialog box appears.



- 3 Click **Browse** to navigate to the directory location of the firmware file and click **Open**. The WDM firmware file has a *.tar.gz* extension.

The **WDM Update** dialog box displays the upload status. Once complete, the **Firmware File** box displays the uploaded firmware file.

- 4 Click **Update**.

The firmware upgrade starts and once complete, the user interface displays a message indicating the result of firmware upgrade operation.

Attention

- At times, the update may take longer than expected and the result of the upgrade may not be displayed. Instead, a "Page not available" error may appear. In such cases, wait for a minute and then redirect the browser to "https://<ipaddress>/restartzfs.html" for viewing the result. Do not remove or reboot the WDM during the upgrade process.

After the WDM upgrade from R210 to R220 is complete, the WDM reboots automatically.

- 5 Close and restart the web browser.
- 6 Log on to the user interface again.
- 7 Verify the upgraded version of the WDM firmware as follows:
 1. On the Selection Panel, select the WDM.
 2. On the Property Panel, expand **Device Manager Summary**.
 3. Under **Identification**, verify the **Revision**.

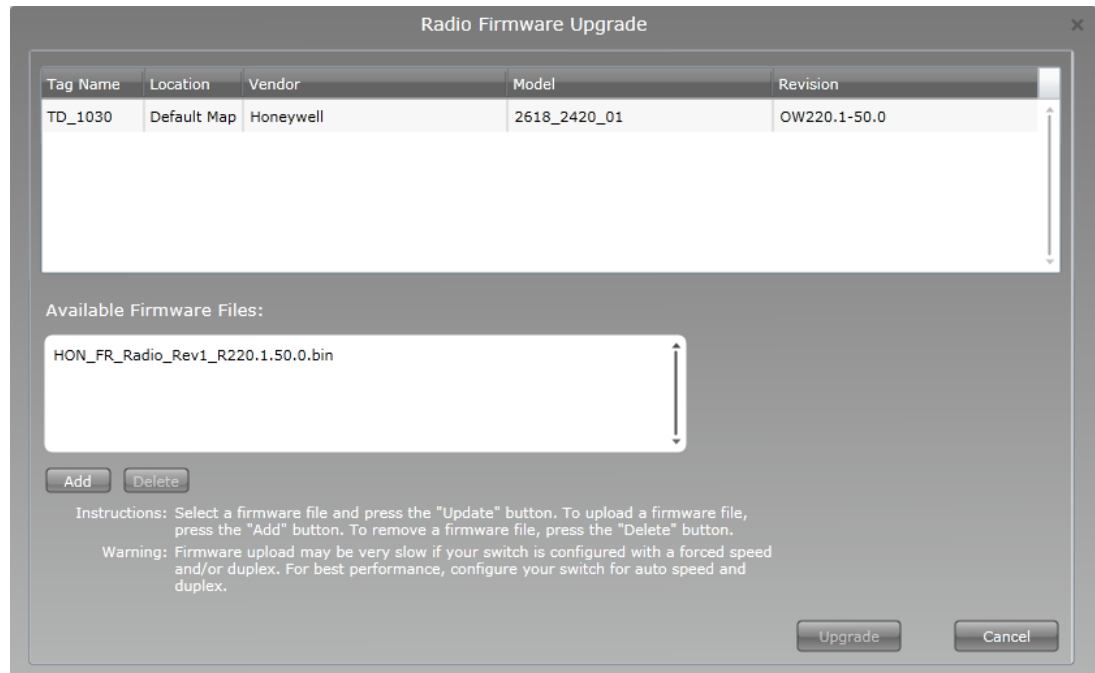
8.3.2 Upgrading the FDAP/access point firmware

Download the latest FDAP/access point firmware files from the Honeywell Process Solutions website.

To upgrade the FDAP/access point firmware

- 1 On the Selection Panel, select the FDAP/access point.
You can select multiple devices using the Selection Panel or the map view. Use SHIFT+click to select multiple items in a successive list. Use CTRL+click to select multiple items not in succession.

- 2 On the ribbon bar, in the **Upgrade** group, click **Radio**.
The **Radio Firmware Upgrade** dialog box appears.



- 3 In the **Available Firmware Files** list, select the required firmware upgrade file.
By default, the firmware upgrade file appears in the list. If the file is not available in the list, perform the following steps to open the firmware file.
 - a Click **Add** to browse to the directory location of the firmware upgrade file.
 - b Click **Open**.
- 4 Click **Upgrade**.
The **Firmware Upgrade Status** dialog box appears. The **Progress** column displays the progress of the upgrade.



Attention

- To abort any firmware upgrade operation, click the Abort Upgrade icon adjacent to the upgrade status.
- To remove the devices for which the firmware upgrade has been completed, click the Clear Upgrade icon adjacent to the upgrade status.

- 5 Close the **Firmware Upgrade Status** dialog box.

8.3.3 Upgrading the field device firmware

The devices at the farthest hop level must be upgraded first.

To upgrade the SmartRadar FlexLine field device firmware

- 1 On the Selection Panel of the OneWireless user interface, select the field device.
You can select multiple devices of the same type using the Selection Panel or the map view. Use SHIFT+click to select multiple items in a successive list. Use CTRL+click to select multiple items not in succession.



Attention

- It is recommended that you select and accept only three devices at a time.

- 2 On the ribbon bar, in the **Upgrade** group, click one of the following icons, as required.

- **Application:** To upgrade the application firmware of the selected field device.



Attention

To initiate the firmware upgrade of the HCI-1WL (CAN-1WL) board using the **Application** firmware, the SD card must be inserted in the HCI-1WL (CAN-1WL) board. Also, the SD card should not be write protected.

- **Radio:** To upgrade the radio firmware of the selected field device.

The **Radio/Application Firmware Upgrade** dialog box appears.

- 3 Depending on the firmware type, the available upgrade files appear by default. Select the required file from the list of upgrade files.

If the file is not available in the list, perform the following steps.

- a Click **Add** to browse to the directory location of the firmware upgrade file.
- b Click **Open**.

- 4 Click **Upgrade**.

The **Radio/Application Firmware Upgrade** dialog box appears.

The **Firmware Upgrade Status** dialog box displaying the status of the upgrade appears. Closing the dialog box allows the upgrade operation to run in the background. The upgrade status is displayed in the status bar. Click the firmware upgrade status box to open the dialog box again. If multiple users are simultaneously upgrading different device firmware, all the users can view the progress of all the device upgrades.

While upgrading the application firmware of a field device, the LCD display of the field device displays the firmware upgrade status. The status is displayed until the upgrade operation completes or aborts.

Once the upgrade is complete, the status column displays the status as complete. If firmware upgrade fails for a device, you can abort the upgrade and start again. To abort firmware upgrade for individual devices, click the abort button next to the status indicator.

- 5 Close the **Firmware Upgrade Status** dialog box.

8.4 Configuring system configuration backup

Related topics

“About system configuration backup” on page 174

“Configure manual backup” on page 174

“Configure automatic backup” on page 174

8.4.1 About system configuration backup

OneWireless user interface enables you to configure system backup on a FAT32 formatted USB drive connected to one of the USB slots in the WDM. The backup file created can be used to restore the system configuration to a new WDM, or a WDM that has been reset to factory defaults. System configuration can be backed up manually or WDM can be configured to automatically backup system configuration whenever a configuration change is detected. All system configuration data is included in the backup file created.

In automatic system configuration backup, a USB flash drive should be connected to the WDM at all times. If automatic backup is enabled and the USB flash drive is disconnected from the WDM, automatic backup stops and resumes when a flash drive is connected to the same slot on the WDM. If the disk space on the backup drive is insufficient, you can replace the disk with a new one without any backup configuration changes.

WDM state, ISA100 network state, WDM configuration changes, user actions, external interface configuration changes, and device topology changes are monitored every five minutes to initiate an automatic system backup, when enabled.

8.4.2 Configure manual backup

The **Manual Backup** option enables you to back up the system configuration manually. This option is disabled when automatic backup is enabled.

To configure manual backup

- 1 Connect a FAT32 formatted USB flash drive to any one of the USB slots on the WDM.
You can create a backup only using a USB flash drive.
- 2 On the Selection Panel, select the WDM.
- 3 On the Property Panel, expand **Backup Settings**.
- 4 Under **Automatic Backup**, clear the **Enable Automatic Backup** check box.
Under **Manual Backup**, the **Destination** drop-down list displays the USB slot to which the flash drive is connected.

- 5 Click **Backup Now**.

The **Backup Status** dialog box displays the following information about the last successful backup.

- **Name:** Name of the backup file.
- **Size:** Size of the backup file.
- **Date:** Date and time of last backup.
- **Description:** The mode of backup configured (automatic or manual) and the USB drive/slot number where the backup file was created. It also displays any errors that occurred during a backup.

8.4.3 Configure automatic backup

You can configure automatic system configuration backup to back up the system configuration automatically.

To configure automatic backup

- 1 Connect a FAT32 formatted USB flash drive to any one of the USB slots on the WDM.
- 2 On the Selection Panel, select the WDM.
- 3 On the Property Panel, expand **Backup Settings**.
- 4 Under **Automatic Backup**, select the **Enable Automatic Backup** check box.

The **Destination** drop-down list displays the USB slot in which the USB flash drive is connected.

The **Status** displays the current automatic backup status. Following are the different status values that are displayed.

- **Idle** when automatic backup is not in progress.
- **In Progress** when automatic backup is in progress.
- **Error** when an automatic backup fails.
- **No Device** when the backup device is not available on the destination USB slot even though backup is enabled.
- **Device Access Error** when an error is encountered while accessing the backup device on the destination USB slot.
- **Device Disk Space Low** when the disk space is low on the backup device.
- **Auto Backup Not Configured** when automatic backup is disabled.

The **Backup Status** displays the following details about the last successful backup.

- **Name:** Name of the backup file.
- **Size:** Size of the backup file.
- **Date:** Date and time of last backup.
- **Description:** The mode of backup configured (automatic or manual) and the USB drive/slot number where the backup file was created. It also displays any errors that occurred during a backup.

8.5 Restoring the system configuration from a backup

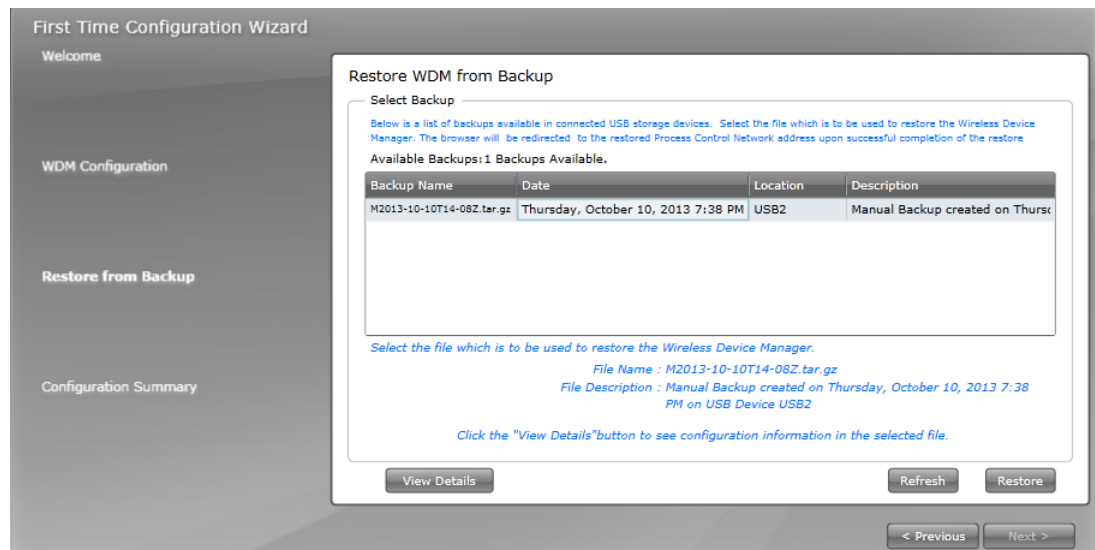
System configuration from a previously created backup file can be used to reconfigure a WDM that has been reset to factory defaults using the First Time Configuration Wizard. Restoring WDM configuration from a backup file configures the WDM with the same list of devices/channels. It also restores other system configuration on the WDM when the backup file was created.

! Attention

- After restoring the system configuration, the default administrator password resets to the default password, “password.” All other users’ password remains unchanged.

To restore the system configuration from a backup

- 1 Log on to the OneWireless user interface using the default user name and password. For more information, refer to the section “Logging on to OneWireless user interface” on page 26.
The **First Time Configuration Wizard** appears.
- 2 On the **Welcome** page of the **First Time Configuration Wizard**, click **Next**.
- 3 On the **Wireless Device Manager Configuration** page, click **Restore Wireless Device Manager from a Previous Backup**, and then click **Next**.
The **Restore WDM from Backup** page appears.
- 4 Connect the USB flash drive containing the backup file to one of the USB slots on the WDM.
- 5 Click **Refresh** to view a list of backup files available on the USB flash drive.



- 6 Select the required backup file from the list of available backups, and then click **View Details** to view the IP addresses and redundancy information.

Restore WDM from Backup

Select Backup

File Name : M2013-10-10T14-08Z.tar.gz
 File Description : Manual Backup created on Thursday, October 10, 2013
 7:38 PM on USB Device USB2

WDM Firmware Revision that Created Backup : OW220.1-68.0
 WDM Name : wdm5

Field Device Network IP Address : 192.168.0.5
 Field Device Network Subnet Mask : 255.255.255.0

Process Control Network IP Address : 192.168.1.5
 Process Control Subnet Mask : 255.255.255.0
 Process Control Network Default Gateway : 0.0.0.0

WDM Redundancy Role : Non-redundant
 WDM Redundancy Synchronization State : No partner

Hide Details Refresh Restore

! **Attention**

- The network address of the WDM when a backup is performed is displayed at the bottom of the page. After completing the restore, you can access the WDM using this IP address.
- Reconfigure the network settings of the computer to access the user interface using the IP address displayed on the **Restore WDM from Backup** page.

7 Click **Restore**.

8 Click **OK** on the **Browser Redirect** dialog box.

The system configuration restores, and the **Login** page appears. The WDM restarts after the restore operation. It might take a minute to complete the restart and the login page to appear.

9 Type the default **User ID** and **Password** or use the logon credentials configured at the time when the backup file was created.

9 Troubleshooting and maintenance

Related topics

“Replacing devices” on page 180

“Removing devices” on page 182

“Resetting/removing WDM” on page 183

“Restarting devices” on page 184

“About NTP status” on page 186

The NTP Status panel in the WDM Properties Panel displays a number of NTP process attributes, which are mostly useful for debugging purposes.

“Generating reports” on page 188

“Exporting and saving system logs” on page 193

“Reporting anomalies” on page 194

9.1 Replacing devices

You can replace a failed FDAP, Access Point, or a field device with a new device. Replace operation restores all the configuration information to the new device. This includes the position of the device on the map, device name, channel names, publication, configuration, and so on. Note that device notes from a failed device are not restored to the new device.

Considerations

- A failed device can be replaced with a new device, only if the new device specification is identical to the failed one.
- Device role should be identical for the devices that are undergoing replacement operation. That is, a field device can be replaced only with a field device and a routing field device can be replaced only with a routing field device.
- Device to be replaced should not be part of another replacement operation.
- For FDAP and field device, the radio vendor and radio model of the failed device and the new device should be identical.
- For field devices, the application vendor and application model of the failed device and the new device should be identical.
- For field devices, the number of channels and the channel types of failed device and the new device should be identical.

Prerequisites

- Ensure that the failed device is offline and that it is not deleted.
- Ensure that the new device's tag name, type, radio vendor, and radio model is read by the WDM.
- Ensure that methods are not running for any of the channels of the new field device.
- Ensure that new device's firmware is not undergoing any upgrade operation.
- Ensure that new device's channels have been read by the WDM.

To replace devices

- 1 Provision the new device to allow it to join the network.
For more information, refer to the section “Provision the devices using Provisioning Device handheld” on page 60.
- 2 Perform one of the following:
 - For replacing a field device with instantiable channels, verify that the new device's instantiable channels are identical to that of the failed device.
 - If not, perform channel instantiation to make the channel configuration identical to the failed device.
For more information, refer to the section “Configure channel instantiation” on page 86.
- 3 To replace a field device, set the channel to OOS mode as follows:
 - a On the Selection Panel, select the field device channel.
 - b On the Property Panel, expand **Mode**.
 - c In the **Target** list, click **OOS** and then click **Apply**.
The channel icon appears as blue indicating the OOS mode.
- 4 On the Selection Panel, select the newly added device.
- 5 Drag the new device icon and drop it on the failed device on the map.
The **Device Replacement** dialog box appears.
- 6 Click **Replace failed device <device name> with <new device name>**.
- 7 Click **OK**.

The **Device Replacement Status** dialog box appears indicating the progress of replace operation. The status bar also displays the status. If you close the **Device Replacement Status** dialog box, click the **Device replacement in progress** pane in the status bar to open the dialog box.

- 8 After the device replace operation is complete, the **Device Replacement Status** dialog box displays the result.

**Attention**

- If a device replace operation completes with errors, it implies that one or more attributes of the device is not restored successfully. In this case, manually inspect the device and channel configuration from the Property Panel, and correct any incorrectly configured attribute.

- 9 Click **Clear List** to clear the list of device replace operations.

9.2 Removing devices

You can remove a failed device from the network. A device that is removed can rejoin the network only if it is assigned a new provisioning key.

Considerations

- Removing an online device resets the device configuration to factory defaults. This results in the loss of provisioning data from the device.
- Removing an offline device makes the security information of the device invalid, but retains the provisioning data in the device. Though the device retains the provisioning data, it should be authenticated again to allow it to join the network.

To remove a device

- 1 On the Selection Panel, select the devices that you want to delete.
If you are deleting an online device, change the channel mode to **OOS** for all the channels.
- 2 On the ribbon bar, in the **Provisioning** group, click **Delete**.
The **Delete Devices** dialog box appears.
- 3 Click **Delete**.
On completion, the **Progress** column in the **Delete Devices** dialog box displays the status as complete.
- 4 Click **Close**.

9.3 Resetting/removing WDM

Like any other device, you can reset/remove a WDM using the **Delete Selected Device** icon on the Property Panel. Resetting or removing WDM is possible only if WDM sync is disabled. Resetting the WDM removes all the system and configuration data and resets the WDM to factory defaults.

**CAUTION**

This operation results in significant changes in the system configuration. Honeywell recommends you to perform this operation only when there is a definite requirement.

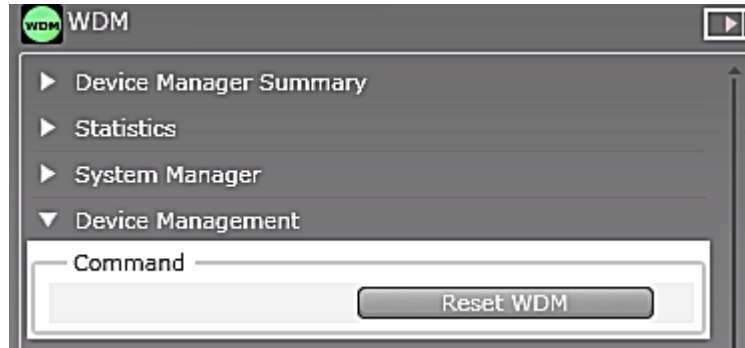
To delete/reset a WDM

- 1 On the Selection Panel, select the WDM.
- 2 On the ribbon bar, in the **Provisioning** group, click **Delete**.
The **Delete Devices** dialog box appears.
- 3 Click **Delete**.
On completion, the **Progress** column in the **Delete Devices** dialog box displays the status as complete.
- 4 Click **Close**.
This resets/removes the WDM.
- 5 Use default FDN or PCN IP address to access WDM after the WDM is reset to defaults.
- 6 Restart the Web browser to run the **First Time Configuration Wizard**.
You can either configure the WDM using the **First Time Configuration Wizard** or restore the system configuration using the latest available backup. If you are configuring the WDM using the **First Time Configuration Wizard**, you need to transfer new provisioning keys to the Provisioning Device handheld and provision all the devices in the network.

9.4 Restarting devices

To restart a WDM

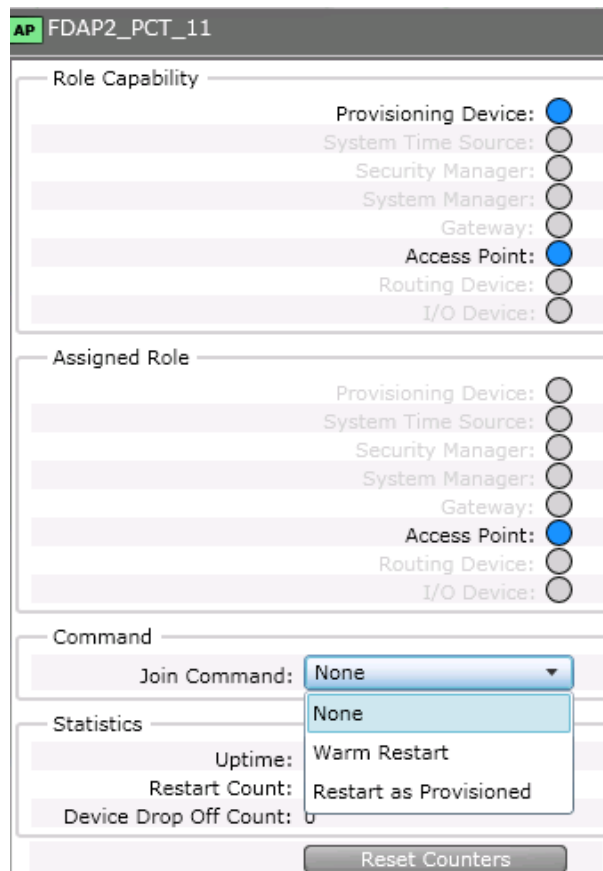
- 1 On the Selection Panel, select the WDM.
- 2 On the Property Panel, expand **Device Management**.



- 3 Click **Reset WDM**.
The WDM restarts.

To restart FDAP/Access Point/field device

- 1 On the Selection Panel, select the device to be restarted.
- 2 On the Property Panel, expand **Device Management**.



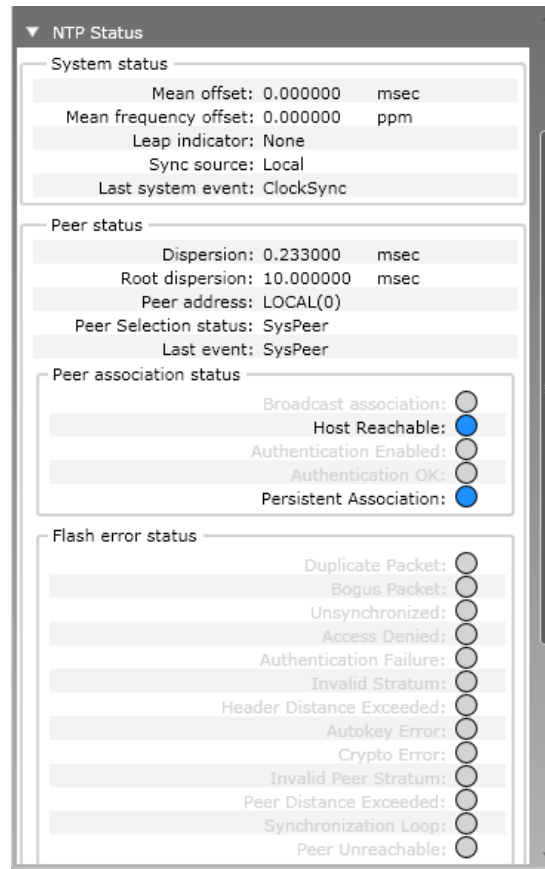
- 3 In the **Join Command** list, select one of the following options.
 - **None**
 - **Warm Restart** — preserves static and constant attributes data.
 - **Restart as Provisioned** — corresponds to the provisioned state of the device in which the device only retains the data received during its provisioning.
- 4 Click **Apply**.

9.5 About NTP status

The NTP Status panel in the WDM Properties Panel displays a number of NTP process attributes, which are mostly useful for debugging purposes.

To view the NTP status display

1. On the **Selection Panel**, select **WDM**.
2. On the **Property Panel**, expand **NTP Status**.



NTP server unreachable

When the NTP server is not responding to NTP communication from the WDM, the WDM raises the NTP server not reachable alarm. In the NTP Status panel, under **Flash error status** section, the **Peer Unreachable** appears in blue color and indicates as ON, and under **Peer association status** section, the **Host Reachable** appears in grey color and indicates as OFF. Depending on the internal state of the NTP process, it takes 8.5 minutes or more to detect that the server is not reachable.

NTP server reachable

The NTP server unreachable alarm returns to normal when the server is reachable again. In the NTP Status panel, under **Flash error status** section, the **Peer Unreachable** appears in grey color and indicates as OFF, and under **Peer association status** section, the **Host Reachable** appears in blue color and indicates as ON. Depending on the internal state of the NTP process, it takes 8.5 minutes or more to detect that the server is not reachable.

Peer rejected

The NTP process determines the time quality of the server over several communication packets based on various time and frequency measurements. Based on these measurements, the NTP process may reject a server but still continue to communicate with it and perform the time measurements. Until the server's time quality improves, the NTP process keeps the server marked as rejected. In the NTP Status panel, under **Peer status** section, the **Peer Selection status** is set to **Reject**. When a server is in rejected state, the NTP process does not try to sync time from the server.

Peer selected

The NTP process may reject a server for several reasons. For example, the server itself may not yet have synchronized to the root time server. While the server is rejected, the NTP process keeps performing the time and frequency measurements with the data received from the server. When the reference time quality improves, the NTP process selects the server as a system peer and starts synchronizing time with the server. In the NTP Status panel, under **Peer status** section, the **Peer Selection status** is set to **SysPeer**.

Mean offset

The NTP process monitors time from a server selected as a system peer and calculates how much correction should be made to the system time. In the NTP Status panel, the **Mean offset** indicates the additional remaining correction to the system clock. A positive value indicates that the system clock is behind the reference clock. As the NTP process slowly corrects the system time, the system clock slowly approaches the reference clock and the mean offset reduces.

Time synchronization

In the NTP Status panel, under the **System status** section, the Mean frequency offset field indicates the periodic correction applied to the system clock. Positive values make the clock go faster while negative values slow it down. When the NTP process starts synchronizing with a server, depending on how far the two clocks are, it may set the frequency offset to the maximum value (+/-500 ppm). This is unusually high for a good clock and is an intermediate value. ISA100 network devices correct their clocks at a maximum rate of 60 ppm. If the WDM's clock is corrected at a higher rate, the ISA100 network devices may further apart in time, resulting in devices reporting a clock drift alarm. The WDM generates an NTP frequency error alarm when the frequency offset is > 60 ppm. As the WDM's system time converges and the offset reduces, the frequency offset gradually reduces to a more realistic value. The NTP frequency error alarm returns to normal when the frequency offset reduces to below 30 ppm. The NTP process adjusts the clock in small steps so that the time-scale is effectively continuous and without discontinuities. This makes clock correction slow. In a system with a redundant or backup WDM, the backup WDM uses the primary WDM as its time server. If the primary WDM is configured to use an external NTP server, it may take some time for the primary WDM to synchronize with the NTP server and then the secondary WDM will synchronize, after some more time, with the primary WDM's time.

9.6 Generating reports

The OneWireless user interface enables you to generate and view various reports about connectivity, device health, and battery life of the devices in a network.

You can generate and view the following reports:

- **Battery Life:** This report lists all devices that require battery replacement and lists the devices with battery level less than 50%.

Data Preview

Battery Life Report: Report Generated By: administrator
10/11/2013 10:27:44 AM

The Battery life report lists all devices that require battery replacement soon. This report contains details of devices with a battery level less then 50%.

| Device Name | Battery Life | Default Map | Description |
|-------------|--------------|-----------------|-------------|
| MD_429_PCT | Low | 5FDsingleparent | |

- **Device Health Overview:** This report lists all the devices with wireless network disconnection and alarms.

Data Preview

Device Health Overview Report: Report Generated By: administrator
10/10/2013 2:43:02 PM

Device overview health report lists all devices that need attention paying specific attention to device wireless network disconnections and the presence of alarms.

Device Name : FDAP2_PCT_02
 Device Default Map :Default Map
 Device Description :

Wireless Disconnects: This device has disconnected 2 times.

| Diagnostic Alarms | Priority | Start Time | Reported Value | Category | Description |
|-------------------|-------------|----------------------|----------------|---------------------------|-----------------------------|
| | Urgent High | 10/3/2013 6:27:49 PM | | Communications Diagnostic | Non-Redundant Communication |

Device Name : UIOD_3F4
 Device Default Map :Unplaced
 Device Description :

Wireless Disconnects: This device has disconnected 1 times.

| Diagnostic Alarms | Priority | Start Time | Reported Value | Category | Description |
|-------------------|-------------|-----------------------|----------------|---------------------------|-----------------------------|
| | High Medium | 10/9/2013 12:23:06 PM | A4800001 | Device Diagnostic | Failure Status Alert |
| | Urgent High | 10/3/2013 6:30:42 PM | | Communications Diagnostic | Non-Redundant Communication |

Device Name : FDAP2_2
 Device Default Map :Default Map

- **Device Summary:** This report provides a summary of each of the device that is configured in the network. The report does not display the details of the devices that are filtered out using the **Filter** option in the ribbon bar.

Data Preview

Device Summary Report: Report Generated By: administrator
10/10/2013 2:44:32 PM

The Device Summary report lists all currently filtered devices with summary information about each device.

| Device Name | Status and Identification | ISA100 Information |
|---|---|--|
| Tag Name: FDAP2_2 Type: Routing Default Map: Default Map Description: | Status Status: Joined Power: Line Identification Vendor: Honeywell Model: FDAP2 Serial Number: 1033022 Radio Revision: OW220.1-66.0 Sensor Revision: OW220.1-66.0 | Network Address IPv6 Address: FE80::0040:84FF:FF08:002E EUI64: 004084FFFF08002E Network Address: 28 Primary Parent: FDAP2_PCT_02 Primary Address: 13 Secondary Parent: Secondary Address: 0 Routing Level: 2 Time Synchronization Time Master Tag Name: MNBBR_83 Time Master Address: 3 Primary Parent: FDAP2_PCT_02 Primary Address: 13 Secondary Parent: Secondary Address: 0 Time Distribution Level: 2 |
| Tag Name: FDAP2_PCT_02 Type: Routing Default Map: Default Map Description: | Status Status: Joined Power: Line Identification | Network Address IPv6 Address: FE80::0040:84FF:FF08:0041 EUI64: 004084FFFF080041 Network Address: 13 |

- **Device History:** This report lists all the device status changes. For example, status change from online to offline device, routing to time synchronization, non-redundant connection to redundant connection.

Data Preview

Device History

Report Generated By: administrator
10/10/2013 2:45:40 PM

The Device History Report provides detailed information about the history of connection changes between devices

| History/Device | Primary Devices | Secondary Devices |
|---|--|---|
| Date/Time: 10/9/2013 11:42:28.276 AM Reason: Update Tag Name: 3rd_Flr_17_00 Type: Routing Network Address: 30 Redundancy State: Non Redundant Routing Level: 2 Time Master Tag Name: MNBBR_83 Time Master Address: 3 Time Distribution Level: 3 | Parent Tag Name: FDAP2_2 Parent Address: 28 Access Point Tag Name: MNBBR_83 Access Point Address: 3 Time Sync Tag Name: FDAP2_2 Time Sync Address: 28 | Parent Tag Name: Parent Address: 0 Access Point Tag Name: Access Point Address: 0 Time Sync Tag Name: Time Sync Address: 0 |
| Date/Time: 10/9/2013 11:42:25.014 AM Reason: Update Tag Name: FDAP2_2 Type: Routing Network Address: 28 Redundancy State: Non Redundant Routing Level: 1 Time Master Tag Name: MNBBR_83 Time Master Address: 3 Time Distribution Level: 2 | Parent Tag Name: FDAP2_PCT_02 Parent Address: 13 Access Point Tag Name: MNBBR_83 Access Point Address: 3 Time Sync Tag Name: FDAP2_PCT_02 Time Sync Address: 13 | Parent Tag Name: Parent Address: 0 Access Point Tag Name: Access Point Address: 0 Time Sync Tag Name: Time Sync Address: 0 |
| Date/Time: 10/9/2013 11:42:23.371 AM Reason: Update Tag Name: FDAP2_2 Type: Routing Network Address: 28 Redundancy State: Non Redundant | Parent Tag Name: FDAP2_PCT_02 Parent Address: 13 Access Point Tag Name: MNBBR_83 Access Point Address: 3 Time Sync Tag Name: FDAP2_PCT_02 Time Sync Address: 13 | Parent Tag Name: Parent Address: 0 Access Point Tag Name: Access Point Address: 0 Time Sync Tag Name: Time Sync Address: 0 |

- Connection Summary:** This report provides a summary of current status of device connections in the network, redundancy state, and lists all connections with a poor or unacceptable signal strength and quality. The RSQI value when less than 128 results in poor or unacceptable signal quality.

Data Preview

Connection Summary

Report Generated By: administrator
10/10/2013 2:46:19 PM

The Connection Summary Report provides information about communications redundancy, and signal strength and quality

| Device Information | Primary Parent | Secondary Parent |
|--|---|--|
| Tag Name: FDAP2_PCT_02 Type: Routing Network Address: 13 Redundancy State: Non Redundant Redundancy Ratio: 0 | Tag Name: MNBBR_83 Network Address: 3 RSQI: 254 RSSI: -54 TxFailRatio: 19 Overall Status: Good | Tag Name: Network Address: 0 RSQI: RSSI: TxFailRatio: Overall Status: |
| Tag Name: ED_12 Type: Device, Routing Network Address: 36 Redundancy State: Non Redundant Redundancy Ratio: 0 | Tag Name: MNBBR_83 Network Address: 3 RSQI: 252 RSSI: -46 TxFailRatio: 18 Overall Status: Good | Tag Name: Network Address: 0 RSQI: RSSI: TxFailRatio: Overall Status: |
| Tag Name: UIOD_3F4 Type: Device Network Address: 20 Redundancy State: Non Redundant Redundancy Ratio: 0 | Tag Name: MNBBR_83 Network Address: 3 RSQI: 240 RSSI: -66 TxFailRatio: 34 Overall Status: Fair | Tag Name: Network Address: 0 RSQI: RSSI: TxFailRatio: Overall Status: |
| Tag Name: UIOD223_1FLR Type: Device Network Address: 21 Redundancy State: Non Redundant Redundancy Ratio: 0 | Tag Name: MNBBR_83 Network Address: 3 RSQI: 250 RSSI: -60 TxFailRatio: 14 Overall Status: Good | Tag Name: Network Address: 0 RSQI: RSSI: TxFailRatio: Overall Status: |

- Connection History:** This report lists all the history of connection changes. For example, change of RSQI, RSSI, transmit fail ratio.

Data Preview

Connection History

Report Generated By: administrator
10/10/2013 2:47:08 PM

The Connection History Report provides detailed information about the history of connection dynamics

| History | Connection | Status |
|---|--|--|
| Date/Time: 10/10/2013 2:45:12.045 PM Reason: Update (Active) | Connection ID: 0003/0020 Receiving Tag Name: UIOD_3F4 Receiving Type: Device Receiving Network Address: 20 Ending Tag Name: MNBRR_83 Ending Network Address: 3 | RSQI: 240 RSSI: -59 Tx Fail Ratio: 38 Overall Status: Fair |
| Date/Time: 10/10/2013 2:41:12.048 PM Reason: Add (Inactive) | Connection ID: 0020/0036 Receiving Tag Name: UIOD_3F4 Receiving Type: Device Receiving Network Address: 20 Ending Tag Name: ED_12 Ending Network Address: 36 | RSQI: 255 RSSI: -192 Tx Fail Ratio: 0 Overall Status: Unknown |
| Date/Time: 10/10/2013 2:40:11.276 PM Reason: Add (Inactive) | Connection ID: 0021/0036 Receiving Tag Name: UIOD223_1FLR Receiving Type: Device Receiving Network Address: 21 Ending Tag Name: ED_12 Ending Network Address: 36 | RSQI: 255 RSSI: -192 Tx Fail Ratio: 0 Overall Status: Unknown |
| Date/Time: 10/10/2013 2:38:41.854 PM Reason: Update (Active) | Connection ID: 0013/0028 Receiving Tag Name: FDAP2_2 Receiving Type: Routing Receiving Network Address: 28 Ending Tag Name: FDAP2_PCT_02 Ending Network Address: 13 | RSQI: 255 RSSI: -30 Tx Fail Ratio: 22 Overall Status: Fair |

To view, print, and save the report

- 1 Click **Reports** in the ribbon bar.
- 2 In the left pane, click **Reports** and then click the required report.
- 3 Click **Run Report**.

The **Data Preview** pane displays the report.

The following is a sample illustration of the **Connection Summary** report.

Data Preview

Connection Summary

Report Generated By: Administrator
9/17/2013 2:25:54 PM

The Connection Summary Report provides information about communications redundancy, and signal strength and quality

| Device Information | Primary Parent | Secondary Parent |
|---|--|--|
| Tag Name: MNBRR_81 Type: Access Point Network Address: 3 Redundancy State: Not Applicable Redundancy Ratio: 0 | Tag Name: 3 Network Address: 3 RSQI: RSSI: Tx/FailRatio: Overall Status: | Tag Name: 3 Network Address: 3 RSQI: RSSI: Tx/FailRatio: Overall Status: |
| Tag Name: MNBRR_S2 Type: Access Point Network Address: 4 Redundancy State: Not Applicable Redundancy Ratio: 0 | Tag Name: MNBRR_81 Network Address: 3 RSQI: 255 RSSI: -34 Tx/FailRatio: 0 Overall Status: Good | Tag Name: 0 Network Address: 0 RSQI: RSSI: Tx/FailRatio: Overall Status: |
| Tag Name: FDAP5 Type: Routing Network Address: 10 Redundancy State: Redundant Redundancy Ratio: 98 | Tag Name: MNBRR_S2 Network Address: 4 RSQI: 154 RSSI: -81 Tx/FailRatio: 60 Overall Status: Poor | Tag Name: MNBRR_81 Network Address: 3 RSQI: 194 RSSI: -80 Tx/FailRatio: 42 Overall Status: Fair |
| Tag Name: TD_1044 Type: Device, Routing Network Address: 7 Redundancy State: Redundant Redundancy Ratio: 97 | Tag Name: MNBRR_S2 Network Address: 4 RSQI: 251 RSSI: -48 Tx/FailRatio: 12 Overall Status: Good | Tag Name: FDAP5 Network Address: 10 RSQI: 202 RSSI: -79 Tx/FailRatio: 28 Overall Status: Fair |
| Tag Name: HOM_VDR_A100 | Tag Name: MNBRR_81 | Tag Name: MNBRR_81 |

Run Report Print Report Export As... Include column headers in reported file

- 4 To print the report, click **Print Report**.
- 5 To save the report in .csv format, click **Export As** and save the report to your system.

- Select the **Include column headers in exported file** check box to include the column headers in the exported file format.

9.7 Exporting and saving system logs

OneWireless user interface enables you to export and save the system logs that record information about events in the application instances. **Export System Log** option in the ribbon bar, exports and saves the system log in a .tar.gz (compressed archive) format in the system for future reference. The system logs are primarily used for debugging by Honeywell Technical Assistance Center (TAC).

 **Attention**

- For WDMS configured as redundant, export the system logs from both WDMs when reporting an anomaly or requesting clarification.
-

To export and save system logs

- 1 On the ribbon bar, click **Export System Log**.
The **Export System Log** dialog box appears.
- 2 Click **OK**.
The **Save As** dialog box appears.
- 3 Save the log file.
The system log files are saved in *.tar.gz format.
The **Export System Log in Progress** message appears. After the system log is saved, **Export System Log completed successfully** message appears indicating that system log has been saved successfully.
- 4 Click **OK**.

9.8 Reporting anomalies

If you encounter any errors in the OneWireless Network that you cannot resolve, you need to contact TAC. The following are required while contacting TAC for assistance.

- Export and collect system logs. For information on exporting system logs, refer to the section “Exporting and saving system logs” on page 193.
- Take a system configuration backup up. For information on taking a backup, refer to the section “Configuring system configuration backup” on page 174.
- Contact TAC and provide the following.
 - System logs from both WDMs if configured for WDM redundancy.
 - The system configuration backup, if required
 - Affected device tag name and the exact description of the anomaly
 - Time when the anomaly occurred

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10.1 Documentation feedback

You can find the most up-to-date documents on the Honeywell Process Solutions website at:

<http://www.honeywellprocess.com/>

If you have comments about Honeywell Process Solutions documentation, send your feedback to:

hpsdocs@honeywell.com

Use this email address to provide feedback, or to report errors and omissions in the documentation. For immediate help with a technical problem, contact your local support center.

10.2 How to report a security vulnerability

For the purpose of submission, a security vulnerability is defined as a software defect or weakness that can be exploited to reduce the operational or security capabilities of the software.

Honeywell investigates all reports of security vulnerabilities affecting Honeywell products and services.

To report a potential security vulnerability against any Honeywell product, please follow the instructions at:

<https://honeywell.com/pages/vulnerabilityreporting.aspx>

Submit the requested information to Honeywell using one of the following methods:

- Send an email to security@honeywell.com.
- or
- Contact your local Honeywell Technical Assistance Center (TAC) or support center listed in the “Support and other contacts” section of this document.

