

Real-Time, Actionable Information through Wireless Technology

Bob Kocanda – Product Specialist

Thank You for Attending Today's Webinar



Your Host

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Today's Featured Speaker

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Why Use Industrial Wireless?

IT'S ALL ABOUT SAVING MONEY!

- Wired instrumentation costs \$50 to \$100 per foot
- No room for new wires
- Reduced installation time
- Difficult and remote access
- Rotating and mobile equipment
- Easy to implement



Describing ISA 100.11a Devices *a simple analogy*

I/O Device = Cell Phone

- measures a physical value and sends measurement to router



Router = Cell Tower

- routes wireless messages to create a multi-hop mesh network - Cell Tower




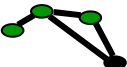
Gateway = Cell Network

- converts from wireless communication protocol to legacy wired protocols
- firewalls wireless subnet from plant network
- manages communication between devices
- handles security



ISA 100.11a

Why have a standard???

- ✓ Open wireless communications protocol
 - ✓ Device interoperability
 - ✓ Multiple Vendors products will all work together
- ✓ Supports routing and non-routing devices
- ✓ Mesh & Star Topologies  
- ✓ Enables flexible and deterministic network operation
- ✓ Predictable performance
- ✓ Redundant wireless paths
- ✓ Deterministic Mesh Networking



Cost, risk and time reduction in the selection and deployment of wireless products and systems.

ISA 100.11a

Why have a standard???

- ✓ "Tolerant System" Characteristics – Communicates reliably while co-existing with other systems (wi-fi)
- ✓ Supports multiple communication protocols over the same wireless network: Profibus, HART, Fieldbus Foundation
- ✓ Incorporates Data Security Mechanisms
 - data encryption (*AES-128 bit encryption*)
 - message authenticity
 - time security
 - real time key redistribution



Cost, risk and time reduction in the selection and deployment of wireless products and systems.

OneWireless Network Components – ISA100

Field Instruments



Battery powered wireless field instruments

Multi-Year battery life with fast update rates

Field Device Access point



Wireless Coverage for ISA100 – field instruments

Fast and Reliable

Wireless Device Manager



Manages ISA100 field devices and network Web page access

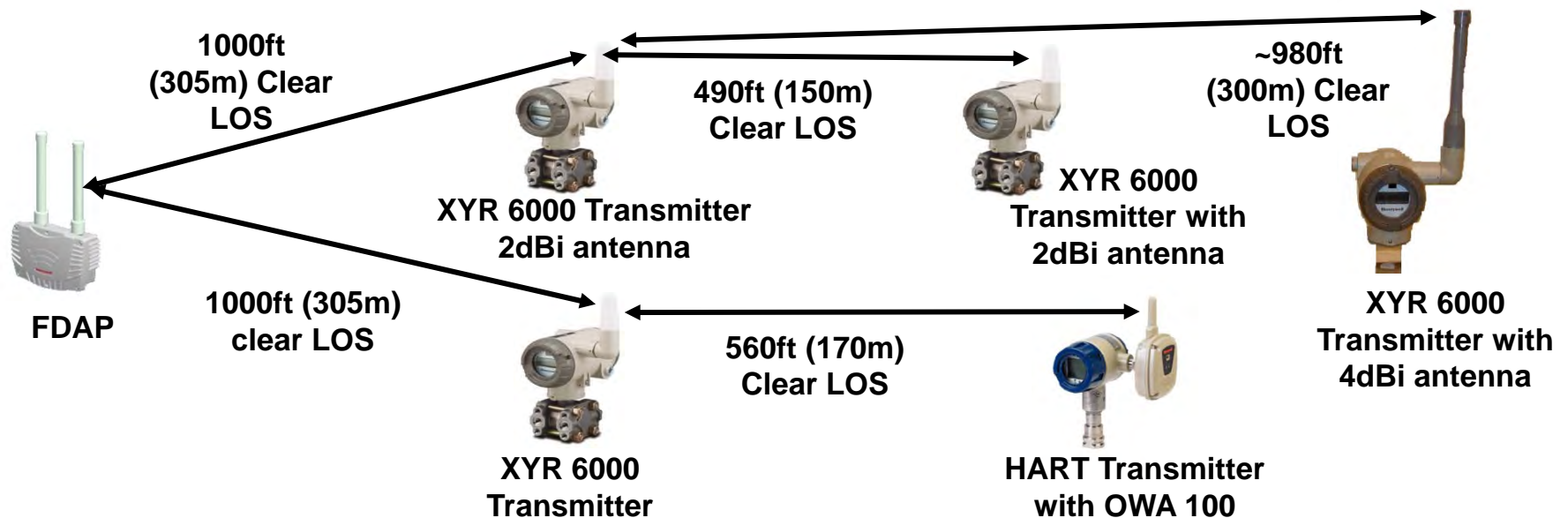
Easy to use

OneWireless Performance Capacity

Max # of Backbone Routers per system	40 backbone routers (Access Points or FDAPs connected to backbone)
Max. # of Routers per system	40 Routers
Max # of Field Devices per system	100 Field Devices (routing and non-routing)
Max # of Field Devices connected to a FDAP or Access Point (devices with input channels)	<ul style="list-style-type: none"> • 18 with 1 sec. publish rate • 60 with 5 sec. or greater publish rate
Max # of Field Devices connected to a FDAP or Access Point (devices with input and output channels)	<ul style="list-style-type: none"> • 10 with 1 sec. publish rate • 40 with 5 sec. or greater publish rate
Max. # of devices connected to a battery powered Field Router	<ul style="list-style-type: none"> • 1 devices with 1 sec. publish rate • 2 devices with 5 sec. or greater publish rate

Radio Distance Map

- XYR 6000* to FDAP – transmission distance ~ 305 m (1,000 ft.) with a clear line of sight
- Two XYR 6000* transmitters – transmission distance ~ 150 m (490 ft.) with a clear line of sight
- These distances are assuming Line of Sight!

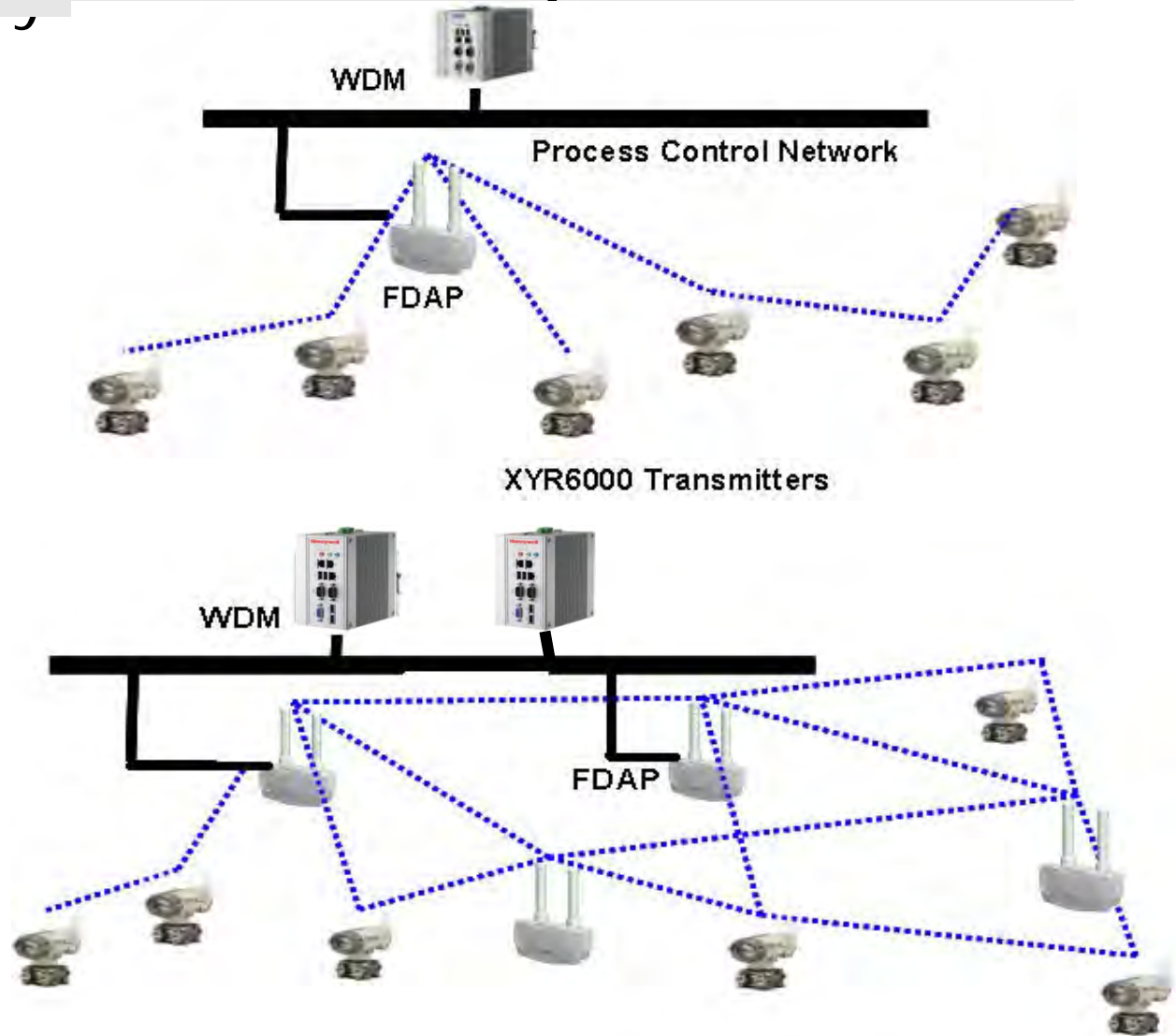


* Note: XYR 6000 with Tx power set to 16 dBm and using 2 dBi antenna

Honeywell OneWireless Implementation

Single Wired FDAP- No redundant path creation

Field Instrument
Meshing
Variants



2 Wired FDAPs for redundant path creation & Redundant Wireless Device Managers

Web Base Interface

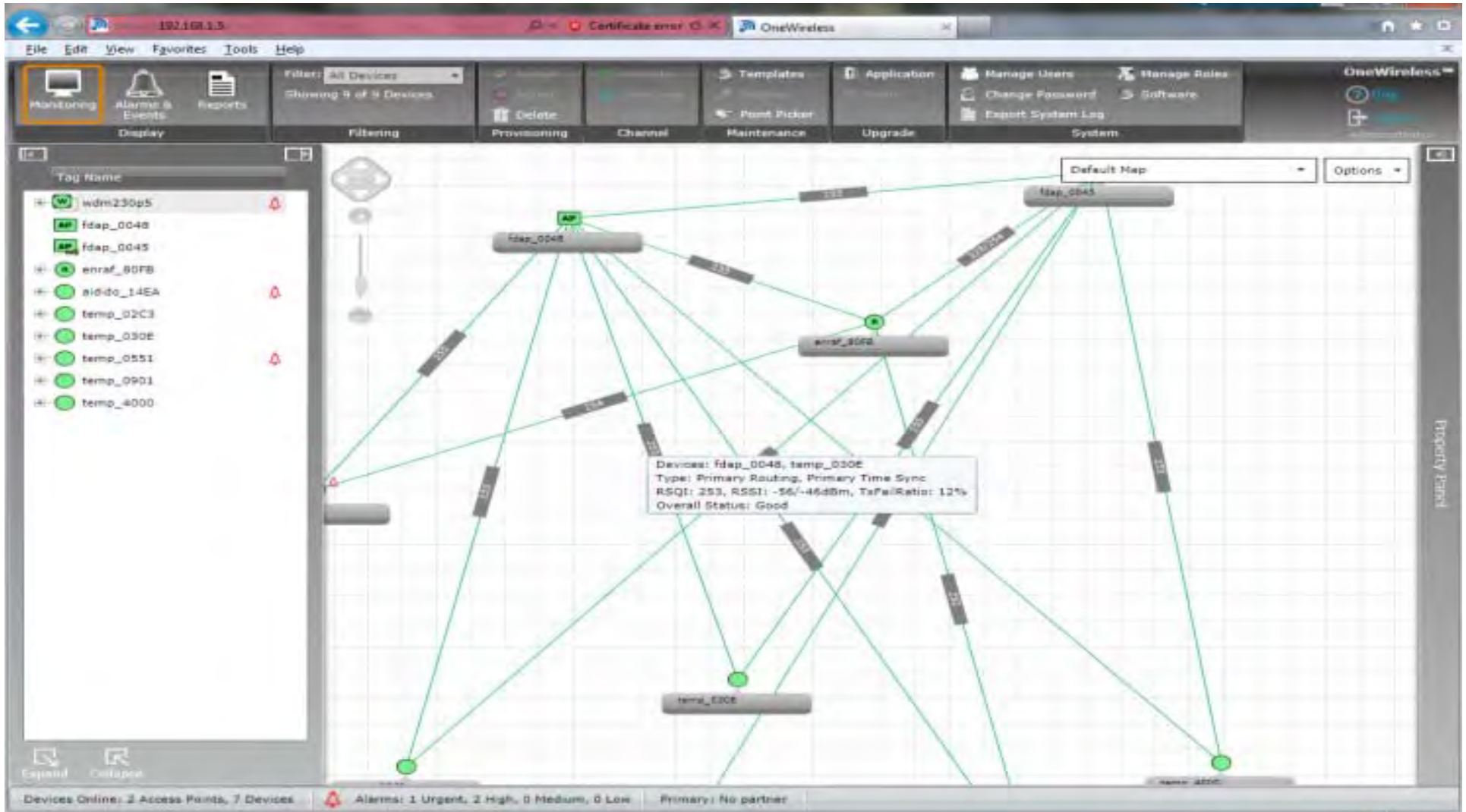
The screenshot displays the Lesman OneWireless web interface. The top navigation bar includes icons for Monitoring, Alarms & Events, and Reports, along with a filter dropdown set to 'All Devices' showing 5 of 5 devices. The main menu contains sections for Provisioning (Accept, Reject), Channel, Maintenance (Templates, Replace), Upgrade, and System (Manage Users, Manage Roles, Change Password, Export System Log). The user is logged in as 'administrator'.

The central area shows a network diagram for 'Location 1' with an access point 'FTWMKTG5' connected to two devices: 'PAR70001' and 'VOF90011'. The connections are labeled with signal strength '23%'. The left sidebar lists the network structure: 'wdm1' containing 'FTWMKTG5', 'DBAREA90013', 'PAR70001', and 'VOF90011'. The right sidebar shows details for 'DBAREA90013', indicating 'Device Properties Unavailable'.

Device details for 'PAR70001' and 'VOF90011' are shown below:

Device	Temp	CH02_BI_1_CHAN	CH03_BO_1_CHAN
PAR70001	75.1 °F	OFF	-nan %
VOF90011	73.6 °F	OFF	OFF

Web Base Interface



WDM External Interfaces

- Connect OPC, MODBUS, and HART Interfaces to the Process Control Network (Ethernet port connecting to your network) from WDM
- For Serial interface, connect a serial cable from the client to the RS232 or RS485 port on the WDM.

MODBUS in the WDM

The screenshot displays the OneWireless web interface in Internet Explorer. The browser address bar shows the URL `https://192.168.1.1/`. The interface includes a navigation menu with options like Monitoring, Alarms & Events, Reports, Filtering, Provisioning, Channel, Maintenance, Upgrade, and System. The main content area shows a tree view on the left with 'wdm1' expanded to 'MODBUS'. The right-hand pane displays the configuration for 'wdm1.MODBUS', including settings for Interface (Disabled), Modbus RTU Options (Serial Port: COM1, Baud Rate: 9600, Parity: None), Modbus TCP Options (TCP Port: 502), Byte Order (Big Endian), and various error response settings.

OneWireless - Internet Explorer, optimized for Bing and MSN

Address: `https://192.168.1.1/`

File Edit View Favorites Tools Help

Google Search Share More Sign In

OneWireless

Monitoring Alarms & Events Reports

Filter: All Devices Showing 1 of 1 Devices

Accept Activate Templates Application Manage Users Manage Roles

Reject Inactivate Replace Radio Change Password Manage Roles

Delete Upgrade Export System Log

System administrator

Location1

wdm1

- MODBUS
- HART
- OPC
- CDA
- GCI

wdm1.MODBUS

Configuration

Interface

Interface: Disabled

Modbus RTU Options

Serial Port: COM1

Baud Rate: 9600

Parity: None

Modbus TCP Options

TCP Port: 502

Byte Order

Byte Order: Big Endian

Unconfigured Register Response

Read Response: Zero

Write Response: Ignore

Read Register Error Response

Float Error Response: NaN

Float Error Value: 0.000000

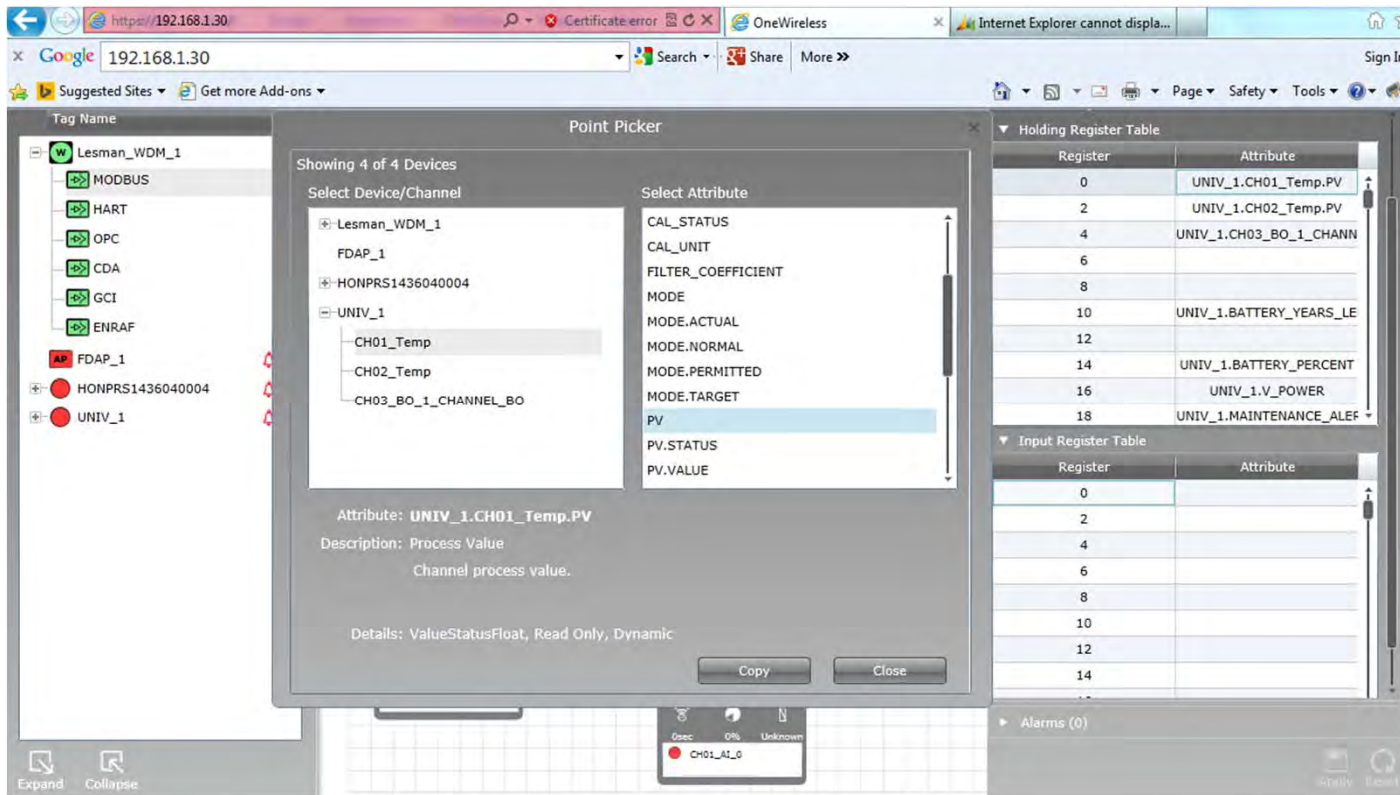
Integer Error Response: Zero

Integer Error Response Value: 0

Statistics

Coil Table

Point Picker



The Point Picker can be used to configure Modbus coil and register tables without typing the syntax

HART in the WDM

The screenshot shows the OneWireless web interface in Internet Explorer. The browser address bar shows the URL 192.168.1.1. The interface has a navigation menu with tabs: Display, Filtering, Provisioning, Channel, Maintenance, Upgrade, and System. The 'System' tab is active, showing a tree view on the left with 'wdm1' expanded to show 'MODBUS', 'HART', 'OPC', 'CDA', and 'GCI'. The 'HART' option is selected. The right-hand pane displays the configuration for 'wdm1.HART'. The configuration includes:

- Configuration**
 - Interface**: Interface: Disabled
 - Serial Interface Options**: Serial Port: COM2, Baud Rate: 9600, Parity: Odd
 - Ethernet/UDP Interface Options**: UDP Port: 55599
 - Polling Address**: Polling Address: 0
- Statistics**
- Vendor and Model Table**

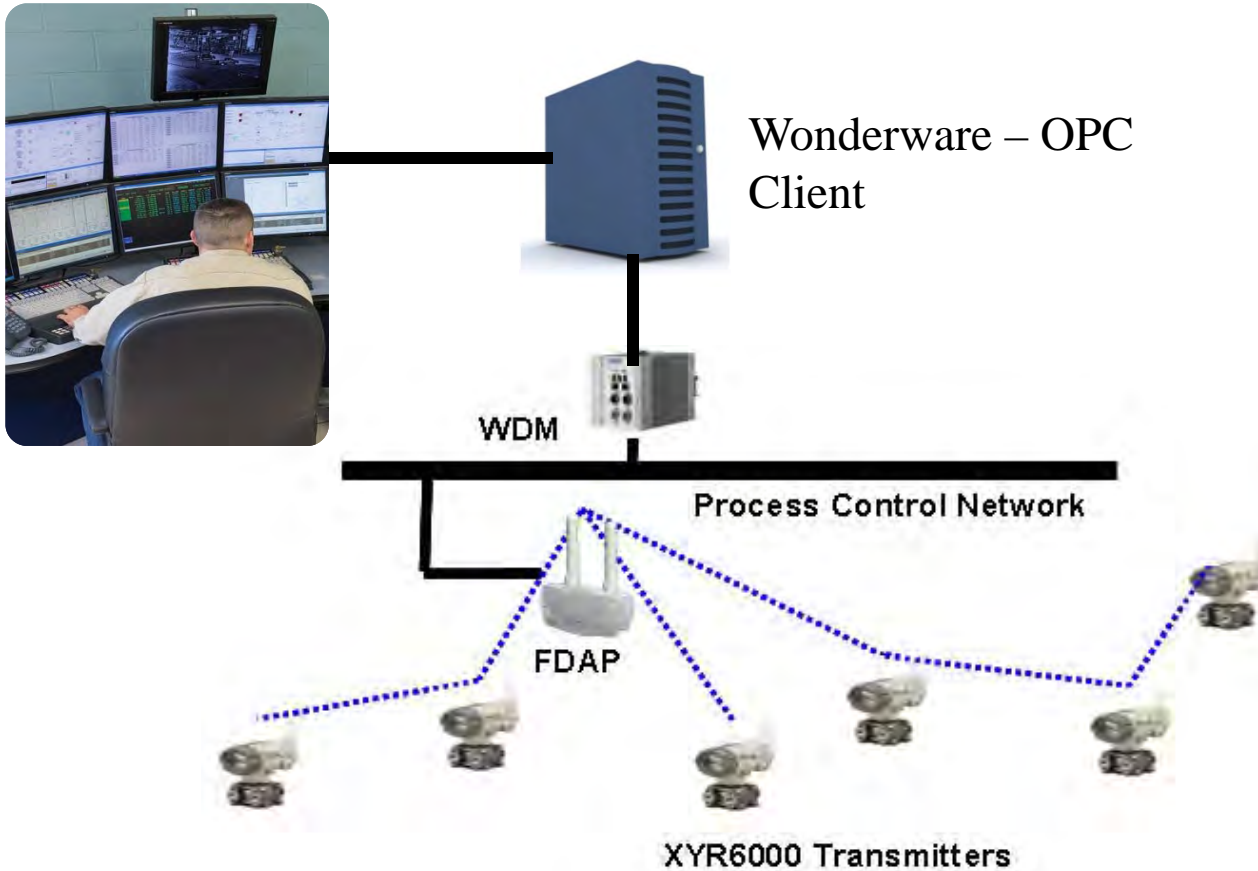
Vendor String	Model String	Manufacturer ID
Honeywell	XYR 6000 Press	23
Honeywell	XYR 6000 Corr	23
Honeywell	XYR 6000 HLA1	23
Honeywell	XYR 6000 TempDI	23
Honeywell	XYR 6000 MAIDI	23
Honeywell	XYR 6000 MAIDIDO	23
		0
		0

At the bottom of the configuration pane, there is an 'Alarms (0)' section.

OPC in the WDM

The screenshot displays the OneWireless web interface in Internet Explorer. The browser address bar shows the URL <https://192.168.1.30>. The page title is "OneWireless". The interface includes a navigation menu with options like Monitoring, Alarms & Events, Reports, Filtering, Provisioning, Channel, Maintenance, Upgrade, and System. The main content area shows a configuration page for "Lesman_WDM_1.OPC". The configuration includes a "Configuration" section with an "Interface" dropdown set to "Enabled", and a "Statistics" section. A central grid displays a device icon labeled "FDAP_1" with status indicators for "0sec", "0%", and "Unknown". A left sidebar lists various protocols: MODBUS, HART, OPC, CDA, GCI, ENRAF, and FDAP_1. The FDAP_1 entry is highlighted, and a red alarm icon is visible next to it. The top right corner shows the user is logged in as "administrator".

OPC in the WDM



Transition to On-Line Demo

Wireless Standards

ISA100.11a

WirelessHART



Defined and specified **backbone architecture** - minimizes latency, provides added bandwidth and quality of service.

Gateway only, no defined backbone network or devices (*network access point defined - external connections not specified*).



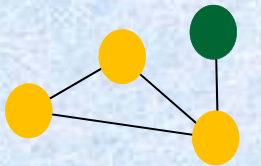
Support for **other communications protocols** via tunneling - provides integration of legacy protocols and devices, protecting installed investment.

Supports only HART using the thumb device



Field instrument transmitters use standard **off-the-shelf batteries** - provides a lower cost of ownership.

Field instruments use custom proprietary battery packs that need to be purchased from the instrument supplier.



Device **routing flexibility** - provides device energy saving and improved network data throughput.

Device routing inherently fixed in all devices.

Honeywell OneWireless

Combines meshing, router radio diversity and redundancy features - ensures **data availability and reliability**.

Offers a more powerful, **longer range radio** (16 dBm) - saves cost due to fewer access point and/or routing devices.

Field instrument transmitters use standard **off-the-shelf batteries** - provides a lower cost of ownership.

Control ready performance with 1 sec. device update rates - provides best-in-class technology ensuring future proof usage.

Emerson Smart Wireless




Provides device meshing and limited redundancy support.

Radio power fixed at 10 dBm.

Field instruments use custom proprietary battery packs that need to be purchased from the instrument supplier.

Update rates limited to 4 sec.

Wireless Field Instrumentation

<p>ISA100 Wireless COMPLIANT</p> 	<p>XYR 6000 Differential, Gauge and Absolute Pressure Transmitters bring simple, safe and secure wireless technology to the pressure measurement portfolio enabling data and information acquisition from remote and hazardous locations without wiring.</p>
<p>ISA100 Wireless COMPLIANT</p> 	<p>XYR 6000 Temperature Transmitters provide flexibility by offering support for a combination of thermocouple (<i>T/C</i>) inputs, RTD inputs and discrete inputs (<i>DI</i>). The temperature transmitter will simultaneously support an integral probe and external inputs; a total of 3 customer selectable input channels (<i>T/C</i>, <i>RTD</i>, <i>mV</i>, <i>DI</i>).</p>
<p>ISA100 Wireless COMPLIANT</p> 	<p>Honeywell's XYR 6000 Universal I/O and High Level Analog Input Transmitters can be used to convert any measurement device with 4-20mA/1-5V output into a wireless sensor (analytical flow or level measurements). The Universal I/O Transmitter provides three user channels for either <i>T/C</i>, <i>mV</i>, <i>V</i>, <i>DI</i> or one channel as a digital output (<i>DO</i>).</p>

Wireless Field Instrumentation

ISA100
Wireless
COMPLIANT



FlexLine Radar is a high precision radar gauge for tank level measurements. The radar technology and signal equipment makes the tank gauging system ideal for stock management and administration, custody transfer, quality control, processing and operations.

ISA100
Wireless
COMPLIANT



SKF, with Honeywell's input, has designed a wireless vibration and temperature monitoring system for Semi-Critical & Balance of Plant assets with rolling element bearings (added technology) whose reliability is Critical to the safety and production goals of the plant and whose cost of repair and loss of production can be dramatically reduced by employing PdM technologies

The WVT is designed for one motor driven asset, with 2 sensors on the Motor and 2 on the driven asset (i.e. pump, fan)

This system has been engineered to drop into a Honeywell One Wireless ISA 100.11A

Wireless Field Instrumentation



XYR 6000 Position Sensor allows remote, reliable position monitoring in a variety of applications, such as valve position monitoring, in hazardous areas and remote installations.



OneWireless Adapter transforms a HART device into an ISA100 compliant wireless device, enabling the user to easily gain access to the information locked in HART devices. It provides access to 4 HART dynamic variables (*PV, SV, TV, FV*), multivariable data, diagnostics information and device configuration parameters.

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