Honeywell’s OneWireless™ Network seamlessly extends process control into the field. Manufacturers are turning to innovative wireless applications and services to help meet higher productivity goals and respond to stricter security and environmental regulations. They recognize how wireless technologies can enable applications that will not only help meet immediate requirements, but also solve problems in the future.

**An Industrial Wireless Network**

The Honeywell OneWireless Network is a multi-application, multi-standard wireless network that can be tailored to offer the coverage needed for industrial applications, from a simple wireless field instrument network to a completely integrated plant-wide, multi-application wireless network.

**Flexibility and Scalability**

The OneWireless Network offers users the choice to design the network best fitting their application needs:

- **Meshing field instruments:** Each ISA100 field instrument can communicate with more than one other field instrument to form a mesh network. Field instruments cannot only send their own data, but route data received from neighboring field instruments. The data can jump through multiple field instruments before reaching the host gateway. This type of network is typically implemented by users who want to tactically implement a handful of battery-operated field instruments for non-critical monitoring purposes and do not require fast update rates.

- **Mesh network for field instruments only:** Access points for wireless field instruments enable users to build a plant-wide wireless mesh network for field instruments capable of supporting hundreds of field instruments sending data at fast update rates. This type of network is typically implemented by users who want reliable wired-like performance with fast update rates from their battery-operated field instruments for critical monitoring and control. This network does not provide wireless coverage for Wi-Fi devices such as handhelds or Ethernet devices such as digital security cameras.

- **Mesh network for field instruments and Wi-Fi devices:** Multi-application access points capable of communicating with ISA100.11a field instruments and IEEE 802.11 devices enable users to design a plant-wide multi-application network. This type of network is typically implemented for users who want to implement handhelds for their mobile workforce, personnel safety systems, and other applications that require fast update rates.

Honeywell’s OneWireless™ Network seamlessly extends process control into the field, which allows the site to:

- Cost-effectively and quickly roll out battery-powered wireless transmitters to collect additional data to improve control strategies or meet regulations at lower costs
- Empower a mobile workforce by providing remote access to process data and other plant-related information
- Enhance a plant’s security by cost-effectively implementing wireless CCTV cameras
- Improve personnel safety thanks to wireless personnel safety system
- Connect remote controllers to the central control system
safety and plant security systems as well as hundreds of field instruments for monitoring and control purposes.

Users will implement these different types of network devices throughout their plant based on the type of coverage needed and monitor the network via a single network management application.

**Universal**

The OneWireless Network supports all standards required to implement industrial applications:

**Multi-standard network:** OneWireless Network supports ISA100.11a standard for wireless field instruments, IEEE 802.11 for Wi-Fi devices and IEEE 802.3 for Ethernet-based devices. A multi-standard network drastically reduces the cost associated with the deployment, maintenance and security management of a wireless network.

**Multi-protocol network:** Users can easily integrate ISA100.11a data with their existing applications using HART, Modbus (serial and TCP) and OPC. A generic tunnel is also offered to enable native communication between client/server transmitter and host systems using any protocol. For instance, Honeywell uses this feature to support the Bi-Phase Mark III protocol used by its Enraf Entis applications.

**Performance**

**Wired-like performance:** Wireless access points allow users to achieve wired-like performance from their wireless field instruments. With access points, wireless field instruments don’t have to route data from other field instruments. Users will get five years or more battery life from their field instruments at one-second update rates.

**Self-contained and predictable power management:** Without power efficiency, many of the cost-saving benefits of wireless field instruments can be lost to costs associated with battery changing. Honeywell offers a power-efficient solution with a 10-year battery shelf life from wireless field instruments at fast update rates.

**End-to-end industrial security:** Honeywell protects plant information and ensures safe operations with industry standard 128-bit encryption at the mesh, Wi-Fi and wireless field instrument level.

**Over the air firmware upgrades and configuration:** All ISA100.11a wireless field instruments can be configured and upgraded over the air, saving several hours of labor over the life of the wireless field instrument.

**Availability**

Honeywell offers the best data availability for wireless field instruments.

**Data and channel segregation:** Honeywell ensures interoperability between Wi-Fi devices and ISA100.11a wireless field instruments. The network also provides automatic prioritization of data ensuring critical information from wireless instruments is always received first.

With a high-speed and self-organizing mesh network, OneWireless delivers flexible channel allocation and a robust architecture with latency control and redundancy for safe wireless control.

**Antenna diversity:** The antenna diversity is used to enhance the reliability of both the Wi-Fi and field-instrument wireless coverage in multi-path environments.

**Investment Protection**

Honeywell's industrial wireless portfolio is future-proof thanks to the adoption of communications standards.

**ISA100.11a and IEEE 802.11 a/b/g/n:** Standards offer the freedom of choice and interoperability requested by users. Existing wireless users can migrate their existing infrastructure to an ISA100.11a compatible one via a simple over the air firmware upgrade. ISA100.11a ensures interoperability between wireless field instruments from different vendors.

**Support of all key field protocols:** Leveraging its multi-protocol capability, users can easily integrate wireless field instruments with their existing applications using Modbus, HART, OPC and ISA100.11a generic tunnel.

**OneWireless Network Pillars**

The network can be composed of the following interconnected components: Wireless Device Manager (WDM), OneWireless Field Device Access Points (FDAP), OneWireless Multinodes, Cisco 1552S Access Points, and XYR 6000 field instruments.

**Wireless Device Manager**

WDM manages all wireless field devices, which includes the ISA100.11a wireless field instruments and field instrument network devices such as FDAPs, Multinodes and the Cisco Access Point. WDM assumes the roles of the wireless field instruments’ network gateway, system manager and security manager. It is used for initial wireless device configuration and to store wireless network system data for configuring wireless devices. It is also the trust for the wireless field instrument
network by generating, issuing and managing security keys, which all field devices require in order to join the secured network. Finally, it hosts all the interfaces required to connect the sensor data to your control application via Modbus, HART OPC and proprietary protocols.

**Field Device Access Point**
A Field Device Access Point (FDAP) is a rugged industrial access point, which provides access to ISA100.11a field instruments. Once deployed in the field, FDAPs self-discover and self-organize into a managed, secure and redundant wireless field instrument mesh network. They act as bridges between the sensor network and the wireless or wired infrastructure (backhaul).

**Cisco Aironet 1552S Outdoor Access Point**
The Cisco® Aironet® 1552S Access Point is a rugged industrial access point and mesh bridge node, which provides access to IEEE 802.11 a/b/g/n clients as well as ISA100.11a compatible field instruments. The product boasts Cisco’s CleanAir® technology, which intelligently optimizes the network around RF interference sources and improves the air quality, thus significantly increasing network performance and user experience.

**Cisco WLAN Controller**
Cisco wireless controllers help reduce the overall operational expenses of a network designed with Cisco’s Aironet 1552S Access Point; extending the same Cisco Borderless Network policy and security from the wired network core to the wireless edge. The WLAN Wireless Controller delivers:

- Flexibility to centrally configure wireless policy, management, or security settings on remote access points through centralized provisioning and management
- Wireless intrusion prevention system (WIPS) capabilities
- Enforcement of centrally-defined policy across wired and wireless networks and integration with Cisco Identity Services Engine
- Support for advanced mobility services, including ClientLink, VideoStream and CleanAir technology.

**Honeywell OneWireless™ Xyr 6000 Field Instruments**
XYR 6000 field instruments enable customers to obtain data and create information from locations where running wire is typically cost-prohibitive and/or the measurement is in a hazardous location.

With ISA100.11a, XYR 6000 field instruments can be configured as routing or non-routing devices. Routing field instruments can send their own data but also data received from neighboring field instruments. These devices can be upgraded to ISA100 via a simple over the air firmware update.

**The Only Network You Will Ever Need**
Honeywell’s OneWireless Network extends your process control network into the field. It is:

- The most flexible and scalable network in the industrial market
- The easiest system to commission and maintain
- The most performing and reliable network – field proven for best uptime
- The most cost-efficient network
## Details

### Network Architecture
The Network is composed of WDM, FDAPs, Cisco 1552S Access Points and Cisco Wireless WLAN Controller, XYR 6000 field instruments and other ISA100.11a field instruments. It can be tailored to satisfy diverging application requirements, from a simple wireless field instrument network to a completely integrated plantwide wireless network.

### Highlighted Features

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<tr>
<th>Feature</th>
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<tbody>
<tr>
<td>• IEEE 802.11 a/b/g/n high-speed, self-organizing, self-healing mesh network for multi-applications</td>
<td>• End-to-end industrial security with industry standard 128-bit encryption</td>
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<tr>
<td>• ISA100.11a self-organizing, self-healing mesh network</td>
<td>• Over the air firmware upgrades and configuration</td>
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<td>• Routing and non-routing ISA100.11a field instruments</td>
<td>• Support of all key field protocols</td>
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<td>• Up to one second reporting with latency control and the ability to configure sensors on the same network at different update rates</td>
<td>• Antenna diversity improving reliability and range</td>
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<td>• Built-in wireless field instrument redundancy for assured communications</td>
<td>• Certified to be used in hazardous environments</td>
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<td>• Preconfigured QoS with process data set at highest priority</td>
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### Network Standards

- 2.4 GHz and 5.8 GHz IEEE 802.11 a/b/g/n for use in facilities worldwide
- 2.4 GHz ISA100.11a for wireless field instruments

### Network Security Management
End-to-end security:
- 128-bit encryption for process data
- 802.11i, Wi-Fi protected access (WPA2), WPA
- 802.1X authentication, including extensible authentication protocol and protected EAP (EAP-PEAP), EAP transport lauer security (EAP-TLS), EAP-tunneled TLS (EAP-TTLS), and Cisco LEAP
- Advanced encryption standards (AES), temporal key integrity protocol (TLIP)
- VPN passthrough
- IP Security (IPsec), Layer 2 Tunneling Protocol (L2TP)

### Field Protocols
Modbus TCP/Serial, HART, OPC

### Other Interfaces
OneWireless Adapter Interface – interface tunneling HART data collected from wired HART devices to HART clients

### Field Instrument Power Management
Self-contained and predictable power management designed for 10-year sensor battery life (rain or shine)
More Information
To learn more about Honeywell’s wireless solutions, visit www.thewirelessplant.com or contact wireless@honeywell.com.

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