

# **Wireless Scalable Networks from the First Meter to the Last Mile**

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**industrial/wireless/performance**



The use of Ethernet and Internet Protocol (IP) is rapidly gaining acceptance for industrial applications.

### **Integrating IP and Ethernet with Existing Networks**

A communications manager charged with establishing a new network or expanding an existing one has various needs for that network. It must work for the current application, integrate with existing infrastructure and accommodate future growth and technology. Cost effectively and securely combining wired and wireless, industrial and corporate network infrastructure, serial, IP and proprietary protocols are the major challenge.

Because of the significant resources most organizations have invested in existing non-IP or serial networks, the ability for new, IP-based technology and applications to integrate seamlessly is the key. MDS ensures that yesterday's technology can be integrated and reused with today's solutions.

To future proof a network, MDS utilizes open standards architecture and upgradeable firmware such as Java, SNMP, IP and Linux. These ensure the long-term viability and scalability of your network infrastructure.

### **Advantages of Industrial Wireless Solutions**

Integrating wireless and unlicensed technology can provide numerous benefits when compared to the use of a wired network. A wireless network can help realize lower upfront and recurring costs, as well as ease of implementation, management and maintenance, and greater flexibility.

#### **Lower Upfront and Recurring costs**

The ability to connect to data and information without cable and wire by using an MDS wireless solution saves installation and recurring monthly costs. A license-free MDS solution allows immediate system installation and services.

The MDS iNET 900 operates license-free in the 902 – 928 MHz ISM frequency band. The iNET

is easy to install (configuration requires virtually no setup) and scaleable so that adding to your wireless network in the future is easy and cost effective. The rapid deployment of the radios—literally hours, not days or weeks—means almost no disruption to service, and reduced monthly operating costs.

### **One Device Replaces Many**

The MDS iNET is a wireless solution that supports different protocols, users and applications—all in one device—translating into a lower infrastructure investment. The iNET enables IP/Ethernet and Serial services and enables reuse of existing infrastructure.

### **Performance and Reliability**

Because of its design for industrial wireless performance the iNET provides large advantages within industrial environments.

Many wireless devices are designed for an office setting or even for consumer use. Indoor office or residential settings do not resemble the brutal conditions that are typical for industrial environments. An industrial environment means extreme temperatures and rugged (i.e., dirt, grime, etc.), noisy, RF conditions.

The MDS iNET is long-range, has been designed and tested to extreme temperatures, draws little current, has an industrial Mean Time Between Failures (MTBF), has mechanisms allowing it to contend with interference and offers network redundancy.

Incorporating the iNET, an industrial-grade radio, into a network translates into greater uptime, network availability and reliability.

### **Manageability**

Today's enterprise-wide networks are a combination of wired and wireless, industrial and office, IP and legacy protocols, public and private, making the ability to manage it challenging.

The good news is wireless devices/radios have evolved from pieces of hardware to sophisticated software-controlled network elements with higher bandwidth and more

features that allow complex network topologies. Radios must have the ability to be managed, maintained and controlled from a remote site.

The iNET can be managed using the MDS NETview MS™. NETview is a standards-based, SNMP (Simple Network Management Protocol) network management system (NMS). It allows remote management and control of network devices, simple integration with the wired portion of a network equating to ease of management, lower maintenance costs and quick upgrades. An NMS providing self-diagnosis and wireless alarm reporting also allows customers to receive alarm notifications of issues or outages quickly translating into less downtime and lower maintenance costs.

### **Security**

As networks become a mix of public, private, industrial and office, wired and wireless infrastructure, the issue of security becomes critical.

Networks need multiple levels of security in place, such as a standard security plan, firewalls, and virtual private networks (VPN) for example. Assuming the necessary steps have been taken to secure a network on an enterprise level, the next concern is incorporating wireless technology that enhances that security.

### **Frequency Hopping Spread Spectrum (FHSS)**

The iNET uses a technique known as Frequency Hopping Spread Spectrum (FHSS). One of the advantages of Frequency hopping is it provides better performance with heavy interference, however it also provides an added layer of security to a network. Originally designed to provide transmission security for military applications during World War II, the carrier frequency changes several times per second and requires another radio—to be set to the exact same pattern—to listen to any data being transmitted.

In a FHSS radio, each pseudo-random sequence of hops is generated based upon a user-selected key that can result in tens of thousands of

different combinations making it virtually impossible to reproduce.

And because the signal is spread over a range of frequencies, the communications link is more resilient to interference or jamming. Also, the spreading technique makes it more difficult for unwanted listeners to intercept network traffic.

A wireless product that offers several layers of security prohibiting unauthorized access and eavesdropping of data communications is the ideal solution. Dynamic key sharing, authentication and provision lists are some mechanisms that the iNET uses to enhance network security.

### **Conclusion**

An iNET wireless network provides a secure, manageable, industrial-grade, high-performance solution for the lowest total cost of ownership.

The ease of installation, reduced monthly operation costs over wired, and diminished risk of network outages due to cable maintenance issues, can significantly reduce capital expenses and improve revenue-generation.

Integration of IP and your existing legacy network is also possible using the iNET capable of supporting numerous protocols and IP and serial configurations.

Readers interested in more information about wireless applications for security monitoring can contact Microwave Data Systems, 175 Science Parkway, Rochester, NY 14620 (Tel. 585.242.9600). Additional information can also be found on the MDS website at [www.microwavedata.com](http://www.microwavedata.com).

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