

Wireless Mesh Technology Used in Life Saving Application

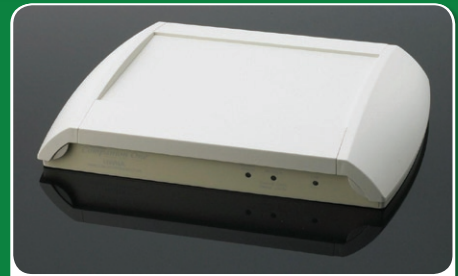
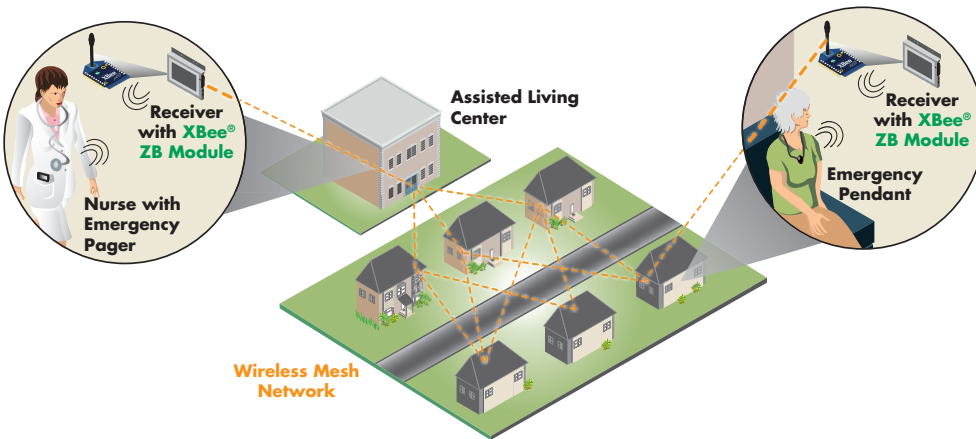


Background

As the senior living industry continues to grow, so does the need for advanced technology in communication, safety and security. Whether the need is a state-of-the-art emergency call system for a new community, or an upgrade for an existing property, Tel-Tron designs, installs and maintains emergency call systems for the senior living industry.

Until recently, the wireless receiver network on Tel-Tron's system was wired to the emergency call server. Because Tel-Tron's systems relay life-saving information such as smoke/fire alarm notifications or calls for emergency care, Tel-Tron believed that wired systems were the only solutions reliable enough for this critical communication. For new construction communities, the wired paradigm is still an excellent manner of connecting Tel-Tron's systems. However, when installing retrofits or upgrades to existing properties, running cables can be extremely difficult. Tel-Tron had been looking for a reliable wireless technology for years and finally chose ZigBee mesh technology. Tel-Tron determined the self-healing, node-hopping nature of ZigBee technology was the most reliable solution for its needs and selected Digi International's XBee® ZigBee modules.

"Since we are in the life saving business, we needed an extremely reliable technology," said Brian Dawson, president, Tel-Tron. "If this signal doesn't go through, really bad things can happen to people. Until we came across the self-healing mesh technologies, we didn't believe there was a wireless solution worthy of a life saving application."



"Digi is actively interested in its customers and seeing what kind of permanent enhancements they can make to their products to allow niche applications."

- Brian Dawson, president, Tel-Tron

Application Summary

Application:

Emergency Call Systems for Assisted Living Communities

Industry:

Senior Living

Company:

Tel-Tron Technologies Corporation

Challenge:

Tel-Tron needed a reliable wireless solution for connecting assisted living residents' homes and emergency call pendants.

Solution:

XBee ZB ZigBee OEM RF modules created a ZigBee mesh network that can self-heal in the event of node failure or communication breakdown between emergency call pendants and control equipment monitored by medical staff.



XBee Modules Provide Reliability for Mission-Critical Application

In a Tel-Tron emergency call system, assisted living community residents each carry a pendant 24/7. The pendant allows the resident to call for help if he/she falls or needs any kind of emergency assistance. Additionally, fire, security and other safety alarms are scattered throughout the community. When an alarm is triggered or a resident presses the button on his/her pendant, a wireless signal is sent to a receiver which communicates this information back to the control equipment being monitored by emergency response personnel. In the wired version, the receivers are connected to the control equipment using CAT 5 cable. In the wireless setup, each receiver includes an XBee module to enable wireless communication between the receiver and the control equipment.

“Selecting the right vendor was extremely important,” Dawson said. “If someone has a heart attack or someone falls down and breaks a hip, a call for help is not an optional communication.”

In addition to proper vendor selection, layout and application of the technology is important. Tel-Tron positions the receivers to create redundancies within range of each transmitter. Multiple receivers allow for multiple routes back to the transmitter. This maintains system integrity if any node fails.

“The systems are very redundant in the way they are implemented,” Dawson said. “This is important so that we don’t cripple the system if one or two nodes fail.”

Self-healing is an important feature of a ZigBee mesh network. Mesh networks are decentralized in nature; each node is self-routing and able to connect to other nodes as needed. This allows a ZigBee mesh network to repair itself if there is any node failure or communication breakdown.

“Self-healing made the XBee very attractive,” Dawson said. “We considered Wi-Fi, 2.4 GHz, 900 MHz and long-range RF products, but until we discovered self-healing mesh technology, we didn’t think anything was worthy of a life-saving application.”

A Strong Partnership

Tel-Tron deployed its first wireless installation in November 2008 and currently has seven wireless configurations deployed that feature XBee technology. One of the installations features 165 XBee ZigBee nodes scattered over 100 acres.

“We not only needed good technology, but we needed proper layout of the technology,” Dawson said. “Digi’s technical support has been excellent. They’ve made themselves regularly available and have even visited us a couple of times.”

Tel-Tron also liked that Digi added features and functionality to the XBee.

“Digi is actively interested in its customers and seeing what kind of permanent enhancements they can make to their products to allow niche applications,” concluded Dawson. “Whether firmware support or physical packaging, they have been interested in our success which is key to us. When we choose a vendor to OEM our product, they need to be flexible. Digi understands how people are using their products, and they want to be helpful.”



More about XBee ZB ZigBee Modules

The low-power XBee ZB and extended-range XBee-PRO® ZB use the ZigBee PRO Feature Set for advanced mesh networking. By deploying this and any XBee device, OEMs are leveraging the value of the XBee product family and Digi’s unsurpassed Drop-in Networking offering of gateways, adapters and routers. In addition, XBee users can take advantage of platform agility—the ability to rapidly change their XBee solution with minimal development.

Key Features:

- Low-cost, low-power mesh networking
- Self-healing and discovery for network stability
- Interoperability with ZigBee PRO Feature Set devices from other vendors
- Support for larger, more dense mesh networks
- 128-bit AES encryption

For more information on Digi products please visit www.digi.com

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Digi International
877-912-3444
952-912-3444
info@digi.com

**Digi International
France**
+33-1-55-61-98-98
www.digi.fr

**Digi International
KK**
+81-3-5428-0261
www.digi-intl.co.jp

**Digi International
(HK) Limited**
+852-2833-1008
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