CASE STUDY

Extreme Wireless Makeover: Revolutionizing the Design, Deployment and Management of Wireless Networks

Customer Overview: "Extreme Makeover: Home Edition"

For its 2008/2009 season finale, "Extreme Makeover: Home Edition" chose to rebuild a house for the family of Bernard McFarland and his three sons. They live in Martindale-Brightwood, an old and relatively low-income neighborhood on the east side of Indianapolis.

The Estridge Companies, the builder selected for the project, contacted ERS Data Solutions to build a wireless mesh wide area network to support operations during the "Extreme Makeover: Home Edition" project. The primary challenges for ERS were the highly compressed time frame and the network reliability required for the show. Even a few minutes of network downtime could make the whole project fall behind schedule.

The network also had to be robust enough to support numerous high-bandwidth applications. The Estridge Companies' construction team needed to complete tasks such as accessing and sharing blueprints and schematics. The approximately 5,000 community volunteers who support the show needed to access the Internet. And the television crews on the set needed to send video back and forth.

In addition, Paul Estridge, Jr., the CEO of The Estridge Companies, had future plans for the wireless network. He asked ERS and FirstMile Technologies (an Estridge Company and Internet Service Provider) to expand the network and make it accessible to the entire neighborhood, such that it would continue to operate after the completion of the show. They agreed, and the network is now being expanded to help support community initiatives in education and other areas.

The challenge: Quickly deploy a rock-solid wireless Internet network robust enough to support hundreds of simultaneous users

When filming "Extreme Makeover: Home Edition," the builder has approximately seven days from the point the house is demolished to present a set of keys to the design team. That meant that ERS had to set up the wireless network in record time. To complicate matters further, ERS was not even allowed on the site until the family was notified that they would be on the show.

"At 10:30 a.m., we got the go ahead that we could enter the staging area. We had the server and switch installed and deployed the first seven high priority nodes by 2:00 p.m. – just three and a half hours," says Sam Kincaid, a systems engineer at ERS. "We had to cover the site where the house was being built as well as a staging area that was a half mile away and all points in between."

CUSTOMER PROFILE

Enterprise
"Extreme Makeover: Home Edition"
Indianapolis, Indiana, USA

Industry
Television production and community development

Motorola solution
- One Point Wireless Suite: MeshPlanner and Wireless Manager
- Point-to-Multipoint access points and subscriber modules
- Point-to-Point Ethernet bridges
- Mesh wide area network (MWAN) access points

Solution features
- Outdoor broadband WiFi access
- Video and data file transfer
- Email
- Project management

Benefits
- Reliable wireless connectivity under heavy usage loads
- Lightning quick design and deployment
- Simple, intuitive network management for maximum network availability

"When they filmed "Extreme Makeover: Home Edition" in Indianapolis, The Estridge Companies' construction team had 106 hours from the point the house was demolished to present a set of keys to the design team. To help them communicate more effectively while meeting that aggressive timeline, we deployed a Motorola wireless network in a little more than three hours. And we couldn't have done it without Motorola's One Point Wireless Suite software, which made designing and managing the network astonishingly easy."

- Sam Kincaid, Systems Engineer for ERS Data Solutions

In total, ERS deployed and configured 20 Motorola MWAN 6300 series access points (APs). ERS also deployed one 5.4 GHz Point-to-Multipoint 400 series AP and two subscriber modules (SMs) to connect the areas covered by the mesh network back to the Internet point-of-presence. When completed, the network covered a half square mile and 459 homes.

The solution: Design, deploy and manage the wireless network for *Extreme Makeover: Home Edition* using Motorola's One Point Wireless Suite software

How did ERS install the network so quickly? They used Motorola's MeshPlanner and Wireless Manager, both part of the One Point Wireless Suite, a powerful set of software solutions used to design, deploy, manage and protect wireless networks.

Before even entering the site, ERS used MeshPlanner to plan out the approximate location of the wireless nodes and the Point-to-Multipoint backhaul links.

MeshPlanner couples predictive design capabilities and 3-D visualizations with Google Earth-based network views to simplify equipment placement. MeshPlanner allows engineers to easily determine the impact of the physical environment – including terrain, buildings, foliage and even subscriber densities – on wireless signals so that they can confidently and cost effectively design and deploy networks that reliably deliver the coverage required. Once the network is deployed, the global positioning system (GPS)-based drive test measurement capabilities of the software allow engineers to verify that the network is actually performing as designed.

Using breakthrough network visualization via Google maps, the One Point Wireless Manager allows organizations to visualize the performance of their indoor and outdoor wireless networks in real-time on a single computer screen. The software provides control over virtually all aspects of network operation, from identifying and resolving problems, to provisioning and re-configuring network elements, to monitoring and verifying performance.

Once ERS could finally start deploying the network, the One Point Wireless Suite proved to be invaluable once again – this time to help speed deployment.

"After getting the One Point Wireless Manager server installed and running, it took about 5 minutes to provision a Mesh radio (this includes discovery) and it took about 15 minutes to deploy the radio on the pole," says Kincaid. "In the network operations center, I plugged the radio directly into the switch to get it discovered, got all my configurations set and handed it off to the contractor. The contractor hung it on the pole, and it automatically appeared on the network map that the software supports."

The deployment took such a short time that it shocked the contractor, who had worked with other wireless equipment many times before. He said to Kincaid: "Seriously, is that all you have to do? Other manufacturer's radios are taking hours to deploy."

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- *Sam Kincaid, Systems Engineer, ERS Data Solutions*

The benefits: Motorola's broadband wireless equipment delivers unbeatable bandwidth and its One Point Wireless Suite software supports superior network design and management

During the taping of the "Extreme Makeover: Home Edition" show, approximately 5,000 volunteers had access to the broadband network built by ERS and FirstMile Technologies. Many of the volunteers were college students, who were sharing a high volume of pictures, videos and other information back and forth on various social networking websites.

Meanwhile, the marketing department for The Estridge Companies was also editing and sending television commercial clips to the local network affiliate, which involved the transfer of large, high quality files. In addition, the builders and others working on the set were using applications such as project management software and email.

Through it all, the network held up beautifully. "If you want to test something, bring a bunch of college kids in," says Kincaid. "It really showed the robustness of the equipment when it handled all that traffic."

Not only did the network reliably support the high bandwidth demands of the users, it was also incredibly easy to maintain, thanks to the physical map feature found in Motorola's One Point Wireless Manager.

Wireless Manager allows network managers to view all of the network's radios on a live Google map. So instead of having to sift through text based information about hundreds of individual radios to troubleshoot problems, One Point Wireless Manager visualizes on the map a wide range of crucial information including connectivity between nodes, link quality, range, and device and network availability. These graphical representations help the network administrator quickly determine network status, identify problems and determine the severity of impact on the network and users.

"The physical map in Wireless Manager is one of the exciting new features, and one that nobody else currently has. After using it, I don't know a network administrator that would want to manage a MWAN without it."

- *Sam Kincaid, Systems Engineer, ERS Data Solutions*

currently has," Kincaid says. "After using it, I don't know a network administrator that would want to manage a MWAN without it."

In fact, while "Extreme Makeover: Home Edition" was being filmed, one of the radios on the network lost power. One of the staff members had accidently plugged the radio into a power source for temporary lights, which only ran at night. So when the sun came up, the power generator was turned off and the radio lost power, making it unreachable.

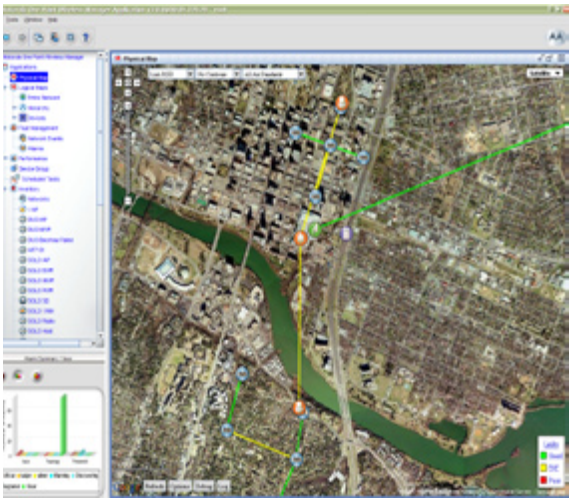
ERS Data Solutions personnel, who were monitoring the network using Wireless Manager's physical map view, immediately noticed that the node had turned red on the map. However, thanks to the self-healing quality of the mesh network, people were still connected to the network. ERS was able to correct the problem without any users being affected.

"It is always a good day when you can head to and fix a problem on a wireless network before the customer notices it and calls you," Kincaid says. "That is what the One Point Wireless Manager allows you to do."

"Another useful feature of the Wireless Manager is how easy and intuitive it is to use," Kincaid says. "You can have anyone monitoring an application, not requiring the advanced skill set needed for other text-based hard-to-analyze products."

ABOUT "EXTREME MAKEOVER: HOME EDITION"

Each episode of "Extreme Makeover: Home Edition" is self-contained and features a race against time on a project that would ordinarily take at least four months to achieve, involving a team of designers, contractors and several hundred workers who all have just seven days to totally rebuild an entire house – every single room, plus the exterior and landscaping. The lives of the lucky families are forever changed when they learn that they've been selected to have their home walls moved, their floors replaced and even their facades radically changed.



A Brighter Future for Martindale-Brightwood

Now that the filming of "Extreme Makeover: Home Edition" has been completed, the network is being used to support the community's development in areas such as education, healthcare and crime-fighting. In particular, it is already being used as an education-enabler to provide students in the neighborhood the access they need outside of the classroom to stimulate their minds, raise test scores and graduation rates.

In the near term, the current network will be expanded to reach the neighborhood's three square mile radius. It will include 140 Motorola MWAN 6300 series APs, 12 Point-to-Multipoint APs, 40 Point-to-Multipoint SMs and several Point-to-Point wireless Ethernet bridges.

ERS Data Solutions Group (ERS DSG) is a Motorola Authorized Channel Partner for Wireless Broadband and Enterprise Mobility. With expertise in technologies such as Mesh, Point-to-Multipoint and Point-to-Point broadband; ERS DSG is also leading the way in indoor WLAN, WWAN, VoWLAN and mobile computing solutions. A Division of Emergency Radio Service, Inc., ERS DSG is part of a 60+ year heritage with Motorola in almost every avenue of wireless technology. Customer focused and quality driven, ERS DSG offers the total customer experience of sales, engineering, training, support and maintenance.

FirstMile Technologies is a regional Internet service provider of high-speed Internet access, fiber connectivity, telephone, home entertainment services and security monitoring systems. Based in Westfield, Indiana, and serving central Indiana, FirstMile Technologies is part of an over 30 year history of home building and neighborhood development.

MOTOROLA

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