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## 2012 Wireless Technology Report



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*"The wireless telegraph is not difficult to understand. The ordinary telegraph is like a very long cat. You pull the tail in New York, and it meows in Los Angeles. The wireless is the same, only without the cat."*

**ALBERT EINSTEIN**  
(1879-1955)



**FOREWORD:**

## Wireless Technology and Its Potential for Creating Cost Efficiencies

By John Watson and Jerry Denham

Leaf through the pages of this edition of *Today's Wireless World*, and you'll notice some peculiar, square-shaped barcodes on many of the pages. They're response codes, more commonly known as "QR codes." First introduced almost two decades ago in the automotive industry to track vehicles during the manufacturing process, QR codes have become popular the world over as a cost-effective marketing tool. The latter comes into play when you wave a smartphone over a QR code and snap a picture. In most cases, the user is then taken to a designated web page.

Besides QR codes, wireless technology is the impetus for many other cost savings, which are laid out one by one in this report. Starting on page 4, we write about two-way radio systems, highlighting the benefit of various technologies, such as Motorola's MOTOTRBO professional digital two-way radio system, which utilizes existing spectrum resources at significant cost savings. There are also indirect cost savings when you consider Sonetics and its hands-free wireless communication headsets and systems, which promote the long-term safety and effectiveness of a work team in challenging environments. Last but not least, there are the two-way radios of Icom and Vertex Standard, which are rich in features, while priced affordably.

We go on to look at other solution categories, such as radio interoperability, WLANs, cutting-edge mobile hotspots, and video surveillance systems. The latter solution, in particular, delivers on the coveted cost-saving promise of being a force multiplier. We also introduce one of our newest partners in that section, AgileMesh, which produces rapidly deployable video surveillance mesh networks, a highly popular choice among first responders.

Rounding out the solutions sections are articles on mesh networks from Firetide, point-to-point bridges from BridgeWave, remote call boxes from BearCom, and mobile command centers from BearCom and LDV.

Our good friend, Wireless Woman, answers questions about one of BearCom's own entries into the cost-effective two-way radio space, the BC130, as well as a bevy of accessories and applications for wireless devices that can enhance not only the effectiveness of these products, but also their potential to generate cost savings.

The bottom line: the future looks very bright for users of wireless technology. ●

With more than 30 years in the communications business, BearCom is uniquely qualified to advise wireless technology users in both the public and private sectors about the best options with regard to compliance with the FCC's narrowbanding mandate. Given the many options in the wireless technology space, compliance with the initiative can actually be a win-win for users.

*"The bottom line: the future looks very bright for users of wireless technology."*



**JOHN WATSON**  
Chairman, BearCom

**JERRY DENHAM**  
President & CEO, BearCom





The MOTOTRBO digital two-way radio system, a solution developed by Motorola and deployed by BearCom, has become a popular choice across a wide spectrum of industries. One aspect of MOTOTRBO that makes it effective is the fact that Motorola has embraced software developers, who become part of the mobile application development program and create industry-specific applications that make users much more productive.

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...for quick access to more details!

## TWO-WAY RADIOS AND ACCESSORIES:

# Two-Way Radio Users Embrace Efficiencies that Often Come with New Technology

The Campus Crossings apartment complex in Orlando, Florida is like a lot of student housing properties around the country. Each fall, a fresh crop of college students move in, ready for their first away-from-home living experience. This can be bad news at times for the company that owns the complex, since students will tax an apartment to its limits. The company's maintenance team needs an edge.

Campus Apartments, which owns Campus Crossings and hundreds of other complexes around the country, found that edge when it recently upgraded its two-way radio system. "We purchased Motorola radios in the licensed spectrum on some of our larger garden-style properties for maintenance techs," said Andrew Marshall, the Chief Executive Officer of Campus Apartments. "This is a major saving over our previous approach. The radios pay for themselves in approximately six to nine months." The radios also enhanced communication flexibility with features such as push-to-talk ID and selective call, according to Marshall. "The audio output penetrates even the noisiest

environments, providing for clear communication at any volume."

Marshall's experience is typical for many of the nation's businesses, especially those that have embraced Motorola's MOTOTRBO professional digital two-way radio system, a solution developed by Motorola and deployed by BearCom. MOTOTRBO promotes cost efficiency in a multitude of ways. First, it increases calling capacity and improves voice quality, lessening the risk of error. In fact, it has a built-in error correction technology that reconstitutes the voice, enabling more consistent audio performance. The technology also reduces background noise by compressing speech. It utilizes TDMA technology, which allows for the division of the existing 12.5 kHz channel into two time slots, doubling the call capacity and allowing two voice conversations, or a voice and data transmission, to occur simultaneously. This is done using the existing license, meaning users don't incur additional costs. It also requires less infrastructure, making the MOTOTRBO platform a highly economical solution for

maximizing capacity and satisfying the needs of business users.

"TDMA has become the digital choice of the future for professional two-way radio communications," said Paul Cizek, Motorola's Director of North America Professional/Commercial Radios. "Delivering advanced features and more system capacity, while being able to leverage existing spectrum resources at a significant cost savings, makes it a clear choice over Frequency-Division Multiple-Access digital solutions."

MOTOTRBO also leads to indirect cost savings. "Digital technology allows greater channel capacity and system efficiency," noted Hugh Johnston, Purchasing & Product Manager at BearCom. "Recognizing this in the development of MOTOTRBO, Motorola employed the intelligent strategy of creating an open-source application development program." Johnston highlighted HotSOS, an application for the hospitality industry which helps hotels optimize service. HotSOS

*Continues on page 6...*



Motorola MOTOTRBO™ Two-Way Radios



## CLEAR AUDIO FOR CLEAR COMMUNICATIONS

Providing your customers with the service they expect requires dedicated staff who are in constant communication. That's where the MOTOTRBO series digital two-way radio from Motorola can help. Its enhanced audio quality and 40% longer battery life make responding to customers easier anytime, from anywhere throughout your coverage area. And with the flexibility to call an individual, select group, or every radio on your system, along with texting and GPS tracking, MOTOTRBO is the ideal solution for ensuring clear communications—24 hours a day, seven days a week. It's just another way Motorola puts seamless mobility in the palm of your hand. HELLOMOTO™

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...Continued from page 4

ensures that all guest incidents, requests, service orders, and even escalation alerts are automatically communicated to the hotel's fleet of MOTOTRBO radios. Staff can instantly update service order status and guest information in real time at the touch of a button, without involving a dispatcher. The updates show up as easy-to-read text messages. "Before HotSOS, hotel employees might carry a pager and a two-way radio," said Johnston. "Now they have everything they need on one device." And there are dozens of other examples. "We are seeing more and more niche-specific applications, thanks to this technology," he added.

Combining functionality has become a trend in other ways as well. Sonetics, another BearCom partner, has developed a line of rugged, full-duplex wireless communication headsets and intercom systems with push-to-talk radio capability that is changing how users in construction, industry, and public works do business. "This solution is ideal for crews that need proven and dependable hands-free communication in high-noise environments," said Johnston. "Sonetics' products are being used for highway paving and paint striping, operating construction equipment, and assisting heavy recovery tow trucks, to name just a few."

Reed Stager, Sonetics' Chief Operating Officer, told *Today's Wireless World* that "countless occupational safety and health studies have shown that clear communication is the single most important factor in keeping teams safe, effective, and productive. When a team struggles to communicate, its productivity instantly declines. Our goal is to make sure every member of a team can hear and be heard, even under the most challenging conditions."

For example, this important technology has already revolutionized the lives of many crane operators, according to Johnston. "Such users are required by OSHA regulations to communicate hands free," he said. "They have to be

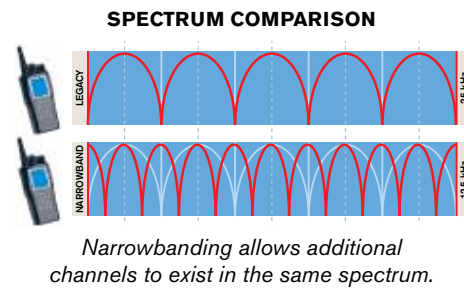
able to concentrate on what they are doing, as lives are at stake. Sonetics accomplishes this, and its solutions are already proven."

Sonetics' solutions are ideal for those who want to expand communications to all members of a team in a cost-effective manner. Its equipment works seamlessly with the latest digital portable radios, including those from Icom. Icom, a long-time BearCom partner, recently adjusted its offerings, introducing a digital portable radio, the IC-F4101, at a lower price point. "It's attractive, not only because of the price, but because it is digital and meets the narrowbanding requirements set forth by the FCC," said Johnston. "The audio is very clear. All in all, this is a very good entry-level portable for the price-conscious user." Mark Behrends, Icom's National Sales Manager, said the decision to deliver a less-expensive device was an easy one. "We have a very loyal customer base that has been supporting us not only by buying our products, but also by providing feedback on what their needs are," he said. "Devices like the Icom IC-F4101D provide them with an affordable pathway to the digital age—and all the cost efficiencies that come with it."

Similarly, Vertex Standard has stepped forward with its own highly functional and economically attractive devices—the VXD series conventional digital land mobile radios. "The new VXD series enables analog radio users to gradually upgrade to digital as needed and make the most of their radio investments," said Mike Gray, Vertex Standard's North America LMR Sales Vice President. "The portable and mobile radios operate in both analog and digital modes, making conversion to digital flexible and easy. If budget is an issue, users can gradually evolve from analog to digital as required to best address their needs."

All of the above devices will comply with the FCC's narrowbanding mandate, which calls for all two-way radio users to operate radios at 12.5 kHz efficiency as of January 1, 2013. BearCom and

others are currently working with their customers to help them take the right path to compliance.



For some users, renting devices may make more sense than buying them. "This especially holds true for corporate users who are in a state of financial flux or have an uneven demand for such devices," said BearCom's Executive Vice President, Brent Bisnar. "The last thing an organization needs to do is buy radios that sit on the shelf 99 days out of 100." Bisnar has additional advice for users who bought digital radios years ago, which are now coming off their manufacturing warranty. "Consider the extended warranty," he said. "It may be a way to limit your expenditures in the short term."

The pace of technological change in the wireless world is always brisk, especially in the face of surging demand. Thomas Lynch, Mobile Radio Market Analyst at IMS Research, recently projected that the worldwide professional mobile radio terminal market for cost-effective digital technologies is set to jump 27 percent annually from 2010 to 2015. "These technologies offer a direct migration from analog to digital at a cost of ownership that is currently less than other well-established digital technologies, and this is creating an appetite in industry," said Lynch. "It is the global success of these technologies that remains key, as there is optimism in the international marketplace toward digital solutions that do not necessarily provide the widest range of features but do offer the most cost-effective solution." ●

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## IDAS™ Digital Suites Help You Grow.

IDAS is the best choice of professional digital two-way radios available today. Our digital suites are communication platforms that will grow with your company into the future. From entry level to advanced radios with enhanced features, Icom is your digital solutions provider.

### F3161D/F4161D & F5061D/F6061D – Advanced Level

- Advanced digital features build scalable solutions that fit any size operation.
- Making a lasting transition to the digital future is easy and effective with IDAS.

### F3101D/F4101D & F5121D/F6121D Series – Entry Level

- Digital quality at an analog price.
- No repeater needed to deploy the secure advantage of IDAS digital technology.



To learn more about Icom wireless solutions, contact BearCom at 800.527.1670 [www.BearCom.com](http://www.BearCom.com)

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**ICOM**





## RADIO INTEROPERABILITY SYSTEMS:

# Wireless Interoperability Solutions Lead to Greater Efficiencies, Saving Money and Lives

Charlie Dooley knew there had to be a better way. So when the top executive of St. Louis County, Missouri heard about Motorola Solutions' Project 25 (P25) communications technology, he realized he had the answer to what had been "a troubling problem in our emergency communications system."

P25 enables police officers, firefighters, paramedics, and essential local government support organizations throughout the county to freely communicate across different systems. "Every emergency response agency in the region will be able to speak to one another 24 hours a day, seven days a week, in any conditions," said Dooley. "When you're reacting to an emergency or disaster, timely communication between agencies can mean the difference between life and death."

In the past, many emergency response agencies and departments operated their own individual two-way radio systems, making coordination for daily work and emergency incidents cumbersome and time-consuming. In St. Louis County's case, voters approved

an emergency communications sales tax of one-tenth of one cent. With funding secured, the county moved forward with a plan to bring more than 150 agencies and organizations under a "single radio umbrella" and give them the ability to directly communicate with each other.

The deployment in St. Louis County will be one of the largest local radio systems in the Midwest. A new radio network and more than 9,000 digital vehicle-mounted and handheld radios in the field will lead to better coverage for the county's public safety first responders and local government workers.

The St. Louis County deal was similar in some respects to another one in Bucks County, Pennsylvania, where that municipality recently acquired a Motorola ASTRO 25 system with P25 Phase 2 TDMA trunking. "Bucks County is making the right decision by addressing the FCC's requirement to complete narrowbanding well in advance of the January 1, 2013 deadline," said Jim Mears, Corporate Vice President at Motorola Solutions. "In addition, the county has chosen the

BearCom is a recognized expert in identifying appropriate two-way radio systems and then deploying them. "We have seen a steady movement toward the purchase of interoperable systems in the public sector," said Hugh Johnston, Purchasing & Product Manager at BearCom. "This can be attributed to the fact that counties and municipalities see a quick return on investment as far as efficiency and safety are concerned."

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most advanced P25 solution available, allowing for easy migration of its existing and future communications technology to maximize its investment and enhance emergency response."

Motorola is far from the only participant in the radio interoperability space. Another is Sonetics, a recognized leader in innovative team communication solutions for challenging environments.

Sonetics' systems can be configured to meet many team communication and interoperability requirements. Radio interface and communication hubs, intercoms, base stations, and headsets are configured to allow simultaneous monitoring of multiple radios by two to 60 users, plus transmission on one or more interfaced radios via push-to-talk buttons on the headsets. Reed Stager, Chief Operating Officer at Sonetics, recently noted that "this approach provides full-duplex communications for the local team—as well as radio interoperability—for a fraction of the cost of replacement or more extensive, pricey technical solutions." •

# Wireless Team Communication Made Easy

**No wires. No hands. No belt packs.**

**No problems.**

Sonetics Corporation delivers full-duplex, hands-free communication solutions that keep teams in touch. Our wireless headsets allow each team member to hear and be heard, even under the most challenging conditions. Just as important, our headsets deliver a full 26dB of hearing protection, making them ideal for construction and other high-noise environments.

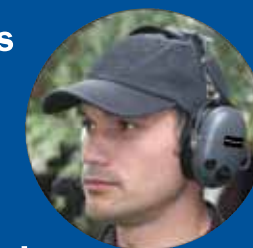
Sonetics' systems create a secure local audio network wherever they are deployed. Team members can be up to 1600 feet apart and still enjoy crystal clear conversation over a DECT 6.0, interference-free band. For complete connectivity, the local audio network can be easily connected to any of more than 400 mobile radios for remote communication. Local area conversation is segregated from radio transmissions and each headset can be custom configured so that each team member hears only what they need to hear. Best of all, communication on the local audio network is full duplex and completely hands-free. Small wonder that more than 500,000 customers around the world depend on Sonetics to keep their teams safe, effective, and productive.

**To learn more about wireless team communication systems from Sonetics — with or without mobile radio interface capability — call BearCom at 800.527.1670 or visit [www.BearCom.com/Partners/Sonetics](http://www.BearCom.com/Partners/Sonetics). Be sure to ask about Sonetics' Wireless Made Easy Trade-up Program for possible credit on your existing equipment.**

Range based on line-of-sight distance between headset and base station.



- **Wireless headsets**
- **Radio interfaces**
- **Intercoms**
- **Communication hubs**
- **Vehicle-mounted and portable team communication systems**



Shown above is a portable 4-person team communication system. Each system includes all the elements necessary for immediate deployment and is contained in a weatherproof charging case for easy setup and portability. Just one of the many solutions available from Sonetics Corporation.

**Sonetics**  
CORPORATION





## WLAN SYSTEMS:

# Innovative Company Creates Powerful Solutions that Enhance Wireless LANs

America's war on terror is becoming increasingly reliant on cost-effective technology as a way to mitigate risks.

Take the decision of the Federal Aviation Administration (FAA) to purchase Motorola Solutions' AirDefense services platform last year. The FAA was seeking a way to prevent unauthorized wireless access to its critical core network at 66 locations across the United States. The AirDefense Security & Compliance suite fit the bill by combining the industry's leading wireless intrusion detection system with a wireless vulnerability assessment module. This enabled the FAA to discover vulnerabilities and mitigate them before they could impact the safety of its systems, and more generally, air travel in North America.

Security & Compliance is just one module associated with AirDefense. The other suites center on Infrastructure Management and Network Assurance. Infrastructure Management is a powerful wireless LAN (WLAN) management tool designed to help IT departments gain better visibility into their networks and reduce operational costs associated with

managing fast-changing, increasingly complex and pervasive wireless networks. Its impact falls directly to the bottom line because of its ability to help customers simplify and automate their network management function, significantly lowering the total cost of ownership and accelerating the return on their enterprise mobility investments.

One of the key attributes of Infrastructure Management is the fact that it delivers vendor-agnostic management at the application, device, and network layers, giving IT staffs unmatched visibility into the performance of their entire wireless mobility ecosystems. With support for both legacy standards and new devices, it helps customers migrate to 802.11n technologies or introduce mobility solutions across their organizations.

Equally impressive is the Network Assurance suite, which helps IT teams lower the high costs associated with maintaining their wireless infrastructures. For example, Motorola's Advanced Troubleshooting module is the industry's first and only toolset to perform expert analysis of wireless connectivity issues

"Enterprise mobility is considered a business necessity today, but most organizations still continue to be concerned about the operational costs associated with maintaining the increasing number and complexity of applications, devices, and services available over today's wireless LANs," said Roy Wittert, General Manager for Wireless Network Solutions, Motorola Enterprise Mobility Solutions, Australia and New Zealand.

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and end-to-end network testing from a remote location. This tool allows dedicated radios in Motorola access points to act as AirDefense sensors. The sensors actively test the entire communication path from the mobile device to the wireless access point through the network and into the application server, either verifying access or localizing the breakdown.

Motorola is also addressing inefficiencies on a second front with its Total Enterprise Access & Mobility (TEAM) VoWLAN solution, which delivers cost-effective mobile access over the WLAN to PBX-based telephony, PTT, text messaging, e-mail/PIM, Internet/Intranet, and line of business applications—all through a single handheld device.

"Motorola is bringing unimaginable efficiencies to the wireless LAN, whether it is AirDefense or TEAM," said Chris Pace, IP Radio Solutions Manager at BearCom. "These are the kinds of solutions that every company should consider, given the prompt ROI that our customers are seeing." ●

Motorola MOTOA4™ Mission-Critical Portfolio

## A BETTER VIEW FOR BETTER DECISIONS AND BETTER OUTCOMES

When you're responsible for the safety of an entire community, complicated and difficult decisions are part of the job. But Motorola can help make it easier. The MOTOA4™ portfolio of mission-critical voice and data networks delivers mobility at high speeds and helps to enable secure interoperability between disparate agencies. When coupled with our suite of advanced applications and mobile devices, real-time information is seamlessly delivered to first responders and other key personnel so they can make better, faster, and safer decisions. It's just another way Motorola puts seamless mobility in the palm of your hand. HELLOMOTO™

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Analysts believe that consumers' rapid adoption of smartphones and their applications is driving how businesses are using phones in a corporate setting. This is especially true with the Sprint HTC EVO 3D, a highly popular device. One of the biggest attractions is that this new HTC smartphone is extremely fast, enabling users to go from task to task in seconds.

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## PHONES, TABLETS, AND MOBILE BROADBAND CARDS: Introducing “Anytime Internet” and Cutting-Edge Devices for Business Users

Advances in wireless technology have shrunk the shelf life of many a wireless device, rendering them obsolete, typically, in a matter of years.

Then there's the Sprint mobile broadband card. For more than a decade, such cards have been a staple for corporate America, affording individual employees the ability to continue working while on the road and to remain connected with the workplace. But even that device—which remains an offering of BearCom and Sprint's exclusive partner, True Wireless—may be facing a challenge that could ultimately render it obsolete.

Enter the Sprint Overdrive Pro 3G/4G mobile hotspot by Sierra Wireless. This device is, in essence, a portable wireless hotspot that can service up to eight WiFi-enabled devices at the same time. “The Overdrive is as functional as a regular WiFi router, with all the standard options, including security,” said Rob Chamberlin, the founder and Chief Executive Officer of True Wireless. “The major difference, however, is that you can unplug it and carry it on the road, where it works just as well as a router.”

The significance for businesses is that a team of executives or salespeople can share the hotspot when they are on the road or making a presentation, avoiding the additional cost of several individual broadband cards.

Business also are uncovering cost efficiencies with Sprint smartphone offerings, such as the HTC EVO 3D, a highly popular offering from True Wireless. The HTC is extremely fast, enabling users to go from task to task in seconds.

Phones like the HTC are part of industry trend where the “the rapid adoption of smartphones and their applications in the consumer segment is impacting how SMBs use smartphones for business purposes,” said Rob Arnold, a Senior Industry Analyst at Frost & Sullivan. “We call this the consumerization of IT—that is, consumer-lead technologies making their way into the workplace.”

Tablets are another product category that has found favor among business users. In particular, these users like the Samsung Galaxy Tab 7.0, which weighs in at fewer than 14 ounces but delivers

a heavyweight performance. “Many of our customers like the fact that they can access all their important documents and create new ones via ThinkFree Office on the Galaxy Tab, which is compatible with Microsoft Office applications like Word, Excel, and PowerPoint, and Adobe PDF viewing,” said Chamberlin. “Over time, this tablet will become a must-have tool for the business traveler.”

Arnold went on to note that “business users today expect to bring their own device into the workplace,” which “has compelled vendors to substantially expand the corporate communications applications that can be accessed from cellular devices. As a result, business users can be provided with a single number where they can always be reached, and they can readily access features and apps such as corporate directory, e-mail, call handling, presence/IM, conferencing, and more from their mobile devices.” Arnold then added, “Overall, this level of connectivity and reach-ability can help improve user productivity and responsiveness, and it can speed decision making and improve the organization's overall agility.” ●



## Brilliant screen. Pencil thin phone.

There's nothing you can't do when you pair a Sprint Unlimited plan with the new Samsung Galaxy S™ II Epic™ 4G Touch. With the best and **brightest screen on a smartphone** and pencil thin design, we can experience a world of entertainment at our fingertips. Only on America's Favorite 4G Network.



Sprint ranks “Highest Satisfaction with the Purchase Experience among Full-Service Wireless Providers in a Tie.”

—J.D. Power and Associates

For J.D. Power and Associates award information, visit [jdpower.com](http://jdpower.com)



Samsung GALAXY S II  
Epic™ 4G Touch

## Contact Your Business Solution Partner:



To learn more about how wireless solutions from Sprint and BearCom can help keep you communicating clearly, call BearCom at 800.527.1670 or visit [www.BearCom.com](http://www.BearCom.com).

May require 2-yr Agreement, activation on an Everything Plan with Data plus required \$10 Premium Data add-on, up to \$36 activation fee/line and \$350 early termination fee ((no ETF for Agreements cancelled in compliance with Sprint's Return Policy)), credit approval & deposit. While supplies last. **Upgrade:** Existing customers in good standing with service on the same device for more than 22 consecutive months currently activated on a service plan of \$39.99 or higher may be eligible. See in-store rebate form or [Sprint.com/upgrade](http://Sprint.com/upgrade) for details. **America's Favorite 4G Claim:** Based on number of Sprint 4G subscribers vs. those on other wireless 4G (WiMax and LTE) networks in the U.S. **Other Terms:** Coverage not available everywhere. Nationwide Sprint Network reaches over 278 million people. Sprint 4G network reaches over 70 markets and counting, on select devices. Sprint 3G network reaches over 274 million people. See [sprint.com](http://sprint.com) for details. Not all services avail. on 4G and coverage may default to 3G/separate network where 4G unavailable. Offers not available in all markets/retail locations or for all phones/networks. Pricing, offer terms, fees & features may vary for existing customers not eligible for upgrade. Other restrictions apply. See store for details. All Rights Reserved. Sprint received the highest numerical score in a tie among full-service wireless providers in the proprietary J.D. Power and Associates 2011 U.S. Full-Service Wireless Purchase Experience Study/SM Vol. 2. The study is based on responses from 9,190 consumers measuring 4 full-service wireless providers, and measures opinions of consumers who purchased a wireless product or service within the last 6 months. The proprietary study results are based on experiences and perceptions of consumers surveyed January–June 2011. Your experiences may vary. Visit [jdpower.com](http://jdpower.com) ©2011 Sprint. Sprint and the logo are trademarks of Sprint. Android, Google, the Google logo and Android Market are trademarks of Google, Inc. Other marks are the property of their respective owners. Focus on driving





## IP VIDEO SURVEILLANCE CAMERAS: Wireless Video Surveillance Becoming Cost-Effective Staple for Public Safety

When the Dallas Mavericks basketball team celebrated its very first NBA championship last summer with a parade, the Dallas Police Department was ready.

Five years earlier, BearCom led the deployment of an IP video surveillance project—utilizing the technology of BearCom partners Sony and Panasonic (cameras), Firetide (mesh networks), BridgeWave (point-to-point bridges), and OnSSI (monitoring software)—that canvassed acres of the downtown area. This allowed police to monitor the celebration with confidence, as well as save taxpayer dollars by not having to overstaff the parade.

But what if the infrastructure hadn't already been there? In an era of instant fame—where situations or events can quickly bubble to the surface, like the "Occupy" movement—law enforcement is being taxed like never before to preemptively address potentially dangerous activities in a cost-effective manner. Fortunately, one of BearCom's most recent partners, AgileMesh, is filling the void for rapidly deployable video surveillance mesh networks with an easy

operational learning curve. The company's systems can be deployed within days for an event, or even within minutes of an ongoing crime.

AgileMesh, not surprisingly, has found a receptive audience in public safety entities charged with responding to emergency situations. To that end, the company announced last summer the availability of a series of live-streaming video surveillance products designed for deployment on the ground and in police cars, mobile command centers, armored vehicles, and even on the body. AgileMesh's CommandMesh operating system allows these products to seamlessly integrate with an agency's legacy analog and digital video surveillance equipment.

Where a high-performance, reliable, IP-based wireless broadband infrastructure for video and other applications is needed, Firetide remains an excellent choice and supports both fixed and mobile nodes. The City of Houston, in fact, recently deployed Firetide's wireless mesh network as part of a Homeland Security-funded initiative. The city

Over the last few years, hundreds of police departments have deployed IP video surveillance systems. The results have included cost savings associated with the fact that they act as a force multiplier and an enabler for reducing crime. The good news is that emerging technologies are now making it possible to attach wearable cameras to first responders, which reaps a whole new set of benefits.

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can expect the standard cost savings that come with such a deployment, according to Mike Butler, Engineering Project Manager at BearCom. "It will act as a force multiplier, allowing police officers to monitor wide areas of a city from surveillance cameras," he said. Bo Larsson, CEO of Firetide, added, "The City of Houston's public safety project highlights the need for cities across the nation to embrace and harness technology as a way to cost effectively improve community safety."

Whether it is more permanent deployment of video surveillance systems or temporary ones that are incident based or related to a one-time event, the cat is out of the proverbial bag as far as the utilization of such technology, according to Rob Arnold, a Senior Industry Analyst for Frost & Sullivan. "There is increasing demand by businesses and enterprises to unify the command, control, and management of their various video applications," Arnold told *Today's Wireless World*, singling out video surveillance as one of those emerging applications. ●



## Draw the line

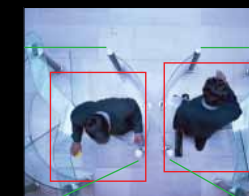
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## MESH BROADBAND NETWORKS: Wireless Mesh Networks Filter Out Costs Often Associated with Wired Solutions

Faced with budgetary pressures, most public sector entities struggle when it comes to affording robust technology solutions that can make a difference in the lives of their constituents. Wireless technology has been the exception to this rule. That is especially true when it comes to mesh broadband networks, which eliminate the need for expensive cabling.

There are countless examples of the successful application of this technology, many of which involve Firetide, the leading provider of multi-service mesh networks for industrial and municipal applications. The company's solutions securely handle concurrent video, voice, and data applications, making it ideal for large-scale municipal and enterprise networks. The resulting cost benefits have been borne out over time.

Take the Dallas Police Department, which enlisted BearCom to oversee the design and installation of an IP video surveillance system in 2007. Years after the system was deployed, it has more than paid for itself, saving the department money in a multitude of ways. Among them are the force multiplier effect (reduced hiring

by the Dallas PD) and the deterrence of criminal activity as awareness of the system spreads throughout the city.

Mesh broadband networks offer more than just capacity for video-intensive applications. For example, a Firetide solution was recently deployed at Penn Station in New York City to eliminate WiFi blind spots and add bandwidth for passengers traveling to and from the city. Prior to the deployment, passengers would lose their connection when their train entered the tunnels that go under the East River and Hudson River. Firetide's infrastructure mobility architecture allowed for an uninterrupted connection between the fixed and mobile nodes, delivering seamless WiFi for the passengers and giving Amtrak an important competitive advantage as it battles the airlines to maintain market share. Amtrak was able to make such improvements in a cost-effective manner, since installing fiber in the tunnels would have taken two to three years to deploy and cost five times as much as the wireless mesh solution.

Successful deployments of mesh broadband network technology go

Firetide has become the industry leader when it comes to deploying multi-service mesh network solutions that securely handle concurrent video, voice, and data applications. Firetide's solutions are the perfect choice for large-scale municipal and enterprise networks. The deployment of its solution as part of an overall IP video surveillance system for the Dallas Police Department remains the bellwether for the industry.

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well beyond the public safety and transportation segments into the education industry, which has extensive thirst for a robust and reliable connection to the Internet. That is especially evident in higher education. A case in point is Lewis University in Illinois, where its need for faster, more advanced applications had outgrown its existing wireless network capabilities. That need led it to Motorola and its MOTOMESH Duo outdoor mesh network and wireless LAN technology. The impact has been stunning, said school officials, who noted that the Motorola solution has quadrupled the school's wireless network utilization over the last year.

Along the way, this technology has attracted important advocates, such as analyst Craig Mathias of Farpoint Group. "I've long been an advocate of mesh architecture, the most important architectural direction for wireless communications overall," he said. "Broadband infrastructure mesh is the only solution that can cost effectively and reliably scale to cover large geographic areas with high-bandwidth connectivity—quite distinct from WiFi and cellular." ●

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Beseiged by a crushing demand for bandwidth, many colleges and universities are increasingly turning to BridgeWave Communications and its point-to-point bridges as a way to accommodate that demand while avoiding the considerable upfront costs associated with constructing a wired connection. BridgeWave's solutions are used to transmit—or “backhaul”—voice, video, and/or data traffic from a cell site to a switch.

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## POINT-TO-POINT BRIDGES:

# Point-to-Point Wireless Bridges Enhance Bandwidth While Reducing Costs

John Jay College of Criminal Justice of the City University of New York is like a lot of colleges throughout the United States. Its campus network is comprised of thousands of wired ports—as well as recently installed wireless access points that dot the campus—bringing the students, faculty, and staff together in a virtual community. However, it's a network that is increasingly being taxed by VoIP technologies, video, security cameras, time clocks, backups, and increased reliance on classroom and other information-sharing applications, creating the need for an alternative, high-capacity solution at a reasonable cost.

Like other colleges—and corporate campuses for that matter—leased fiber was considered. But John Jay College's leaders were turned off by the considerable upfront construction costs, as well as five-figure recurring annual fees. Transparent LAN services were also considered, but were dismissed for similar reasons. The solution was a point-to-point transport system, which is used to transmit, or “backhaul,” voice and/or data traffic from a cell site to a switch. Such systems are manufactured by

BridgeWave Communications and Cambium Networks, both partners of BearCom, which oversees deployment.

John Jay College turned to BridgeWave and its 60 GHz wireless links to reliably provide scalable network connectivity, while managing the school's bandwidth growth and delivering significant ROI. The links run a variety of services between campus buildings. One of the links is installed behind glass, providing “five nines” reliability, while delivering fiber-equivalent, full-duplex gigabit throughput with low latency, without the interference issues usually associated with unlicensed, lower-frequency devices. Complete ROI was achieved in just a few months. Over time, the system has saved the college more than \$500,000, compared to equivalent leased-fiber solutions.

“Compared to other offerings, BridgeWave's links provide more bandwidth at a minimal maintenance cost,” said Praveen Panchal, Chief Information Officer at John Jay College Department of Information Technology. “Essentially, we get GigE connectivity without breaking the budget and an

‘install and forget’ solution for data and voice connectivity that has been reliable as the fiber connection between our buildings over several years.”

Similarly to colleges and universities, municipalities are also looking for the cost-effective results that point-to-point solutions can provide. The City of Santa Barbara is a powerful example. It recently sought a solution that provided more bandwidth for a video conferencing application to be used to regularly train its firefighters. The training is very expensive, since the city must pay other firefighters to cover areas normally covered by their co-workers who are in training. Complicating matters was the fact that the network had to sustain reliability over rolling hills, through a downtown skyline, and across 10 miles to the Santa Barbara Municipal Airport.

The city purchased and deployed eight fixed point-to-point wireless Ethernet bridges, resulting in a much faster and highly cost-efficient network, one that the city estimates will save it up to \$100,000 per year. ●

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## REMOTE CALL BOXES:

# Wireless Remote Call Boxes Help Save Lives and Trim Expenses

When the friends of San Francisco Giants fan Bryan Stow testified recently about how Stow was brutally attacked in the parking lot of Dodger Stadium after attending a baseball game in 2010, it made national headlines. But it was the legal headlines associated with this tragedy that should have gotten the attention of small businesses. Stow's family sued the Los Angeles Dodgers, alleging that cutbacks in security, among other things, had contributed to the attack on Stow.

Every day across America, small and medium-sized businesses, like the Dodgers organization, face the challenge of how to cost effectively secure their property. While the best solution may be to increase staff, there are more efficient solutions that could have averted the tragedy at Chavez Ravine.

The wireless remote call box is a good case in point. Easy to use, call boxes typically feature push-to-talk/release-to-listen buttons on the exterior, while other boxes are used by simply opening the front cover and speaking into a small telephone handset.

Parking lots are just one example where call boxes can be effectively deployed. Other businesses and public entities have installed them on jogging trails, golf courses, and desolate highways, to name just a few.

And it's not just the actual use of the device that can prevent crime. "Remote call boxes serve as a deterrent to crime," said Vernon Hogue, Special Projects Manager at BearCom. "Many of our customers have told us that once they installed the device, reports of criminal activity declined. So not only does it save money over the long run, but it can be highly effective at preventing crime."

Hogue added that BearCom has seen a dramatic spike in demand for the use of such devices, helped along by the fact that it is getting easier to get power to them. Call boxes are increasingly powered, for example, by solar energy. This provides the foundation for an arsenal of features that contribute to safety. The use of some call boxes will trigger flashing lights, drawing attention to the area around the call box and scaring away a would-be criminal. Having such power

Troy University recently installed emergency call boxes in every building on its campus in an effort to improve security. "After the tragedy at Virginia Tech, Troy University reassessed its security protocols to improve campus safety," Dean of Student Services Mary Ragland said. "The new call boxes are one of several enhancements we have undertaken in the past year in an effort to provide a safer environment for our students."

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also enables features like automatic location identification or mapping. This enables authorities to quickly identify the location and respond immediately to a dangerous situation.

These technological advances have led to a boom in the purchase and deployment of such devices on college campuses and hospital properties, where people are walking back and forth to their cars at all hours of the day and night.

Remote call boxes can introduce an important layer of safety for both employees and the visitors of patients in hospitals. "We have seen a tremendous uptick in interest in call boxes in the healthcare industry," said BearCom's Purchasing & Product Manager, Hugh Johnston. "Some of this can be tied to budgetary reasons, since the use of call boxes means that organizations can be more judicious about the use of security personnel. The other reason is simply that the buyers of this technology have heard from others in the industry that the technology works, promoting a safer environment for everyone." ●

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Mobile command centers, like the one designed and developed for the Dallas Police Department by BearCom and LDV, provide public sector entities with the ability to more effectively respond to a crime in progress. These vehicles are loaded with the latest in wireless technologies, moving command into the field while creating a safer environment for officers and other first responders.

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## MOBILE COMMAND CENTERS:

# Mobile Command Centers Demonstrate Value to Municipalities and Law Enforcement

Mobile command centers (MCCs) aren't cheap. Typically, these oversized vehicles are chock full of the latest wireless technology. And yet, the value to law enforcement has decision makers exploring all kinds of options when it comes to acquiring one.

BearCom has been responding to this burgeoning demand by partnering with LDV, which has hundreds of its vehicles in the field. Each one is customized to suit the public entity's needs.

Pratt County (Kansas) Sheriff Vernon Chinn, who recently sought the approval of his county commissioners to purchase a mobile command center, said his department currently has "no way to work on extended crime scenes. We sit on meth labs for up to 24 hours, and we're shuffling officers back and forth. If we were to have a child abducted, and I hope we never do, we might have to sit on the scene for up to nine months. We would use the command center six to eight times a year."

Cochise County (Arizona) Sheriff Larry Dever and Deputy Chief Rodney Rothrock

beamed recently over their department's purchase of a new MCC, which is loaded with interoperability communications equipment and computers that will help in disasters and emergencies. "We want to be as prepared as possible to deal with emergency issues," Rothrock told the media. "In the past, our response to critical incidents has always been a challenge. There have been times when we conducted operation command from the hood of a Crown Victoria by the seat of our pants. With this vehicle, we can maintain communications with on-the-ground operations in any emergency." Dever added that his department "wanted to be forward thinking about our response to emergency situations with minimal impact to our budget." He added that funding for the MCC was provided through a Border Security Enhancement Grant, totaling \$1.6 million.

The pace of advances in wireless technology even has early adopters, such as the Faulkner County Sheriff's Department in Arkansas, coming back for a new one. "We knew we needed a new center because the old one was definitely outdated," Faulkner County

Sheriff Karl Byrd said. "However, finding the money for a new one was going to be a challenge, so we devised a way to get a new center without having to ask the taxpayers to pay for it." Byrd explained that the money for the new MCC was collected from the funds paid to the department for civil processing. If an attorney's office paid a deputy to have someone served with divorce papers, for example, the funds collected were then added to the account that helped pay for the MCC.

Major Andy Shock, Public Information Officer for the department, said that the new MCC can be used in any situation, and departments throughout the county can ask to borrow the center if the situation warrants its use. "This trailer can be used in any catastrophe, such as a tornado or an earthquake," Shock explained. "With the weather the area has received this year and the ongoing issues with earthquakes, being prepared is not just a good idea on our part, but a necessity. The new center is sort of like an insurance policy—you don't need it until something bad happens, but you're thankful for it when it is there." ●

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Meg A. Hertz, the virtual Chief Technology Officer for BearCom, provides innovative wireless solutions to BearCom customers every day. But whenever a communications problem requires superhuman powers, Meg becomes Wireless Woman—and always saves the day!



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## ASK WIRELESS WOMAN:

# Two-Way Radios Emerge for Every Budget; Accessories that Help You Get the Most Out of Your Wireless Devices

### Question:

*I have heard a lot about the FCC narrowbanding initiative. What do I need to do to comply with it, especially if my company has a limited budget?*

### Answer:

First, a little background might be in order. In 1992, the FCC embraced a strategy, called narrowbanding, that would increase capacity and efficiency for the industrial/business and public safety radio pools in the private land mobile radio services category. It required that all “Part 90” business, educational, industrial, public safety, and local and state government two-way radio system licensees currently operating in a legacy wideband space (25 kHz) transition to the narrowband technology (12.5 kHz) by January 1, 2013. Those who don’t comply face potential fines and possibly even the loss of their communication capabilities. Time is clearly of the essence.

Fortunately, BearCom has several partners that manufacture two-way radios—such as Motorola, Icom, and Vertex Standard—and interoperable team communication systems—such as Sonetics—to name just a few. These companies have rushed to the market with products that not only comply with the narrowbanding initiative but also offer other technological advances that enhance the return on investment when making this capital expenditure.

That said, I am cognizant of your comment about being on a limited budget. In that case, there is one radio in particular that I would highly recommend: the BC130. Manufactured by Motorola exclusively for BearCom, the BC130 is a compact, lightweight radio. But don’t let the size fool you. Its rugged, die-cast chassis is ideal for everyday and commercial use, both indoors and outdoors. To that end, the radio meets the United States military testing criteria for durability and reliability.

Hugh Johnston, Purchasing & Product Manager at BearCom, told me recently that the radio’s aluminum chassis makes it far more durable than other radios at the same price, which typically have a plastic frame.

Unlike many other economically priced two-way radios, the BC130 is fully programmable and will not limit the user to specific frequencies. Each radio is sold with an antenna, spring belt clip, Lithium-Ion battery, rapid charger base and power supply, and one-year limited warranty. In addition, the complete portfolio of Motorola two-prong radio accessories will work with the BC130.

The BC130 has already attracted an extensive following in the retail, education, hospitality, and manufacturing sectors, primarily because of its size and price point. Education industry professionals, in particular, like the radio’s capability to instantaneously connect with co-workers. School administrators, for example, are increasingly putting the radio in the hands of landscapers and maintenance workers to improve their efficiency, since the administrator can direct them at a moment’s notice to more pressing projects. Efficiency leads to cost savings, freeing school districts to focus their financial resources on their chief mandate: educating students.

While the price point is attractive, Motorola and BearCom did not compromise when it comes to technology. The BC130 provides for superior coverage and better-sounding audio, even in large buildings. This is where the aforementioned aluminum chassis emerges with yet another benefit, acting as a ground plane. Ultimately, the aluminum improves the radio’s capability to send and receive. The BC130 also goes beyond its counterparts at a similar price point in its capacity to leverage other wireless

*Continues on page 25...*

*...Continued from page 24*

technologies. For example, many schools with large campuses, especially high schools, are embracing radio repeaters for extended reach. This offers little benefit with most low-cost radios, which cannot use them. The BC130, however, can be programmed onto the repeater’s frequency. As if that weren’t compelling enough, BearCom and Motorola recently upgraded all BC130 radios to include a Lithium-Ion battery, which extends the talk time for users.

### Question:

*What are some ways I can get the most out of my handheld wireless devices and other wireless equipment?*

### Answer:

BearCom has partnered with a wide variety of manufacturers—such as Motorola, Icom, Vertex Standard, David Clark, IMPACT Radio Accessories, OTTO, Advanced Charger Technology, TABLETmedia, and SafeMobile—that make accessories and applications for wireless devices.

David Clark’s 9900 series wireless intercom system provides ground support personnel at airports with the ability to communicate clearly in spite of extreme noise and weather conditions. It has been well received by the major airlines, who appreciate the fact that it enhances a wide variety of ground support applications for pushback, deicing, maintenance, and other ramp operations where communication and safety are essential. The manufacturer has created a variety of headset styles—over-the-head, behind-the-head, single-ear, and muff-type—that let users choose the perfect model to fit their application needs and personal comfort preferences. All wireless headsets offer lightweight design, excellent noise attenuation, and communication clarity with advanced comfort features for long hours of use.

Another accessories manufacturer that has earned a terrific reputation with BearCom’s thousands of customers is IMPACT Radio Accessories. Its universal rapid charger line, in particular, is a

popular choice, since there are models that can accommodate a single device, as well as six at one time. The latter product, the AC/DC-6, can multiply the productivity of an organization exponentially, ensuring that no device ever loses power. But IMPACT’s product line doesn’t end there. The company also offers a wide variety of speaker-microphones, headsets, and surveillance kits through BearCom.



Another long-time BearCom partner that has attracted a loyal following is OTTO. Founded in 1961 in Carpentersville, Illinois, OTTO possesses strong mechanical, electrical, and RF design engineering capabilities, which have coalesced in a line of unmatched speaker-microphones. The “Storm” line is a heavy-duty product that is ideal for users in the public safety, military, and industrial space. The “Breeze” line, meanwhile, is a lighter product that works with a variety of two-way radios and is designed for extended wear. OTTO’s products are used extensively by security firms, surveillance operations, law enforcement agencies, emergency medical teams, SWAT teams, firefighters, hazmat teams, and other public safety organizations, along with food service, hospitality, entertainment, and industrial operations. OTTO also provides other accessories,

including surveillance kits, ear hangers, remote speaker-microphones, and skull and throat microphones.

BearCom’s partnership with Advanced Charger Technology (ACT), which manufactures the iCHARGE line of products, has also yielded many a happy customer. Its technology provides for real-time feedback on the state of the battery throughout the charging process. ACT has earned its name in the battery charging business by investing considerable resources in research and development in the areas of battery chemistry and charging technology. The technology used in its products has been tested, verified, and endorsed by internationally respected research professors and various OEMs.

There are also a number of software applications for Motorola MOTOTRBO digital two-way radios that have come up on my radar. The eztracker@trbo from TABLETmedia, for example, provides for real-time monitoring of your fleet using Google Maps. Among other things, it allows you to visualize the individual position of each radio, monitor if your vehicles are heading into traffic and reroute them appropriately, and text individuals or a group of radios.

SafeMobile, a monitoring tool, is another application worth considering. One of its more appealing qualities is the fact that multiple communication networks can be seamlessly integrated into one system. There also is a flexible mapping option that works with Microsoft MapPoint, Google, and ESRI-formatted maps. Additionally, the SafeMobile administrator can assign varying levels of access privileges for users.

Technological prowess is the common denominator across all BearCom partners, mirroring the company’s own commitment to excellence, whether it is advising customers of the optimal mix of products or deploying an integrated solution that delivers on the promise of wireless technology. ●



Vertex Standard, a long-time partner of BearCom, recently introduced highly functional and economically attractive devices—the VXD series conventional digital land mobile radios. The new VXD series enables analog radio users to gradually upgrade to digital as needed and make the most of their radio investments.



#### AFTERWORD:

### Wireless Technology Companies Set the Stage for Better Times

By Mike Gray  
Vice President for LMR Sales, Vertex Standard

Tough times. That's a good description of the current economic environment in both the private and public sectors, where managers have had to make very difficult decisions about how much of their shrinking budgets to allocate toward wireless technology.

As a provider of reasonably priced, high-quality two-way radios, we understand the need to deliver as many important features as possible in a device, while keeping the cost to the users affordable. Over the past several years, Vertex Standard has focused on meeting and exceeding our customers' needs with highly cost-efficient products. This will allow users to more profitably grow their organizations, leading to a healthier, stronger economy for everyone.

Along those lines, I agree with the assessment of analyst Andrew Seybold, who recently wrote that "customers have better access to more different types of wireless connectivity in more parts of the United States and the world than ever before. There are some rough spots ahead on the road to ubiquitous wireless services, but the technology and those who deploy and maintain it will continue to find ways to better optimize the spectrum we have."

This is where the Federal Communications Commission (FCC) and its narrowbanding initiative come into play. Public agencies and companies that use two-way radios are required to modify their FCC licenses and, when appropriate, reprogram or replace existing equipment to meet the narrowbanding requirements set forth by the FCC. The January 1, 2013 deadline for compliance with the narrowbanding mandate is fast approaching. Vertex Standard provides a wide portfolio of narrowband-compliant two-way radios that will allow our users to meet the FCC requirements.

A company like BearCom, given its extensive menu of wireless technology products and solutions, can identify the optimum recipe. That recipe likely will involve Vertex Standard devices, which were built with efficiency, quality, and safety in mind.

This challenging economy has created a foundation for the successful deployment of highly effective and efficient wireless technology. A prosperous story is undoubtedly right around the corner. ●

*"This challenging economy has created a foundation for the successful deployment of highly effective and efficient wireless technology. A prosperous story is undoubtedly right around the corner."*

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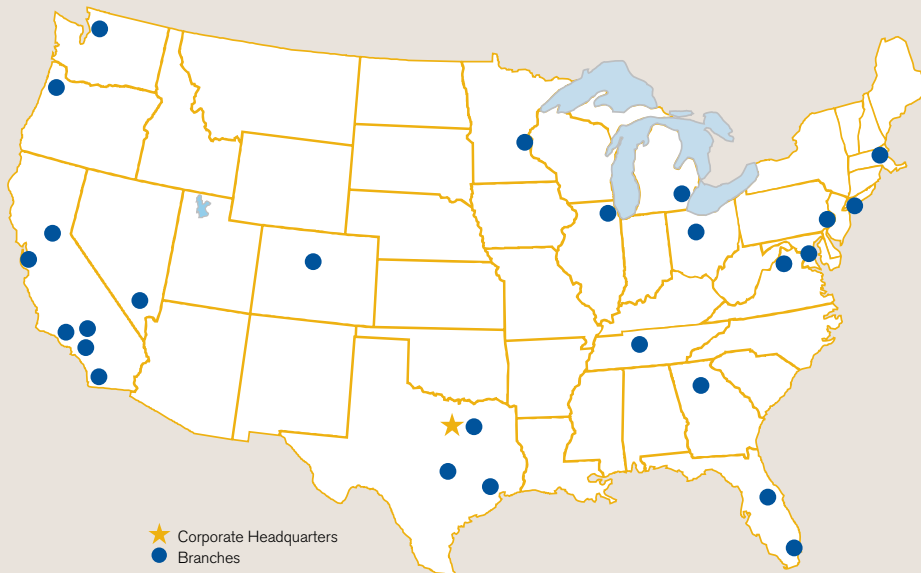
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