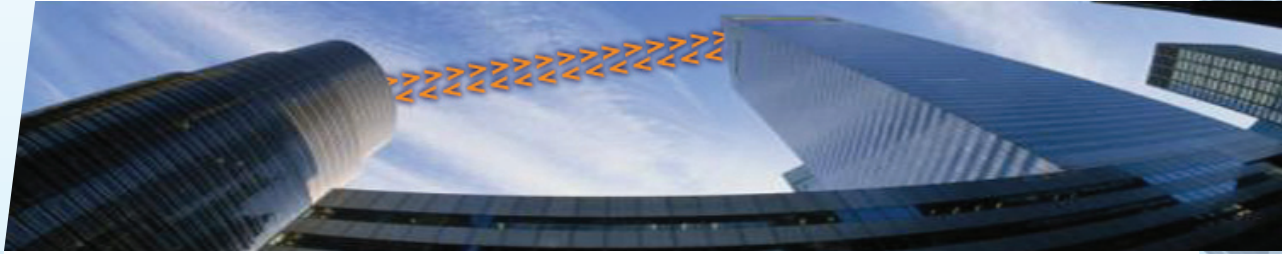




Case Study

City of Southlake



City of Southlake Deploys Advanced Public Safety Video Network Using BridgeWave's Gigabit Wireless Links

The city of Southlake is a vibrant community named in 2006 by D Magazine as the best Dallas/Fort Worth suburb. Located in Northern Tarrant County, Southlake boasts an inviting and unique downtown area, characterized by an old-fashioned style town square with plazas, restaurants, stores and public areas that serve as a lively entertainment, dining and shopping hub for residents and visitors.

The city, which has received national recognition for this pedestrian-friendly town square, blends old-style charm and high-capacity backhaul technology to support progressive social, cultural and public safety services. According to Police Chief Wade Goolsby, the city of Southlake is committed to providing the highest levels of customer service while embodying the city's core values, including integrity, innovation, accountability and teamwork.

"Our resilient high-speed wireless network can grow right along with our ever-expanding public safety initiatives to strengthen the overarching sense of security throughout the community. As a result of BridgeWave's 'future proof' wireless links and IP video innovation, Southlake's downtown area is becoming a model for highly efficient and effective public safety."

Police Chief Wade Goolsby
City of Southlake

"The partnership between the police and the community is invaluable," says Goolsby. "Therefore, we constantly strive to find ways to strengthen that partnership."

To that end, Goolsby has implemented a variety of behind-the-scenes improvements to the department of 56 officers and five civilians. Topping the list is an advanced yet unobtrusive IP video surveillance system designed to boost the department's effectiveness in detecting, investigating and preventing crime.

"It was important to maintain a safe environment, especially as Southlake's town square became a bustling area at night and on weekends," he explains. "We decided video monitoring could raise the level of safety and security for our city."

THE CHALLENGE

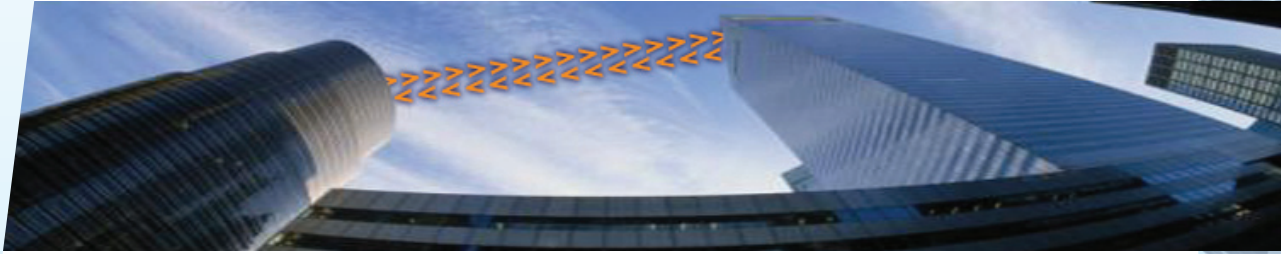
In early 2006, Southlake's department of public safety began exploring ways to deploy an advanced video surveillance solution in the downtown area. Initially, the plan was to link the cameras to the city's existing network using fiber-optic based services. Fiber, however, wasn't deployed to all the buildings on the square and disturbing new sidewalks and streets to lay conduit was out of the question.

"Wireless connectivity wasn't on my mind initially," recalls Goolsby. "But we quickly realized that wireless was the most effective and economical way to connect a variety of fixed and pan-tilt-zoom (PTZ) video cameras to the city's network."



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To assist in determining the optimal solution, Southlake enlisted Redmoon Broadband, a Plano, Tex.-based provider of city-wide Wi-Fi, mesh networks and wireless IP video monitoring solutions. Together they addressed the following requirements and challenges:

- A high-capacity solution was needed to ensure high quality, high frame-rate video without dropping packets.
- Ultra-low latency was a major requirement as image clarity was crucial and delivery delays were intolerable.
- Archival of video frames with motion; the data needed to be readily available and accessible from multiple points for up to 30 days.
- The public safety department demanded a licensed solution for additional security and to avoid the interference concerns associated with license-free wireless transmissions.
- Microwave wireless was too costly, so a more economical yet high-bandwidth solution was required.
- Simplicity of operation was paramount as the city didn't want to overburden its IT team with managing the wireless links.
- The wireless network would need to scale over time without bandwidth limitations to accommodate up to 100 or more cameras as well as potentially other public safety applications.

"In sizing up the city's various connectivity challenges and criterion, it was clear that gigabit wireless was the best alternative to fiber," explains Erik Tijburg, director of network services for Redmoon. "The distances between main camera locations were all about 1,200 feet from the network operations center at town hall and there were no line-of-sight issues. The infrastructure easily lent itself to millimeter wave radios."

THE SOLUTION

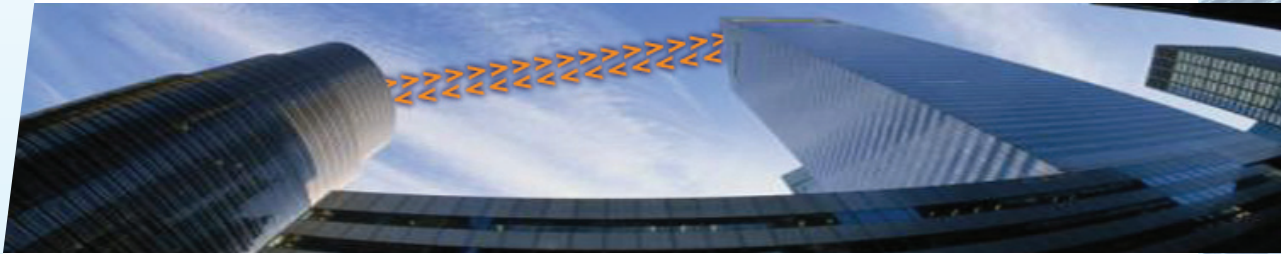
Redmoon next detailed how the various technologies would work together and took members of the public safety and IT departments to a nearby project that featured Sony IP video cameras and high-speed wireless links from BridgeWave Communications.

"BridgeWave is the gigabit wireless market leader as far as we're concerned," says Tijburg. "Their products have virtually no latency and are by far the most stable and reliable links out there. BridgeWave is millimeter wave."



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In May 2007, Redmoon completed a project scope that detailed a phased approach for deploying Sony fixed and PTZ video cameras, OnSSI's NetDVMS network video recorder and camera management software as well as BridgeWave's gigabit-upgradeable 80 GHz wireless links. The first phase of the implementation included BridgeWave's backhaul links and 32 Sony IP video cameras to capture license plates of vehicles entering and leaving two parking garages as well as monitor high-traffic areas at the Harkins Movie Theater and a Barnes & Noble store at the town square.

At each of the primary locations, a BridgeWave FE80U point-to-point, gigabit-upgradeable link would be used to backhaul video transmission to the OnSSI server at town hall.

"BridgeWave's FE80U radios offered a compelling value proposition since we could start with 100 Mbps transmission and step up to full gigabit bandwidth over time," notes Goolsby. "This approach would provide the scalability to support ongoing expansion of our phased rollout."

Another reason BridgeWave's radios were preferred over traditional 100 Mbps, 18-to-38 GHz, was they provide virtually unlimited frequency re-use in the 80 GHz licensed spectrum. Additionally, "lightweight" licensing requirements for the 80 GHz links ensured streamlined deployment without licensing costs and hassles.

"BridgeWave's high-speed links played a pivotal role in the straightforward network design Redmoon recommended," adds Tijburg. "We've done this many times before and had total confidence in the proposed solution."

THE BENEFITS

The first phase of Southlake's IP video surveillance system, which was completed by early 2008, has met all expectations.

"Image quality is excellent and I can log into any camera from my desk and move the cameras to follow any suspicious activity as well as read a license plate from 300 yards away," says Goolsby. "This enables us to stay proactively ahead of the crime curve instead of reacting to incidents once they've occurred."

The deployment of BridgeWave's backhaul links also went without a hitch and streamlined daily operation ensures minimal intervention by the resource-constrained IT staff.

"Most cities don't want to overload IT teams already overburdened with different projects," notes Tijburg. "Fortunately, the basics of the BridgeWave links can be covered in about an hour—as compared to several days of training typically required to master other technologies, such as wireless mesh networking."



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Embedded web and SNMP-based network management agents make it easy to monitor BridgeWave's radios from a standard management console, eliminating the need for additional software, servers and training.

With phase one completed, planning started for the next stage of the rollout. Phase two is focused on adding another 27 cameras around the city to capture license plates for vehicles entering and exiting major roadways surrounding the town square. In this case, Redmoon plans to install a series of Firetide mesh network nodes on light-poles and other remote, difficult-to-install locations. These access nodes will aggregate traffic onto the BridgeWave links for backhaul to the video server and monitoring station.

"Southlake initially expected to be able to accommodate up to 100 cameras on its backhaul network, yet now has the capacity to support five times that number," notes Tijburg. "BridgeWave gives Southlake a 'future-proof' connectivity solution to support an all-encompassing video surveillance system."

The public safety and parks departments are talking about installing cameras in the public parks and tying them into the overall system. Another possibility: helping public works comply with a Homeland Security requirement to install video cameras on water towers and treatment plans in 2009.

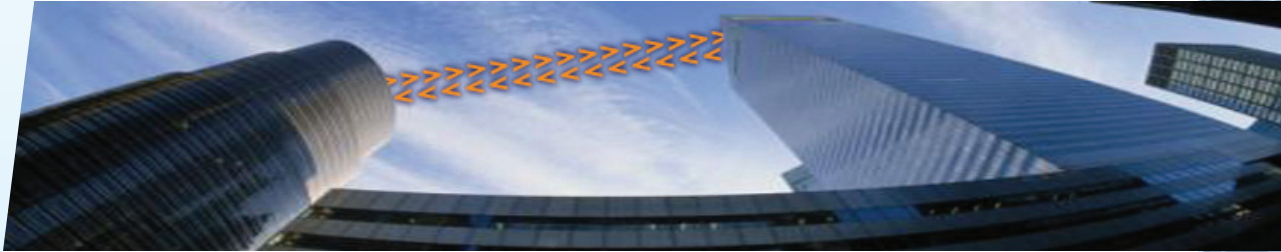
With BridgeWave's 'future-proof' solution, Wi-Fi mobility could be added without problems to support ubiquitous video delivery. Southlake has enough upgradeable bandwidth to transmit video wherever it's needed—to terminals in police squad cars, hand-held PDAs, Windows tablets or Windows mobile phones. Over time, Southlake can upgrade its existing BridgeWave links to full GigE bandwidth without time-consuming and expensive hardware upgrades. Additional links also can be added to accommodate more camera locations.

"Our resilient high-speed wireless network can grow right along with our ever-expanding public safety initiatives to strengthen the overarching sense of security throughout the community," concludes Police Chief Goolsby. "As a result of BridgeWave's 'future proof' wireless links and IP video innovation, Southlake's downtown area is becoming a model for highly efficient and effective public safety."



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CUSTOMER: City of Southlake, Tex. (www.ci.southlake.tx.us)

INDUSTRY: Public Safety

CHALLENGES:

- Fiber wasn't deployed to all necessary downtown locations and laying conduit was out of the question.
- A licensed solution was required to supply additional security and avoid interference.
- Ultra-low latency and high-frame rates were required to ensure quality video transmission.
- Network scalability and expandable bandwidth was crucial as the video surveillance solution would be deployed in several phases but ultimately could grow to more than 100 cameras.

SOLUTION: BridgeWave FE80U 80 GHz wireless links

CHANNEL PARTNERS: Redmoon Inc., www.redmoonbroadband.com

BENEFITS:

- "Plug and play" deployment and operation allows for expedited deployment without overburdening city's IT team.
- Ultra low latency backhaul technology enables real-time pan, tilt and zoom control of cameras without image delivery delay.
- Excellent image clarity makes possible reading license plates from 300 yards away.
- 80 GHz spectrum provides virtually unlimited frequency re-use.
- Easy upgrade easily to Gigabit Ethernet as capacity warrants; provides "future-proof" solution.



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