



CASE STUDY

# Irving P25 Radio Upgrade

Location  
Irving, Texas

## Business Needs

To provide connectivity between critical city infrastructure between P25 radio tower sites and other key city buildings

## Commdex Solution:

Commdex was chosen as a critical partner to support Motorola Solutions for the P25 Radio System upgrade and built a fiber optic network for the City of Irving, which supports its P25 and broadband LTE Network.

## Customer Profile

Irving, Texas is located on the suburbs of Dallas County. Home to over 240,000 residents, Irving is the thirteenth most populous city in Texas and the 93rd most populous city in the United States. In addition to a total area of over 67 square miles to cover, public safety officials saw a dire need for an updated two-way radio system.

## Customer Challenge

Irving, Texas, had a requirement to upgrade its existing Land Mobile Radio (LMR) system to a brand new wireless communications system to better support public safety users across the city. The city needed a wireless communications system that could provide voice and data services for Irving as it deploys more applications that require voice and data access for field personnel city wide over the next several years. The new infrastructure will provide P25 communications to replace the existing two-way radio system and will be supported by a fiber optic network to enhance connectivity. This upgraded communications system will allow for broadband data access to enterprise applications, as well as operation, monitoring and control of remote facilities and systems in real-time. After evaluating various communications solutions, the city opted to implement a new broadband Long Term Evolution (LTE) network from Motorola Network Solutions. The proposed solution will meet the current needs of the city and be expandable to meet any future needs. Commdex is supporting Motorola in the City of Irving, Texas, P25 Radio System Upgrade through Fleetmapping, Coverage Testing, Construction Management, Fiber Backhaul Deployment, IP Backbone Deployment, and Broadband Site Installation services.

## Irving Fiber Network Management

Irving, Texas

### Commdex Solution

#### *High Quality Connectivity and Performance*

Overall, Commdex lead and managed the implementation of the fiber backhaul part of the project. The fiber was buried and directionally bored. In addition, Commdex was able to provide the city with 288 fibers, giving Irving 100% spare capacity to connect future government buildings to the network. Commdex built over 26 miles of fiber backhaul across 12 key interconnection points around City of Irving along with an all-IP switched backbone network. This backbone provided high throughput, high quality connectivity and performance throughout the converged network.

The proposed Irving backbone network consisted of Cisco ME 3400 series switches to provide intelligent 10/100/1000BASE-T edge connectivity to the City. This network of switches provided high throughput, high quality connectivity and performance throughout the converged network. The switch was designed based on experience learned by Cisco from the Catalyst 2950 series. The proposed configuration and devices allows scalability for advanced applications in the future. These devices were installed in a redundant configuration at each of the locations mentioned above.

#### *Technical Expertise & Speed of Implementation*

Commdex provided Fleetmapping experts/Engineers, Fleetmapping Project Management and Fleetmapping technical expertise. The project scope included Fleetmapping for 1800 users across Police, Fire, EMS, and local government departments, which Commdex completed in just 10 weeks.

The Fleetmapping process was led by Commdex engineers, who have vast experience and expertise in fleetmapping, to ensure consistent and coordinated communication talk groups, naming conventions, standard and emergency call hierarchies and protocols, and ensuring code plugs and subscriber programming were implemented flawlessly.

Fast implementation occurred as Commdex managed efficient interaction and coordination among the team and customer. Throughout the Fleetmapping phase, Commdex hosted meetings and conducted on-site planning sessions. Workshops were held to detail the needs of each city agency. Commdex's obligation was to the City of Irving, to ensure that their project objectives and schedules were met and that the customer was involved in the project throughout the first project phase. Two Commdex Fleetmapping Engineers participated by leading agency workshops and ensuring program continuity throughout this term of the project.

The Fleetmap team turned out the initial master list of talkgroups, listed conventional resources required, established naming conventions, call hierarchy, outlined emergency protocols, and any initial base radio templates in Excel format. The Fleetmap Team produced agency packages for user group review, and engaged resources from other agencies for interoperability. After the agencies had an opportunity to review the information, a Commdex Fleetmapping Engineer was on site to lead meetings and provide subject matter expertise. The Fleetmap team presented a final package to be reviewed and signed off on.

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The final package included a fleetmap master plan for the P25 Radio network that defined all talkgroups on the system and conventional resources requiring interfaces for interoperability. The process was complete once all fleetmapping templates were approved.

CommDEX also provided management and coordination during the subscriber programming process. CommDEX served as the project lead for the fleetmapping effort, working closely with Motorola and City of Irving representatives. CommDEX designed wide area solutions, negotiated interoperability between all necessary entities, communicated proactively with representatives and clients, promoted active review between all parties, and created a technical foundation to support both current and future needs and additions.

### Consistent Communications Technology

CommDEX was responsible for the Coverage Acceptance Test Plan (CATP) for this new P25 radio system implementation across the City of Irving. Coverage testing included 68 square miles of outdoor coverage and simulated indoor building sites. The successful implementation took just two weeks. The City of Irving CATP consisted of testing to be performed on 700/800 MHz Simulcast Trunked ASTRO System. The city was divided into ¼ mile by ¼ mile grids and test teams will drive into each grid and perform Delivered Audio Quality (DAQ) testing utilizing Motorola-supplied radios and Bit Error Rate (BER) testing utilizing Motorola-provided Voyager test packages. Daily test team meetings were held at the beginning and end of each day to ensure quality implementation and instant feedback.

A CommDEX Engineer compiled all data from the field test teams at the end of each day and provided a copy to Motorola. Once the testing was completed, CommDEX assembled a final report detailing the testing results. This included maps showing the grids and the pass/fail test results for each grid for both the on-street and simulated in-building testing.

CommDEX achieved quality assurance through a continuous monitoring of work product, with focus on project assessment, and test and acceptance at multiple intervals throughout project phases.

### Sound Construction Management

A CommDEX Construction Manager managed day to day field operations at the job site during construction: directing, coordinating, and assisting the contractors in achieving the final product that conforms to the technical specifications in the contract documents, and meets the schedule objectives. Risk was mitigated for the city, as this manager identified and resolved risks quickly and efficiently as needed. The Construction Manager was in constant touch with Motorola to ensure that Motorola's objectives were being communicated to the field, and progress reports were communicated to Motorola in a timely manner. This resource served as a single point of contact, responsible for providing detailed reports while managing the day to day construction operations to ensure that the project was completed according to specifications, while guaranteeing the City of Irving faster implementation and project completion ahead of schedule.

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### ABOUT COMMDEX

CommDEX is a leading systems integrator, providing a broad range of mission critical solutions and services for telecom networks, communications systems and information technology. We have global experience and specialized expertise across breadth of technologies and full life cycle of communications systems. For more information about CommDEX's products and services, call CommDEX Sales at

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