



Metropolitan Atlanta Rapid Transit Authority (MARTA) Distributed Antenna System



Location:
Atlanta, Georgia



Business Needs:
To ensure the 4,500+ employees, hundreds of heavy rail trains/buses, and the thousands of daily customers have safe, reliable, and efficient transportation, no matter where in they city they might be.

Customer Challenge

MARTA utilizes a Distributed Antenna System (DAS) to provide coverage throughout the pre-existing 38 stations and the underground tunnels utilized by the rail system. This provides coverage to the MARTA Police Department and to the operations and maintenance staff. Due to the rapid growth of the city and aging technology, MARTA needed to upgrade their existing DAS system and install new systems in their new building additions in order to meet their demands to ensure safety and efficiency to all riders and employees.

Customer Profile

The Metropolitan Atlanta Rapid Transit Authority (MARTA) provides bus and heavy rail transit service through the greater Atlanta region serving over 100 million riders each year and is one of the 10 largest transit systems in the country. MARTA's heavy rail system is a combination of above and below ground rail and consists of 38 stations. Operating daily in-and-out of feet of concrete creates many wireless communication challenges.

Commdux Solution

- Upgrade pre-existing system to digital fiber DAS system
- New Construction and Infrastructure



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CommDEX Roles

CommDEX provided a turnkey solution to upgrade the pre-existing system to a new digital fiber DAS system that now encompassed a total of 45 locations, including new building additions such as the MARTA headquarters and annex buildings as well as Garnett Station, which had not been covered previously.

Engineering Design

CommDEX developed a complete engineered solution for all locations in the network, using the core LMR site at the Five Points station as the central head-end. This central head-end location and three fiber aggregation points provided fiber connections to the 45 locations in the system. For all new installations, like the headquarters building, CommDEX developed full three-Dimensional renderings to perform RF coverage propagation predictions and optimize the antenna design in each building. The design plans were reviewed and approved by the MARTA team prior to field deployment. Each of the new locations that were being added to the system as expansion sites received all new cabling and antenna systems according to the approved engineering designs. These cable networks were installed in advance of the new active fiber equipment to shorten the schedule.



Full System Pre-Deployment Staging

CommDEX fully constructed all the major active system components in a test environment to configure and operationally test prior to system deployment. Each active component was racked and cabled to enable full operational testing. All components were programmed and configured according to the design plan to test proper operation and speed installation and configuration in the field. Once the complete system was assembled, each individual system component was tested to ensure proper operation according to the manufacturer's specifications. The entire system was then tested to ensure that all components worked together as designed to deliver full system functionality.

System Design and Cutover Planning

Given that the existing system was providing radio coverage for MARTA public safety and operations users, CommDEX developed a cutover plan with MARTA to minimize system outages by focusing on single stations where possible and operating in maintenance windows during late evening hours. This minimized the disruption to MARTA users during the transition. Each field team was mobilized to the selected stations to remove the existing equipment and install the new fiber DAS equipment that was already configured during staging. Once the new equipment was installed, functional tests were performed to ensure proper operation. System Performance and Coverage Testing Once the system was fully installed, a complete test plan was performed to ensure proper functionality of all system components using the same testing standards that were developed during the pre-deployment staging. Coverage testing was also performed at all 45 locations to ensure that the coverage provided by the system met and exceeded the coverage provided by the previous system. All test results were documented and compiled into a system documentation package along with all design documents, drawings and test plans that was provided to MARTA as part of system closeout.

About CommDEX:

CommDEX provides network solutions to telecommunications service providers and manufacturers for the deployment of telecom networks, facilities and supporting systems. CommDEX specializes in designing and implementing mission critical voice and data networks over Wi-Fi, microwave, land mobile radio and other technologies. CommDEX offers a broad, rich portfolio of proven telecom solutions. Its solutions, services and methodologies have been tested and proven in hundreds of customer environments. Its customer base ranges from state, local and federal customers, to large enterprises and equipment manufacturers.

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