City of San Antonio Future-Proofs Traffic Management System With Cradlepoint 4G LTE Networking

Updated Wireless Mesh Network Streamlines Troubleshooting & Remote Management

SUMMARY

With its population rapidly expanding and its traffic management system needing much better reliability and flexibility, the City of San Antonio, Texas, turned to 4G LTE connectivity through Cradlepoint's primary Edge routing platforms with Enterprise Cloud Manager, the network management service available in the Cradlepoint NetCloud platform.

Now San Antonio's traffic network has reliable connectivity with the ability to expand and begin using untapped technology and applications to improve traffic flow and maximize civic resources.

SOLUTION:

COR IBR1100; ENTERPRISE CLOUD MANAGER

APPLICATION:

PRIMARY EDGE ROUTING CLOUD MANAGEMENT

MARKET:

PUBLIC SECTOR

BACKGROUND

The City of San Antonio, Texas, has a population of more than 1.4 million people—and is expected to grow by at least a million individuals within the next 20 years. Rapid growth required the city to seek smart, efficient expansion of its infrastructure and services. For instance, the city's Traffic Management Center must be prepared to handle greatly heightened roadway usage.

The Traffic Management Center, with a staff of 16 people overseeing nearly 1,400 intersections, is responsible for traffic signal operations, lane control, the school flasher system, sensor-based detection devices, and nearly 60 video cameras that facilitate real-time monitoring.

The city's traffic system is finely tuned. Even minor disruptions and technical issues can drastically hinder motorists' ability to proceed through several green lights in succession during normal traffic flow.

NEEDS

In 2015, the City of San Antonio recognized the need to upgrade its complex traffic management system, which included a dozen radio towers throughout the city. About 300 intersections, featuring access points connected to wired lines, were serving as reference nodes for the remainder of the intersections, each of which featured a wireless access point.

The resultant radio-based wireless mesh network allowed traffic managers to remotely communicate with devices in the field, but not consistently. The staff could only engage with about 60 percent of the city's intersections. This proved problematic because remote access is what allows staff at headquarters to centrally monitor key applications, troubleshoot problems, and adjust the clocks that synchronize traffic lights and flow.

> *"With the reduced communication, the rides that citizens were experiencing on our arterials were becoming poorer and poorer," said Marc Jacobson, manager of the City of San Antonio's Traffic Management Center.*

Complaints from frustrated citizens were beginning to grow, as was the amount of manhours necessary to send personnel into the field to manually adjust clocks and other settings.

> **"It really starts to drain our manpower when we can't communicate to the intersections."**
>
> *— Marc Jacobson, Manager, City of San Antonio's Traffic Management Center*

Also contributing to the problem was the department's lack of a remote cloud management solution.

SOLUTION

By installing Cradlepoint's cloud-managed COR IBR1100 routing platforms in nearly 700 traffic cabinets, and implementing 4G LTE as its primary WAN source, the City of San Antonio took the uncertainty out of its connectivity equation.

Any intersection that doesn't have a Cradlepoint device has an access point that points toward a Cradlepoint. The access point's dual-band, dual-concurrent WiFi maintains a more manageable mesh domain with an updated, more reliable connection back to the data center.

San Antonio also began using Cradlepoint's Enterprise Cloud Manager, which enables the team to be both reactive and proactive in their management of the city's traffic system.

BENEFITS

FAST, EASY DEPLOYMENT

During initial deployment of its Cradlepoint devices, the city was forced to make a quick decision to switch 200 Cradlepoint LTE devices from one carrier to another. The change was easy, taking place in just a few days, with support from the Cradlepoint team.

> *"The fact that we could make that change, from a firmware standpoint, speaks to the adaptability of the product," said John Rodriguez, the City of San Antonio's assistant director of infrastructure.*

CONSTANT CONNECTIVITY FOR RELIABLE ACCESS

With constant 4G LTE connectivity through Cradlepoint's COR IBR1100, the Traffic Management Center has been able to boost the city's rate of communication with intersections from about 60 percent to nearly 100 percent—surpassing administrators' recent 95 percent mandate.

> *"That reliability allows us to start to utilize some of the tools in our central management system that we haven't been able to leverage before, because the data we used to get back wasn't reliable," said Jacobson.*

STREAMLINED NETWORK TROUBLESHOOTING & REAL-TIME MANAGEMENT

When a problem arises at an intersection, the traffic management team can investigate from headquarters via live stream, then ascertain whether the situation calls for a simple fix via ECM or a truck roll.

COMPACT FOR EASY PHYSICAL ACCESS

From a maintenance standpoint, the COR IBR1100's relatively small size makes physical access and maintenance easy, as it sits near ground level in a traffic cabinet, with an external antenna mounted outside the cabinet.

> *"With our old installation, it required a bucket truck, and for us to go up 20 feet in the air and to run cable to the infrastructure," said Jacobson.*

POTENTIAL TO SCALE UP NETWORK AND APPLICATIONS

Leveraging COR IBR1100s and ECM helps position the City of San Antonio's Traffic Management Center to easily scale up its network without sacrificing throughput and speed.

> *"Intersections are almost like a node in our environment. With cellular, that node can help us plan for the future—traffic today, live security feeds tomorrow," said Rodriguez.*

Constant connectivity and cloud management have opened up a wide variety of possible Smart City LTE applications for the City of San Antonio, including syncing KITS software with Computer-Aided Dispatch (CAD) to provide more granular data about traffic expectations for public safety.

"It has changed our mindset to the point that we are beginning to come up with new ways to utilize the system to make our jobs easier, and to make the ride better for the traveling public."

—Marc Jacobson, Manager, City of San Antonio's Traffic Management Center

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