

Municipal Network in Aurora, Colorado Goes Gigabit Speed



“The combination of 60 GHz cnWave and PTP 850E is allowing Aurora’s businesses and community to benefit from multi-gigabit speeds. Planning and coordination between our team, Cambium Networks, the city of Aurora and Aurora’s partners made this upgrade straightforward.”

BRETT BONOMO,
FOUNDER & PRESIDENT,
CASTLE ROCK MICROWAVE



Overview

THE CITY OF AURORA, the third largest city in the state of Colorado, has been a connectivity customer of Castle Rock Microwave since 2018. Most recently, Aurora was given Coronavirus Aid, Relief, and Economic Security (CARES) Act funding which was allocated to improve IT infrastructure. The improved infrastructure would benefit public safety, voice and data, LAN extension, video applications and credit card processing. Castle Rock Microwave began planning to upgrade the disparate, aging variety of radios and solutions with Gigabit speed connectivity.

The Challenge

AS A RESULT OF THE CARES ACT, Aurora received funding to upgrade 32 aging links throughout their city. Aurora’s previous unlicensed 5 GHz solution constantly rebooted, failed and did not offer the capacity the city needed. They needed an upgraded network to support the city’s public safety, voice and data, LAN extension, video surveillance and credit card processing. Aiding credit card processing was an especially important part of the project as it was directly linked to the city’s revenue. The solution also needed a security upgrade to be Payment Card Industry (PCI) compliant.

Castle Rock Microwave, a leading microwave integrator in the Western United States, saw the opportunity to use gigabit speed 60 GHz cnWave equipment from Cambium Networks to replace the 50 Mbps links. Their plan was to make best use of the available spectrum and minimize total RF license costs by deploying a mix of licensed microwave where required and using the unlicensed spectrum where available. The city found this an attractive solution to maximize total throughput while controlling costs instead of a “one size fits all” solution.

The Solution

THE UPGRADE INCLUDED a total of 32 60 GHz cnWave unlicensed and 80 GHz licensed microwave Point-to-Point (PTP) links. Castle Rock Microwave decided to deploy Cambium Networks’ 60 GHz cnWave and PTP 850E licensed microwave solutions handle the high-density area. The integrator chose 24 60 GHz cnWave links supporting up to 1.8 Gbps and 8 PTP 850E Radios. During the project planning stage, Castle Rock heavily used Cambium’s LINKPlanner, configuration tool and the online learning center’s manuals and guides. The entire network is managed with the cnMaestro™ management system, which made installation and provisioning easy and provides a bird’s eye view of the performance of the entire network across a mix of technologies used.

BEST PRACTICES

- Work closely with a great distributor, communicate with your regional sales manager, and maintain an open line of communication with the customer about the project’s process.
- Anticipate bad weather days, days when the customer might not be able to let you onto the site and holidays. Contingency planning because of COVID has become a necessity; be prepared to have a plan for situations where a worker is sick or if an office is shut down.

Project installation began on November 4, 2020. During this time, Castle Rock Microwave also had to navigate with other stakeholders in the city. The city's IT group does not own the tower structures; instead, they belong to the water department and the city public safety radio group. Currently, the city's IT group owns and operates the radios, and they are beginning conversations for a maintenance project with Castle Rock.

In January 2021, cutting the traffic over from the old links to the first cnWave links was simple; once the system was built, the customers went down for a short period of time and were then moved over to the new links. Projected completion of the project is February 4, 2021.

APPLICATIONS

- Wi-Fi Backhaul
- Video Surveillance
- Public Safety
- LAN Extension
- Credit Card Processing
- Connecting Parks & Sports Arenas

The Results

NOW, THE CAMBIUM EQUIPMENT is supporting densely populated areas, primarily benefitting public Wi-Fi and credit card processing. Encryption on all the links ensure proper security when transacting credit cards, whether at golf courses, sports park concessions or the Aurora Reservoir.

The screenshot shows the 'Dashboard' for a 60 GHz cnWave V5000 device. It features several summary cards: 'Links' (2 Total, 2 Online), 'Nodes' (3 Total, 3 Online), 'Sites' (3 Total), and 'Wireless Throughput' (1.81 Gbps RX, 1.82 Gbps TX). A 'Device Information' table is visible on the left, and a map on the right shows the device location near a beach area.

Device Information	
Type	POP
Name	RESOFFICE
E2E Controller	Running Onboard
MAC Address	00:04:56:88:32:dd
Serial Number	V5WK00477Z68
Model	V5000
Software Version	1.0
Firmware Version	10.11.0.79
Wireless Security	None
Layer 2 Bridge	Enabled (2 tunnels)
System Time	Dec 19, 2020, 6:38:04 PM

Initially, one of the driving factors behind the upgrades was the likelihood that Aurora would have to convert public facilities to distance learning centers to accommodate more students . With COVID, creating more space for these students was a high priority. Those benefitting would have been children from an impoverished area – they needed a program where kids could be supervised in a public setting with adequate distancing while learning.

The screenshot shows the 'Topology' view for the 60 GHz cnWave V5000 device. It displays a table of network nodes with columns for Name, MAC Address, IPv6, Type, Status, Model, Site, PoP Node, and Software Version.

Name	MAC Address	IPv6	Type	Status	Model	Site	PoP Node	Software Version
RESOFFICE	00:04:56:88:32:dd	fd00:5eed:7af:3000::1	DN	Online Initia...	V5000	AURORARES...	Yes	1.0
BOATRENTAL	00:04:56:88:31:52	fd00:5eed:7af:3001::1	CN	Online	V3000	AURORARES...	No	1.0
BOATINSPEC...	00:04:56:88:31:78	fd00:5eed:7af:3002::1	CN	Online	V3000	AURORARES...	No	1.0

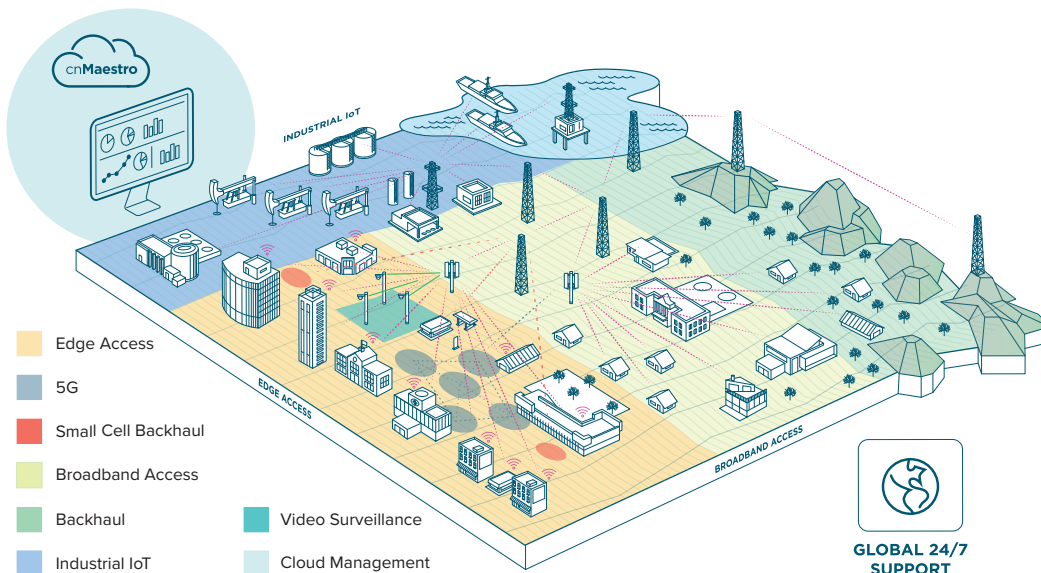
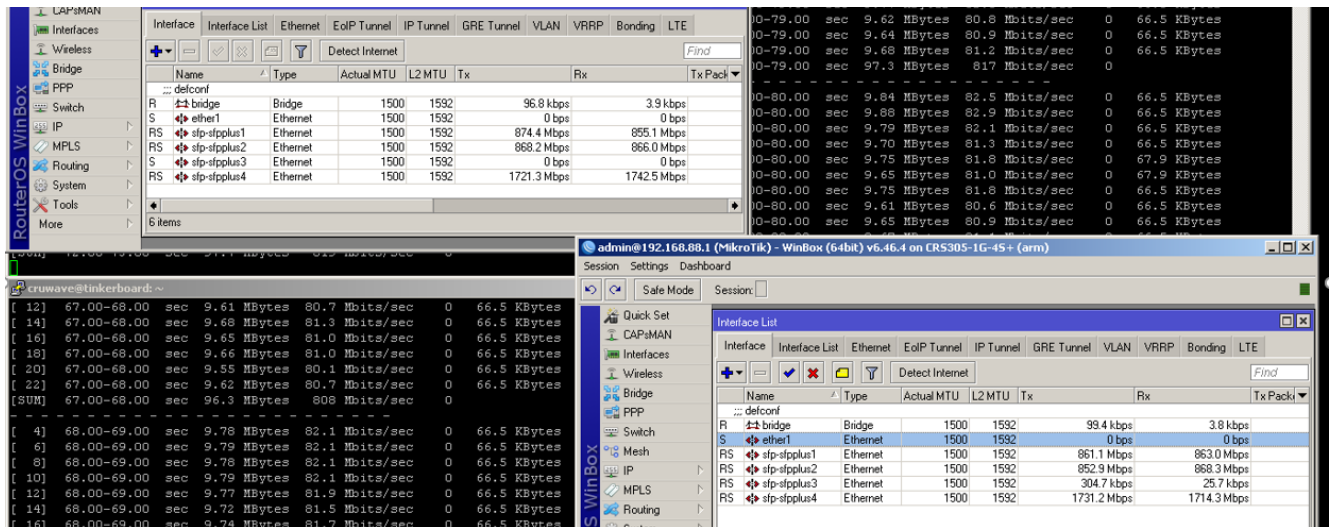
SUCCESS FACTORS

“Maintain templates of equipment you suspect that you’ll need for similar projects in the future. Then, you can fill in the gaps depending on each customer’s needs. Label a link by site, by hop and which side of the hop it is going to. This leaves no opportunity for one part to get confused with another part.

Another important part of this project for us was Cambium Care Prime, the highest technical support level offered by Cambium. The service has been of high value for the Aurora project, and we advocate that others use this service, too”

- Brett Bonomo, Founder & President, Castle Rock Microwave

The level of satisfaction expressed by the city of Aurora is beyond what they’ve seen on smaller projects, with positive feedback coming directly from Aurora’s chief information officer. Aurora is further than halfway through the project, working on cutting over traffic and experiencing no complaints from users.



Cambium Networks’ Gigabit wireless solutions enable municipal, enterprise and service provider operators to tailor connectivity to meet exact requirements and grow as needs evolve.