



CASE STUDY

# How Juneau Built a High-Density Managed Public Wi-Fi Network Without Expanding IT Staff

## Customer Overview

The City and Borough of Juneau (CBJ) serves as Alaska's capital city and a major cruise destination, welcoming thousands of visitors daily during peak tourism season. During summer months, the city's downtown waterfront can see population surges of up to 16,000 additional visitors per day.

Historically, public connectivity in the downtown cruise corridor depended entirely on commercial cellular providers. However, seasonal density overwhelmed existing infrastructure, creating widespread service failures that impacted visitors, local businesses, and municipal operations.



**Wanted to extend my** thanks to the CBJ for implementing public Wi-Fi. I live in the flats and have a GCI cellular phone. For the last few years my cell service noticeably degraded during tourism season, becoming basically unusable on the days with the highest visitation. Happy to report that installation of public Wi-Fi, cellular service has been completely normal again. Thanks for investing in mitigating the impacts of tourism to those who live closest to the docks."

- Local constituent



To address these challenges, CBJ partnered with Northriver IT Services (NRIT) to design, deploy, and operate a purpose-built public Wi-Fi network powered by Cambium Networks. NRIT would like to thank the following partners that made this effort possible:

1. LinkUp Alaska
2. Alaska Electric
3. Alaska Communications (ACS)
4. Fronterra Consulting Group
5. SignalRoam
6. Several Departments from CBJ to bring this to life!

## Business Challenge

### Severe Cellular Congestion

For years, CBJ experienced unreliable cellular performance in the downtown cruise ship zone during peak season.

As Chris Murray, IT Director CBJ explained:

“There was no cell phone signal or really spotty slow cell signal when the ships were in dock during summer tourism season.”

The impact extended well beyond inconvenience:

- Point-of-sale systems failed
- Parking kiosks stopped functioning
- Basic voice calls would not connect
- City services had to redesign projects to avoid cellular reliance

In one example, parking registration machines that worked in winter failed entirely in summer due to cellular overload.

The downtown library became an unintended Wi-Fi hub, drawing large crowds outdoors to access connectivity — creating safety concerns and highlighting the lack of systematic coverage.

### Lack of Carrier Engagement

CBJ formally contacted major telecom providers requesting infrastructure improvements but received no actionable response. The city ultimately concluded that it needed to take control of the solution.



## Strategic Decision: A Fully Managed Model

Rather than building and operating the network internally, CBJ chose a complete managed services model.

CBJ chose a hands-off deployment model, implementing a public Wi-Fi network that operates independently from city systems. Delivered as a managed service, the solution ensures consistent performance while eliminating additional workload for municipal IT personnel.

This model ensured:

- Clear operational separation from municipal IT
- Dedicated funding alignment
- No additional staffing requirements
- Predictable service performance
- **The bandwidth, backhaul, and Wi-Fi were all intentionally separate of the city IT infrastructure.**

Chris Murray emphasized that the city's technical staff did not want additional operational burden or ladder work added to their responsibilities. The managed services structure eliminated that risk entirely.



## Technology Solution

Northriver IT Services designed a resilient, high-capacity outdoor Wi-Fi architecture leveraging Cambium Networks' ONE Network platform.



### Cambium Products Deployed

- **cnWave™ 60 GHz Fixed Wireless Backhaul** (PTP and mesh architecture)
- **Outdoor High-Density Wi-Fi 6 Access Points (XE3-4TN)**
- **cnMaestro™ Cloud Management Platform**
- **LINKPlanner™ Network Design Software**

### Avoid Fiber Trenching with 60 GHz

Juneau's geography presents unique challenges:

- Mountainous terrain
- Waterfront construction zones
- Cruise dock infrastructure
- Complex right-of-way restrictions
- Maritime regulatory considerations

Deploying fiber would have required costly trenching, marine coordination, and permitting delays.

Instead, Northriver IT implemented a 60 GHz cnWave mesh backhaul, delivering multi-gigabit performance comparable to fiber — without excavation or disruption.

This approach enabled:

- Rapid deployment
- Flexible design adjustments
- Resilient failover paths
- Coverage where fiber was impractical

### High-Density Outdoor Wi-Fi

The downtown waterfront required extreme density performance to handle cruise ship surges.

Tri-band outdoor Wi-Fi 6 access points were selected to:

- Support thousands of concurrent users daily
- Prepare for future 6 GHz adoption
- Maintain performance during peak loads

### Centralized Network Management

The deployment leveraged:

- LINKPlanner for predictive RF modeling and design validation
- cnMaestro for unified management of Wi-Fi and backhaul

Cambium's ONE Network framework integrates Wi-Fi, fixed wireless, and management into a single platform. Administrators gain centralized visibility and lifecycle management across the entire infrastructure.

## Field Results

### Rapid Deployment

From project kickoff to active signal at City Hall, core infrastructure was operational in approximately 45 days, with full phased deployment completed over the construction window.

### Measurable Offload Impact

During peak season, the network:

- Supported 103,245 unique users in a 30-day period during peak tourism season.
- Delivered connectivity to a user base equivalent to more than three times Juneau's year-round population of approximately 28,000 residents.
- Offloaded approximately 20–30+ terabytes of data from congested cellular networks
- Enabled seamless Passpoint 2.0 authentication for the majority of users
- Reduced downtown connectivity complaints to zero during peak summer operations

Passpoint 2.0 proved critical to success by allowing automatic cellular offload without complex password entry.

As Chris Murray noted, the objective was to create a seamless experience:

“This would not work if people were dealing with complicated passwords. Passpoint was key.”



### Operational Efficiency

The network:

- Is scheduled seasonally (active during cruise operations)
- Is remotely managed by Northriver IT
- Requires no daily intervention from city IT staff

Feedback from downtown businesses and city officials has been overwhelmingly positive.



## Business Value

### 1. Improved Visitor Experience

Cruise passengers can now:

- Connect immediately upon disembarking
- Post photos, message family, and access travel apps
- Navigate downtown services without delay

### 2. Reduced Cellular Congestion

By offloading tens of terabytes of mobile data, the network improves overall downtown connectivity — even for users not on public Wi-Fi.

### 3. Protection of Municipal Operations

City systems no longer need workarounds to avoid cellular infrastructure during summer months.

### 4. Financial and Political Clarity

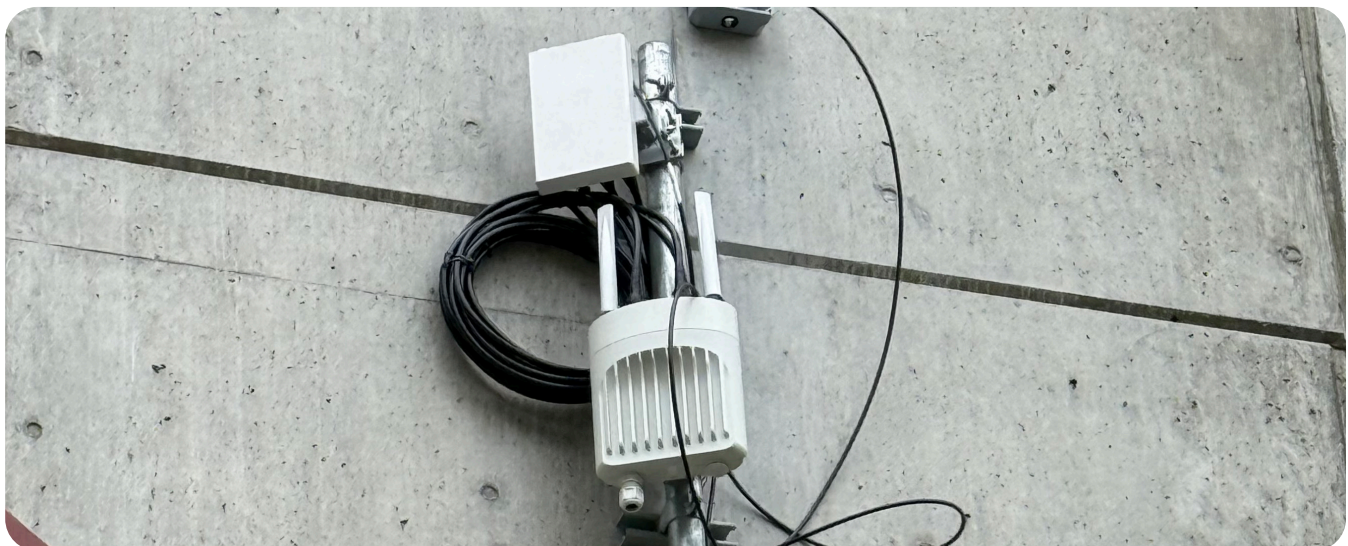
Because the network operates independently under a managed services model, it avoids burdening general municipal operations and staffing.

### 5. The Power of Cambium ONE Network

The project demonstrates the strength of Cambium’s ONE Network approach:

- Unified cloud-based management
- Integrated Wi-Fi and fixed wireless
- Predictable high-density performance
- Operational simplicity at city scale

The Cambium ONE Network enables municipalities to deploy sophisticated infrastructure without building complex in-house network teams.





## Looking Ahead

Coverage expansion is planned for additional waterfront zones and remaining cruise corridor areas. The architecture is inherently scalable, limited only by the geographic areas the city chooses to serve.

## About Northriver IT

Northriver IT is a customer-focused managed services provider specializing in secure network infrastructure, cloud solutions, and cybersecurity. With nearly 20 years of experience, we help organizations design, implement, and manage reliable technology environments that support long-term success.

## Our Mission

Selfless Service to others to empower organizations and communities through secure, scalable, and forward-thinking technology. As a trusted partner, Northriver IT delivers transparent communication, proven expertise, and locally responsive support—helping drive initiatives like Juneau’s public Wi Fi to connect people and strengthen communities.



## About Cambium Networks

Cambium Networks enables service providers, enterprises, industrial organizations, and governments to deliver exceptional digital experiences, and device connectivity, with compelling economics. Our ONE Network platform simplifies management of Cambium Networks’ wired and wireless broadband and network edge technologies. Our customers can focus more resources on managing their business rather than the network. We make connectivity that just works.