



WIRELESS MESH NETWORKS CASE STUDY

Seattle Police Department



Seattle Police Department deploys Aruba to provide video surveillance for annual Mardi Gras festival

The Seattle Police Department needed to provide a safe and secure environment for celebrants at the downtown Mardi Gras festival, held annually in the historic Pioneer Square neighborhood. Due to several incidents at past events, officials wanted to ensure the public safety by deploying an outdoor video surveillance system that would enable officers respond quickly and proactively.

Although police officials made video surveillance a top priority, the city could not afford a costly wired network to support it. A wired surveillance system requires trenching to install cabling, which is expensive and disruptive. Going wireless was the best option and the department chose a wireless mesh infrastructure from Aruba

The Solution

Aruba designed a wireless mesh network for the Seattle Police Department that connected nine video cameras mounted on light poles over a 12-block area. Semaphore Corp. managed the installation.

Aruba MSR2000 dual-radio wireless mesh routers send images captured by the pan/tilt/zoom (PTZ) cameras over the 5-GHz band to another Aruba wireless mesh router mounted atop a nearby fire station.

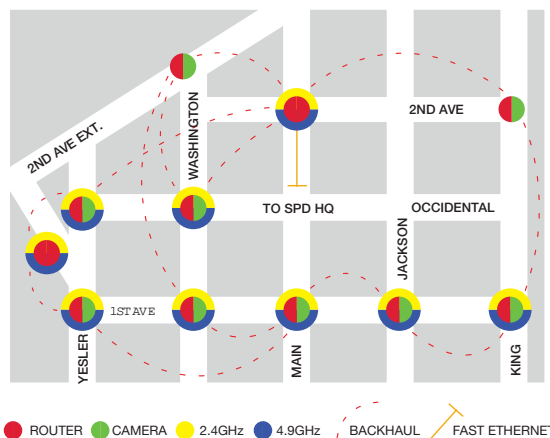
The video stream is then collected and sent to police headquarters several miles away. After recording and capturing the

video on a central server, it is distributed over the 4.9-GHz public safety band to a mobile command center vehicle.



Challenges

- The Seattle Police Department needed a real-time video surveillance system that wouldn't require a huge investment in time and expense
- Real-time, jitter-free, frame-by-frame broadcast-quality video
- Wanted an aesthetic, non-intrusive wireless solution to avoid trenching in a historic downtown district the aesthetics of an historic downtown district that does not need trenching
- A scalable solution easily and quickly installed, removed or deployed to a different area



A quad-radio MSR4000 tri-band wireless mesh router receives video signals from nine cameras deployed over a five-block area and centralizes them in the Seattle Police Department video surveillance center. The video is then sent to a mobile command center and can be viewed on handheld devices carried by patrolling officers.



From the mobile command center, officers on foot can patrol through crowds carrying handheld mobile devices that operate in the 2.4-GHz band. These handheld devices let officers control the angle, tilt and zoom of the strategically mounted PTZ cameras.

This gives officers a bird's eye view of occurrences in the area and allows them to respond quickly to mitigate threats and dangerous situations.

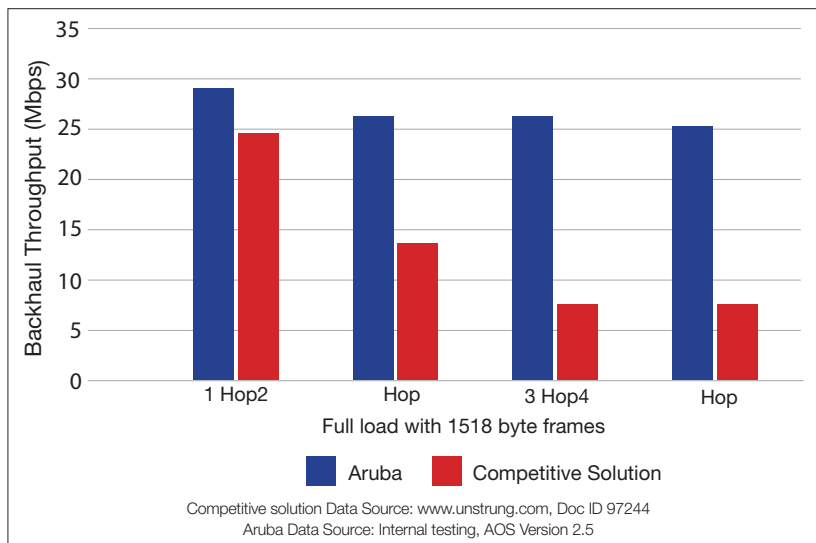
The Aruba wireless mesh network and video surveillance system were quickly deployed and configured in a few days. The integrated system offers exceptional flexibility for short- and long-term surveillance and can be moved, redeployed and expanded as needed.

The clarity of the HD-quality video and reliability of the Aruba wireless mesh network allows Seattle police to protect the public without requiring a costly wired infrastructure. Cameras, wireless mesh routers and antennas can be moved and repositioned anywhere in the city to ensure public safety at specific events.

Aruba's Wireless Mesh Network Technology offers Reliable, Broadcast-Quality Video and Lower Cost of Deployment

Not all wireless mesh network solutions are the same. Aruba's robust Layer 3 wireless mesh networks deliver the highest quality video performance across multiple hops due to three key capabilities:

- 1. Adaptive Wireless Routing™ (AWR™)**
AWR forwards packets across multiple hops with a per-hop latency under two milliseconds. Adapting automatically to topology and radio link quality changes, AWR optimizes traffic flows between wireless mesh routers to ensure maximum throughput and seamless mobility.
- 2. Active Video Transport™ (AVT™)**
Aruba's AVT technology removes impairments to video quality – including jitter and packet loss – which brings dramatic improvements to video performance across extended, multi-hop wireless mesh networks.
- 3. Motrix™**
Motrix – a contraction for the mobile matrix – enables fast roaming across the wireless mesh infrastructure. Uninterrupted sessions are passed seamlessly between wireless mesh routers in under 50 milliseconds.



Aruba's wireless mesh network provides reliable, consistent bandwidth over multiple hops.

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Seattle Police Department Overview

Keeping the city of Seattle safe is the primary duty of the Seattle Police Department. The department employs approximately 1,250 sworn law enforcement officers and 500 civilian employees.

Seattle is divided into five geographic precincts – North, South, East, West and Southwest – with each being served by a local police station. Precinct boundaries were determined through consideration of neighborhood boundaries, geographic and other natural boundaries.

The Seattle Police Department is a nationally accredited police agency, which means it voluntarily complies with over 400 professional standards defined by the Commission on Accreditation for Law Enforcement Agencies (CALEA).

“Finally the technology has arrived that lets us do the type of work we need to do to provide the best possible protection for our community”

Monty Moss
Seattle Police Department
Detective



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