Solution Overview

Smart city

Benefits

- Street lighting systems can centrally monitor and control (on/off, dim) street lights, reducing energy usage and providing operational efficiency.
- Mass transit requires persistent communications with vehicles at stations and in motion to monitor critical data and video.
- Mobile workers can have secure wireless access, reducing operational costs by eliminating monthly cellular card expenses.
- Transportation departments can replace expensive, low capacity leased lines used for traffic controllers, variable message signs, etc., reducing operational costs.
- Utility modernization reduces downtime, increases reliability.
- Video surveillance cameras can be monitored centrally, enhancing public safety and providing video evidence.
- Public safety can access to critical information from anywhere around town, improving efficiency and safety.
- Public Internet access can promote local businesses and events increasing awareness and local commerce.

Tropos Technology Differentiators

- Performance – multi-megabit capacity, low latency
- Security – firewall, IPsec VPN, AES encryption in every router
- Reliability – rugge equipment; patented mesh routing algorithms use multiple paths, channels and frequency bands
- Scalability – can be economically deployed to cover areas as small as a city block or as large as an entire city
- Mobility – seamless roaming across entire coverage area
- Radios – maximum power, best receive sensitivity, outdoor optimized
- Management – most comprehensive centralized configuration, analysis and reporting

Increasingly municipalities are looking to smart city applications as a way to reduce operating costs while increasing efficiencies and quality of services they provide to the community. A single wireless broadband network that supports many applications across multiple municipal departments – public safety, transportation, utilities, building inspectors, parks and recreation, parking enforcement, animal control, etc., can deliver a high value to the community. A Tropos wireless IP broadband network can provide mobile workers with access to the Internet and other applications in the field. The same wireless network infrastructure can be used for remote monitoring and/or control of devices such as SCADA, street lights, utility meter reading, distribution automation, traffic/security video cameras, and more.

Increases Municipal Services and Improves Quality of Life

Wireless broadband networks are flexible and can be deployed effectively in specific areas such as in city centers or near sporting arenas, or provide coverage across entire communities. Depending upon applications, performance, and coverage requirements, a sparse network can be deployed initially and later densified as more demands are placed upon the network allowing smart cities to spread their capital outlay for additional nodes over time. Typical mounting locations for Tropos routers include city owned assets such as traffic signals and utility poles where there is ready access to power.

A Tropos private wireless IP broadband mesh network offers a reliable and secure communications foundation needed to support

a wide range of environments and applications that help drive operational efficiencies and reduce costs for cities. Replacing monthly cellular fees for each mobile device, laptop, or remote sensor, a citywide network can provide municipalities with significant communication cost savings in addition to enabling new applications.

Multi-use Networks for Smart Cities

A Tropos wireless broadband network provides a scalable and reliable foundation to securely support multiple concurrent applications for creating smart cities including:

Street lighting systems – the ability to centrally monitor and manage street lights can significantly reduce energy consumption and provide significant savings. Examples include dimming of lights during low traffic times; and resetting on/off times for different seasons of the year. Planning and centralized management of the lights can result in longer bulb life and real-time fault detection replaces manual drive-by detection, reducing costs.

Mass transit – passenger information systems in stations and on board trains can provide riders with up-to-date information about train schedules, weather, and events; transit vehicles can leverage the network to communicate with other operators, mass transit personnel, and the control center both while the vehicle is stationary and when it is moving at high rates of speed; on board video security cameras can be centrally monitored; and stationary video cameras at stations for security monitoring. A Tropos wireless network can even deliver reliable access transit system-wide including in places such as tunnels and remote mountainous areas which are challenging for wireless communications.

Mobile workforce automation – workers have secure access to the intranet and Internet, extending office applications into the field including access to up-to-date information (GPS, maps, databases, etc.); the ability to create and submit information from the field (work orders, reports, email, etc.); video camera feeds (live and recorded) can be accessed in the field. Examples of municipal employees that can use the network include building inspectors, animal control officers, parks and recreation workers, maintenance crews, restaurant and health inspectors, parking enforcement officers, transit workers, and many more. Keep workers in the field increases efficiencies and productivity, reducing unnecessary trips to the office and increasing worker safety.

Intelligent transportation systems – traffic signal management, transit signal priority, variable message signs and cameras (red light enforcement, traffic monitoring). With Tropos a single network has the capacity to support all of these applications and more and replace use of costly, low capacity leased lines.

Municipal utility (water/gas/electric) – remote monitoring and control of field devices across a smart grid – distribution automation, advanced metering infrastructure and SCADA; mobile utility workforce applications. Utility modernization applications can increase operational efficiencies, billing accuracy, resource conservation, safety, and quality of service.

Video surveillance – video cameras can be monitored centrally or accessed by officers in the field in real time providing them with insights before arriving on site; serving as a crime deterrent and irrefutable court evidence.

Public safety (police, fire and EMS personnel) – easy, immediate access to critical information (GPS, building schematics, HAZMAT databases, medical records, etc.) that is up-to-date while in transit or anywhere around time. In addition, ad hoc networks for emergencies can be quickly setup enabling communications among multiple agencies.

Public Internet access – a valued amenity for the community around town that enables the public to easily access email and the Internet without having to find a local hot spot. It can also deliver public service information such as local events, bus schedules, as well as increase commerce with advertisements for local businesses.

Smart City Network Building Blocks

Tropos wireless mesh routers easily mount to city-owned assets such as on fixed towers, street lights, utility poles, sides of buildings, in vehicles, and more. Routers can be powered via an array of options – AC, DC, PoE, and solar providing connectivity for mobile municipal workers as well as for remote control and monitoring of sensors and devices: utility meters, street lights, video cameras, etc.

The Tropos mesh network securely and reliably connects people, machines and devices across the city to each department's IP network. Tropos gateways can connect to the city's network via copper, fiber optic, or PTP/PTMP links. Mobile mesh routers can be mounted into vehicles – public safety, utility, animal control, etc. and become an integral part of the network providing broadband connectivity for one or many devices.

> "Seventy-five percent of our city staff perform duties outside an office. So this network is an important productivity tool for our employees. And the enhanced communications mean improved safety and service for our residents, and reduced costs for the city."
>
> Homer Nicholson
> Mayor
> Ponca City

Click the link to learn more about our smart city communication solutions.

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