



Wireless Networks for Economic Development

Wireless mesh networks help enable revitalization and investment, while expanding opportunities within communities

It is said that information is power. In many ways, this is true – especially when talking about ready access to information. Cities and towns have already witnessed the value of participating in the information economy and access to the Internet. Studies have shown that higher levels of job growth and new business creation occur in communities where mass-market broadband Internet access is widely available. On the other hand, communities that lack widely available broadband access increasingly find themselves at a significant disadvantage – an economic gap that is likely to widen with time. Even within communities with broadband services available, there may be areas where service is not available or where residents cannot afford them.

A growing number of communities, cognizant of the role that broadband access plays in fostering economic development, are looking for answers. Looking to usher in a new wave of innovation and economic development driven by participation in today's information-driven economy. The answer these communities increasingly find is in the deployment of a municipal broadband network based on wireless mesh technology.

Municipal wireless networks can spur economic benefits in a number of areas – some expected and many unexpected. These include:



- Providing broadband Internet access to areas too expensive to service via other technologies
- Expanding access to educational and career development opportunities from virtually anywhere
- Attracting business people, shoppers, and tourists to urban business districts to meet, eat, and shop
- Facilitating experimentation with new business models based on un-tethered access to the Internet
- Spurring new investments from businesses and residents seeking the advantages offered by locations with these services
- Fostering the birth of new businesses that build applications and services that leverage the wireless network

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Ubiquitous access

Along with the ability to connect to the Internet from anywhere in the community, your public access network can provide ubiquitous access to government services. Schools, community groups, trades people, visitors, taxpayers, and even remote or mobile municipal employees can easily access government resources from anywhere in the community.

In addition to public access, BelAir Networks wireless mesh products can support Public Safety and Public Works networks, as shown in Figure 1. For example, crystal clear voice service allows you to save on cellular costs by establishing your own

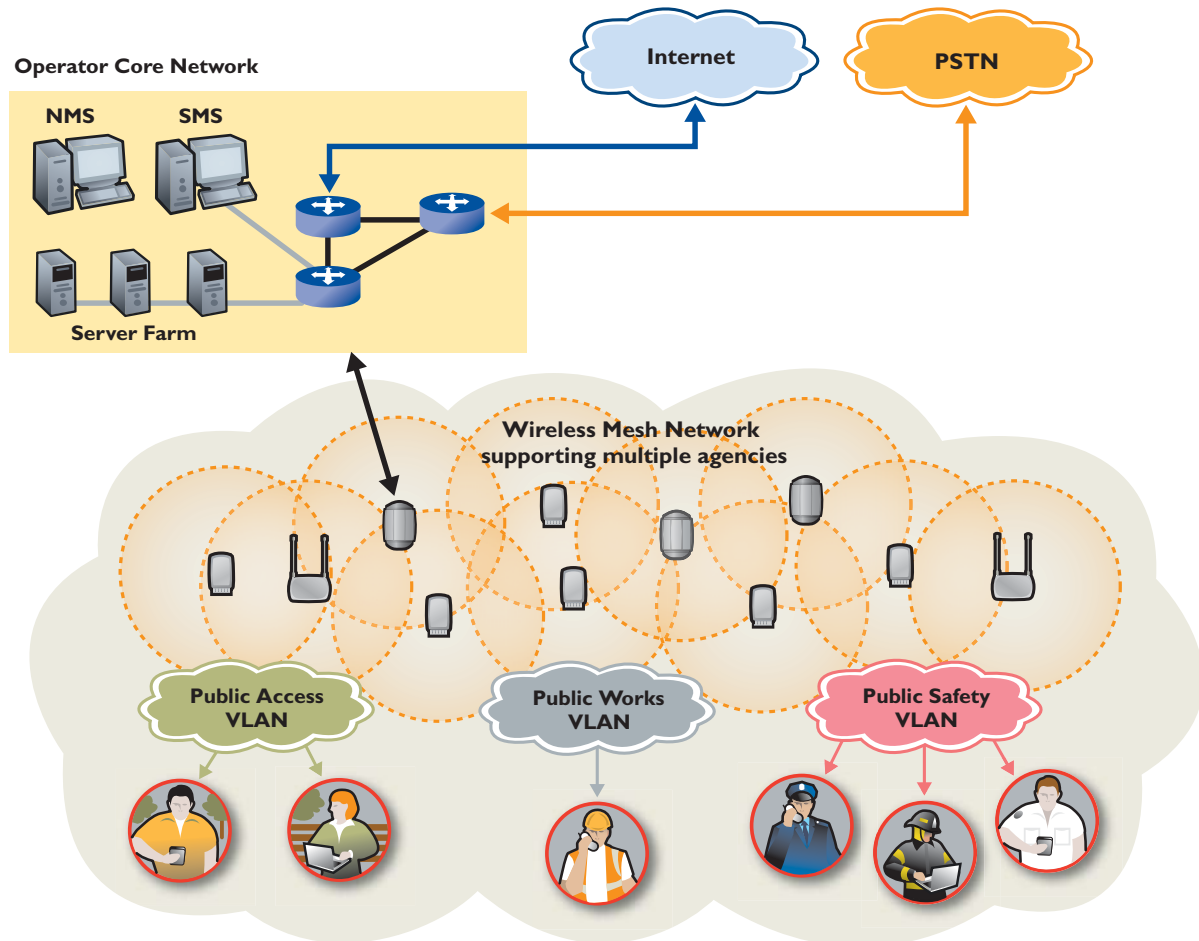
Voice over Internet Protocol (VoIP) network for civic employees. These capabilities significantly increase the value of the network to the community, and make a lot of economic sense.

The ideal innovation network

BelAir Networks wireless mesh architecture provides carrier-grade performance, which means you get the convenience of wireless plus the same high level of availability and reliability that you have come to expect from traditional land-based telecommunications.

It also means the network provides Quality of Service (QoS), including the industry's lowest latency rate,

Figure 1: A BelAir wireless mesh network delivers dependable, mobile broadband access, expanding opportunities for residents, delivering seamless mobility for business people and municipal workers, and fostering economic development and innovation.



with minimal jitter, to support voice services and bandwidth intensive applications such as video and multimedia. BelAir Networks can help communities establish a new information infrastructure that can act as a catalyst for innovation and investment.

There are a myriad of services and applications that a municipal network can provide – but at the heart of the BelAir Networks wireless mesh architecture is an ideal solution for creating a robust, reliable, and cost-effective public access network that scales to support cities and municipalities, including local businesses, school campuses, traffic corridors, and neighborhoods.

The BelAir Networks family of products

No two communities are the same and engineering the right network for optimum coverage often requires a combination of single-, dual-, and multi-radio nodes. BelAir Networks offers the only complete family of wireless mesh products, so you can build a solution that suits your community, whether it is for a downtown core or metro-wide network.

You can start with a downtown core and easily build out to encompass neighborhoods, business parks, school zones, etc. BelAir's unique switched mesh architecture allows true network scalability, where a single network can grow up to 16,000 nodes and 250,000 users. Municipalities can easily deploy networks in several stages, broadening coverage as needed.

BelAir equipment is easy to install and can be mounted on buildings, poles, cables, towers, and rooftops. Field proven in over 150 deployments around the world, BelAir's products are made to withstand harsh outdoor conditions.

Standards-based solution with high-speed mobility

BelAir Networks standards-based wireless mesh solution supports virtually all wireless-enabled client

devices (laptops, PDAs, mobile phones, etc.) “out of the box” and provides vehicle-speed client handoff capabilities of less than 100 milliseconds. With this level of seamless mobility, subscribers can now maintain access to applications and broadband Internet access while mobile – so they remain connected, as they travel from home to downtown, from the airport to client sites, stroll along a shopping avenue or a park, or move throughout a business district.

Also, because it is a non-proprietary solution, operators are free to leverage their existing infrastructure and select best of class routing products and subscriber management software to build their networks without restrictions.

Support for time-sensitive multimedia applications

BelAir Networks is a pioneer in delivering high capacity voice, video and data over Wi-Fi, WiMAX or cellular networks. BelAir's portfolio of wireless mesh products supports a full suite of multimedia services that utilize Layer 2 Switching capabilities. By leveraging both IEEE 802.1Q VLAN's and IEEE 802.1p QoS, users can be separated into different groups (VLANs) based on their relationship to the network as well as the types of applications or resources they require. Simply stated, each type of user (e.g., municipal worker, police/fire/first responder, citizen, tourist, etc.) and application can be assigned their own specific VLAN with QoS parameters assigned for that specific application to ensure that it has the appropriate priority across the network. Authentication and security requirements can also be tailored by VLAN.

This traffic segmentation can be applied to all time-sensitive applications, such as video and voice, as well as bandwidth intensive data traffic. With support for enterprise features like Layer 2 switching, Layer 3 Routing and security via user authentication and encryption, BelAir's portfolio of products and solutions is ideal for mission-critical multimedia applications.

Flexible subscriber management

The BelAir BelView Network Management System (BelView NMS) is fully compatible with any Subscriber Management System (SMS) and allows network operators to easily configure, monitor, and manage a complete wireless network. Both user and node information is stored within BelView NMS. This means that users are free to move throughout the wireless mesh without disruption or loss of service and, in the event of a link failure, all traffic will be automatically re-routed to the next best path. Since BelView NMS is compatible with any SMS, centralized subscriber services can be allocated and maintained, and subscriber network usage and fee schedules can be tracked.

Network security

A vital component to any wireless mesh network is providing end-to-end, comprehensive network security. Because mission-critical applications require a robust, low latency network, security is paramount in ensuring that there is no disruption to the network through unauthorized user access or network hackers. BelAir Networks unique wireless mesh architecture delivers multi-level security that addresses the user, infrastructure, and management layers of the network.

BelAir's wireless mesh architecture leverages standards based methods (802.1x and Web Authentication, WEP, WPA1 [TKIP] and WPA 2 [AES] encryption) for end

user authenticating, authorizing, and accounting – preventing unauthorized access of the network. BelView Network Management System uses SSH, SSL and SNMPv3 standards for encrypted management and network administration log-in to ensure that only authorized personnel have access to network devices and configuration files. The system also maintains access records for auditing purposes.

The BelAir advantage

BelAir Networks has proven to be an industry leader in providing mission-critical wireless mesh networks across the globe. BelAir's cost-effective solutions deliver the highest capacity per square mile, on average 15 times the capacity of the competition – up to 240 Mbps per square mile!

Reliable, high performance solutions make BelAir Networks the wireless company of choice for delivering carrier-grade voice, data and video services for all types of users, leaving no one behind.

The ability to deliver true broadband service and mobility creates a sustainable competitive advantage for your city or town as potential residents, business leaders, investors and tourists evaluate communities for their next home, office, development opportunity, or vacation destination. It can also set the stage for the next wave of innovation, helping create new businesses that leverage the wireless network.



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