



Wireless Networks for Bridging the “Digital Divide”

Extend access and expand opportunities through the deployment of municipal wireless mesh networks

A key indicator of success in the global information economy is regular, effective access to digital technologies. The gap between the “haves” – those who have this access – and the “have-nots” has been called the Digital Divide. Many communities recognize that extending Internet access to underserved constituents is a key element in bridging this gap and developing digital literacy. Communities that have ubiquitous broadband Internet access available have higher levels of job growth, increased new business creation, and growth in new residents, all of which feed development. Cities and towns that do not have wide-scale broadband access services can find themselves at a significant disadvantage – both in the short and long term – with a workforce lacking the skills to participate in the information age. Even within communities where broadband services are available, there are almost always areas where service is not attainable or where residents cannot afford them.

High speed, affordable access to the Internet is becoming a national imperative, especially in a global economy. In 2001, the US ranked 4th in household broadband subscriptions. Only a few years later, the US has fallen to 15th.



And throughout most of Europe, subscription rates are even lower.

To address this challenge, many communities are now looking to empower their residents and expand access to educational and career opportunities by deploying wireless mesh networks. Civic leaders are looking to these networks to usher in a new wave of equal access to innovation and economic development. While simply having access to a computer and the Internet does not mean a person can confidently navigate the Internet, it is still a good place to start. Forward-thinking communities recognize this and are actively partnering with local non-profit groups to ensure that if access is there, people are aware of it and have the resources and the training to readily enter the Internet era.

Wireless Networks for Bridging the “Digital Divide”

Wireless mesh technology: enabling a solution to the Digital Divide

There are a number of obstacles to bridging the digital divide. For example, many residents are unaware of the benefits – economic, educational and otherwise – associated with an always on high-speed connection to the Internet. Additionally, many citizens do not have the access to computers or the training necessary to use one.

While many schools, civic groups, charitable organizations and municipalities have developed answers to these issues, the most critical challenge remains: affordable and ubiquitous access to the

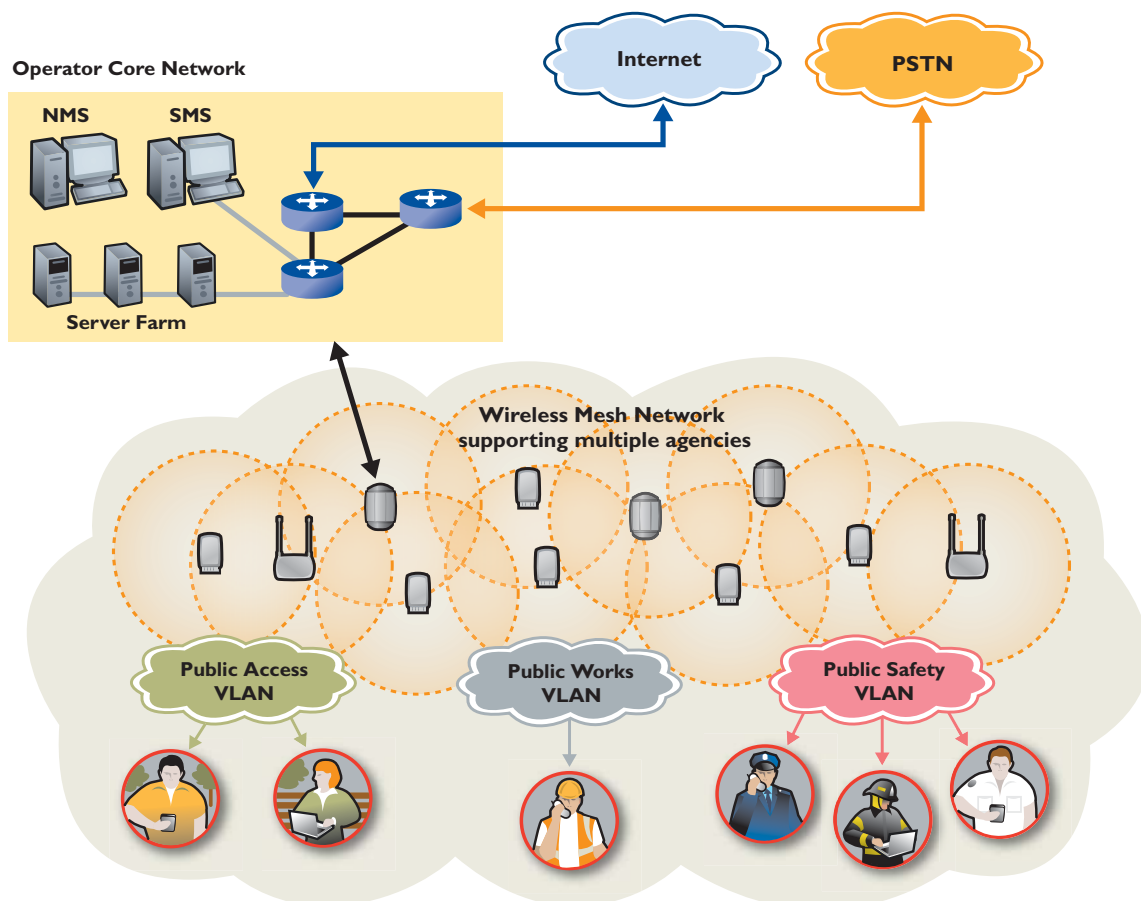
Internet – and that’s where wireless mesh solutions fill the gap. Wireless mesh networks deliver:

- The most cost-effective way to deploy and maintain a wide-area broadband network
- Mobility, the ability to access from the home, the highway or anywhere in between
- Highly reliable, high-performance ubiquitous coverage
- A network platform that also supports public safety and public works applications

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

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



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.

The ideal public access network

BelAir Networks wireless mesh architecture provides carrier-grade performance, which means that 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. This rich network infrastructure ensures that you won't have to compromise service quality in order to provide widespread access.

It also means the network provides Quality of Service (QoS), including the industry's lowest latency rate, with minimal jitter, to support voice services and bandwidth intensive applications such as video and multimedia.

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 reliable public access network that scales to support cities and municipalities, including local businesses, school campuses, traffic corridors, and neighborhoods.

“Outside-In” coverage

BelAir Networks products offer the flexibility to deliver wide-scale indoor and outdoor Wi-Fi coverage for targeted coverage of a building or a complex.

This unique “outside-in” coverage delivers up to ten times more capacity and five times more range compared to traditional wireless mesh architectures. More importantly, this approach avoids the expense and disruption of running cabling throughout the premises and installing obtrusive access points. It can be deployed in days rather than months compared to interior wired solutions. The combination of fewer nodes and no indoor wiring also means lower ongoing maintenance costs.

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 particular needs, whether it is for a downtown core or metro-wide network.

You can also 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 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 client devices “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, as they stroll along a shopping avenue or a park, or as they move through a business district.

BelAir's switched mesh architecture is a key element in delivering greater bandwidth and higher performance. Leveraging standard carrier-grade router platforms, along with QoS tagging and classification capabilities, applications are able to be transported across the wireless mesh networks with little to no latency.

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 leverages 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 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 240Mbps of capacity per square mile!

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

The ability to deliver true broadband service and mobility creates a sustainable competitive advantage for your community as residents, business people, and tourists can access their important information resources from anywhere in the city and experience unparalleled levels of performance and reliability.



Copyright © 2006 BelAir Networks
Specifications may vary by region.

To find out more, contact BelAir Networks:

info@belairnetworks.com

sales@belairnetworks.com

1-877-BelAir1 (1-877-235-2471)

1-613-254-7070

www.belairnetworks.com

BDMA00070-A01