



SOLUTION OVERVIEW

CISCO WIRELESS MESH NETWORK SOLUTION OVERVIEW FOR SERVICE PROVIDERS

From New York to San Francisco, local governments and public service agencies are discovering that Wi-Fi technology is an effective method for delivering high-speed broadband connectivity to their employees and communities.

EXECUTIVE SUMMARY

By using Wi-Fi solutions as a major component of their networking strategy, organizations can revolutionize the way they communicate, helping them to cut costs, boost employee productivity, improve community service, and increase public safety. With the Cisco Mesh Network Solution, today's service providers can satisfy the growing demand for wireless broadband services with a managed offering that extends their wired service portfolio, while relieving public organizations from the burden of deploying and operating their own high-speed networks.

CHALLENGE

In the past, municipalities and public service agencies have faced a number of obstacles when attempting to integrate high-speed and/or wireless services. Many have found that traditional fixed line broadband service is difficult and expensive to deploy, especially in larger communities or areas in which services are highly dispersed.

Attempts to use Wi-Fi hotspots to provide citywide or regional coverage have also been hampered by the need for wired network backhaul for each Wi-Fi hotspot, and cellular networks have been prohibitively expensive and have lacked the bandwidth capacity to adequately support hundreds of government users.

In order to attract customers in the government and public service sectors, wireline service providers must find a way to overcome these barriers without increasing their own management and operating expenses. Mesh networking technology provides a powerful solution that lets them offer high-performance wireless broadband coverage in a city or region at a price their customers can afford.

Mesh networking technology lets providers augment their wired backhaul infrastructure to provide wireless broadband services with very high security, reliability, and scalability. It relies on the mature 802.11 standard for wireless networking and thus is a highly stable technology, unlike other emerging transport methods that are unproven and do not utilize the ubiquitous installed base of 802.11 clients. In addition, mesh networks feature self-healing and dynamic route optimization capabilities, making them simple and cost-effective to deploy and manage. Using mesh networks, service providers can keep their operating costs down, while passing on savings to customers.

Mesh networks let providers extend the reach of their wired infrastructure to deliver affordable managed wireless broadband services to government agencies. A managed service offering helps enable customers to:

- Shift expense from capital outlay to operational expenses, making it easier to win budget approval
- Eliminate the need for new hires and incremental staff to deploy and operate equipment
- Minimize backhaul transport costs
- Pay as they grow, allowing organizations to scale services as needed
- Get service rapidly deployed
- Provide wireless roaming and access in government facilities such as public parks, plazas, office buildings, libraries, community centers, low income neighborhoods, water and sewage facilities, traffic intersections, transit stations, recreation facilities, playgrounds, and athletic fields

Government agencies are seeking ways to minimize capital, deployment, and operational expenses as they deploy high-performance broadband wireless technologies to improve services for employees and local residents. Mesh network technology lets service providers deliver the right solutions with no sacrifice in service quality, enabling public organizations to:

- **Enhance Public Safety**—with applications such as IP video surveillance and traffic monitoring
- **Improve Interagency Collaboration**—to speed information exchange between municipal, county, state, and federal agencies
- **Improve Public Service**—by providing wireless access to records, files, and data in the field
- **Increase Economic Development**—by forming online community alliances with neighborhood groups, schools, and small businesses to promote economic growth
- **Improve Transportation Services**—with applications to better manage internal transportation operations and prevent traffic and public safety problems
- **Extend Internet Access**—to low income residents for easier access to community resources and services
- **Have special or seasonal local events** quickly and easily covered.

SOLUTION

The Cisco Mesh Network Solution, featuring the Cisco Aironet 1500 Series Access Point, enables service providers to easily provision secure, large-scale wireless mesh networks suited for delivery of today's wireless applications. The Cisco solution reduces the complexities of deploying, operating, and managing wireless broadband services, allowing providers to deliver managed offerings tailored to the budgets of cost-conscious government and public service organizations.

Simple to deploy and operate, the Cisco solution is based on intelligent wireless routing technology and a powerful, self-organizing, self-healing, and self-configuring architecture. Once deployed, the solution dynamically responds to varying use conditions, providing optimal route selection in the event of failures and environmental changes. Service providers also benefit from central site configuration and management of wireless LAN functions.

BENEFITS

For service providers, the Cisco Mesh Network Solution provides the following benefits:

- **Fast Deployment**—With the Cisco solution, new access points can be added without truck rolls, reducing deployment time and costs.
- **Flexible Architecture**—The solution supports a variety of mounting options, can be installed indoors or outdoors, operates in a wide variety of environments, and supports multiple antenna options.
- **Low Ownership Cost**—Providers can deploy multiple wireless LANs using a single mesh network, creating a multi-purpose infrastructure for a variety of government customers; indoor and outdoor access, maximizes equipment investment; and the solution features a compelling return on investment.
- **Easy Management**—Administrators can configure and manage the mesh network from a central location; self-healing capabilities reduce troubleshooting and repair time.
- **High Scalability**—The Cisco solution makes it easy to add coverage in response to changing use patterns; support for the under-used 5 GHz band facilitates scalability.
- **Comprehensive Security**—Integrated multi-layer security (including IEEE 802.11i, AES encryption, encrypted backhaul links, AP authentication, secure control traffic between the AP and the controller, and IPSec) provides rock solid protection for Cisco mesh networks; network managers can easily define security policies for individual customers.
- **Peak Reliability**—Rugged equipment enclosures prevent interference from the elements and vibration. Self-healing architecture and automatic load balancing keep the network available for critical communications.
- **Interoperability**—Support industry standard billing and accounting protocols

WHY CISCO?

Cisco Systems® has a 20-year track record supporting service providers of all types and sizes around the world. By working with the worldwide leader in networking technologies, service providers benefit from:

- Over two decades of experience building large-scale routing and RF networks
- Proven performance, reliability, and security
- A broad range of technical experts and engineers who understand the unique requirements of service provider customers
- Award-winning customer support services that help service providers get the most from their investment and extend the life of their networks
- Ongoing investments in R&D initiatives benefiting service providers
- Sustained value with upgradeable, standards-based solutions
- A phased approach to support integration of new technologies or response to new mandates
- Best practices based on showcase network deployments

FOR MORE INFORMATION

For more information about the Cisco Mesh Network Solution, go to: <http://www.cisco.com/go/wirelessmesh>



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