



Value Proposition of Wireless LANs

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Introduction

802.11-based wireless networks pay for themselves in a short amount of time with significant ongoing savings in networking, telephony, location-based services and office space costs. And they provide qualitative improvements that are measured in workflow improvements and better customer focus.

This paper briefly describes wireless LANs and details wireless overlays, identifying the qualitative and financial benefits.



Wireless LAN Technology

Wireless networking of today is different than it was just a few years ago. When one thinks about a wireless deployment, one often thinks of an access point like those that could be purchased at Best Buy or Circuit City. Those products can provide service for smaller deployments, like a home, but they lack enterprise management, security and service features.

Thin Access Points

Modern wireless infrastructures are overlays to an existing wired network. Access points are deployed to cover the air space at the edges of the network. Very little processing takes place on the access points. Rather, wireless traffic is ferried back to central *wireless controllers* and interpreted there. Typically, wireless communications, the management of security, firmware updates, service and radio tuning are managed by the controllers for all of the access points, all at once. Once an access point is installed, there is likely no need to revisit it.

Centralized management of all access points (APs) means that the infrastructure can tune radios to fill dead spots, or avoid interference. The APs can “hear” one another, and can coordinate in triangulation for security, or for simply locating a missing wireless device.

Wireless networks are more secure than wired networks. This is because traffic never passes in the clear, and a wireless connection cannot even be established without the proper credentials. A single wireless system typically supports a full range of encryption, security and authentication capabilities, including captive logon pages for guests, and network-authenticated access for known users.



Basic Infrastructure Cost Savings

Organizations performing new office build-outs or conducting network refresh have an opportunity to re-examine the way they deploy network access and telephony.

Experience demonstrates that ¼ the number of wired drops necessary a few years ago will support the typical office environment; the majority of workers can be wireless. Current laptop computers and mobile PDAs work comfortably with a wireless infrastructure, and users are satisfied with the experience. Wired ports continue to be necessary for fixed devices such as printers or access points.

Cost savings come from the reduction in switch ports and physical wiring. In addition, wireless networks provide network security equivalent to full-featured, premium network switches.

Consider that the cost of a CAT5e drop is nominally \$275. The associated switch port for the drop is \$50. An office build-out or refresh for 100 users can reduce wired costs in favor of a wireless infrastructure.

CAT5e drop	\$275
Switch Port	\$50
Cost per wired port	\$325

The cost for 100 drops would be:

$$\mathbf{\$325 * 100 = \$32,500}$$

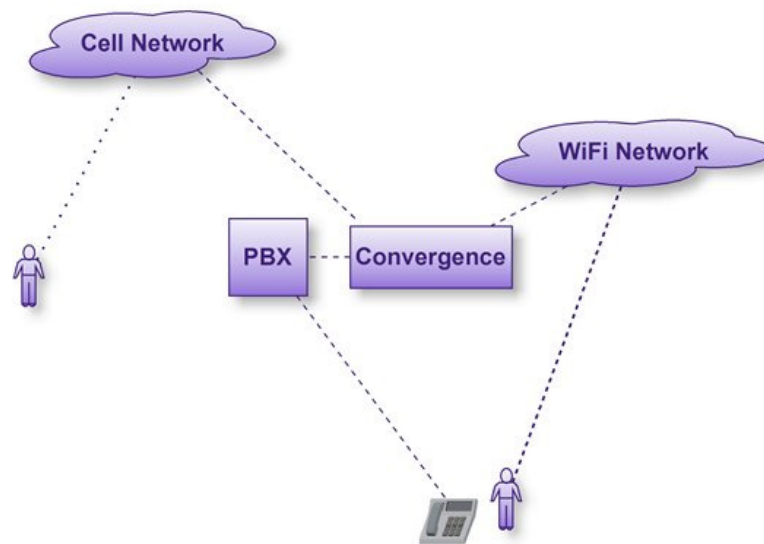
A commercial-grade WiFi infrastructure to service 100 users might cost around **\$15,000**.

There are significantly more savings to be had by recovering the wired telephony port costs, demonstrated below.

Wireless Voice over IP / Convergence

Organizations have rolled out Voice over IP phone systems at the same time their workforce has mobilized. Companies pay for *both* cell phones and desk service for many of their mobile employees.

Convergence is the term used to describe the merging of the company VoIP telephony and standard cell service on a single handset, and it is available today. When the employee is within the reach of sanctioned WiFi network, calls are placed over the company PBX. When the employee is beyond the WiFi network, calls use the cell network. Both experiences are identical to the user, and the handset may change from one mode to the other without dropping the call.

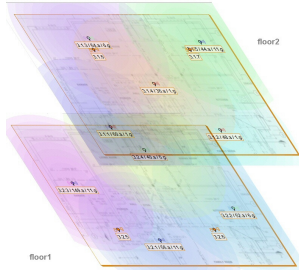


In addition, converged telephone service provides push-to-talk, local extension dialing, live availability monitoring and calendaring to all employees, wherever they are.

Convergence is an add-on to an existing VoIP system; the current PBX needn't be modified or swapped out. Handsets from Nokia and other leading manufacturers can be used.

Convergence's value proposition is great because of the recurring money it can save on cell plans. A typical rollout pays for itself within six months, even after accounting for the cost of mobile handsets.

Location-based services

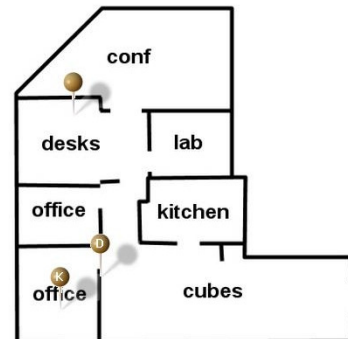


A WiFi infrastructure is deployed in 3-space. Having the locations of the access points, it is possible to calculate the location of a WiFi device within a few meters, given a sufficient coverage density. The value proposition becomes apparent when one considers that wireless devices are often synonymous with people, or physical resources. In a hospital setting, for instance, WiFi devices may be doctors, nurses and equipment carts.

Location based services made possible by a wireless infrastructure can feed business processes; a doctor looking for a cardiac cart can find one quickly; a fire protection device can alert the fire inspector that it's time for inspection as he walks by.

Many ERP systems can make use of the location information to facilitate business.

The utility of location-based services becomes especially apparent when users become fully mobile, as with a converged telephony system; one can depend on the user and their mobile device being in the same location.



WiFi for Active and Passive RFID

Active RFID tags, such as those attached to pallets, wheelchairs, autos, equipment, etc., can be triggered by exciters placed at choke points, or along a physical process path. The same WiFi network that services the infrastructure can receive these triggered responses to identify events, such as a pallet moving through a specific location, such as a garage bay.

Items of lower value may not justify the expense of an active RFID system. Examples include stock items, such as pharmaceuticals or clothing. Passive RFID systems can identify passive tags over short distances. Some systems may even be able to give approximate tag locations.

WiFi's place in a passive RFID network is as a backhaul technology for location data. As with our first discussion—Wifi as a replacement for wired drops—a wireless LAN can significantly reduce the rollout cost of a passive RFID network by eliminating the need for RS232, RS485 or proprietary data connectivity, particularly in an existing structure.



Disaster Recovery and adds/moves/changes

Once the workforce has mobile components in place—wireless data and voice connectivity—they are no longer dependent on a particular location to perform their work.

Modern WiFi infrastructures can be extended over VPN technologies to offer the same wireless experience anywhere, including security, intrusion prevention and radio management.

The benefits are manifold:

- An organization no longer needs to provide a fixed desk or cube for each employee.
- Employees can work from anywhere, including disaster recovery locations.
- Workspace needn't be provisioned with data connectivity.
- 'Swing space' is anyplace within range of the wireless network.
- The wireless network can be extended by simply adding an additional access point.



Summary

802.11 WiFi networks provide much more than mobile convenience. They can reduce the cost of data network deployment and telephony. And, WiFi can enable location-based services for logistics, manufacturing and public service organizations.

This discussion about the value propositions in WiFi LAN technology is from Halestar, an integrator of the technologies discussed in this paper. See www.halestar.com.