



# Blindspots for Wireless Network

Venki Thyagarajan

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Technowave Inc.  
900 Pump Road, Suite 69  
Richmond , VA 23238  
Tel: (804) 740-0957  
Fax: (804) 740-0958

The aim of this paper is to present the major issues that IT managers need to consider when they implement wireless infrastructure in their corporate. The importance of these issues consists of the concern of infrastructure hardware, communication protocols, bandwidth requirements, software, security and user demand.

Understand the difference between mobile and wireless applications is very important. Not all mobile applications require wireless access. Instead, they can use a dial up access or frequent data synchronization. However, applications such as wireless voice over IP and email require wireless access.

Ignoring users' wireless needs might cause serious damage to IT department. Although the wireless technology is expensive and evolving, it provides freedom to users to work from anywhere. Surveys often proved that users in organizations with WLAN technology consider wireless valuable to their productivity.

Successful wireless implementation requires strong technical experience and networking expertise. If internal technicians need some help in areas such as medium or wiring systems, they should be open to get technical experience or training from an outside source. A small implementation error can cause the entire system to fail.

Calculating the return of investment for wireless system is difficult. Efficiency and effectiveness are the major elements when calculating the ROI. ROI also needs to include the business process improvement after using the wireless technology. Nevertheless, there is no easy way to measure the efficiency, effectiveness or business process improvement. For example, using wireless technology, an employee can work from cafeteria or airport, which is difficult to convert in terms of efficiency.

Either completely banning the wireless technology because of the security risks or totally ignoring the security risks of the wireless technology is going to affect the business. Before wireless implementation, we need to analyze the security risks and the costs to eliminate them. There are some workaround for security vulnerabilities, but each of them needs to weight against the cost benefit analysis.

Waiting too long to go wireless is not a good idea. Employees may use wireless technologies in their home or other places. Because of this experience, employees would like to use it at the office too. Failure to implement the wireless technology can encourage employees to setup their own wireless systems without proper security or infrastructure. Waiting too long to implement wireless also make a corporate less competitive.

Do not calculate system throughput based on the transmission data rate. Although the wireless networks are capable of transmitting higher data rates, overhead of Media Access Control layer may reduce the transmission rate to half. In addition, interference from external sources and other wireless devises can choke throughput.

Analyze bandwidth requirements before building the wireless infrastructure. Build wireless network that can be expandable for future bandwidth needs. In most cases, the idle bandwidth is four times greater than the aggregate bandwidth requirement.

Try to use enterprise hardware and software wireless products instead of SOHO-class WLAN infrastructure products. SOHO-class products may reduce the initial infrastructure cost, but increases the maintenance cost and reduces the system throughput. These products do not support centralized control for hundreds of access points and enterprise bandwidth requirements.

Overall system performance is greatly depends on wireless frequency management. Adding more access points without proper frequency management can cause the same channel interference that can reduce overall system performance. It is better to use access points, which dynamically adjust their channels and power output in response to interference from others.

People may think wireless is faster than Ethernet because of the data transmission rates. Although the raw data rate of Wi-Fi (11 Mbps) may be faster than the original Ethernet (10 Mbps), wireless throughput efficiency is always less. People may think that the longer the transmission range can produce the better throughput. This is true in wireless communications, but not in wireless LANs. In wireless LANs, longer the transmission range increases number of users per cell and decreases per-user throughput.

People can argue that the wireless network can harm our health. However, wireless network uses the radio signals, less than 100 mill watts, which cannot harm our health. People think 802.11g may replace 802.11a standard because of the data rate offered and backward compatibility with 802.11b. However, 802.11a offers three to four times more system capacity than 802.11g that makes 802.11a to irreplaceable. People can argue that the wireless networks are insecure. Some workarounds such as using VPNs and security gateways can make wireless networks more secure.

Wireless technology have become increasingly popular in the corporate world, yet the infrastructure to support the multitude of devices advertised and the benefits promised has not been fully developed and refined. In my work, Our LAN uses Fast Ethernet which is simply the traditional 10 Mbps Ethernet running at 100 Mbps. Our WAN uses 10 Gigabit Ethernet networks in conjunction with Dense Wave Division Multiplexing (DWDM) Metropolitan Area Network (MAN). To reduce the costs of separate infrastructures currently utilized by data and voice communications, we are implementing advanced IP services that transport both voice and data. This article printout some common mistakes when selecting infrastructure hardware, communication protocols, bandwidth requirements, software and security for the wireless technology. Therefore, this article will be helpful to our IT managers to avoid such mistakes in their implementation.