Star Watch

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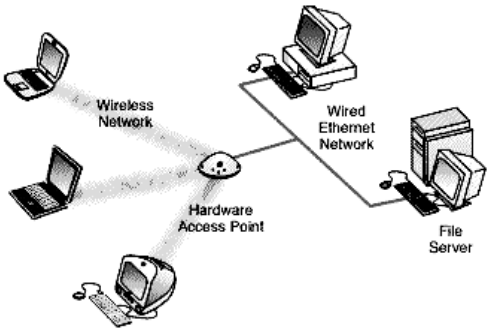
Networking Your Office: Wireless Networks

The term "wireless" does not mean that there are no wires anywhere in the network. It refers to how user workstations are connected to a network. Wireless network technology enables two or more computers to communicate using standard network protocols, but without standard network cabling. A wireless network can also use a hardware access point, or base station that will extend the distance over which wireless workstations can communicate with each other.



The access point can also connect the wireless LAN to a wired LAN, allowing wireless computer access to LAN resources, such as file servers or Internet connections. Users on the wireless LAN can share files and printers located on the wired LAN and vice versa.

Does a wireless LAN have any advantages?

Reduced installation time: The installation of cabling is often a time-consuming activity. For LANs, installers must pull twisted-pair wires above the ceiling and drop cables through walls to network outlets that they must affix to the wall. These tasks can take a lot of time, depending on the size of the installation

Installation of wireless networks greatly reduces the need for cable instal-

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lation, making the network available for use much sooner. This is also true when setting up temporary offices or re-wiring renovated facilities.

Installation in difficult to wire areas: Many organizations have unsuitable building layouts or walls that cannot be wired for various reasons making it difficult or impossible to build a wired network. Wireless networking in these environments is a very cost effective alternative also providing future flexibility.

The asbestos found in older facilities is another problem that many organizations encounter. Network cabling within these areas can be cost-prohibitive because of the steps that must be taken to avoid contamination. Use of a wireless network may avoid any possibility of contact with asbestos.

In buildings of historical value, there may be severe restrictions on where network cabling can be placed. Sometimes, there are outright prohibitions

Mobility: Hard wired networks require a physical tether between the user's workstation and the network's resources. Workstations must plug into a physical network connection in order to access any of the network's resources. This limits the number of workstations that can be connected to the network to the number of data jacks.

With wireless networks, any workstation can connect to the network if it has a wireless network card. That workstation can access the network from any location on the premises that supports wireless networking.

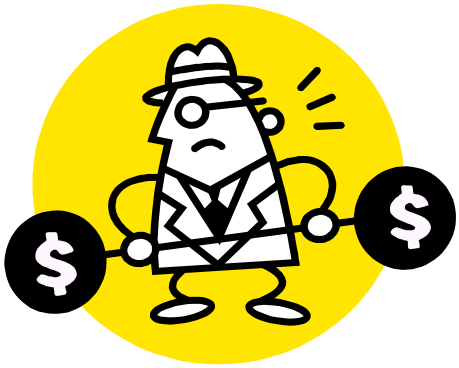
Reliability: A problem inherent to wired networks is performance degradation and downtime due to cable faults. Cable faults are a significant cause of system downtime. Wires and connectors can break through normal use. Users could accidentally break their network connectors when trying to disconnect their PC from the network to move it to a different location. Imperfect cable splices can cause unexplainable errors. The accidental cutting of cables can bring a network down immediately. Over time, moisture can corrode connections. An advantage of wireless networking, therefore, results from the use of less cable. This reduces the downtime of the network and the costs associated with maintaining cables.

Security: It might seem that wireless networks could have potential security issues since a hacker would only need to set up a radio antenna to listen in on the data communications traffic being broadcast. While it is true that a

hacker could determine that wireless communications was in use, it would require very specialized equipment to discover the content of the communications traffic. Wireless communications cannot be decoded by simple scanners or other receivers.

Range: Each access point has a finite range within which a wireless connection can be maintained between the client computer and the access point. The actual distance varies depending upon the environment. Typical indoor ranges are 150-300 feet.

Long Term Cost Reorganizations result in the movement of people, new floor plans, office partitions, and other renovations. These changes often require recabling the network, incurring both labor and material costs. The advantage of wireless networking is again based on the lack of cable: You can move the network connection by simply relocating the workstation.



Cost Comparisons

For purposes of illustration, let's calculate the cost of a network installation in a room containing 4 workstations. Let us also assume that these computers must be able to connect into a hard-wired network in another part of the building.

To hardwire a room for 4 computer workstations, the cost would be as follows:

4 Network interface cards at $35-$70 per computer

Cable installation for 4 computers at $100-$150 per computer

To install a wireless network in the same room:

4 Network interface cards at $80 - $120 per computer

1 Hardware Access point at $250

Cable installation to Hardware Access Point: $100-$150

The cost of the hard wired installation would be between $540 and $880. The cost of the wireless installation would be between $430 and $520.

While individual wireless networking components are more costly, in many situations it actually costs less because of reduced cabling costs.

In Conclusion…

The advantage of wireless networking can be summarized in two words: Less cable. The cost of initial cable installation, re-cabling due to staff reorganization and cable maintenance is a substantial part of the cost of networks. Wireless networking is one way to provide a long term network reliability and flexibility at a reduced cost.

The Cheapskate's Guide to Improving Computer Performance Continued: Video

In the July, 2000 issue of StarWatch, we discussed a number of ways that computer performance could be improved without spending any money. Since that time, we came across several other ways to squeeze a little bit more performance out of your desktop computer.

Desktop background

Many computer users have opted to change the boring, single-color background on their desktop to a picture of a

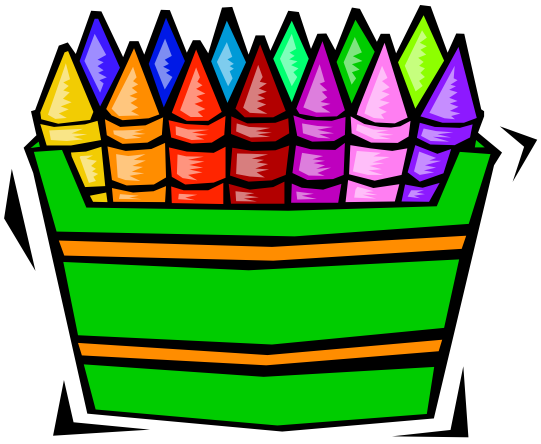
favorite relative or a copy of a famous work of art. Unfortunately, these attempts to beautify one's personal space can have an impact on one's personal computer performance. In order to be displayed on the monitor, the picture must be resident in the computer's memory. The larger the picture, the greater the memory used to contain it and less memory available to perform useful work.

Color Palette

The number of colors that can be displayed on a computer monitor has a direct effect on computer performance. Consider, if you will, that a standard computer monitor display is made up of a series of individual 'dots' of light called pixels. As these pixels are painted onto the monitor, they form an image that users see as text or graphics. The image on the monitor is updated somewhere between 60 and 75 times per second.

At normal display resolution (640 pixels by 480 pixels), 307,200 pixels are being sent to the screen to be displayed every time the screen is refreshed. If the refresh rate is 60 times per second, the number of pixels refreshed per second is 18,432,000.

Pixels can be any number of colors depending on how the video card is configured. The total number of colors displayed can vary from a minimum 16 colors to over 16 million colors. The amount of information sent



to a video card in 16 color mode (4 bits) is very small compared to the amount needed for "true color" mode (32 bits).

The work of painting all of these pixels on the monitor is done by the video card. Depending on the complexity of what is being displayed (screens on top of screens and/or text and/or graphics), the amount of data that must be sent to the video card from the computer's memory will vary greatly. While the information is being transferred to the video card from computer memory, the computer must wait to move instructions and data to the processor (Translation: The computer slows down).

To check and/or change the color palette:

- Place the cursor in an empty spot on the desktop and right-click
- Select "Properties"
- On the screen that is displayed, select the "Settings" tab
- Right below the caption "Color palette" is a popup window with several choices
- Select "256 colors"; then click "Apply". Some workstations must re-boot to implement the change in video settings. Others will make the changes without re-booting.
- If this color choice is completely intolerable, repeat the process and choose "High color (16 bit)".

Some users who have custom backgrounds on their desktop may notice that the colors are not as rich. It's a small price to pay for increased performance.

Animated Cursors

Instead of those mundane arrowheads used to show where the mouse pointer is, some people have changed to pointers that are in constant motion, change shape or change colors. It may spice up the look of the screen, but there is a price to be paid: That animated cursor is a computer program. It's using up computer resources that could be allocated to useful work the entire time that your computer is running. It doesn't perform any useful tasks. If a computer has animated cursors and it's performance is sluggish, removal of the animated cursors will help to improve performance.

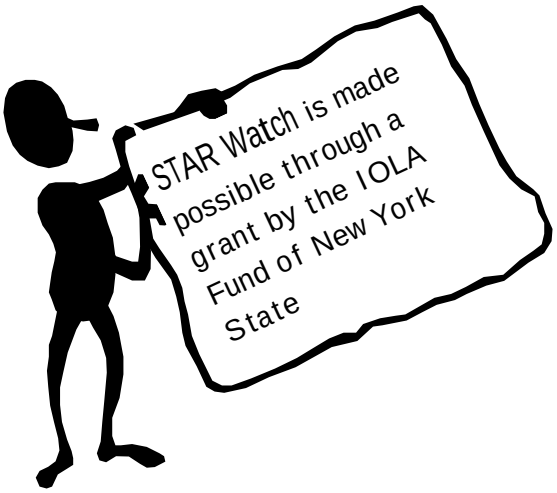
New E-Mail Group

Dave Robinson, from the Legal Support Unit of Legal Services of New York, has set up a listserv through the Western New York Law Center for housing practitioners in New York City. To subscribe, send a request to: drobinson@legalsupport.org

For January 2001

Total Hits 473,744	**Most Active Hour. . . . . .2-3 p.m.**
Total User Sessions 19,616	**Accessed Using Netscape 36%**
Average Hits/Day (Monday thru Friday) . . 17,371	**Accessed Using Internet Explorer 60%**
Average User Sessions/ Weekday 668	**From Windows 95, 98 or NT 91%**

Most Active Day of Week. . . . . Wednesday



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