

## Wireless LANscaping

*Most businesses connect all of their computers together in a network constructed of network interface cards (NIC), routers, hubs, servers, and something called CAT5e cabling. The cabling connects directly to each individual computer, leads to a hub or a switch that manages network traffic. A hub permits very little management of traffic, whereas a more expensive switch allows management of traffic and more explicitly guides the packets to their destination. Wireless networks still require switches, hubs, and NICs to function. They do not require CAT5e cabling.*

**In our** last issue we published an article about wireless networking technology and, in the end, this author decided that the jury had yet to return a verdict on the future feasibility of wireless. WI-FI, the name now commonly being used to refer to the 802.11x standard, has predictably undergone an incredible transformation in response to overwhelming consumer demand that these products provide fast connectivity, security, scalability, and adaptability. Over a year ago, categorically, wireless networking had no value as a component of a secure, hardened network. You may recall that at the time, wireless 802.11b solutions dominated the marketplace. 802.11g loomed on the horizon and manufacturers had already begun slashing prices to ditch their 802.11b inventory.

The landscape of wireless technology experienced considerable change in three dimensions: speed, security, and availability. Wireless technology now boasts much higher speeds capable of 108Mbps with 128 bit encryption. For reference, most wired networks clock in at 100Mbps. Better availability of critical network components such as range extenders, access points, and wireless print servers allows for quick and efficient build-out of network services.

**Note:** So far only the Netgear WGT634U offers the 108 Mbps speeds, which requires compatible NICs.

High speed devices such as the 108 Mbps WGT634U router from Netgear are ideal for wirelessly attaching a small network (10-40 peripherals) to larger, wired networks or even setting up a stand alone network. However, network traffic in large network implementations, where there are many computers, bottlenecks at the throat of the switch - the Wireless Access Point (WAP) connection. Most WAPs only have at most four ports for wired

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By Scott Ellis, Consultant

### Glossary of Terms

**AP:** Wireless Access Point

**WEP:** Wired Equivalent Privacy

**WAP:** Wireless Access Point

**WPA:** Wi-Fi Protected Area

**Wi-Fi:** Soft name of IEEE 802.11x. Undoubtedly invented by marketing agencies in late 2002 as a response to the cute "Bluetooth" standard

**Bluetooth:** Competing wireless RF standard that has some overlap with Wi-Fi market share

**IPSEC:** Encryption protocol used with VPN "tunnels"

**MAC:** Media Access Control

**IEEE 802.11b:** Wireless communication standard

**IEEE 802.11i:** Wireless Standard (still in review) to host WPA technology

computer connections. Quite a few only have one port and if it is a range extender, it has no ports. There do not appear to be any wireless products on the market leveraging the new 1Gbps speeds. For large networks, multiple WAPs must be deployed.

**What does it all mean?** Some businesses with large networks such as graphic design studios, architecture firms, photography studios and software developers with extremely high bandwidth requirements on their network will invariably be choked by a wireless garrote if implemented with too few access points. The philosophy of building a wireless network is far more distributed than the wired, centralized approach, and it attempts to maximize wireless signals. Connectivity of 100 computers via wireless would require the purchase of at least 10 wireless routers to keep network speeds reasonable. If geography permits, these routers may be centrally located, but for best results they should be evenly placed throughout the location. Of course, as more routers are added, the cost begins to approach having wire dropped. For some businesses, smaller businesses with less rigid bandwidth and security requirements, wireless technology will save a lot of money over wires. For businesses that have hefty bandwidth requirements, a lot of employees, large geography, stringent security requirements, and centralization requirements, then wireless may be more expensive in the end.

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...providing superior technology solutions since 1995

## Wireless LANscaping

Primarily, the security concerns of a wireless network, from a hacking standpoint, have been mitigated. Cracking into a wireless network by intercepting the wireless signal can not be easily accomplished if the security is correctly set up. The one caveat is that wireless networks may transmit signals beyond business property to a parking lot outside or to other nearby offices. What this means is that an existing employee who knows how to access the wireless network securely from within the building may rather easily sit in the parking lot and download sensitive information to disk without the fear of being seen or caught (in the act). Additionally, if an IT or other employee has a laptop that uses the wireless network, the security to the physical network is threatened by the mere existence of a laptop that leaves the building. If the laptop is stolen or otherwise compromised, hackers may gain access to the network without ever entering the building. From there it is a simple matter to create caches within the network, hide vast amounts of data, and leverage a corporate strength Internet connection to raid other servers, to stage attacks or to steal any useful information from the location.

Typically, wireless manufacturers target small to medium-sized businesses and home users since deployment costs in busy or large environments don't offer significant cost savings over installing CAT5 cable. The security concerns, though significantly diminished in the newer products, are still very real, but retail pricing in the \$50 - \$150 range for most wireless networking components makes these products doubly attractive to small businesses and home users also.

## Wireless and Windows XP Service Pack 2 (XP SP2)



The dramatic alteration of wireless management introduced in the SP2 bundle transforms the way users interface their computers with their wireless networks. The introduction of active permissions means that users are actually asked before the wireless card connects to an unknown network. Previously, some wireless cards would hop onto any port in a storm. It also allows for easier disconnection. This author has experienced situations with XP SP1 where the PC simply would not relinquish

the network connection. Partial blame for this rests with wireless card manufacturers who failed to thoroughly test their products or acknowledge that someone may desire to disconnect from a network. The other part may have been a corrupted router configuration file (guess how it got corrupted...hint: inadequate testing of wireless cards and bizarre Windows XP interoperability).

SP2 offers complete flexibility in the management of wireless networks. Where previously armed with little but ambiguity, SP2 offers confidence and security. It is a bolder, stronger, and more confident wireless market now.

SP2 still does pose possibly complex difficulties for the non-technical user. However, the technical conflicts that arise with XP SP2 seem (so far) to be strictly ones that would crop up with the installation of any firewall device. If you already have a firewall product installed on your XP machine, XP shouldn't harm it or interfere with it.

## Enterprise Solutions

Or more appropriately, firewalls, vpns, and wireless traffic. With respect to bandwidth, this author still rates wireless products as suitable for only light to

## 2005 Sees Computer Bits, Inc. Celebrate Their 10th Anniversary

It has been an incredible feeling to see a dream grow into reality. At the beginning it was just me, and oh, how difficult it seemed to add another employee! Double the payroll, OUCH! But as the years went on, through hard work and because of great clients, we slowly evolved into a 10 person firm.

The best thing about CBI is the great relationships that we have developed over the years. Our clients not only like us, but they truly trust us. That has been the most rewarding aspect of these past 10 years, the trust that we have developed with our clients.

My sincere thanks go to all of you who are our clients. Please tell your friends about us. And to those of you whom we would like to count as clients in the future, please contact us today. We won't let you down!

Sincerely,

Jim Harmening  
President, CBI



medium-light requirements. Yet there do seem to be some products on the market that are geared specifically for enterprise users. Certainly, as enterprise networks replace machines, they may have the ability to leverage legacy cabling and build out a wireless-cable hybrid network that enables the use of wireless in both a secure manner and without sacrificing speed. In an enterprise environment, one can only expect that security requirements may preclude the use of wireless technology, but arguments can

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## Rapid Server Recovery

RSR is introducing a full turnkey Disaster Recovery solution to protect small businesses from network failures due to human error, hardware failure, or a major disaster. We are providing an automated process to deliver rapid server recovery, while reducing the time and cost of restoring a server and helping to minimize the overall impact to your business.

For the first time, RSR allows small to medium-sized businesses to have an off-site location for disaster recovery at an affordable price. Computer Bits, Inc. is partnering with RSR to offer these services.

*For more information call Jim at Computer Bits, 708.288.3314.*

**CBI****Web****Site****Spotlight:***www.illinoislap.org*

**In this edition** of “Bits You Can Use...” our CBI Web Site Spotlight focuses on the web site of one of our clients, Lawyers’ Assistance Program (LAP), Inc., with offices in Chicago and Alton, IL. LAP is a not-for-profit organization that helps Illinois lawyers, judges, law students and their families with alcohol abuse, drug dependency, or mental health problems. Because it is estimated that ten to twenty per cent of Illinois attorneys and judges suffer from addiction or mental illness, LAP was created in 1980 by the Illinois State Bar Association and the Chicago Bar Association to provide assistance to any Illinois judge, attorney, or law student whose professional performance may be impaired due to addiction or mental illness.

**LAP offers** a range of services including education, information and referral, peer assistance, and intervention. Confidentiality is of the utmost importance and is completely respected with each client interaction. LAP recognizes that addiction and mental health problems significantly impact a professional’s ability to function in

a legal setting, and believes that it is the responsibility of the legal profession to assist its members who suffer from such impairments.

In order to better spread the word regarding their existence and the services that they provide, LAP asked Computer Bits, Inc. to create a web site ([www.illinoislap.org](http://www.illinoislap.org)) for them in 2003. The site is full of helpful information that relates to the legal community, addiction and mental illness.

**LAP’s mission is three-fold:**

- To protect clients from impaired lawyers and judges
- To help lawyers, judges, and law students get assistance for alcohol dependency, drug addiction, and mental health problems
- To educate the legal community about addiction and mental health issues

**Check out** [www.illinoislap.org](http://www.illinoislap.org) today for more detailed information on LAP and the important work that they do on behalf of Illinois’ legal community and the general public. ●

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*Lawyers’ Assistance Program, Inc. is located at 20 S. Clark St., Suite 1820, Chicago, IL, 60603. Executive Director Janet Piper Voss can be reached by phone at 312.726.6607 or 800.LAP.1233 and by email at [jpvoss@illinoislap.org](mailto:jpvoss@illinoislap.org). Associate Director Joseph Bartylak can be reached at the downstate office at 618.462.4397 and [jbartylak@illinoislap.org](mailto:jbartylak@illinoislap.org).*

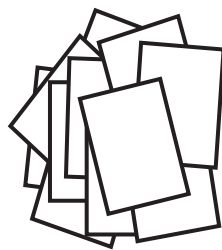
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**CBI Referral Program Now Up and Running**

Just a reminder that the Computer Bits, Inc. (CBI) Referral Program, announced in November, 2003, is up and running. Multiple CBI clients have used the program to refer new clients to CBI and earn free CBI consulting time. Time awards range from one free hour through one free day of CBI time. The amount of time awarded to the referring organization is a function of the amount of consulting time that is initially purchased by the new (referred) client.

If you have any questions about this program or if you have a prospective client that you would like to refer to CBI, please contact Mary Beth Sheehan at 312.399.7505.

**Your free CBI time is waiting for you!**



**Electronic Document Management**

Electronic document management systems (EDMSs) are becoming increasingly prevalent in today’s workplace because of the many benefits that they offer to users. What exactly is an EDMS? And if you don’t have one already, is it time for your organization to consider purchasing one?

EDMSs are basically databases that provide an organization with the tools to create, manage, control, and distribute electronic documents. Due to the proliferation of local area networks (LANs), there are now many people in the workplace creating documents and contributing to the

overall store of institutional knowledge. This knowledge is limited in its impact, however, if it is difficult to locate and access. This is where an EDMS enters the picture.

**Is your organization ready for an EDMS?**

Let’s take a look at a list of questions that should be examined before answering that question:

1. While looking for documents on your computer or server, are you able to quickly locate the particular document that you’re searching for? If not, how long does a typical document search take?

2. Can you call up a list of documents and, simply by looking at the list, know the nature of each one?

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# RFID Technology- The Future Is On Its Way...

By Abraham Velazquez, Consultant

**Your** car keys are hard enough to keep track of in the morning. How would you like to be responsible for organizing and cataloging thousands of items for a living? Every time you buy anything from a candy bar to a new computer, you bring home a bar code, which holds the Universal Product Code (UPC) for the product you have purchased. Since the early 1970's, bar codes have helped to manage inventories around the world, but the drawbacks are obvious to manufacturers and retailers alike. Bar codes require line of sight, which mean that you have to see the label to read it. Also, if the bar code becomes damaged or soiled, it is useless. Several companies understood these drawbacks, and have competed to bring a new, more efficient technology to the marketplace.

Radio frequency identification, or RFID, is the term given to the technology that uses radio waves to transmit a signal, which is digitally encoded on a paper thin sticker, much like a bar code. RFID technology has been around since WWII, but it has been

too expensive and impractical to utilize until recently. Also, a general concern dealt with health issues associated with RFID. Since it uses the low-end of the electromagnetic spectrum, the waves from the reader are no more dangerous than the waves coming from a car radio, so those health concerns have been allayed.

**With RFID**, a serial number is typically stored in a tag, which is affixed to the item to be identified and contains a microchip with a coiled antenna. A free-standing reader sends out electromagnetic waves that link it with and energize the tag. The chip in the tag then transmits the serial number back to the reader, which converts the received signal into digital data and transmits it to a receiving computer.

There are currently two kinds of tags that are used. Passive tags draw their power from the magnetic field created from the waves emitted by the reader. These tags are the most common and the least expensive, costing anywhere from 25 - 75 cents each.

There are many examples of how RFID technology is currently being used and how it will be utilized in the near future.

### Some examples of current uses are:

- The U.S. military uses active tags to track containers of supplies arriving in ports.
- Smart cards, which are used to pay at gas pumps.
- The I-Pass that many Illinois commuters use to pay for tolls on the expressway.
- Clothing theft deterrent security tags.

### Some examples of future usage include:

- Wal-Mart and Target are soon going to begin to implement RFID technology to track boxed and pallet inventory and manage warehouse operations.
- The United States Department of Defense is currently using RFID, and plans to expand its usage of this technology in the future.
- Boeing and Airbus have plans to begin using RFID on their assembly lines.

Active tags are battery powered, and because of the stored energy can be read from 100 feet away or more. However, they are more expensive at more than \$20 each.

**There are** truly limitless possibilities for the use of this technology. A hospital patient could be given an ID containing a unique identifier. When he or she enters an MRI room, the computer system could automatically retrieve that patient's hospital records. Or a doctor could enter a room with a "smart" computer, and the entire medical history of his or her patient could automatically be available. There are tags being added to cars so that your proximity to the car opens the doors (see Chevy Corvette!). There are also many who are proponents of the idea of a National Identification Card here in the U.S., and RFID technology will surely be involved in that debate as well.

RFID can and eventually will revolutionize many aspects of your home and your workplace. Although we are a long way away from a tag that can be put on every item in grocery stores, it seems as if 2005 will be a year where we will begin to see RFID grow exponentially. ●

**If you have any questions on RFID technology, please contact Jim Harmening at 708.288.3314.**



## Electronic Document Management continued from page 3

3. Is it clear which client or issue any given document is associated with from the file name?
4. Can you quickly determine the contents of each file?
5. Are your organization's documents clearly labeled and stored?
6. Can you easily gather together desired documents that happen to be physically dispersed throughout your network?
7. Can you control who sees each document? Who can edit each document?
8. Can you quickly call up a list of documents related to a particular client or subject?
9. Do obsolete files linger on, consuming space and requiring nightly backup?
10. Is there ever any doubt as to which copy of a document is the authoritative version?

If the answer to some or many of these questions is "no", it is probably time to investigate an EDMS. While there are many different options in the EDMS market space, CBI has chosen the WORLDOX product to actively resell and support. WORLDOX is a multi-award-winning electronic document management system that incorporates both document management and e-mail management. It is noted for it's relatively inexpensive price tag, which in large part is due to the fact that it is not a SQL-based application. Please note that there is also a web version of the WORLDOX product, WORLDOX/Web, now available.

*If you are interested in more information regarding EDMSs or the WORLDOX product line, please contact Mary Beth Sheehan, Business Development Manager, at 312.399.7505. ●*

## Wireless LANscaping

be made that the wireless signal, if intercepted, will be useless if the traffic that is intercepted is encrypted. Wireless protocol uses its own sets of protocol rules and transmission controls to receive and transmit the actual wireless signal. But the wireless signal is just a carrier wave. It carries TCP/IP, the protocol suite that six of the seven OSI Network layers use for communication.

IP/Sec and PPTP are just two of the several security protocols that live within the suite of TCP/IP protocols. When either IP/Sec or PPTP are used, a secure tunnel of communication is created between two network IP addresses. If the workstation has an address of xx.xx.xx.202, and the WAP has an IP address of xx.xx.xx.254, a secure tunnel will encrypt ALL IP traffic (http, https, ftp, pop, mapi, smtp, etc.) that passes between the two addresses. This tunnel, or VPN, encapsulates any application protocols that pass within it.

Various wireless products exist that offer the built-in in ability to create VPN tun-

nels. The caveat is that some bandwidth is sacrificed to the gods of encryption, making the VPN traffic a tad more sluggish than the free range chickens (just checking to see if you are paying attention). Unencrypted traffic will doubtlessly move more quickly. Simply considering this and testing bandwidth by moving large files and timing them on both straight TCP and then via VPN will offer up the numbers needed to understand bandwidth impact. It may be negligible, as it of course depends on the internal speeds of the wireless router and its ability to handle the encryption.

### The Decision

Deciding to go wireless, once a rather daunting prospect and not thought of by CBI as an entirely secure network solution, may now be right for your business. If you have waited until now, hoping that the market would change, then your patience is to be admired—wireless prices have never been lower and bandwidth has increased by 10 fold in just a year and a half. Security, once laughable, demands respect, and

the 802.11i standard holds even greater promise. Cracking into a secured wireless network, once laughably easy, demands resources and equipment that the majority of hobbyist hackers are not willing to purchase, and the Internet provides a much easier avenue of attack anyway. As with any network, if a professional cracker targets it, he will probably succeed if a solid firewall policy does not exist. However, for the average business that does not expect James Bond to come snooping around, the abundant array of wireless products offered make hard choices not so hard.

Wireless products ABOUND, from products such as the 3Com officeConnect that handles a/b/g standards simultaneously to SonicWall products that integrate wired and wireless security firewalls. Additionally, the new 802.11a standard means that, in environments where the 2.4GHz frequency range fails, a 5GHz solution exists. SMC wireless solutions boast ranges in the 1500+ feet (open space). With adjustable range and RADIUS Key rotation compatibility, installing an external 2.4GHz high-gain antenna to boost the range creates a reasonable campus wide or multi-floor, wireless networking solution.

That may be all Greek to you. But it translates into (here comes the bottom line) accessibility, security, adaptability, scalability, and higher valuation per dollar than what the same investment offered only a year and a half ago. Things may get better in the future, speeds and security may be even better, and prices may drop even further, but the spike that the market experienced in the past year has leveled off. On the horizon looms only improvement to current technologies as opposed to the vast revisioning of this market in the past year.

The dust has settled . . . for now. ●

**Scott Ellis is also co-author of the book "Firewalls : Jumpstart for Network and Systems Administrators"**

# Ask the Experts

From **Martin I. Becker, Esq.,**  
Long-Time CBI Client

By Scott Ellis, Consultant

*Background: Interested in improving efficiency at their firm, Becker and Gurian asked CBI to upgrade their entire office to MS Office 2003.*

I emailed Scott:

*"The beauty, I thought, of the follow up window was to help me get organized. But having the item in both the inbox and the follow-up windows doesn't make it more organized for me. Am I doing something wrong?"*

# A:

That's a GREAT question (and no, you're doing nothing wrong). Here's what we can do: While in the Inbox view of your messages, click on View | Arrange by | Current View and then select Customize Current View. Then click the [Filter...] button. Click the Advanced tab. Click the [Field] button and scroll down to all Fields. Choose "Flag Color." Select "Does Not Exist" as the Condition and then click the [Add to List] button. By showing only items with a flag color that does not exist, all flagged items are subsequently excepted then from the Inbox view.

*Note: Thanks for the organizational tip, Marty!*

# Q:

Initially pleased with the product, I wanted more organization in the management of my email, so I asked Scott (CBI Consultant) to stop by and give me a hand. He showed me how I could flag items for follow up and then the item would show up in a "For Follow Up" view. This worked until shortly after Scott left my office. I noticed then that the flagged item still stayed in my Inbox and if I deleted it from the Inbox, it also disappeared from the follow up window.



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## Thinking of a Laptop Case?

### Think of CBI – and McKlein USA!

Computer Bits, Inc. (CBI) is proud to announce a new partnership with McKlein USA, a manufacturer and supplier of some of the highest quality laptop cases available in today's market. CBI was recently named a reseller by McKlein, which is located right here in Chicago. Such high quality cases often are accompanied by big price tags, but McKlein offers their products at competitive, reasonable price points.

One particular feature that sets the McKlein product line apart is their patented Detachable Wheel and Handle System. If you opt for this feature, the system will allow you to wheel your case when you don't want to carry it, but you can detach the wheel and handle for a lightweight carrying case when it's raining, snowing or you're in a large crowd. McKlein also has a full range of 17" laptop case solutions available for today's diverse mobile professionals.

If your organization is ready for some innovative, practical, affordable and durable laptop case solutions, please contact Mary Beth Sheehan at 312.399.7505. We look forward to sharing McKlein's product offerings with you. ●



## Learn More About Network Security – Fast and Free!

**If your organization** is like most others these days, network security is a large and ever-growing concern. With the proliferation of computer viruses, huge amounts of spam, spyware, worms, etc., keeping up with how to best protect your network can almost be a full-time job. If you would like to learn more about best practices with regard to protection from these threats, Computer Bits, Inc. (CBI) can help!

We are currently offering a free network security presentation to Chicagoland area

organizations conducted by Jim Harmoning, CBI's president. This presentation, which focuses on some of the myriad of threats that exist in today's marketplace, is a fantastic opportunity to bring your organization up to speed rapidly on ways to increase your protection from today's network threats.

Jim recently offered this presentation to the Illinois Association of County Officials and to the Orland Park Area Chamber of Commerce, and we received excellent feedback on both presentations.

Jim holds a Bachelor of Science degree in Computer Science, and has over 20 years of experience in the field of information technology, including founding Computer Bits, Inc. in 1995 and serving as CBI's president since then. He is a seasoned speaker and teacher, and thoroughly enjoys sharing his technology knowledge with others. His presentations are casual and enjoyable, and he uses language that is understandable by the average user.

If you would be interested in scheduling Jim for a network security presentation, please contact Mary Beth Sheehan at 312.399.7505. Jim's schedule fills up quickly, so give us a call today if you are interested! ●