

SCANFAX

September 1999

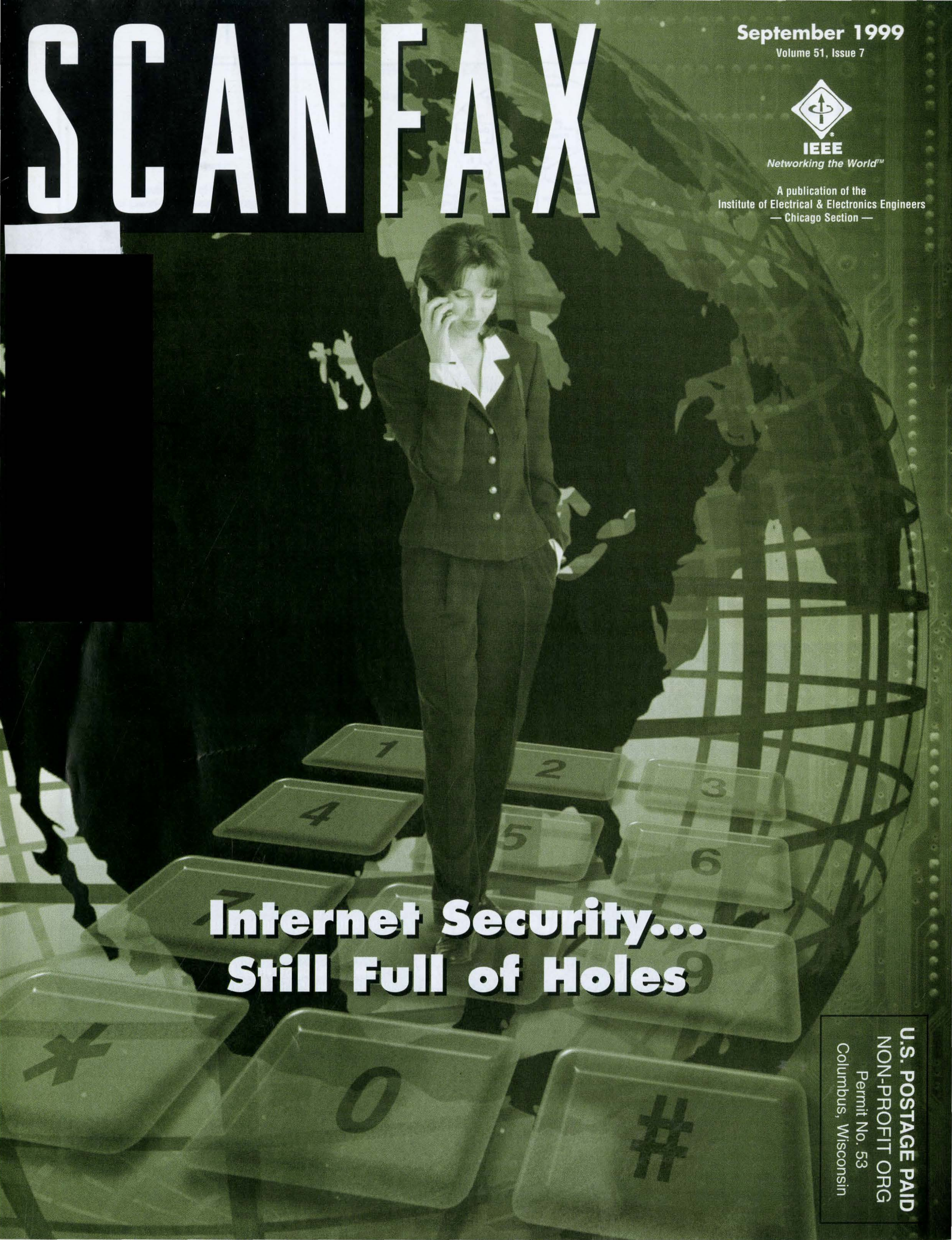
Volume 51, Issue 7



IEEE

Networking the World™

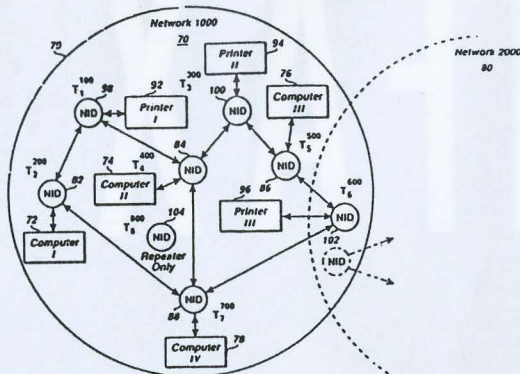
A publication of the
Institute of Electrical & Electronics Engineers
— Chicago Section —



**Internet Security...
Still Full of Holes**

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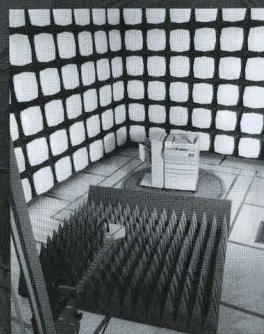
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Chairman

Edward G. Bogus
Phone 847-259-9600 ext.4738
Fax 847-818-5757
e.g.bogus@ieee.org

Editor

Gerry Ryan
Phone 312-214-8124
Fax 312-214-1510

Publisher

Barbara Slack
Slack Attack Advertising

Art Director

Nancy P. Lee
Slack Attack Advertising

Advertising Sales

Beth Vander Grinten
Slack Attack Advertising
608-222-7630

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SCANFAX

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Chairman's Message

Edward G. Bogus, PhD.
*IEEE Chicago Section,
Chairman*

This month begins another year of exciting technical programs in the IEEE Chicago Section. The local chapters, which represent 23 different IEEE societies, host local and national speakers at daytime and evening meetings. The presentations cover a broad range of topics and enable members and non-members to stay abreast of current advances in their fields of interest. The SCANFAX magazine is the primary source of information for the dates, times, locations and topics for these technical meetings. A second source will be the Chicago Section website. We are in the process of re-establishing the website that went down about one year ago.

Over the past few months, officer elections were held in each of the section entities. These entities include the Section, the two subsections (Fox Valley and Northwest), and 16 chapters. The newly elected officers and committee chairmen for the Section are listed below:

CHAIRMAN Edward G. Bogus
VICE CHAIRMAN Patrick Murphy
TREASURER Patrick Murphy
SECRETARY Pat Hennelly
AWARDS Norm Phoenix
CONFERENCE Dorene Lehner
FINANCE Chuck Nochumson
GOVERNMENT ACTIVITIES Bert Orszula
MEMBER SERVICES Mostafa A. Beik
PACE John Waters
PROGRAM Weider Yu
PUBLICATIONS Gerry Ryan
SPECIAL EVENTS Frank Lakowski
STUDENT ACTIVITIES Peter Look

REGION 4 OUTSTANDING MEMBER AWARD

The 1999 Annual Awards and Recognition Banquet of the IEEE Chicago Section was held in April at the Fountain Blue Banquets and Conference Center, where members enjoyed a wonderful dinner and entertainment, along with an awards presentation.

In addition to honoring IEEE Fellows and student chapter winners, the program included the presentation of the Outstanding Member Award by IEEE Region 4 to Irwin C. Smiley. This award is given annually to a member who, through his professional and technical abilities has made sig-

The new officers for the subsections and chapters will be published as soon as those election results are compiled and sent to the Section secretary.

The make-up of the chapters has changed during the past years. Some new chapters have been organized and other established chapters have taken on additional responsibilities by forming joint chapters. The following listing provides the technical focus of each of the current chapters by showing their society affiliation:

- Antennas and Propagation/Microwave Theory and Techniques
- Consumer Electronics/Signal Processing
- Communications
- Components, Packaging and Manufacturing Technology
- Computer
- Dielectrics and Electrical Insulation
- Electromagnetic Compatibility
- Electron Devices/Circuits and Systems/Solid-State Circuits
- Engineering in Medicine and Biology
- Engineering Management/Professional Communication
- Industrial Electronics/Industry Applications
- Magnetism/Nuclear and Plasma Sciences
- Power Electronics
- Power Engineering
- Reliability
- Systems, Man, and Cybernetics

If there is interest in areas not covered by these chapters, it is possible to form additional chapters. Individuals that want to form other chapters should contact the IEEE Chicago Section office at 630-493-4333 for details.

The success of any of the upcoming events depends largely on the enthusiastic support and participation of all the members, not just the officers. Therefore everyone is encouraged to participate in the activities and programs which will be held throughout the year.

nificant contributions to the Institute. His example and dedication to the profession has inspired all who know him, and leads them in the furthering of the high standards of the profession as prescribed by the IEEE.

The Chicago Section is proud to have one of its members as the first recipient of this award.

We apologize for inadvertently leaving this announcement out of the banquet wrap-up article in the June Scanfax and offer our sincere congratulations to Mr. Smiley.



By Christine M. Sloat, P.E.

We've all heard that Internet security is a LOT better than it used to be. But does that mean that the problems have gone away? Hardly. Unfortunately, there is still much to worry about. There are risks that affect Web servers, local area networks that host Web sites, and even those of us who are just taking an innocent ride on the information highway in our air-conditioned browser.

Risks are the greatest from a Webmaster's perspective. It's just like home security. All of those beautiful windows let the light shine in, and unfortunately, are targets for burglars. A Web server at your site is like a window into your local network, and there are plenty of "burglars" out there ready to try to gain entry. Most visitors will just travel by, admiring the site. Some will press their noses on the windowpane and try to peek at things that you really didn't intend to be viewed by the public. And then there are some who will actually "break-in," crawling right through the window into your domain. Once inside, they can accomplish all sorts of damage, ranging from fiddling with your home page, changing its look or how it operates, to actually stealing data and confidential information.

Internet Security... Still Full of Holes!

Web servers pose all sorts of problems for your network administrator. It is his or her job to provide security for the system, keeping out strangers and limiting access to various areas of the network. The hard part is that, by definition, a Web site is supposed to provide controlled access to your network. If the Web server isn't configured very tightly, it can drill holes right through the most sophisticated firewalls. Conversely, too much emphasis on firewall security can sometimes lead to poorly configured firewalls, which can make a Web site difficult, if not impossible to use. Now, throw into the mix the need to configure the server to allow various visitors differing levels of access, assigning distinct privileges based on the "visitor."

Even visitors are susceptible to security problems. Admit it, as "surfers" we have all sat around in our pajamas, wandering around the Internet, feeling snug, secure and anonymous. That's true, right? Frankly, it's not. The latest in Internet features is Active Content, like ActiveX controls and Java applets. These little "gadgets" make surfing fun, but also can be vehicles that carry viruses or malicious software right into your computer. And when we surf from behind the firewall from our work site network, our browser can create new pathways that bring these Internet demons right through the firewall. Something as harmless as retrieving and opening e-mail can

Risks are the greatest from a Webmaster's perspective. It's just like home security. All of those beautiful windows let the light shine in, and unfortunately, are targets for burglars.

Continued on page 6.

bring all sorts of problems into the system. Then listen to the noise as the stress levels of your network administrator go through the ceiling! And then there is the "Big Brother" theory. Not quite theory, but closer to fact. Even without active content, simply browsing around leaves an electronic record of where you've been. There are lots of burglars out there who could easily garner that information and develop a pretty definitive profile based on your Internet habits.

Both surfers and network watchers

are vulnerable to privacy violation by something as simple as eavesdropping. The good-ole standby TCP/IP protocol was never designed with security in mind, making the confidentiality of the data we transmit sorely suspect. Someone may be out there listening in! Think of all the bits and bytes we send and receive everyday, then picture how much of that could be "viewed" by someone with a small, fine sieved net!

We hope that your network administrators and Webmasters are professionals, and keep up with the latest tricks of the trade. So, we won't dwell on the

technical side of their jobs. That would be far too weighty, and is better treated under the auspices of official training. Instead, we thought we would concentrate on the user side. Most of us are pretty unsophisticated when it comes to firewalls, networks, system security, etc. We view the Internet as a very useful tool, and know just enough about browsing to make us dangerous. Here is a short overview of the potential pitfalls with Internet surfing.

I am sure that you have been to a site that requires you to enter a user name and password. Or, when on the road, you are required to enter a user name and password to access the network at your place of business. In either case, user names and passwords have their own security problems. Unfortunately, most of us are not very creative when it comes to our passwords. And we are just a bit lazy. Is your password easy to guess? Did you select your birthday, your spouse's name, one of the kid's names, or your favorite sports team? Burglars on a mission, officially known as hackers, have developed programs that simply employ a guessing game based on some basic knowledge about you. Guess long enough, and voila! The hacker gains entry into the network using your password. Web servers, unlike ATM machines, let you try as often as you like to get the password right, without kicking you out. And no matter how trustworthy your office buddy may seem, it is never a good idea to share passwords with each other!

Remember those eavesdropping spies out there? A hacker with the right hardware and software can pull your password right out of the data stream as it passes by. In a true login session, a password is sent over the Internet just once. But when using a browser, passwords are sent every time you retrieve something. Browsers serve to give hackers more than one kick at the cat, so to speak.

User names and passwords are simple forms of user authentication. There are more sophisticated processes that can be utilized to prevent forgery of electronic signatures. Have you been to a site that assures you that it utilizes encryption to secure your information? Well, encryption is a method of encoding your data, or text, with a key. In older, more traditional systems, the same key was used for both encoding and decoding. Think of it as similar to the system used in that

spy kit you had as a child. Newer systems, responding to the need for privacy, as in the instance of transmitting a credit card number, use an asymmetric encryption system. In this system there are two keys, one for encoding and another for decoding. One of the keys, called the public key, is widely distributed and encodes the message. The other key, called the private key, is a secret key used to decrypt the incoming message. The system has also been adjusted to create non-forgable digital signatures. In the case of credit card data, both the traditional and asymmetric systems are employed. Public key encryption is used to negotiate a secret symmetric key that is then used to encrypt the actual data. To an unsophisticated user like myself, it sounds pretty complicated. Suffice it to say, check for the encryption symbol, a small padlock is the most popular, before sending critical information.

Now what about that "Big Brother" theory, where Web sites garner information about you as you pass through? Well, it is a reality. Most servers log every access. The log can include things like the IP address and/or host name, the time of the access, the users name, the URL requested, even the URL you came from or your e-mail address. The host server logs all requests for documents. For above-board and ethical sites, this means compiling information for statistical generation or for debugging purposes. But, if the site is not administered tightly, and logs are left open for casual eavesdropping, other users can obtain the information. And, some less scrupulous sites maintain the log to create nuisances like mailing lists.

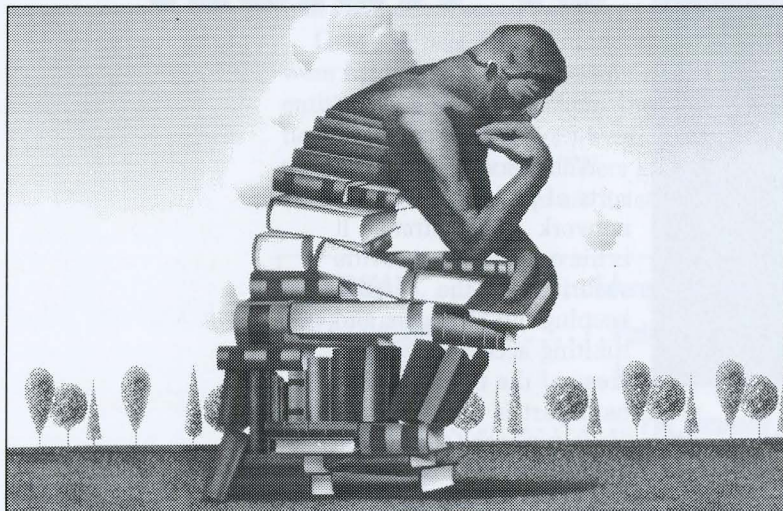
Then there are those pesky cookies we get while surfing. Unfortunately they can be far from sweet. In average surfing, every time a browser requests the URL for a site, the request is treated as a completely new transaction by the Web server. However, it may be that the request is the most recent is a series of requests. This "stateless" nature makes surfing more efficient, but causes problems at some sites, like the ones that employ shopping carts that must remember a users action over many pages. Cookies solve the problem. In simple terms, a cookie is a small piece of information that the server sends to the browser when the browser connects for the first time. Thereafter, the browser returns a copy of the cookie every time it connects to the site, like surfing over multiple pages. Not all browsers support cookies,

however Microsoft Explorer and Netscape Navigator do.

It is urban myth that cookies can steal information about you or your computer system. They only store information that you have provided at some point in time. A very simple example is site preference. If you fill out a form that says

you prefer to view a particular site with a certain color background, the server can send a cookie to retain that information. Then, whenever you return to the site, the cookie is forwarded back to the server and it makes the color adjustment.

Continued on page 8



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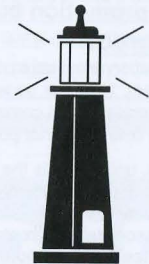
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There are some security concerns with regard to cookies, however. As you visit sites, you leave behind information about yourself, as we overheard earlier. This information is like a trail of breadcrumbs in the proverbial Internet

forest. Without cookies, it would be nearly impossible for anyone to follow the trail and construct a dossier on your Web browsing habits. Sans cookies, an industrious spy would have to sort through and correlate a very large number of individual server logs. Cookies simplify the task.

Browsers that recognize cookies normally also offer a feature that alerts you when one is being sent to you. When turned on, you are given the option of accepting or not. If all else fails, you can manually delete all of the cookies that you have already collected. The nuisance factor is the drawback you will have to weigh in on. At many servers, cookies continue to be sent, even after you refuse the first one. This means that you are continually have to click "no" as you surf. It is important to remember that most cookies are just benign little snippets that attempt to smooth out your browsing experience. Very few are used to invade your privacy.

You will have to weigh how important it is for a site to remember your preferences, versus having to retype information every time you visit. As an example, a subscription site that requires a user name and password might pass a cookie back to your browser the first time you log in. From then on, the site permits access to restricted pages if your browser can produce a valid cookie, basically using the cookie as a passport. However, those nasty eavesdroppers could intercept this cookie as it moves from your browser to

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the server, and gain free access to the site. Or, if saved on your machine, could be vulnerable to being hijacked right from your cookie file.

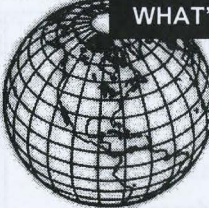
And finally, e-mail. Can the simple act of opening an e-mail message trash your computer? Well, first no, then a qualifier. Most of those scary e-mails you get about these deadly messages are simply hoaxes. If you get these warning messages, delete them. Don't become a party to the hoax and bother other people by forwarding them. Now, the qualifier.... There are some cases where simply opening e-mail can cause damage to your system. Some e-mail readers have identified security holes that could let through a carefully orchestrated message that would result in a computer crash or damaged files. Check at your reader's Web site for the availability of patches to solve the problem. If your e-mail reader allows attachments to contain active content, these messages can become the open window for violating your privacy or perhaps inflicting harm. The best protection is to disable active content in both your browser and your e-mail reader.

Don't forget about viruses. These little computer diseases come in small packages, but can be deadly. If you receive an e-mail message that contains a document with a virus, your system could be infected when you open the enclosure. A few precautions include not accepting documents from unknown sources, disabling a program's ability to automatically open macros, and outfitting your computer with an up-to-date version of reputable virus protection software.

Should you be concerned about Internet security? Yes! Just arm yourself with information. If you are working through the firewall of a network at your place of employment, be sure to follow your company's rules of the road. In most cases, you have probably been given a document outlining what you should and shouldn't do. If not, talk to your network administrator and get the latest low-down. And for your personal computer usage, remember the potential pitfalls, and err on the side of caution. Try typing "internet security" in your favorite search engine. There is a LOT of information sitting on the Web to keep you up on the latest alarms, bells, whistles, holes, viruses, prescriptions, authentications, encryptions... You name it! ■

Calendar of Events

DATE	EVENT
Sept. 14, 1999	IEEE Chicago Section EXECUTIVE COMMITTEE MEETING
Sept. 22, 1999	ED/CAS/SSC RECENT ADVANCES IN DC/DC REGULATOR DESIGN USING A MULTI-PHASE TECHNIQUE
Sept. 22, 1999	IAS/IES COMMUNICATION NETWORK TECHNOLOGY
Sept. 27, 1999	Chicago/Rockford IEEE Consultants' Network AUTOMATED REQUIREMENTS MANAGEMENT



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September 13 & 14**

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Recent Advances in DC/DC Regulator Design Using A Multi- Phase Technique

Wednesday,
Sept. 22, 1999

Kurt Deger, Linear Technology Corporation

About the Speaker: Kurt Deger is a Field Applications Engineer with Linear Technology Corporation, serving customers in the Midwest for the last 10 years.

His prior experience includes positions at Northrup and Williams Electronics where he also specialized in Switching Regulator Design.

About the topic: In the past, when a chip manufacturer announced a design rule shrink, most customers celebrated. Lower cost was the anticipated benefit. Today, with the advance of Submicron Geometry's, a design rule shrink often implies a lower Voltage Supply limitation. Suddenly, a hodgepodge of voltage requirements have been foisted upon the system designer. Some new chips are only available in 3.3V versions, legacy custom devices must have a 5V supply, and 2.5V chips are banging on the door. Each design rule shrink accelerates the chip's obsolescence. Mr. Deger will describe recent multi-phase technology advances with the focus on practical applications.

The following topics will be covered:

- MultiPhase Technology Overview, Theory
- Current Mode Control vs. Voltage Mode Control

EVENING MEETING

- Operating Frequency Tradeoffs, Selection Thereof
- Burst Mode vs. Constant Frequency
- Designing for Fault Conditions
- Inductor Value Calculation, Core Selection
- Power MOSFET Selection
- Cin and Cout Selection
- Efficiency Considerations
- Transient Response

Location:

Wyndham Hotel, 1837 Center Point Circle, Naperville, IL. From I 88, take Naperville Rd exit. Turn right off ramp onto Naperville. Right at 1st stop light onto Diehl. Right onto Center Point.

Time: Cash Bar: 6:00pm

Dinner: 6:30pm

Presentation: 7:30pm

Reservations: Please call the IEEE Message Center at (800)898-4333 or (630)575-8045 by 1PM Monday, Sept. 20th. Specify Chicken Piccata \$19 or Vegetarian Pasta Primavera \$17. Meeting is free. For information, call Norm Phoenix at (847)523-1078.



IAS/IES

Communication Network Technology

Wednesday,
Sept. 22, 1999

IAS/IES DINNER PRESENTATION

David G. Loucks, Manager of Systems Integration - Cutler Hammer

About the topic: Does Ethernet, LANs, or TCP/IP sound familiar? Can you monitor and control your plant over the Internet? The demand for information retrieval is critical in power systems design. Today's power distribution equipment is designed with communicating trip units, power meters, motor starters, and other sensing devices. The information can save plants millions of dollars in lost revenues from downtime. This presentation will take a look at how power system information is transmitted, advantages and disadvantages of different networks, and network topologies.

About the speaker: Mr. David G. Loucks is the Manager of Systems Integration for Cutler-Hammer's Power Management Products group. David is responsible for the development of custom power management control systems that are used to monitor power quality, downtime and cost of energy. These systems involve standard computer hardware, third party networking hardware, and Cutler-Hammer hardware and software. David received his BSEE in 1979 from the University of Kentucky and is currently enrolled in an electrical engineering masters program at the University of Pittsburgh. David holds three patents, has published two technical papers, and is a registered PE in Pennsylvania. Most of David's career has involved automation and industrial communication. He spent eight years in

California working with the oil industry coding several device drivers to interface PLCs with minis and worked with the team that developed the first hybrid DCS/PLC. David has held several other positions including the Product Manager of Mid-Range PLCs, Manager of Petroleum Applications, and Industry Marketing Manager.

Location:

Como Inn, 564 N. Milwaukee Ave, Chicago, IL.

Directions: The Como Inn is located on Milwaukee Avenue just off the Kennedy Expressway (I-90/94) near Grand Ave. and Halsted St.

Time: Social: 5:30pm.
Dinner: 6:00pm.
Presentation: 7:00pm.

For reservations:

Cost: \$25 includes the presentation and your choice of a chicken or pasta four course dinner. Please call the IEEE Business Office at (800) 898-IEEE or (630) 724-0200 with your entree preference on or before September 10.

NOTE: For P.E. licenses that require continuing education for renewal, attendance at IEEE Technical Meetings is acceptable as one Professional Development Hour (PDH) per meeting.

The upcoming 1999 IEEE - IAS meeting dates are: Oct. 20, and Nov. 17, and January 19.

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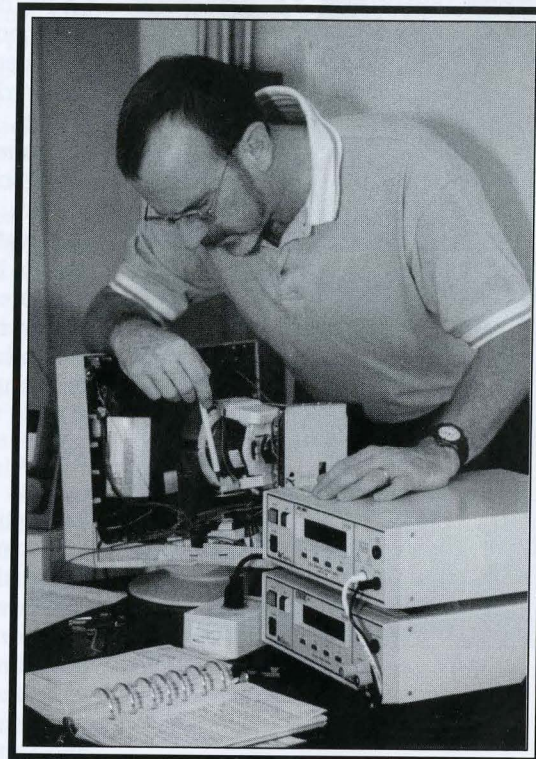
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CONSULTANTS' NETWORK MEETING

Bob Parro, Past Chair of the Rock River Valley (Rockford) Section

Members of the network meet regularly to exchange leads, make referrals, and help each other to find consulting assignments and develop their practices. Most meetings also include guest speakers whose topics are relevant to consulting. The guest speaker will be Bob Parro, past chair of the Rock River Valley (Rockford) Section. Members and interested individuals are invited.

About the Speaker:

Bob Parro obtained his BSEE from the University of Notre Dame in 1976 and his MSE from Purdue University in 1981. He worked for five years as a controls engineer at Delco Electronics, 18 years for Sundstrand Aerospace in advanced technology research and development, and for under a year at Quality Software and

Systems providing technical support for sales for requirements management software.

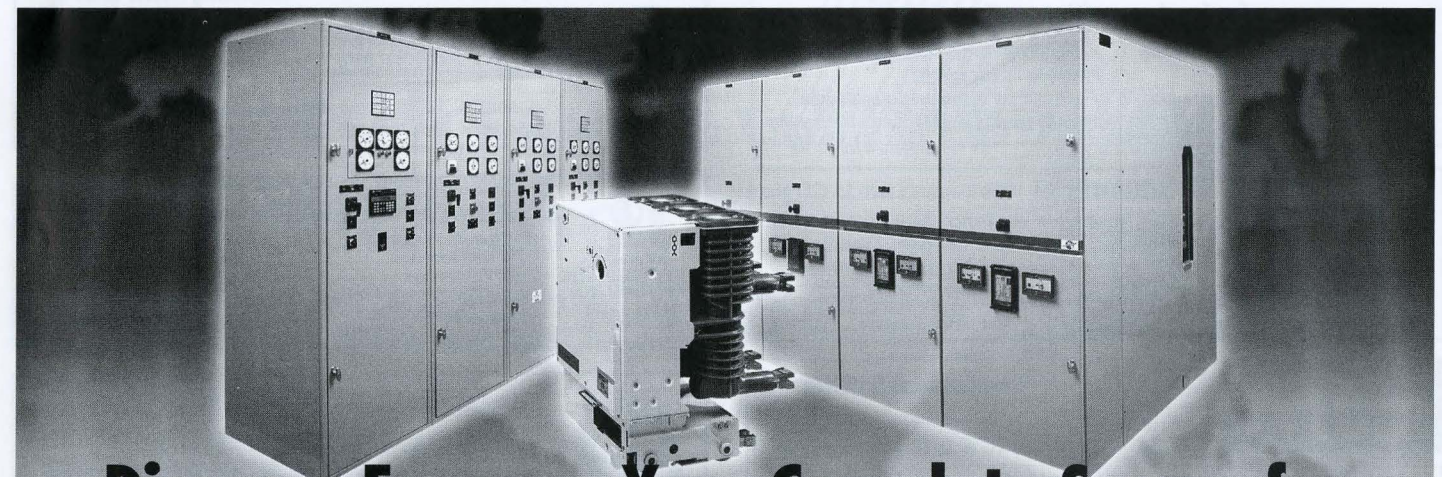
About the topic:

Bob Parro's topic will be Automated Requirements Management and its criticality to the success of a project. He will describe effective and automated requirements management and software solutions, for not only the initial requirements and gathering phase but also each phase of the project lifecycle - analysis, design, coding and test (phases assume a software development project.)

Location:

Palatine Public Library (847-358-1216)

Time: 7:30 to 9:00 p.m.



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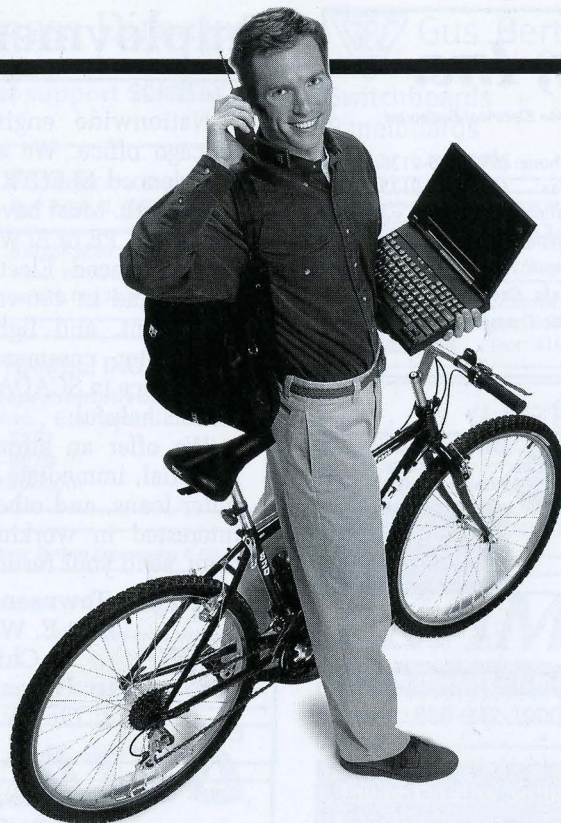
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