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SouthEastern Michigan
Computer Organization, Inc.

DATA BUS

DATA BUS Addendum
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The SouthEastern Michigan Computer Organization, Inc. (SEMCO) is a non-profit group dedicated to providing information, education and a forum to computer users (professional and amateur) and other interested individuals. Membership in SEMCO is open to all individuals 18 years or older. Persons under 18 years may become members through the sponsorship of a parent or guardian. Dues of \$30/year include monthly DATA BUS, access to SEMCO's Message Service, and free personal ads.

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Gary DeNise
SEMCO President

25th Anniversary Celebration

The sign-in list included thirteen guests and twenty-two members. Sixty was a more accurate count.

The meeting was a Twenty-Five Year History Review of the SEMCO organization from 1976 to 2001. Jim Rarus, the Main speaker, offered the original sign-in list and other memorabilia from the first meeting with the aid of a slide projector. National Geographic could not have done better.

Dick Weir, SEMCO'S first president and one of our founders took the floor. Dick's input and views of SEMCO's history as well as that of the computer industry as a whole was greatly appreciated.

Warner Mach, a continuous charter member for twenty-five years, helped to fill in some of the empty spaces on our journey to 2001.

Richard Jackson, Warner Mach and Jim Rarus were presented with Charter Member 25-year awards. Many thanks for their years of service.

Steve Yuhasz furnished us with a collection of early Macs and other PC equipment for viewing. There may be some video forthcoming at a later date. Thank you Steve.

The door prizes were the result of Carol Sanzi's thoughtfulness and efforts. Thanks for the time and effort you extended.

Wednesday (4-12-01) Microsoft Big Day, Hilton Hotel, Novi, MI the SEMCO display was staffed by Phil "Vic" Charns and myself. We handed out numerous past newsletters and the overall interest appeared "High." TIME WILL TELL!

Looking forward to the next meeting!
√

NOTICES, ARTICLES and Other Neat Things



**Publisher for Windows,
Visual Quickstart Guide
by Gillian Hall
Book Review
by Jean Blievernicht**

I like the Peachpit Press Visual Quickstart Guide books, having read a number of them. They give valuable information in an understandable format. They're well organized. They have excellent screen shot type graphics. They have a very good table of contents and a decent index. They cover the most used features and give good tips. And they are reasonably priced. While standing in a bookstore aisle you can easily decide whether the book will actually help you. Once you get it home you can find the answers to your questions quickly without having to read the whole book.

SEMCO MEETINGS Sunday, MAY 13, 2001

Board Meeting	12:00pm
General Meeting	1:30pm
SIGS IBM/MAC Mtgs	1:45pm
Social Period	3:15pm
SIG-IBM Novice	3:45pm
SIG-IBM Intermediate	3:45pm

Publisher for Windows is no exception. In the introductory chapter you'll find out that Microsoft Publisher is a good lightweight program for flyers and brochures, but not really suitable for print professionals who must output files to imagesetters. If flyers and small brochures are what you'll be doing, proceed with the book. On the plus side, Publisher gives you lots of automated tools which you will not find in high-end publishing programs since the people who use those want full control over the features they use.

Most people can skip the Basics chapter since it deals with opening the program, toolbars, menus, mouse usage and like information common to most programs. However, you'll note that there is a catalog list of prepared publication designs organized by Wizard (examples: newsletter, brochures, postcards, signs, Web sites, letterheads, greeting cards, etc.) Or you can get a list of designs by look rather than function such as a business card, company letterhead, and company brochure, all of which share the same design. Handy!

Also in the Basics chapter are 2 pages depicting and explaining the toolbar options. I especially like this as I get very frustrated wondering what some icon represents. The book asks you to think about some issues before using the program, and then suggests how to proceed.

Now that you're actually into the creating process, the book explains how to work with pages, objects, rulers, ruler and layout guides, and text frames. Obviously you'll be dealing with a lot of text, so there are 3 chapters dealing with editing text and formatting characters and paragraphs.

Sometimes you'll have a need to work with tables. This chapter covers creating a table, selecting cells, entering, formatting, and editing table text, inserting and deleting rows and columns, resizing rows and columns, merging cells, and dividing cells diagonally and more.

Most people want some graphics in their document. Publisher encourages the use of WordArt, pictures, and gives you the opportunity to draw objects. The book tells you how to include, manipulate, and embellish the artwork. How to use Publisher's own Design Gallery is a separate chapter.

It's all nice and well to create a masterpiece, but sometimes getting it off the computer in the form you want is a frustrating job. One chapter deals with printing and another with creating publications for the Web.

Besides the usual printing instructions, Publisher for Windows covers printing to odd sized publications, using mail merge, printing envelopes, printing color, using the print troubleshooter and design checkers, discusses trapping considerations, and how to use the Pack and Go Wizard (Pack and Go Wizard collects all the linked and embedded graphics, OLE objects, and TrueType fonts together with the publication file and compresses all of it for efficient transport to another computer or service bureau).


Printing or publishing to the Web is different from regular printing so Microsoft allows you to create a Web publication from scratch or to convert a print publication for use on the Web. You'll learn how to use the Web Publication Wizard, add hyperlinks, use graphics, add sound and video, set a background, and create a form. How to

convert a print publication has some warnings you might want to check out. Once you are this far you'll learn how to set properties for individual Web pages. Finally you're told how to save a Web publication as a Web site, how to preview it, and how to publish it.

In short, this is a book that does a good job of clearly explaining the main aspects of a popular program. The price is a reasonable \$17.99.

Peachpit Press
1249 Eighth St
Berkeley, CA 94710
800 283-9444

✓

	<p>DEALS COLUMN from the Deals Guy Greater Orlando Computer UG by Bob "The Cheapskate" Click</p>
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I often write about things I don't like, but I also don't hesitate to write about something I do like. When looking for a CD-RW drive for a new computer a friend just assembled for me, I chose the Iomega CD-RW drive because it was the best deal I saw at the time and I respected the brand, but I am VERY impressed with Iomega's tech support.

I had minor questions and a slip included in the package with tech support information urged me to call if I had any problems. It was a free call and in spite of heavy traffic, I only waited 10 minutes to have three questions answered quickly by a very friendly and knowledgeable person. What a nice experience. They'll get my business the next time, even if the product is a bit more money.

On the other hand, I bought a Linksys Router with a four-port hub to use for networking my computers, and for the

DSL I've just subscribed to. After getting the DSL up and running on it, I had problems uploading my e-mail and any new files to my Web page. I ended up using the old dialup connection for those. Earthlink's tech support first asked if I had a Linksys router (yes) and suggested that I should get help updating my router's BIOS from Linksys. He said it is a known problem with Linksys routers. I called Linksys tech support and was eventually asked to leave my name after waiting 20 minutes. My return call came from Linksys four days later when I wasn't home. Great! Maybe I'm lucky they even took my call, but on the other hand, it was a free call to them. But, my router still isn't working properly and a second call is fruitless so far. Am I expecting too much these days?

Still Good

The **Pockey** drive should still be good this month so call 1-877-7POCKEY (1-877-776-2539) and mention "Bob Click." Also, the **Laplink PCsync** deal should still be good this month. Call LapLink at 1-800-343-8080 and tell them you are an APCUG member.

Last month, a few people wished I had included short descriptions of the MGI products, so I'll do that now:

PhotoSuite 4.0 certainly makes it easy to edit, organize, enhance and share all of your photos. When I say enhance, I really mean it. Dave's enhancements had us rolling in the isles at his presentation. UG price – \$30.00.

VideoWave 4.0, the complete PC and Web video experience. Capture, edit, produce and share your video. All you need to create professional-quality videos with powerful editing and "special effects" tools that are easy to use. UG price – \$50.00.

PhotoVista 2.0 creates the most impressive 360-degree WebPanoramas, something a viewer will “experience” rather than just look at. I was impressed when I saw it. UG price – \$25.00.

SoftDVD Max 4.0, a DVD player software delivering maximum performance, total Web integration and superior audio, all with an easy-to-use interface. UG price – \$20.00.

You may order by US mail if you pay by check, or by fax or mail if you pay with VISA or MasterCard. Please provide your name, complete mailing address, phone number, and e-mail address. Then list the product(s) ordered and the prices. Total it all up and include your check, or credit card number with expiration date and signature. Send your order to:

Webworking Services
653 North 600 East
Springville, UT, 84663

Or fax your order (only credit card orders) to 1-801-489-0609. Don’t miss this great opportunity.

Now let’s get into the deals:

Aladdin Closeout Sale (Both Mac & Windows)

I’ve had this posted on my Web site’s Announcement page because of the time frame, but I’m repeating it here because that page hasn’t had much traffic. Aladdin is having a closeout sale until April 30, which means it will be over when you read this. However, I talked to them at the FACUG Conference and they said if an order was not very late, they would probably honor it, so don’t delay. Here are the items:

The following Aladdin products are on clearance:

IntelliNews 2.0 (Mac) only \$4.95

MacTicker 1.6.1 (Mac) only \$4.95

Sundial California 2.0 AND Sundial Hawaii 2.0 (Mac). Both only \$9.95 – dazzling desktop scenery that moves with the time of day.

DragStrip 3.7 (Win) only \$9.95 – One click launches applications, files, Web sites and more.

Aladdin FlashBack 1.1 (Win or Mac) only \$9.95 – Add unlimited undos to all your favorite software.

Private File 2.0 (Win) only \$9.95

ShrinkWrap 3.5.1 (Mac) only \$19.95

I don’t have all the descriptions, so visit their Web site <<http://www.aladdinsys.com>>.

How do you take advantage of these great deals?

Goto: <<http://www.aladdinsys.com/support/usergroups/>> and look for the “UG Clearance Sale Order Form” link. Please download the PDF order form and make as many copies as you need to distribute to your members. Or, you can direct your members straight to this site to download their own order form. All orders must be mailed in using this order form.

Fund-raisers!! User group officers should be aware of Aladdin’s 5% rebate program to an “affiliate” user group which gets you a 5% rebate for all of your member’s purchases. I doubt this applies to the closeout items though. Get more information on the Announcements page on my Web site, or check the Aladdin Web site.

Help Yourself To A Little Extra Discount

O’Reilly Publishing is offering us a little bit extra off the price of certain books until May 13, 2001. Here is what Denise says:

“In celebration of the 1-year anniversary of the O’Reilly/Pogue Press

collaboration on the best selling 'Missing Manual Series,' O'Reilly would like to extend a special discount to user group members: Order direct from O'Reilly and receive 25% off all books in the '**Missing Manual Series.**' In particular, your members might be interested in:

Windows Me: The Missing Manual
Windows 2000 Pro: The Missing Manual

This is an extra 5% saving above the regular UG discount of 20%!

Offer expires May 13th, 2001. To order, call: 800-998-9938 — ask for Customer Service.

When ordering, be sure to give the customer service representative this discount code 'UGMM.'

For product info, go to www.oreilly.com (this discount not offered on orders placed online). Please send this message to your UG members. Thanks, Denise."

An Old Buddy (Software) Captures Your Screen

Many of you have used "SnagIt" in the past and liked what it does. I talked to the "TechSmith" user group coordinator recently who offered this discount for my column. There are many uses for capturing all or parts of a computer screen, such as an instructive review of a product, or detailed instructions. SnagIt does all this with ease and outputs it as a graphic, text or video file, and will send the information to the printer, the Clipboard, a file, or as an e-mail attachment from any MAPI enabled e-mail client. A wizard will help if necessary. Retail price is \$39.95, but the user group price is \$35.95

TechSmith's "**Camtasia**" is harder to describe since it does so many tasks. Camtasia's suite of tools produces a

video of anything you see on your screen and makes it easy to record, edit and publish high fidelity videos. Use them for computer-based training, product demonstrations, presentations, online help, tech support solutions, sales demonstrations, Web site content and much more.

You can move in closer with zoom and pan the capture frame across the screen for more detail. Use ScreenPad to easily annotate your video with text, arrows and callout boxes. Even "brand" your video with a watermark if you like. Yes, you create standard AVI files or broadcast your screen live over the Internet.

I'm enjoying my review copy and may be a bit over-exuberant, so check the TechSmith Web site yourself for better descriptions. <http://www.techsmith.com> Camtasia normally retails for \$145.95, but the user group price is \$134.95. You can order these fine programs by calling the sales department at 1-800-517-3001, or fax to 1-517-333-1888. Mention your user group's name. If you want better savings, order the SnagIt/Camtasia Bundle for just \$152.95. Sorry I don't have more room for descriptions.

Hey Folks, How's The Ol Ticker?

If you're into stocks, this program puts a stock ticker across the top of your monitor with only the stocks you want on the ticker. Joe Issac wrote about this one in The Computer File, newsletter of Central Kentucky Computer Society.

WinStock is a powerful stock ticker, client designed with the serious online investor in mind. US stocks, Canadian stocks, mutual funds, bonds, market index quotes, options, commodities, foreign exchanges and money-market mutual funds can all be tracked and

monitored by WinStock, Use it free for 30 days. If you like it, send the guy \$20. No special offer here, I just liked it. See <<http://cws.internet.com/coolapp.html>> to check further and look in "Previous Coolapps" for it. Full time DSL or Cable would make this work best.

That's it for this month. Meet me here again next month if your editor permits. This column is written to make user group members aware of special offers I have found or arranged, and my comments should not be interpreted to encourage, or discourage, the purchase of products, no matter how enthused I might sound. Bob (The Cheapskate) Click <dealsguy@mindspring.com>. Visit my Web site at <<http://www.dealsguy.com>> for past columns. Also, I keep adding to my "articles of interest" page. ✓



**DSL Better Than Cable?
Not Always!**
by Phyllis Evans

The article last month from Mike Lanzarotta needs to be taken with a grain of salt. Whether DSL is better than a cable modem connection depends on a number of things. Location is a prime factor. DSL is only as good as the phone lines you are using. Those of us in older areas have a definite problem with phone systems that have been patched over and over again.

When Earthlink and Covad tried to set up DSL at our home, the lines from the pole to the house were great, as were the first set of lines coming out of the switching center. By rights, we should have had no problem. Unfortunately, there was a problem somewhere between the two points. Ma Bell either couldn't pinpoint the problem or decided it would

take too much to fix it, so after two months of waiting, the service was finally cancelled.

At about the same time, Time Warner was bringing their RoadRunner service to our area. At the appointed time, their technician arrived, modem and new cable in hand. He was happy to learn that there was already a fast 10/100 Ethernet card in my Mac (standard equipment for several years now) and that I could handle the software installation. His Macintosh experience was very limited. The hardest part of the installation was running a new coaxial cable into my office to replace the old one.

I don't know what brand of cable modem Charter uses, but Time Warner uses new, sleek looking Motorola Surfboard modems which generate almost no heat. Additionally, they come with both USB and Ethernet connectors. I set the TCP/IP control panel to connect via Ethernet, popped their CD into the drive, then let the software negotiate the connection. It was great. No fuss, no muss, and no hassles. And I didn't have to install their proprietary software to set up the connection. It used my current browser and e-mail software.

After the tech left, I added a router between the modem and my computer, then transferred the settings from the computer to the router using Microsoft Internet Explorer. As with most broadband subscriptions, networks are not supported unless you pay commercial rates. Fortunately, networking is easy these days. My daughter has both her iMac and iBook connected.

In the time that we've been connected to the cable system, I've only seen one brief outage, and that was due to work to fine-tune the local equipment.

The speed is terrific compared to the 45K dialup I was getting. Better yet is that the connection has never dropped. It's always there. I couldn't tell you how the Time Warner tech support is, as I haven't had to use it. As for Earthlink, it took me an hour-and-a-half and a dropped connection to even cancel my account (which is still operating as of this date). A friend in Farmington Hills who has an Earthlink/Covad DSL connection has been out of commission for almost three weeks. Tech support? The first call got him the information that there was a three-state problem and they were working on it. Later calls only resulted in too long on hold and dropped connections. Web-based support had no knowledge of problems and suggested — you guessed it — call tech support.

I guess what I've been trying to say is, no one system is always better than another. Factors such as location, phone company, cable company, ISP, all contribute to a good or bad connection. Most of the time, there is no choice. When you are fortunate enough to have a choice, check with friends and neighbors to see what experiences they've had. As in the case of the Mac vs Windows debate, what's best depends on your own needs and experience. ✓

Tim's Top Tips

by Tim Thomas

tim_thomas@cmug.com

Mouse Droppings

**(RAM; Tiff; Force restart; Sherlock;
First, do no harm; Natural Disas-
ters; All the Rest; Do-it-yourself
Repair; Backups; Contextual
Menus; Epson Printers)**

More RAM savings

Desktop pictures might be pretty. But if you are running short of RAM, or

just want to speed up the startup process, turn them off.

Desktop pictures is an application, as far as RAM is concerned. Do you really want to give up a big bite of RAM just for that picture you probably don't even notice anymore?

Open the Desktop Pictures control panel in OS 8 or 8.1. In later OS versions, open the Appearance control panel and click the Desktop tab. Click the "Remove Picture" button and close the control panel.

In OS 8 or 8.1, you can then disable the Desktop Pictures control panel, for further savings. In later versions, it's part of the Appearance package, and can't be disabled.

Tiff Jaggies

Got jaggies from a TIFF file, even though you set it to a proper dpi (dots per inch)? Check your background! No, don't call in the FBI. Just make sure that for a TIFF scan, the background color is set to fill with white. If not, you might get some jaggies no matter what the DPI! (San Diego Mac User Group MacInTouch 09/99)

Force Restarting iMac

If Command/Control/Power doesn't work, try Command/Shift/Power. If that doesn't work, try pressing the power button on the front of the computer. And if that doesn't work, whip out that paper clip.

Sherlock

If you use the Internet at all, you have a great search tool built right into the Mac OS 8 (or higher). Sherlock is an amazing tool if you give it the right plug-ins to work with.

First, Do No Harm...

I attended a conference hosted by DriveSavers Inc., the data recovery company. John Christopher, a data recovery

engineer for the company, shared some tips about how to proceed once you encounter a damaged drive.

According to Christopher, users tend to cause more problems as they try one thing and then another to resurrect their drives. His rule of thumb is, "Do no harm." If you really need that data, especially if you need it badly enough to consider the significant expense of sending the drive off to a professional service to recover your data, then don't do anything that will make the data even more difficult or utterly impossible to retrieve.

That doesn't mean you have to throw up your hands and ship off the drive at the first sign of trouble. You do have options that won't necessarily do any additional damage.

First of all, if you have a good system of backups, a drive failure becomes a much less traumatic affair. If you have data that you cannot afford to lose, backups are your best defense. And backing up is far less expensive than data recovery. Remember, there are only two kinds of computer users; those who have lost data, and those who will.

There are six ways to lose data:

1) Hardware Failure, 2) User Error, 3) Software/Directory Corruption, 4) Computer Virus, 5) Theft or Intentional Destruction, 6) Natural Disasters.

Hardware Failure:

Physical damage is one potential cause of drive failure. Head crashes, when the heads actually come in contact with the platters and gouge out microscopic particles, are a common cause of failure. If your drive begins making unusual noises, noises that you have never heard it making before, don't ignore it and hope it'll go away. Drives

don't just start making noise and then quit. They won't heal themselves.

Immediately begin copying your data to a safe place. Don't waste time with applications or your System folder. You can always reinstall those from the original discs. Grab your files. And if you finish those and the drive is still operational, get your preferences from the system folder. They could help you recover more gracefully if you have to reinstall all your software onto another drive.

And the noisy drive? Turn it off as soon as you've copied any data files from it that you could. If you didn't manage to copy your files from the drive, you don't want to do any more damage to your data by continuing to let it run. Likely it's suffered terminal damage, and data recovery will only be accomplished by professionals, like the folks at DriveSavers.

A drive's life span is measured in Mean Time Between Failures (MTBF), and you can find that average in the drive's specifications, which may be available on the Web site of the manufacturer. At any rate, all drives will fail eventually, and any drive over three or four years old should be considered nearing old age and a candidate for failure. To be safe, replace that drive.

I've got drives that have been running for over ten years, and I've had drives fail in less than two years. But the MTBF is a good indication of what you should expect from your drive.

Natural Disasters:

Natural disasters, like floods, lightning, and other acts of god, may leave you with damaged equipment, but data recovery is sometimes possible, if very costly. DriveSavers can disassemble a drive and remove the platters. It is

possible for them to recover data from the platters, bit by bit, but this is a tedious and extreme method. If you had a set of backup data stored at a location away from where the disaster took place, you could save yourself the trouble and expense.

All the Rest:

User error, software/directory corruption, and computer virus damage are all similar, in that the hardware itself is seldom damaged, but your data is lost nonetheless. Again, backups could save your sanity and allow you to recover and get back to work in the least possible time. But assuming you don't have those backups, data recovery is your only hope.

Do-it-yourself Repair:

Fortunately, we have a number of utilities at our disposal for dealing with these problems. They all work differently and have different strengths, and also different weaknesses.

The first utility to use when you detect a problem is also a free utility that each of us already has; Disk First Aid, which is installed in the Utilities folder upon system installation.

Christopher said that Disk First Aid has the reputation of not doing further damage to an already damaged directory or data. And the most recent versions are much more robust and capable of fixing more problems.

Drive Setup, another free utility supplied by Apple, is also a powerful tool to use during data recovery. However, be careful, because if misused, Drive Setup can make recovery impossible.

The trick to remember is, if your drive refuses to mount, start up Drive Setup and see if it can find the drive. If the drive appears in the Drive Setup window by its name, and not as an

unknown device, or some other bad sign, you might be able to recover easily.

First, use Drive Setup to force the drive to mount, then immediately copy your important data from the drive. If the problem drive is your only drive, start up from a CD or other removable drive. And of course, save the data to some other drive than the one you are trying to recover data from.

If you were unsuccessful with Disk First Aid or direct copying, you might want to try Norton Utilities, but not Norton Disk Doctor. Disk Doctor is a good tool to use for preventive maintenance, but not for data loss.

In this case you want to use UnErase. No, you needn't have been using File Saver in order to use UnErase for data recovery. With UnErase you can use the Customized Search function to locate files and save those files to another disk.

But watch out, Norton Utilities has an Undo option, which takes a snapshot of the drive before any recovery takes place. The problem is that Norton will allow you to save that Undo file to the very same drive you are attempting to save data from. This is a very bad idea. Never allow anything to be written to a drive that has data on it you hope to recover. You could write over the very data you want to save.

Also Disk Warrior is also a good tool to use for data recovery. It has a more limited array of tools, but those it has, work well. Again, be sure to start up from another drive, and don't write anything to the disk you are trying to recover data from.

Disk Warrior is also a good preventative maintenance tool. It does a great job of rebuilding directories, and comes

on a CD complete with system folders for OS 7.6.1, OS 8.1, and OS 9. It can start up just about any PPC Mac.

Tips for Good Backups:

1) Use tape backups for big disks (want to try backing up six gigs to floppies?) 2) Make multiple copies of your backups if you use Zip or Jazz (these formats tend to be the least reliable) 3) Take your backups off site. (Your backups won't do any good if they are also damaged in the flood.) 4) CDR is a great archiving tool, but less useful for backups.

Oh, and one more thing. Have you ever wondered if a SCSI address conflict (having two or more SCSI devices set with the same address on the same bus) could cause physical damage to your drive? The answer is no, hardware damage is not likely. However, it is conceivable that the directory data may be damaged as a result of this conflict.

Contextual Menus:

If you are running Mac OS 8 or higher, you really should be taking advantage of contextual menus. If you hold down the Control key as you click an item on the screen (such as an icon, window or some text), a menu appears displaying commands you can apply to the item. The items contained in the menus change according to the "context" of the item selected. The menu choices are specific to that item. Each item has a different context. A folder is different from a file, which is different from an alias, which is different from a window, etc.

Contextual menus work especially well for folks who use a programmable two-button mouse. You can program the second button to perform a control-

click. This way, you don't have to use both hands.

Although the built-in options are pretty simple, you can download a boatload of pretty good additions from a number of sites. <www.control-click.com/> This site is a great resource for contextual menu plug-ins. It's updated regularly with notices of new and updated releases.

Just drop the new plug-in on your closed system folder, and you'll receive a prompt asking if you want them put where they belong. Uh, yes.

Speaking of contextual menus, one of the selections I find very useful is the "Move to Trash" command. I use it in the finder when I have a bunch of windows open sorting files and the trash can is covered.

Instead of messing about trying to click on the right window, reposition it, and then select the window I was in before, then dragging the unwanted file to the trash, I just control-click on the file and select "Move to Trash" from the contextual popup menu.

But I recently realized that there is a keyboard shortcut that is actually faster. Just highlight the file and press command-delete. The file is instantly moved to the trash.

In fact, one of the best ways to increase your productivity on the Mac, is to use keyboard shortcuts. This reduces the number of times you'll have to remove your hand from the keyboard and reach for the mouse.

And if you have Action Menus, part of the Action Utilities suite, which I highly recommend, you can set your own keyboard command combinations. You just click on the menu which contains the item you want to assign a keyboard equivalent to, slide down to

the item and while it is highlighted, type the keys you want to assign to the command, and presto—it's done. You can even change the standard keyboard equivalents if you like.

Epson Printer Nozzles Guzzle Dollars

Your Epson printer prints such beautiful documents with stunning color graphics that you may want to use it everyday. A good idea, according to the discussion at a recent EMUG meeting. Daily use keeps the Epson's ink-jet nozzles clean flowing. And perhaps monthly, you might find it to your advantage to run the option in the Epson print dialog boxes that lets you clean the nozzles.

Unlike the Hewlett-Packard ink-jet printers, the Epson ink-jet cartridge only holds ink. When you buy an HP cartridge, you buy both ink and a fresh set of nozzles.

With regular routine use, your Epson keeps clean nozzles. But let ink sit on the printhead for some days and it can corrode, jamming up the print head. Replacing the print head can cost about \$200. (Eugene MUG MacNews 01/00) ✓

Is Your Win98 CD Worn Out?

Don't Fret!

COMPUTER

GURU ROD REAM COMES TO THE RESCUE

by Rod Ream

Pasadena IBM Users Group

"Hey Rod," the e-mail started, "have you any suggestions how to get the original Windows 98 CD replaced? The darn thing no longer will install because of an 'error' caused by corrupted CAB file."

"I've had to reinstall Win98 too many times to count in the last year,"

the e-mail continued, "and the CD seems to have a scratch or fault on it. I tried to clean it with a little rubbing alcohol. I would try Old Crow but I have consumed all that in the endless struggles (in lieu of pulling my hair out—'cause there ain't any left anyhow...). Thanks."

Rod's reply is the sort of thing you need to cut out and paste on the side of your monitor. It has vital information you'll need if you bump into the same dilemma.

What's the CD Problem?

The message about corrupted CAB files can have several meanings; none of them mean the files are corrupted.

* **The CD is damaged.** Not likely unless it's badly scratched, cracked or someone wrote on the face with a ballpoint pen.

* **A timing issue.** Some CD players may be too fast and the data is being corrupted as it's unpacked. You can work around this in a couple ways: From the DOS prompt type setup /?. You'll see an option to run Setup without using SmartDrive. Turning this off prevents file caching for the CD and although considerably slower, may provide a more reliable file transfer. Disabling L2 and perhaps even L1 caching in the BIOS will slow things down even more.

* **AntiVirus software running.** Turn it off! If you are using McAfee, you may have to uninstall it to kill it.

* **An out of balance CD.** Just like a new tire. Rotate it 1/4 and put back into the drive. You'll hear or feel the vibration if this is the case.

The Cab Folder

If the original installation of Windows 98 (or any other version of windows) was performed by a manufacturer, you should already have the CAB

files on the hard drive. The usual location would be \windows\options\cabs. If these files exist, you can run setup from that folder, either from Windows or by booting to the command prompt and changing to that folder.

If the contents of the CD \WIN98 folder are not on the hard drive, I'd certainly want to put them there. Aside from not having to hunt for the CD at times like this, Windows will automatically look there whenever it needs a file and will stop asking you to insert the CD.

The best way to copy the files is to boot to the DOS prompt and then use XCOPY, because it has the ability to "retry" difficult files. In your Windows folder, create another folder named CAB. Copy all the files (not the subfolders) from the CD from within the Win98 folder.

Here's How

Since the normal DOS prompt doesn't access the CDROM, you'll have to either re-enable the CD drivers in both config.sys and autoexec.bat or use the W98 boot disk.

Here's the process if you use the boot disk—C: is assumed to be the drive where W98 is installed and we'll assume that the folder named above does not exist: Use the boot disk and select "with CD support." Note the drive letter that's assigned (I'll use "E" here) E:

```
DIR WIN98 (This checks to see if the
CD is readable) C:
CD WINDOWS
MD OPTIONS
CD OPTIONS
MD CABS
CD \WINDOWS\COMMAND
XCOPY E:\WIN98\*. *C:\WINDOWS\
OPTIONS\CABS /S /E /V
```

When the file copy process is finished, remove the boot disk and CD, then reboot to the command prompt again. You can then run the SETUP from the cabs folder. If you still receive "corrupted" messages, it may be due to bus mastering and you'll need to slow the machine down with one or more of the steps above.

Rod Ream is senior tech support for PIBMUG and president of PCConsulting, 626/280-6850 RodReam@techie.com. ✓

Cable vs. DSL

What You Need To Know

by Bruce Pechman
bigbruce11@hotmail.com

Decisions, Decisions

What a conundrum; she loves me she loves me not, caffeinated or decaffeinated, paper or plastic, and now Cable or DSL. For many of you, the choice of DSL may be determined by the proximity of your residence to your ISP's telephone junction switch. The rule of thumb is if you live more than five miles from your telephone company's junction switch, DSL probably won't be available to you. Based upon your address, ISP providers of your area will determine the availability of Cable, DSL, or maybe both. To get a brief idea of what broadband services are available in your specific area, I have provided some links at the end of this article under the Resources section. I would still recommend checking the major players in the Atlanta metro area by consulting the "Personal Technology" section in the AJC.

The Many Flavors of DSL

Let's get into DSL first. Digital Subscriber Line (DSL) is a high-speed Internet connection through the telephone line. What many of you might not

know is that there are eight subtly different types of DSL permutations. I created the table below for easy explanations:

DSL TYPE	SPEED RANKINGS	RECOMMENDED USES
ADSL	8 Mbps download 1.5 Mbps upload	Home and small business; this is the type I recommend for most
G.lite	1.5 Mbps download 384 Kbps upload	Same as ADSL except for speed; bad for voice and multimedia applications
RADSL	7 Mbps download 1.5 Mbps upload	Same as ADSL but can adjust bandwidth during transmission based on line quality
HDSL	1.5 Mbps both ways	Requires two wire pairs; used by businesses as an alternative to T1
HDSL II	1.5 Mbps both ways	Same as HDSL, but over a single phone line
SDSL	1.5 Mbps both ways	Forerunner to HDSL II; same performance but available only within 10,000 feet of a central office
IDSL	144 Kbps both ways	A hybrid of DSL and ISDN technologies with no call setup delay
VDSL	52 Mbps download 2.3 Mbps upload	The fastest DSL service; available only within 4,500 feet of a central office

Depending on the age of the telephone equipment in your home, it may need to be updated. Remember when you contact various ISPs to inquire about the specific type of DSL for which you are being quoted. Just a little advice—avoid IDSL like the plague. It will cost as much as ADSL per month, but will be a poor performer. ADSL is what you want in the DSL game and represents the best value on average (for the record, the “A” in ADSL stands for asymmetrical).

The ABCs of DSL

DSL utilizes digital technology to send heaps of compressed data over traditional phone lines. How do they do that? This little trick involves using special modems at both ends to encode the data, and then transmit it over an unused frequency on the line. On your end you will need an Ethernet network card in your PC that in turn is connected to your DSL modem. Don’t worry if you’re unsure about this, your provider will

take care of the whole ball of wax.

The Fable of Cable

Despite that I spent more time explaining and sorting out DSL technol-

ogy, don’t overlook the power of Cable. The fact is Cable modem and DSL services are not only very close competitors, but also share similar elements. You will need a similar Ethernet network card, Cable modem (instead of DSL modem), and a professional to do the initial installation. Cable modems do have one distinct advantage over DSL in that Cable service is very accessible. If you have Cable TV, chances are high you can subscribe to the Cable modem service or it will be available in your area shortly. In terms of speed and cost both DSL and Cable are similar. I use Cable and can tell you first-hand that the speed of downloads is awesome. I download 10MB files in one minute (that equates to downloading a 100MB file in about 10 min)! My average download speed is about 100KB to 177KB. By the way, AT&T Broadband took over MediaOne and they are the dominant Cable provider here in the Atlanta area.

Wrapping up and Pros and Cons

First let me state this: whatever services you choose make sure you get a money-back guarantee from the provider. Most will give you a 30-day MBG. This way you not only protect yourself, but if you are fortunate enough to have both DSL and Cable service available, you can sample each then decide for yourself. Some providers also have minimal standards of speed they will guarantee; ask about this up-front or get it in writing. Yes, both are considered “always-on” connections so security is always an issue. Do these two things if you are a concerned home user. Obtain a good grade personal software firewall such as ZoneAlarm (Free at

www.zonealarm.com). Second, disable “File & Print Sharing” from your Network control applet. Note that Cable is a shared bandwidth, so in theory you will receive diminished performance over time as more users are added to your node. I find this to be greatly over-exaggerated. In my subdivision, for example, we have over 500 homes. I did a survey talking with neighbors over the year on the prospect of getting Cable. The bottom line is 10 out of 100 would want to shell out the extra \$40 to \$50 per month to receive a broadband connection. Remember, unless your company will pay for it, or you are a true enthusiast, you will probably pass until the prices get much lower.

Resources

<http://www.speedus.com/UpdateISP3.asp> > Broadband availability guide
<http://www.zdnet.com/special/isp/simplesearch/> > Broadband availability guide
<http://www.2wire.com/dsllookup/finddsl.asp> > DSL availability guide
<http://www.catv.org/index.html> > Cable Modem Resources
http://www.speedguide.net/Cable_modems/cable_patches.shtml > Cable/DSL tweaks & patches

Trying To See Where The Future Is Headed *by Dennis Stacy*

Computer predictions used to be easy. Time was when you could predict that processors would get faster, hard drives bigger (even as they got smaller), and laptops lighter and be hailed as a visionary.

No more. Trying to see where the future is headed now is as fruitless as trying to predict where the chad will fall in Florida. Remember the paperless office? We’re still waiting on that one.

Nevertheless, here are a few, not too far out on the limb prognostications.

You’ll begin having conversations with your household appliances. I talk to my VCR now, but it doesn’t talk back. Considering what I call it, that’s no surprise. But in the future you’ll be able to voice-activate and instruct your TV, VCR, and no doubt your ice box and microwave oven, too. And they’ll talk back. It’ll be a limited conversation true, but a conversation nonetheless. After you tell your oven “high heat for two hours,” for example, it might reply, “Hey, dude, this is only a package of popcorn. Are you sure you don’t mean two minutes?”

Or you might look your refrigerator right in the ice dispenser and ask, “I’m going to the store now,

Continued on page 28



**5 of SEMCO's 7 presidents,
Gary DeNise, Chuck Moery, Steve Yuhasz, Bob Clyne, and Jim Rarus**



**SEMCO's first two presidents,
Dick Weir (right) & Jim Rarus**



SEMCO 25th Anniversary Cake



**Charter members Warner Mach,
Jim Rarus & Richard Jackson with
plaques for 25 years of service**



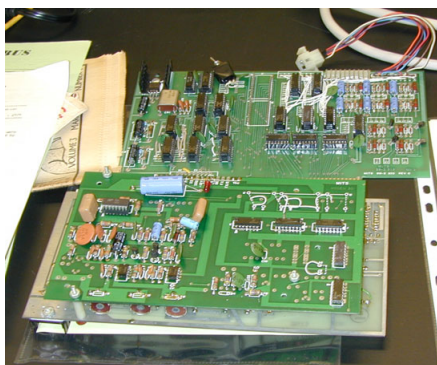
**Bob Clyne taking a picture with
John Loden on the left**



Steve Yuhasz adjusting video camera



Apple Macintosh Plus (on left) & Apple III with hard drive and monitor on top (on right)



Some circuit board from the early days of personal computing



Apple IIe with an Apple Macintosh Plus on top and door prizes on the right



An 8" disk drive with power supply at the rear



Members enjoying the refreshments



The refreshment line!



Tom Callow reading door prize ticket



Warner Mach



**Tom Callow
adjusting
video
camera**

**Vector
computer,
S-100 Bus,
& Z-80
processor**





Refreshment line

Linksys Etherfast 4-Port Cable/DSL Router Model # BEFSR41

by: *Anonymous* (so the cable company does not charge me extra)

Co: **Linksys** <www.linksys.com>

Price **\$199**

System Req: An Ethernet Network Interface Card in your computer, Cable or DSL modem, high speed – Broadband internet connection, the installation sheet from your ISP.

Summary: A hardware device, which is installed between your computer and the Cable/DSL modem, which acts as a firewall and allows multiple computers to connect to the same modem.

The Internet is getting more and more demanding of high-speed access like DSL or a Cable Modem. All those graphics, moving animations, Flash and RealPlayer movies and Internet Radio are making a 28.8K or slower modem obsolete and pushing even a 56K to the limit. To really enjoy the Web, you need speed, and with the prices of high speed access dropping to almost reasonable levels, (around \$40/month vs \$22/month plus another phone line for dial-up) more and more people are moving over. A simultaneous event: as computers are getting less expensive, people are upgrading and giving the older box to another family member. Unfortunately, they both usually want to share the resources (Internet, printer, scanner) at the same time.

A Local Area Network (LAN) is an inexpensive and relatively easy way to connect and share these resources.

After installing the Ethernet Network Interface Card (NIC) or setting up a USB connection, Windows will guide

#



you through the connection protocols. If you connect more than two computers in a “Peer-to-Peer” network, you will probably be getting an inexpensive device called a Hub to create a “Star” network with the connections all going through the hub via a NIC installed in each one.

Enter the Broadband connection with its expensive modem and the fears of someone on the Internet hacking into your always-on connection and you see the virtue of a router like the Linksys Etherfast 4-Port Cable/DSL Router. While I already own a simple Linksys hub, which I could have used with the \$150 Linksys 1-Port Cable/DSL Router, I elected to go with the 4-port model to eliminate one of the ever-growing number of devices on my overcrowded desk. (I also found this model on sale at CompUSA for only \$160 so there was no real price advantage to the less capable unit.) There is also an 8-Port unit, but I considered that overkill for anything but a small-office-home-office (SOHO).

In a “normal” LAN, each computer has a preassigned I/P address and is a member of “Workgroup.” This allows other computers in the workgroup to share files, printers, etc. When you go Broadband, like the @Home cable system in our area, the Cable company-ISP assigns these numbers to the ONE computer that must be used to log into the system. If you want to hook up a

second computer, you pay an extra monthly fee for a second I/P address. The seven e-mail addresses you get with your @home account must all be on the same computer according to the fine print buried in the contract. (It is possible to avoid the extra expense if you figure out how to get around this with internet sharing – but the main computer must be on.) A Router is an intelligent Hub where you can load the ISP supplied information so the outside world sees only that device and not your computer. The router can then dynamically assign an I/P address to each computer as it logs on (similar to a dial-up connection) so the network set-up is actually easier. Because there are no disk drives in the router and you can name your own Workgroup and don't have to use the one supplied by the ISP. This is very effective in mitigating exposure to internet hackers. This built-in Network Address Translation (NAT) technology acts as a firewall protecting your internal network. Configurable as a DHCP server, the EtherFast Cable/DSL Router acts as the only externally recognized Internet device on your LAN.

You will need the installation sheet the company should have given you with all of those mysterious numbers on it like DSN Server, DSN Name, and

Gateways, etc. If you are using Comcast @Home in the South Jersey area, these are the numbers on the bottom of the Installation Form. Just follow the easy directions on the Quick installation guide and make all of the connections. You then load your Internet Browser (Netscape or IE 5) and type in the address of the router in the Address (IE5) or Location (Netscape) bar area. The address is in the instructions and will change with the manufacturer and model number. After you type the supplied password, a Setup screen will appear like the one in illustration #1 below. (Note: These are not my real numbers.)

Illustration #1

Type in the information carefully or it will not make a connection. I reversed two of the numbers initially and even a very patient person at Linksys's Tech support could not help me. The Router Name is your DSN Name. I had to add

the Subdomain Address after the DSN Name because it is needed in my local area. (I need it in my e-mail program's SMTP server name so that was a big hint.) My host name looks something like cx12345-a.dubn1.nj.home.com. You may not need all of this but it could not hurt. The Domain Name is @home. The WAN IP Address area gets a check in the Specify an IP Address and type your information. The Subnet Mask is your Netmask Address. Everything else is the same name. I selected Disable PPOE and did not fill in a user name or password as these are handled by my e-mail program. Click on Apply and close the browser.

Now right click on Network Neighborhood (or My Network Places in Win ME) and Select Properties. Highlight your TCP/IP network card and select Properties. (Illustration #2)

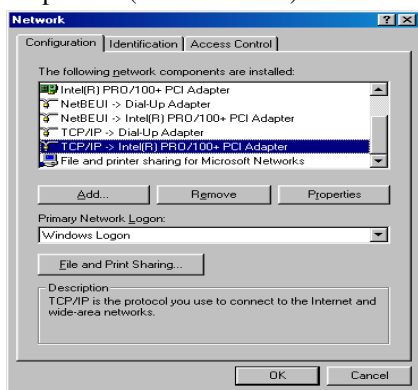


Illustration #2

Make sure the Obtain IP Address Automatically is selected (Illustration #3) and click OK all the way back to the desktop. This allows the router to assign the addresses.

After you finish installing the router and inserting your numbers, you reboot and then click the Start button and select RUN. Type winipcfg and click OK. Click on Release and then Renew All.

One final reboot of everything and you are set.

The instructions are clear and do contain most of this information with screen shots, but I had trouble because of the @Home connection. (Another brand router I saw actually contained a special @Home appendix in the instructions.)

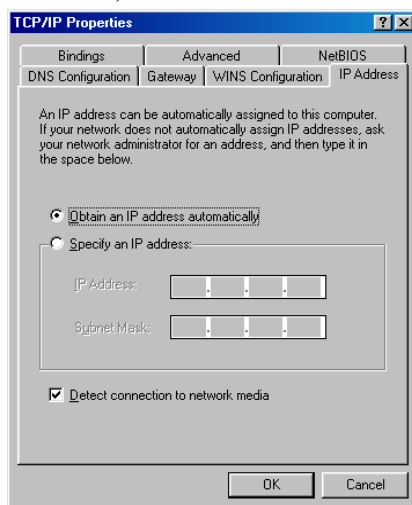


Illustration #3

I should also mention there are several other settings like DMZ and Port-Forwarding (useful if you run your own Web-server) and filtering (to limit Internet activity from a specific computer) but these are features only the advanced user will use so I will not go over them here.

For those interested in the technical information here it is from the box: Features

- Connects to a Broadband Modem (Cable or DSL) or to An Ethernet Backbone
- Equipped with full duplex 4-port 10/100 Switch (connection ports for 4 computers)
- Expands up to 253 users

- Connects All of Your PCs to the Internet With Only One Purchased IP Address
- Supports Dynamic and Static IP Addresses
- Supports PPPoE (Point to Point Protocol over Ethernet – used in dial-up and some Broadband systems)
- Creates a Firewall to Protect Your PCs From Outside Intruders
- Configurable Through Any Networked PC's Web Browser
- The 100MB speed, speeds up your gaming and multimedia connections
- Can Act as Either a DHCP (Dynamic Host Configuration Protocol) Server or Client
- Compatible with All Standard Internet Applications
- Administrators Can Block Specific Interior Users Internet Access
- Technical Support - 24 Hours a Day, 7 Days a Week
- Full 1-Year Warranty

Specs:

Standards: IEEE 802.3, IEEE 802.3u
 Certifications: FCC Class B
 #L2115639

Protocol: TCP/IP, RIP1, RIP2,
 PPTP(VPN)

Ports:

- 4 10BaseT/100BaseTX RJ-45 Ports
- One 10BaseT Broadband WAN Port
- One 10BaseT/100BaseTX RJ-45 Uplink Port

Cabling Type:

- 10BaseT: UTP/STP Category 3 or 5
- 100BaseTX: UTP/STP Category 5 or Better
- Topology: Star

Speed:

- WAN Router: 10Mbps (10BaseT Ethernet)
- LAN: 10Mbps (10BaseT Ethernet) or 100Mbps (100BaseTX Fast Ethernet)

- LEDs: Power, Ready/Test, Link and Activity for both WAN and LAN port(s)
- Partition and Collision for LAN ports

Any downside? Yes. You must open the computer box to install the NIC but that is easy to do. The only other shortcoming is I wish the Router had one or two printer ports on it also. (Linksys does sell a Printer equivalent which hooks into the network with two parallel printer ports, but that is an additional \$150 dollars, so perhaps after the holidays if I win the lottery.) We tested another brand, which had one printer port, but while the router worked well, we could not get the printer to install on the router's printer port so that unit was returned. Why would you want a printer port on the router or the network? I have a Laser and a Color Inkjet printer and use both according to the job requirements. Right now, each one is connected to its own host computer. (Unfortunately, most computers only have one printer port.) To print on the printer attached to the other computer, both computers must be on which is a nuisance. A print server would be nice. Linksys also offers a wireless network router, which I would love to have so I didn't have to string wire upstairs, but again, I have to win the Lottery first.

The bottom line: it is a convenient way to allow multiple computers to share the Internet at full speed without requiring the "master" computer to be on. You also get firewall protection and have the full benefit of a high speed 100Mbps LAN with file and print sharing. I am very happy with this unit and have convinced three other people to purchase it. Is that recommendation enough! ✓



Unofficially, USB Could Mean 'User's Super Buddy'

by Ken Fermoye

Officially, USB stands for "Universal Serial Bus." Unofficially, I think it could translate to "User's Super Buddy" for PC and Mac users. Anybody who tried to install and configure a peripheral device in the old pre-USB days likely will agree. Back then, the chore was a major one, especially with PCs.

It required a ton of computer savvy and no little amount of luck.

First, you had to figure out which port to use from a bunch of confusing possibilities.

Then in most cases, you had to pull the cover off your computer (always scary, for either Mac or PC) to install an add-in card. For PCs, this often required setting pesky DIP switches. Next came the job of finding and configuring an available IRQ, not always easy. Basic system components used up some IRQs; serial devices already installed used up still more.

It was a fun job, yessir! I can recall blowing the better part of a day trying to install a single new peripheral in computers ranging from the venerable XT through a variety of X86 machines, even into WinTel systems of the '90s. (Mac users had it easier but USB has been a boon for them, too.) Windows Plug'n'Play eased the problem, when it worked, but it took USB to solve it completely.

With USB, a computer automatically recognizes the device connected and installs the appropriate drivers. It enables computer users to "hot-plug" computer peripherals to their PCs. ("Hot-plugging" means you can plug in and unplug peripherals without

having to power down and then reboot your computer, no small benefit.)

Not that there weren't difficulties at first. I heard many complaints from people who tried to install USB ports and devices in the early days of the technology. The problems usually arose from trying to use USB in hardware or software systems that weren't ready for it; i.e., older systems that hadn't been built with USB compatibility in mind. I do not recall getting any similar complaints during the past year. Lack of USB devices was a problem at first but now they're everywhere.

USB offers many more benefits than simple installation.

First, USB (Version 1.1) can carry data at up to 12 megabits per second (Mbps), 100 times faster than any serial port. This broad category includes digital cameras, modems, keyboards, mice, printers, digital joysticks, some CD-ROM drives, tape and floppy drives, digital scanners and specialty printers.

USB's data rate also accommodates a whole new generation of peripherals: MPEG-2 video-base products, data gloves, digitizers and computer-telephony, expected to be a big growth area for PCs and Macs. (In addition, USB provides an interface for such business-oriented technologies as Integrated Services Digital Network (ISDN) and digital PBXs.)

The latest version of USB, Version 2.0, introduced late in 2000, offers even faster communication, with bandwidth up to 400 Mbps. It easily accommodates high-performance peripherals, such as monitors, video conferencing cameras, next-generation printers, and faster storage devices.

Happily, USB 2.0 is backward-compatible with Version 1.1

Next, one or two USB ports can support many peripherals. In theory, up to 127 devices can be “daisy-chained” from a single port. There are practical limitations, power supplies among them, and most of us will never use anywhere near that number. The ability to plug a USB hub into a USB port and then connect four or more peripherals to it is a real convenience. You can place a hub anywhere on your desktop for easy access; no more crawling under the desk to connect or disconnect a mouse, digital camera or any other USB-compatible device.

Frosting on the cake comes in the form of an impressive hardware package from Belkin: the USB BusStation. This versatile docking station not only serves as a hub that gives you up to seven USB ports. Using optional adapters, it can accommodate many non-USB peripherals. It also offers a laundry list of other features:

- Innovative modular tower with three slide-out modules that fit into the palm of your hand.

- Configure your own low-cost universal docking station; choose whatever module combination is right for you, whether you are a PC or Mac user. (Compatible with Windows® 95 rev. B, Windows® 98, Windows® 2000, Mac® OS 8.1 or higher)

- 7-port hub (standard configuration) connects seven devices to a single USB port on your PC.

- Freedom to Connect keyboards, mice, joysticks, speakers and more to a single USB port on your computer.

- 4A (Ampere) power supply provides true 500-mA (milliAmp) power

to each port.

- Modules available for Ethernet, SCSI devices, serial, parallel, PS/2 and additional USB ports.

- Illuminated green LEDs for easy access to port status.

- Supports all high-speed and low-speed USB devices.

- Includes a Belkin Pro Series 3 ft. USB Device cable for a quality connection, lifetime Belkin warranty and USB Wizard to make configuration even easier.

I’ve been using a BusStation for many months now and find it invaluable. (Faithful readers know I don’t report on a service or product until it has proved itself over a reasonable length of time and I have become thoroughly familiar with it.) Even before installing it in my main computer, I vowed never to buy another non-USB peripheral again.

With BusStation, I’ve found it easy to connect some of my older devices, including one of my several scanners and a digital camera with only a serial interface. This rates as an especially valuable feature for those of us who can’t afford to replace all of our currently owned peripherals with new USB products.

One caution: The BusStation User Manual clearly states that the 4A power supply is more than enough to supply adequate power to all ports in normal configuration. At 500mA per port, the power draw would be 3.5A. Low-power devices such as mice and keyboards draw only about 100mA. However, adding a 4-port hub as one of the modules would overtax the BusStation. In such case, the 4-port hub must have its own 2.1A power

supply, supplied with optional 4-port hub modules.

I like the fact that the BusStation includes built-in "Overcurrent Protection," which shuts off a port if it draws too much current, protecting both the connected device and BusStation from damage.

At the usual price of \$79.99, I consider this Belkin product a good value. The cost is higher than two standard 4-port USB hubs, but you get more versatility. The price is competitive with multifunction hubs, even when you add in the cost of an adapter module or two (adapters range from about \$50 and up.) and, again you have greater choice in integrating USB into your system.

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We Get Letters Does this Sound Familiar?

**By Steve Bass
Pasadena IBM Users Group**

Steve,

I just read your column in July's PCWorld about printer problems. You will probably enjoy this story.

A while back, I got a call at about 10:45 pm. It was my mother. She had a very worried tone of voice. "Bob," she said, "we have a problem here. I don't think it's serious but I thought I'd better call you."

My parents are in their 80's and their health is not the best. When I get a

call like that at that hour, I start reaching for the 911 button and my car keys.

Then she said, "It's this damn printer."

Ah, parents...

From: . PIBMUG's Karl Kasca's Parents

Dear PIBMUG,

It is laughable, I guess, but then I am one of the 80-year-old mothers whose son believes I have the aptitude to assimilate computers, and therein is a divergence of opinion.

Your son unpacks 6 huge boxes of equipment for you, does his magic stuff in assembling it all, turns on the electricity and says, "Now you have a computer." Never once does he mention that the hours of utter frustration one suffers after he leaves the premises are bound to take their toll on one's patience and nerves.

So "poor computer-alert neighbors" have to fill in and tell us why the darn thing won't close when you are in Works, or writes strange messages in Grey boxes that don't make sense, or the abandon one feels the first time you get sick of the whole thing and press all the buttons. That gets immediate response, also alerts from the ipo or ipso or whatever telling you your computer will be shut off if such and such happens again, most of it in algebraic language.

At that point you call your son in a panic thinking you are going to be hauled off in a paddy wagon for some obscure reason.

It is supposed to be very simple, say the articles I read, and it is if you have been to computer school and been using the machines for several years. But even after one year of practice, loads of books, studying computer books written by a

Bill Gates neophyte, only E-Mail has been comprehensible and Word writes nice letters, but it is still a bit of a mystery.

However, I can hunt out health issues and some info like that and even get directions for a road tour, but there I stop. I figure in 20 years I will have the whole thing solved but then my beloved computer will be out of date and I will have been buried for several years.

I thoroughly agree with Steve Bass's parents. Life was so much simpler with a good radio broadcast, an interesting book and a letter written in pen and ink.

Sincerely, Another Parent.

Steve Bass is a Contributing Editor with PC World Magazine, frequently writes for Forbes ASAP, and is the president of the Pasadena IBM Users Group. He often writes with his tongue in his cheek. Write to him at stevebass@earthlink.net

This article is brought to you by the Editorial Committee of the Association of Personal Computer User Groups (APCUG), an International organization to which this user group belongs. ✓

Continued from page 16

is there anything we're out of or low on?" To which your Kenmore will reply, "We're low on milk and out of orange juice altogether. I don't detect any tomatoes or onions in the vegetable tray, either."

"Is that all?"

"Well, I didn't want to nag, but the lettuce has gone bad and the Roquefort expired two months ago. And while we're at it, do I have to refrigerate the garlic? Can't you just keep it outside in one of those little hanging baskets?"

"You do what I tell you! Now, how are we on Budweiser?"

After a long, pregnant pause, you repeat your question. "I do not detect

any Budweiser, nor do I detect any foreign imports, which I continue to recommend."

"(Expletive deleted)!" you exclaim. "That's the third time this week we've had this conversation! How many times do I have to tell you: warn me when the Budweiser drops below a six-pack."

"Yes, master."

Your car will want to chat with you, too. "Good Monday morning, master. Are we off to your son's school as usual? If so, I should warn you that the traffic satellite shows Highway 281 backed up from downtown beyond Basse Road. Do you mind if I go Hildebrand to McCullough?"

"That'll be fine. I could use another cup of coffee, too. Anything else?"

"Wash me."

"Wash yourself!"

"You haven't refilled my water reservoir, master."

"After school. I need to talk to the gas pump, anyway." At the Shamrock station you pass on gas, but have the self-washing water reservoir filled and three pounds of pressure added to the left rear tire. While this is taking place, you ask "What's up?"

"The Dow is holding steady, the Naz is down three points after AT&T announced a fourth-quarter shortfall on earnings," it replies. "Oil and transportation stocks look good."

"That's what you said last week. Your weather forecast was wrong, too."

"Sorry, sir. I'm only a machine."

"Tell me about it. What's the latest on Mary Higgins?"

"She was in here yesterday with a slightly senior gentleman I didn't

recognize. She voted Republican in the election."

"Really. How could you tell?"

"Sir, I may be a machine, but I know Chad when I see it. Her floorboards were littered with it."

After dispensing several other juicy tidbits of neighborhood gossip (the Sorensens, it seems, drove up in new, matching His and Her Toyota Sequoias, while the divorce of Sam and Sarah Jenkins has finally been realized), the gas pump asks if you would like the latest version of MS Internet Explorer downloaded to your flash card.

"Thanks," you demur, "but I did that on the way to school already. A bit bulky, as usual." You slip the transmission into drive and start to pull away, when the gas pump suddenly shouts out:

"Sir! Aren't those Firestones?" ✓

**SEMCO's
Special Thanks
to
Kay Johnson
and
Gary DeNise
for the
Beautiful
and
Delicious
25th Anniversary
Cake**



**The Need for Speed
or
Internet Speed(s)
by Harold Balmer**

You go on line with your dial up 56k modem, connect to the internet and then surf the Web, looking for information to finish your report for work. You wait as pages download, only to find that this is not the page or information you wanted. On to the next page, still hunting and waiting.

So what options are available for the average(?) person. How about a DSL phone line, an ISDN phone line, a Cable Modem, or a Satellite Connection. How about a wireless connection? Of course the ultimate connection is a T1 line, but the cost is much too high for most of us. If we set these options out as for speed from slowest to fastest we get: 56K modem, ISDN phone line, wireless connection, cable modem, DSL phone line, satellite connection and finally T1 line.

The first question is where will I be when I want to use this connection. Only wireless connection is portable and can be used at home, at work, out in my fishing boat, and if you are so inclined (or ride in a car pool) out on the road. They claim that you can stay connected at up to 70 mph, within the service area. If you have a home desk top computer and want to use your wireless connection, a wireless modem is available. The Detroit/Pontiac area is wired for wireless at 128K speeds <<http://www.wwc.com>>, and you don't have to worry about that pesky squirrel that tries to eat the phone cables causing static and bad connections.

But if you never take your computer anywhere, then the other options are available. So since all these other methods require special phone lines, cables, or satellite dishes, trying to take them to

work will pose special problems. Similar to the guy who developed an electric car. Drove the car across the country and it only cost him about twenty dollars for electricity. The expensive item was the extension cord. Extension cords are not an option for most of these items.

Distance from the provider is a major factor if service is available. For the ISDN line distance is not as much of a factor since they are using two lines back to the phone company, each with a 56K modem to make the 128K speed. DSL is limited to about 2 to 3 miles from the phone company wire office (where the switching takes place). A cable modem is only available where the local cable company is hooked to the internet and offering the services. If you live out in the country then satellite connection may be the only option you have.

In the May-June 2001 of "My Generation" magazine (AARP), there is an article by John Quain that tells of his experiences of trying DSL service in New York. Started out great, but then ran into problems with outages and other strange problems that seem to be common across the nation. Finally went to Time Warner cable and even though it is slower it is better for him. His final note in the article is that Road Runner (cable modem software) keeps track of your surfing habits and shares the information with other companies.

The rooms in the Science Building at Oakland University are wired with a T1 line. But at home or at work, you are on your own. I will be demonstrating this wireless communication in the near future at a meeting. I will use both my Apple G3 Powerbook and my Hewlett Packard portable for the demonstration. The modem I will be using is a wireless using the PCMCIA slot on each computer. ✓



Board Members Present: President Gary DeNise, Treasurer Roger Gay, Secretary Carol Sanzi, SIG-Advanced Chairman Franz Breidenich, SIG-IBM Co-Chairman Tom Callow, and SIG-MAC Chairman Harold Balmer. Also attending were Past President Bob Clyne and SIG-IBM Co-Chairman Warner Mach. The meeting was called to order at 12:05 PM.

OLD BUSINESS: After a review of the Application for Recognition of Exemption Under Section 501(c)(3) of the Internal Revenue Code, Roger Gay moved to authorize filing the application and paying the \$150 fee for processing. Carol Sanzi seconded the motion and it was carried.

Tom Callow moved to reimburse Warner Mach \$13.06 for refreshments and Gary DeNise \$44.45 for trophies. Franz Breidenich seconded the motion and it was carried.

Treasurer Roger Gay reported that the balance on hand is \$2866.66. The membership is now 123 with Edward V. Dolikian and Henry Langberg's memberships expiring. Roger Gay mailed 239 invitations for SEMCO's Anniversary meeting to former members. 27 of those were returned with invalid addresses.

NEW BUSINESS: Gary DeNise announced that he has obtained a table to advertise SEMCO at Microsoft's Big Day, "Solutions for Small Business." It will be held on April 12 at the Novi Hilton. Volunteers will be requested at the general meeting.

In the absence of Beth Fordyce, Bob Clyne agreed to edit next month's DATA BUS.

The meeting adjourned at 12:34 PM.

SPECIAL INTEREST GROUPS (SIGs)



SIG-MAC
Harold Balmer

May 13: A Spectacular Computer Tour of the Universe presented by Bill Agnew. Joint meeting with SIG-IBM. ✓



SIG-IBM
Tom Callow
Warner Mach



May 13: A Spectacular Computer Tour of the Universe presented by Bill Agnew. Joint meeting with SIG-MAC. ✓



SIG-IBM INTERMEDIATE
Position open

May 13: The Future of Windows: Co-Chairman Tom Callow will discuss Windows XP, the upcoming versions of Windows which will finally replace Windows 95, 98 and ME, and provide home and professional versions of Windows based on the reliable Windows NT/2000 code base. ✓



SIG-ADVANCED
Franz Breidenich

May 7, Monday: Meetings held first Monday 6:45pm at Troy Public Library. TOPIC: Wide ranging discussion of computers & computing. ✓

NOVICE-IBM GROUP
Rotating Volunteer Hosts

May 13: Q&A, member directed discussion. ✓

May 2001 DATA BUS DEADLINE (10th day after meeting)

SEMCO & SIG DATA, & MEMBERS' ADS - Deadline: Wed, May 23, 11:59pm

Members' personal ads free. To mail, use Editor address on Page 2; e-mail address beth.fordyce@macgroup.org PLEASE send to arrive sooner than deadline if possible.

BUSINESS ADS - Deadline: Second Friday monthly. Mail **unfolded** camera-ready copy; payment in full made out to SEMCO, to the Editor (address Pg 2).

Ad Rates and Rules

Full pages are 5-1/2" wide x 8-1/2" tall; Make allowance for 1/2" margins;
Halftones to be screened at 85 dpi; Offset press used; No agent pricing;
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Half-page/1-issue=\$20; Half-page/6-issue=\$100; Half-page/12-issue=\$160
Qtrr-page/1-issue=\$15; Qtrr-page/6-issue=\$75; Qtrr-page/12-



Beth Fordyce

beth_fordyce@macgroup.org

(to post monthly computer group info)

CALENDAR-OF-EVENTS OTHER GROUPS

AAIICI (Amer. Ass'n. of Ind. Investors, Computerized Invstrs),

May 26 - Saturday, 10am-Noon (Meet 4th Saturday) (not December): W. Bloomfield Huntington Bank, Orchard Lk Rd., S.of Maple Rd. Info: Jack Lockman at 313-341-8855 or thunder@tir.com
COMP (Computer Operators of Marysville/Port Huron)

May 2 - Wednesday, 7pm (Next Jun 6)(Meet 1st Wednesday): Rm 201, Clara E. McKenzie Library-Science bldg, 323 Erie St, Port Huron. Ron Walters, 810-679-4144. Web: <http://dns.advnet.net/comp/> **TOPIC:** The Family Tree Maker

DCOM Computer Club

May 11 - Friday 6:30 - 8:30 pm (Meet 2nd Friday): Henry Ford C.C., Patterson Tech Bldg, Ford Rd/Evergreen, Rm T143, Parking Lot C. Info: Doug Piazza 313/582-2602

Delta Computer Club

May 31 - Thursday, 7pm (Meet last Thursday) (not Nov/Dec): Bay de Noc C. C., Escanaba. Info: Gordon Nelson, Pres & Editor at gnelson@bresnanlink.net or 906/428-1014.

GDOUG (Greater Detroit OS/2 Users Grp)

May 10 - Thursday, 6:30pm (Meet 2nd Thursday) (not July): Stardock Systems, Farmington Rd, N. of 6-Mile, Livonia; Info: Carolyn Kolaz, Pres at 76460.3040@CompuServe.COM. Map on Web: lookinc.com/gdoug.

MacGroup Detroit

May 20 - Sunday, 3pm-5pm (Meet 3rd Sunday): Southfield Civic Center, 26000 Evergreen Rd., Room 221. Info: Terry White, terry@macgroup.org or 313-571-9817. Web: www.macgroup.org
TOPIC: "Makin' DVDs"

MacTechnics. (MAC user Group). Coffee 9am, SIGs 9:30am, Main meeting 11am.

May 19 - Saturday, 9am-1pm (Meet 3rd Saturday): U of M, No. campus, EECS Bldg. & Dow Bldg. (see map on Web: mactechnics.org). Info: Cassie at cassiemac@yahoo.com or 313-971-8743.

MCUG (Michigan Computer Users Grp)

May 17 - Thursday, 7pm (Meet 3rd Thursday): 35271 Rockingham Dr, Sterling Hts., MI 48310-4917; Info: Jerry Zinger, Pres. kahunazing@netscape.net 810-792-3394.

Michigan Apple Computer User Grp

May 10 - Thu 7pm (Meet 2nd Thu) MAC: Troy Library, I-75 at Big Beaver; **May 16 - Wed 7pm** (Meet 3rd Wed) IIGS, Apple II/Apples-Works, Parent/Teachers Ed, PC, Internet: St Bede School, 12 & Southfield; **May 17 Thu 7:30pm** (Meet 3rd Thu) MAC Media Arts, Programmers: St. Bede. Info: Carl Pendracki 248/647-8871 or carlpen@aol.com. Web: <http://www.michiganapple.com>.

SHCC (Sterling Hts Computer Club)

May 1 - Tuesday, (Next: Jun 5) 7:30pm (Meet 1st Tuesday: not July/Aug): Carpathia Club, 38000 Utica Rd, Sterling Hts, Pres. Don VanSyckel at Don@VanSyckel.net, 810/731-9232 ; Web: member.apcug.org/shcc.

SVCA (Saginaw Valley Computer Assoc.)

May 10 - Thursday, 6:30-9pm (Meet 2nd Thursday): Saginaw. Info: Kay Engelhart program chairperson at kengelhart@hotmail.com.

Wayne State U. Mac User Grp

May 12 - Saturday 10am-Noon (Meet 2nd Saturday): at Mich.com, 21042 Laurelwood, Frmgtn. Info: Lorn/JoAnn Olsen 248/478-4300 or Denny McLampy 248/477-0190, denny@mich.com
TOPIC: Questions, Shortcuts, Tips and The Internet.

**TAX DEDUCTIBLE
DONATIONS
SEMCO Members
Helping the Community**

Art Laramie is accepting computers, computer components, manuals and software for the Rochester Hills Lions Club program that supplies computers to disabled people.

Contact Art at 248-398-7191
● ● ● ● ● ● ● ●

Beth Fordyce is accepting Macintosh computers, components, peripherals, manuals and software (working or broken) for Immaculate Heart of Mary School PreK-8th grade, 175-200 students for computer science classes.

Contact Beth
248-626-5105 7pm-10pm or
beth_fordyce@macgroup.org

You may also contact the church directly:

Maurice Roberts or
Sister Mary Stephanie Holub
19940 Mansfield
(Greenfield/8-Mile area, Detroit)
313/835-0258

If you want to use your donation as a tax deduction, make an itemized list (with one copy for yourself) of items you donate, and attach it to your donation. Include on the list the full name or description of each item, and the cost of its fair market value. Also make sure your full name, address and phone number are on it. The donee will see that you receive a receipt. (Be advised that no one will make these lists for you.)

Your **SEMCO** membership card is good for a **\$1 discount** (not valid with any other offer) on admission to
Super Computer Sales
shows. See
www.a1-supercomputersales.com
or www.a1scs.com
for show schedule.

**APRIL
REFRESHMENT
DONATIONS**

Warner Mach, Coordinator
Gary DeNise
Bert Farmilo
Kaye Johnson
Betty MacKenzie
Anita MacSorley
Roland Maki
Chuck Moery
Allan Poulin
Carol Sanzi
Dawn Sanzi

COMPUTER RESOURCE PEOPLE

This is a list of members willing to be resources for other members to call when they have hardware or software questions. Are you willing to help members learn? Which software programs are you familiar enough with?

It is not necessary to be an expert, but just have some familiarity with the program and be willing to help someone starting to learn it. Please give this some thought and volunteer at the next group meeting.

AutoCAD: Comptois, Gay

Genealogy: Cook

IBM PC Hardware Issues: Clyne, Gay, Grupido, Yuhasz

IBM Windows Operating Systems: Clyne, Grupido, Yuhasz

Internet (browsers and mail): Grupido

Lotus 98: Diller

MAC Hardware and OS Issues: Yuhasz

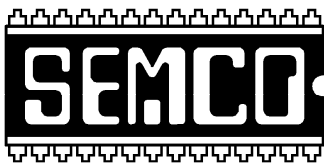
M.S. Powerpoint: Diller

M.S. Word: Clyne, Diller, Grupido

Novell Netware: Grupido, Yuhasz

Quicken: Clyne, Gay

Clyne, Bob—810/387-3101. 9a-10p
Comptois, Jerry—248/651-2504, anytime
Cook, Steven—313/272-7594 eves
John Diller—248/540-4382, eves
Gay, Roger—248/641-7799, 9am-10pm
Grupido, Larry—810/664-1777 Ext 151
Yuhasz, Steve—734/953-3794 eves



**SOUTHEASTERN MICHIGAN
COMPUTER ORGANIZATION, INC.**

SEMCO CALENDAR—MAY 2001

SCIENCE BUILDING, OAKLAND UNIVERSITY in ROCHESTER

May 13 - SUNDAY (Meet 2nd Sunday)

SEMCO **Board** Meeting at 12:00 pm, **Room 172**. For Officers and SIG Chairpersons. Other members are invited to attend.

SEMCO **General** Meeting at 1:30 pm, **Room 172**.

Special Interest Groups (SIGs)

SIG-IBM 1:45 pm, **Room 172**. **Pgm:** A Spectacular Computer Tour of the Universe presented by Bill Agnew. Joint meeting with SIG-MAC.

SOCIAL PERIOD, 3:15 pm, **Room 164**. Refreshments! (Reminder: We must maintain a neat environment.)

NOVICE-IBM GROUP, 3:45 pm, **Room 164**. **Pgm:** Q&A, member directed discussion.

SIG-IBM INTERMEDIATE, 3:45 pm, **Room 172**. **Pgm:** The Future of Windows: Co-Chairman Tom Callow will discuss Windows XP, the upcoming versions of Windows which will finally replace Windows 95, 98 and ME, and provide home and professional versions of Windows based on the reliable Windows NT/2000 code base.

SIG-MAC (All Apple Macintosh products), 1:45 pm, **Room 172**. **Pgm:** A Spectacular Computer Tour of the Universe presented by Bill Agnew. Joint meeting with SIG-IBM.

SIG-ADVANCED

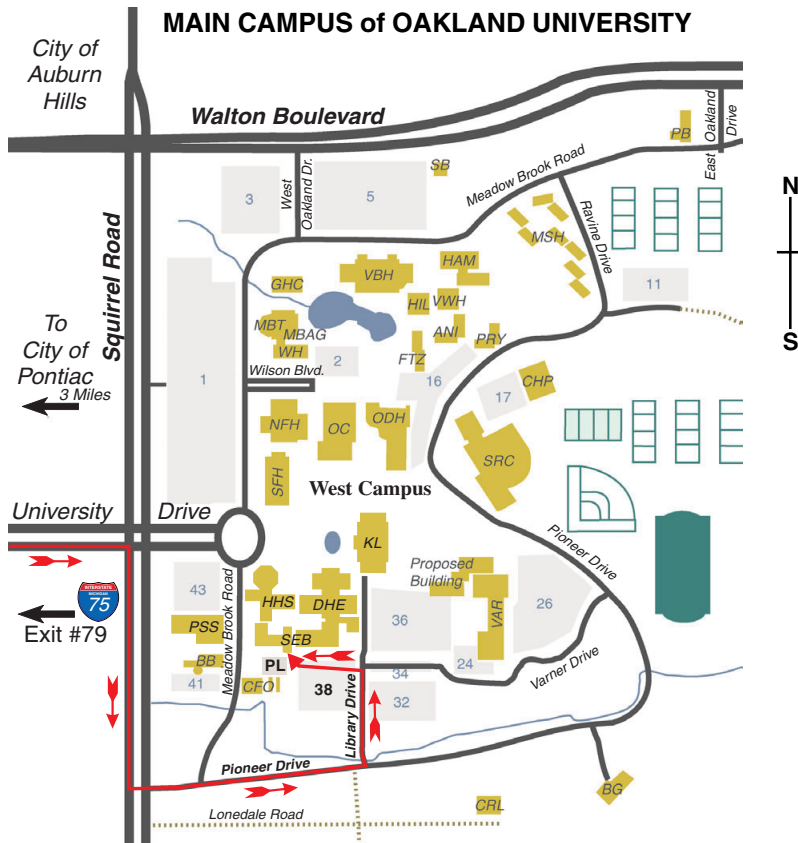
May 7 - Monday, (Next: Jun 4) 6:45 pm (Meet 1st Monday), Troy Public Library, 510 W. Big Beaver Rd in Troy, at I-75 exit. See the sign in the lobby for room assignment. Info: Franz Breidenich 248/398-3359. **TOPIC:** Wide ranging discussion of computers & computing.

SEMCO

JUNE 10, 2001 - SUNDAY (Meet 2nd Sunday). **Topics to be announced.**

PUBLIC INVITED

(Please copy this and the next page to post on your bulletin board)



MAP LEGEND

- SEB** Science and Engineering Building
DHE Dodge Hall of Engineering
KL Kresge Library

Note: SEMCO meetings are in the Science (west) wing of the Science and Engineering Building, hence the “Science Building”

DIRECTIONS

Driving north on I-75 (from Detroit and suburbs), take Exit 79 (University Drive), stay to the right on University Drive to campus entrance. Turn right (south) on Squirrel Road (at traffic light which is just outside campus), turn left on Pioneer Drive (next street to left). Turn left off Pioneer Drive onto Library Drive (second left) toward Kresge Library. Turn left before you get to the buildings, into parking lot 38 on the left. Proceed to the far end of the parking lot and up to the next lot. After parking, enter the first set of glass doors (at the SE corner of the building).



The meetings at Oakland University are sponsored by OU's Academic Computer Services (ACS), and the student chapter of the Association of Computer Machinery (ACM). SEMCO thanks OU, ACS & ACM for their assistance.

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DATA BUS ADDENDUM

**THESE ARTICLES DID NOT APPEAR IN THE PRINTED
DATA BUS**

The Beginnings of Computing, by Major Keary	37
Entangled Photons, from Jet Propulsion Laboratory	41

The Beginnings of Computing

by Major Keary

From time to time discussion arises about the *first* computer, who deserves credit for what, and the watershed between analog and digital computers.

The word, *compute*, is a verb that means *reckon a number or amount, determine by calculation*. Devices to do that have been around for over four thousand years.

Not as ubiquitous as it once was, the abacus dates back to 2200 B.C. and is still used. In the early 1950s Time Magazine carried stories of annual competitions between human-with-abacus and the latest calculating machinery of the day; the abacus won hands down each time.

Mechanical calculating machines were invented in Europe during the 17th century. In Germany Wilhelm Schickard invented a mechanical device c.1623; then followed Pascal's adding machine. There seems to be some variance in the details; one source (Fuori, *Introduction to the Computer 3rd edn.*, Prentice Hall, 1983) says it was built in 1647 and known as the *Machine Arithmetique* and its design, using gear driven counter-wheels, was used for the next three centuries. Elsewhere his machine is said to have been known as *The Pascaline* and built in 1642. It was restricted to addition and subtraction, but could handle eight columns of digits. Some twenty-five years later (1673) Leibniz constructed a more powerful machine with the capacity to multiply, divide, and derive square roots. It was not until 1820 that a machine was manufactured in commercial quantity; it was the *arithmometer*, the work of Charles de Colmar.

Enter the Punched Card/Tape Era

The binary era goes back along way. Remember, binary arithmetic involves two digits, zero and one, and is not reliant on computers for its existence. The concept existed in China as early as 800 B.C.

Apart from the early appearance of a binary system in China, punched cards and punched tape have a long history in the West. The punched hole system presents one of two states: hole, or no-hole. Its use dates back to 1725 when Basile Bouchon invented a weaving loom that used punched paper tape to control the pattern. The paper tape was later (1728) replaced by rectangular perforated cards. In 1745 Jacques de Vaucanson made substantial improvements to the design, but the most significant advance was achieved by Joseph-Marie Jacquard.

Commissioned to further develop the Vaucanson machine, in 1801, jacquard exhibited what became known as the jacquard loom. On his machine the *cards* were made of metal and connected in an endless belt. The Smithsonian Institution's computer exhibit includes a *family tree* of computers that shows the jacquard loom as the principal seminal invention.

Charles Babbage used the punched card concept (known as *Jacquard cards*) in the *Analytical Engine*, which was the successor to his *Difference Engine*. The Analytical Engine was designed to be programmed; as matter of interest, Ada Augusta Byron (daughter of Lord Byron and a mathematician) collaborated with Babbage and is credited with being the world's first programmer. Her name was later given to the ADA programming language. It was Ada's efforts that preserved Babbage's

work, leading to the eventual (1960s) construction of a working model of the Analytical Machine by IBM. The work was done from Babbage's original drawings and the machine was found capable of being used with then (1960s) modern programming techniques.

None of Babbage's machines were ever made operational in his lifetime, but a working Difference Engine was constructed by a Swede, whose work was later copied and put to use by the British government to calculate life insurance tables (Fuori). Following Babbage were some notable designers of so-called analytical machines: Ludgate, Torres y Quevedo, and Couffignal.

The Hollerith Machine

It is generally accepted that Herman Hollerith, a statistician, employed the jacquard card concept when he invented his system for the 1890 U.S. census. What is not generally known is that the machine did not compute or calculate, but simply recorded non-numerical data (gender, marital status, and so on). However, what he did introduce was what we know as database *records* and *fields*. In 1896 he established the Tabulating Machine Company to apply his punched card method to statistical and accounting applications. The company later (1911) became the Computing-Tabulating-Recording Company, and in 1924 changed its name to International Business Machines Corporation.

Hollerith Tabulating Machines were manufactured in the UK by the British Tabulating Machine Company, which suggests that IBM had kept a company with the original name (Tabulating Machine Company) in the UK to

protect its use along with that of the name, Hollerith.

As a matter of interest, essential devices - known as *bombes* - for cryptanalysis in the *Ultra* project were manufactured by the British Tabulating Machine Company at Letchworth (Peter Jensen, in *Electronics Australia*, April and May 1997).

After Hollerith left the U.S. Bureau of the Census, the Bureau undertook development of a new machine for the 1910 census. James Power, the engineer in charge of the project, later established Remington Rand (the Bureau seems to have had a staff retention problem).

The Hollerith model dominated commercial automated systems into the 1930s, and punched cards remained in common use until the 1970s. Keyboards were a later development, and the only means of input for many machines was by way of punched tape or punched cards.

Beyond Hollerith

In the late 1930s Harvard University undertook developmental work in the computer field, and in 1937 Professor Howard Aiken collaborated with IBM to build what became known as the *Automatic Sequence Controlled Calculator* or, more commonly *Harvard Mark 1*, which used punched cards for input. The project began in 1937 but Mark I did not become operational until August 1944. It was over 15 metres long and 2.5 metres high, some 5 tonnes in weight, and required a 4 hp, 25 kW motor to drive the counters and relays.

The Analog-Digital Watershed

The ISO defines *analog* as "Pertaining to data that consists of means of continuously variable quantities", and defines *digital* as

“Pertaining to data that consists of digits” (Nader, *Dictionary of Computing*). Gilbert Held’s *Dictionary of Communications Technology* defines analog as “Continuously variable as opposed to discretely variable”, and digital as “Discretely variable as opposed to continuously variable”. If that is more confusing than enlightening, join the queue. Early computers and calculating devices were analog, and current computers are digital. The watershed is not clear because the designs and technologies merged.

The binary concept is very old; the I-Ching exhibited binary properties as far back as 800 B.C., and in 1050 A.D. Chinese scholars arranged the I-Ching hexagrams in a 6-bit binary order (*Encyclopedia of Computer Science*).

The Harvard Mark I has been credited with having launched the digital computer era. However, the British machine known as *Colossus* was operating for some two years before Mark I, but its existence was kept secret until many years after WW II.

The *Encyclopedia of Computer Science* says, “The earliest known electronic digital calculating device was a machine for solving up to 30 simultaneous linear equations, initiated in 1938 at Iowa State College by John Atanasoff and Clifford Berry”. It was not until 1972, after protracted litigation, that Atanasoff was credited with having created what has been described as “the first true electronic computer” (Fuori).

Also from the *Encyclopedia of Computer Science* is the information that the “earliest known efforts at applying electronics to a general-purpose program-controlled computer

were those undertaken in Germany by Schreyer and Zuse in 1939”. Fortunately for the WW II Allies, the German military considered Konrad Zuse’s research as a side show and declined to support it. His work, which did not become generally known until after the war, was of substantial significance in the history of computer development; it is interesting that his Z1 (1936) is now described as the first binary (albeit mechanical) computer, the Z3 (1941) used binary and floating point computer arithmetic (it employed telephone switching components), and the Z4 (1950) - an electronic machine - had floating point arithmetic operation capability.

While the German military was dismissing Zuse’s work the British were moving in the opposite direction. It is likely that they, too, would have ignored any proposal to develop computers had it not been for the Ultra project. Information had come their way about German rotor-based encryption devices and a decision was taken to find means of cracking the ciphers. The first German machine was named Enigma, but there were later, more complex devices, with the impressive names, *Geheimfernsschreiber* and *Schlusssatz*.

Colossus was developed for an essential part of the task of attacking the new German cryptosystems. Like Zuse’s Z3, it used telephone system switching devices. There is no doubt it was the first such device applied successfully to a real, ongoing task. One of the curious things about the development of Colossus was that none of the people involved seems to have been aware of the work of Babbage,

who had already solved many of the problems they had to overcome.

Immediately after the war the Colossus machines were destroyed. Several had been constructed, no two alike, and there was at least one in Australia. They weren't really destroyed, but dismantled and most of the components recycled back to the British telephone system. Since then Bletchley Park (home of Ultra) has been turned into a museum and now houses a working replica of Colossus.

Machines Of The 1945-1950s Period

The development of Harvard Mark I was delayed because of America's entry into WW II, but later regenerated. Alan Turing, a key figure in the Ultra project, visited the U.S. on several occasions to discuss Ultra. I suspect that without his influence Mark I might have remained on the shelf. In the event, Mark I was commissioned and put to work for the U.S. Navy under the supervision of Commander (previously Professor) Howard Aiken, USNR.

It is not coincidental that post-war computer development in Britain was led by people, such as Alan Turing, who had worked on Ultra. It is likely that the same knowledge base helped the development of the ENIAC machine, work on which began in 1943 at the University of Pennsylvania. The project was led by Mauchly and Eckert with significant support from the Office of Naval Research. It is recorded that ENIAC was working in the summer of 1945.

Before the ENIAC team had completed its work, a new project was launched: EDVAC, a serial binary machine that became operational in 1951, and which probably represents

the beginning of what we would now recognize as a computer.

An important figure in the development of computers, John Von Neumann (one of the Colossus team), has been given credit for EDVAC's stored-program computer design, but Mauchly and Eckert deserve equal recognition. Mauchly and Eckert set up their own company (later merged with Remington Rand) to develop UNIVAC, the first of a new generation of machines designed specifically for the commercial market.

What emerges from the history of these machines is that over a long period of time many people have-often without being aware of the work of others-contributed to the development of the machines with which we are now so familiar. Along the way there has been adaptation of other technologies, such as telephone switching, that have enabled design to advance. Many of those inventions and designs never became operational, but contributed to later developments.

There is no real first computer, but it is interesting to reflect on the consequences of a French weaver's 1725 invention. The *Encyclopedia of Computer Science* (ed. Ralston and Reilly) is an excellent source of information and references pertaining to the history and technical aspects of analog and digital computers. A new edition (the fourth) is expected to be published soon.

For anyone interested, Science Works now houses CSIRAC - a room-sized survivor of the 1950s computer era-that used to live at Monash University's Caulfield campus. It was still working when at Caulfield, without

loss of its impressive - for its day - 32 kb of memory.

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**ENTANGLED PHOTONS COULD
PROMISE LIGHTNING-SPEED
COMPUTERS**

Defying traditional laws of physics, researchers may have found a way to blast through imminent roadblocks on the highway to faster and smaller computers.

Using modern quantum physics, a research team from NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., and the University of Wales in the United Kingdom has discovered that entangled pairs of light particles, called photons, can act as a single unit, but perform with twice the efficiency.

Using a process called "entanglement," the research team proposes that existing sources of laser light could be used to produce smaller and faster computer chips than current technology allows. Their paper appears in today's issue of the journal Physical Review Letters.

"Our economy constantly depends on faster and faster computers," said JPL researcher Dr. Jonathan Dowling, a co-author of the paper. "This research potentially could enable us to continue upgrading computers even after traditional manufacturing procedures have been exhausted."

Currently, in a process known as optical lithography, manufacturers use a stream of light particles to sculpt computer chips. A chip is basically a grid of interconnected on-off switches, called transistors, through which electric current flows and enables computers to calculate. As companies crowd millions of transistors into tinier chips, electric current travels shorter distances, resulting in speedier processes.

Chipmakers shine a laser light onto photosensitive material to create a stencil-like mask, which is used to carve silicon into the components of transistors. However, the producers can only provide transistors with dimensions as small as those of the masks.

Today's state-of-the-art chips have transistors measuring between 180 and 220 nanometers, approximately 400 times narrower than the width of a human hair. While traditional computers have the ability to perform with transistors as small as 25 nanometers, or 3,000 times narrower than a human hair, this presents manufacturing obstacles.

The light manufacturers use to produce today's transistors has a wavelength of 248 nanometers. It becomes increasingly difficult to use light with shorter wavelengths to produce transistors with smaller dimensions. In fact, according to a central principle of optics called the "Rayleigh criterion," 248-nanometer

light can't create features smaller than 124 nanometers.

However, this new research, still in its theoretical stage, could provide a bypass of the Rayleigh criterion. The research team proposes that entanglement would allow the use of existing sources of laser light of 248 nanometers to produce computer chips with dimensions of a fourth of the wavelength (62 nanometers) or smaller compared to today's limits (124 nanometers).

Entanglement would allow researchers to use the intermingled properties of two or more photons to obtain subwavelength spatial resolutions. Albert Einstein called this intermingling of photons process "spooky action at a distance" because the particles can immediately influence each other over huge distances, even halfway across the galaxy.

Here on Earth, entangled photons can be produced by passing a light beam through a special crystal. In this quantum lithography proposal, a pair of entangled photons enters a setup with two paths. While the two particles travel together and act as a single unit, it is impossible to determine which of the two paths the pair has taken. In a strange effect of quantum mechanics, however, each photon actually travels down both paths.

On each path, the photons act like a rippling wave with peaks and valleys. After traveling on their own path for a while, the two photons converge on a surface. Because the light particles making up each wave were originally entangled, the result of adding the photon waves together is to create patterns on the surface equivalent to those made by a single photon with half the wavelength.

This process, in essence, enables the entangled photon pair to produce patterns twice as small on each side of a chip's surface as can be created by the single photons in the conventional optical lithography procedures. Entangling more than two photons would improve results even further.

While a number of technical challenges remain, researchers are already working on developing materials that would be required for quantum lithography.

This research is part of the Revolutionary Computing Technology project in the NASA/JPL Center for Integrated Space Microsystems. The project is supported by the Deep Space Systems Program in NASA's Office of Space Science. JPL is managed for NASA by the California Institute of Technology in Pasadena.

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