

November Meeting:
GLADY CAMPION & JIM ULLOM —
Best Tips, Tricks, & Freebies of the Year

Volume III (New Series), Issue 11 — November 2013

7:00 P.M. Tuesday the 26th at T.J. Chump's, 1100 East Dayton–Yellow Springs Road in suburban Fairborn — just off Interstate Route 675. Click [here](#) for a map. (The Regional Center, our usual meeting place, is *closed* for Thanksgiving week.) All DMA meetings are free and open to the public. Plenty of free onsite parking, too, so bring a friend! Come early if you wish to order something to eat.

By Gladly CAMPION, Staff Reporter

JIM AND I ARE BUSY sorting through our files, copying the notes off the backs of wrinkled receipts and napkins, and pulling pages out of our most dog-eared tech journals. We will bring you the best of our collection of tips and tricks and freebies and maybe a couple of how-tos. You are welcome to share some of your own, but be ready to take a few notes.

Our regular meeting place is closed for Thanksgiving week, so we are moving to TJ Chumps. Think of this as flipping the agenda and holding the Pizza SIG meeting *before* the regular meeting. Give yourself a little extra time if you want to order something for dinner.

DMA's next big event is the Holiday Dinner — or should we call it our Holiday BBQ?

Company 7 has great food (award-winning, actually). The Buffet will include their famous ribs and cheesy muffins, followed by an assortment of pies and cakes. There will also be a cash bar. We will take time to recognize the efforts and accomplishments of our volunteers. And as always, we will finish the evening with a raffle of hardware, software, and holiday crystal. Tickets are \$20 and will be available at the meeting. Please reserve your seat by Dec 3rd.

The Databus

Newsletter of the Dayton Micromonoputer Association, Inc.

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* SAVE A TREE (or at least a twig): If you prefer to print THE DATABUS rather than read it off the screen, and you are already a DMA member, there's no need to print page 13.

—CD-R and DVD Longevity: How Long Will They Last?—

By John LANGILL, Newsletter Editor, Southern Tier Personal Computing Club, NY

August 2013 issue, *Rare Bits*

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ALTHOUGH THERE ARE TODAY MANY DATA STORAGE ALTERNATIVES, I'm sure that there are many such as me who in the past stored various kinds of information on optical media, CD-ROMs in particular. To cite just two examples; I have scanned hundreds of family slides, organized the digital images, and saved them on CD-Rs. Similarly, I did the same with several hundreds of digital photos from my two-month visit with my son and daughter-in-law to Australia in 2003. The purpose of doing so was to have a convenient form in which archive the digital images and to share them with other members of the family; while at the same time conserving space on the hard disk — then a more precious commodity than it is today.

Thinking back ten or more years, one may recall that a single CD-R then offered a relatively large data storage capacity in a form that could be easily and inexpensively mailed anywhere in the world — something that could not be accomplished via the Internet or with other “portable” media at the time.

While acknowledging that the images stored on these CD-Rs — and others even older — could now be transcribed to another medium, I confess that I'm reluctant to devote the time and effort to doing so at this point. Accordingly, the durability and life expectancy of the CD-Rs that I created ten, twenty, and even thirty years ago, has become an increasing concern.

In the early '90s when the first CD-R discs were introduced, manufacturers said the medium had a data life in excess of forty years. In the late '90s when the first DVD-R discs appeared on the scene, producers proclaimed a data life of at least 100 years. However, in the time since their introduction it has been discovered that these early discs are susceptible to media “rot” (*i.e.*, “bit rot”) that can eat your information — audio, video, or data — in as little as two years after they are written. (According to research fairly recently conducted by J. Perdereau, CD-Rs may have an average life expectancy of not more than ten years — *Journal de 20 Heures*, March 2008.)

Because CD-R and DVD+R media are used to archive nearly everything today, it does make one worry; especially if these discs are the only repository in which your precious, and irreplaceable, family memories — photos and movies — as well as vital family, personal, and company data or documents are stored.

So where does the truth lie? Somewhere across the complete spectrum.

Most people who successfully burn a disc believe they have a quality medium. Unfortunately that only tells you the disc will be compatible (able to be played) in the vast majority of CD or DVD players. More importantly all better quality CD and DVD burners include technology called over burn/under burn protection making “coaster production” a thing of the past. The basic construction of both disc technologies enable you to burn your data in a very precise, very controlled manner.

Test Options

There are only two foolproof ways of proving the data life of the discs you use:

(Continued on page 3)

- Write a few CD-Rs or DVD+–Rs, then wait between 25 and 50 years and check if they still hold the correct data.
- Use a CD/DVD analyzer that is specially designed to retrieve very accurate information about your media and your data after accelerated aging in test chambers where the discs are subjected to excessive temperature and humidity tests.

The first is typically impractical. Nonetheless, from personal experience I can attest to the fact that the first CD-R I ever burned—selections from a vinyl LP album — plays just fine and the music still sounds great twenty-five years later. However, I have also had some CD-Rs become unplayable in just a matter of months. Fortunately, such occurrences have been few.

The second provides only theoretical limits and doesn't take into consideration how you use, handle, and store the media. However, even assuming proper handling, temperature and humidity can adversely affect the data life of even quality media.

Between the CD-R discs produced in the early 1980s and today's double-layer DVD+–R discs there has been considerable progress in write performance, capacity, quality, and cost.

Following the test procedures of the International Standards Organization (ISO), quality media manufacturers have been able to predict data life spans ranging from fifty to 200 years. But keep in mind there are wide differences between low-budget media manufacturers and quality media manufacturers. In addition variations in manufacturing methods, materials, processes, and procedures can dramatically affect the data life of the media you use.

Or as auto manufacturers like to say: "Your mileage may vary."

Understanding Your Discs

It isn't vital that you understand the construction of CD-R or DVD+–R media to produce a quality disc that can be read years from now, any more than you need to understand the internal combustion engine to drive a car. But understanding the difference between quality and cheap media may help you avoid losing family photos or videos later on.

Most people consider DVD+–R discs little more than overgrown CD-Rs but, while they are similar, they are also quite different. In particular, the grooves are narrower and more closely spaced and the structure (pattern) of "pits" and "lands" is very much smaller with a DVD+–R in order to enable a greater data storage capacity. Precision is very critical.

Writable CD-R and DVD+–R discs start with a piece of polycarbonate substrate into which very precise grooves are molded to guide the tracking of the laser beam. A dye layer is then precisely applied to the substrate followed by a reflective layer and one or more protective layers. A few of the leading media manufacturers have initiated the policy of applying two very resistant layers for added data protection when the discs are used, handled, and stored.

Because of the faster read/write performance users now expect, leading manufacturers have developed new stamper technology for optimum groove (storage area) shape and ultra-precise molding technology. The molding is critical when the medium must withstand being rotated at extremely high speeds during the write process — up to 52x for CD-Rs, and 8x to 16x for DVD+–Rs. The engineering margin that was once reserved for manufacturing tolerance has been used for data capacity instead, leaving no tolerance for manufacturing; for these discs to be truly compliant with the Orange Book standard, the manufacturing process must be perfect.

(Continued on page 4)

Media Problems

The quality of your media is directly related with the time the media will last without losing information. As you can see there are a number of areas where manufacturers can shave a few cents in the overall cost of the media and areas where production can go amiss to shorten the data life of your stored information dramatically.

There are conflicting claims and consumer beliefs on which medium is best for data retention of 30, 50, 100 years — green, gold, or blue dye; and gold or silver reflective layer. It is somewhat immaterial today. Manufacturers of quality writable discs have developed significantly improved, more sensitive and more stable dyes, and better reflective materials that virtually eliminate data loss during high-speed read/write processes and enhance long-term reliability.

CD and DVD rot (i.e., bit rot) is not the problem today that it was with earlier Laser Discs because the media use different dye technologies to store data and make it much less susceptible to that kind of degradation. The truth is that deterioration arising from delamination and oxidation is the greater problem.

Delamination and oxidation usually occur at the outer edge of the disc and are often the result of the adhesive not being properly applied and cured during the production process. This usually happens when price-oriented manufacturers use equipment that is two to three generations old and the least expensive materials possible.

When it does happen the laser is unable to read the data on the reflected layer. It is usually caused by:

- Oxidation when air comes in contact with the reflective layer
- Galvanic reaction between the layers and coatings
- Chemical reaction caused by impurities in the disc's adhesive or aluminum coating.
- Excessive heat and humidity are known to accelerate and exacerbate delamination and oxidation.

The Real Culprit

If you have purchased quality media from a quality manufacturer, you are still not assured of 50 to 100 years of data life!

The greatest danger to the data longevity of your personal, family, and business information is you alone; that is, the way you handle and store your discs. The environment — temperature and humidity — can stress the materials. Gravity also can bend and stress the discs. Fingerprints and smudges can do more damage than scratches. But by following a few Do's and Don'ts you can ensure your precious family and friend pictures, movies, family records, and business files have the maximum data life.

Do not

- Touch the surface of the disc.
- Bend the disc — especially when removing it from its case as this can cause a fine crack to develop at the rim of the hub-hole which will render the disk useless. This is a particular problem with DVDs.
- Store discs horizontally for a long time (years).

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- Open a recordable optical disc package if you are not ready to record.
- Expose discs to extreme heat or high humidity.
- Expose discs to rapid temperature or humidity changes.
- Expose recordable discs to prolonged sunlight or other sources of UV light.
- Write or mark in the data area of the disc (the shiny side that the laser “reads”).
- Clean in a circular direction around the disc.

Do

- Handle discs by the outer edge or the center hole.
- Use a nonsolvent-based felt-tip permanent marker to mark the label side of the disc.
- Keep dirt or other foreign matter from the disc.
- Store discs upright (book style) in original jewel cases that are specified for CDs and DVDs.
- Return discs to their jewel cases immediately after use. Because the label side is more delicate and susceptible to damage, I recommend storing any CD or DVD disc label-side down in its jewel case.
- Leave discs in their spindle or jewel case to minimize the effects of environmental changes.
- Remove protective wrap only when you are ready to record data on the disc.
- Store in a cool, dry, dark environment in which the air is clean — relative humidity (RH) should be in the 20% to 50% range, and temperature should be in the range 4°C to 20°C (approx. 40° to 70° Fahrenheit).
- Remove dirt, foreign material, fingerprints, smudges, and liquids by wiping with a clean cotton fabric in a straight line from the center of the disc toward the outer edge.
- Dampen the cloth with a lens cleaner to clean your discs. Dry with photo lens tissue. For tough problems use Windex or a similar glass cleaner, diluted dish detergent, or rubbing alcohol. Rinse and dry thoroughly with a lint-free cloth.
- Check the disc surface *before* recording.

Reliable Medium

There are a lot of cheap CD-R and DVD+-R media that have marginal quality. For some applications like games, quality isn't critical. For irreplaceable, vital data like family photos, special events, vacations, and family/friends memories quality does matter. If you are backing up mission-critical data on your home or business computer, quality matters. Then it is important to select a brand of media that will keep your data safe, secure and available for years to come.

Quality and low prices just don't seem to mix!

—Did You Know?—

Any paid-up DMA member is entitled to a business-card sized advertisement in THE DATABUS?

—Network Debugging—

By Dick MAYBACH, member, Brookdale Computer Users' Group, NJ

August 2013 issue, *BUG Bytes*

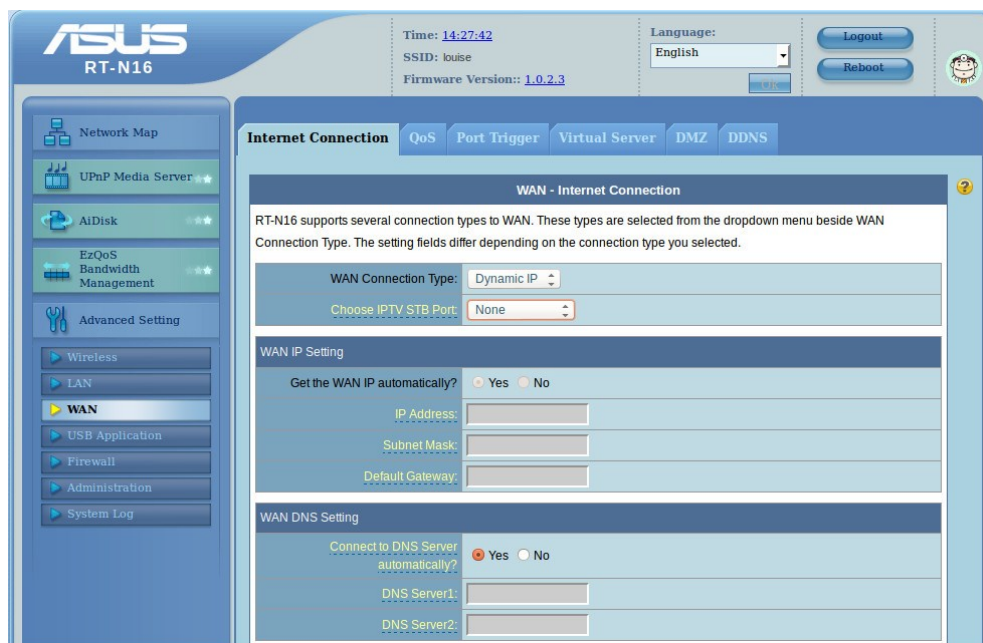
www.bcug.com

n2nd (at) charter.net

WHEN YOUR NETWORK ACTS UP, the first thing you must resolve is whether this is your problem or your Internet Service Provider's (ISP). If it's yours and you have an ISP technician come to your house, you'll pay a substantial service charge. Conversely, if it's your ISP's problem, you don't want to spend time chasing non-existent problems and perhaps replacing perfectly good network components. Here's what to do.

Perform some preventive maintenance. This is your most important step, and it consists of recording the network connection information. If you have a router, download its manual from the manufacturer's Web site, and print it. (EDITOR'S NOTE: Log in to router as though you were going to a Web site. Your router's Owner's Manual should give you an "address," which is a set of numbers separated by dots.) Log into the router, access the screen that shows the Internet connection information, either record the parameters or print a screenshot. The screenshot (below right) shows an example.

In this case, all the parameters are the defaults and are restored if you press the router's reset button. (Don't do this if you don't have to, as you will have to enter your Wi-Fi name and password.) Most ISPs are set up so that home customers can use their routers' default settings, but this is not true for commercial customers. If you maintain a business network, be careful to



examine all the set-up pages and record everything. Repeat this for any other routers, Wireless Access Points (WAPs), and switches on your network. If you have no router, record the same information from the Network Manager of the PC connected to the ISP's Wide Area Network (WAN) modem. For Windows 7, click the Windows button, type "net", and select the *Network Sharing Center*. Select *Local Area Connection* and click the *Details* button. The next screenshot is for a PC connected to the ISP's WAN modem through a router.

If your network does include a router, you should record this information for at least one of your PCs and keep it with the other material. Finally, power on all the computers in your network

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and use Zenmap (discussed in my July article, available at www.bcug.com) to record your internal network connections. (Since all you need is the connection information, a ping scan is sufficient.) Put all this material into a folder and save it someplace where you can find it.

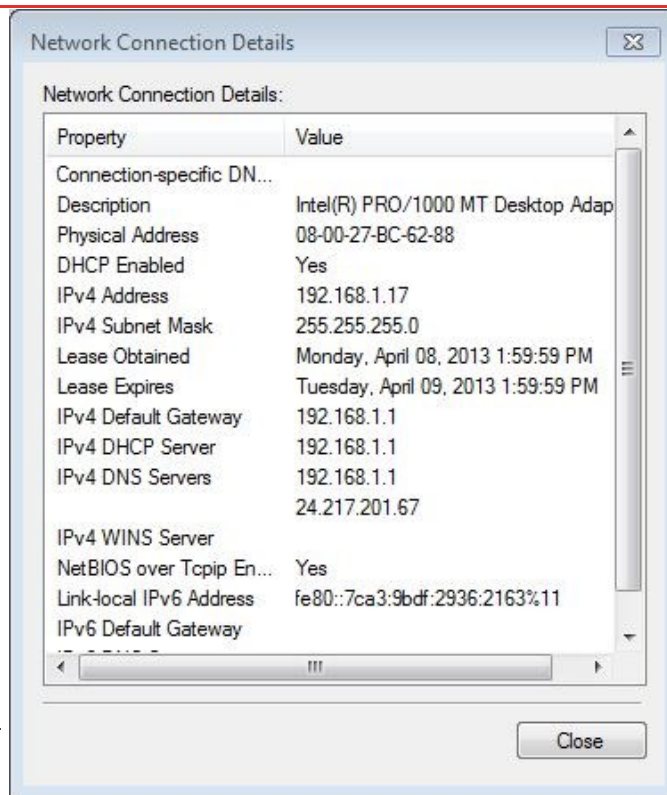
If a problem develops, you'll do one or more of the following, depending on the symptoms.

Check the PC's network connection. If the Ethernet cable is disconnected or if you lose the wireless signal, there will usually be a notice to that effect on your desktop. To be sure, move the pointer over the network icon, although some operating systems require that you make a left- or right-click on it. These of course are your problems. Correct them before you try to continue.

Reset the ISP's modem and your router. If every computer in your network loses Internet access, check whether a transient problem on the ISP's network has confused the WAN modem. In my experience, this is by far the most common Internet access problem. Unplug the power cord from it and, if you have one, from your router. (It would be prudent to tag these cords before you unplug them to be sure you plug them back into the right box. Otherwise, you may find yourself down among the dust-bunnies trying to decide which wall-wart belongs to the modem.) Wait about half a minute, and then restore power to the WAN modem. After a minute or so, the indicator lamps will settle down, and when they do, restore power to your router. If this doesn't help, your ISP may be experiencing a longer outage. Find something else to do for an hour or so, and give their technicians a chance to restore service. [EDITOR'S NOTE: This is far and away the most frequent problem I have. Unplugging the modem or the router almost always works. If it doesn't, try Mr. Maybach's suggestion, and unplug both.]

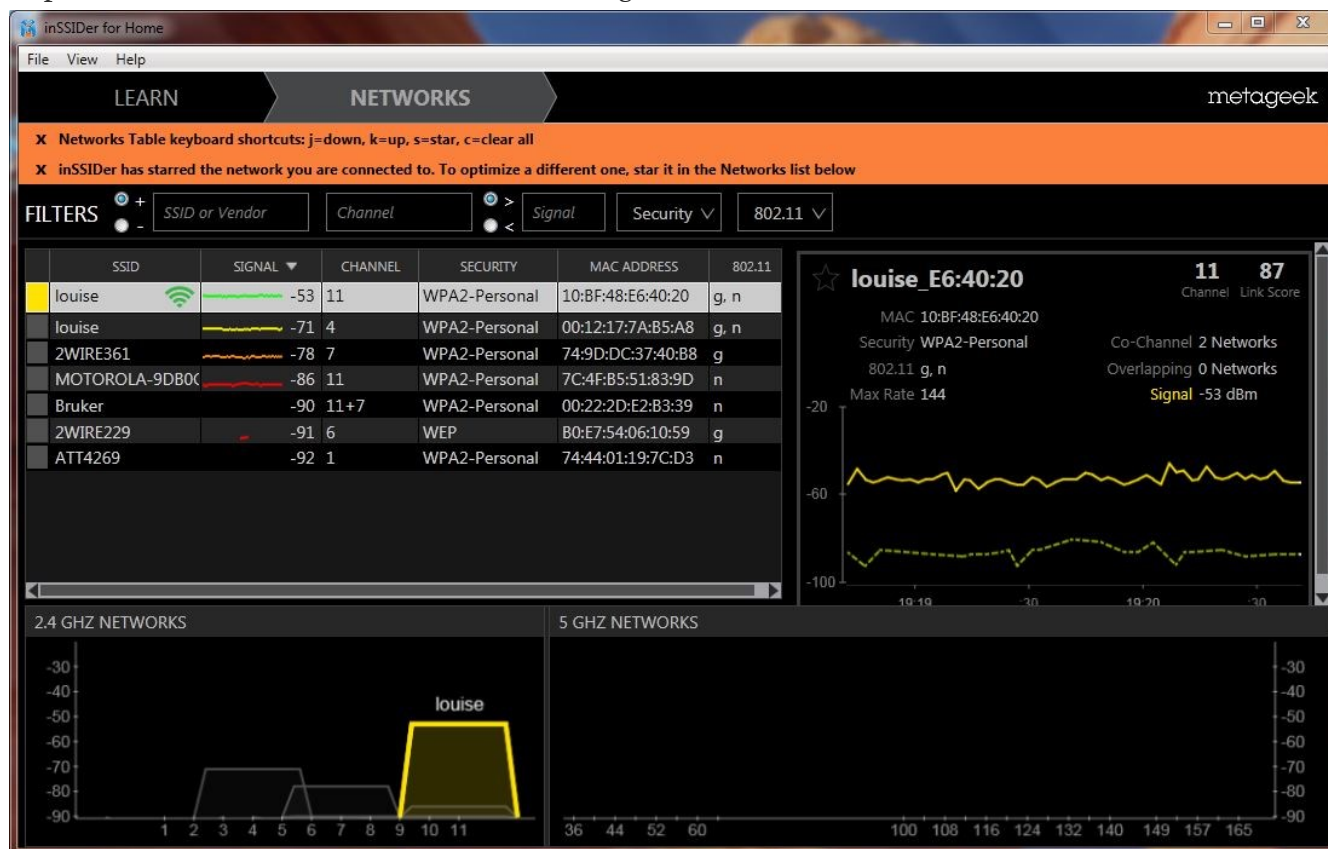
Connect a PC directly to the ISP's modem. If the above doesn't help, consult your network records and connect a PC directly to the ISP's WAN modem. If you normally connect with a router, the PC should be set up the same way the router was. If you can now access the Internet, the problem is in your home network; if you can't, it's time to call the ISP's help line.

Test the local network. Reconnect the network and boot all the computers on it. As each one comes up, check that it reports a normal network connection, either wired or wireless as appropriate. Probe the network with Zenmap, or a similar tool, and check the results with your records. The IP addresses of each computer will most likely be different, but they should all be present. If Zenmap shows no network, suspect the PC running Zenmap or the router or switch to which it's connected. If just one PC is missing, its connection is a problem. This could be a disconnected cable, a malfunctioning network or Wi-Fi card, or an incorrect configuration. Pull the entire length of the cable out where you can see it and look at it closely. Most Ethernet cables have flimsy plas-



tic locking tabs, and these are easily broken. Unless you have a crimping tool to replace connectors, the only reliable repair is to replace the problem cable. Check the network configuration against the records you took above.

Conduct a Wi-Fi survey. If you lose Wi-Fi connectivity, you must check that. All operating systems have wireless managers that display the available wireless signals and a crude estimate of their signal strengths. If you can see your signal, and it is the strongest one, you should be able to establish a circuit. If you are getting continuous requests for a password, check that your PC hasn't locked onto a neighbor's encrypted signal. If the PC is a laptop, move it near the wireless access point, and try to establish a link there, but this isn't practical with a desktop. Free Wi-Fi analysis software is available for all platforms, and the screen-shot below shows one of these, *inSSIDer for Home*, available for Windows, Android, and the Mac at <http://www.metageek.net/products/inssider/> Please note that Microsoft has *not* approved this program, but Metageek has other similar products for sale, so I think the risk is not great.



Our own Wi-Fi has the name or Service Set Identifier (SSID) “louise,” and we have two wireless access points, one operating on channel 11 and the other on channel 4. Although there is another channel-11 signal, it is 33 dB lower. (That is, it's power is 1/2000 that of louise. At the location where I made this measurement, the power of channel-4 louise is adequate, but this isn't true throughout the house, which is why we added the second WAP. (Some of the signal powers in the list are below -90 dBm, and hence don't appear on the plot.) As the plot suggests, wi-fi signals spread two channels above and below their assigned channel, so moving your signal by just one channel number may not change anything. With this information, you can pick a good channel,

and perhaps reduce the interference to your signal. Other possible solutions are a directional antenna, a second WAP (or perhaps a better location for the present one), or running a cable. In the example here, there are no 5-GHz signals, so that too offers a possibility.

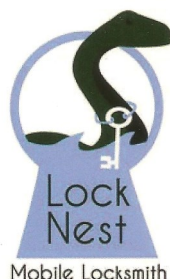
Check Internet speed. If you can connect to the Internet but it seems slow, use your browser to search for “internet speed test”. You will find many sites; www.speedtest.net seems to be good. Our own ISP’s speed varies greatly with the time of day, sometimes by a factor of 1000 or more. (Tonight, it’s 41 Mbits/s download and a tenth of that for uploads. You will seldom approach these in actual use, since the limiting factor is usually the site with which you’re communicating.) The most effective solution to this rush-hour traffic problem is to find something else to do for a few hours.

Again, your most important diagnostic tool is preparation. It’s difficult to repair an ailing network if you don’t know how it operates when it’s healthy. You should download the test software now and become familiar with it, because once your network chokes, downloading may not be possible, and staring at the terse diagnostics provided by your operating system usually provides few clues about where to begin.

—Investment SIG—

Is there any interest in reviving the *Investment* Special Interest Group? Financial periodicals such as *Barron’s* or *Forbes* have had columns with titles like “The Electronic Investor” for several years now, and there’s no question that digital technology plays an increasingly important role in investing, if for no reason other than to track your investments in real time. Please contact Trustee Martin ARBAGI if such a SIG appeals to you. Whether you’re a novice or an expert, we’d like to have you!

10% Discount to DMA
members!



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Owner

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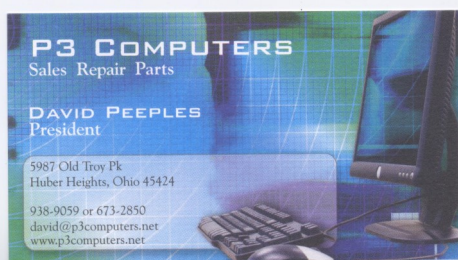
765-825-2054

www.whitewatervalleyrr.org



DMA Holiday Dinner!

Tuesday, December 10th at COMPANY 7 BBQ, 1001 South Main Street in suburban Englewood— click [here](#) for a map. Attitude adjustment (cash bar) at 6:00 P.M., dinner at 7:00.



5% Discount to DMA
members!
(Special orders excluded.)

Dayton Microcomputer Association

Events for December 2013

For additions or corrections, contact [Dave Lundy](#)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 7:00pm DMA Board of Trustees	3	4	5 6:30pm Genealogy SIG	6	7 3:00-5:00pm Classic Computers
8	9 7:00pm Dayton Diode Mtg.	10	11 7:00pm Dayton Dynamic Languages Users Group	12	13	14
15	16 7:00pm Amateur Radio SIG 7:00pm Apple-Dayton SIG	17 7:00pm Software Development SIG	18	19 7:00pm Linux SIG	20	21 Winter Solstice 3:00-5:00pm Classic Computers
22	23	24 No DMA Main mtg. - Happy Holidays	25 Christmas Day	26	27	28
29	30	31				



Click anywhere on the DMA Calendar (above) to go to the original at [DMA1.org](#).



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We have a new
Web Site!

DMA1.org

ESTABLISHED IN 1976, DMA is a group of Dayton-area professionals and hobbyists in the field of computing and information technology. General membership meetings are usually on the last Tuesday of each month. DMA has a number of Special Interest Groups (SIGs) in areas ranging from digital photography and genealogy to the Linux operating system. Each SIG meets according to its own schedule. DMA is a member of Association of Personal Computer Users' Groups (APCUG) and the Affiliated Societies' Council (ASC). Click on any of the logos — including our own — to go to that organization's Web Site.



Your 2013/14 Officers:

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Gary COY

Vice-President

Ken PHELPS

Secretary

Debbie MCFALL

Treasurer

Glady CAMPION

Trustees:

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Wynn ROLLERT

Ed SKUYA

Gary TURNER

Jim ULLOM

Webmaster:

Dave LUNDY

Submissions ...

THE DATABUS welcomes compliments, complaints, suggestions, and especially articles. We can accept articles in ASCII, or as attachments in Microsoft Word or Works, Open Office Writer, Word Perfect, or, yes, even WordStar! No PDF files, please. Send e-mails to:

Editor@DMA1.org

All articles are subject to editing for spelling, grammar, usage, and space. Always retain a copy of your work, as THE DATABUS cannot be responsible for loss. When articles are of roughly equal quality, those by paid-up DMA members usually receive preference.

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THE DATABUS is written and published by volunteers. We do not give professional advice on computer, network, or software installation, troubleshooting, or repair. If you need professional advice or other expert assistance, you should seek the services of a competent professional.

DMA Membership Application/Renewal

PLEASE ALLOW UP TO THREE WEEKS FOR APPLICATION PROCESSING AND INTERNET SET-UP

Name: _____ Birth date: ____/____/____
mo. day yearAssociate Name: _____ Birth date: ____/____/____
mo. day year

Address: _____

City: _____ State: _____ Zip: _____

Phone: (Home) (____) _____ - _____ (Work) (____) _____ - _____ x _____

I wish to have my name and address published in the club roster: YES ☐ NO ☐

E-mail address: _____@_____

Name of DMA member who recruited me: _____ (only new regular memberships)

Are you a current or recent DMA Member? Yes ☐ No ☐ Change of Address only? ☐ Today's date: ____/____/____

If you are renewing, please give your Membership Number (from your membership card) _____

Type of Membership

Application is for: New Membership ☐ Membership Renewal ☐ Associate Membership* ☐If applying for free student membership, please give school name and student ID number: Available only for students under 22 years old. (Student Members *cannot* vote in DMA elections.)

School Name: _____ Student ID#: _____

* A family or associate membership is an additional membership for a member of your immediate family or someone else who is living in the member's household. If this is a family or associate membership, give name of regular member:

Dues/Fees (Dues and Fees are subject to change without prior notice):

Membership (one year — New or Renewal)

1.) ☐ \$25.00

Family or Associate Membership (must live at same address as regular member)

2.) ☐ \$12.50Free Student Membership for students under 22 yrs of age. (Student Members *cannot* vote in DMA elections.)3.) ☐ FREE

Please assign me a user ID for E-mail and Usenet news access one-time setup fee for new E-mail accounts.

4.) ☐ \$10.00

Total — Lines 1 and 2 (+ 4 if checked)

5) \$ _____

☐ Cash☐ Check

Check # _____

Make your check payable to Dayton Microcomputer Association, Inc. (DMA), and then send the check and application to:

PO Box 340402

Beavercreek, OH 45434-0402

DMA Use only: Membership # _____

Exp. Date: ____/____/____

Processed by: _____

REV: 25 November 2013

Click [here](#) to pay your dues
using PayPal. Simplified
Membership Form, too!