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**Wireless N
Buyer's Guide
By Tom Callow**

[*Editor's Note: Article is based on Tom Callow's SIG-Techniques talk of 2-12-2012*]

Note:

The term "Wireless N router" is intended to refer to both wireless routers and wireless access points. A wireless router is a wireless access point with routing capabilities built in, but most wireless access point devices sold in the consumer market are also routers. For the purpose of discussing the wireless characteristic and capabilities of such devices, the two terms are used interchangeably.

Standards

The older standards are the 802.11g and 802.11b standards. The 802.11n ("Wireless N") standard is now mainstream.

The future will see a new standard, the 802.11ac ("Wireless AC") standard. Wireless AC devices are expected to arrive in stores by the end of the year. In Wireless AC, faster Wi-Fi is achieved by using beam forming, wide bands and multiple antennas to deliver as much as 1.3 Gbps (Gigabits per second) of real-world throughput with a longer range and better wall penetration. Broadcom expects to ship chipsets for some of these improved products by the second half of 2012.

The Wi-Fi Alliance may have a Wireless AC certification program in place by the end of 2012. However, the IEEE probably won't have completed the actual standard by then. Wireless AC access points are expected to be backward compatible with Wireless N.

Wireless AC will operate in the 5 GHz band, one of the two bands used by Wireless N.

What Kind of Network User Are You

In considering what kind of Wireless N devices to buy, your requirements will be different if you are: (a) A single home user who just wants to web surf, or (b) A heavy duty gamer, a multimedia enthusiast, or a small business. In case (b) consider what it is that will be transferred over the wireless network, streaming video and/or a lot of files and/or large files. Your backup needs also have to be taken into consideration.

Challenging Technology

The wireless router can be a challenging piece of technology to select and set up. One router can connect differently from one location to the next, although vendors are increasingly developing Wireless N routers with more robust consistent performance. Different routers may perform differently at the same location. Wireless N routers are slower than wired connections. Particularly with respect to your desktop, it may still be better to skip the wireless network completely and go with a wired connection.

Single Band or Dual Band

Wireless N can use either 2.4 GHz or 5 GHz band. A single-band Wireless N router will use the 2.4 GHz band. But a dual-band Wireless N supports both the 2.4 and 5 GHz frequencies. The 5 GHz band is less crowded than the 2.4 GHz band. Unfortunately there are fewer devices that run on the 5 GHz band, but it is better for throughput intensive work within your own networks, such as gaming or file streaming. With 5 GHz you will get better internal network performance.

The 5 GHz band has many more channels; up to 23 non-overlapping channels can be used simultaneously. However, the 5 GHz band does not sustain the signal at longer distances as well as the 2.4 GHz band. This is a consideration when placing the router in your home or office.

Overlapping channels is a concern with the 2.4 GHz band. While the 2.4 GHz band has 14 different channels, only three of them are non-overlapping. You have to have non-interference in all three channels to maximize throughput in the 2.4 GHz band. If the three non-overlapping channels in the 2.4 GHz band are used simultaneously, it uses up to 87 percent of the total band. If there is interference from other devices, or interference from one or more of the channels, the throughput goes down greatly.

The 2.4 GHz band is commonly used by other devices, such as Bluetooth and microwave ovens. Certain car manufacturers also use this frequency for their internal movement sensors.

The fact that devices support Wi-Fi doesn't tell you much — They may be Wireless B or G devices. Even if they support Wireless N, the support may only be for the 2.4 GHz band. The iPhone 4 and even the newer iPhone 4S only support Wireless N on the 2.4 GHz band. The Amazon Kindle with Wi-Fi, Amazon Kindle Fire, Barnes & Noble Nook and Sony e-reader only support Wireless N in the 2.4 GHz band, as do the ASUS Eee Pad Transformer Prime, Acer ICONIA TAB and iPod Touch.

Newer devices are more likely to support the 5 GHz band. The iPad and iPad2 work with both bands. The Motorola Xoom Android table also supports both 2.4 GHz and 5 GHz.

Wireless by the Numbers

150 Mbps (Megabits per second) is the maximum link rate using one channel in either the 2.4 GHz or 5 GHz band of Wireless N. There are still many inexpensive Wireless N devices that don't try to exceed the 150 Mbps maximum link rate. Any greater link rate is produced by channel bonding.

A 300 Mbps rated wireless device may be nothing more than a dual band router with each band running at 150 Mbps, or a 300 Mbps rated wireless device may be using Channel bonding to double the bandwidth of the wireless link on one band. The Wireless N standard specifies a 300 Mbps theoretical bandwidth when using channel bonding. Channel bonding substantially increases the risk of interfering with nearby Wi-Fi networks due to the increased spectrum and power it consumes. Channel bonding often will not be implemented by default, to keep interference low.

In the Linksys devices, channel bonding is created by switching from 20 MHz to 40 MHz operation. If backward compatibility is needed, it may be necessary to set channel bonding to mixed mode, because 802.11b and g standards do not support channel bonding.

300 Mbps is pretty much the standard speed of all except the most expensive Wireless N Wi-Fi routers. This means that when tested under the best circumstances, with no interference, the router can achieve a link speed of 300 Mb per second. In the real world you will never see a link rate at the Wireless N router's rated speed. Issues such as channel overlap, interference, distance between the wireless devices and walls between the wireless devices

mean a Wireless N router in a typical home or office environment will never reach the theoretical link speed claimed by vendors. Count yourself lucky if you attain close to half the link speed the vendor says the router is capable of.

450 Mbps, 600 Mbps, 750 Mbps and even 900 Mbps Wireless N routers are now being marketed. 450 Mbps routers add an additional set of antennas and an additional data stream to increase the theoretical speed of a 300 Mbps router by 50 percent. Actually this is channel bonding 3 rather than 2 channels. A 450 Mbps router may be a dual channel router with one band at 150 Mbps and another at 300 Mbps. A 600 Mbps router is simply a dual band Wireless N router broadcasting 300 Mbps on each band. A 750 Mbps router is a dual band Wireless N router that supports 450 Mbps on one band and 300 Mbps on a second band. A 900 Mbps router supports 450 Mbps on each of the 2.4 GHz and 5 GHz bands.

Note that "dual band" does not mean that a device can connect to both bands at the same time. A dual band USB adapter rated as a 300 x 300 adapter still only connects to one band at a time. You could use two adapters, such as a built-in notebook wireless adapter and an external USB adapter to connect the device to the Wireless N network on both bands at the same time. However, notebook computers and other wireless devices generally are not designed to take advantage of both connections at the same time to increase the throughput of a single data stream.

Note, also, that both bands of the wireless connection must support the 450 Mbps speed in order to attain the higher speed. Most built-in Wireless N adapters in notebook computers, and even most external USB adapters still only support 300 Mbps and will not take advantage of the higher speeds supported by a 450 Mbps per-band router.

Note that the speeds are measured in megabits per second, not megabytes per second. In the following table comparing link speeds in Megabits per second and Megabytes per second, Mbps represents megabits per second, MBps represents megabytes per second and Gbps represents Gigabits per second:

* 300 Mbps = 37.5 MBps
* 450 Mbps = 56.25 MBps
* 600 Mbps = 75 MBps
* 750 Mbps = 93.75 MBps
* 900 Mbps = 112.5 MBps

By comparison:

* USB 1.0 – Up to 12 Mbps or 1.5 MBps
* USB 2.0 – Up to 480 Mbps or 60 MBps
* USB 3.0 – Up to 5000 Mbps or 625 MBps
* 802.11ac – Will support up to 1.3 Gbps, or 162.5 MBps of real world throughput on the 5MHz band (and not split between two different bands).

What You See and What You Get

The numbers given above refer to the link speed, or "physical layer rate" (PHY), which is the maximum rate that bits will move across the wireless network. Even wired connections won't deliver actual throughput equal to the PHY. Older gigabit connections (1000 Mbps) might deliver only around 600 Mbps, while even current adapters might actually deliver only about 900 Mbps. On a wireless connection, a 300 Mbps router and client adapter card combination might deliver only about 50 to 90 Mbps.

There is a lot of overhead involved in maintaining wireless connections. Wireless networking requires communicating a lot of information other than the actual data. There will be more retransmissions of data packets due to the inherent unreliability of wireless connections. Connecting a Wireless G or B device to a Wireless N router also slows down the entire wireless network. The much slower devices force the router to slow down to talk to them, which also tremendously slows down simultaneous Wireless N connections. The good news is that most of the time, the backward compatibility mechanisms only slow down the router when the legacy devices are actually connected to the network.

In the real world, the fastest cable Internet plans you can now get have download speeds of 105 Mbps. Economy plans usually provide 1.5 Mbps for about $20-$25 a month. High-speed DSL providers can reach about 15 Mbps downstream on copper connections and up to 50 Mbps or even higher on fiber-optic connections. Satellite Internet providers reach a maximum speed of about 2 Mbps in some areas. So a good quality single band Wireless N connection should be adequate for almost anyone's Internet access.

Other Characteristics Affecting Throughput

Wireless N routers support WPA2/AES (802.11i/Advanced Encryption Standard) security. This is the highest level of security available to most home users. In the corporate setting, higher levels of security are supported by external infrastructure devices, such as Radius servers.

Most Wireless N routers will drop throughput down by up to 80 per cent if you use WEP (Wired Equivalent Privacy) or WPA/TKIP (Wi-Fi Protected Access/Temporal Key Integrity Protocol) security. The Wireless N specification provides that link rates above Wireless G levels (54 Mbps) can't be enabled if either WEP or WPA/TKIP is being used). You should use only WPA2/AES security, or no security at all, if you don't want to throw away speed.

802.11e defined a set of QoS (Quality of Service) enhancements for wireless LAN (Local Area Network) applications. The standard is considered of critical importance for delay-sensitive applications such as VoIP (Voice over Internet Protocol) and streaming multimedia. WMM (Wi-Fi Multimedia, or Wi-Fi Multimedia Extensions) was developed by the Wi-Fi Alliance to spur interoperable QoS among different vendors. It was a stop gap measure while 802.11e was making its way through the slow IEEE review process.

WMM provides basic prioritization of data packets based on 4 categories: (1) Voice; (2) Video; (3) Best effort and. (4) Background. WMM support is required for products to pass the 802.11n certification. It therefore is enabled by default on all Wi-Fi certified routers. Even if you don't have any WMM aware devices on your network, disabling WMM may limit link speeds to 54 Mbps.

Other Features Commonly Found in Wireless N Devices

Generally, the more expensive the wireless N Router, the more features it has. The most expensive routers may also be the easiest to set up. This does not mean that the throughput is better than on a less expensive wireless device. The capabilities and features often

have to be matched at both ends of the wireless connection, and wireless access point, or router, and at the computer or other wireless device.

WPS (Wi-Fi Protected Setup) is a standard that attempts to allow easy establishment of security for home networks. The goal was to allow home users who know little of wireless security to set up encryption with WPA2. It also makes it easy to add new devices to an existing network without entering long passphrases. However, a major security flaw in WPS was revealed in December 2011 that allows remote attackers to recover a WPS PIN, and then use the PIN to recover the WPA's two pre-shared keys within a few hours. Users have been urged to turn off the WPS feature. You may, therefore, want to look for a wireless router that allows you to turn off WPS, since not all of them do. Apparently, in some devices, including those made by Linksys, disabling WPS in the user interface does not result in the feature actually being disabled.

Some of the more expensive latest generation wireless routers are supporting IPv6. Home users are not likely to need IPv6 any time soon, but IPv6 is the future and may keep you from having to replace your router down the line.

Some wireless routers have USB ports permitting you to plug USB storage devices and printers into the router. However, most new printers either support or have wireless as an option, which may work better over the network. The USB ports on some Wireless N routers support only plugging in storage, not printers. The USB connection and a USB storage device may provide network attached storage.

Some reviews indicate that network attached storage support is either slow or with limited functionality.

External antennas provide the ability to substitute more powerful antennas to improve signal strength. A lot of the Linksys routers have the antennas built-in with no ability to plug in an external antenna. Where you plan on having substantial distance between the router and wireless devices, or multiple walls reducing the signal, an external antenna replacement may solve low signal problems.

If you are a parent, you may want to consider a more advanced Wireless N router that implements parental controls limiting the access of your children to different websites. The router may restrict access to certain domains or URLs or may limit the hours at which Internet access is available. Some routers have only limited control, extending to only a few domains. However, Netgear provides a live parental control. Its parental control products use OpenDNS to filter accessible websites. It allows families to restrict access to unsafe and inappropriate websites. There is filtering for more than 50 categories of content.

The "Guest Access" feature on some routers allows guests to connect to the Internet through the router without being able to access files and folders on your network.

Some other router features include:
* SPI (Stateful Packet Inspection) firewall to keep track of the state of network connections traveling across it. This distinguishes legitimate packets for different types of connections, so that only packets matching a known active connection will be allowed through the firewall.

* Port triggering, which allows a host machine to dynamically and automatically forward a specific port back to itself. Port triggering opens an incoming port when your computer is using a specific outgoing port for specific traffic.

* VPN (Virtual Private Network) pass-through.

* Gigabit switch built-in for quick file sharing.

* Media server streaming of video and media files from a USB attached storage device to universal plug-and-play or DLNA (Digital Living Network Alliance) compatible devices.

**Have Fun with Your
Digital Images
Using JibJab
By Ira Wilsker**

SAMPLE "STAR WARS" JIBJAB CREATED FOR THIS COLUMN: <http://sendables.jibjab.com/view/IiMDHNAWjGLB2wRq>.

This past week, three of my family members had birthdays. Rather than send them traditional paper birthday cards, or canned e-cards, I decided to do something a little different; I created a series of humorous musical videos using their faces in the videos. Some of the videos I e-mailed directly, while others were posted on Facebook, as a public celebration of their birthdays. The website that I used to create these videos is JibJab <http://jibjab.com>.

You may have seen JibJab videos in the past and not known it. Some of the local morning news shows have created and shown JibJab videos using the faces of local celebrities in the comical videos. On several occasions, on some of the cable news channels and cable comedy shows, JibJab videos

have played a prominent part in a funny or satirical presentation. Imaginative individuals have posted over 16,400 JibJab videos on YouTube, which is a good resource to see what creative people can do on JibJab.

For those who might not be aware of JibJab, it is a web based service that offers its users over a thousand personalized e-cards, and over 500 "Staring You" videos and photos that can be personalized with the faces of anyone who has their image on a digital photo. While there are often a limited number of e-cards and videos available to anyone for free, often with a nearby holiday theme, JibJab requires a paid membership in order to make full use of its services. A typical membership on JibJab costs only a dollar a month ($12 per year), but sometimes discounted deals are available; I recently paid $6 for my annual membership, taking advantage of a daily deal posted on dealnews.com. A user can login to JibJab using an existing Facebook account, or the user can create his own JibJab account.

With Valentine's day fast approaching, **[*Editor's note: Not too soon to start planning for 2013*]** that special day will be a busy day for JibJab <http://sendables.jibjab.com/valentines/category/valentines_day>. JibJab offers a total of 136 Valentine themed e-cards and videos, some of which are available for free, without a paid membership. While the e-cards are cute, I personally prefer the customized videos using the images of my acquaintances. For those who may not be romantic, or want other genres, JibJab also offers large collections of themed e-cards and videos for other occasions, including birthdays, anniversaries,

weddings and engagements, get well, Christmas, Hanukah, Halloween, Thanksgiving, 4th of July (and other patriotic holidays), thank you cards, friendship, and several other topics and events. Some categories are explicitly for children, often utilizing popular cartoon or nursery rhyme themes.

To create a JibJab video, open the website at JibJab.com and choose a topic, event, or genre. Under each of those is a selection of relevant e-cards and videos. The items that are available to all for free have a red "FREE" banner on the top-left corner, while all of the others require the paid membership. For demonstration purposes, I selected the "Dance" group which displayed four free dance videos, and 18 for members only. The four free dance videos, all of which can be customized to use anyone's faces, include Star Wars, Disco, Chippendales, and Justin Bieber. To create a particular video, simply click on it and follow the uncomplicated on-screen instructions.

For this column I chose to put myself in the freely available "Star Wars — A New Hope" video. Clicking on the "Get Started" button opened another window where photos in the JPG or PNG formats can be uploaded from the user's computer or imported from Facebook. Once uploaded, the images can be zoomed, cropped, dragged, and tilted to fit in the template shown, with the eyes lined up on a specific line. If the face on the uploaded image is of unusual shape, there is an opportunity to fine tune the shape by dragging an outline to better fit the image of the face. Many of the videos have the characters talking or singing, so there is a step where the shape of the mouth is selected, again with the provided template dragged to

the shape and size of the mouth in the image. The image can then be named and saved for later use. The process is repeated until the desired number of faces have been imported into the service. For the Star Wars video I used the faces of one of my granddaughters, my wife, Governor Perry, and my face. Total time to upload, align, and name all four images was about two minutes. I then had to drag and drop the faces onto the "question marks" in the video template, which only took a few seconds. I previewed the video to make sure that it looked ok, and then clicked "done."

In a matter of seconds, JibJab created my Star Wars video, which is now available for viewing at <http://sendables.jibjab.com/view/IiMDHNAWjGLB2wRq>. Total time from selecting the video, uploading and aligning the faces, dragging the faces into place, and showing the finished video was just under five minutes. For free, the finished video can be posted on Facebook, shared on Twitter and MySpace, e-mailed (the link), embedded on a website (code provided), or downloaded (for a fee). If paid for and downloaded, the video can be uploaded to Facebook and YouTube, used in PowerPoint, loaded on to a smart phone, or saved to a computer or other type of storage device or media. Non-members pay $4.99 to download a video, while members pay $1.99.

For only a dollar a month (discounts sometimes available), JibJab allows the user to create, post, and send any or all of thousands of highly personalized videos and e-cards. In addition to a few minute long video, using some third party media burning software, multiple JibJab videos can be burned to a CD

or DVD and played in series. For a recent departmental Christmas party, I spent one evening creating about a dozen Christmas and Hanukah themed JibJab videos, burned them to a DVD, and entertained the group for a full hour of continuous guffaws and hysterical laughter. All of the images in the videos on the DVD were of my co-workers in a variety of musical, comical, and classical themes, some a little risqué. Watching my co-workers sing, dance, and act in classical and artistic roles was very funny. In one classical Christmas Story scene, my secretary froze her tongue to the schoolyard flagpole; in another classical JibJab movie a co-worker played the part of George Bailey in "It's a Wonderful Life," with other co-workers playing the other roles. Among hoots and hollers, we all watched ourselves square dance, disco, tango, break dance, Charleston, and perform other theatrical and circus acts.

Whether using the limited free selections, or the reasonably priced complete collection of videos and e-cards, JibJabs are fun and fast to create and share.

WEBSITES:

<http://jibjab.com>.
<http://www.youtube.com/results?search_query=jibjab>.

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Undelete or Unerase Accidently Deleted Files with Recuva By Ira Wilsker

I plead guilty. I admit that I have sometimes deleted files that I should not have deleted. Often, I realize the mistake fairly quickly, but sometimes I am unaware of my error for several days. Since its earliest days, Windows has had a trashcan or "Recycle Bin" where deleted files are stored until the trashcan is emptied. If the deleted file is still in the Recycle Bin, restoring it to its original location is typically an easy task; simply click on the Recycle Bin icon on the desktop or the Recycle Bin in Windows Explorer (or any other file manager), click or highlight the file, and then click on "Restore this item" on the menu bar. Alternatively, from the open Recycle Bin in any file manager program, right click on the file name and select "Restore"; the file will instantly be restored to its original location.

This straightforward method of recovering deleted files from the Recycle Bin is fast and reliable, but all too often users like me frequently empty the recycle bin either manually or with a quick drive cleaner such as CCleaner. Luckily for us, even if a file is gone from the Recycle Bin, there is still a chance that it can be recovered. Unless the deleted file has been intentionally wiped (a process to securely erase a file by repeatedly overwriting it with random data, usually zeros and ones), or overwritten in the normal course of writing to the hard drive, it can likely be recovered. In Windows, when a file is first deleted, it is still intact on the hard drive, but the first character of the filename is changed to a "?",

which tells Windows to skip the file when using a file manager such as Windows Explorer to display the files in a directory. This "?" also tells the hard drive and its controller that the space taken up by that file is available to be overwritten, as the file has been deleted, and can be used to store other files. Once a file, or major parts of the file, has been overwritten by other data, the likelihood of recovering that original data is significantly reduced. If for no other reason than this, it is important to have one or more file recovery programs already installed on your computer, because the simple act of installing a file recovery program after a file has been deleted may overwrite the exact file space that contains the targeted deleted file, rendering it unrecoverable!

There are several fine, and often free, file recover utilities that can undelete or unerase recoverable files. My personal favorite is one of the most widely used free undelete utilities, Recuva <http://www.piriform.com/recuva>. Recuva will run on almost all builds of 32- and 64-bit Windows, and can possibly recover files from a variety of media including the Windows hard drive, a memory card such as those found in digital cameras and cell phones, and MP3 players including iPods via their USB connection to the computer. While I always install Recuva on all of my computers as one of the first utilities installed, I also have the portable version of Recuva on the flash drive that I have on my car-keychain for use on others' computers that have files to be recovered, but do not have an undelete utility installed; this eliminates the chance of overwriting that target file which could possibly happen if I actually installed Recuva on the target machine. Using Recuva I have successfully recovered countless deleted files including digital photos, e-mails, music, videos, compressed files, Word files, Excel files, and a variety of other data and program files. Contrary to popular belief, formatting or simply erasing a hard drive or other media does not necessarily delete all of the content, and Recuva can often recover data from formatted or apparently erased and blank storage devices.

Recuva is easy and fast to use. First, download the 2.4 MB free version (paid versions are also available) from <http://www.piriform.com/recuva/download/standard>. Installation is quick and easy, with few options to select. Upon opening the installed Recuva, a wizard appears that will walk the user through the recovery process; advanced users can skip the wizard and go directly to the recovery console. When using the wizard, the user selects the type of files to be recovered, which speeds up the search and recovery process by only searching for recoverable files of the selected types. If the "Show all files" option is selected, the search process may be slowed substantially as there is more searching to be done. The wizard then asks the user if he knows where to look for the deleted files, such as on a media or memory card, in "My Documents," in the Recycle Bin, in a user selectable specific location or directory on the hard drive, or "I am not sure" which will be slow as it searches everywhere on the computer. The last of the wizard windows informs the user that the wizard is now ready to search for, and display the recoverable files. If the deleted file is not found, the user may select to perform a "Deep Scan"

which is much slower, but will do a much more detailed scan.

I attempted a standard scan for missing files in My Documents on my hard drive, a 4.4 GB directory, containing almost 6000 files in over 200 sub-directories; the initial search took 12 seconds. I tried a search on my entire hard drive, which has 545 GB of files, and it completed the initial search in 127 seconds. Once Recuva compiled a listing of potentially recoverable files, it then analyzed the results to determine the degree of recoverability, and this can take several minutes or more up to an hour for a large hard drive. The results are displayed in a sortable format, with the first column being a colored dot icon, green, yellow, and red, with the obvious green icons indicating recoverable files (labeled as "Excellent"), yellow indicating that the chance of recovery may be poor, and the red icon indicating that the file has been overwritten and is unrecoverable. Clicking on a filename in the left column makes information available in the right window. In some cases, a preview of the file may be available in the right window, and selecting the "Info" tab displays all of the technical information about the selected deleted file. If a selected file is recoverable, clicking on the "Recover" button on the bottom right of the window will recover the file and restore it to its original location.

The free version of Recuva is one of those free utilities that should be on every personally owned PC, and the paid commercial versions (or similar products) should be installed on all institutional computers. One never knows when it will become necessary to recover deleted files, and Recuva

is one of the top programs to perform that task.

WEBSITES:
<http://www.piriform.com/recuva>.
<http://www.piriform.com/recuva/download/standard>.

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Prepare and File Your Federal Income Taxes For Free By Ira Wilsker

It is that time of year again. We are in the process of receiving W-2 forms, 1099's of various types, and other documents that we will need in order to prepare our income taxes. While many people still use the paper-pencil-calculator method of completing the mandated Federal tax forms, there are a variety of free online and downloadable tax software packages that are available, as well as several popular commercially available income tax packages, with TurboTax and H&R Block at Home (formerly known as TaxCut) being the top selling commercial packages. For those who prefer to have others prepare their taxes, CPA firms and store front tax services are readily available.

As it has done in the past, the IRS has compiled a list of 16 approved online tax preparation services on its FreeFile website <http://apps.irs.gov/app/freeFile> that will for free, prepare and e-file Federal income taxes for eligible individuals. While the eligibility standards for each of the IRS listed free services varies, the IRS still claims that

about 70% of all individuals are eligible for the free filing services. What is new is that the IRS (through a third party, <http://www.freefilefillableforms.com>) has now made electronic versions of many of its forms available which can be completed by anyone for free, and e-filed without using one of the other free online services or other commercial tax preparation products. These free fillable forms can be filled out on the computer or printed and filled in by hand, and then e-filed. Unlike the online and commercial tax software that computes the users' taxes, the free fillable forms are just interactive blank forms, and do not carry out any calculations or give any advice.

Something else that is available this year is an independent third-party rating of the free tax services by Gizmo's <http://www.TechSupportAlert.com>. The Gizmo community based service has tested and rated all of the free tax services listed on the IRS FreeFile website, and has posted its reviews, ratings, and recommendations <http://www.techsupportalert.com/best-free-income-tax-filing-software.htm>. While the IRS FreeFile list has 16 services listed, the Gizmo ratings can only recommend eight of those listed. In addition to the eight free online services recommended by Gizmo, there is also one top-rated "10 Star" stand-alone tax program that can be downloaded and run on the user's computer. This downloadable free program is TaxACT Free Edition, and has earned "Gizmo's Freeware award as the best product in its class!" <http://www.taxact.com/s_taxact/free_taxact.asp>. Available for Windows computers only, this free program is limited to a single tax return, but can process almost all Federal forms and schedules. College students may find TaxACT Free Edition helpful as it also includes a "College Student Financial aid worksheet."

Gizmo's community of reviewers, in its ratings and evaluations, has recommended the following free online tax preparation services in this order based on their overall score: TaxACT Free Edition Online (rated a "10"), was also listed as "Gizmo's Freeware award as the best product in its class!"; H&R Block's Free File (9 star rating), which also offers free state filing for residents of AL, AR, GA, IN, MI, MN, MO, NY, NC, OK, OR, SC, VA; TaxHawk (8 star rating); FreeTaxUSA IRS Free File Edition (8 stars); FileYourTaxes.com (7 stars); Jackson Hewitt Online (6 stars); TaxSlayer (6 stars); and TurboTax Freedom Edition (6 stars).

The Gizmo community also reviewed the IRS' new "IRS Free File Fillable Forms," but only gave it a rating of 5 stars (below Gizmo's minimum recommended rating of 6 stars). While these free fillable forms are available to everyone, without limitations, Gizmo states that these, " … online versions of paper forms [are] designed for people comfortable preparing their own tax returns. No interview process. No help screens. Many values must be transferred manually from the Schedules to other places in the return. Many calculations must be done manually, …Federal only, no state returns."

While the IRS claims that 70% of taxpayers can use the free online tax services for preparing and e-filing their taxes, eligibility for each of the 16 listed services varies. Generally, users of these free online services must have an adjusted gross income (AGI) of $57,000 or less (the $57,000 AGI is the upper limit

for the IRS approved FreeFile services), with some services having even lower eligibility requirements. The TurboTax Freedom Edition is one example, offering its free service to anyone with an adjusted gross income of $31,000 or less, unless active duty military, then the $57,000 or less eligibility kicks in. Anyone eligible for the Earned Income Tax Credit can also use the TurboTax Freedom Edition. Several of the services have eligibility restrictions based on the states of residence, and are either available only to residents of certain specified states, or are available to the residents of any states except those explicitly listed. For example, there are several of the free filing services listed by the IRS that are available to residents of most states, but not Texas (and others). Those services as listed by the IRS that are explicitly not available to Texas residents are OnlineTaxPros.com, Free1040TaxReturn, Tax Simple, 1040NOW.NET, and ezTaxReturn.com. The other 11 free services listed by the IRS allow eligible Texas residents to use their services. Some of the services are for the residents of all states, while a few are only for residents of a small number of states; obviously this can be a strong influence on which service to select based on the state of residency.

Some of the free services are only available for tax payers of certain age ranges (with some exceptions); TaxSlayer is for people age 25 or younger (with some exceptions), while FreeTaxUSA IRS Free File Edition is only available to people between the ages of 23 and 64. 1040NOW.NET is for age 72 or younger, while Free TaxACT is for those between 19 and 55. Details and eligibility requirements for each of the IRS approved FreeFile providers is available on the IRS website at <apps.irs.gov/app/freeFile>, and should be reviewed before selecting a free online tax preparation service.

Since the eight Gizmo top-rated free online tax preparation services, and the free downloadable software from TaxAct, all use an interview method to collect relevant tax information, make all necessary calculations, and check for errors before e-filing, those would be the ones that I would recommend to eligible taxpayers with an adjusted gross income of less than $57,000. Since 70% of taxpayers can use these free online services to prepare and e-file their federal income taxes, eligible taxpayers can save a lot of time and money by utilizing these services.

WEBSITES:
<http://www.techsupportalert.com/best-free-income-tax-filing-software.htm>.
<http://apps.irs.gov/app/freeFile/>.
<http://www.irs.gov/efile/article/0,,id=118986,00.html?portlet=106>.
<http://www.freefilefillableforms.com>.
<http://www.taxact.com/s_taxact/free_taxact.asp>.

Ira Wilsker is a Columnist, The Examiner, Beaumont TX; Program Director of Management Development at the Lamar Institute of Technology, Beaumont TX; and a radio and TV show host. Contact him at <iwilsker@sbcglobal.net>.

Pictures: Recent SEMCO Meetings: <http://www.tinyurl.com/y8cm99e>
Video: Recent SEMCO Meeting: <http://www.tinyurl.com/363vnbd>
Podcasts: Podcasts of SEMCO meetings can be found at: <http://www.semco.org/podcasts.htm>.

FEBRUARY REFRESHMENT DONORS
Coordinator: Richard Jackson
Donors:
Brian Brodsky
Warner Mach
Roland Maki
Kenneth Philips
Carol Sanzi

SEMCO

Serving the needs of professionals, hobbyists, novices, and prospective computer users since 1976.

* Learn more about computing in an informal, non-academic setting.

* Get honest answers to computer questions without commercial bias.

* Meet and interact with other computer users. Personal and electronic networking.

* Gain access to members willing to provide help in response to a phone call or e-mail.

* Receive monthly newsletter with informative articles.

Upcoming Events:

Penguicon 2012
Will be held April 27 through 29 at:
Hyatt Regency Dearborn
600 Town Center Drive
Dearborn, MI 48126

Early registration at:
<http://penguicon2012.eventbrite.com>
Cost is $40 (Early Registration) or $50 at the door.

APCUG/CAMUG 2012 Regional Computer Conf.
Will be held Fri., July 13; 8:00 AM through Sat., July 14; 5:00 PM at:
Walsh University
2020 East Maple St NW
North Canon, OH 44720

Early registration at:
<http://tinyurl.com/2012-Regional-Conference>
Cost is $50 to $75 depending on how early you register

SEMCO Meeting Pictures

(Above) At SIG-Computing, Gene Barrow discusses (remotely) how to partition and backup hard drives. (Below) At SIG-Techniques, Tom Callow talks about Wireless networks.

SEMCO Planning Pictures

At Shield's Pizzeria on February 4 for SEMCO planning meeting.

BOARD MEETING
2/12/2012
Carol Sanzi

Board Members Present

President Mike Bader, Vice President Richard Jackson, Treasurer Bette Gay, Secretary Carol Sanzi, SIG-Computing Chairman Tom Callow, SIG-Advice Chairman Franz Breidenich, SIG-Linux Co-Chairman Michael Rudas, Publications Committee Chairman Warner Mach, and Members-at-Large Bob Clyne and Brian Brodsky. Also attending were provisional SIG-Programming designated representative Sikander Rashid, and member Edward Zaremba. The board meeting was called to order at 12:08 p.m.

Old Business

Bette Gay reported that the current treasury amount equaled a total of $9,348.30 with $4,594.08 in the checking account and $4,754.22 invested in three Certificates of Deposit. The membership currently is 75. It's time for William G. Agnew, Karl O. Anderson, Michael D. Bader, Franz H. Breidenich, Julie Comptois, Randy Kilgore, and Steve Yuhasz to renew their memberships.

Bob Clyne moved to authorize the payment of SEMCO's room rent to the Engineering Society of Detroit at the rate of $50 per Sunday meeting date for the period from January 2010 through January 2012. Tom Callow seconded the motion and it was carried.

Bob Clyne moved to authorize on a continuing basis the payment of SEMCO's room rent to the Engineering Society of Detroit at the rate of $50 per day for our regular Sunday meetings held at their facility. Tom Callow seconded the motion. Brian Brodsky moved to amend Bob Clyne's motion to include, on a continuing basis, the payment for dues for the Engineering Society of Detroit Affiliate Society membership. Richard Jackson seconded the motion and the amendment was carried. The amended main motion carried.

Bob Clyne moved to approve the SEMCO 2012 Budget as presented. Brian Brodsky seconded the motion and it was carried.

Bob Clyne moved to award Beth Fordyce an Honorary Membership for the year 2012. Tom Callow seconded the motion and it was carried.

Bob Clyne moved to appoint Robert Clyne, Brian Brodsky, Morton Stockler, Stephen Cook and Jerry Comptois to the Audit Committee. Tom Callow seconded the motion and it was carried.

Bette Gay moved to be reimbursed $88 for the purchase of 200 postage stamps and for the approval of the purchase of 200 postage stamps for $88 made on February 18, 2011. Bob Clyne seconded the motion and it was carried.

Carol Sanzi moved to amend the June 2011 minutes to include, "Bob Clyne moved to reimburse Carol Sanzi $7.45 for lemonade supplies. Brian Brodsky seconded the motion and it was carried." Bob Clyne seconded the motion and it was carried.

New Business

Bette Gay requested the Board to review the list of complementary copies of the DATA BUS that are mailed each month. It was decided to remove Robert Click from the list. The Sterling Heights Computer Club, the Computer Operators of Marysville and Port Huron, the Internet Advisor, and the NWA-PCUG Computer User Group

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SPECIAL INTEREST GROUPS (SIGS)

SIG-COMPUTING
Tom Callow

March 11: 1:45 p.m. : Keys to a Successful Online Business: Brian D. Renner, Founder and Managing Member of the Movie Insider LLC, which operates MovieInsider.com will speak on his experiences. If you've considered starting an online content business or wish to hear from an Internet entrepreneur, this talk is for you. Mr. Renner will highlight his major keys to success in the 12-year operation of his film website. Topics will include: online strategy formulation, user experience considerations, search engine optimization (SEO) and advertising monetization.

SIG-TECHNIQUES
Warner Mach

March 11: 3:45 p.m. : The Birth of the Modern Internet — a Personal Recollection: Mr. Steven Gold will speak about his personal experience being one of the early builders of the Internet.

SIG-PROGRAMMING
Richard Jackson

March 17: At the home of Richard Jackson. Contact Mr. Jackson for full details: (248) 546-3694. **Topic:** A review of chapter 6 — "Using Loops to Process Data."

SIG-ADVICE
Franz Breidenich

March 6/April 3 (Tues): 5:30 p.m.: At the Madison Heights Library located at 240 West 13 Mile Rd. one block West of John R. The parking lot entrance is off Brush St. The lot and entrance to the library is located in the back of the library. Topic: General discussion.

SIG-LINUX
Michael Rudas
Mike Bader

March 27 (Tues): 6:45 p.m.: At Motor City Free Geek, 1511 Jarvis St., Suite #10, Ferndale, MI 48220. The building is on the Northwest corner of Wanda and Jarvis - The first traffic light south of 9 Mile, on Wanda. Topic: TBA.

April 2012 DATA BUS DEADLINE (7th day after 2nd Sunday in month)
SEMCO Input and Members' Ads—Deadline: Sun., March 18, 11:59 p.m.
Members' personal ads are free. To mail, use Editor address on Page 2; e-mail address: <warnermach@gmail.com>. PLEASE send to arrive sooner than deadline.
Business Ads - Deadline: Second Friday monthly. Contact Editor (address Page 2).

Warner Mach
warnermach@gmail.com
(to post monthly computer group info)

**CALENDAR-OF-EVENTS
OTHER GROUPS**

COMP (Computer Operators of Marysville & Port Huron

March 7., 7 p.m., (1st Wednesday) Jane Wheatly 810-982-1187 or Pam Raisanen E-mail info: <compinfo@greatlakes.net>. Web: <http://www.bwcomp.org>. Topic: "Amazon's Kindle Fire."

Focus: Hope IT User Group

1400 Oakman, Detroit, MI. 48238. Web info <http://www.fhitug.org/>. See web site for details. Pre-registration required.

HUG (Holly User Group)

March 10, 9 a.m.-noon (2nd Saturday) Groveland Twp. Fire Hall, 3085 Grange Hall Rd. & Dixie Hwy., Holly, MI. 48442. Ron McCauley 810-629-9683. Topic: TBA.

MacGroup-Detroit

March 18, 3:00 p.m., Birmingham Temple, 28611 West 12 Mile Rd., Farmington Hills. Info: Terry White, <terry@macgroup.org> or 248-569-4933. <http://www.macgroup.org>. Topic: "Adobe Lightroom 4." SIGs: 2:00 PM.

MacTechnics, (MAC User Group)

March 17, (3rd Saturday); See web site for meeting time and location. <http://www.mactechnics.org>. JoAnn Olson at 248-478-4300. Topic: "Mac Tips n' Tricks II," by Fred Seitz

MDLUG (Metro Detroit Linux User Group)

March 10, 12:30–2:30 p.m., (2nd Saturday); MDLUG meetings will be at The Gaudior Academy located at 27100 Avondale Avenue in Inkster. Web: <http://www.mdlug.org>. Topic: TBA.

Motor City Free Geek

Every Saturday 1 p.m. to 5 p.m. 1511 Jarvis St. Suite #10, Ferndale, MI 48220. <http://www.motorcityfreegeek.net>. E-mail: <MotorCityFreeGeek@gmail.com>. Recycling & Open Source.

MUG (Michigan User Group)

March 13, 6:00 p.m., (2nd Tuesday): Farmington Community Library-Main Branch, 32737 W. 12 Mile Rd., Farmington Hills, MI. 48334. <http://www.mug.org>. Topic: TBA.

Oak Park Computer Club

Every Fri., 10:15 a.m. at Oak Park Library, Oak Park Blvd. west of Coolidge.

Royal Oak Computer Club

Every Wed., 12:30 to 2:30 PM at Mahany/Meininger Senior Community Center, 3500 Marais Ave., Royal Oak, 48073. Near Crooks & 13 Mile. Guest speakers & regular monthly speakers. <http://tinyurl.com/royaloakcc>.

SHCC (Sterling Heights Computer Club)

March 6/April 3, 7:30 p.m.(1st Tues); Macomb Community College South Campus, Bldg. K, 14500 E. 12 Mile Rd. Don VanSyckel <Don@VanSyckel.net>, 586-731-9232; Web: <http://www.SterlingHeightsComputerClub.org>. March Topic: "Wireless and Other Wonders of Home Networking."

will remain on the list. The APCUG Regional Advisor will be on hold until Bob Clyne researches the status.

Richard Jackson moved that the Provisional SIG-Programming be recognized as a full fledged SIG. Bob Clyne seconded the motion and it was carried.

Mike Bader is meeting with the Troy Senior Computer Group. He is assisting them in setting up their Computer Lab.

Bob Clyne reported that an APCUG Regional Conference will be held in Canton Ohio on July 13th and 14th. Early registration is $50.

Bob Clyne reported that Penguicon, a Sci-Fi and Open Source Convention will be April 27 to April 29th at the Regency Hyatt in Dearborn. Pre-registration is $40 for the weekend. There was a discussion about the possibility of co-hosting a party room to promote SEMCO. Bob Clyne stated that the cost be covered with personal funds.

Bob Clyne moved to adjourn at 12:47. Tom Callow seconded the motion and it was carried.

COMPUTER RESOURCE PEOPLE

This is a list of people willing to be resources for 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.

Almost Anything: Vander-Schrier	**MS Office for Windows:** Callow
AutoCAD: Comptois	**MS Word:** Clyne
Genealogy: Cook	**Networking:** Callow
IBM PC Hardware Issues: Clyne, Yuhasz	**Novell Netware:** Yuhasz
Operating Systems: Callow, Clyne, Yuhasz	**Quicken:** Clyne
MAC Hardware and OS Issues: Yuhasz	**Geocaching:** Cook
Security: Bader	**Relational Database Programming**: Lis

Bader, Mike—586-573-7330, 9am–8pm.................... mdbader@flash.net
Callow, Tom—248-642-5770, 9am–5pm.................. tcallow@monaghanpc.com
Clyne, Bob—810-387-3101, 9am–10pm .... clyne@mich.com
Comptois, Jerry—248-651-2504, anytime
Cook, Stephen—313-272-7594, eves........................ scook48227@ameritech.net
Lis, Bernie—248-669-0101, 10am-8pm .... BerlLis@comcast.net
Vander-Schrier, Jack—586-739-7720,12–8pm .... jvanders@comcast.net
Yuhasz, Steve... Help@yuhasz.org

**SOUTHEASTERN MICHIGAN
COMPUTER ORGANIZATION, INC.**

SEMCO CALENDAR

**Engineering Society of Detroit
20700 Civic Center Dr., Suite 450, 4th Floor
Southfield, MI. 48076
42°29'7" N by 83°14'29" W**

March 11—SUNDAY (Meet 2nd Sunday)

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

SEMCO General Meeting at 1:30 p.m.

Special Interest Groups (SIGs)

SIG-COMPUTING, 1:45 p.m.: Keys to a Successful Online Business: Brian D. Renner, Founder and Managing Member of the Movie Insider LLC, which operates MovieInsider.com will speak on his experiences. If you've considered starting an online content business or wish to hear from an Internet entrepreneur, this talk is for you. Mr. Renner will highlight his major keys to success in the 12-year operation of his film website. Topics will include: online strategy formulation, user experience considerations, search engine optimization (SEO) and advertising monetization.

SOCIAL PERIOD, 3:15 p.m., Refreshments! (Reminder: We must continue to maintain a neat environment.)

SIG-TECHNIQUES, 3:45 p.m.: The Birth of the Modern Internet - a Personal Recollection: Steven Gold, started programming mainframes in 1969, first at Lawrence Tech and later at WSU (yes, he predates personal computers). He left WSU in 1985 to take a position at University of Michigan's (UM) UMnet/Merit networking group, and in 1996 became part of the team which built NSFnet — the backbone which morphed into the modern Internet. He will speak about his personal experience being one of the early builders of the Internet.

SIG-Programming, March 17: At the home of Richard Jackson. Contact Mr. Jackson for full details: (248) 546-3694. **Topic:** A review of chapter 6 — "Using Loops to Process Data."

SIG-ADVICE, March 6/April 3 (Tues): 5:30 p.m.: At the Madison Heights Library located at 240 West 13 Mile Rd. one block West of John R. The parking lot entrance is off Brush St. The lot and entrance to the library is located in the back of the library. Topic: General discussion.
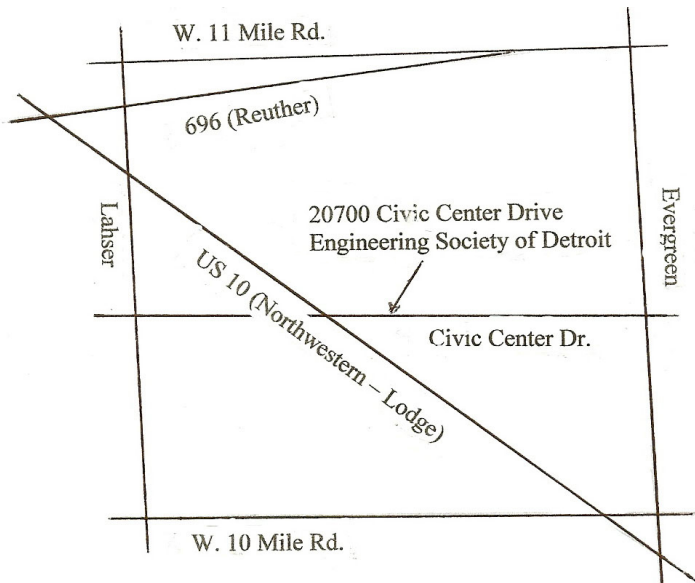
SIG-LINUX, March 27 (Tues): 6:45 p.m.: At Motor City Free Geek, 1511 Jarvis St. Suite #10, Ferndale, MI 48220. **Topic:** TBA.

April — No meeting in April because of Easter.

SEMCO Meetings at [Engineering Society of Detroit](#)
20700 Civic Center Drive, Suite 450, 4th Floor
Southfield MI 48076.
42°29'7" N by 83°14'29" W

From I-696 exit at Evergreen. Take Evergreen south to Civic Center Drive. Civic Center Drive is about halfway between I-696/Eleven Mile Rd. and 10 Mile Rd. Turn west, right if you are coming from the north, onto Civic Center Drive. Follow Civic Center Drive, watching the number signs on the right. When you get to the 20700 sign turn right, north, and follow the drive until you arrive at the southwest corner of the brown building with the Engineering Society of Detroit sign near the top. Turn right, east, and go past the front of the building. When you reach the end of the building, turn left, north and go to the back of the building and turn left, west, again. The parking lot will be on your right. The entrance is in the center of the building. Park in back of building. Enter the rear door. The ESD office is on the fourth floor.

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Computer Organization, Inc.
P.O. Box 707
Bloomfield Hills, MI 48303-0707

SEMCO (future meetings)
March 11
April – No Meeting (Easter)

SEMCO: A Community Organization
Helping People for the 21st Century