



A Monthly Publication of the Tampa PC Users Group, Inc.



Vol. 28 No. 1

January 2015

January in Tampa

## Meeting

### Password Presentation

by  
Dave Palmer

Wednesday, January 14, 2015

6:30 PM

Pepin Distributing Co.  
4121 N 50th Street  
Tampa, Florida

**Meeting Preview:** There is much more to passwords than you might think. And Dave Palmer will tell you the details. Bob LaFave will conduct the usual Windows SIG for the first 30 minutes of the meeting.

---

## Editor's Comments

By William LaMartin, Editor, Tampa PC Users Group  
[william@lamartin.com](mailto:william@lamartin.com)

**M**uch thanks to Merle Nicholson for providing a long article with several screen captures. I really needed help in getting the newsletter filled.

Last month I laid out all the problems I had on my Windows 7 computer caused by some sort of malware that, as best I could tell, I received while viewing a page at the New York Times on-line. You can never be totally sure about such things, but while viewing that page was the time I received the message about bad things happening on my computer. As noted there, within 24 hours I had everything fixed with no sign of any damage. I also mentioned that while coping with my computer problems, our washing machine appeared to malfunction; however, the cause was simply the city replacing our water meter without giving us any warning.

More about the washing machine in a moment. But first I want to announce that I will soon have a new version of my Windows

*Comments.....Continued on page 2*

### INSIDE THIS ISSUE

Meeting Preview	1
Editor's Comments	1
Minutes	2
RAID Hard Drive System	3
Picture of the Month	5
Links	5
Map	8

**February Meeting: To be announced**

**\*\* OFFICERS \*\***

President: John Witmer (president@tpcug.org)	949-8007
Vice President : Kevan Sheridan (kevan@tpcug.org)	988-6480
Treasurer: Doug Mullis (dmullis@tampabay.rr.com)	234-9343
Secretary: Merle Nicholson (merle@merlenicholson.com)	879-3602
Member at Large: Ron Weinberg (rswjbr@verizon.net)	960-4132

**APPOINTED (Volunteers)**

Editor: William LaMartin (william@lamartin.com)	251-3817
Programs: Doug Mullis (dmullis@tampabay.rr.com)	234-9343

**Home Page** <http://www.tpcug.org>

Bits of Blue is published by the Tampa PC Users Group, Inc., a State of Florida registered non-profit corporation, to provide educational information about personal computer systems to its members. Our mailing address is P. O. Box 3492, Tampa, FL 33601-3492.

However, for business concerning this newsletter, Bits of Blue, please contact the Editor, William LaMartin, at 813-251-3817, or william@lamartin.com.

Technical information found in this publication is not necessarily compatible with your hardware and software, plus other errors or misprints could occur from time to time. Therefore, the use of programs, commands, functions or anything of a technical nature appearing in this publication will be at your own risk.

**RENEWING YOUR MEMBERSHIP?**

WE CERTAINLY HOPE YOU WILL

MAIL YOUR CHECK AND ANY  
ADDRESS OR NAME CHANGES TO:TAMPA PC USERS GROUP  
PO BOX 3492  
TAMPA, FL 33601-3492\$25 Individual                      \$35 Family  
\$60 Corporate = 3 employees + \$20 each add'l employeeGo to our web site <http://www.tpcug.org> and click on the  
About Us | Join link to join or renew online

Check the address label for your renewal month

**Friend of the User Group**

*We acknowledge  
Pepin Distributing Co.  
for their support*

**Affiliations**

Florida Association of User Groups  
Association of Personal Computer User Groups

**Minutes of the December Meeting**

*By Merle Nicholson, Secretary,  
Tampa PC Users Group  
[merle@merlenicholson.com](mailto:merle@merlenicholson.com)*

**O**ur December meeting has been for several years an occasion to socialize without the usual program. Our president, John Witmer, catered a dinner for the club members and guests for an evening's enjoyment. As in the past, John reserved a nice corner at Pepin Distributors for the more than 20 attendees. John obviously works hard to set this up for us and the spread was up to his usual standards. It was a very enjoyable evening.

Our thanks to John for a job well done and to Pepin Distributors for providing the place. ◆

*Comments.....Continued from page 1*

8 app, *Computer Group Newsletters*, that displays all of the TPCUG newsletters going back to 1988 in searchable form updated to include the 2014 newsletters. The new version should be in the Windows Store as a free app by next week. I will also publish an update to the companion Windows Phone app which is titled *Computer Newsletters*.

Now back to my appliance problems since that is about all I have to write about this month because of the many problems, some more serious than the appliance problems, that have kept me from getting any serious computer work done other than the updating of the newsletter apps.

The good luck with the washing machine did not hold since a few days later it began to malfunction and we had a repairman out who said that it needed a new water valve, which he would order. It appeared that our appliances were rebelling since less than a month before the same repairman had replaced water valves in the refrigerator and the dishwasher. The dishwasher malfunction was particularly bad since if I had not

*Comments.....Continued on page 7*

## Hard Drive System Using RAID 10

By Merle Nicholson, Secretary,  
Tampa PC Users Group  
[merle@merlenicholson.com](mailto:merle@merlenicholson.com)

**T**his is about the hard drive I put on my home computer, a Windows 7 desktop. It may be too technical for everyone, but please, give it a try .. I'll give some background and definitions for you. Overall, it should be of interest at least to those who are really concerned with backups and performance.

I have written before on the idea of separating your boot drive from the data drive, so that you have two: One small, fast one that will contain the operating system and your programs that you keep a backup system image of, typically not more than 60GB, and the other for all the data, settings, pictures, desktop folders, and documents. I partition this data drive into two drives, one large, one small and relocate all the stuff that doesn't need backups: Swap file, temporary Internet files and TEMP files to the small drive and then put all my data files on the large drive. So in total there are two physical drives and three drive letters. The boot drive is occasionally cloned to a spare or just an image copy that goes on a spare drive or even on a flash drive as a backup. A Windows 7 OS is just 6 – 15GB, and even as the system ages, it should not go over 30 or 40GB. I use SSDs for boot drives now, usually either 60 or 64GB. The data drive needs a backup system, either online or more practically using external portable drives. There's too much risk not having a good reliable backup, yet I talk to people who have no backup and try to help when they have lost valuable pictures and documents.

The computer I'm working with now is a very powerful machine. People are not really aware that \$5,000 (or more) computers are available from "boutique" system builders, and even from major manufacturers. My computer – at least in performance – matches those boutique computers easily except in graphics performance. But mine can be easily duplicated for about \$2,000 in parts, since I assemble my own.

I really do use the power of the computer for database

development, and I've been very happy with it for some years now; it's powerful enough that I don't see replacing it for years to come. I mention cost to illustrate that the cost of installing five hard drives isn't inconsistent with the overall cost of the computer. More on that following.

In order to balance the hard drive performance with the processor power, one hard drive for data will not do the job. It's easy to tell with the performance tools available that even the best hard drive doesn't have the speed – throughput – that keeps up with the rest of the system's CPU and memory. So I bought two very good Western Digital High performance drives and installed them as RAID 0 and used that as my only drive, boot and data. Later I acquired a very fast 128GB SSD. It was time then to split my system up into boot (SSD) and data. So now is the time to explain RAID. We'll start with RAID 0, then RAID 1 and finally RAID 10 (Or alternately RAID 1+0).

Quoting from Wikipedia, RAID is "originally called redundant array of inexpensive disks; now commonly redundant array of independent disks. It is a data storage virtualization technology that combines multiple disk drive components into a logical unit for the purposes of data redundancy or performance improvement."

Physically, the work of operating RAID systems is built into virtually all motherboards. There's a system chip that manages this. It uses the power of the CPU to drive it, but it works independently from the operating system. That allows the operating system to load as if the RAID array were one drive. There are other means to do this; some are built into the operating system (but can't boot), and the ultimate is a RAID add-in card that has the RAID system chip and also a dedicated CPU. This card starts at about \$400 and goes up.

In the case of my RAID 0, it combined two identical hard drives and makes it look like one to the operating system. This is also called "Striping" or "Stripe". The RAID 0 scheme divides the workload of reading and writing data into the two. Since the system is capable of operating several hard drives at once, by divid-

*RAID.....Continued from page 3*

ing the work up, the throughput is doubled (for two drives). So Windows 7 thinks it has but one really fast drive. Believe me, doubling the throughput is noticeably faster. Here's the downside. If a failure occurs on one of the two, the data on both are lost. Most times that does not happen though. Usually some sectors are lost, and some files, but sometimes the whole drive will fail, and you've lost everything. This isn't entirely different than having one drive, but you have statistically increased the chances of this happening by having two drives. The hard drive space is the sum of both. To summarize, RAID 0 makes the hard drive significantly faster but reduces reliability. So something further is needed. So we look at RAID 1.

RAID 1 is for reliability only. It takes two drives minimum, reads and writes all data to both. RAID 1 is easiest to implement. This is also called "mirroring" or "mirrored". Most operating systems have this built in software, but it's easiest to set up on the motherboard to move the workload off the software. It has the advantage of very high reliability. If a file on one drive is damaged, the data will come from the other undamaged. If one drive fails altogether, you just unplug the failed drive and plug the new one in its place. The RAID system then rebuilds the new automatically in the background. It takes quite a while, but for the most part there's no impact on the system. As in RAID 0, the ideal is for the two drives to be physically identical. They must be at least the same size. Obviously, since the data is mirrored, you lose half the capacity. So a RAID 1 array of two 1TB drives yields 1TB, not 2. There is also a slight, perhaps unnoticeable penalty in performance. The main advantage is reliability. You have an automatic backup running in the background with no effort on your part.

RAID 10 (Or sometimes called RAID 1+0) is a combination of RAID 1 and RAID 0. It is two sets of mirrored drives (RAID 1) that is striped (RAID 0). It takes a minimum of four drives. The advantage is that it provides the reliability of RAID 1 with almost the speed of RAID 0. The total capacity is halved, just as in RAID 1. But it is nearly as fast as RAID 0 – not quite – because of the overhead of mirroring. But the result is that it can withstand the total loss of one drive

and continue to use the system. Any one of the drives can be replaced and the RAID utility will rebuild the array. The system can even withstand the failure of two drives as long as it's the right two. If the two are in different RAID 1 groups it will continue with what it's got.

Remember I had a set of drives originally set up as a boot and data in RAID 0. Then I did an inventory and discovered that among my computers I had two more drives with identical manufacturer's part numbers. They are WD1002FAEX in case you want to look at them. They are pretty unique with two processors built in and a 64MB cache. They are about as fast as you can buy for a consumer drive and also have five year warranties. They are somewhat more expensive – and still are – but the newest replacement drive is affordable at \$75 each for 1TB. Anyway I had four of them and did some swapping around and reconfigured my system to accept my newest SSD for boot (operating system and program files) and four 1TB drives for data. The ages of the drives start in early 2011, now nearly four years old.

Since I configured the system a few years ago, I have had two in-warranty failures, one very recently (prompting this article). The first indication something is wrong is that it tells you so! When the computer goes through its boot process, there is a program built into the motherboard that checks the availability and then the condition of the RAID array. It reports the status of all four and also the health of the array as a whole. If one drive does not check out, it reports that a member of the array has failed or has problems, and displays the manufacturers part and serial number. The computer boots normally, and in my case there is an Intel utility that can manage all this from Windows. That will reaffirm which drive it is and will also run some integrity utilities and attempt to relocate the data if possible. In this last incident, it reported the problem was not repairable. Guess what? I have a spare! Next I shut the system down and had to identify which drive it was. I had to dismount each one and read the serial number. So this time I got out my handy label maker and put the a serial number label on the end where I could see it. (Proving even old geezers can learn new

*RAID.....Continued on page 6*

---

## Internet Picture of the Month



### Lower Manhattan Skyline

From Flickr at <https://www.flickr.com/photos/kazinacastle/16165411415/>, this photo taken December 28, 2014 shows the new World Trade Center tower on the left. It was probably taken from a helicopter (?) by Kazina Crediza, whose Photo Stream can be found at <https://www.flickr.com/photos/kazinacastle/with/16165411415>, which consists primary of European photos. The original photo is 4592x3056 pixels and was taken with a Sony NEX-5

---

### January's Links

Tampa PC Users Group  
1926 Hurricane in Miami, Florida  
Linux - Ubuntu Home page  
Linux Today - All Linux news  
Birds of North America - Whatbird.com

<http://www.tpcug.org>  
<http://www.genealogytrails.com/fla/miamidade/hurricaneof1926.html>  
<http://www.ubuntu.com/>  
<http://www.linuxtoday.com/>  
<http://www.whatbird.com/> (use Browser feature to find Florida birds)

RAID.....Continued from page 4

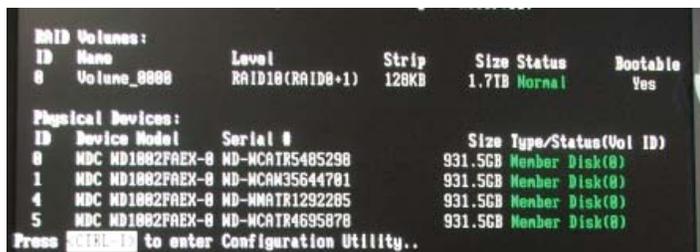
things.) Back into Windows and the Intel utility, I found that the drivers have already discovered the new drive and was rebuilding. It took three or four hours, but the computer was operable if I chose to keep working.

Now the only thing left is to mount the failed drive in a dock and run the Western Digital (WD) diagnostic, obtain the error number and do an online RMA, pack it up, print the UPS label and run it over to Staples. I had the new replacement in 10 days. The cost to me was the UPS shipping one way. But I have a new drive with a 5 year warranty.

This was my first – and only – implementation of RAID 10, and it has worked out well for me. I have had four years without a single loss of any data. It’s a bit more expensive – about \$325 for a 2TB array, but remember this also includes a backup drive. That backup drive is alive and copying all files in real time with no intervention at all. Additionally, it is performing at a throughput level unobtainable in anything but an SSD. You can reduce the cost slightly by using four 500GB drives, yielding 1TB, but the cost differential is small.

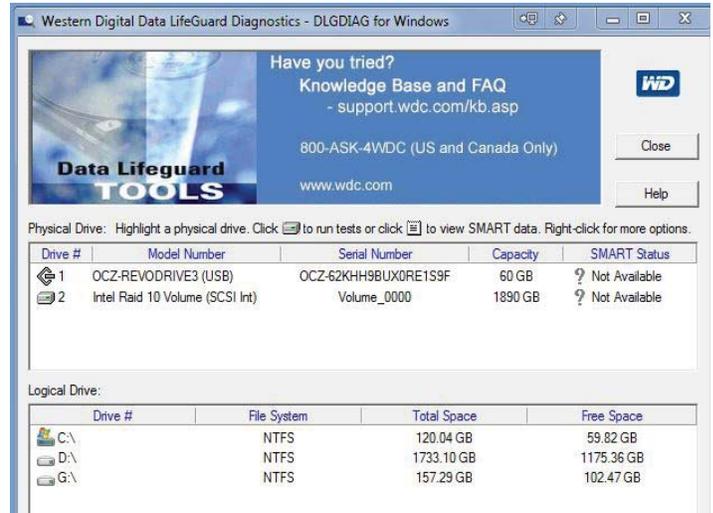
RAID is used routinely in business systems. No one would consider a server that doesn’t have RAID of some kind, and it has been in constant use in millions of computers for many years, so there just isn’t anything new or unknown. But it’s rarely used in desktop systems, even though on a well designed system there has to be a backup system in place that requires some intervention and attention.

Below are some screen captures of the RAID setup. ◆



Screen shot of the RAID utility initializing during POST. The first item is the full RAID10 array, then the four member disks. Instead of green “Member Disk(0)” you may get red notices

like “Fail” or “Rebuild”. There is a part number “WDC WD-1002FAEX” and serial number “WD-WCATR5485298” to help you identify the bad drive. Notice you can enter a configuration utility. It’s very complete, but difficult to use. Fortunately you can wipe the configuration and start over again.



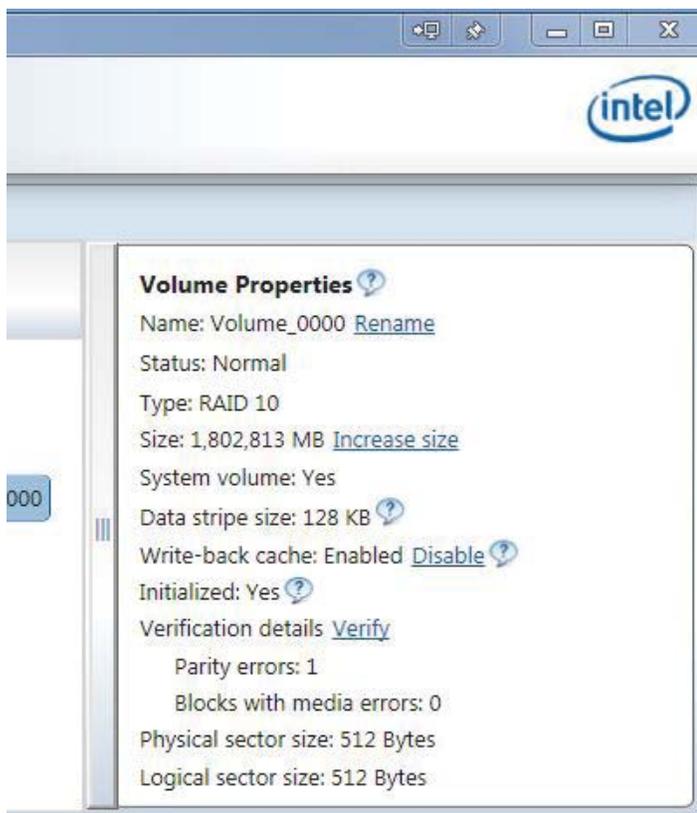
The Western Digital Data LifeGuard Diagnostics utility. If you have a suspect disk you want to return, run this utility and WD accepts an error code as proof for issuing an RMA. Note there are two physical drives. One is the SSD boot disk, 60G capacity and the RAID 10 1890GB virtualized drive. So you cannot test a single drive from a RAID array without dismounting it from the array. But good thing here – the program runs from the SSD boot drive.



RAID.....Continued on page 7

*RAID.....Continued from page 6*

Left half of the Intel Rapid Storage Technology application. This originally came from the motherboard manufacturer driver disk, but it's easily downloaded from Intel. Notice the SATA\_Array\_0000 volume\_0000 and its member disks consisting of four SATA disk (932 GB). You usually use this application to initially set up the array and test it – unless it's also a boot drive of course. The alternative is a text-based complete RAID utility whose program is built into the BIOS. You punch the right key(s) at the right time during POST, much like you do for BIOS settings. In this case it's a Ctrl-I (that's an i).



Right half of the Intel Rapid Storage Technology application showing characteristics of the RAID array. Notice you can do several settings, and I also see I have one parity error; a possible bad file, but it's self-correcting.

The end of screen captures and comments.

*Comments.....Continued from page 2*

caught it before going to bed, when we awoke in the morning we would have awakened to a flooded house since the valve stopped working in the open position. But that was not the end of it. When the repairman came to replace the washing machine's water valve he told my wife that she had a leaking hot water heater and should call a plumber. I was not home at the time, spending a few days in the hospital to get a minor problem corrected. She contacted me, and I called our plumbers, who determined it was just a malfunctioning pressure valve, which they replaced.

And it is not over. A couple of days after writing the above, we noticed that the thermostat control panel for our downstairs A/C was totally blank as if it had no power. A check of the pertinent circuit breakers came back OK. So the problem must be in the air handler which sends power to the control panel. Of course it was the weekend and no repair person could be called. This unit is only two-and-one-half years old.

On Monday, the A/C repairman came out, found a clogged condensation drain line, fixed it and gave us a bill for \$179, which I was glad to pay and have the downstairs A/C back running.

And there is more. Feeling neglected, I suppose, the Win 7 computer decided that it needed to complain again. After opening an article in the New Orleans Newspaper, <http://www.nola.com>, Windows Security Essentials warned me about a dangerous item and directed me to go to my home page instead. I forget the name of the item other than it ended in .pl indicating it was a Perl Script, since when I looked at it in Security Essentials history, I saw that it was quarantined, checked its box and then said remove, thinking that would remove it from the computer, but it appears that it removed also all the listings of things that had been quarantined.

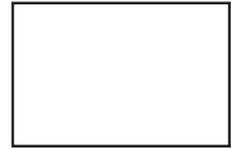
Anyway, this time Security Essentials appeared to have caught the malware as compared to my earlier problem. However, I immediately did a full scan of the computer with Security Essentials. And that evening, I did the same on my Windows 8 computer

*Comments.....Continued on page 8*

**Tampa PC Users Group, Inc.**

P. O. Box 3492

Tampa, FL 33601-3492



**First Class Mail**

*Member: Your membership is up for renewal*

*Comments.....Continued from page 7*

with Windows Defender. Note that Windows Security Essentials is the Microsoft malware and Virus program for Windows 7 and Windows Defender is the same for Windows 8.

What next? I hope nothing. ◆

