www.w3uu.org

Harrisburg Radio Amateurs' Club Newsletter

Wednesday of each month at 7:00 pm at HACC, Shumaker Public Safety Center, Gate 5 on Industrial Road in Harrisburg (Elmer Time starts at 6:30PM)

CLUB OFFICERS

PRESIDENT
Tim Lehman
KB3OZA
(717) 982-8550
KB3OZA@arrl.net

VICE PRESIDENT
Nick Rylatt
AA3T
(717) 957-4688
AA3T@arrl.net

SECRETARY
Pete Lehman
KB3WIH
plehman0@gmail.com

TREASURER
Joe Stepansky
KQ3F
(717) 657-9792
KQ3F@comcast.net

TRUSTEE
Steve Gobat
KA3PDQ
ka3pdq@juno.com

WEBMASTER
Gary Cappello
KV3Q
webmaster@w3uu.org

NEWSLETTER EDITOR
Shelby Minier
K3EMT
shelbyminier@gmail.com

From the Desk of the President..........

It has been a busy month for me (they ALL seem to be busy lately), but there were some other things going on besides radio; mostly scouting activities.

For one thing, July is when I go to summer camp with the scouts. I took my portable station along and had some fun setting it up in the campsite and operating a couple of evenings. The camp is not in an ideal location for radio operation, being situated in a rather narrow valley that basically runs east and west. Reception wasn't too bad, but my QRP signal just wasn't getting out. Oh well, the kids got a kick out of listening to the stations that we could hear.

I also got to help out with a radio merit badge class which was conducted by a ham from Sunbury, Tim, K3TEG. We had eight scouts show up for the class, but only four or five completed the course. Some of them had other activities that were more important to them than radio.

Tim and I had a conversation about forming a radio club at the camp for the purpose of bringing amateur radio to the scouts. I think it would be a positive move as far as giving scouts the opportunity to experience amateur radio. It would be a convenient place to operate for Jamboree On The Air as well as other scouting-related radio events. From the research that I've done so far, forming a club is not a terribly complicated process, but then, my research is just getting started. I will probably have more to report on that in the future.

We are already beginning to get the word out about the winter hamfest, coming up on January 24, 2015. I know what you're thinking: The Firecracker was just a few weeks ago. Why are we starting to work on the Winterfest now? Well, it's NEVER too early to get the word out about an event like this.

We have the date reserved for the student union building and flyers are beginning to get distributed to other hamfests. Hopefully, I'll have a supply of flyers by next meeting so that you can start spreading them around your local community. Don't be shy about asking some and posting them on bulletin boards at the local laundromat or grocery store or asking a computer shop if you can leave a stack on their counter.

Tim, KB3OZA
President

July Meeting Minutes

The July 9, 2014 meeting of the Harrisburg Radio Amateurs Club was called to order at 1900 HRS by the president, Tim (KB3OZA).

Before the normal meeting opened, John (W3HMS) was present to discuss the upcoming Pennsylvania Amateur Radio Conference.

Secretary Report - The minutes of the April meeting were published in the newsletter. Joe (KQ3F)

Chuck (N3WL) made a motion to accept the minutes seconded by Rick (K2RBT). Motion PASSED

Treasurers Report - Joe (KQ3F) presented the treasurer's report. Rick (K2RBT) made a motion, seconded by Mike (N3HLK), to accept the report. Motion PASSED

Trustee – The application for UHF repeater coordination was sent in by Steve (KA3PDQ)

Repeater
- Marty will talk to PEMA about the .075 repeater.
- There was discussion of the purchase of new equipment for the 146.760 repeater. There was a motion made by Steve (KA3PDQ) to spend the $700 to purchase a new repeater, seconded by Rick (K2RBT). Motion PASSED.

VE Committee – The testing session at the Hamfest had 12 applicants with about a 50% pass rate. The next regularly scheduled test session will be held on August 16, 2014.

Membership Committee – Tim (KB3OZA) reported that one new membership application had been received at the hamfest. Total membership is now 95.

Newsletter – No update.

Web page – There was a request made by Gary (KV3Q) for a wide shot of the Hamfest to put up on the website.

EMCOMM – Marty (KB3BAA) reported that there was 0 response from Dauphin County for the Hope Ride.

DXCC – 4 applications for DXCC were received at the Hamfest, 1 WAS was checked at the Hamfest.

Entertainment – Nick (AA3T) reported the following:

- August – MESH networking
- September – We will have Susan Singer (PEMA) to give an overview presentation on Auxiliary Communications System (ACS).

Possible future topic: MARS

Field Day – Nick (AA3T) will do the log submission.

Firecracker Ham Fest – Tim (KB3OZA) reported:

434 Tickets were sold, 85 Flea market spaces sold, and 3 canceled vendors.

Elmer Time –Pete (KB3WIH) will do a presentation on bicycle mobile operations for August.

July Minutes Continued…………..

New Business –
- The date for the Winterfest was set for January 24, 2015.
- There was discussion about the annual donation to the Public Safety Center. There was a motion made by Mike (N3HLK) to give $200, seconded by Glen (K3SWZ). Motion PASSED

Good of the Club – The club received a QSL card from Field Day. Joe (KQ3F) will take care of responding.

Adjournment – There being no further business to conduct, Chuck (N3WL) made a motion, seconded by Rick (K2RBT), to adjourn. Motion PASSED

Meeting adjourned at 2021 HRS.

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The next testing session will be held August 16th, 2014 at the HACC Shumaker Public Safety Center, Gate 5 on Industrial Rd, Harrisburg, PA.

Testing begins promptly at 9:00AM

Long Delayed Echoes

Looking back through the rich history of the Harrisburg Radio Amateur's Club
Compiled by Mark Robinson WB3JIS

Fresh on the heels of this year's hamfest report, this month I share a recap of the 1996 hamfest.

Don't forget to send me your photos and other historical material. I can be reached at (717) 371-3926 or wb3jis@comcast.net.

JULY 4TH HAMFEST REPORT

The July 4th "Firecracker" Hamfest is the club's only real moneymaker. This year the hamfest grossed $4,548.00, and netted the club $3,024.14 after expenses. The chairman (WU3X, Tom) would like to thank all of those who donated their time to help make the hamfest possible. Of the 123 dues paying club members, 28 helped in some way with the hamfest, a participation of 23% of the club. The following members volunteered their time to HRAC:

KA3PCX - Ray	N3DSA - Dave	KA3PDQ - Steve	N3JDT - Tony
K3AM - Dick	K3BHZ - Bob	N3PLR - Bill	N3HLK - Mike
N3PTR - Dennis	KE3TM - Harold	N3URF - John	N3WWH - Bill
K3IBN - John	AA3CK - Bill	WB3JIS - Mark	AA3T - Nick
WB3ECC - Randy	KA3YQD - Gus	N3WER - Chris	WE3G - Ed
W3IS - John	W3JVW - Earl	KA3VDA - Wayne	N3NJB - Dick
N3URM - Allan	N3NLZ - Doug	N3JJG - Bob	WU3X - Tom

2014 Exam Schedule for the Laurel VE Team (associated with HRAC)

All tests are held at HACC -Shumaker Public Safety Center, Gate 5 on Industrial Rd, Harrisburg, PA

➤ Saturday, August 16, 2014 at 9:00 AM

➤ Saturday, October 18, 2014 at 9:00 AM

➤ Saturday, December 20, 2014 at 9:00 AM

As always, testing is FREE!

Monthly Ham Radio Lunch

The last Thursday of each month there is a Ham Radio Lunch
at the "Old Country Buffet" at noon.

This restaurant is located on Route 22 in Colonial Park in the vicinity of Value
City Furniture, K-Mart and Home Depot.

It's a great way to meet new people!

Link to Repeater and Net Lists

http://www.w3uu.org/local-repeaters-and-nets/

Same lists that used to be in the newsletter……but now conveniently located on the club's website.

Weekly HRAC Net

The weekly information net is held every Wednesday at 8:00 PM on the146.760 repeater, except for the second Wednesday of the month, which is club meeting night.

Please send any articles for the newsletter to shelbyminier@gmail.com

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There will be a presentation on Broadband-Hamnet at the August meeting.

The following article provides some introductory information. The basic premise is that you can take certain Linksys routers (or Ubiquiti devices), replace the factory firmware with the Broadband-Hamnet software, and have a high-speed, self-discovering data network.

Nick, AA3T

Starting to use Broadband-Hamnet™

Written by Rick Kirchhof, NG5V

Reprinted courtesy of Broadband-Hamnet.org

So you just discovered Broadband-Hamnet™ and may be wondering what is going on. Broadband-Hamnet™ is the self configuring ham network.

It is time to have our own Broadband-Hamnet. Hams have transferred IP data by radio for ages. This network is FAST!

Lets start with some basic concepts. We will be expanding this page so check back from time to time.

Broadband-Hamnet™ is a network, it is not application software. It is a special firmware build that transforms consumer wireless gear to a specialized ham radio function. It can use application software to transport your data from place to place, but you must provide the application software just like you do at your home or office.

A Mesh network is a highway over which data travels. Turning on two mesh nodes loaded with our firmware creates a data network. This highway carries your cargo (data), and allows your local computer to use information or applications stored in other locations Mesh nodes were originally consumer wireless routers but changed function when the firmware was changed.

After conversion, the WAN, LAN and Wi-Fi ports are linked using special rules and no longer operate like a normal wireless router. Some devices like Ubiquiti Bullet have only a single network connection. Others like the WRT54x series have multiple LAN jacks and the Internet jack. All have the RF (WiFi) antenna and signal.

Mesh nodes are self discovering, self configuring, self advertising and fault tolerant.

Mesh nodes are a data network without the wires. Most tasks that you can do over a wired or wireless network at your home or office will work on a mesh node.

Mesh nodes are small, portable, low-power and inexpensive. They are easily battery powered.

Mesh nodes can easily have a range of 10 miles or more using stock power and gain antennas if you have true line of sight.

Mesh nodes communicate with other nodes over Wi-Fi frequencies and only talk to other mesh nodes on the wireless port.

You can't use Wi-Fi to connect to a mesh node from your computer, netbook, smart phone or other wireless device.

It is possible to extend a mesh network with a properly restricted access point (AP) where only hams are given access.

Computers connect to mesh nodes with an Ethernet cable and control them using a web browser.

You can access the control screen on your own mesh node and easily jump to any other mesh node with a click or two.

The web address of your mesh node is http://localnode:8080.

From the mesh status screen, you can jump to any other member mesh node to use its services, configure it, install or update software or view the other direct neighbor nodes that can be seen by that mesh node.

Mesh nodes use peer to peer connections. This means each node connect to all others it can directly reach.

This is different than the star configuration where wireless users connect to an access point.

Peer to peer connections share the same SSID (network name) That name is BroadbandHamnet-v1.

If you change the SSID, spell it wrong or change the punctuation, the mesh is broken. It must be exactly the same for all nodes.

As later versions of the firmware are developed, the need to change data formats may arise. At that time, the SSID will change, forming a new mesh network with the updated firmware.

Do NOT change the SSID unless you are an expert and understand that you will be creating an entirely different mesh network when you do so.

Each mesh node must have a unique node name. Normally this is your callsign with a suffix (w1aw-1, w1aw-2, w1aw-mobile...).

The SSID is the network name seen over Wi-Fi and is the same for all mesh members, the Node name is what you named the device (your callsign + suffix).

Mesh nodes operate on channel 1. Channels 1-6 of the 802.11B/G wireless band are completely within the 2.4ghz ham band. As support for additional ham bands is developed, different channels will apply in that band.

Mesh nodes on channels 1-6 use FCC part 97 rules instead of part 15. This allows big antennas, more power, other changes.

Mesh nodes talk to other nodes using RF (Wi-Fi), to the Internet over the WAN port and to computers, servers, video cameras and other devices using the LAN ports.

Mesh nodes will create a network just by turning several of them on. They create portable, high-speed data networks in minutes.

Mesh nodes don't need any computer to be attached to pass data to other mesh nodes. Just plug one in, it will expand the mesh.

You don't need to physically attach to a given mesh node to make changes to it. You may "remote in" to configure it from anywhere on the mesh network.

Data is data. It can be IP Video, VOIP, LAN traffic between computers, web browser reading an situation briefing web page, downloading operating software or a radio manual by FTP, printing out something on a remote printer, keyboard chat, hop to the Internet, etc.

IP addresses exist but you interact with mesh nodes by using the node name. The names can be tactical but your ham call is still sent out frequently as a beacon packet.

Any mesh node within wireless range automatically joins the existing mesh and exchanges available routes with all others.

If one mesh node has Internet access or contains a NTP (network time protocol) server, all mesh nodes will get a correct date/time in their display.

As signals grow stronger and fade, nodes join and leave the mesh. It can happen many times as you drive around.

Your path between any two mesh nodes may be single or multiple hop and can/will change with no notice or impact to you. The data flows where it needs to flow because of the automatic routing delivered by OLSR.

A single node joining your mesh may add many other nodes if it can see other mesh nodes the first group can't reach. It does so by becoming a bridge to join the two separate groups of mesh nodes.

Mesh node owners from different parts of the country will join any existing mesh just by coming within range if it.

Using a standard software load, one shared SSID and one operating frequency on all nodes means that any two hams, never having met

each other and unaware of the other's presence can form a mesh network just by being in range of each other. Later, additional hams join the network (and perhaps bring additional network resources or advertised services) by turning on their devices within range of the first group.

Doman Name Service (DNS) is automatically provided to all mesh members, allowing them to see/interact with other mesh nodes.

After initial conversion and setting the node name and password, no further changes are needed to connect with other nodes and no configuration or adjustments are needed for the mesh to continue to run. User may join or leave, advertised services can appear or be turned off, and all users take advantage of any network resource.

Computer resources on your mesh node can be shared with others on the mesh. These are Advertised Services.

Your mesh node can see and use advertised services on other nodes by just clicking on them in your web browser.

If one mesh node has it's WAN port plugged into an Internet feed, and a config change, it can provide Internet to all mesh members but you are always responsible for all traffic remaining part 97 compliant.

Firmware upgrades and patching are done from an internal menu (Internet or local copy of the firmware upgrade is required).

Mesh nodes can be remotely managed and the firmware or patch level upgraded by any user with the password for that node.

Users on other parts of the mesh may view other mesh node status screens and even wireless devices visible to that specific node.

Mesh nodes have several modes of operation and the same device can be configured to change roles as you dictate.

Having spare mesh nodes means you can deploy them for each of several roles, such as putting up a local AP for served agencies Several mesh nodes + one experienced ham operator = a portable, quick deployment, swiss army knife of network services.

Microwaves are different than UHF/VHF/HF Antennas always get you more than amplifiers. When a repeater is all mouth and no ears it is called an "alligator". When you increase transmit power on a mesh node, you can't get the same help hearing the incoming signals.

Directional antennas narrow the beamwidth to boost signals on axis while concurrently rejecting unwanted signals and noise off axis. No amplifier can do this.

Any increase in power also causes serious safety concerns and raises the noise level for all users. The control operator is always responsible for compliance with FCC OET Bulletin 65 regarding RF exposure.

Add quality directional antennas on both ends and ensure you have a true line of sight path with a clear Fresnel zone before considering any amplifier. See other sections on this web site for RF Safety and Noise Level information.

Several things are important as basic knowledge. Please read the General Disclaimer and the HSMM-MESH Design Philosophy for adequate background on how this firmware changes your previous wireless router.

We HIGHLY recommend (as in "Go get it right now") a copy of WNDW (Wireless Networking in the Developing World) a FREE e-book (PDF or HTML). You can read this to help understand concepts and technologies of wireless networking and how to set up your own mesh network. If we were to write a textbook about mesh networking and field operations, only a few chapters would be different than what is already published. **you need to read this book**

Hershey Half Marathon – Help Needed!

The date is Sunday October 18 and the time is from 0600 until about noon.

 We still need operators.

Please contact Marty if you are available to help!

Marty Gutekunst
717-652-3702
717-439-8971 cell
KB3BAA

HRAC MEMBERSHIP APLICATION

Make checks payable to HRAC
Membership is $15.00 ($7.50 if over 65) per year.
Family Membership is $25 (Hams must reside in the same household)

Dues end December 31st

NAME _____ CALL SIGN _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____ E-MAIL _____

ARRL Member: Y _____ N _____   *** YEAR FIRST LICENSED** _____

SIGNATURE _____ DATE _____

I agree to abide by the guidelines of the membership and The Harrisburg Radio Amateur's Club, Inc.