

**The Mount Vernon Amateur Radio Club
PO Box 372, Mount Vernon, Ohio 43050**



**Meetings are held the 2nd Monday of each month at 7:00 pm
at the Knox County Chapter of the American Red Cross,
300 North Mulberry Street, Mount Vernon, Ohio**



**K8EEN Repeater: 146.790. MHz (600Khz with PL of 71.9 Hz)
K8EEN-R Echolink Node: 809800
KD8EVR Repeater: 442.100 MHz (+5 MHz with PL of 71.9 Hz)**

INSIDE THIS ISSUE:

View from the Presidents Desk	1
Scout Day Report/ Contesting for Fun	2
Minutes for the July MVARC Meeting	3
Membership Roster/ Contesting for Fun	4
Daniel Emmett Special Event	5
How to Build a Mesh Node	6-9
August / September Calendar	10

Also, I'm interested in what you are doing, maybe something that you have built (maybe we could do a show and tell at one of our meetings) or a topic that you would like to hear more about. Send me an email fcounts@gmail.com

I have been busy (too busy) chasing children and grandchildren (enjoying every bit of it) so my operating time has been limited this summer Look forward to seeing you Monday the 8th.

73, Frank KC8EVS

The view from the Presidents Desk



Hope all are surviving the heat of the summer. Well the big news is Hamvention will no longer be held at the Hara site! As of my writing of this they have not released where they plan to hold it next year, except that it will be in the Dayton area and that if you have made your reservations they will still be good. I wish I could plan that far ahead :)

With that said the Columbus Hamfest will be held in a new location this year on Aug 6th in the Grove City area. Check the website www.columbushamfest.com for directions.

I'm sure Jim N8IBR will have something in the newsletter concerning the upcoming (our first as far as I know) Special Event Station being planned for Dan Emmitt Days (Aug 12th and 13th). We will be operating from our club station. All are welcome to at least drop in and see the station.

Aug 8th at 7 pm is the next meeting please come join us as we make the final plans for the special event station and Ohio State Parks on the Air, which will be September 10th.



Editors Note:

Since this coming weekend is the Columbus Hamfest and not on the calendar, I thought I would add some additional information on the location

It is still held at the Aladdin Shrine Center, but the Aladdin Shrine Center has moved to the SW corner of Columbus, just outside of I-270 on I-71 at Stringtown Road

From Columbus, take I-71 South, to the first exit past I270. Exit at Stringtown Road and turn right, then take an immediate right onto Marlane, behind TJs restaurant. Follow Marlane to Gateway Circle.

**Aladdin Shrine Center
1801 Gateway Circle
Grove City, Ohio 43123**

July 14th Cub Scout Event Report

I would like to thank KC8EVS and W8TW for their assistance at Pack 344's annual summer day camp held at Camp Cornish near Apple Valley July 14th. We had approximately 75 Cub Scouts from the Knox County area attend.

While the day started out great weather wise, mother nature and the propagation gods didn't follow my game plan.

While the weather and HF band conditions didn't co-operate, and 2 meters was unusually quiet, we did manage to keep the scouts busy with demonstrations on CW and discussing the various different things available to do in our hobby.

I do believe we may have stirred some interest from a few of the attendee's and their parent's in our future Technician classes, as they requested information on how to obtain their license. W8TW and KC8EVS made sure they had our club information and invited them to future club functions.

So between this event, and the one held earlier in the spring, hopefully we will gain some future Amateur operators.

While I wish the weather and band conditions had been better, I do believe we were successful in keeping the scouts entertained.

Again, thanks to W8TW and KC8EVS for their assistance.

73, N8IBR

Contesting for Fun By Barry Butz, N8PPF

I reported earlier that the MVARC Contesters did well in the ARRL November SSB Sweepstakes. I didn't realize at the time just how well that was. The final results were published and show our team standing was 19 of 41 teams, right in the middle. But individually we were more impressive. Out of 51 Ohio entries, W8PEN, N8IBR, N8PPF, and KC8ANS placed at numbers 3, 4, 7 and 9. Overall, out of 795 entries in the 100 watt class, they were numbers 27, 46, 112, and 180. Can we make that 1, 2, 3, and 4 next November?

On the success scale the July CQ VHF contest wasn't so successful, at least for me. For a 27 hour contest, I was able to make only 10 contacts on 6 meters. Not that I worked that whole time. That would have been really discouraging. I checked the band frequently, found no activity, so checked again later. My contacts were on the Gulf Coast and Florida and one in Ohio. Well, that's the way the 6 meter band is. Other years I've made dozens of contacts. So don't give up.

The Mt. Vernon Amateur Radio Club Officers

President: Frank Counts, KC8EVS

fcunts@gmail.com

Phone: 740-358-9131

Vice President: Tom Evans, KD8HSA

tom65@embarqmail.com

Phone: 740-625-5138

Secretary: Jim Williams, N8IBR

n8ibr51@centurylink.net

Phone: 740-967-0627

Treasurer: Tony Spiegel, KC8UR

tony516@embarqmail.com

Phone: 740-392-7586

Call & Repeater Trustee:

Don Russell, W8PEN

w8pen@arri.net

Phone: 740-397-0249

Equipment Trustee:

Barry Butz, N8PPF

n8ppf@mvarc.net

Phone: 740-397-7540

Directors:

Emery Bennett, W8TW

eabenn2002@hotmail.com

Phone: 740-397-8127

David Byrd, KD8RST

dbryd@roadrunner.com

Phone: 740-392-6325

Barry Butz, N8PPF

n8ppf@mvarc.net

Phone: 740-397-7540

Jeff Butz, N8SMT

jaylynn4@gmail.com

Phone: 740-965-9368

Don Blizzard, W8UMH

w8umh@yahoo.com

Phone: 740-392-9753

John Barr, KD8FXX

Phone: 740-326-1090

Scott Fields, K8AEC

ballixxe@yahoo.com

740-504-8204

Terry Windsor, KE8ANS

ke8ans@gmail.com

740-507-6329

Newsletter Editor &

Facebook Editor:

Bill Bradley, KC8BB

wjabradley@yahoo.com

Phone: 740-397-0267

Meeting called to order by KC8EVS at 23:03 UTC.

Motion to accept June 13th minutes made by W8TW, 2nd AC8PT, Approved.

Motion to accept July Treasurers report made by K8AEC, 2nd N8PPF, Approved.

General Business

N8PPF reported repeater operating normal.

KC8EVS reported on our Field Day results. While we didn't set individual mode records for CW or SSB, we added the digital modes this year thanks to K8AEC, and had 50 plus contacts on that mode. Great result for the first attempt for this mode during Field Day. Congrats K8AEC. By the way, W8PEN reports that this was a total score record year for us on Field Day.

Motion to buy and send a Thank You card and \$75 gift card to KE8ANY thanking her and her family for setting up and allowing us to use her family's large shelter tent. Made by AC8PT, 2nd KB2SAI, Approved.

Motion to send The Apple Valley Recreational Committee a Thank You and \$150 check for the use of their tent and the Apple Valley Facilities for Field Day. Motion made by KE8ANS, 2nd by N8PPF Approved.

Motion to pay \$56 for flowers for KE8ANS's XYL's funeral services made by W8TW, 2nd K8KLW, Approved.

President's Report

Reminded members of the upcoming Cub Scout Demonstration on July 14th. See N8IBR for more details.

Listed the following upcoming events; Dan Emmett Days special event station August 12th and 13th (see N8IBR for info), the Columbus Ham fest on Saturday, August 6th and Ohio State Parks On The Air September, 10th (See KD8HSA for info).

Mesh network still growing slowly. ARES team still making improvements on the station located at the County EMA headquarters. This is a slow process due to the various noise problems, and limited access to the EMA location.

ARES Report

KB2SAI reported the new county emergency notification system for ARES Personnel was being worked on. Make sure he has your current information. Have not had any notifications for any upcoming bicycle events in our area.

Other Important Items

AC8PT suggested that we check the web page for outdated information, Please bring any corrections or updates you find to the August 8th 2016 meeting. If you won't be able to attend this meeting, please forward any suggestions you have KC8EVS or N8IBR to be presented at the meeting.

Sending an additional donation to the local Red Cross for the use of their facilities was discussed. It was decided to table this for discussion at a future meeting.

Motion to Adjourn at 00:15 UTC made by AC8PT, 2nd KB2SAI, Approved.

We had 13 members and 1 guest present.

Respectfully submitted,
N8IBR, Secretary -MVARC

Recently I have had request for a list of membership. The following is the current list of active club members. It is listed in alphabetical order by the members last name. Callsign will be listed first, followed by members name.
N8IBR, Secretary -MVARC

K8NJA-Nick Altstatt	KD8UT-Jim Jennessee
W8TW-Emery Bennett	KE8DKJ-Calib Keller
KD8UEP-Emery Bennett Jr.	KE8DKI-Harry Keller
W8UMH-Don Blizzard	AC8PT-Scott Keyes
KE8DKG-Harold Bower	N8JQZ-Jack Koelbl
KE8DKH-Ralph Bower	KE8DKL-Pete Lawhon
KD8EVR-Arlin Bradford	KE8ANU-Ed Liddle
KC8BB-Bill Bradley	KE8ANP-Mike Liston
K8SLY-Larry Brengman	KE8ANQ-Scott Magers
KB8QPO-Don Bunner	KE8ANR-Ron McGlone
N8PPF-Barry Butz	KD8UEB-Craig McMurry
N8SMT-Jeff Butz	KE8DKF-Mark Peakovic
KB2SAI-Ruben Clark	W8DEP-Dave Phillips
KD8SWJ-Steve Cochran	KE8ANY-Bobbie Robey
KC8EVS-Frank Counts	KE8DKK-Ryan Rupp
KC8VTA-Kathleen Dean	W8PEN-Don Russell
KE8AFT-Jim Dorough	KD8TNT-Steve Salyers
KD8WSI-John Eagle Spirit	KC8UR-Tony Spiegel
KD8HSA-Tom Evans	KF4HHZ-Daniel Staiger
K8AEC-Scott Fields	KD8WHQ-Bill Stroud
K8KLW-Rick Gibson	KD8PSM-Pat Valentino
KE8ANV-Brian Hockenberry	N8OGX-Bill Waits
KB8QPP-Peggy Hockenberry	N8NMQ-Kelly Warner
W8LFR-Ralph Hoffman	N8IBR-Jim Williams
N8RPZ-Charlene Householder	KE8ANS-Terry Windsor
N8RDH-Dick Huggins	

Einstein Quote

Albert Einstein was reputed to have given this reply when asked to explain how radio works.

“You see, wire telegraph is like a very, very long cat. You pull his tail in New York and his head is meowing in Los Angeles. Do you understand this? And radio operates exactly the same way: you send signals here, they receive them there.

The only difference is that there is no cat”

JUST A REMINDER

Daniel Emmett Special Event Operations

Just a note to remind the membership that we will be holding a joint open house and special events station during the Daniel Emmett Days festivities. Our event will be held at the American Red Cross Annex at 300 North Mulberry Street.

Our activities will be held on Friday August 12th, and Saturday August 13th from 1600 UTC to 2200 UTC (12 noon to 6 PM). We need people to both greet visitors, and to operate the club station.

The greeters will be down stairs in the Training area, while the Special Event Operators will be upstairs with the club station. So, if you can help out, it would be greatly appreciated. We plan to have displays set up downstairs for the public to view. They can then go upstairs if they wish to see the actual club station in operation.

The open house we held earlier this year was quite a success, as we had numerous visitors, and some folks expressed interest in becoming Amateur Operators. We hope to expand on that success with this event. And, this time around we will have our club station to show off for our visitors as well.

So along with explaining the number of different things we can do with our hobby, such as the Public Services communications which we supply in emergencies, too the experimenter side of things. And the just plain old fun side of our hobby, talking to other hams over the airwaves.

We plan to have FM, SSB and CW running at various times during this special events/open house. Maybe for future open houses we will be far enough along with our Mesh Network and can have a Digital Station running to show off those modes also.

We have so many different aspects to our hobby that we can show the public, that we may want to consider doing one or two open house type events a year. If the Daniel Emmett Days event proves a success, maybe we can do one each summer during that event, and another one after the first of the year right before we hold our Technician License classes. Just a thought.

On the operating side of things, we will have information sheets available for the folks running the Special Event station to describing the Festival, and who Daniel Emmett was. We will also be sending out QSL cards to any station requesting one.

This event will take more than one or two folks to be successful, so if you can even help for only an hour or two on either day, it would be greatly appreciated. If you have any questions, contact me, N8IBR event co-coordinator.

Here's to hoping that this event is a big success.

And, I hope to see many of our members during this event, even if you are just stopping by to say "Hello."

N8IBR

By Don Russell, W8PEN



In Mt. Vernon, we have been working on a ham radio mesh network for some time now. Certainly more than a year. Last month, someone said to me “Don, I am interested in setting up my own Mesh Node but don't know where to start. Could you write an article in the Newsletter on what to buy and how to set a Mesh Node up”?

This is such a reasonable request that I felt like, duh, why didn't I think of that. I guess I expected those that were interested in our project would research it on the internet. However, even when doing so, I have found the particulars of Meshing to be hard to understand for those not into networking. **I am not into networking so this slams home and I understand.** Unfortunately, there are many pitfalls in buying the correct radio and upgrading its firmware. It is best if one does not do it alone, at least the first time. In this article, I will make some suggestions on what to buy, but will refrain from giving instructions on how to upgrade the firmware. Please contact me before you buy and before you upgrade.

Keep in mind that the only way a Mesh Network will work is by everyone committing to keep their nodes going 24/7. I keep mine on even during thunderstorms and have not had any problems I can associate with storms. Also, the electricity to keep a node going is really low and probable a penny or two a day if that much. This assumes you don't keep your computer on since it is not necessary.

WHAT IS A MESH NETWORK?

First, I think we need to define what a Mesh Network is. A Mesh Network is a high speed, self discovering, self configuring, fault tolerant, wireless data network. This was commonly called High Speed Multi Media or HSMM when first started. HSMM used popular Linksys routers. These routers were modified by uploading new firmware into their memory, therefore making them do what hams wanted them to do instead of being just plain old wireless routers, For a Ham Radio Mesh Network to do what we want it to do, there are some specific things required of the Node equipment:

Each Node in a Mesh Network is a Repeater.

Each Node communicates only with other reachable Nodes in the Network.

Each Node exchanges available routes/maps with other reachable Nodes.

All Nodes in a Mesh Network are remotely managed. One does not have to be physically present or connected once the Node is installed.

Once a Node is set up it will continue to communicate with the rest of the network until turned off. If a Node goes down by malfunction or by simply being turned off, the Network will try to find a way around that Node to continue operations. When you want to get onto the Network, you connect to your Node via an ethernet cable and computer just like you would on the internet. If you have no interest in using a Mesh Network, but wish to help us out, then all that would be required would be setting up a Node on your tower, or in a high place. Mesh Nodes are basically Line of Site, so the higher the better. Once a Node is set up, it no longer needs a computer to continue operating.

How to Build a Mesh Node, continued on page 7

Nodes are fairly cheap to set up. A reliable Node can be set up for less than \$100, although my recommendations will run you a little more.

OKAY, SO WHAT CAN BE DONE WITH A MESH NETWORK?

Good question and one I am still trying to figure out. Just about anything you can do on the internet you can do on a Mesh Network. Without the advertisements! Yes, it does take work to set all of that up. Video Streaming, Keyboard Chatting, VOIP, Web Pages, Emailing. The sky is the limit. Our local Mesh Network has a Web Page, PBX telephone system, and several Keyboard chat rooms available. And we are still expanding!

The ultimate goal of this whole project is to assist our served agencies in times of need. If nothing else, we should be able to reroute internet service outside Knox County if local service is down. This would allow served agencies to continue their emails as if they had a true internet connection. We would also be able to provide phone service from and too different sites if needed when local phone service and cell phones are down.

FIRST STEPS

First thing that needs done is to determine if you will be able to communicate with other local Mesh Nodes. Since we are hoping that this will be something that is continuously changing, you may wish to put up a Mesh Node regardless. We need as many Nodes up as possible to increase the chance of everyone linking with everyone else. Once we get one or two high profile Nodes up, this should be less of a problem., Just about everyone will be able to link with some Node somewhere. Remember, all these Nodes work together so even if you can't hit a high profile Node, if you can see any of the Nodes in the Network you will see all the Nodes. Not having a Node in range will not be a problem initially. You will be able to "tunnel" via the internet until we have enough Nodes up to connect to everyone by RF.

It is preferred that most Nodes use omni directional antennas. This way, no aiming will be required and it gives everyone a chance to hear everyone else. If you are really far away, you may need a direction antenna though.

Currently, we have four Nodes up. N8PPF, W8PEN, and AC8PT (at the Red Cross), and AC8PT via internet tunneling from Granville. Here is what my screen looks like when I am viewing all the Nodes available:

Local Hosts	Services	Current Neighbors	LQ	HLQ	TxHbps	Services
W8PEN-AG-1.local.mesh	HamChat RM-1	W8PEN-MTY-SOUTH.local.mesh	100%	100%	13.0	Hamchat RM-2 MeshChat W8PEN-Web-Server
Remote Nodes	ETX	Services	@ w8pen-Web-Server.local.mesh Previous Neighbors none When			
AC8PT-ARHP.local.mesh	2.00	AC8PT Hamchat MeshChat Winlink PO AC8PT 10.134.0.215				
N8PPF-2.local.mesh	2.13					
AC8PT-RM2-ARC.local.mesh	2.13					

Part of the AREDN™ Project. For more details please [ask_hack](#)

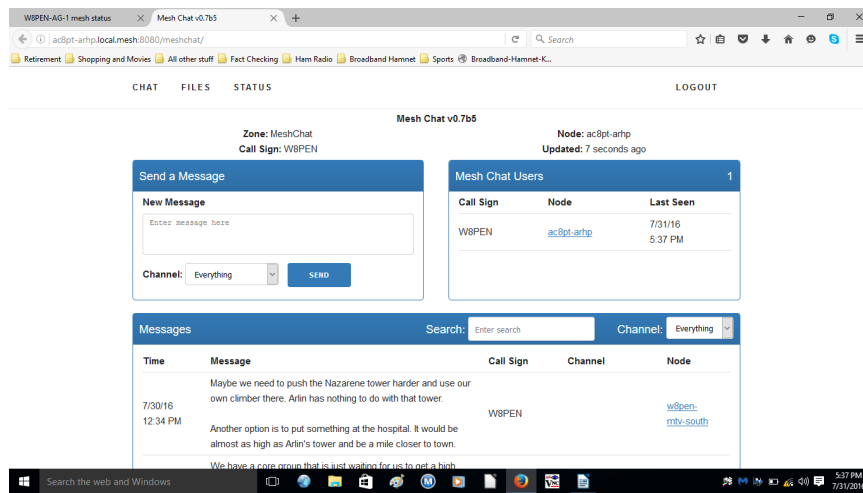
This screen lists all the available Nodes and their services. There is Hamchat RM-1 and RM-2 and Meshchat on my Nodes (W8PEN-MTV-SOUTH.LOCAL.MESH, and W8PEN-AG-1.LOCALMESH). I also have a Web Page (W8PEN-WEB-SERVER). You can see Scott's Node from Granville (AC8PT-ARHP.LOCAL.MESH) and the Red Cross Node (AC8PT-RM2-ARC.LOCAL.MESH). Once you start using the Mesh, it all becomes very simple.

Here is a shot from one of the Hamchat Rooms:



If I had someone to talk to during this demo, we would carry on a conversation much like on psk-31 or packet radio.

One last screen shot is from Scott's MeshChat server:



EQUIPMENT NEEDED

The local group has decided to use equipment manufactured by Ubiquiti Networks. These units are more powerful than the older Linksys Routers, They are also weather proof so you do not have to put them in weather proof boxes like you would if using the Linksys units.

It would be wise to get together with one of the regular mesher's before ordering anything, because not all Ubiquiti units can be upgraded to serve as Mesh Nodes in our network.

A good first step is to go to the Amateur Radio Emergency Digital Network (AREDN) and read everything you can. <http://www.aredn.org/>

Read all you can. Then look at the “Supported Platform Matrix” listed under the Software Column. Again, it is wise to get help and I am almost always available by phone or repeater or email.

The number one recommended Ubiquiti unit is the Bullet M2. This unit can be easily upgraded and is weatherproof for mounting on a tower or mast. It does require an external antenna, but has an “N” connector that the antenna usually plugs directly into. Some like the Ubiquiti Rocket M2. This unit requires a special dual polarized antenna though.

HERE IS A SHOPPING LIST FOR YOU:

1. Ubiquiti Bullet M2: \$74.38
2. Ubiquiti POE Injector: \$19.37
3. TP-Link 12dBI Antenna \$39.91
4. Cat-5 Ethernet Cable: About \$15 per 50 feet locally. The group has some very good cable available for a very low cost. So ask me before you buy.

Personally, I like the Bullet Titanium. It is better weatherproofed and you get them with the POE. Just a little more expensive, but just add antenna and you are set. These are the ones I have bought for the clubs high profile sites.

5. Ubiquiti Bullet M2 Titanium: \$114.98

So, if you buy a regular Bullet M2, POE, and Antenna you are talking about \$133.66. Keep in mind that if you really need to, you can build your own antenna for about \$10. I don't feel the savings are worth it though.

Buying the Bullet M2 Titanium and antenna will cost you 154.89.

Be aware that there are used Bullet M2's. I bought one for \$32.

There is a Ubiquiti Picostation M2 that sells for \$79. It has a built in antenna 8dBi omni directional antenna. You would still need to buy a POE though. These should work great once we get the high profile Nodes up. May work well anyway and no external antenna required, although you can add one later if needed.

One more thing. If you don't think you will be able to hit a Node, there is a Ubiquiti “AirRouter that sells for about \$62. This is wireless, but you cannot mount it outside. However, if your only alternative is to use the internet to tunnel to our Mesh Network, then this would be a cheaper alternative. Scott, AC8PT, has one and is very happy with it. This is my number one recommendation for those outside of town who wish to join our mesh group.

SETTING YOUR NODE UP

Probably the most difficult part of getting your Node on the air, besides making a decision on what to buy, is installing the firmware. Installing the firmware is still a bit scary for me because you can mess up the unit if done improperly.

The first thing to do is to run what AREDN calls a “boot test”. This is done because the newer software is not compatible with the AREDN firmware. Most new units will have to have their firmware downgraded before uploading the AREDN Firmware. That means you get two chances to mess it up! Please ask for help!

If you really want to “go it alone”, visit the AREDN web page. There you will find step by step instructions on uploading the firmware.

Once the new firmware is installed, the rest is easy. Mount the unit on your tower or antenna mast as high as possible. Both the unit and the antenna go on the tower. Then you run cat5 cable to your operating table. Plug the cat5 cable into your computer and use your favorite web browser. That is all there is to it.

If we have time at the August meeting, I will give a little demo on how to upgrade a Ubiquiti radio to run on our Mesh Network.

See you then.

August 2016

Sun	Mon	Tue	Wed	Thu	Fri	Sat
7 9:00 pm ARES Sunday Night Net on K8EEN KC8BB –Bill	8 7:00 pm MVARC Meeting at the Mt Vernon Red Cross Annex	9	10 5:00 pm Dinner at Southside Diner	11	12 10:00 am Breakfast at Hardee's Dan Emmett Days Celebration See N8IBR for info	13 9:00 am Breakfast at Allison's Fine Diner Dan Emmett Days Celebration See N8IBR for info
14 9:00 pm ARES Sunday Night Net on K8EEN W8PEN –Don	15	16	17 5:00 pm Dinner at Southside Diner	18	19 10:00 am Breakfast at Hardee's	20
21 9:00 pm ARES Sunday Night Net on K8EEN KE8ANS –Terry	22	23	24 5:00 pm Dinner at Southside Diner	25	26 10:00 am Breakfast at Hardee's	27
28 9:00 pm ARES Sunday Night Net on K8EEN KD8HSA –Tom	29	30	31 5:00 pm Dinner at Southside Diner	1 Sept	2 10:00 am Breakfast at Hardee's	3
4 9:00 pm ARES Sunday Night Net on K8EEN W8PEN –Don	5 Labor Day	6	7 5:00 pm Dinner at Southside Diner	8	9 10:00 am Breakfast at Hardee's	10 9:00 am Breakfast at Allison's Fine Diner Ohio State Parks on the air. See KD8HSA for info