

Introduction to HSMM-MESH

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Good evening to the net. My name is Brad, AC7BR, and I will be giving the training this evening. For the training I would like to give a brief introduction to HSMM-MESH or what is now being called Broadband Hamnet. The name HSMM-MESH stands for High Speed Multimedia MESH. It is a high speed, self discovering, self configuring, fault tolerant, wireless data network that can run for days from a fully charged car battery, or indefinitely with the addition of a modest solar array or other supplemental power source. The focus of HSMM-MESH is on emergency communications so it fits very nicely with the mission of ARES.

HSMM-MESH is orders of magnitude faster than packet radio. The Icom ID-1, a D-STAR radio, is often regarded as a high speed data radio. It can run at speeds up to 128kbps. Compare that to HSMM-MESH that can run anywhere from 1Mbps to 54Mbps. That is anywhere from 10 - 432 times faster than the ID-1. As you can see, HSMM-MESH is truly high speed.

Before I continue, I should define the terms node and mesh. A node is a single Linksys router, with a gain antenna and possibly an amplifier. A node can be at your house, on a mountain top, or at a remote location by way of your go-kit. A mesh is a collection of nodes that have automatically discovered each other and have formed a high speed data network.

The downside of HSMM-MESH is that it does not propagate well due to the high frequency that it operates on. This can be solved with modest amplifiers and high gain, directional antennas if necessary – something that we hams know and understand. HSMM-MESH also solves the propagation problem by building a redundant mesh of nodes. To communicate with another node in the network, all I need to worry about is connecting to single node in the mesh, not the target node that I want to communicate with. The mesh software automatically and intelligently routes the traffic to the correct node in the network. Even though the target node is across the valley and may be blocked by terrain and other obstacles, I am still able to communicate with it.

HSMM-MESH uses inexpensive, off the shelf Linksys WRT54G series routers. Only certain models work so you need to consult a hardware buying guide before purchasing a Linksys router. You will also need an external gain antenna, an outdoor enclosure, possibly a bi-directional amplifier and some fans to help mitigate the summer heat. The overall entry cost for an HSMM-MESH node is fairly cheap compared to the cost of the radios some of us own.

So what can you do with HSMM-MESH? Well, you can setup a voice over IP (VOIP) phone system. Imagine an incident commander being able to pick up a phone and make a normal phone call during an emergency when the telephone network and cell phone systems are down. This is possible with HSMM-MESH. Using applications such as Teamtalk, emergency responders can

have video chats, share files or even instant message each other. DRATs can also operate over HSMM-MESH. E-mail such as Winlink 2000, web and file servers are also possible. Do you need a live video feed? It is simple with HSMM-MESH and an IP video camera. In short, anything you can do on a regular data network can be done over HSMM-MESH.

There are several “hub” nodes in the works in Salt Lake County. There is currently work being done on a node on Farnsworth peak. There are also discussions to put a node on Ensign peak. Nodes in Sugar House and Murray are also being discussed. A node is being constructed at the L-3 campus east of the airport. This list does not include individual hams who are putting nodes up at their homes and other locations. The more nodes the better as it is easier for you to connect to the mesh. Furthermore, your node can be the gateway for other hams to connect to the mesh.

For HSMM-MESH to be successful in the Salt Lake valley, we need a critical mass of nodes. There are several groups working on this. If you are interested in experimenting and participating with HSMM-MESH, I encourage you to attend one of the many meetings on HSMM-MESH. There are regular meetings in Daybreak, Magna and Herriman. The Davis county and Logan areas are also heavily involved in HSMM-MESH. You can contact me if you are interested in the details of one of these meetings.

Are there any questions?

References

HSMM-MESH web site

<http://www.hsmm-mesh.org/>

Introductory video

<http://hsmm-mesh.org/documentation/156-introduction-to-hsmm-mesh-or-broadband-hamnet>

Getting started with HSMM-MESH

<http://hsmm-mesh.org/just-starting-read-this.html>

Hardware buying guide

http://hsmm-mesh.org/images/hsmm_docs/WRT54Shop.pdf

Firmware downloads

<http://www.hsmm-mesh.org/software-download.html>

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