

Accessing Your Mesh Node From Inside/Outside Your Home

by John Chamberlain, AC5CV, August 2014

This document will help you **view your mesh node from anywhere, via the web**. Links to other nodes and services will not work, but you can easily check the mesh status, and a few other clever things are possible. Continuing on page 2, you can also **access the entire mesh from inside your home network, e.g., via wi-fi**.

Note: Below, the value “*x*” (usually *0*, *1*, or *2*) depends on your brand of home router.

1. **Configure your node.** Let’s call your node MeshRouter, and your home network router (probably a wif-fi router) HomeRouter.
 - a) Identify HomeRouter’s IP address (e.g., 192.168.x.1). Select an available IP address for MeshRouter within your home network (e.g., 192.168.x.199).
 - b) Connect to MeshRouter, and go to the *Setup* screen. In the *LAN* section, specify *NAT* mode and specify the address you selected (e.g., 192.168.x.199).
 - c) In the *WAN* section, select *Disabled*. This makes the *Gateway* field appear.
 - d) Back in the *LAN* section, fill in the *Gateway* field with your HomeRouter IP address, e.g., 192.168.x.1.
 - e) *Save* your changes and *Reboot* MeshRouter. Sometimes a power-cycle (remove power to the router for a few seconds) is needed.
2. **Connect MeshRouter to HomeRouter.** Use a CAT5 cable to connect a LAN port of MeshRouter to a LAN port of HomeRouter. Verify MeshRouter is connected to the home network: from a home network device, ping your chosen IP:
ping 192.168.x.199 (You should see successful pings.)
3. **Configure HomeRouter to forward your selected port number to MeshRouter.**
 - a) Choose an available port number for your router, such as “8080.”
 - b) Connect to your HomeRouter Setup screens with your browser (probably something like `http://192.168.x.1`). Supply your HomeRouter user name (probably “admin”) and password.
 - c) “Bind” or “reserve” the MeshRouter IP address you chose above. Do this by linking the MAC address of the MeshRouter to the IP address value. This ensures that MeshRouter will always be known by your chosen IP address (e.g., 192.168.x.199) in your home network.
 - d) Most important: To enable outside access to MeshRouter, find the Port Forwarding feature in HomeRouter. Add an entry to forward TCP requests for Port 8080 to the MeshRouter IP address (e.g., 192.168.x.199).

Now, using the IP address for your HomeRouter, you can browse to your MeshRouter screens. **1)** Inside your network, `http://192.168.x.1:8080`. **2)** From outside your network, use `http://eee.fff.ggg.hhh:8080`, where “eee.fff.ggg.hhh” is the IP address assigned by your ISP (can be found in the HomeRouter Setup screens). Since your ISP can change the value **eee.fff.ggg.hhh** at any time without warning, a good solution is to subscribe to a **domain name** service (e.g., DynDns) that links a name with your current IP address. Then you can **1)** specify the name in place of the numbers of your IP address (e.g., `ac5cv.dyndns.org`), and **2)** rely on the service to automatically update the link between the name and your current IP address, (e.g., `http://ac5cv.dyndns.org` will always point to HomeRouter, and `http://ac5cv.dyndns.org:8080` always points to MeshRouter).

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4. **Optional: Configure HomeRouter so any user on your home network can browse the mesh.** Inside your home network, when you click a browser link to a mesh node, your HomeRouter needs to know the mesh node IP address that goes with that node name. Your MeshRouter has that information. And so, you can specify it as the first provider: effectively a “Mesh Domain Name Server” for devices in your home network. Back in the HomeRouter configuration screens...
 - a) **Identify MeshRouter to be the first “domain name server” (DNS) for devices on your home network.** Find the screen for specifying DNS servers, usually part of the DHCP settings. Specify the IP address for MeshRouter as the first DNS (e.g., 192.168.x.199), and then specify the IP address for HomeRouter as the second DNS (e.g., 192.168.x.1). HomeRouter will pass its requests on to the DNS address obtained from your Internet service provider (ISP).
 - b) **Tell HomeRouter which IP addresses MeshRouter should especially handle.** Find the “routing” settings in the HomeRouter Setup screens—usually part of an “Advanced” category. Since mesh IP addresses will look like “10.x.y.z,” add a new entry, specifying that all addresses like “10.0.0.0”, Subnet Mask “255.0.0.0” should be directed to our MeshRouter’s IP address as a gateway (e.g., 192.168.x.199).
 - c) **Save the changes, and reboot HomeRouter.** Since you’ve changed important settings on your home network, a restart of the network is necessary. Sometimes a power cycle of the connected devices is necessary, too. You may also need to reconnect or restart other network devices to update their DNS settings. In the end, you should be able to verify that network devices now have DNS settings pointing to your MeshRouter first, and your HomeRouter second.

After Step 4, when connected to your home network (via HomeRouter), you should be able to browse to any mesh node by name (e.g., AC5CV-QTH), just as if you were connected directly to a mesh node via a CAT5 cable.

Fix a Windows DNS problem. For Windows devices only, you may successfully connect to mesh nodes the first few times, but then start failing (“not found”). This behavior can be fixed by carefully following the “Workaround” steps given in this Microsoft Knowledge Base article—the steps to add an entry to your registry: <http://support.microsoft.com/kb/320760> (Alternatively, you can download [this “zip” file](#), extract the “reg” file, right-click it, and choose *Merge*.) This change makes every web search look *first* for a mesh node. **Note:** Windows XP devices will need a reboot to finish the edit. Although the article implies it only applies to Windows XP machines, the above registry edit also fixed my Windows 7 computers.

And Windows devices also need one other small change to browse the mesh. In your Network connection *Properties*, *TCP/IP Properties*, *Advanced*, *DNS* (tab), *Add...*, type the domain suffix: “**local.mesh**”, and click *Add*, *OK*, *OK*, *Close*.

CAUTION: Avoid performing any firmware upgrades over your home network or the mesh network. Any unexpected disruption in the wireless network during a firmware upgrade could result in a very “bad day” for your node! Instead, it’s best to connect to the nodes with a cable for upgrades.