Troubleshooting HotView Pro software and mesh issues

This section lists problems and potential solutions.

Problem	Possible solution
Cannot ping the HotView Pro server	Make sure that the required ports are open. Clear the ARP cache and ping again. To clear ARP cache: 1. Verify administrator privileges. 2. Open a command prompt. 3. Type: arp –d <mesh ip>
HotView client cannot connect to the HotView Pro server	Make sure you can ping the server. Check the firewall settings.
Installation does not finish	If installation takes longer than 5 minutes, or does not finish, check the version of Java. For stable performance, you must use Java 7 (32 bit). If installation does not finish, Java is not installed or a 64-bit version of Java was installed.
Cannot see Remove or Remove All buttons	When you view shortened windows, you cannot see the whole display. Expand the window to see the Remove or Remove All buttons.
You do not know the IP address of the mesh	If you do not know the mesh IP address, you can use a utility to discover it, such as Advanced IP Scanner at http://www.advanced-ip-scanner.com/ or Angry IP Scanner at http://www.angryip.org When you use these tools, make sure you turn off the wireless features of the laptop from which you run the utility.

Problem	Possible solution
Cannot log into HotView Pro server	• Make sure you can ping the server machine. If the server process is running on the same machine (such as your laptop) you may need to use 127.0.0.1, the loopback address, instead of your machine's actual IP address. Some systems do not recognize their own IP address if the network is not connected. • Verify that the server process is running. You should see two javaw.exe processes, one for the launcher program and one for HotView Pro itself. • If a firewall is between the client computer and the server, you need to open ports in the firewall. See "Ports that HotView Pro software uses" on page 3. • If your login credential is correct, but the program says it is not correct, the login file might be corrupt. Delete the NmsUsers.xml file to correct the problem.
Cannot shut down HotView server	Open the task manager, and then stop all Java processes.
Cannot apply license or fill out Licensed To form	• If you are on a multi-user PC and are not running HotView Pro as the administrator, you cannot add a license. • If you are on a multi-user PC and are not running HotView Pro as the administrator, you cannot use the Licensed To form. You must run the program as the administrator, and then fill out the form.
Cannot add a mesh to HotView Pro	• Make sure you can ping the mesh. The ping must be from the server machine and not from the client. • Make sure that the ports required by Firetide products are open. See "Ports that HotView Pro software uses" on page 3.
A port is not working	• Make sure that the port is enabled. Enable the port if necessary. • Check the cable.

Problem	Possible solution
Node missing from mesh (down nodes)	• Ping the node • See "Forcing node discovery" • If you cannot see one or more mesh nodes in HotView Pro, make sure that you set the extended range and multiple hop feature. The extended range feature is for applications where mesh nodes are 0.8 km (0.5 mile) or more apart. The multi-hop optimization feature decreases the possibility of packet collisions. If you can see the head node but not other nodes, then you also might have a configuration problem.
During staging tests the head node is visible in the network view but one or more nodes are not visible	• Make sure that all of the nodes are running the same active image. • Make sure that the radio channels are configured correctly. • Make sure that you have staging antennas on Radio 1/connector 1 and Radio 2/ connector 1 for each node. • If indoors and the nodes are close together, decrease the radio transmit power to 50%. • You might have another configuration problem.
After multiple reboots a mesh node is missing	If a mesh node reboots five times within 10 minutes, the mesh node loads the second saved firmware image. The previous firmware, if older or different from the firmware of the other mesh nodes in a mesh network, might not be recognized by the mesh and HotView Pro will not detect the mesh node. To prevent this behavior, always upgrade the firmware image on each mesh node two times, so both images are the same.

Problem	Possible solution
Poor mesh performance	• Check for RF problems with the Statistics panels and diagnostics tests (Iperf). • Make sure you enabled multi-hop optimization. • Make sure the extended range is longer than the longest link in your mesh. • Record the RSSI levels for each link. RSSI levels close to or below the absolute minimums cause performance issues. • Run a UDP Iperf test across each link, and record the throughput. If the throughput is low, the receiving end probably has a problem. • Check the number of dropped packets and number of retries. If either value is more than 1% of the total packets sent, interference exists.
Hardware in network is not working correctly.	• Use MAC address filtering to block traffic from the hardware that is not working as expected.
Installing license keys	When you install new keys on an existing mesh: 1. Install keys to the far node. 2. Install the keys to the node from which you are working.
Invalid license message	Save the License To information during the permanent license request process.
An access point does not change to use 5 GHz radio	In a wireless distribution system configuration if you remove and then install the Ethernet cable, the access point does not change to the 5 GHz radio. When you enter the serial number of a new access point: 1. Click on the relay station and compare the configuration to the new access point. 2. Edit the VAP group. 3. Add the new access point and click **Save**. Go to **Access Point > Configure VAP,** and click **Save**.
Online DFS authentication failed	Use the offline DFS authentication method.

Forcing node discovery

If one or more nodes fail to join the mesh after five minutes, you can try to recover the node. When you recover a neighbor node, the system recalculates the whole mesh. The mesh loses the radio channel plan. To recover from a mesh recalculation, reboot each node individually.

To force discovery of a missing node:

1. Select a node that is geographically close to the missing node.
2. Right-click the node, and then select **Advanced Tools > Attempt to Recover Neighbor Node**.
3. Reboot each node individually.

If you recently changed a mesh setting, change it back to the original settings and see if the node joins the mesh. If it does, try the change again.

When changing radio settings, it is often best to change just one setting at a time. For example, when changing the bonded-mode mesh-wide radio settings, change Radio 1, and then make sure all nodes joins the mesh before changing Radio 2.

If you cannot recover the node, follow these steps:

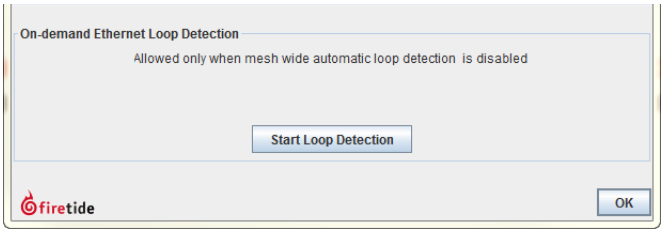
1. Connect to it directly through an Ethernet connection.
2. Change its settings to match those of the rest of the mesh.
3. Import the mesh settings from the head node, and then log out of the mesh.
4. Connect directly to the down node. Use the ping command to check the IP address. If you do not know the IP address of the node, press the reset button with a paper clip for about 15 seconds.

Detecting an Ethernet loop

The system detects Ethernet loops automatically. If you disable loop detection, you can use the manual loop detection feature.

To use on-demand Ethernet loop detection:

1. Go to **Tools > Ethernet Loop Detection**.
2. Click **Start Loop Detection**.
3. Click **OK** when finished.



Link throughput tests

HotPort mesh nodes have a built-in link throughput tool.

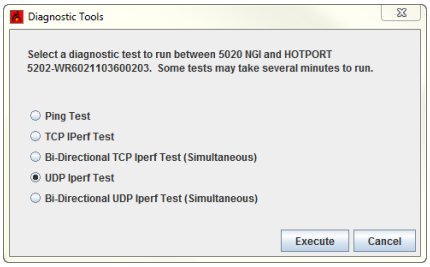
The Iperf test is a deployment diagnostic tool and is not a performance benchmark test. The results are indicative of baseline performance, but actual throughput performance can be higher.

To measure link throughput performance:

1. Right-click on one of the two nodes between which you want to measure performance.
2. Select **Run Diagnostics Tools**, and select the second node from the menu.

   A window appears from which to select a test:

   - Ping. A ping test checks for a link between the nodes. It does not generate enough traffic to affect mesh operation. The ideal result is a low, consistent, ping response time. Highly inconsistent times indicate RF signal problems.
   - TCP Iperf and bi-directional TCP Iperf. Both tests send a large amount of TCP traffic between the nodes on one link. The bi-directional test runs the test traffic in both directions simultaneously.
   - UDP Iperf and bi-directional UDP. Both tests run a large amount of UDP traffic between the nodes on one link. The bi-directional test runs traffic in both directions simultaneously.
3. Select the type of test.
4. Click **Execute**.



Note: Iperf tests flood a link with as much traffic as it can carry. This can disrupt other traffic on the mesh. Iperf sends a large, fixed amount of traffic. If iperf cannot complete the transfer in a fixed period of time, it stops. If you receive a failure message, run the test again. If the test fails consistently, substantial interference exists on the RF link.

Resolving interference issues

Ensure that the source of the interference is not the other radio in the node or from poor antenna orientation.

Use the Spectrum Analyzer feature and a directional antenna to locate the source of the interference. When you find the direction of maximum signal strength, rotate the antenna to change its polarization from vertical to horizontal or

horizontal to vertical as necessary. Alternately, you can use other spectrum analysis equipment to look for sources of interference.

After you locate the approximate direction and polarization of the interference, you can:

- Use more-directional antennas to minimize interference, or aim the antennas you have to minimize pickup.
- Change antenna polarization to the opposite of the interference source.
- Change operating bands. Changing channels within the band can help, but inter-channel rejection within one band is not good.
- Add a single-channel bandpass filter to the antenna lead. These devices are selective and can eliminate interference. Contact Firetide for options and resellers.
- Move the equipment out of the path or range of the source of the interference.

Powerful microwave transmitters, such as those used by television satellite uplink equipment, emit a strong enough nearby field that it is difficult to get 802.11 equipment to operate reliably if it is near such transmitters.

Using Telnet and SSH

You can use telnet or SSH to connect to the head node of a mesh. The account name is ftusr, and the password is ftu5r. After you connect to the head node, you can then telnet to other nodes in the mesh as necessary for testing.

Quadritarium:~ admin$ ssh 192.168.224.20 -l ftusr

ftusr@192.168.224.20's password:

Welcome to Firetide Command shell

ftsh >> help

Firetide Command Shell Usage

show :This command tells ftsh to get some information

conf :This command tells ftsh to set some information

perf :This command takes to Performance menu

table :See the various tables in the node

stats :This command takes to Statistics menu

telnet:telnet to a node. telnet <Node IP addr>

ssh:Set up SSH session to a node. ssh <Node IP addr>

help:This command prints this help

exit:Quit/Exit Firetide Command Shell

The perf command lets you run Iperf from the command line. You can write scripts on your computer to connect and run various types of tests across multiple links simultaneously.

Troubleshooting multicast issues

These tables show the reserved addresses used for various multicast functions and Ethernet MAC addresses. Ensure that your network does not use reserved addresses for anything but the intended purpose.

IPv4 address	Purpose
224.0.0.0	Base multicast address
224.0.0.1	All hosts multicast group
224.0.0.2	All routers
224.0.0.4	Distance vector multicast routing protocol (DVMRP)
224.0.0.5	All OSPF routers
224.0.0.6	All D routers
224.0.0.9	RIP version 2 group address
224.0.0.10	EIGRP group address
224.0.0.13	Protocol independent multicast (PIM)
224.0.0.18	Virtual router redundancy protocol (VRRP)
224.0.0.19 to .21	IS-IS over IP
224.0.0.22	IGMP version 3
224.0.0.102	Hot standby router protocol version 2 (HSRPv2) and gateway load balancing protocol (GLBP)
224.0.0.107	Precision time protocol version 2 peer delay measurement messaging
224.0.0.251	Multicast DNS (mDNS) address
224.0.1.1	NTP clients
224.0.1.39	AUTO-RP-ANNOUNCE address
224.0.1.40	AUTO-RP-DISCOVERY address
224.0.1.41	H.323. gatekeeper discovery address
224.0.1.129 to .132	Precision time protocol version 1 time announcements
224.0.1.129	Precision time protocol version 2 time announcements

IPv4 address	Purpose
224.0.1.133 to 239.255.255.255	Available for multicast groups

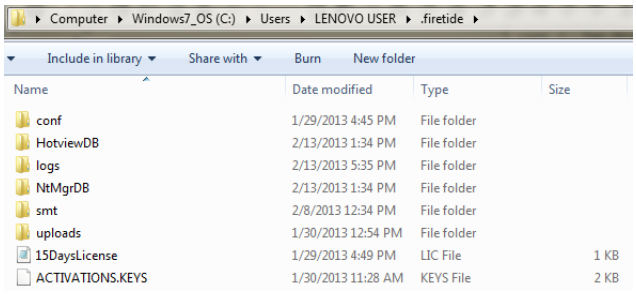
Ethernet MAC address	Type field	Purpose
01-00-0C-CC-CC-CC	0x0802	Cisco discovery protocol (CDP), VLAN trunking protocol (VTP)
01-00-0C-CC-CC-CD	0x0802	Cisco shared spanning tree protocol address
01-80-C2-00-00-00	0x0802	Spanning tree protocol (for bridges) IEEE 802.1d
01-80-C2-00-00-08	0x0802	Spanning tree protocol (for provider bridges) IEEE 802.1ad
01-80-C2-00-00-02	0x8809	Ethernet OAM protocol IEEE 802.1ah
01-00-5E-xx-xx-xx	0x0800	IPv4 multicast (RFC 1112)
33-33-xx-xx-xx-xx	0x86DD	IPv6 multicast (RFC 2464)

User accounts and server directory structures

This section explains the server and user directory systems.

Best practice: When you install HotView Pro to the production server, create a user account for HotView Pro. Do not run HotView Pro under your ordinary personal user account. To create a new user account, refer to Microsoft help.

The HotView Pro software creates a .firetide directory in the home folder of the account under which it is installed. If you are running Windows 7, the path to the is C: > Users > *HotView Pro* > .firetide



This directory contains:

- License files and keys
- Log files
- Other installation-specific data

If you log in as another user on the server machine and launch HotView Pro, it creates a new .firetide directory in that account's home folder.

User account directory structure

HotView creates a subdirectory called .firetide in the user's home directory. This contains:

- User IDs
- Passwords
- License keys
- Installation-specific data

When you delete HotView Pro from a computer, the uninstaller does not delete this directory. If you need a clean installation, you have to manually delete this directory.

Best practice: To save the directory and have a clean installation, put the directory within another directory to keep the data.

Moving licenses from one system to another

A management license has to be installed on the computer from which you run HotView Pro.

To clear the license information from an old computer and submit a request to license a new system:

1. From the computer that contains the license information, go to the C: drive or the main drive where HotView Pro is installed:
   - If using XP, go to the Documents and Settings folder.
   - If using Vista, Windows 7 or 8, go to the Users folder.
2. Open the profile that contains the HotView software, and locate the .firetide folder.
3. If you do not have a copy of the key:
   a. Open the Licensing tab in HotView.
   b. Copy the line that contains your key or keys (use Ctrl + C) and paste it into a text editor, such as Notepad.
   c. Save the key file.
4. Shut-down HotView Pro software and all processes that use Java and javaw.exe.
5. Delete the .firetide folder.
6. From the new computer, install HotView Pro software.
7. Enter the management license key that you copied from the old computer.
8. Activate the license key.
9. Enter the License To information, and submit a new request for a permanent license.