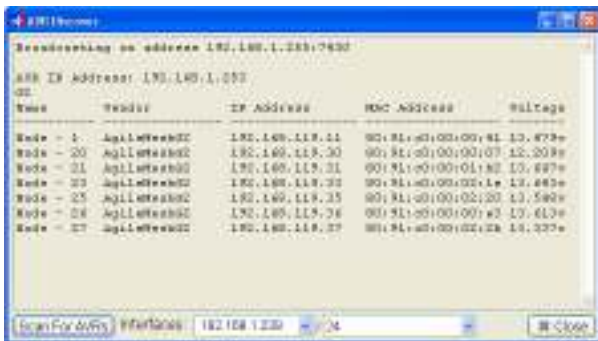




AgileMesh AV3000G2 User Guide

*Includes: AVR Discover, Node Control and
AV3000 Status applications*



AV3000G2 Software Version 7.13 and above
AV3000G2 Software Version 8.6 and above
AVR Discover 3.2 and above

December 31, 2015

Table of Contents

| | |
|--|----|
| Table of Contents | 2 |
| Introduction | 3 |
| Minimum Viewing System Requirements | 3 |
| Recommended Viewing System Requirements | 3 |
| Overview | 4 |
| Initial Setup | 6 |
| Configuring an AgileMesh Viewer(s) | 10 |
| Administration Page..... | 11 |
| Software Upgrade Procedure | 21 |
| AVR Discover | 25 |
| AV3000G2 Hardware Platforms | 27 |
| Appendix 1 – AV3000G2 Port Numbers | 30 |
| Appendix 2 – Troubleshooting | 34 |
| Appendix 3 – AgileMesh Node Control Application | 35 |
| Appendix 4 – AgileMesh AV3000 Status Application | 37 |

© 2010 - 2015 AgileMesh, Inc. Reproduction in whole or in part without written permission is prohibited. All rights reserved. AgileMesh and the AgileMesh logo are trademarks of AgileMesh. All other trademarks are trademarks or registered trademarks of their respective owners.

The information in this document is for information only and subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, AgileMesh assumes no liability resulting from errors or omissions in this document, or from the use of the information contained here. AgileMesh reserves the right to make changes or revisions in the product design or the product manual without reservation and without obligation to notify any person of such revisions and changes.

Printed in USA.

Introduction

The AgileMesh AV3000G2 is a self-configuring IP video router that provides a transport interface between an AgileMesh wireless network and another LAN/WAN. The AgileMesh network is the host to multiple IP video cameras or servers. The AV3000G2 is connected to the wireless MESH network and the wired LAN network via standard hardware interface. The AV3000G2 will find the AgileMesh video assets in the MESH network and map them to one IP address (assigned by the user or by a DHCP server) on the wired LAN network.

The major features provided by the AgileMesh AV3000G2 are:

- Auto-discovers Agilemesh video and sends them to one IP address (user specified or DHCP)
- Replication of a single wireless stream to one or more viewers or destinations to minimize bandwidth utilization on the wireless network
- Enabling connectivity to the Internet or satellite backhaul
- Setting Time of Day on each node

Minimum Viewing System Requirements

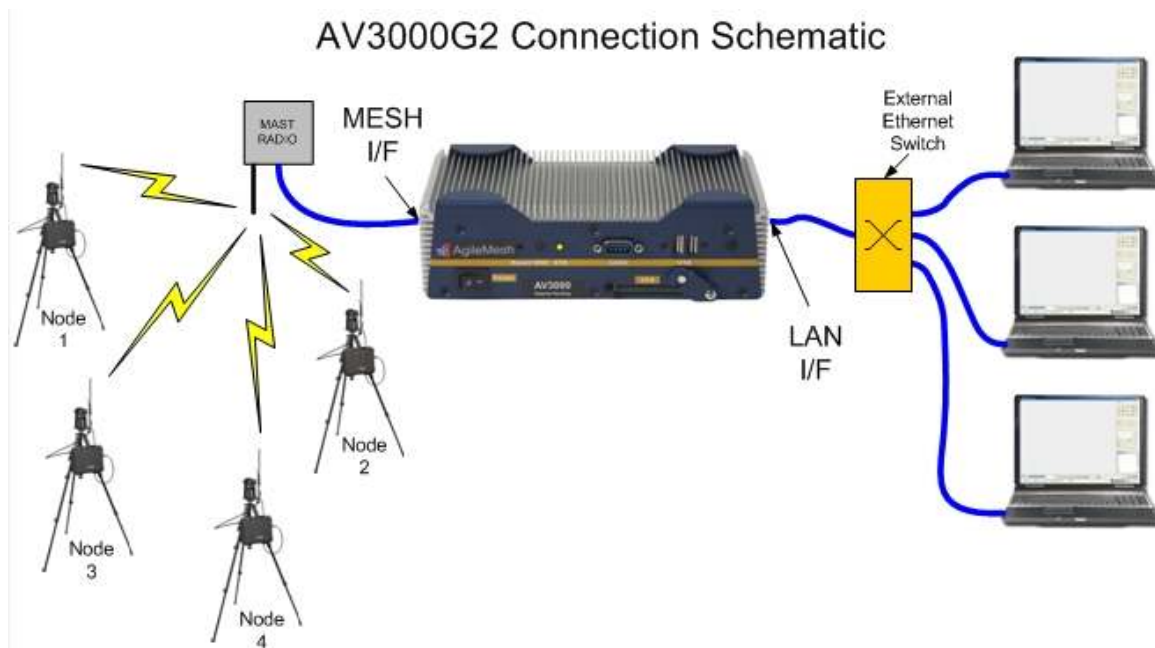
| | Windows 7 Professional (32/64bit) | Windows 8.1 Professional (32/64bit) | Windows 10 Professional (32/64bit) |
|------------|--------------------------------------|--|---------------------------------------|
| CPU (GHz) | 2.3 (multi-core) | 2.3 (multi-core) | 2.3 (multi-core) |
| RAM (GB) | 4 | 4 | 4 |
| Disk (GB) | 120 | 120 | 120 |
| Video Card | 1024 X 768 (256 MB) | 1024 X 768 (256 MB) | 1024 X 768 (256 MB) |

Recommended Viewing System Requirements

| | Windows 7 Professional (32/64bit) | Windows 8.1 Professional (32/64bit) | Windows 10 Professional (32/64bit) |
|------------|--------------------------------------|--|---------------------------------------|
| CPU (GHz) | 3 (multi-core) | 3 (multi-core) | 3 (multi-core) |
| RAM (GB) | 8 | 8 | 8 |
| Disk (GB) | 500 | 500 | 500 |
| Video Card | 1280 X 1024 (512 MB) | 1280 X 1024 (512 MB) | 1280 X 1024 (512 MB) |

Overview

The AgileMesh AV3000G2 is a specialized network router with two Ethernet ports. The operating system is BSD UNIX. The MESH Ethernet side is connected to AgileMesh video sources and the LAN Ethernet side delivers video on one IP address (with each AgileMesh video source on a unique port) to one or more viewers. A typical configuration is shown below.



The AV3000G2 receives IP video from an AgileMesh node via an Ethernet cable. The AgileMesh nodes and the AV3000G2 MESH interface are on the 192.162.119 subnet. Video data is routed through the AV3000G2 to an IP address assigned by the user (preferred) or a DHCP address. The viewer is configured with the IP address assigned to the AV3000G2 as the IP address for all cameras connected (Nodes 1 – 4 in the example above). The AV3000G2 replicated ports are set to 9000 + the node number for codec 1. In the example above, Node 1, codec 1 is viewed on port 9001, Node 2 codec 1 is on port 9002, etc. To view the second codec in an AgileMesh node through the AV3000G2, the port is 9200 + the node number. In the example above, Node 1, codec 2 is viewed on port 9201, Node 2 codec 2 is on port 9202, etc.

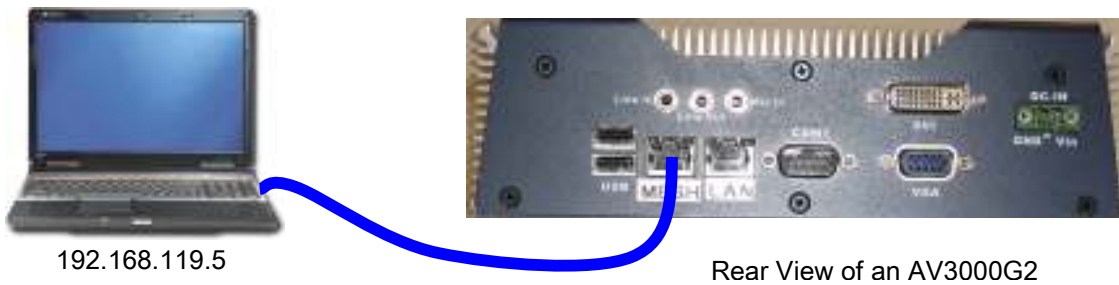
The AV3000G2 Connection Schematic shows three viewers connected to the LAN Ethernet port. When viewing video, the AV3000G2 pulls one copy of the video over the air from the MESH Ethernet interface and replicates the video to the three viewers connected to the LAN Ethernet interface. If

three viewers were viewing the same video, **without** the AV3000G2, three separate copies of the video will be transmitted from each camera and therefore increasing the video bandwidth by a factor of 3. This is an important bandwidth saver in a deployed AgileMesh system.

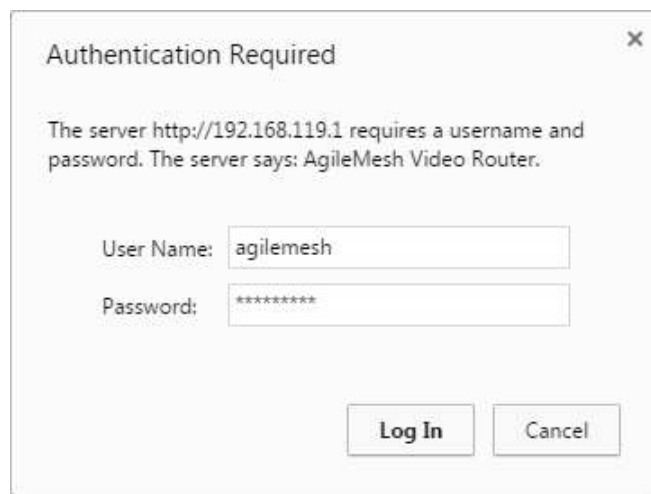
Initial Setup

The AV3000G2 has two Ethernet ports to allow connectivity to the MESH network (AgileMesh video assets) or the LAN network (user’s intranet). **AgileMesh strongly recommends that the LAN network interface should be set to a static IP address on the user’s subnet.** This will be the subnet that the AgileMesh Viewer PC is connected. The static IP should be provided by the Network Administrator to make sure a valid address is used. This section has instructions on setting a static IP address on AN AV3000G2.

To configure the AV3000G2, connect an Ethernet cable from the MESH port on the AV3000G2 to a PC that is on the 192.168.119 subnet. The last octet of the IP address should be between .5 and .9. In the example below, the PC is set to 192.168.119.5.



By default, the IP address of the MESH network interface is 192.168.119.1. Use a browser (IE, Chrome, etc.) to browse to 192.168.119.1. The following window will appear:

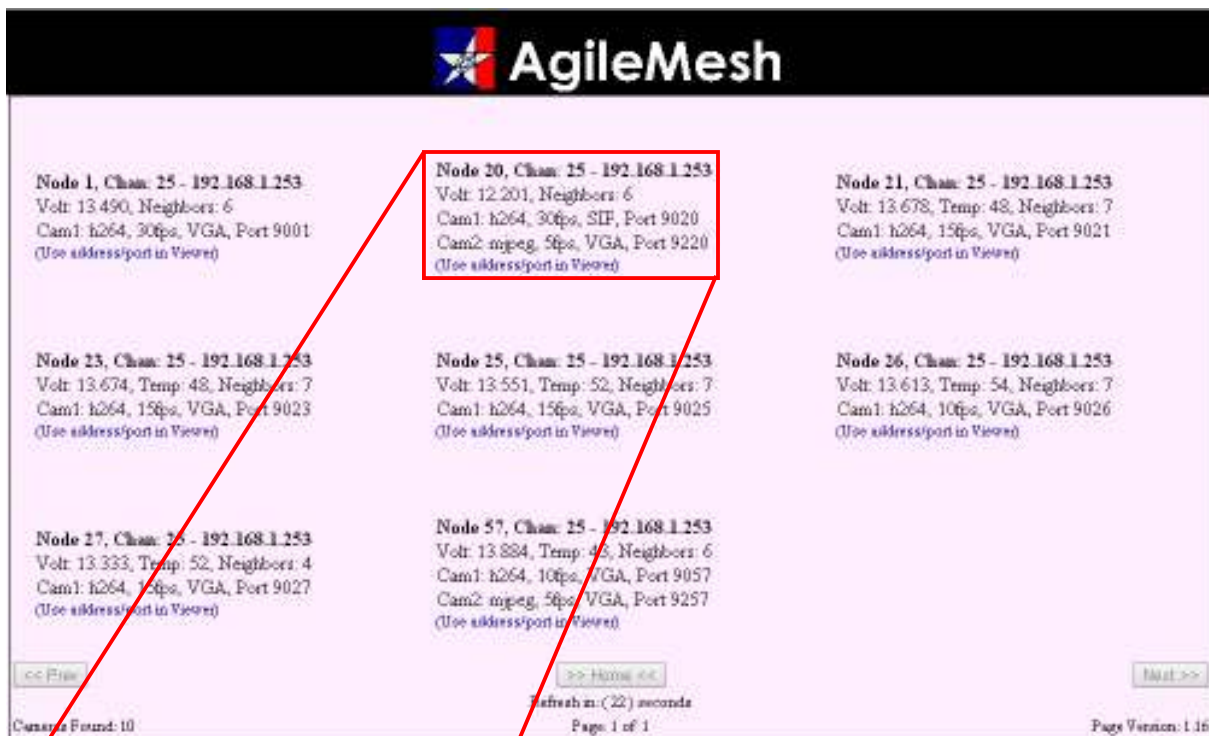


The “User Name” and “Password” are both “agilemesh”. This is the administrator login. Click on the “Log In” button. This will display an empty AV3000G2 home page. On an AV3000G2 that is

connected to a PC on the MESH Ethernet interface, the home page will not contain any video sources as shown below



The screen shot below is from an active AV3000G2 with 8 Agilemesh video assets. This home page lists the AgileMesh video sources discovered along with information that will be needed to configure a viewer.



Node 20, Chan: 25 - 192.168.1.253
Volt: 12.213, Neighbors: 6
Cam1: h264, 30fps, SIF, Port 9020
Cam2: mjpeg, 5fps, VGA, Port 9220
(Use address/port in Viewer)

Here is the information for Node 20. The first line, in bold text, displays the node number, the radio's channel and the IP address to be used in the AgileMesh Viewer. The second line displays the node's voltage and the number of neighbors THIS node can "see". Because Node 20 has two active video inputs, the settings for camera 1 and camera 2 are displayed. After "Cam1" or "Cam 2", the first field displays the type of encoding for that camera, the second field displays the

frames per second (FPS), the third field displays the resolution and the last field displays the port number to be used in an AgileMesh viewer.

Browse to 192.168.119.1/admin to bring up the AV3000G2 Administration webpage. From this webpage, the AV3000G2, the LAN Ethernet interface can be configured to a static IP address, subnet mask and Gateway. The LAN Ethernet address is set from the MESH Ethernet side as the AV3000G2 is shipped with the LAN Ethernet interface set to DHCP. If there is a DHCP server on the subnet where the AV3000G2's LAN Ethernet network is connected, a login from the LAN side is also possible. IF connecting from the LAN side, use the AgileMesh application, "AVR Discover", to find the DHCP address that was given to the AV3000G2.

The screenshot shows the AgileMesh administration interface with the following sections:

- AmCamPage Configuration:** Includes fields for Camera ID, Lines, Refresh Time, Pic Width, Pic Height, Banner Image, Upload Image, Banner Width, Banner Height, Columns, Rows, and View Order.
- AmCamPing Configuration:** Includes fields for Camera ID, Refresh Time, MAC ID, Login, Password, Auto Login, Auto Password, Timeout, Time Threshold, Snapshot Term, and Recovery Delay.
- Interface Configuration:** Includes fields for Current IP, IP Address, Default Router, and Mesh IP Address. A red box highlights these fields.
- Misc. Configurations:** Includes buttons for LAN Config, WAN Config, Port Mapping, Upgrade AVR, and Manage Config.

The zoomed-in view of the Interface Configuration section shows:

- Current IP:** 192.168.119.1
- IP Address:** DHCP
- Default Router:** [Empty]
- Mesh IP Address:** 192.168.119.1
- Use DHCP:**
- Subnet Mask:** [Empty]
- MTU:** [Empty]
- Buttons:** Help, Reset, Save Config

Red arrows indicate the following fields to be configured:

- Enter IP address (points to IP Address field)
- Enter subnet mask (points to Subnet Mask field)
- Enter Gateway (points to Default Router field)
- Default IP address (points to Mesh IP Address field)

To set a static IP address, click on the "Use DHCP" check box to remove the check. Enter the desired static IP address, the subnet mask and gateway. Click on "Save Config" button. The

AV3000G2 must be rebooted for the new address to take effect.

The MESH Ethernet address for the AV3000G2 **should only be changed if there are more than one AV3000G2 units are in the same mesh.** Use the “Mesh IP Address” pull down menu to select 192.168.119.1 or .2 or .3 or .4. If only one AV3000G2 is in the mesh, use the default Mesh IP address of 192.168.119.1.

The AV3000G2 is now configured. Connect the Mesh Ethernet port to an AgileMesh node (usually to the Mast Radio or RCU in a Command Vehicle Kit) and the LAN Ethernet port to the user’s intranet. The next step is to configure the AgileMesh Viewer to view video through the AV3000G2.

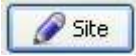
Important:

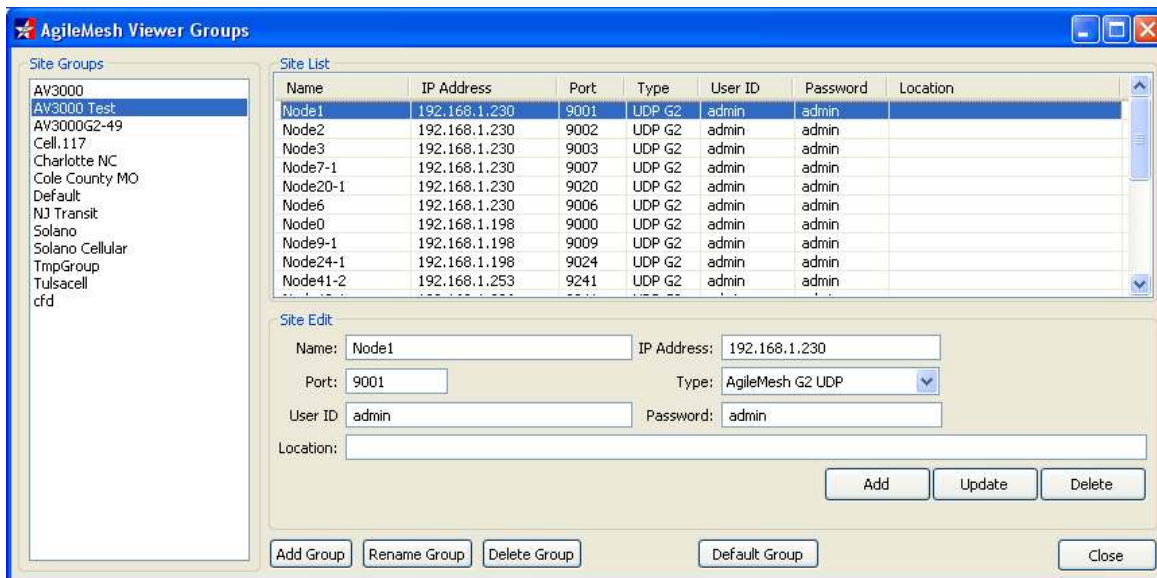
1. **The AV3000G2’s MESH network IP address and the LAN network IP address CANNOT be on the same subnet.**
2. The AV3000G3 MESH address will be 192.168.119.1 by default. If there are more AV3000G2s in the same mesh, the second AV3000G2 should be 192.168.119.2, the third 192.168.119.3 and the fourth 192.168.119.4. A maximum of 4 AV3000G2s can be in the same mesh.

Configuring an AgileMesh Viewer(s)

When an AgileMesh Viewer is utilized on LAN Ethernet Interface, the following items must be known to configure the Viewer:

- The static IP address of the AV3000G2
- The node numbers to be viewed
- Which codec is to be viewed

From the AgileMesh Viewer, click on the Site  button to display “AgileMesh Viewer Groups”. In the example below, the Group named “AV3000 Test” is selected. The list of defined cameras is shown in the Site List below. The “Name” field will be displayed below the video image. The “IP Address” is the address of the AV3000G2. This should be a static IP address assigned by the customer. The “Port” is 9000 + the node number for codec 1 or 9200 + the node number for codec 2. The “Type” field MUST be “UDP G2”. The default User ID and Password are used in the example below.

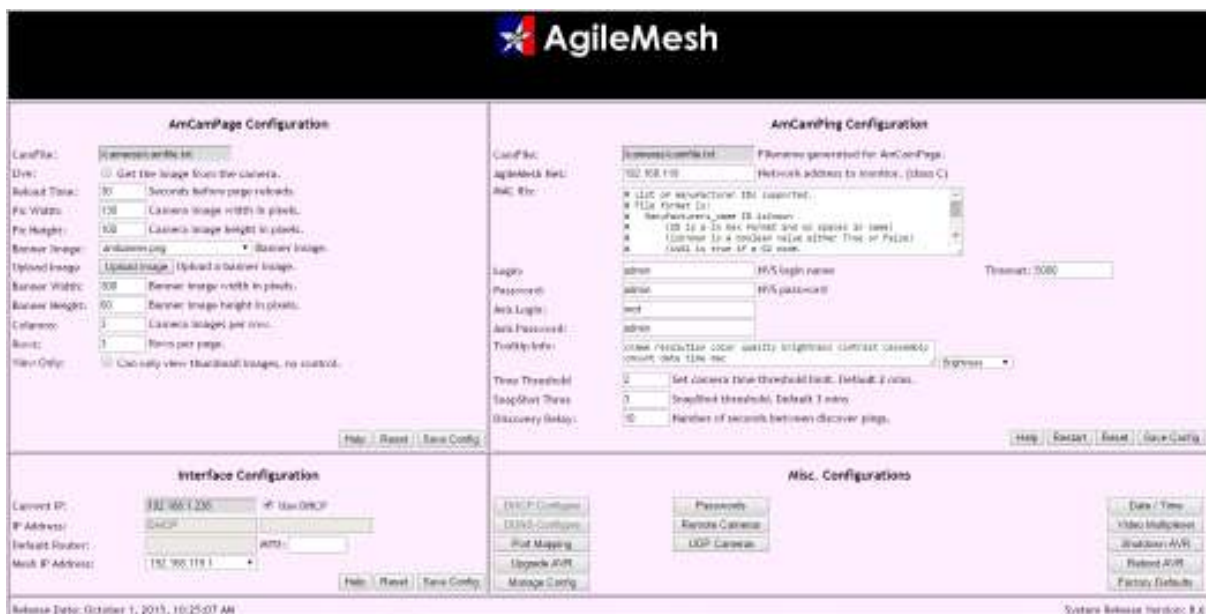


See the AgileMesh Viewer User Guide for more detail on camera configuration.

The AV3000G2 by default will replicate 5 video streams. If six separate videos are being viewed, each of the six video streams will be sent to up to five viewers. The maximum number of replicated streams is 10. The number of streams replicated is set on the Administration page.

Administration Page

The AV3000G2 Administration webpage is used to configure the AV3000G2. Browsing to 192.168.119.1 accesses this webpage. The “User Name” and “Password” are both “agilemesh”. This is the administrator login. Click on the “Log In” button. The current software version is displayed in the lower right corner of the administration page. In the example screen below, the software version is 8.6. The webpage consists of four panels as shown below.



The four panels are: AmCamPage Configuration, AmCamPing Configuration, Interface Configuration and Misc. Configurations. Each of panel is described below.

AmCamPage Configuration

The “AmCamPage” Configuration or AgileMesh Camera Configuration panel is **primarily for factory use and is of little interest to the user.** The fields are described below.

| Field | Description |
|--------------|---|
| CamFile: | Used by AgileMesh only. |
| Live: | Not used. |
| Reload Time: | Time in seconds before the reload time of the discovered nodes. |
| Pic Width: | Not used. |

| Field | Description |
|----------------|---|
| Pic Height: | Not used. |
| Banner Image: | Allows the user to place their own banner image at the top of each AV3000 web page. |
| Upload Image: | Upload a banner image (.jpg or .png). 32 MB maximum file size |
| Banner Width: | In pixels. Minimum value is 50. |
| Banner Height: | In pixels. Minimum value is 40. |
| Columns: | Defines the number of cameras per row to show on the web page. Minimum value is 1. |
| Rows: | Defines the number of rows displayed on the web page. Minimum value is 1. |
| View Only: | Not used. |

AmCamPing Configuration

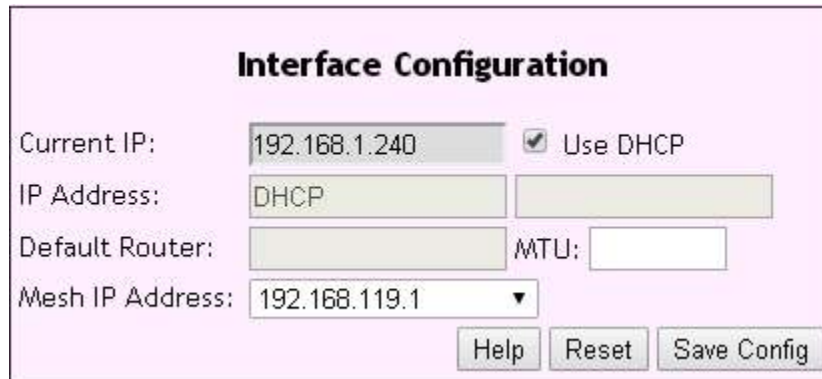
The “AmCamPing Configuration” or AgileMesh Camera Ping Configuration panel is **primarily for factory use and is of little interest to the user.** The fields are described below.

| Field | Description |
|------------------|---|
| CamFile: | Used by AgileMesh only. |
| AgileMesh Net: | This field is used to control what subnet is used on the MESH side for auto discovery and pulling video. Class C subnet. |
| MAC IDs: | This field is used to filter only devices that are auto discovered on the MESH network. |
| Login: | This field contains the user name used to log into an AgileMesh node. |
| Password: | This field contains the password used to log into an AgileMesh node. |
| Timeout: | This field contains the number of milliseconds to wait for a connection to complete when trying to log into an AgileMesh node. |
| Axis Login: | This field contains the user name used to log into an Axis camera. |
| Axis Password: | This field contains the password used to log into an Axis camera. |
| Tooltip Info: | Not used. |
| Time Threshold | Minimum number of minutes for time threshold, default 2. If the time difference is greater than this value then node’s time is set by the AV3000G2. |
| SnapShot Thres | Not used. |
| Discovery Delay: | This field contains the number of seconds between discovery pings. |

Interface Configuration

The “Interface Configuration” panel is used to set the AV3000G2 to a static IP address or to allow a DHCP Server to issue an address to the AV3000G2. The fields are described below.

A DHCP Configuration is shown below. This is the default Interface Configuration. An external DHCP Server issues a lease for an IP address that the AV3000G2 will use. The external DHCP Server also issues the subnet mask, default gateway and MTU size. THE Mesh IP Address is a drop-down menu to allow up to 4 AV3000G2s to operate in the same network. The default address is 192.168.119.1 and should not be changed unless more that one AV3000G2 is in the same mesh. This configuration is **NOT RECOMMENDED** unless the DHCP server is configured to issue the same IP address every time the AV3000G2 is power up. This address must be used in the AgileMesh Viewer and will have to change if the AV3000G2’s IP address changes.



Interface Configuration

Current IP: 192.168.1.240 Use DHCP

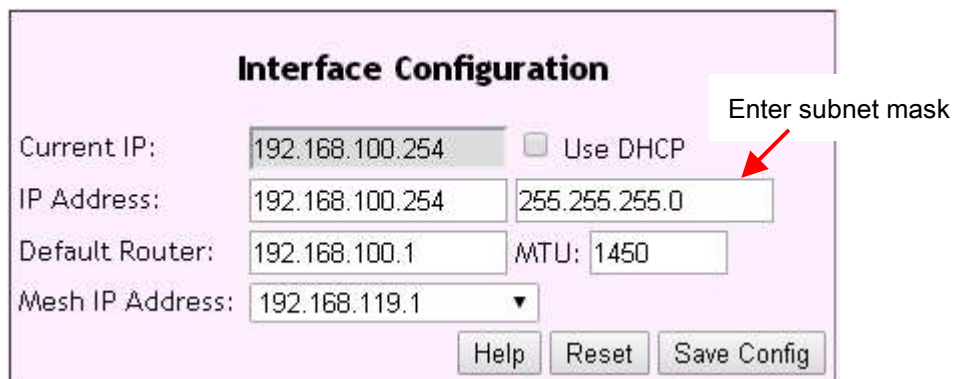
IP Address: DHCP

Default Router: MTU:

Mesh IP Address: 192.168.119.1

Buttons: Help, Reset, Save Config

The preferred Interface Configuration is a static IP address as shown below. Notice the “Use DHCP” checkbox is not checked. The AV3000G2’s IP address, subnet mask, default router and MTU size are enters as shown in the fields below.



Interface Configuration

Current IP: 192.168.100.254 Use DHCP

IP Address: 192.168.100.254 255.255.255.0

Default Router: 192.168.100.1 MTU: 1450

Mesh IP Address: 192.168.119.1

Buttons: Help, Reset, Save Config

Callout: Enter subnet mask (with red arrow pointing to the subnet mask field)

Once entered, click on the “Save Config” button. The AV3000G2 must be restarted (rebooted) for the new configuration to become active.

IMPORTANT:

The AV3000G2 static or DHCP address **CANNOT** be on the 192.168.119 subnet!

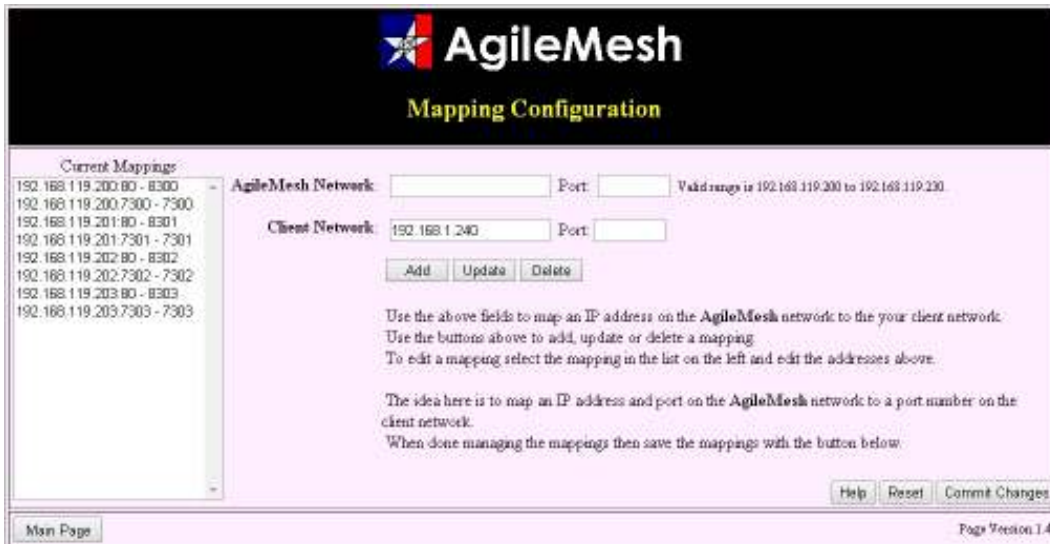
Misc. Configurations

The “Misc. Configuration” or Miscellaneous Configuration panel is used for a variety of operations including upgrading the software, setting the time and rebooting the AV3000G2. The “DHCP Configure” and “DDNS Configure” buttons are grayed out and are not used.



Port Mapping

The “Port Mapping” button is not normally used, as all AgileMesh cameras are pre-configured to be routed through the AV3000G2. The port mapping page is shown below.



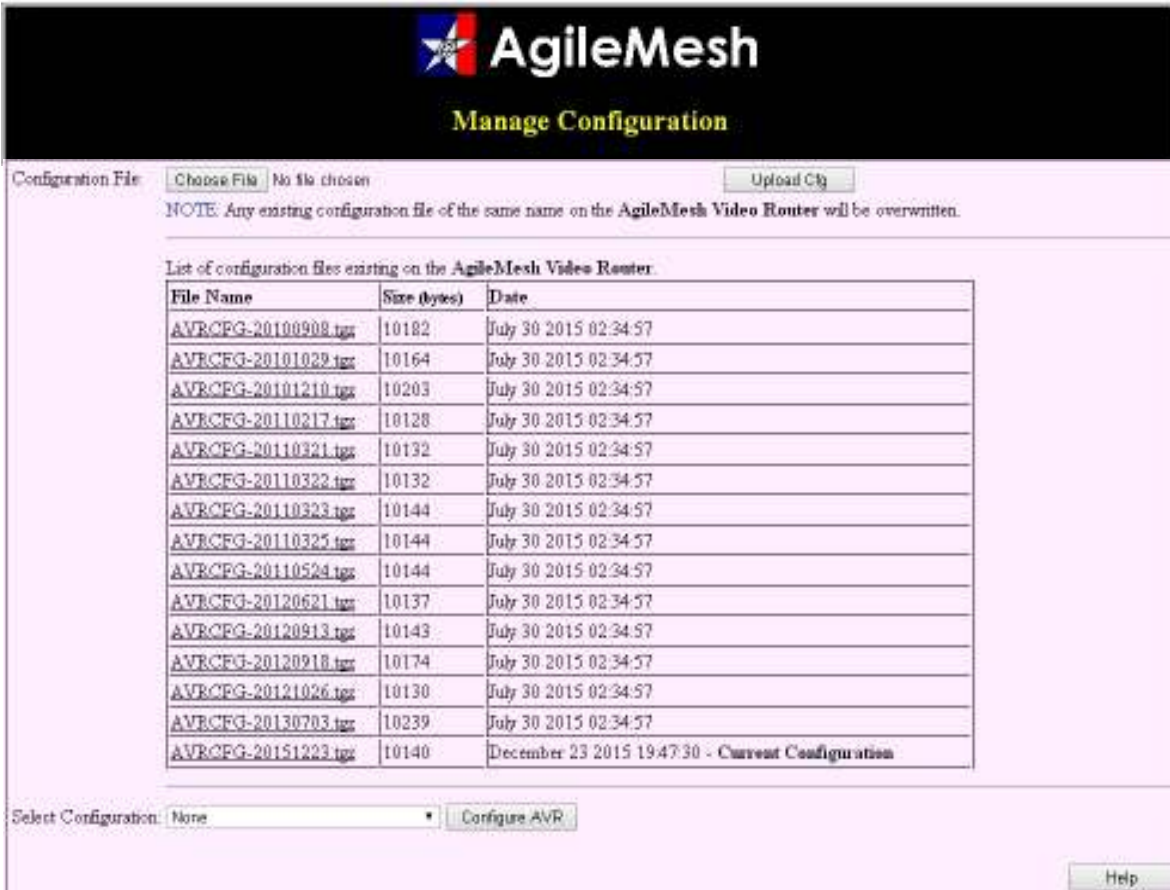
Upgrade AVR

This button is used to upgrade the software on the AV3000G2 (AgileMesh Video Router). The upgrade procedure is described in detail in the “Software Upgrade Procedure” section.



Manage Config

When clicked, this button displays the history of AV3000G2 configurations. An example is screen shot is shown below. This function is rarely used.



AgileMesh
Manage Configuration

Configuration File: No file chosen

NOTE: Any existing configuration file of the same name on the AgileMesh Video Router will be overwritten.

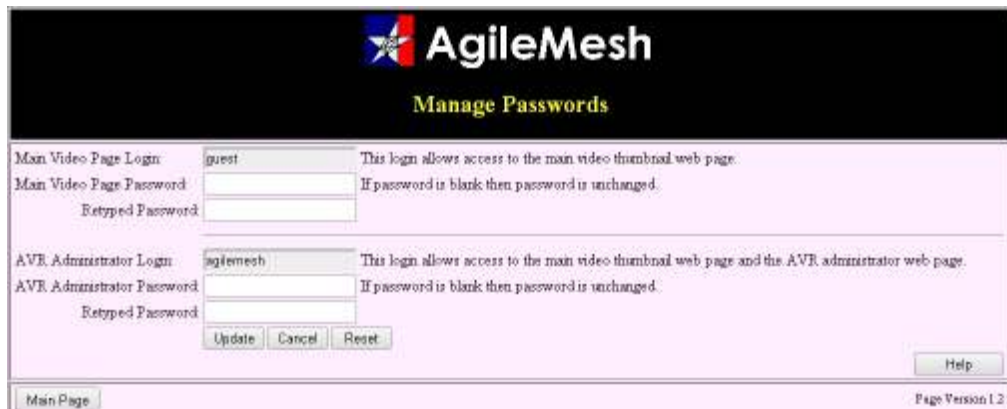
List of configuration files existing on the AgileMesh Video Router:

| File Name | Size (bytes) | Date |
|-------------------------------------|--------------|---|
| AVRCFG-20100908.tgz | 10182 | July 30 2015 02:34:57 |
| AVRCFG-20101029.tgz | 10164 | July 30 2015 02:34:57 |
| AVRCFG-20101210.tgz | 10203 | July 30 2015 02:34:57 |
| AVRCFG-20110217.tgz | 10128 | July 30 2015 02:34:57 |
| AVRCFG-20110321.tgz | 10132 | July 30 2015 02:34:57 |
| AVRCFG-20110322.tgz | 10132 | July 30 2015 02:34:57 |
| AVRCFG-20110323.tgz | 10144 | July 30 2015 02:34:57 |
| AVRCFG-20110325.tgz | 10144 | July 30 2015 02:34:57 |
| AVRCFG-20110524.tgz | 10144 | July 30 2015 02:34:57 |
| AVRCFG-20120621.tgz | 10137 | July 30 2015 02:34:57 |
| AVRCFG-20120913.tgz | 10143 | July 30 2015 02:34:57 |
| AVRCFG-20120918.tgz | 10174 | July 30 2015 02:34:57 |
| AVRCFG-20121026.tgz | 10130 | July 30 2015 02:34:57 |
| AVRCFG-20130703.tgz | 10239 | July 30 2015 02:34:57 |
| AVRCFG-20151223.tgz | 10140 | December 23 2015 19:47:30 - Current Configuration |

Select Configuration:

Passwords

The “Passwords” button allows changes to the “guest” and “agilemesh” passwords. This function is rarely used.



AgileMesh
Manage Passwords

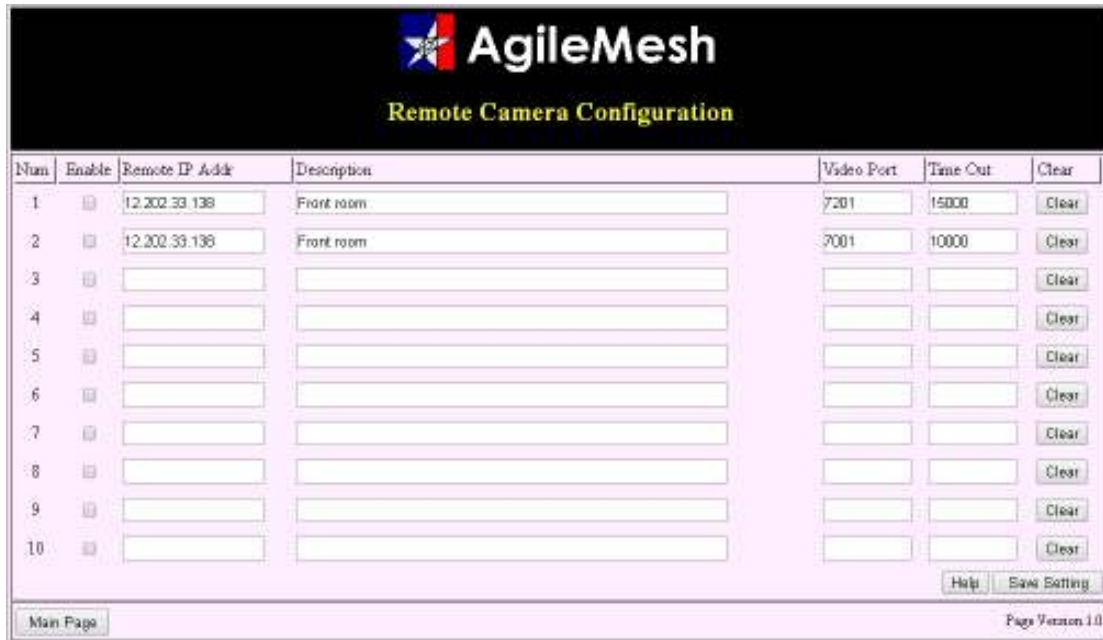
Main Video Page Login: This login allows access to the main video thumbnail web page.
 Main Video Page Password:
 Retyped Password:
If password is blank then password is unchanged.

AVR Administrator Login: This login allows access to the main video thumbnail web page and the AVR administrator web page.
 AVR Administrator Password:
 Retyped Password:
If password is blank then password is unchanged.

Page Version 1.2

Remote Cameras

The remote cameras button allows the remote monitoring of an AgileMesh node's voltage to be monitored if the node is connected via a cellular connection. The configuration screen is shown below.



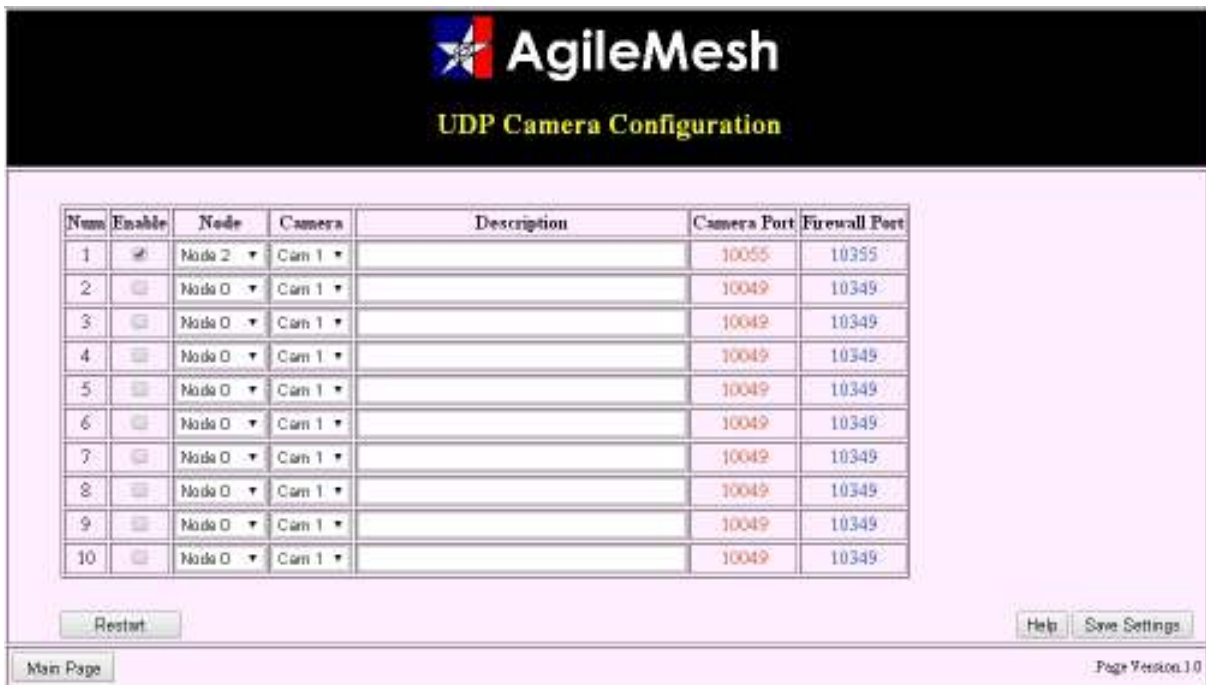
The screenshot shows the AgileMesh Remote Camera Configuration interface. It features a table with 10 rows for configuring remote cameras. Each row includes an 'Enable' checkbox, a 'Remote IP Addr' field, a 'Description' field, a 'Video Port' field, a 'Time Out' field, and a 'Clear' button. The first two rows are pre-filled with '12.202.33.138' for the IP address and 'Front room' for the description. The first row also has '7201' for the video port and '15000' for the time out. The interface includes a 'Main Page' button at the bottom left and 'Help' and 'Save Setting' buttons at the bottom right.

| Num | Enable | Remote IP Addr | Description | Video Port | Time Out | Clear |
|-----|-------------------------------------|----------------|-------------|------------|----------|-------|
| 1 | <input checked="" type="checkbox"/> | 12.202.33.138 | Front room | 7201 | 15000 | Clear |
| 2 | <input checked="" type="checkbox"/> | 12.202.33.138 | Front room | 7001 | 10000 | Clear |
| 3 | <input type="checkbox"/> | | | | | Clear |
| 4 | <input type="checkbox"/> | | | | | Clear |
| 5 | <input type="checkbox"/> | | | | | Clear |
| 6 | <input type="checkbox"/> | | | | | Clear |
| 7 | <input type="checkbox"/> | | | | | Clear |
| 8 | <input type="checkbox"/> | | | | | Clear |
| 9 | <input type="checkbox"/> | | | | | Clear |
| 10 | <input type="checkbox"/> | | | | | Clear |

The static IP address of the cellular modem connecting a remote camera is entered in the “Remote IP Addr” field. The video port is entered in the “Video Port” field. A timeout in milliseconds is entered in the “timeout” field.

UDP Cameras

This button allow non-AgileMesh UDP cameras to be routed throught the AV3000G2. This feature is rarely used as AgileMesh UDP video is pre configured. A screenshot of the entry screen is shown below. Up to 10 non-AgileMesh cameras can be added.



Date and Time

This button sets the date and time from the PC to which it is conneted. A screenshot of the entry screen is shown below.



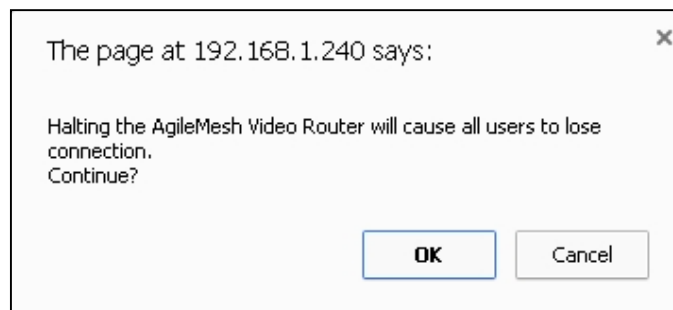
Video Multiplexor

This button is used for the sole purpose of setting the maximum number of replicated video streams are allowed by the AV3000G2 (“Max Connections”). The default is 5 replicated streams to 5 different viewers. The maximum is 10 streams. A screenshot of the entry screen is shown below.



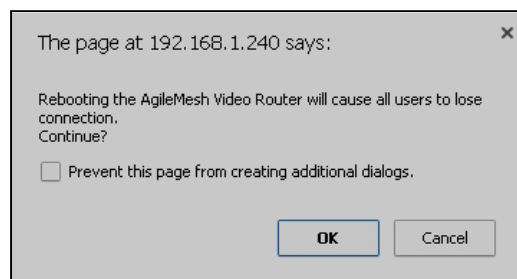
Shutdown AVR

This button is used to shutdown the AV3000G2 (AgileMesh Video Router). The following screen will appear and requires clicking the “OK” button to shutdown the AV3000G2.



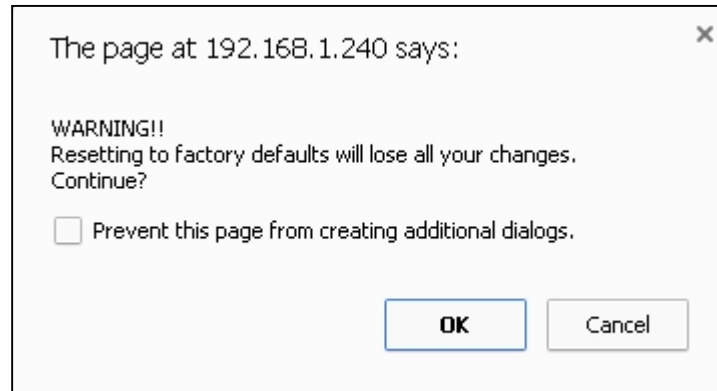
Reboot AVR

Clicking this button reboots the AV3000G2 (AgileMesh Video Router). The following screen will appear and requires clicking the “OK” button to reboot the AV3000G2.



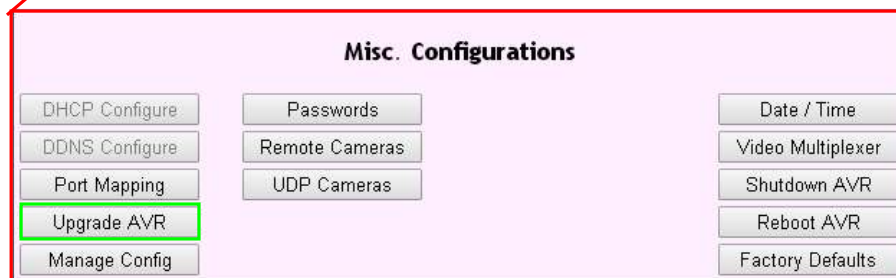
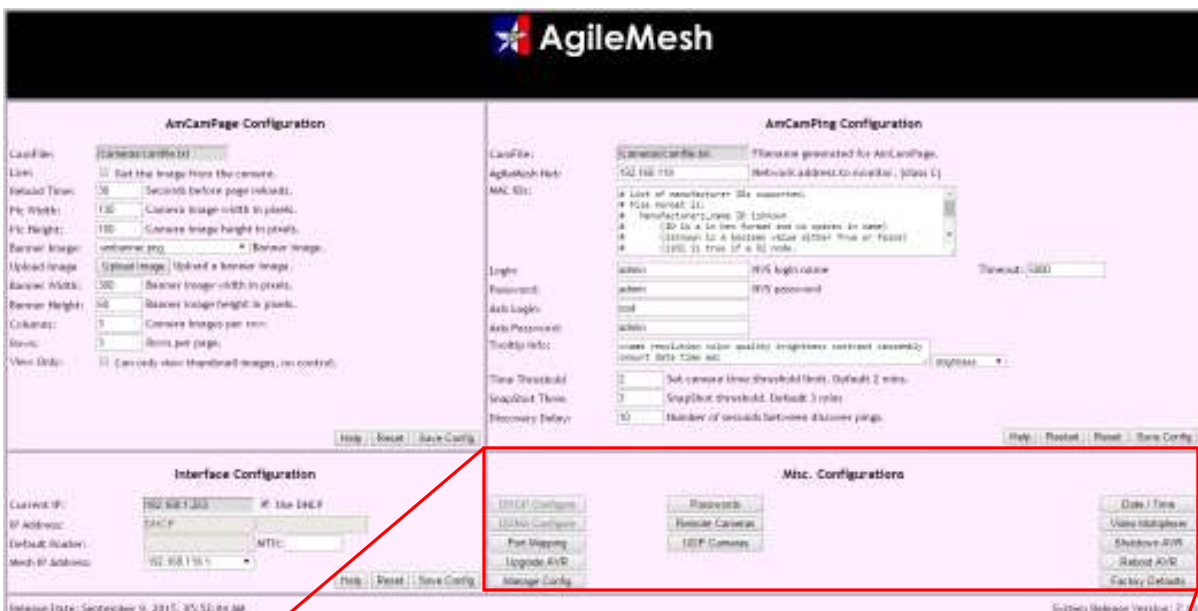
Factory Defaults

Clicking this button returns all AV3000G2 setting to factory defaults. The following screen will appear and requires clicking the “OK” button to reboot the AV3000G2.



Software Upgrade Procedure

The AV3000G2's software is upgraded from a PC that is connected to either the MESH or LAN Ethernet interfaces. Login to the AV3000G2 by browsing (IE, Chrome, Firefox, etc.) to the default mesh address (192.168.119.1) on the MESH Ethernet interface or from the static IP address on the LAN Ethernet interface. Use the AgileMesh application “AVR Discover” to determine the previously defined static IP address or find the address on the LCD display for AV3000G2 units inside and RCU. The administrative User ID and Password are both “agilemesh”. This will display the AV3000G2 home page. From the same browser, add “/admin” to the IP address (example 192.168.119.1/admin) to display the administration pages as shown below.



Scroll down the administration page to the lower right panel and click on “Upgrade AVR”. “AVR” is the “AgileMesh Video Router” also known as the AV3000G2. This will bring up the “Video Router Upgrade Upload” screen as shown below.



The screen shot above indicates that the current S/W version of the AV3000G2 is 8.4. An upgrade for this version of the AV3000G2 will require software version 8.5 or higher (and not 7.XX S/W). If the current version was 7.XX, then 7.XY software will be required for the upgrade. See “AV3000G2 Hardware Platforms” section for an explanation of AV3000G2 hardware platform differences.

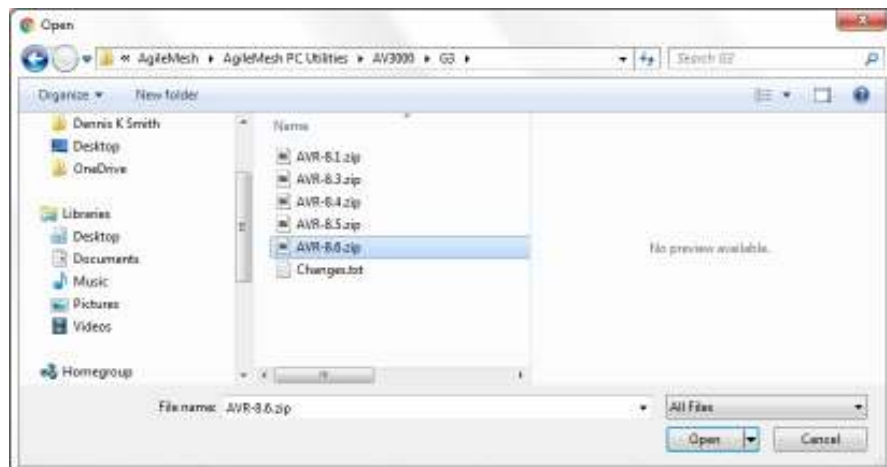
All AV3000G2 upgrade software is in the form of a Zip file. Typical upgrade file names are:

AVR-7.13.zip

AVR-8.6.zip

The upgrade file should not be unzipped as the AV3000G2 expects the upgrade file to be zipped. The upgrade file is available from the AgileMesh website (www.agilemesh.com → Support → Software) with login credential that were previously provided to AgileMesh by the customer. Once the upgrade file is available, place it in a known location on the PC to be used to upgrade the AV3000G2.

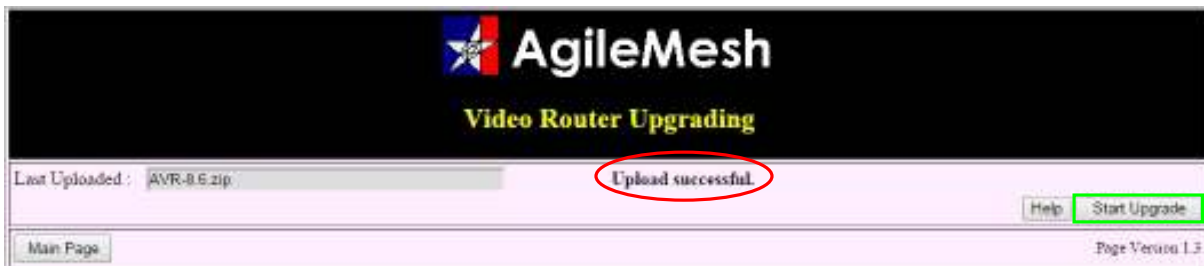
From the screen shot above, locate and click on the “Choose File” button. This will bring up a browser to select the upgrade file. Highlight the desired upgrade file and click “Open” as shown below.



The selected file "AVR-8.6.zip" is now listed on the upgrade screen as shown below. Now click on



the "Upload File" button to begin the upload of the upgrade file. The following screen will appear indicating "Upload Successful"



On the screen above, click on the "Start Upgrade" button. The software upgrade will start and the following screen will appear when the upgrade is successful.



Click on the "Main Page" button to return to the administrative page to reboot the AV3000G2. Scroll down to the lower right corner to the "Misc. Configurations" panel and click on the "Reboot AVR" button.



This will start a 180 second countdown until the AV3000G2 is rebooted.

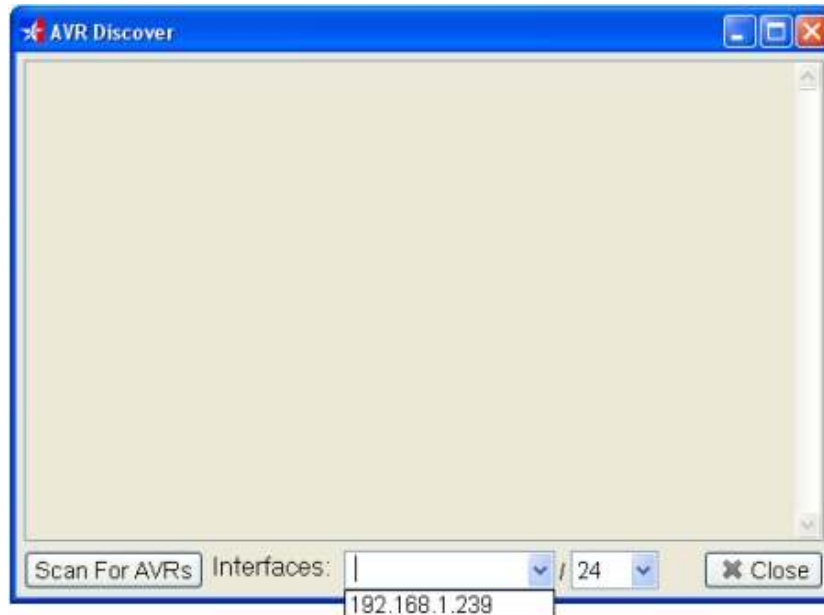


This completes the software upgrade. The new software version will be displayed in the bottom right-hand corner of the administrative page as shown.

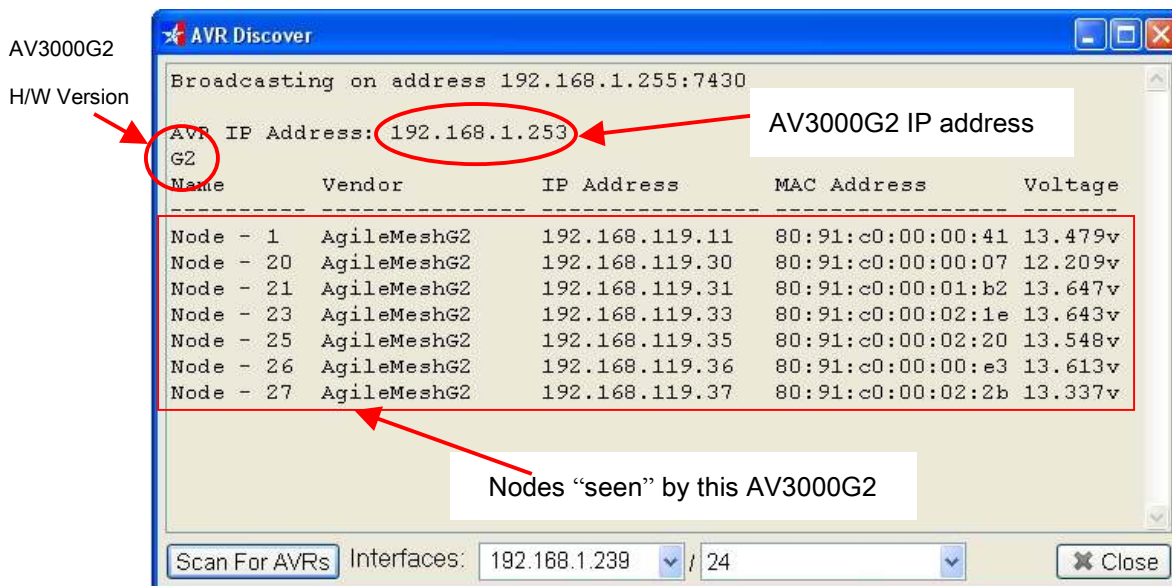


AVR Discover

The AVR (AgileMesh Video Router) Discover application is used to find one or more AV3000G2s on the same subnet. Double-click the AVR Discover icon to launch the application. The screen below will appear. Use the drop-down menu to select the Ethernet interface of choice. The screen below has 192.168.1.239 as the only



interface found by AVR Discover. Click on this interface. Click on the “Scan for AVRs” button to display the following screen.



The first line in the AVR Discover window is the IP address of the broadcast packet that is sent on the selected subnet. If an AV3000G2 is located, the address is displayed. In the example above the AV3000G2 was located at 192.168.1.253. **This is the address that will be used in the AgileMesh Viewer for all nodes viewed through the AV3000G2.** The next line shows the hardware version of the AV3000G2's platform. In this case it is G2. (This is not to be confused with AgileMesh G2 nodes.) If the AV3000G2 has active AgileMesh nodes, a list of these nodes is displayed. In this example, seven nodes were discovered. The node name, Vendor, IP address, MAC address and node voltage is displayed.

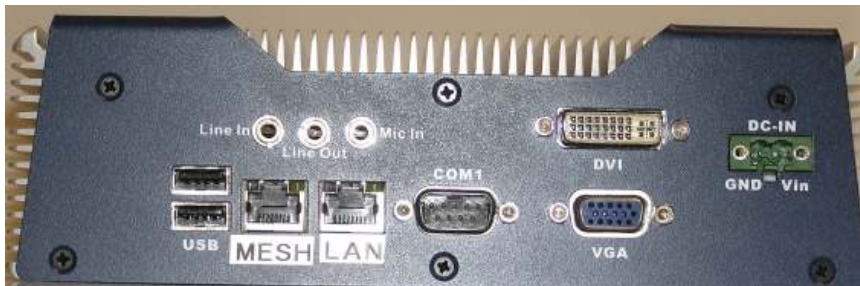
AV3000G2 Hardware Platforms

G2 platform as displayed by AVR Discover

The AgileMesh AV3000G2 software has been ported to two hardware platforms. The original G2 platform has the software loaded on an 8 GB Compact Flash module. The photo below is the first AV3000G2 platform as a stand-alone network appliance.

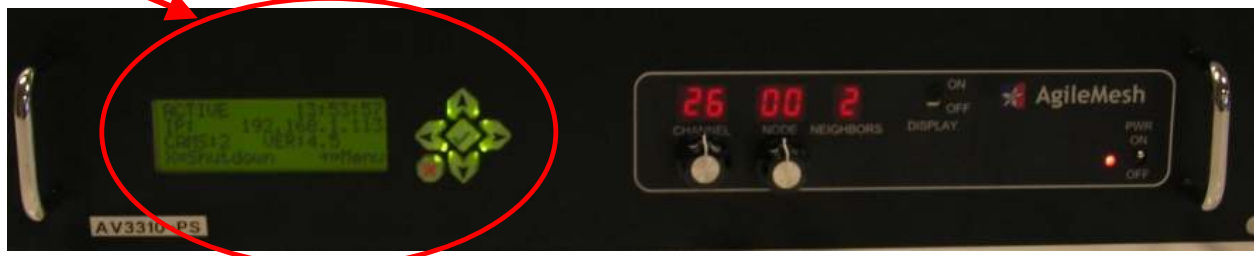


The two Ethernet NICs are on the rear of the unit. The Compact Flash module is shown installed above. This is a single core processor platform. The rear view of this platform is shown below.



This version or the internal board set can be placed inside the Remote Control Unit (RCU) of the Command Vehicle Kit.

An LCD display is added to an RCU with an embedded AV3000G2. The time of day, the



AV3000G2's IP address, number of cameras discovered as well as the S/W version is shown on the

LCD display.

This is AV3000G2 hardware platform version **G2** as displayed by AVR Discover. Software for this version of hardware is 7.XX where the 7 is constant and the revision is XX. When the software for either of these platforms is upgraded, the software version must be 7.XX.

G3 platform as displayed by AVR Discover

The second hardware platform has a multi core processor and an mSATA or SATA disk (solid-state disk). The photo below is the second AV3000G2 platform as a stand-alone network appliance.

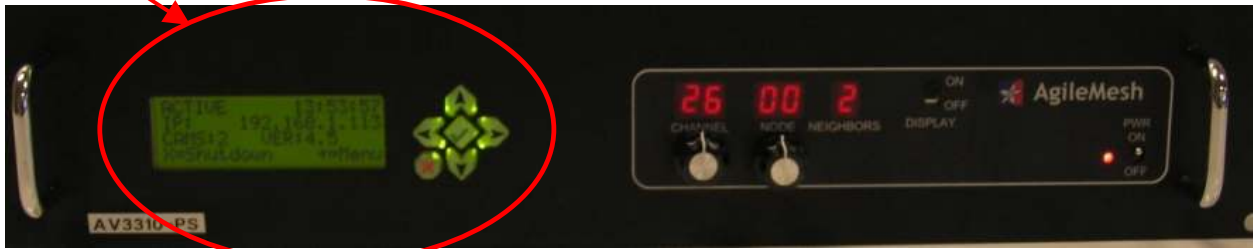


The two Ethernet NICs are on the rear of the unit. The rear view of this platform is shown below.



This version's internal board set can be placed inside the Remote Control Unit (RCU) of the Command Vehicle Kit.

An LCD display is added to an RCU with an embedded AV3000G2. The time of day, the



AV3000G2's IP address, number of cameras discovered as well as the S/W version is shown on the LCD display.

This is AV3000G2 hardware platform version **G3** as displayed by AVR Discover. Software for this version of hardware is 8.XX where the 8 is constant and the revision is XX. When the software for either of these platforms is upgraded, the software version must be 8.XX.

Appendix 1 – AV3000G2 Port Numbers

The table below lists the node number and the corresponding port numbers for video that is viewer on the LAN side of the AV3000G2. The IP address assigned to the AV3000G2 as a static IP (preferred) or an IP address from a DHCP server will be the same for all nodes in the mesh. The port numbers for the Codec 1 & Codec 2 are also listed and change with the node number.

To calculate the video codec1 use the following formula: $9000 + \text{the Node number}$

To calculate the video codec 2 use the following formula: $9200 + \text{the Node number}$

| Node # | LAN Address | Video 1 Codec | Video 2 Codec |
|--------|----------------------|---------------|---------------|
| 0 | AV3000G2 LAN Address | 9000 | 9200 |
| 1 | AV3000G2 LAN Address | 9001 | 9201 |
| 2 | AV3000G2 LAN Address | 9002 | 9202 |
| 3 | AV3000G2 LAN Address | 9003 | 9203 |
| 4 | AV3000G2 LAN Address | 9004 | 9204 |
| 5 | AV3000G2 LAN Address | 9005 | 9205 |
| 6 | AV3000G2 LAN Address | 9006 | 9206 |
| 7 | AV3000G2 LAN Address | 9007 | 9207 |
| 8 | AV3000G2 LAN Address | 9008 | 9208 |
| 9 | AV3000G2 LAN Address | 9009 | 9209 |
| 10 | AV3000G2 LAN Address | 9010 | 9210 |
| 11 | AV3000G2 LAN Address | 9011 | 9211 |
| 12 | AV3000G2 LAN Address | 9012 | 9212 |
| 13 | AV3000G2 LAN Address | 9013 | 9213 |
| 14 | AV3000G2 LAN Address | 9014 | 9214 |
| 15 | AV3000G2 LAN Address | 9015 | 9215 |
| 16 | AV3000G2 LAN Address | 9016 | 9216 |
| 17 | AV3000G2 LAN Address | 9017 | 9217 |
| 18 | AV3000G2 LAN Address | 9018 | 9218 |
| 19 | AV3000G2 LAN Address | 9019 | 9219 |
| 20 | AV3000G2 LAN Address | 9020 | 9220 |
| 21 | AV3000G2 LAN Address | 9021 | 9221 |

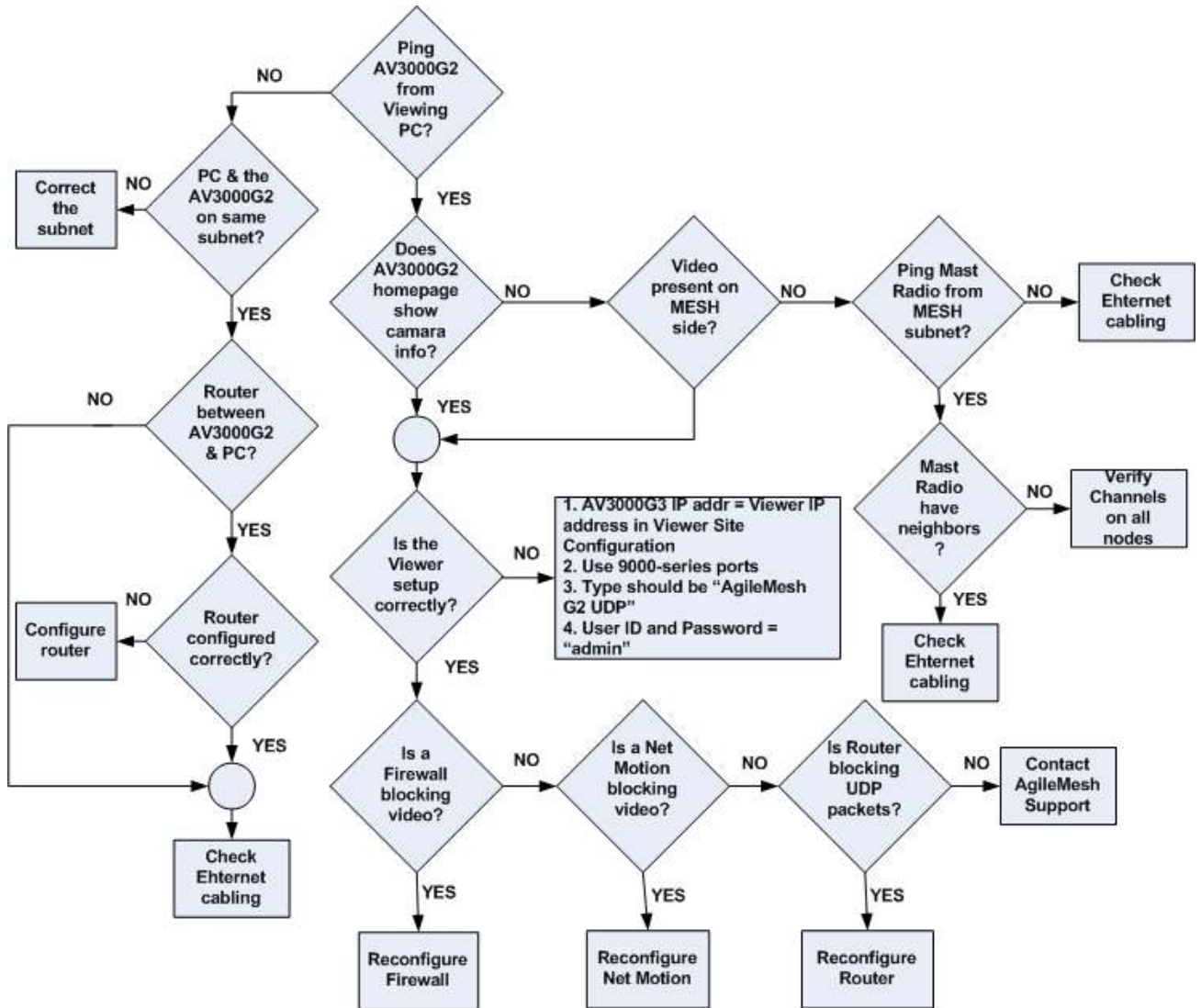
| Node # | LAN Address | Video 1 Codec | Video 2 Codec |
|---------------|----------------------|----------------------|----------------------|
| 22 | AV3000G2 LAN Address | 9022 | 9222 |
| 23 | AV3000G2 LAN Address | 9023 | 9223 |
| 24 | AV3000G2 LAN Address | 9024 | 9224 |
| 25 | AV3000G2 LAN Address | 9025 | 9225 |
| 26 | AV3000G2 LAN Address | 9026 | 9226 |
| 27 | AV3000G2 LAN Address | 9027 | 9227 |
| 28 | AV3000G2 LAN Address | 9028 | 9228 |
| 29 | AV3000G2 LAN Address | 9029 | 9229 |
| 30 | AV3000G2 LAN Address | 9030 | 9230 |
| 31 | AV3000G2 LAN Address | 9031 | 9231 |
| 32 | AV3000G2 LAN Address | 9032 | 9232 |
| 33 | AV3000G2 LAN Address | 9033 | 9233 |
| 34 | AV3000G2 LAN Address | 9034 | 9234 |
| 35 | AV3000G2 LAN Address | 9035 | 9235 |
| 36 | AV3000G2 LAN Address | 9036 | 9236 |
| 37 | AV3000G2 LAN Address | 9037 | 9237 |
| 38 | AV3000G2 LAN Address | 9038 | 9238 |
| 39 | AV3000G2 LAN Address | 9039 | 9239 |
| 40 | AV3000G2 LAN Address | 9040 | 9240 |
| 41 | AV3000G2 LAN Address | 9041 | 9241 |
| 42 | AV3000G2 LAN Address | 9042 | 9242 |
| 43 | AV3000G2 LAN Address | 9043 | 9243 |
| 44 | AV3000G2 LAN Address | 9044 | 9244 |
| 45 | AV3000G2 LAN Address | 9045 | 9245 |
| 46 | AV3000G2 LAN Address | 9046 | 9246 |
| 47 | AV3000G2 LAN Address | 9047 | 9247 |
| 48 | AV3000G2 LAN Address | 9048 | 9248 |
| 49 | AV3000G2 LAN Address | 9049 | 9249 |
| 50 | AV3000G2 LAN Address | 9050 | 9250 |
| 51 | AV3000G2 LAN Address | 9051 | 9251 |
| 52 | AV3000G2 LAN Address | 9052 | 9252 |

| Node # | LAN Address | Video 1 Codec | Video 2 Codec |
|---------------|----------------------|----------------------|----------------------|
| 53 | AV3000G2 LAN Address | 9053 | 9253 |
| 54 | AV3000G2 LAN Address | 9054 | 9254 |
| 55 | AV3000G2 LAN Address | 9055 | 9255 |
| 56 | AV3000G2 LAN Address | 9056 | 9256 |
| 57 | AV3000G2 LAN Address | 9057 | 9257 |
| 58 | AV3000G2 LAN Address | 9058 | 9258 |
| 59 | AV3000G2 LAN Address | 9059 | 9259 |
| 60 | AV3000G2 LAN Address | 9060 | 9260 |
| 61 | AV3000G2 LAN Address | 9061 | 9261 |
| 62 | AV3000G2 LAN Address | 9062 | 9262 |
| 63 | AV3000G2 LAN Address | 9063 | 9263 |
| 64 | AV3000G2 LAN Address | 9064 | 9264 |
| 65 | AV3000G2 LAN Address | 9065 | 9265 |
| 66 | AV3000G2 LAN Address | 9066 | 9266 |
| 67 | AV3000G2 LAN Address | 9067 | 9267 |
| 68 | AV3000G2 LAN Address | 9068 | 9268 |
| 69 | AV3000G2 LAN Address | 9069 | 9269 |
| 70 | AV3000G2 LAN Address | 9070 | 9270 |
| 71 | AV3000G2 LAN Address | 9071 | 9271 |
| 72 | AV3000G2 LAN Address | 9072 | 9272 |
| 73 | AV3000G2 LAN Address | 9073 | 9273 |
| 74 | AV3000G2 LAN Address | 9074 | 9274 |
| 75 | AV3000G2 LAN Address | 9075 | 9275 |
| 76 | AV3000G2 LAN Address | 9076 | 9276 |
| 77 | AV3000G2 LAN Address | 9077 | 9277 |
| 78 | AV3000G2 LAN Address | 9078 | 9278 |
| 79 | AV3000G2 LAN Address | 9079 | 9279 |
| 80 | AV3000G2 LAN Address | 9080 | 9280 |
| 81 | AV3000G2 LAN Address | 9081 | 9281 |
| 82 | AV3000G2 LAN Address | 9082 | 9282 |
| 83 | AV3000G2 LAN Address | 9083 | 9283 |

| Node # | LAN Address | Video 1 Codec | Video 2 Codec |
|---------------|----------------------|----------------------|----------------------|
| 84 | AV3000G2 LAN Address | 9084 | 9284 |
| 85 | AV3000G2 LAN Address | 9085 | 9285 |
| 86 | AV3000G2 LAN Address | 9086 | 9286 |
| 87 | AV3000G2 LAN Address | 9087 | 9287 |
| 88 | AV3000G2 LAN Address | 9088 | 9288 |
| 89 | AV3000G2 LAN Address | 9089 | 9289 |
| 90 | AV3000G2 LAN Address | 9090 | 9290 |
| 91 | AV3000G2 LAN Address | 9091 | 9291 |
| 92 | AV3000G2 LAN Address | 9092 | 9292 |
| 93 | AV3000G2 LAN Address | 9093 | 9293 |
| 94 | AV3000G2 LAN Address | 9094 | 9294 |
| 95 | AV3000G2 LAN Address | 9095 | 9295 |
| 96 | AV3000G2 LAN Address | 9096 | 9296 |
| 97 | AV3000G2 LAN Address | 9097 | 9297 |
| 98 | AV3000G2 LAN Address | 9098 | 9298 |
| 99 | AV3000G2 LAN Address | 9099 | 9299 |

Appendix 2 – Troubleshooting

No video can be seen through the AV3000G2. Use the following flow chart to diagnose the problem. Troubleshooting begins with an attempt to ping the AV3000G2 from the viewing PC.



Appendix 3 – AgileMesh Node Control Application

When viewing video from the LAN Ethernet interface of the AV3000G2, the configuration of AgileMesh video assets cannot be changed directly as they are on a different subnets. If a codec on an AgileMesh node needs to be changed from H.264 to MJPEG, the web pages of the node must be accessed. The application “AgileMesh Node Control” can be used to view and change setting on AgileMesh nodes on the MESH Ethernet interface side of the AV3000G2 from the LAN Ethernet interface side.

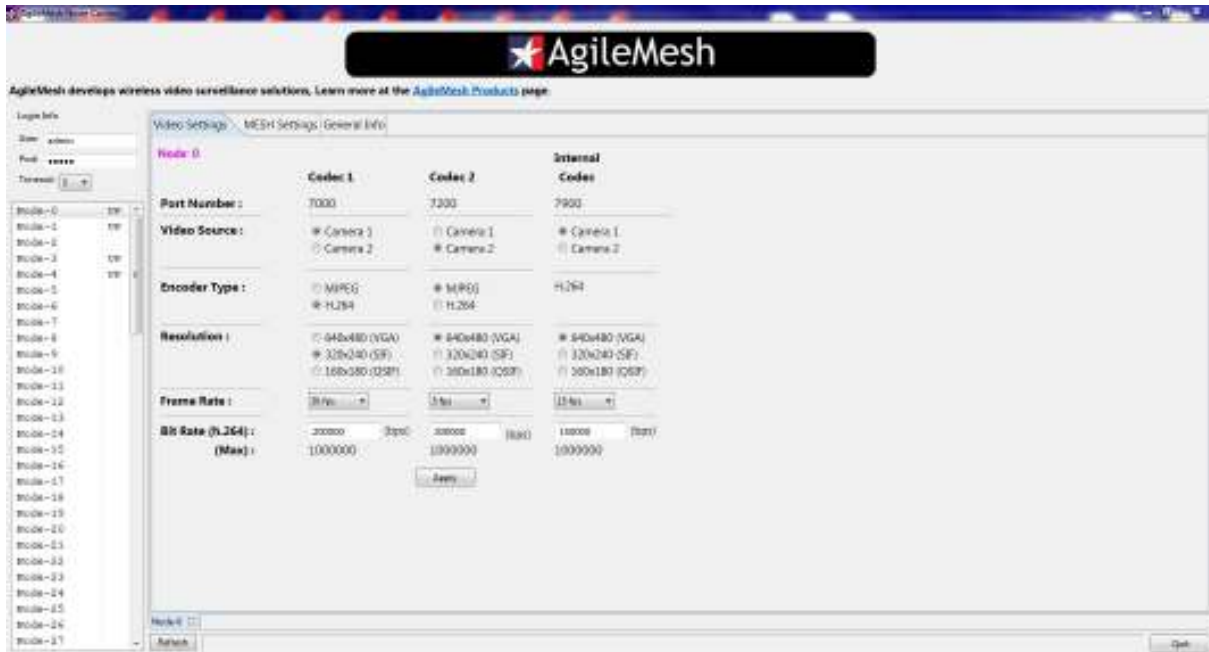
The AgileMesh Node Control application can be downloaded from the AgileMesh website and can be utilized with AV3000G2 S/W versions 7.13 and 8.6 and above. (The application is available from the AgileMesh website ([www/agilemesh.com](http://www.agilemesh.com) → Support → Software) with login credential that were previously provided to AgileMesh by the customer.) Master installer 3.9 and above contain this application.

AgileMesh Node Control application installer is named “nodectl-1_X_setup.exe”. Double-click on the executable to install the desktop icon. Once installed, double-click on the icon to launch the AgileMesh Node Control application. This application can be run from the viewing PC or another PC on the LAN side.



Nodes that are active have “UP” beside the node number. By double-clicking “Node 0”, the

following screen will appear.



The setting on the node selected can be changed from this screen.

Appendix 4 – AgileMesh AV3000 Status Application

AgileMesh Support personnel use the AgileMesh AV3000 Status application to “look inside” the AV3000G2 to trouble shoot a possible problem. Double-clicking on the icon launches this application. Once launched, the application displays information about the AV3000G2’s IP addresses, the nodes it can “see”, process started to “listen” for node video as well as solid-state disk utilization.



The AgileMesh AV3000 Status application can be downloaded from the AgileMesh website and can be utilized with AV3000G2 S/W versions 7.13 and 8.6 and above. (The application is available from the AgileMesh website ([www/agilemesh.com](http://www.agilemesh.com) → Support → Software) with login credential that were previously provided to AgileMesh by the customer.) Master installer 3.9 and above contain this application.

This configuration can be saved by clicking on the “Save” button at the bottom of the page. This saves configuration can be e-mail to AgileMesh support personnel.

The screen shot below is a typical status of an AV3000G2. The IP addresses of the LAN and MESH Ethernet interfaces are listed at the top of the page. A list of auto discovered nodes is displayed next.

Several processes critical to the operation of the AV3000G2 are listed next. There should be two “listening” ports for each node that was auto discovered. Solid-state disk information is displayed at the bottom of the page.

See a screen shot of the AgileMesh AV3000 Status application on the next page.

AgileMesh AV3000 Status

```

Scanning for AV3000 device.
Getting broadcast address.
Trying broadcast address: 192.168.1.255
Found AV3000 at address: 192.168.1.240
Mesh Interface: igb1
Mesh IP Address: 192.168.119.1

Nodes found:
Node-0      192.168.119.10
Node-1      192.168.119.11
Node-3      192.168.119.13
Node-4      192.168.119.14

Processes:
Found process for      AMMM.
Listening for          Node-0-1      on port: 9000
Listening for          Node-0-2      on port: 9200
Listening for          Node-1-1      on port: 9001
Listening for          Node-1-2      on port: 9201
Listening for          Node-3-1      on port: 9003
Listening for          Node-3-2      on port: 9203
Listening for          Node-4-1      on port: 9004
Listening for          Node-4-2      on port: 9204
Found process for      LCD display.
Found process for      Camera discovery.
Found process for      restarting programs.
Found process for      Dlisten.

Disk space:
Filesystem      Size  Used  Avail Capacity  Mounted on
zroot/ROOT/default  24G  1.8G  22G    7%    /
devfs           1.0k  1.0k   0B   100%  /dev
fdescfs         1.0k  1.0k   0B   100%  /dev/fd
procfs          4.0k  4.0k   0B   100%  /proc
/dev/md0        123M   24k  113M    0%  /cameras
zroot/tmp       22G   204k  22G    0%  /tmp
zroot/usr/home  22G   8.2M  22G    0%  /usr/home
zroot/usr/ports 23G  807M  22G    3%  /usr/ports
zroot/usr/src   22G   144k  22G    0%  /usr/src
zroot/var       22G   66M   22G    0%  /var
zroot/var/crash 22G   148k  22G    0%  /var/crash
zroot/var/log   22G   356k  22G    0%  /var/log
zroot/var/mail  22G   148k  22G    0%  /var/mail
zroot/var/tmp   22G   152k  22G    0%  /var/tmp
          
```

Interfaces: 192.168.1.227