

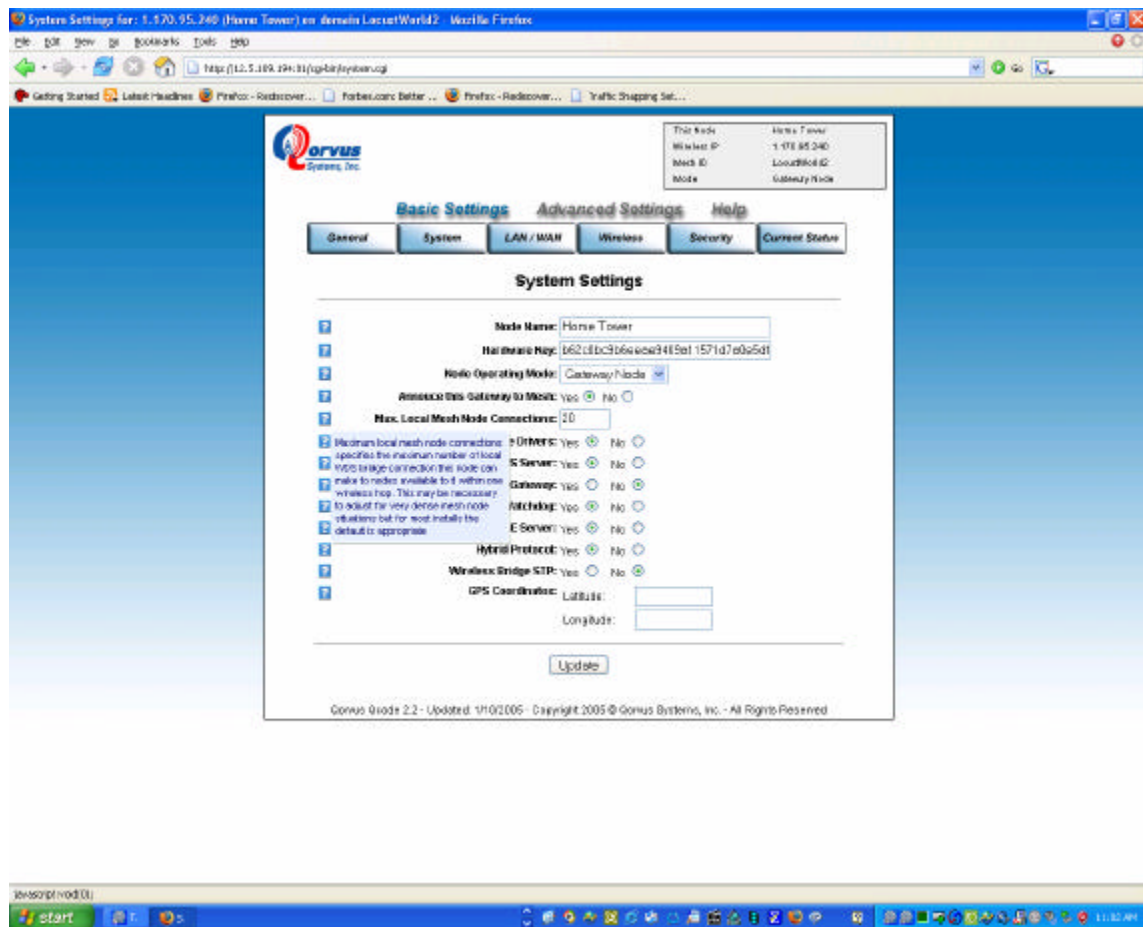
## Qorvus Qnode & Qcode Graphic User Interface overview:

The Qorvus Qnode is generally preconfigured at the factory to meet specific user requirements. This means they arrive nearly plug-and-play, and can often be deployed with little additional setup work. However, for situations where further configuration is required, each Qnode contains an unusually capable and feature-rich web-based user interface that is the primary management tool for each node within the mesh. Management via a fully-featured command-line ssh interface is also available. When a technician first associates and logs into the management interface, he is presented with the comprehensive general status page shown below, providing a quick status overview as well as detailed links that allow him to change all major operating parameters of the device, as well as jump to any other downstream or upstream Qnode in the same mesh using the unique built-in VPN client / hosting mechanism. This real-time capability is available both while local within the mesh, and from thousands of miles away via VPN.

The screenshot displays the Qorvus Qnode web-based user interface. The interface is divided into several sections:

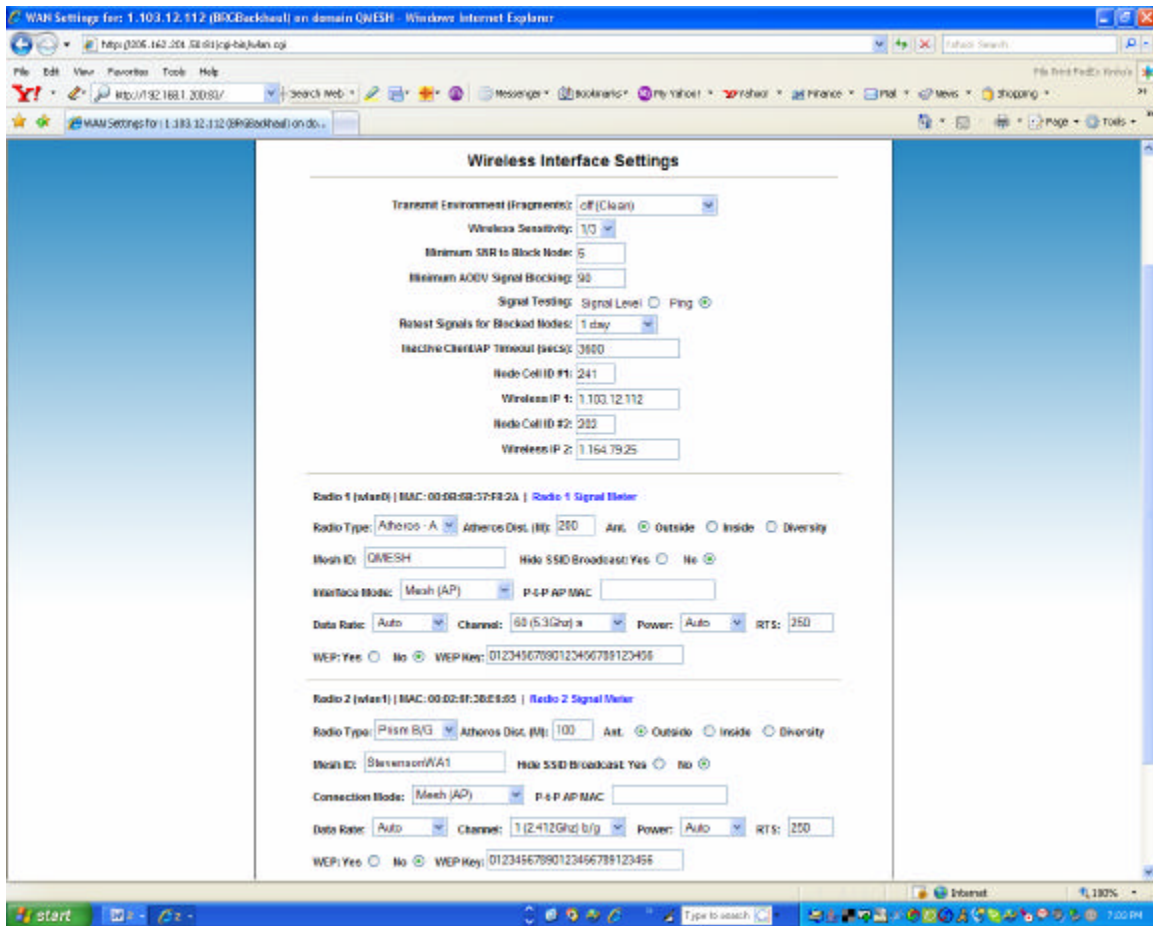
- Header:** Includes the Qorvus logo and a navigation menu with tabs for General, System, LAN/WAN, Wireless, Security, and Current Status.
- Current Status:** A central section providing a quick overview of the node's status.
- System Details:** A table showing various system parameters such as System Time, Last Heartbeat, System Uptime, System Load, System Memory, System CPU, System Temperature, System Power, System Fan, System Fan Speed, System Fan Status, System Fan Control, System Fan Mode, System Fan Speed, System Fan Status, System Fan Control, System Fan Mode, System Fan Speed, System Fan Status, System Fan Control, System Fan Mode.
- Radio 1 (wlan0):** A section showing details for the wireless interface, including IP Address, BSSID, Channel, Data Rate, TX Power, MAC Address, Signal Strength Meter, Bandwidth Data, and View WDS Connections.
- Ethernet (eth0):** A section showing details for the Ethernet interface, including Operating Mode, IP Address, Netmask, Gateway, Primary DNS, Secondary DNS, MAC Address, and Connection Speed.
- System Notes:** A section providing additional information, including a warning about a valid security certificate and a note about the last WAN check.

Basic and Advanced functions are available via the navigation bars at the top of the screen. Context balloon help is provided to allow the user to quickly understand and implement many of the sophisticated capabilities:



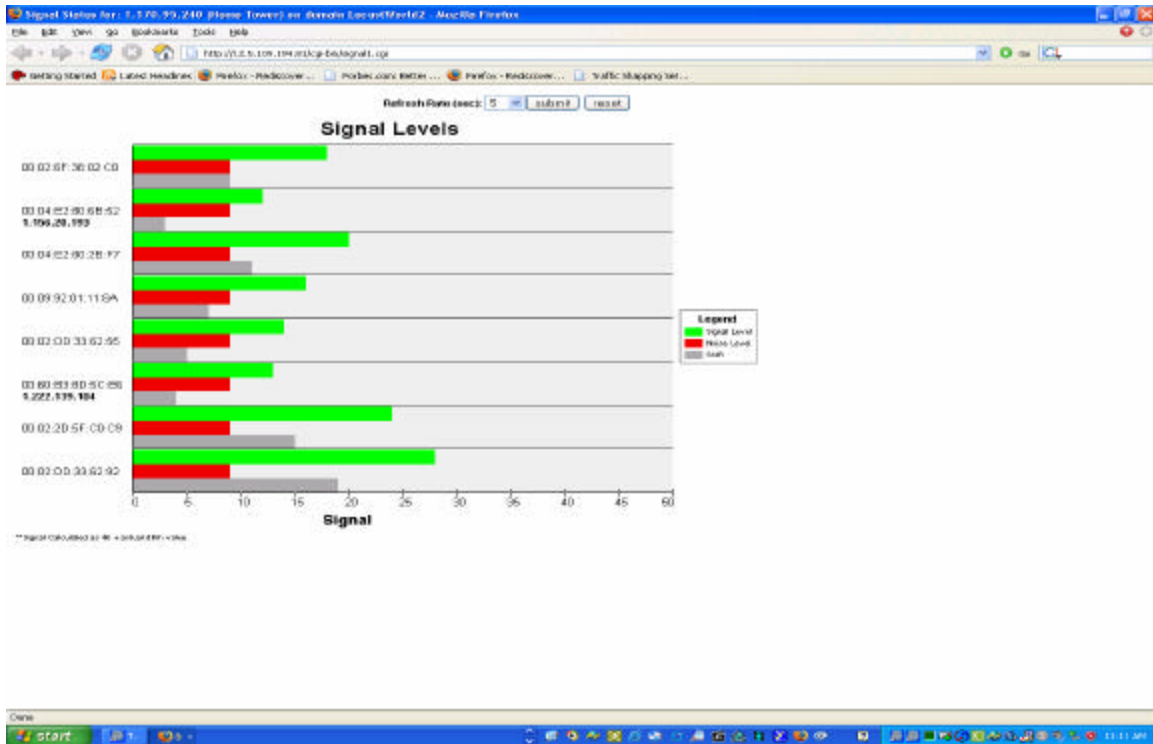
Sophisticated radio setup is made easy by the intuitive Qcode interface:

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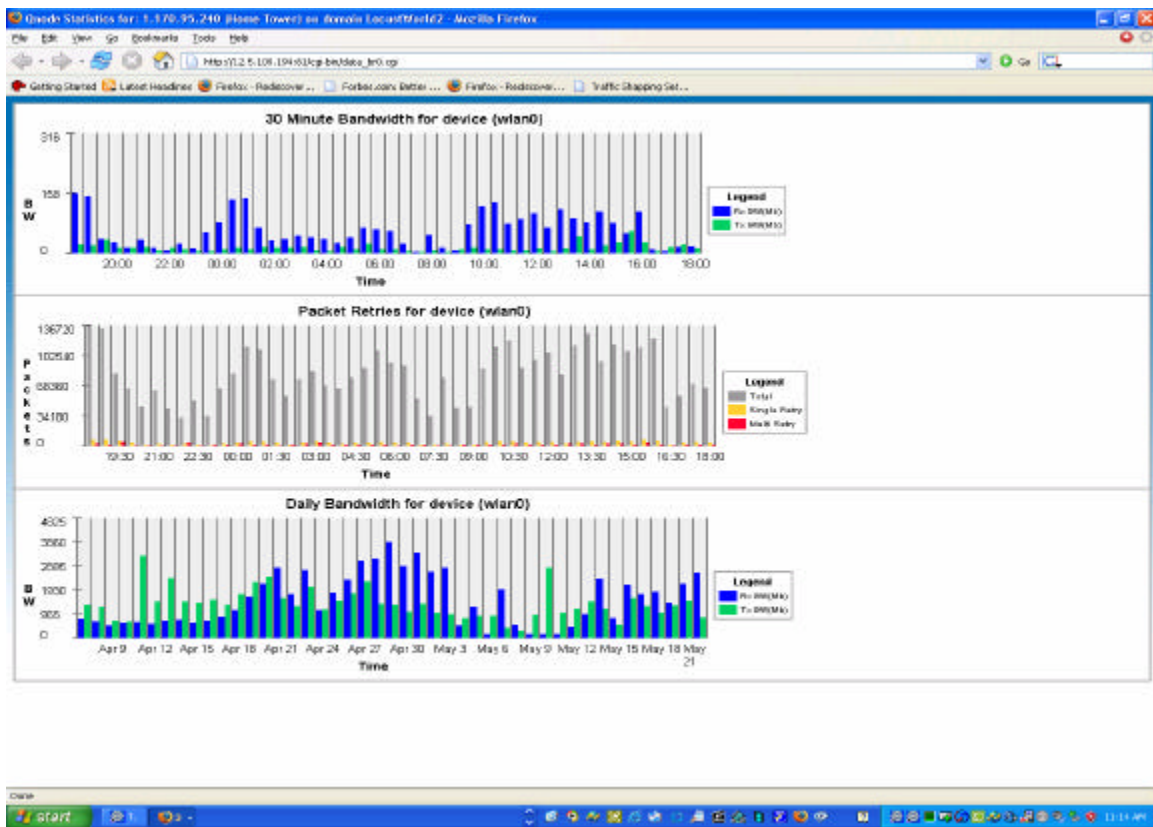


All important parameters for Atheros and Prism based radios such as the Wistron CM9, Ubiquiti SR-5 and SR-9, and Senao mp2511 are supported including wireless IP, standard ISM and UNI-I channels from 900 Mhz to 5.8 Ghz, ESSID, link distance, encryption, fragmentation, transmit power, and receive sensitivity.

Both during and after the initial installation process, radio signal strength and quality are available in a unique real-time graphing system:



and packet transmission statistics over time are also available at the click of a mouse:



Site Survey for: 1.11.120.149 (Courthouse) on domain Shenandoah.WA. Mozilla Firefox

http://1.11.120.149:80/cgi-bin/site.cgi

Getting Started | Latest Headlines | Firefox - Redcover... | Portes.com: Better... | Firefox - Redcover... | Traffic Shaping Set...

**Gowas Systems, Inc.**

This Node: Courthouse  
Wireless IP: 1.11.120.149  
Media ID: Shenandoah.WA  
Media: Wireless Node

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### Site Survey

#### Radio 1 Site Survey

| Channel | Power | Signal | SNR | Beacon | D-Fault | SSID       | MAC               | IP            |
|---------|-------|--------|-----|--------|---------|------------|-------------------|---------------|
| 9       | -60   | -71    | 20  | 100    | 1       | Shenandoah | 00:02:00:32:8E:9A | 1.11.120.153  |
| 9       | -65   | -75    | 20  | 100    | 1       | Shenandoah | 00:02:00:33:8D:75 | 1.68.42.157   |
| 9       | -64   | -64    | 10  | 100    | 1       | Subagrade  | 00:12:17:3A:85:50 |               |
| 9       | -65   | -76    | 10  | 100    | 1       | Shenandoah | 00:02:00:33:8D:00 | 1.28.151.248  |
| 9       | -60   | -66    | 32  | 100    | 1       | Shenandoah | 00:02:00:33:8D:96 | 1.111.221.159 |
| 9       | -61   | -65    | 3   | 100    | 1       | Hobart     | 00:0C:41:37:73:4D |               |
| 9       | -108  | -88    | 2   | 100    | 1       | Wireless   | 00:0C:46:3D:0:04  |               |
| 9       | -106  | -92    | 0   | 100    | 2       | Hobart     | 00:06:25:4D:25:4D |               |
| 9       | -108  | -84    | 38  | 100    | 1       | Wireless   | 00:30:1A:88:2:45  |               |
| 11      | -67   | -60    | 17  | 100    | 2       | Shenandoah | 00:01:95:4D:96:28 |               |
| 4       | -108  | -81    | 10  | 100    | 1       | Shenandoah | 00:0A:28:14:8A:38 |               |

#### Radio 2 Site Survey

No Connections Present

Gowas Onda 2.5.1 - Updated: 8/27/2005 - Copyright 2005 © Gowas Systems, Inc. - All Rights Reserved

All Qnodes within a mesh, are visible from any Qnode within the mesh:

The screenshot displays the Qnode web interface in a Mozilla Firefox browser window. The address bar shows the URL: [http://192.5.106.194:80/cgi-bin/node\\_table.cgi](http://192.5.106.194:80/cgi-bin/node_table.cgi). The interface features a navigation menu with tabs: General, System, LAN / WAN, Wireless, Security, and Current Status. The 'Current Status' tab is active, showing the 'Active Mesh Nodes Seen by Home Tower (1.170.95.240)'.

At the top right, a box displays node information: This Node: Home Tower, WirelessIF: 1.170.95.240, MeshID: 1, Location: 62, Mode: Gateway Mode.

The main section is titled 'Active Mesh Nodes Seen by Home Tower (1.170.95.240)' with a sub-header '[ Last Update: 09/22/05 18:06:01 UTC ]'. It contains a table of active mesh nodes:

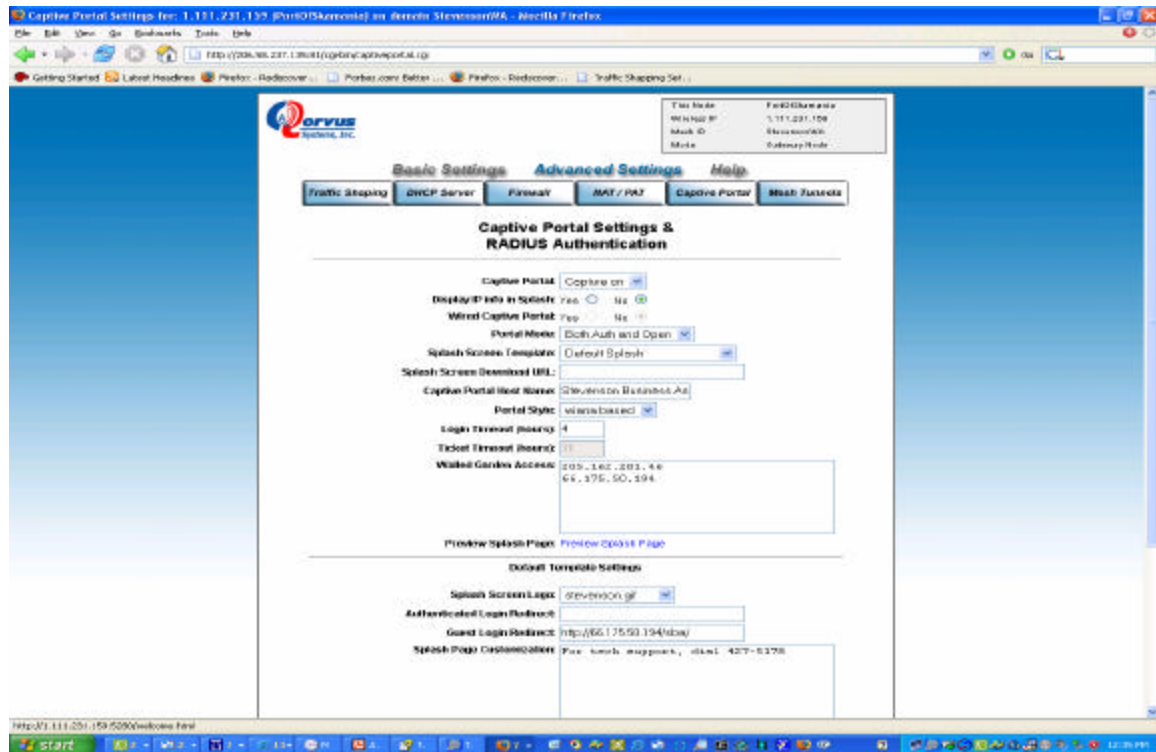
| Screen                   | Node Name      | IP Address    | Hops | Operating Mode | Cell 1 | Cell 2 | Route                   |
|--------------------------|----------------|---------------|------|----------------|--------|--------|-------------------------|
| <input type="checkbox"/> | Home Tower     | 1.170.95.240  | 0    | gateway        | 248    | 175    | fin                     |
| <input type="checkbox"/> | Cone Tower     | 1.202.139.104 | 1    | wireless       | 207    |        | Route to: 1.202.139.104 |
| <input type="checkbox"/> | Water Tower #2 | 1.161.43.45   | 1    | wireless       | 150    | 217    | Route to: 1.161.43.45   |
| <input type="checkbox"/> | Rock           | 1.213.201.125 | 2    | wireless       | 166    | 195    | Route to: 1.213.201.125 |
| <input type="checkbox"/> |                | 1.141.159.250 | 2    | UPN            | -      | -      | Route to: 1.141.159.250 |
| <input type="checkbox"/> | Water Tower #1 | 1.104.114.81  | 2    | wireless       | 204    | 183    | Route to: 1.104.114.81  |
| <input type="checkbox"/> | Pondry Tower   | 1.132.247.65  | 2    | wireless       | 136    | 218    | Route to: 1.132.247.65  |

Below the table, there are sections for 'Manually Blocked Nodes' and 'ADIV Blocked Nodes', each with a list of IP addresses and a checkbox to unblock them. An 'update' button is located at the bottom of these sections.

The footer of the interface states: 'Qnode 2.2 - Updated: 10/03/05 - Copyright 2005 © Qorvus Systems, Inc. - All Rights Reserved'.

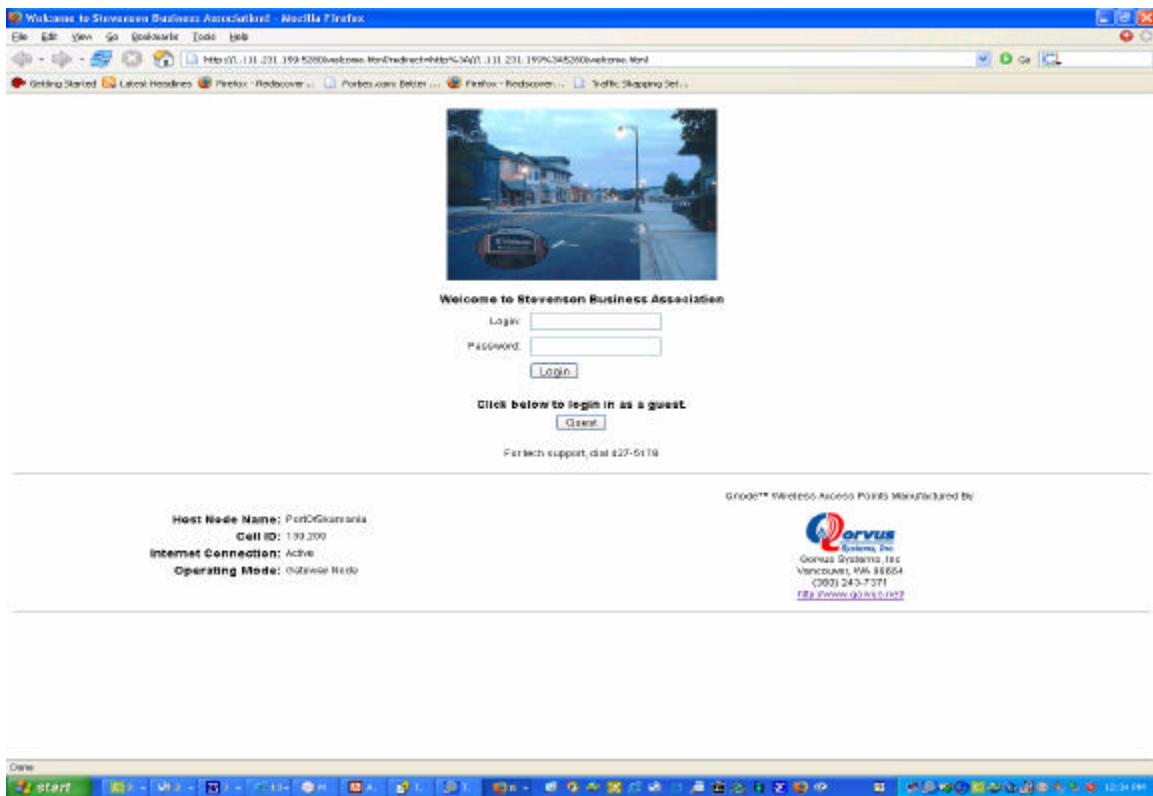
Basic status for each Qnode including connectivity mode, cell-id, route blocking, number of hops, and round-trip ping and latency statistics are instantly visible on this screen, and clicking on any Qnode's link immediately brings the technician to that node's web interface.

Powerful built-in tools are also available to set up various walled-garden and client capture scenarios. These allow the technician to completely set up the experience that a user will see when they first associate with the mesh using their laptop or PDA. The captive Portal tool allows this setup to take place using either the built-in defaults, or an external server-based presentation that can include streaming audio and video for e.g. location-based services.

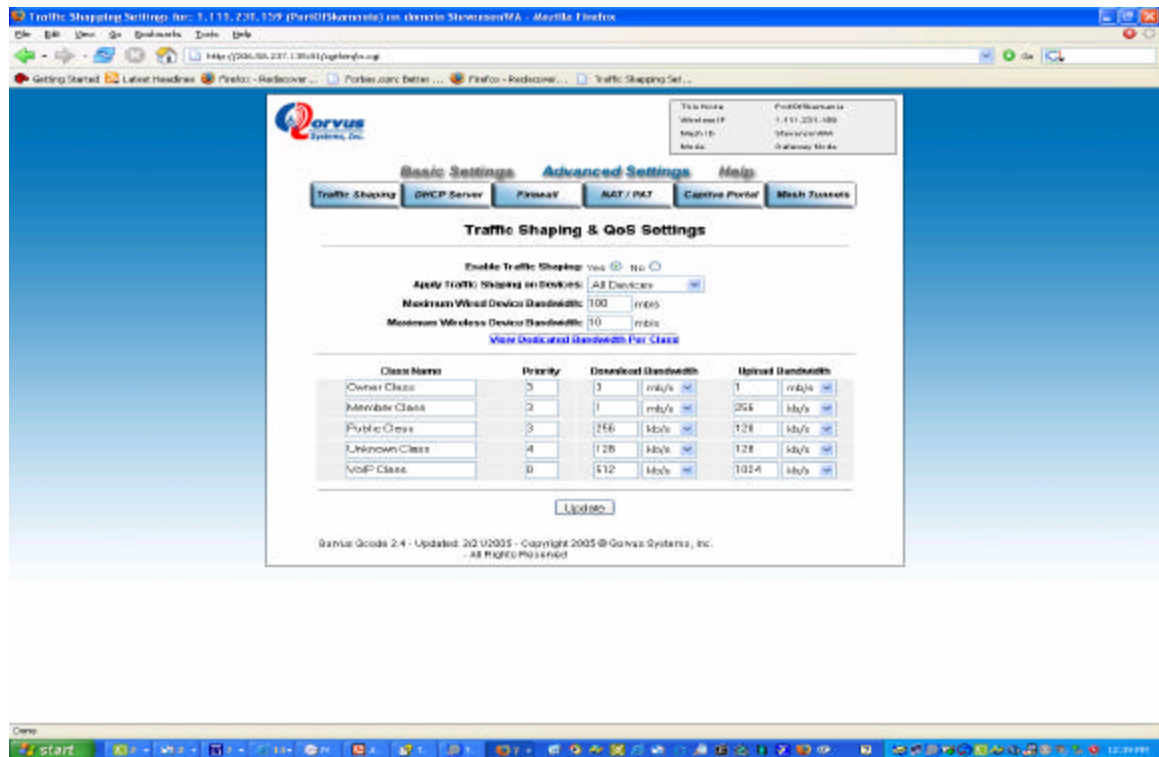




The result is a fully customizable presentation screen that network users see when first associating with the mesh, that supports standards such as RADIUS and AUTOMAC authentication as well as class-based use and bandwidth privileges



Classful bandwidth, traffic-shaping, and QoS and peer-to-peer throttling are also supported on a node-by-node basis:



And a classful firewall that can be set to prevent associated client computers from snooping on each other is also included:

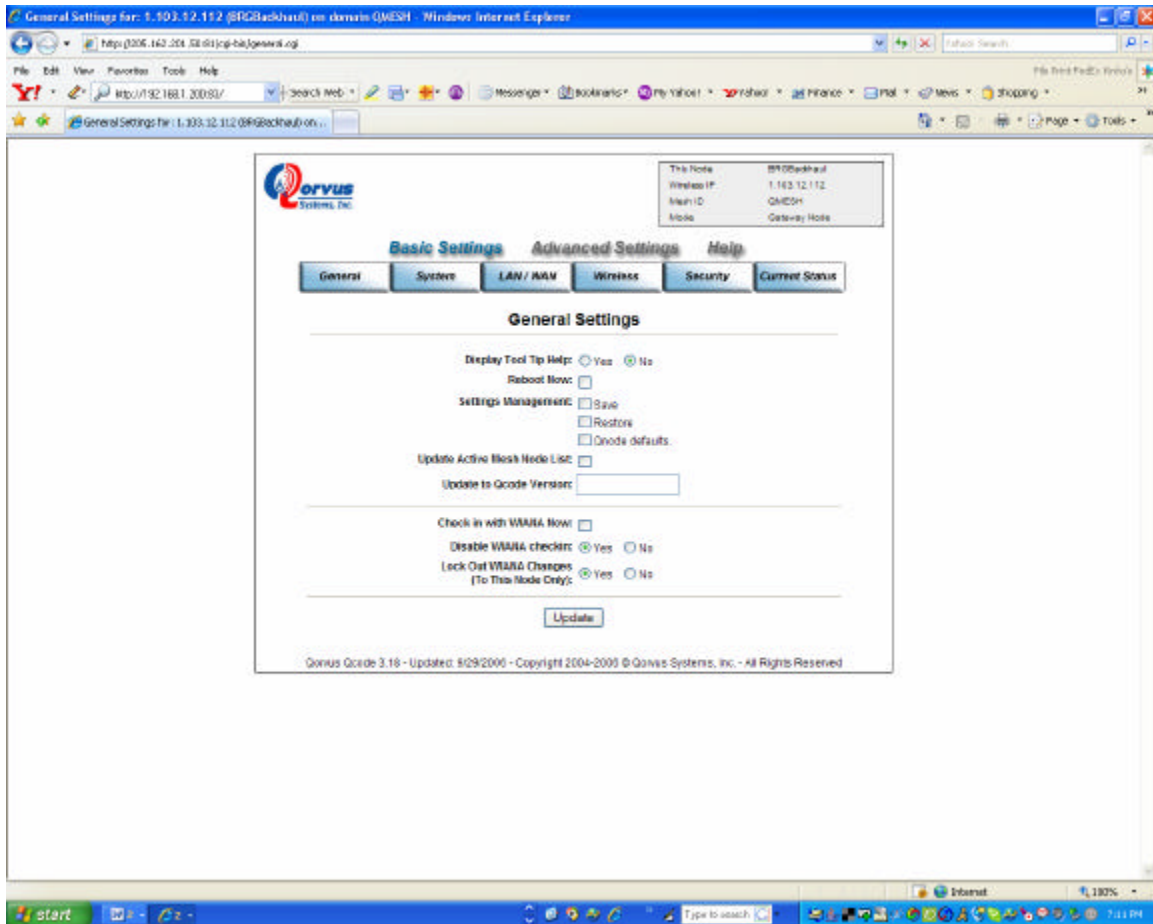
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System security is also set to a high level. The GUI can be accessed via secure ssl at <https://1.X.Y.Z:82/> For customer traffic, inter-node 2048-bit key encryption can be optionally enabled, as well as Blowfish encryption for mesh traffic, end-to-end pptp VPN, and client-to-node VPN. Commonly-used security standards and authentication mechanisms are all supported, as is hidden SSID:

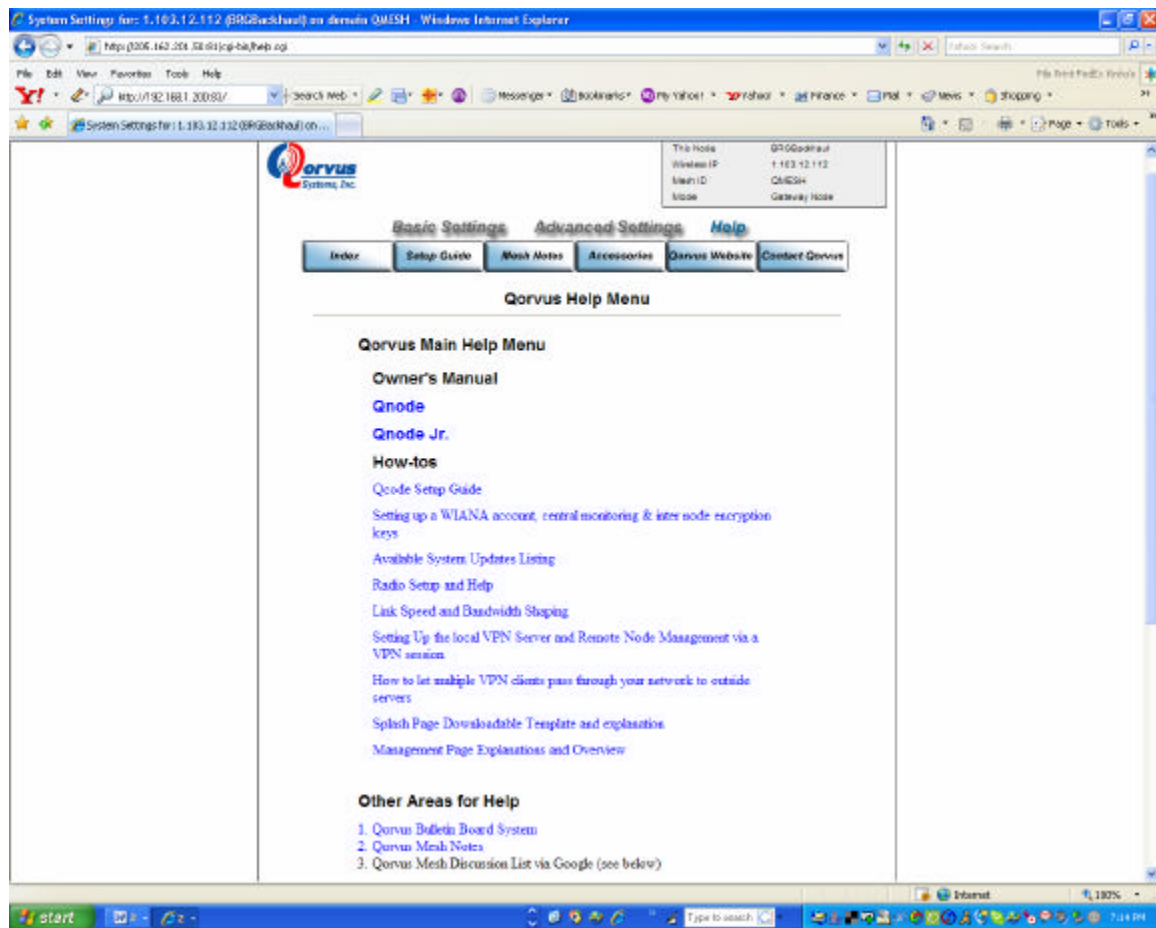


All of these features are under a continuous improvement process, so that each new software release typically includes improvements both in back end functionality, and in ease of use. The update process can also be managed from the GUI:



The technician simply loads the name of the desired update into the Update field, hits the Update button, and the node automatically contact the Qorvus server, and after validation, the new upload is installed automatically in the background. Often, the can take place with no reboot or interruption in user traffic.

For more details on system setup please visit the built-in help section on any Qnode:  
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Or visit the Qorvus Systems website at <http://www.qorvus.com/helpmenu/index.htm>

We look forward to hearing from you!

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