BelAir Networks BelAir50, BelAir100, and BelAir200 VIEW Certified Configuration and Deployment Guide

SpectraLink's Voice Interoperability for Enterprise Wireless (VIEW) Certification Program is designed to ensure interoperability and high performance between NetLink Wireless Telephones and WLAN infrastructure products.

The products listed below have been thoroughly tested in SpectraLink's lab using the VIEW Certification Test Plan. This document details how to configure BelAir access points with NetLink Wireless Telephones.

Certified Product Summary

Manufacturer:	**BelAir Networks:** www.belairnetworks.com	
Approved products:	**Wireless Controllers**	**Access Points**
	N/A	**BelAir50** **BelAir100†** **BelAir200**
RF technology:	**802.11b/g**	
Radio:	**2.4 – 2.484 GHz**	
Security:	**WPA-PSK and WPA2-PSK††**	
AP firmware version tested:	**5.0.1.1**	
NetLink Wireless Telephone software version tested:	**89.127**	
Maximum telephone calls per AP:	**10**	
Recommended network topology:	**Switched Ethernet (recommended)**	

† Denotes products directly used in Certification Testing

†† Only WPA-PSK and WPA2-PSK are used during VIEW Certification. Other security methods, such as WEP, could be used as well.

Release 5.0.1.1 must be used. Later releases do not include changes to ensure SpectraLink interoperability.

Service Information

If you encounter difficulties or have questions regarding the configuration process, please contact BelAir Networks technical support at 1-877-235-2471, techsupport@belairnetworks.com or https://support.belairnetworks.com/index.cfm.

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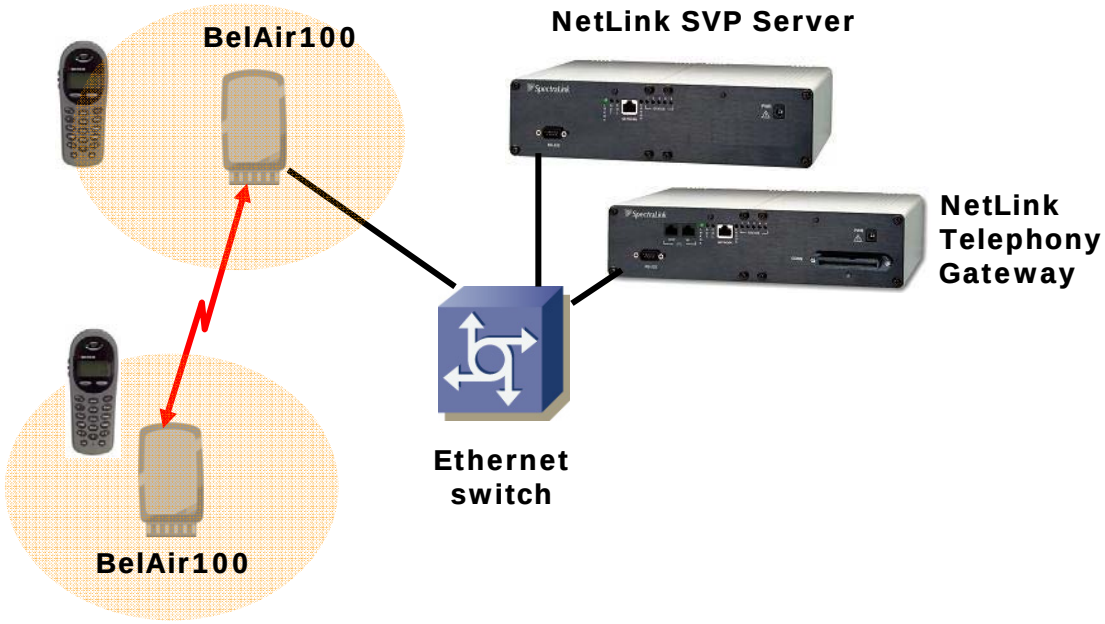
Network Topology

The following topology was tested during VIEW Certification testing.



SpectraLink Voice Priority (SVP) is the SpectraLink quality of service (QoS) mechanism that is implemented in the Wireless Telephone and access point (AP) to enhance voice quality over the wireless network. SVP gives preference to voice packets over data packets on the wireless medium, increasing the probability that all voice packets are transmitted efficiently and with minimum delay. SVP is fully compatible with IEEE 802.11b standards.

The NetLink SVP Server is an Ethernet LAN device that works with APs to provide QoS on the wireless LAN. Voice packets to and from the NetLink Wireless Telephones are intercepted by the NetLink SVP Server and encapsulated for prioritization as they are routed to and from an IP telephony server.

Product Limitations

No limitations were discovered during VIEW Certification testing. However, testing was conducted in a laboratory environment where outdoor access point coverage area and range are not considered. VIEW Certification testing is designed to ensure interoperability and high performance in a typical in-building, enterprise deployment. Actual results may differ if BelAir access points are deployed outdoors covering a large area.

Configuration Settings using the CLI

The following table contains the configuration parameters recommended for interoperability with NetLink Wireless Telephones.

Mode	AP
SVP	Enable
Voice SSID	Map to VLAN 100
QoS mapping	Map VLAN 100 to queue 3
Antenna Diversity	Enable

BelAir access radios implement SVP. BelAir backhaul radios can use VLANs to assign voice priority to SpectraLink traffic or they can use the 802.1p User Priority field to prioritize traffic.

The configuration shown above uses VLAN prioritization. Any VLAN ID can be used. In the sample configuration given throughout this document, we chose a VLAN ID of 100.

Telnet to CLI

The following command is used to telnet to CLI.

```
telnet <IP address of controller>
```

Enable radio

The following command enables the access radio.

```
/radio# set arm1 mode ap
```

Check access configuration

The following command displays the general configuration of the access radio.

```
/# cd /radio
/radio# show arm1 config
```

Change access SSID

The following commands display and change the access SSID. In the example, below, the first SSID is set to "Data" to be used for data traffic and the second SSID is set to "Voice" for voice traffic. The second voice SSID is assigned to VLAN 100.

```
/# cd /radio
set arm1 ssid "Data" ssidx 1
set arm1 ssid "Voice" ssidx 2 vlan 100
```

Change access channel

The following commands display and the channel setting and change the access radio channel to 11.

```
/# cd /radio
/radio# show arm1 physical channel-number
/radio# set arm1 physical channel-number 11
```

Change Access Transmit (tx) Power

The following commands display and change the transmit power setting.

```
/# cd /radio
/radio# show arm1 tx power
/radio# set arm1 tx power 2
```

The transmit power setting is determined by coverage requirement, antenna choice and regulatory requirements. The setting is set by BelAir field engineers or BelAir's VARs and they have been properly trained to set this appropriately.

Set WPA-PSK for access

The following commands enable/disable the WPA-PSK for the voice SSID (ssidx 2).

```
/# cd /radio
/radio# set arm1 wpa1 psk <Pre-Shared Key> ssidx 2 enabled
/radio# set arm1 wpa1 ssidx 2 disable
```

Set WPA2-PSK for access

The following commands enable/disable the WPA2-PSK for the voice SSID (ssidx 2).

```
/# cd /radio
/radio# set arm1 wpa2 psk <Pre-Shared Key> ssidx 2 enabled
/radio# set arm1 wpa2 ssidx 2 disable
```

Enable SVP

The following commands enable SVP support

```
/# cd /qos
/qos# set svp enable
```

Map VLAN to QoS

The following command maps the voice VLAN (such as VLAN 100, in the example) to queue 3, which is the highest priority queue. NetLink Wireless Telephones must always be assigned to queue 3.

```
/# cd /qos
/qos# map vlan id 100 to queue 3
/qos# show vlan all qos config
```

Set Antenna Diversity

The following commands enable antenna diversity.

```
/# cd /radio
/radio# set arm1 rcv antenna diversity enabled
```

Save the Configuration

The following command saves the AP's current configuration so that it will be used after reboot.

```
/# config-save
```

Reboot the node

The following command reboots the AP.

```
/# cd /system
/# /system/reboot
```

Other setup

Please refer to BelAir User Guide for other supported commands.

Configuration Settings Using the Web Interface

The following table contains the configuration parameters recommended for interoperability with NetLink Wireless Telephones.

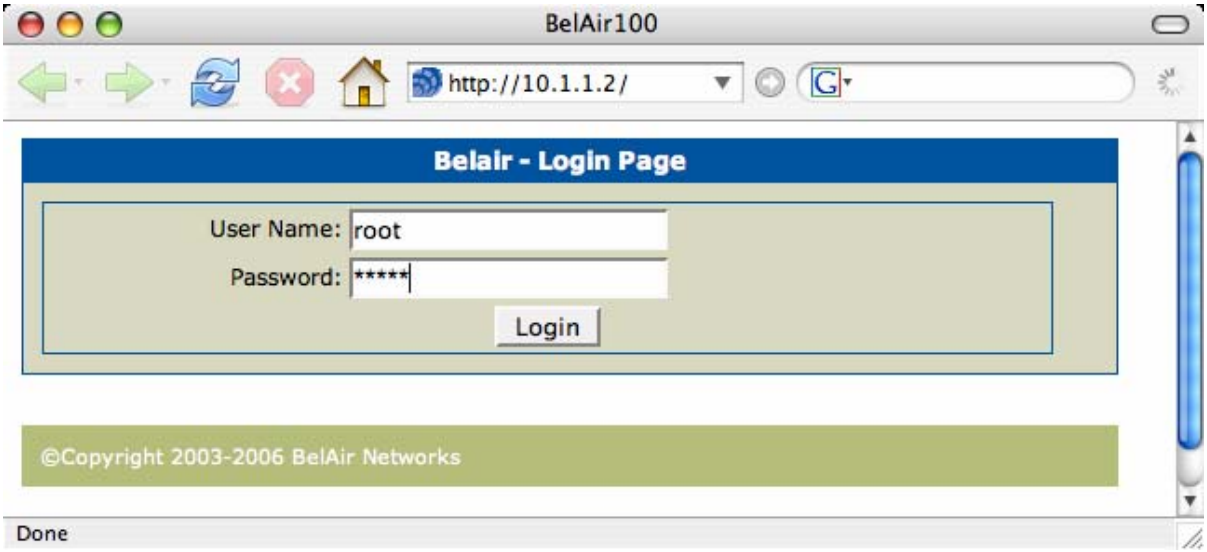
Mode	AP
SVP	Enable
Voice SSID	Map to VLAN 100
QoS mapping	Map VLAN 100 to queue 3
Antenna Diversity	Enable

BelAir access radios implement SVP. BelAir backhaul radios can use VLANs to assign voice priority to SpectraLink traffic or they can use the 802.1p User Priority field to prioritize traffic.

The configuration shown above uses VLAN prioritization. Any VLAN ID can be used. In the sample configuration given here, we chose a VLAN ID of 100.

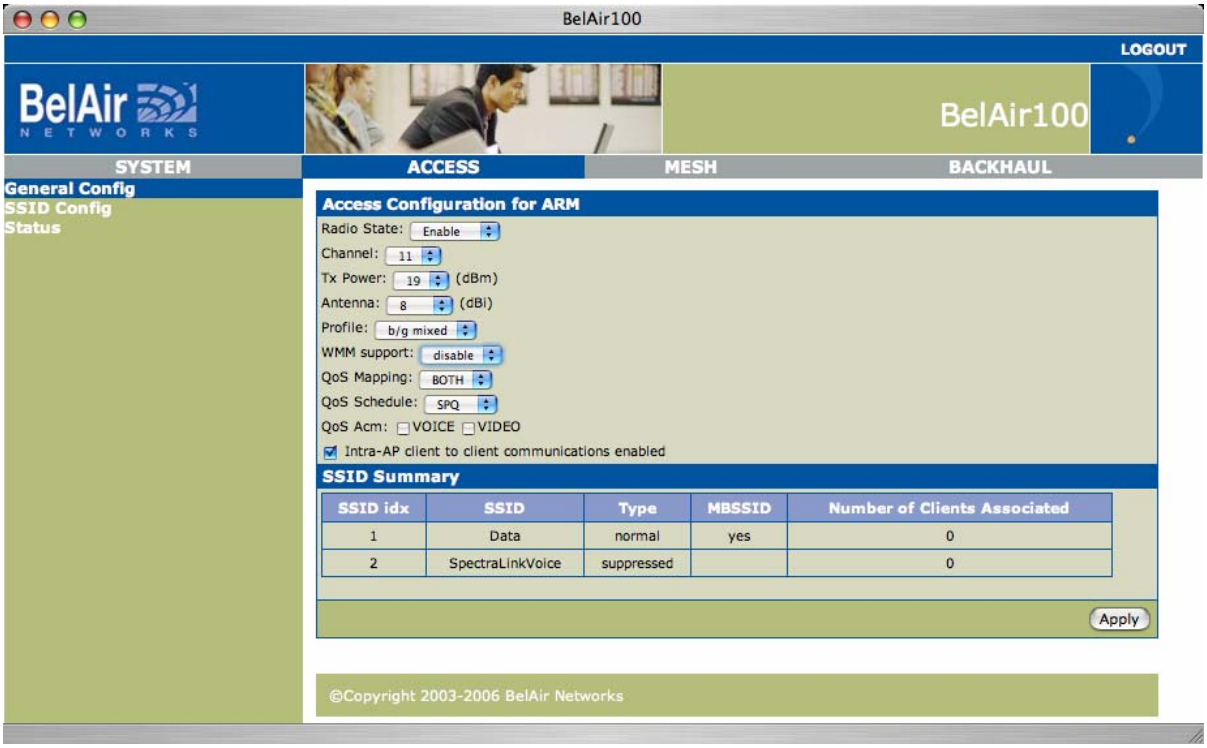
Connect to web interface

Open a web browser window and enter the BelAir node's IP address in the navigation bar. Then log in with your BelAir administrative credentials.



Configure the access radio

Click the **ACCESS** tab in the top bar and then **General Config** in the navigation panel on the left.



Make sure that the **Radio State** is **Enable**. Set your channel and power level according to your deployment plan. If you are using the internal access antenna then the **Antenna** (Antenna Gain) should be set to **8 dBi**; otherwise, choose the antenna setting corresponding to your external antenna.

Note: BelAir's internal access antennas have 8 dBi gain, which is the default setting for this field. If a different antenna is used then this setting should be changed accordingly. Please refer to the *BelAir Hardware Products: Deployment Guidelines* manual for more information.

WMM support must be disabled.

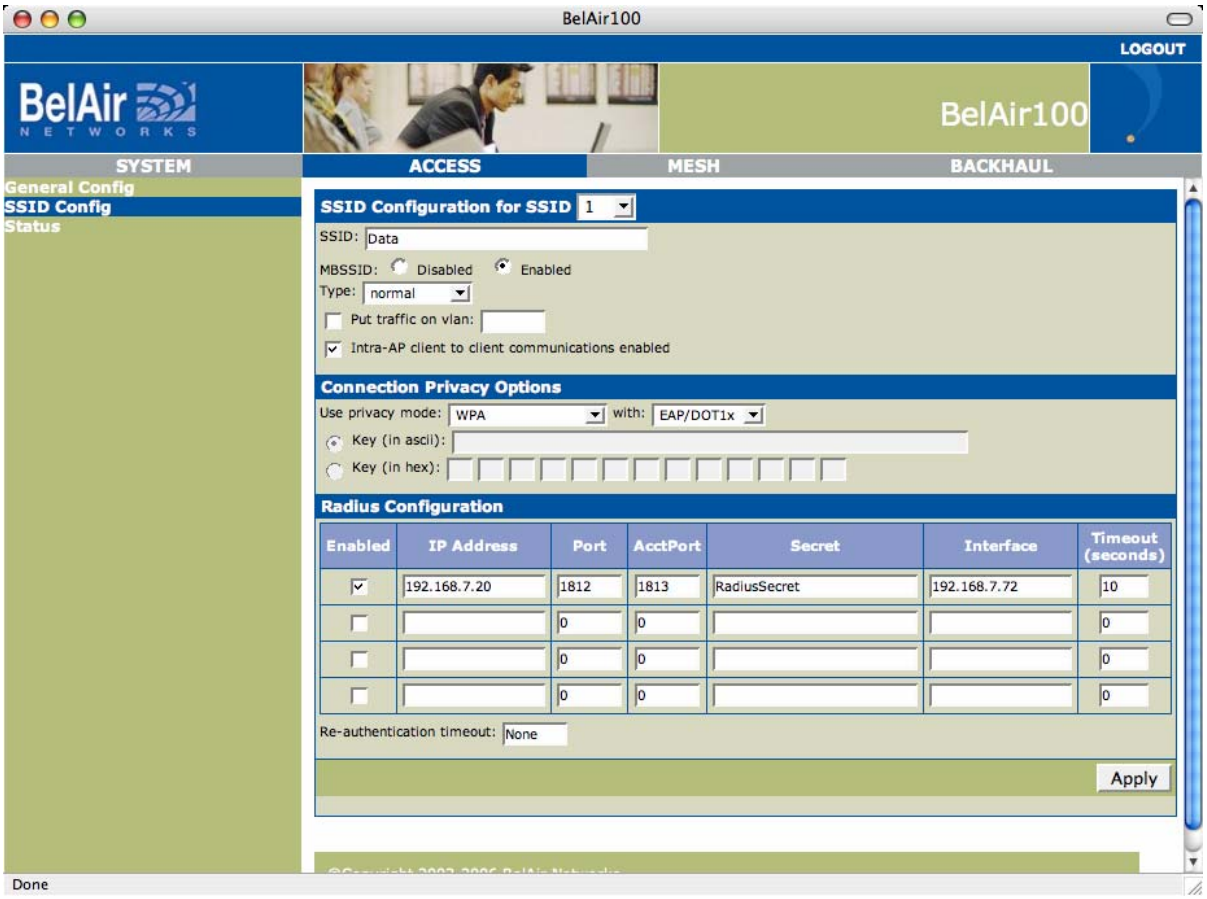
The **QoS Mapping** setting is irrelevant for SpectraLink phones because the SVP support over-rides it, therefore, the default QoS Mapping of **BOTH** can be used.

Make sure that **QoS Schedule** is set to **SPQ** (Strict Priority Queuing) and the checkbox for **QoS ACM Voice** is not checked so that Access Control Mandatory (**Acm**), which is part of WMM call admission control, is not used.

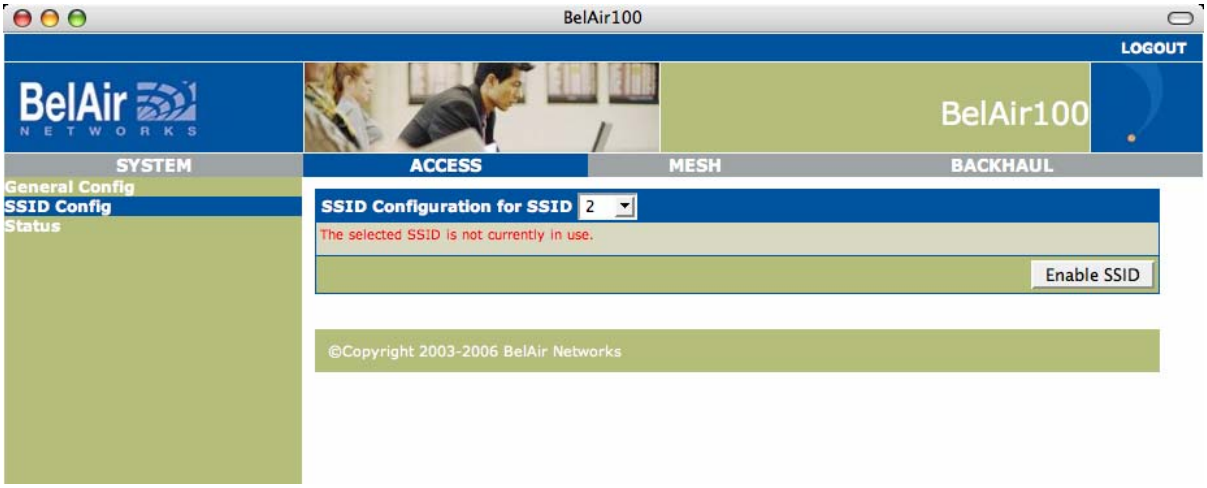
When you have made your changes then click on **Apply**.

Set up the voice SSID

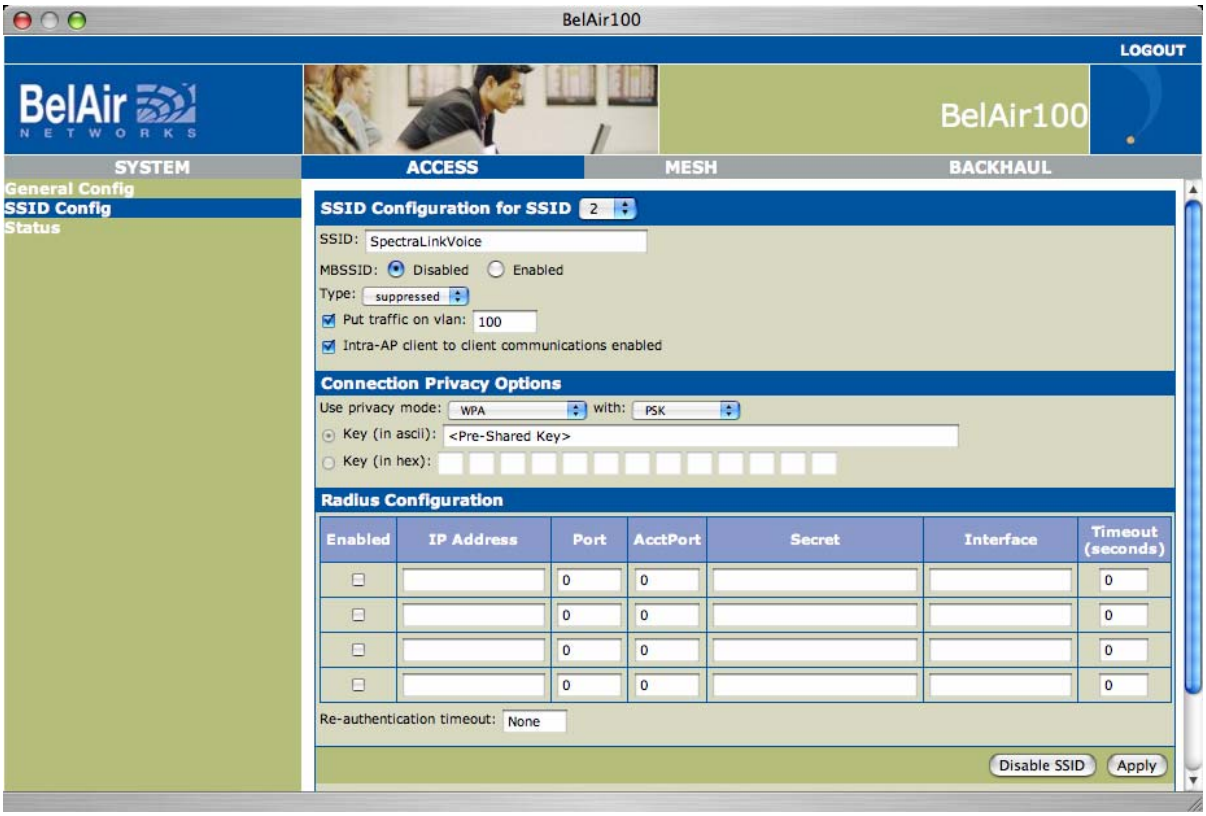
Make sure you have selected **ACCESS** in the top bar, and then click **SSID Config** in the navigation panel on the left.



If you have not done so already, set up an SSID for data users. Next, select an unused SSID, in this example **2**.



Click **Enable SSID**.



Enter your new voice SSID name. Make sure that **MBSSID** is disabled. In this example configuration we mapped the voice SSID to VLAN 100 and enabled Intra-AP client to client communications.

MBSSID must be disabled so that there is a single SSID carrying SpectraLink voice traffic. If MBSSID is enabled, each SSID gets its own BSSID, causing the NetLink SVP Server to not work properly since the SVP Server would perceive the two SSIDs on an AP to be two different APs.

Suppressed refers to whether the SSID gets its own beacon. When MBSSID is enabled for an SSID, it can only be broadcast (i.e., non-suppressed) if it is the first SSID. The NetLink Wireless Telephones work fine with an SSID that is either Broadcast or Suppressed.

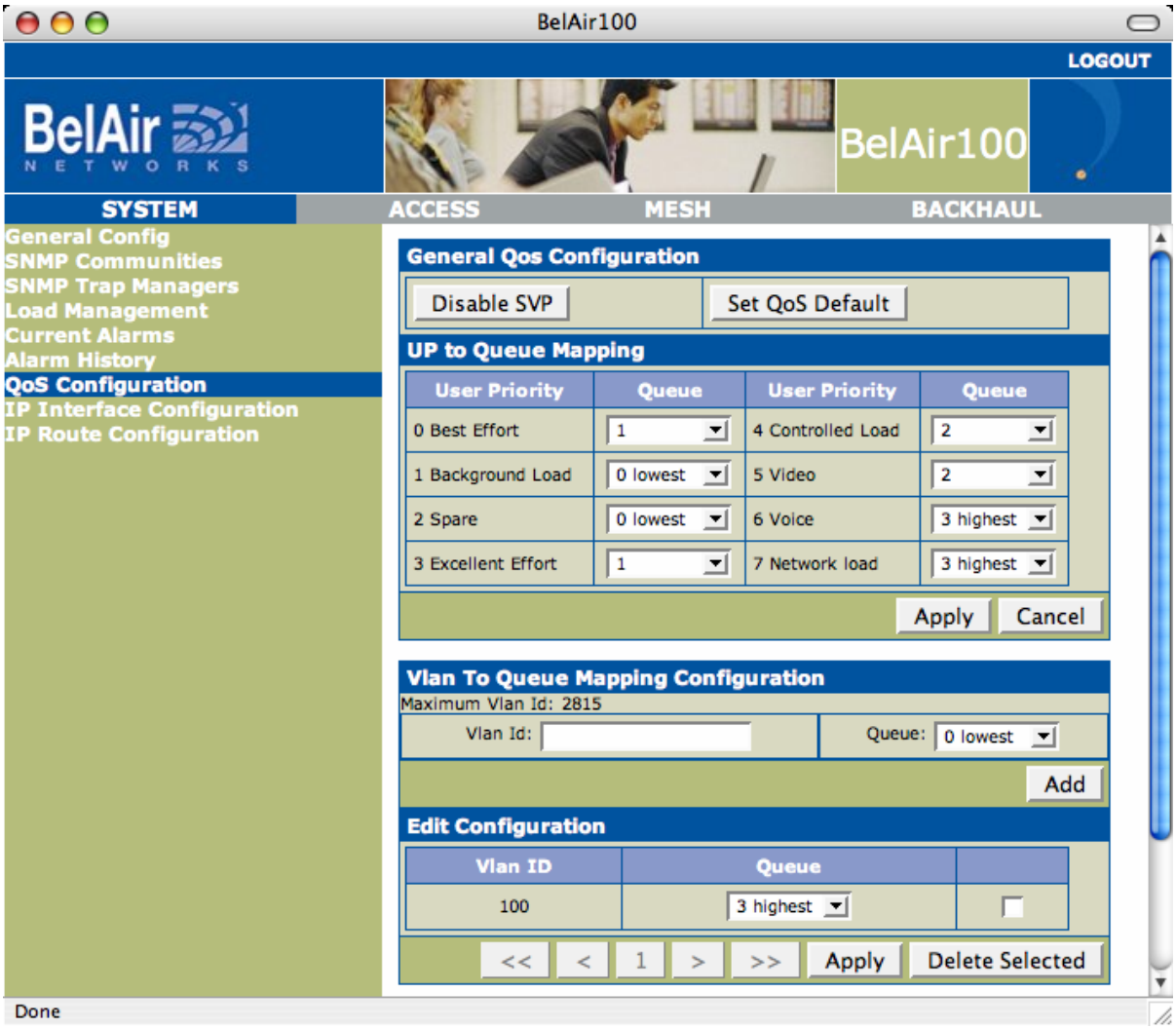
Intra-AP client to client communications setting relates to whether client devices can communicate directly with one another. In certain VoIP-based PBX environments, the NetLink Wireless Telephones need to communicate directly with one another, therefore the setting must be enabled in those instances. Otherwise you may wish to disable this setting to slightly enhance security.

It is not recommended to use RADIUS authentication, which is referred to as **EAP/DOT1X** in BelAir's web interface.

Select your privacy mode and enter a key as indicated. When you are done, be sure to click **Apply**.

Set up QoS

Click on **SYSTEM** in the top bar and then select **QoS Configuration** in the left menu bar.



If the top-left button is labeled, **Disable SVP** then SVP is already enabled. Otherwise, it will be labeled **Enable SVP**. Enable SVP if it is not already enabled.

Check the **UP to Queue Mapping** Configuration section to verify that only **6 Voice** and **7 Network load** are mapped to Queue 3. If any other User Priority (UP) values are mapped to Queue 3, then remap them to a different queue.

In the **Vlan to Queue Mapping Configuration** section, enter the voice VLAN ID (of VLAN 100 in our example), select 3 highest for the queue, and click **Add**.

If you made changes here, then click the **Apply** button at the bottom of this section.