

Spectralink Quick Network Connect

Administration Guide

Version 1.0.81

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Warranty

The *Product Warranty and Software License and Warranty* and other support documents are available at <http://support.spectralink.com>.

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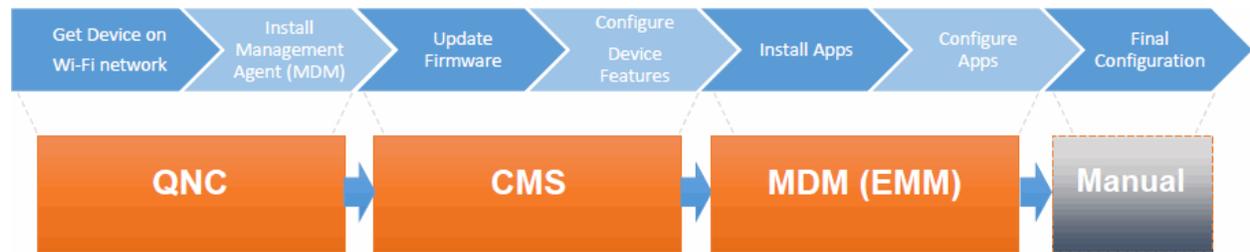
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About This Guide

This document explains how to install and use the Quick Network Connect.

QNC configures the phone so it can associate with the wireless LAN and pick up additional configuration settings from a server. It is the first step in the deployment process.

Deployment process



What is QNC?

Quick Network Connect utilizes a customized version of a commercially available Raspberry Pi to simplify the wireless provisioning of your Spectralink 87-Series smartphones.

When connected to a PC, QNC provides a browser-based GUI that provides you with the wireless configuration parameters you need to set in order for PIVOT to associate with the wireless LAN.

Once the configuration is completed, a connection between QNC and an 87-Series smartphone loads the wireless parameters into the handset. This document explains how to use QNC to configure and load wireless parameters into your PIVOT smartphones.

What is CMS?

The primary tool for administering a volume of handsets is the CMS, the Configuration Management System. It is a GUI program that is opened in a browser and provides an easy and intuitive way to configure the handsets and manage the deployment of many handsets at once. For CMS deployment see *Spectralink 87-Series Smartphone CMS Administration Guide*.

What is MDM/EMM?

EMM is Enterprise Mobile Management, a term used to describe the management of mobile devices in a business context. EMM software is an offshoot of MDM or Mobile Device Management. EMM is the preferred approach as it is specifically designed for enterprise applications and devices.

MDM/EMM programs are used to manage applications. Applications need to be managed on PIVOT so that enterprise devices remain secure. The degree of control is a matter of enterprise policy. See *Spectralink 87-Series Applications Installation Guide* for complete information.

What is Manual Configuration?

Like any device powered by Android, PIVOT provides menus for configuring options that provide functionality and features. Two types of menus are available, the familiar user-level menus used by all smart phones and administrator menus that are behind a password. Manual configuration refers to using these phone menus to set up each phone individually.

Practically any deployment will require some manual adjustments so this step is included to put the final polish on your deployment. See *PIVOT by Spectralink Configuration Guide* for complete information.

Product Support

Spectralink wants you to have a successful installation. If you have questions please contact the Customer Support Hotline at 1-800-775-5330.

The hotline is open Monday through Friday, 6 a.m. to 6 p.m. Mountain time.

For Technical Support: <mailto:technicalsupport@spectralink.com>

For Knowledge Base: <http://support.spectralink.com>

For Return Material Authorization: <mailto:nalarma@spectralink.com>

Spectralink References

All Spectralink documents are available at <http://support.spectralink.com>.

The screenshot shows the Spectralink Support website interface. At the top, there is a navigation bar with links for 'Partner Access', 'Spectralink.com', 'Contact Support', and a search icon. The main header features the Spectralink logo and the word 'support'. Below the header, there are navigation tabs for 'PRODUCT RESOURCES', 'RMAs', 'SERVICE REQUESTS', and 'CUSTOMER MANAGEMENT'. The main content area is titled 'Welcome to Spectralink Support' and includes a search bar for product documents and downloads. The search bar has two dropdown menus: 'Product Category' (set to 'Wi-Fi') and 'Product Type' (set to '- Any -'). A 'FIND' button is located below the search bar. To the right of the search bar, there are links for 'All Documents & Downloads', 'Feature Requests', 'Product Alerts', 'Service Policies', 'FAQs', and 'Contact Support'. Below the search bar, there are two sections: 'RMAs AND SERVICE REQUESTS' and 'CUSTOMER MANAGEMENT'. The 'RMAs AND SERVICE REQUESTS' section includes links for 'RMA Status', 'My Service Requests', 'RMA Forms', 'My Company's Service Requests', 'RMA Requests', 'Repair Pricing', and 'My Company's RMAs'. The 'CUSTOMER MANAGEMENT' section includes links for 'Warranty and Entitlement Lookup', 'My Company's Entitlements', and 'Batch Warranty and Entitlement Lookup'. At the bottom of the page, there is a copyright notice: '© 2013 Spectralink Corporation, All rights reserved. Terms and Conditions | Product Warranty'.

To go to a specific product page:

Select the Product Category and Product Type from the dropdown lists and then select the product from the next page. All resources for that particular product are displayed by default under the All tab. Documents, downloads and other resources are sorted by the date they were created so the most recently created resource is at the top of the list. You can further sort the list by the tabs across the top of the list to find exactly what you are looking for. Click the title to open the link.

QNC documents and software can be found at: <http://support.spectralink.com/products/wi-fi/qnc>.

Specific Documents

AP Configuration Guides show you how to correctly configure access points and WLAN controllers (if applicable) and identify the optimal settings that support Spectralink 87-Series handsets. The guides can be found at the View Certified page.

Spectralink 87-Series Smartphone Deployment Guide The Deployment Guide provides sequential information for provisioning and deploying the handsets. It covers deployment using QNC and CMS as well as manual deployment.

PIVOT by Spectralink Configuration Guide The PIVOT Configuration Guide provides detailed information about PIVOT menu items that have been developed specifically for the PIVOT handset.

Spectralink 87-Series Smartphone CMS Administration Guide The CMS Admin Guide provides information about every setting and option available to the administrator on CMS. Time-saving shortcuts, troubleshooting tips and other important maintenance instructions are also found in this document.

Spectralink 87-Series Wi-Fi Security Implementation Guide Wi-Fi security prevents unauthorized over-the-air access to network components and the sensitive data that resides there. This Guide discusses the various method and explains how to implement each of them.

Spectralink 87-Series Smartphone Application Installation Guide The Applications Installation Guide provides detailed information about deploying any type of application, using an app store or MDM and manual processes for loading applications on the Spectralink 87-Series handset.

Spectralink 87-Series Smartphone User Guide The User Guide provides detailed information about using the features of the 87-Series handsets.

Spectralink 87 Series Wireless Telephones Web Developer's Guide The Web Developer's Guide provides Web application creators with information for developing and deploying Web applications that interface with Spectralink handsets.

For information on IP PBX and softswitch vendors, see *PIVOT by Spectralink Call Server Interoperability Guide*.

Conventions Used In This Document

Icons

Icons indicate extra information about nearby text.



Note

The Note icon highlights information of interest or important information that will help you be successful in accomplishing a procedure or understanding a concept.



Spectralink recommends:

Our recommendation for a specified aspect of the information.



Caution

The *Caution* icon highlights information you need to know to avoid a hazard that could potentially impact device performance, application functionality, successful feature configuration and/or affect handset or network performance.



Admin Tip

This tip advises the administrator of a smarter, more productive or alternative method of performing an administrator-level task or procedure.



Tip

The Tip icon highlights information that may be valuable or helpful for users to know, such as special techniques, shortcut methods, or information that will make user tasks easier to perform.

Typography

A few typographic conventions, listed next, are used in this guide to distinguish types of in-text information.

<i>Convention</i>	<i>Description</i>
Bold	Highlights interface items such as menus, soft keys, file names, and directories. Also used to represent menu selections and text entry to the handset.
<i>Italics</i>	Used to emphasize text, to show example values or inputs, and to show titles of reference documents available from the Spectralink Support Web site and other reference sites.
<u>Underlined blue</u>	Used for URL links to external Web pages or documents. If you click on text in this style, you will be linked to an external document or Web page.
Bright orange text	Used for cross references to other sections within this document. If you click on text in this style, you will be taken to another part of this document.
Fixed-width-font	Used for code fragments and parameter names.

This guide also uses a few writing conventions to distinguish conditional information.

<i>Convention</i>	<i>Description</i>
<MACaddress>	Indicates that you must enter information specific to your installation, handset, or network. For example, when you see <MACaddress>, enter your handset's 12-digit MAC address. If you see <installed-directory>, enter the path to your installation directory.
>	Indicates that you need to select an item from a menu. For example, Settings > Basic indicates that you need to select Basic from the Settings menu.

Chapter 1: QNC Provisioning

Initial provisioning sets configuration options so that the PIVOT smartphone can associate with the wireless LAN and access the Configuration Management Server, if one is being used.

When connected to a PC, QNC provides a browser-based GUI that provides you with the wireless configuration parameters you need to set in order for PIVOT to associate with the wireless LAN.



Once the configuration is completed, PIVOT can obtain the configuration either wirelessly or through a USB connection between QNC and PIVOT. A wireless connection allows you to configure up to 10 PIVOTs at the same time with the same parameters.



Admin Tip

If using CMS, please set up CMS first so that the account key can be captured and provided to PIVOTs through QNC configuration.



Caution: Internet access

If you need to configure PIVOT without access to the internet, use QNC for initial wireless connectivity to a closed WLAN using the configured SSID. Simply skip over any internet connectivity prompts.

Initial/OOB Provisioning Using QNC

Configuration overview

The QNC platform is designed to simplify the configuration of Spectralink 87-Series handsets. The usual sequence is as follows:

- 1 Set up the PC browser and LAN to host the QNC program.
- 2 Configure QNC with the parameters you will want on PIVOT.
- 3 Turn on PIVOT(s). Reset handsets to factory default if any menu options have been changed manually.
- 4 Select the desired QNC icon from the Home screen(s).
 - » QNC USB requires a cable between QNC and PIVOT. Only one handset can download its configuration at a time.

- » QNC Wi-Fi delivers the configuration over the air. Up to 10 PIVOTs can be configured at the same time. QNC uses the default SSID “Spectralink” which is pre-configured in PIVOT R1.8 and R2.1 and above.
- 5 PIVOT(s) will associate with QNC and download the configuration parameters set in QNC.
- 6 PIVOT connects to the wireless LAN.
- 7 Provision additional configuration with the CMS or manual entry.
- 8 Test the handsets.

Box Contents

The following components are included in the QNC package:

1. The QNC unit
2. Universal USB power supply.
3. A USB cable to connect QNC to the handset
4. An Ethernet network cable for the network connection between QNC and your PC/laptop
5. Spectralink Product Warranty and EULA
6. Regulatory information

Set up QNC

Set up the wireless LAN infrastructure

Since QNC configures the wireless connection, the handset must be able to connect to the configured WLAN in order for QNC to complete the configuration successfully. Therefore, ensure that you have the correct SSID and security method with the correct passwords fully configured before configuring QNC.

If you are also deploying CMS R2.0 or above, install CMS before activating QNC. You will need to enter the unique customer account key and security credentials from the About Us tab in CMS so that PIVOT phones can access CMS once they connect to the WLAN.

Set up the hardware



Caution: Do not insert or remove USB device during power up.

All USB connections must be made prior to power up to avoid boot issues. If you are using a USB connection to transfer the configuration to the PIVOT smartphones, you can plug in the cable before powering up QNC or during the configuration steps.

QNC is pre-loaded with software.

- 1 Plug in the QNC power supply to a wall outlet. Plug the power supply into QNC. You can see the board lights through the vent.
- 2 Plug the provided network cable into the Ethernet port of QNC and connect the other end to your PC/laptop.

Configure your PC/Laptop

These instructions are generic in nature and may need to be adjusted to accommodate the existing configuration of your PC/laptop. The general idea is that you are disconnecting from any existing LAN and setting up a private LAN so that PC/laptop and QNC can talk to each other without interference.

- 1 If necessary, install Firefox® or Chrome™ browser on your PC/laptop. Internet Explorer® may work but is prone to interference and is not recommended.
- 2 Disable DHCP for the network port on the PC/laptop you plugged the Ethernet cable into. Set the PC/laptop Ethernet interface to use static IP 192.168.1.x and subnet mask of 255.255.255.0.

Chapter 2: Configure PIVOT parameters

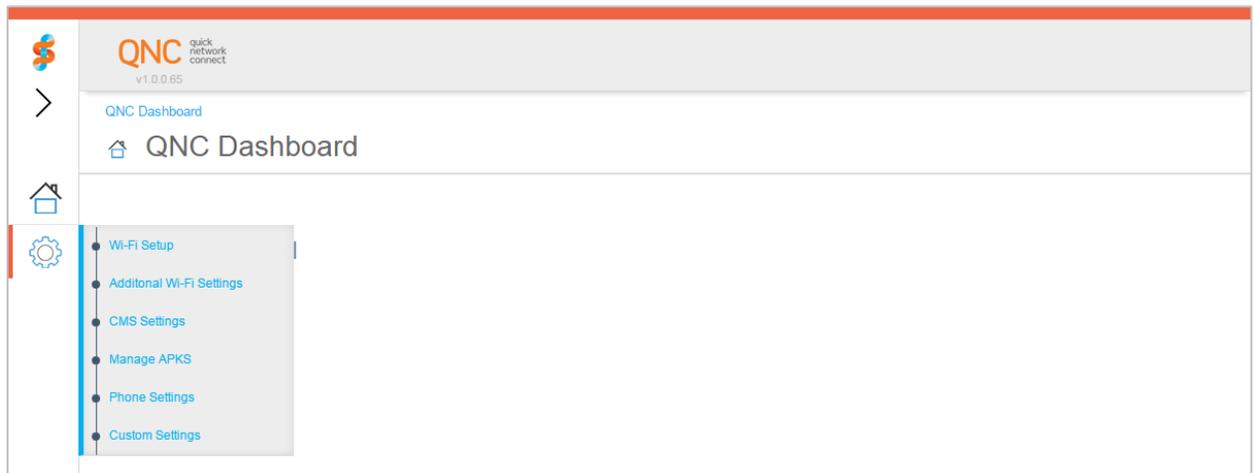
Step through the menu and enter the configuration parameters for your facility. Each window has an **Update Configuration** button at the bottom of it. Click the button to save your entries then move to the next window. If no changes have been made in any given window, the button will not be available.



Admin Tip: Do QNC settings persist?

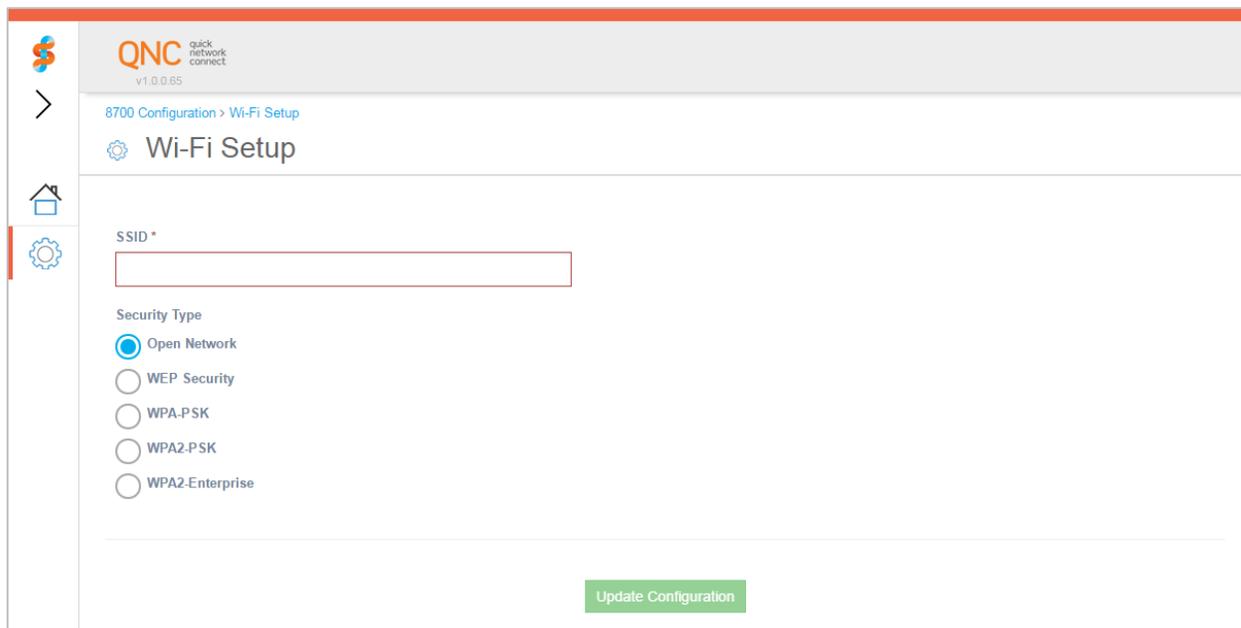
When configuring the parameters for wireless connectivity while also using CMS for further configuration, realize that QNC settings will persist unless overridden by CMS settings.

- 1 Open a browser and browse to the QNC IP address: **192.168.1.1**. The dashboard displays. Click the configuration icon to display the configuration menu.



Wi-Fi Setup

- 2 The Wi-Fi Settings pages are next. Enter the SSID that you will be using to connect to the wireless LAN and the Security type.



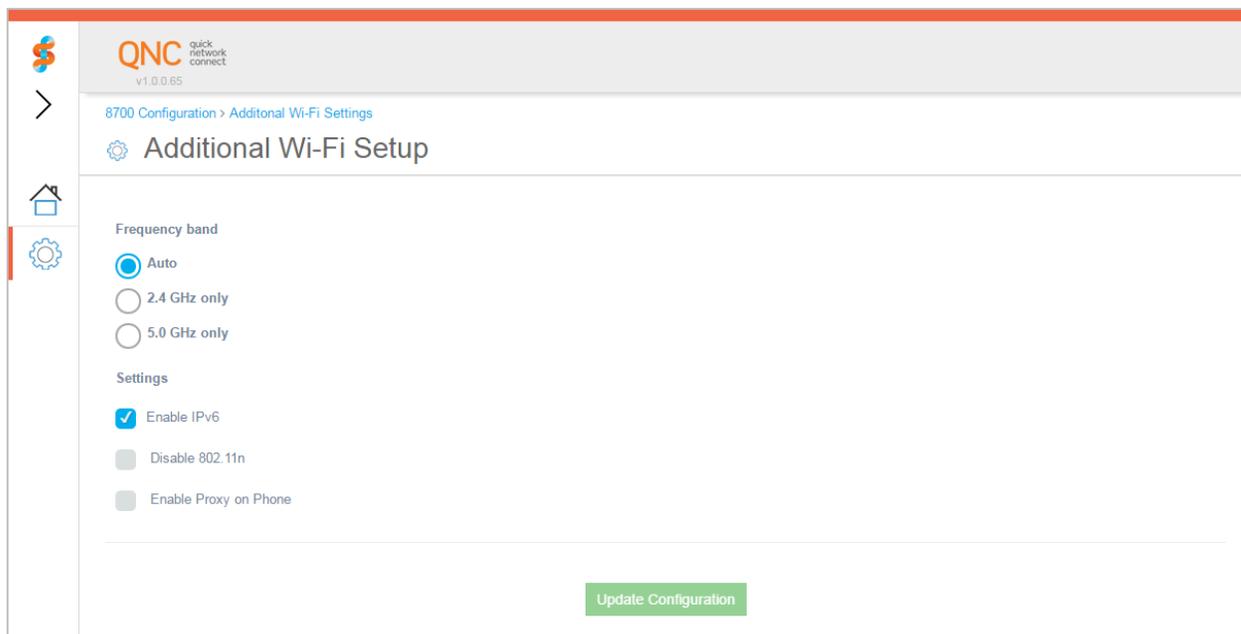
- 3 If required by your security type, enter the passphrase or hex key type and the passphrase or hex key.



Admin Tip: Changing Security type with CMS

Note that you can set one security type to initially connect to the wireless LAN and then change it with the CMS once the handset is on the wireless LAN.

Additional Wi-Fi Settings



- 4 Wi-Fi frequency band options allow you to specify which band(s) you want to use: 2.4GHz, 5GHz or “Auto”. If Auto is selected, the handset scans both bands when it is trying to find the best AP.
- 5 You may enable IPv6 awareness to improve compatibility with IPv6 aware applications. However, IPv6 wireless networks are still NOT supported, and this setting should be set to off if networking problems are observed.
- 6 802.11n support can be disabled. It is enabled by default.
- 7 Wireless proxy options allow you to configure proxy settings for access to the internet.

The screenshot displays the 'Additional Wi-Fi Setup' configuration page in the QNC interface. The page has a sidebar on the left with icons for home, settings, and navigation. The main content area is titled 'Additional Wi-Fi Setup' and contains the following sections:

- Frequency band:** Three radio button options: 'Auto' (selected), '2.4 GHz only', and '5.0 GHz only'.
- Settings:** Three checkbox options: 'Enable IPv6' (unchecked), 'Disable 802.11n' (unchecked), and 'Enable Proxy on Phone' (checked).
- Host Name:** A text input field.
- Port:** A text input field.
- Bypass proxy for:** A text input field.

At the bottom right of the form is a green 'Update Configuration' button.

Enter the requested information for Host Name and Port. The “Bypass proxy for” field allows you to enter a list of locations that the handset can access directly rather than going through the proxy. This setting can be one domain or a comma-separated list of domains.

Configuration Management Setup

- 8 Enter the URL of the CMS server. The network protocol used by the CMS server is either HTTP or HTTPS. The entry in this box must use the complete address starting with `http://` or `https://`. This must be the same address that was set up in CMS upon installation (in the `application_init.py` script).
- 9 The CMS heartbeat defaults to 60. This is the time interval between “check-ins” between the handset and the CMS. Use the following scale to determine what interval is best for your installation.

<i>Number of handsets</i>	<i>Heartbeat interval</i>
1 to 5,000 handsets	60+ seconds
5,000 to 10,000 handsets	120+ seconds
10,000+ handsets,	180+seconds

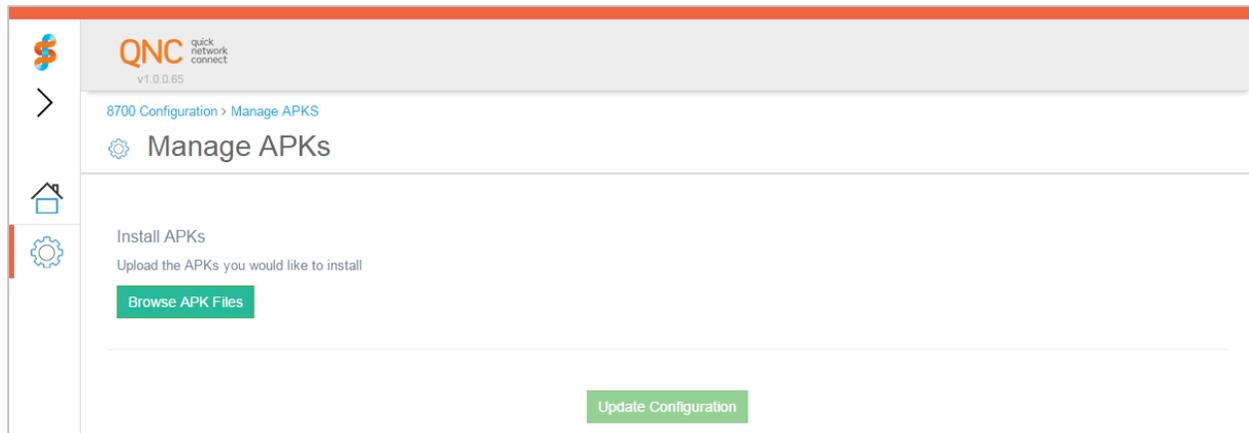


Caution: If using HTTPS

If you use an address for CMS that starts with `https://`, you must load an SSL certificate. If you do not load a certificate, the authentication handshake between the handset and the CMS will fail and there will be no connection.

- 10 If using HTTPS as your network protocol, you will need to enter the SSL certificate from the CMS server. See the About Us window in CMS 2.0 for the certificate.
- 11 Account Key. CMS 2.0 and above requires an account key be loaded into the phone that identifies it to CMS. If you are using CMS 2.0 or above, you will need the account key that CMS generates. This key is then loaded into the phone either manually or with QNC. See the About Us window in CMS for the account key.

Manage APKs



- 12 Install application files.



Spectralink recommends: Upload MDM client

Our recommended deployment model includes loading an MDM/EMM client and managing your apps through the MDM/EMM.



Admin Tip: Loading many apps through QNC

You may upload a maximum of 120Mb total combined size of all .apk files. There is no limit to the number of .apk files, only their combined size.

However, you will experience a delay in configuration when loading large or many apps and this is not the recommended method. Use an MDM/EMM for app loading and management.

Phone Settings

The screenshot shows the 'Manage Phone Settings' interface. At the top, it says 'QNC quick network connect v1.0.0.65'. Below that, the breadcrumb is '8700 Configuration > Phone Settings'. The main title is 'Manage Phone Settings'. There are three main sections: 'Admin Password' with a text input field containing dots and a 'Show Password' checkbox; 'NTP Address' with a text input field containing '2.android.pool.ntp.org'; and a checked checkbox for 'Disable Google Play Store'. At the bottom right, there is a green 'Update Configuration' button.

- 13** Set the Admin password. This is where you can set a secure password for the Admin Settings menu in the handset than the default of “admin” to prevent unauthorized changes to the administrative parameters.



Caution: Special character limitations

Sometimes passwords and other text uses special characters that can be problematic in certain software applications. In the QNC program, the double backslash (two backslashes in a row, i.e. \\) functions as an escape character and therefore does not manage your entry accurately. The ampersand (&) and bracket characters (<>) are similarly problematic for CMS.

To be on the safe side, do not use these special characters in any fields:

\\ (double backslash)

& (ampersand)

< > (open or close brackets)

- 14** Enter NTP server address information.
- The handset can get its time from the default server at Google™, but it must have internet access. The internet address is 2.android.pool.ntp.org. Retain the default to use this option.
 - A local NTP server can be used for the time. Enter the IP address or a FQDN.

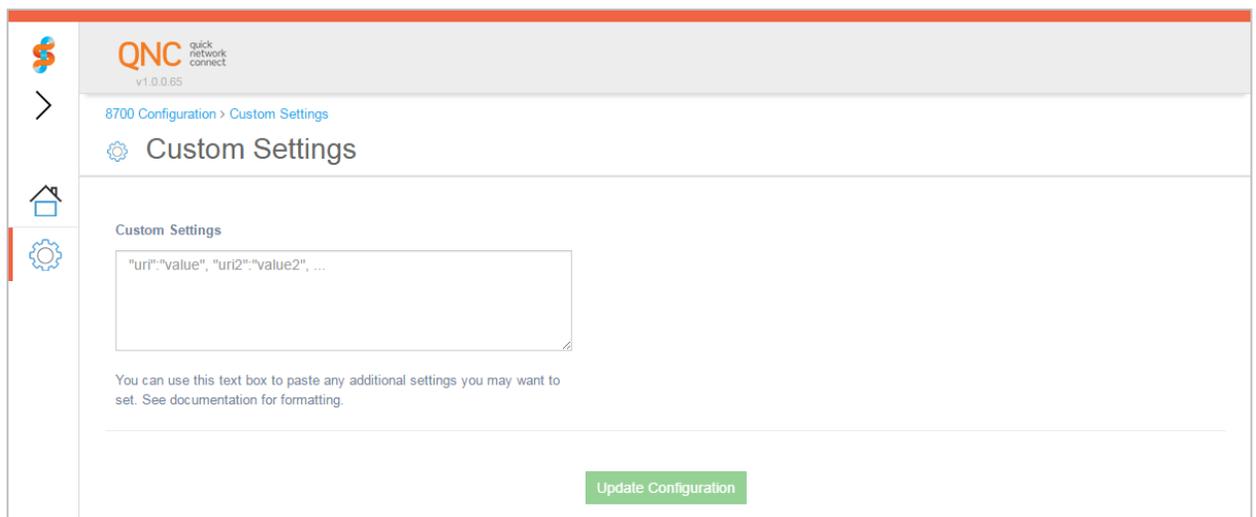


Admin Tip: Android requires an NTP server

Android devices require a constant source for time. You can use the default server that Google provides if the handsets have constant internet access. If the handsets do not have internet access, deploy an NTP server and enter its address in this field.

- 15 Control access to the Google Play™ Store. It is disabled by default.

Custom Settings



- 16 Spectralink service personnel may direct you to enter custom configuration parameters through this “back door”. Do not attempt to enter custom settings unless you have specific parameters provided by the Spectralink service department.

Download configuration to phones

- 17 Once you have stepped through the applicable windows and updated the configuration, you are ready to upload the configuration parameters to your PIVOTS.

Chapter 3: Load Wireless Parameters into the Handsets

QNC permits both wireless and wired transfer of parameters to PIVOT. If using the wireless method, Spectralink recommends loading no more than 10 PIVOTs at a time. If using the wired method, only one PIVOT can be configured at a time. PIVOT R1.8, R2.1 and above can be configured wirelessly.



Caution: Wireless security

When QNC transfers the security configuration to the handset via a USB cable and not over the air, it is considered to be a very secure transfer of information.

If you select the wireless option, you can use a less secure Wi-Fi method and then move to a more secure method using CMS.

If you are not using HTTPS between CMS and the handsets, be aware that the over-the-air transfer of security information with the CMS, is a potential security risk.

EAP-TLS is the exception to this as it sets up mutual authentication when configured with QNC according to Spectralink recommendations. Please see *Wi-Fi Security Implementation Guide* for the 87-Series handsets.

To load the configuration into the handsets

- 1 Insert a fully-charged Battery Pack into PIVOT(s).
- 2 (Conditional) If the handset has been modified from out of the box configuration, perform a Reset to Factory. [Navigate to **Settings**> **Admin Settings**> **Reset Settings**> **Factory data reset**.]
- 3 The startup screen offers configuration by either QNC or the Google Wizard. Tap the QNC method for PIVOT R1.8 and R2.1 and above.

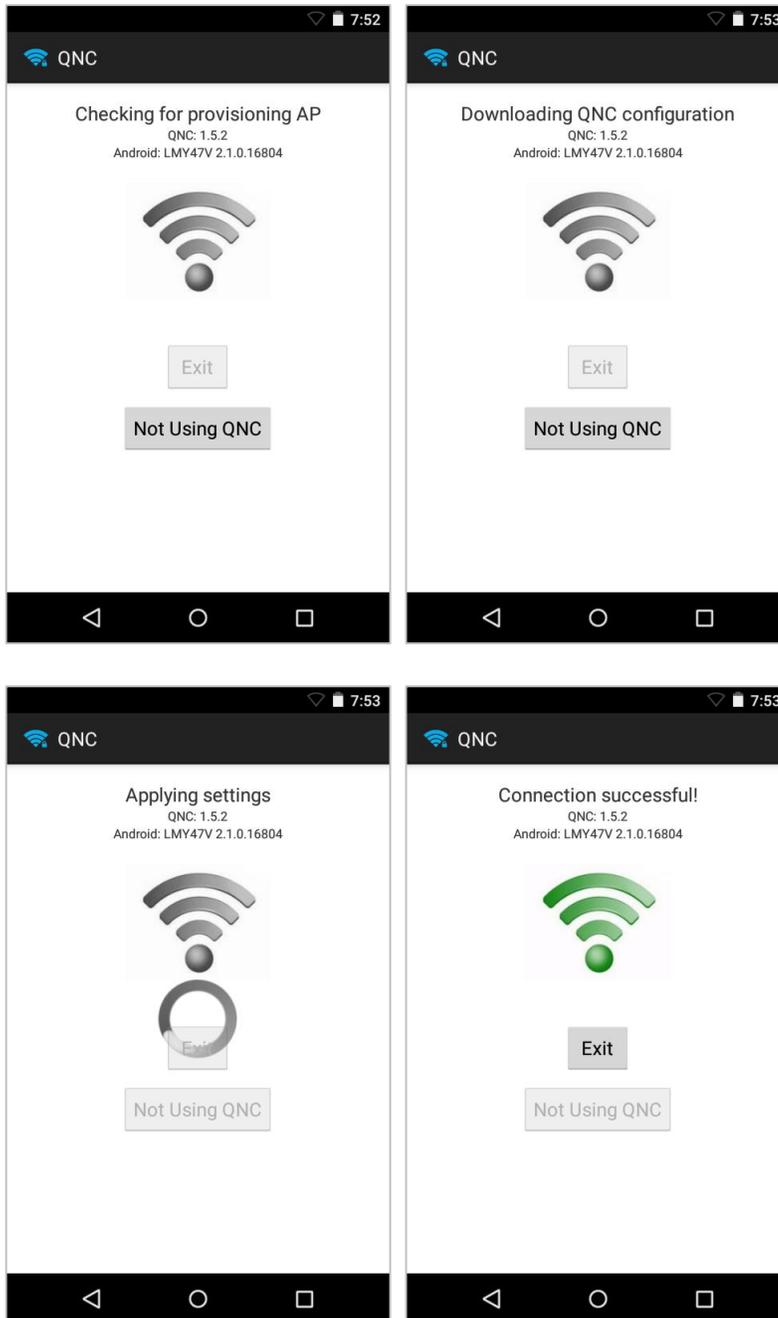
Startup screen R2.1



Admin Tip: Where is the QNC app?

The QNC app is intentionally disabled after using it. If it is not available in the Launcher, it can be found in the Apps library. To restore it to the Launcher, navigate to **Settings > Admin settings > Apps** and swipe to the right-most screen. The QNC app will be there. Tap the icon and enable it. You will then see it back in the Launcher.

- 4 PIVOT will associate with QNC and load the configuration.



You may now disconnect the USB cable from PIVOT, if using one.

- 5 PIVOT will then step you through the Google wizard.
- 6 PIVOT will now download the rest of its configuration from the CMS server, if it has been configured. If not using a CMS, manually configure the rest of your settings in the handset.
- 7 Test the first few handsets to be sure your configuration is working as desired.

Optimization Pointers for Quantity Deployment

Once you have proven that one handset can download the CMS updates and come up on your network, speed up the deployment of the rest of the handsets by following these pointers:

- 1** Ensure you have a fully charged battery for each handset.
- 2** All handsets must be in factory default state. If handsets have been modified, return them to the factory default state.
- 3** If using wireless deployment, install batteries and power up the next set to deploy wirelessly. They will connect to QNC per the instructions above and connect to the WLAN.
- 4** If using the USB cable, one at a time, plug in each handset. The handset will download the configuration and connect to the LAN. Unplug the handset and repeat with next handset.

Chapter 4: Troubleshooting

If you have faulty hardware or errors in the configuration, QNC may not function properly. Here are several tips for correcting possible sources of problems.

Could not locate...

If the phone does not recognize the QNC server, the “Could not locate...” screen will persist, even after you have plugged the phone into the QNC box:



This error is usually caused when the configuration has not been saved. Re-configure QNC settings and click the Save button on each screen.

Configuration failure

If you get some sort of failure during the configuration process, note the failure message and tap the **Exit** button on the phone. Note that if you tap **Not Using QNC** the Google Wizard will start. If that happens, you can either run the Google Wizard or restore to defaults via the manual recovery menu and try running QNC again after checking the points below.

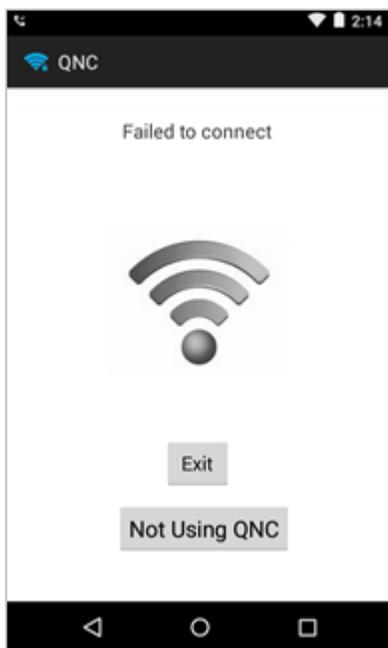


Admin Tip: Using the Recovery menu

The Recovery menu allows you to restore the handset to defaults if you cannot access the Admin menu.

Remove battery. Press and hold the volume down button while reinserting battery and wait for vibrate confirmation. Release volume down button and follow the Recovery Menu options for wiping the data and restoring to defaults.

- Can you connect to the QNC wizard. Check the PC LAN settings. Are they properly configured. See [Set up QNC](#).
- Was the correct version loaded on the jump drive when you updated the software. See [Appendix A: Updating QNC Software](#).
- If you get a “Failed to connect” message, there is an error with the wireless configuration. Tap **Exit** and disconnect the phone. Go through the QNC configuration again and identify the problem. It could be an incorrect SSID, security method or a password error. Correct the configuration and then reconnect the phone and select QNC.



Caution: Do not use the Google Wizard

Use the **Exit** button to go back to the startup buttons. **Not Using QNC** will start the Google Wizard and your handset will only be partially configured.

Connect device to QNC now...

This message means that the phone couldn't find the QNC using wireless. Try these fixes:

- Use a USB connection
- Power cycle the QNC

Appendix A: Updating QNC Software

The software version currently being run on QNC is noted in the browser page banner. To determine if a later version is available, go to the Spectralink Support site and browse to the x page. The QNC software is located under the Downloads tab with the version included in the link title. If a later version is listed, click the link and download the software.

To upgrade the Spectralink QNC

- 1 Download the update from the Spectralink webpage.
- 2 Extract the files from the zip to a convenient location.
- 3 Copy the QNC.img file into the root directory of a USB flash drive.
- 4 Insert the USB flash with the QNC.img file into QNC USB port.
QNC will detect the update and load it. It will power cycle when the load is complete.
- 5 Use “eject” to eject the jump drive and ensure that the operating system has notified that it is ok to remove the USB drive. Remove the jump drive.
- 6 Verify the upgrade was successful by starting the browser and viewing the version number in the page header.

Appendix B: Products Mentioned in this Document

Linux is the registered trademark of Linus Torvalds in the U.S. and other countries.

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