

Technical Bulletin CS-18-04

## QNC Best Practices

This technical bulletin explains the best approach to using the QNC tool when deploying handsets and provides tips and tricks on QNC behaviors to help smooth your deployment process.

### *System Affected*

QNC Model Rev A and Rev B

### *Description*

### *QNC Configuration Procedure*

1. Power on QNC by connecting a 2.5A 5VDC power supply with a micro-USB connector into the corresponding port on the QNC tool.
2. Connect your Ethernet cable to the QNC and into the PC you will use for configuration.
3. Wait approximately one minute after connecting power to the QNC for the unit to complete the boot up sequence.
4. Configure your PC's ethernet interface with an IP address of 192.168.1.2 with a netmask of 255.255.255.0 with no gateway.
5. Open Chrome or Firefox, do not use Internet Explorer, and enter the IP address in the address bar of 192.168.1.1 and press enter.
6. You should now see the QNC home screen with links for the 87-Series and 84-Series handsets.
7. Click on the 87-Series handset or 84-Series handset icon, depending on which handset type you are going to configure, to continue.
8. The first screen requires you to enter the wireless LAN SSID and security type information.
  - a. SSID: MySSID
  - b. Select WPA2-PSK followed by passphrase from the drop-down box.
  - c. Passphrase: MyP@ssPhRaS3
9. Click the Update Config button at the bottom of the screen then click the right arrow to continue.

SSID \*

MySSID

Security Type

Open Network

WEP Security

WPA-PSK

WPA2-PSK

WPA2-Enterprise

WPA(2)-PSK Wireless Security Information  
Is your security a passphrase or a hex key?

Passphrase

Passphrase / Hex key

MyP@ssPhRaS3

UPDATE CONFIGURATION

10. The next page allows you to set the radio information.
  - a. Select the radio type preferred in your environment.
  - b. Uncheck the Enable IPv6 checkbox, unless you intend to use IPv6 in your environment.
  - c. Check the Disable 802.11n checkbox, this is highly recommended for all installations.
11. Click the Update Config button at the bottom of the screen then click the right arrow to continue.

Frequency band

Auto

2.4 GHz only

5.0 GHz only

Settings

Enable IPv6

Disable 802.11n

Enable Proxy on Phone

UPDATE CONFIGURATION

12. On this page you will configure the CMS settings for device management
  - a. Click on the CMS 2.0+ radio button
  - b. In the CMS Configuration Management URL enter: `https://192.168.0.5`
  - c. Enter 60 seconds into the Heartbeat Interval
  - d. Copy and paste the CMS certificate into the Certificate box:
    - i. -----BEGIN CERTIFICATE-----  
`\nMIIDqzCCApOgAwIBAgIJAI2/2C5kBNT1MA0GCSqGSIb3DQEBCwUAMGwxCzAJBgNV\n\nBAYTAjAxMQswCQYDVQQIEwJWQTEOMAwGA1UEBxMFTm9rZXMxDjAMBgNVBAoTBUlu\n\nb3ZhMRcwFQYDVQQLEw5lZWVsdGggU3lzdGVtczEXMBUGA1UEAxMOMMTAuMTYxLjEx\n\n n-----END CERTIFICATE-----`
  - e. And finally paste the CMS Account Key in to the Account Key field:  
`Dxxxxxxxxxxxxxxxxxxxx`

13. Click the Update Config button at the bottom of the screen then click the right arrow to continue.

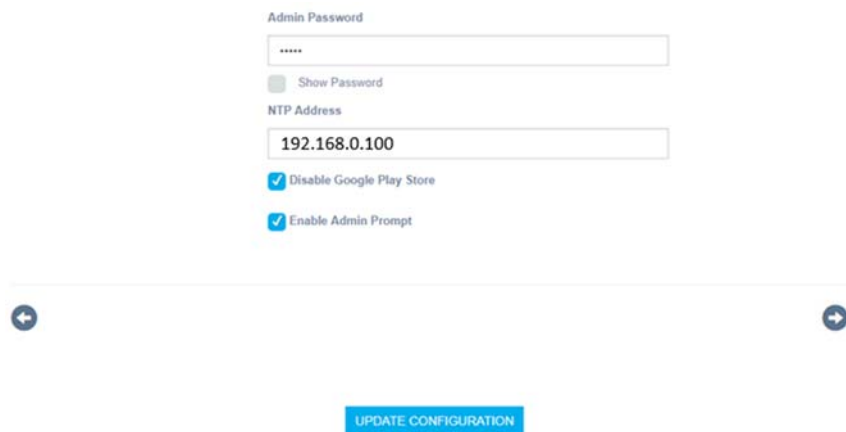
The screenshot shows a configuration screen titled "Are you using CMS?". It has three radio button options: "Yes - CMS 2.0+" (selected), "Yes - CMS 1.5", and "No". Below these are three input fields: "Config Management Server URL" with the value "https://192.168.0.5", "Config Management Heartbeat" with the value "60", and "SSL certificate" containing a long alphanumeric string. At the bottom, there is an "Account Key" field with a masked value "Dxxxxxxxxxxxxxxxxxxxx". A blue "UPDATE CONFIGURATION" button is centered at the bottom, flanked by left and right navigation arrows.

14. Now you will need to upload the APK files that you want the QNC to upload to each phone as it is provisioned.
  - a. Click the Browse button on the screen and select all APK files to be uploaded
  - b. Allow all APK files to upload to the QNC – **Note: this may take up to 1 minute to complete so do not navigate away from this page until said amount of time has elapsed.**
  - c. If you want to make sure all your APK files are uploaded see [QNC APK Verification](#) section in this document for details.
15. Click the Update Config button at the bottom of the screen then click the right arrow to continue.

The screenshot shows a configuration screen titled "Install APKs". It has a sub-header "Upload the APKs you would like to install" and a green "Browse APK Files" button. Below this, a list of files is shown, each with a red 'x' icon: "7signal-Mobile-Eye-Agent-Android-release-2.0.3-beta+1794.apk", "AirstripOne.apk", "airwatchagent.apk", "AirWatchOEMService-spectralink-release-3.0.0.10.signed.aligned.apk", "AscomiUnile.apk", "Ping.apk", and "Spok.apk". A blue "UPDATE CONFIGURATION" button is centered at the bottom, flanked by left and right navigation arrows.

16. This next screen is the file screen you need to enter configuration into.
  - a. In the NTP Server Address field enter: 192.168.0.100
  - b. Ensure the Disable Google Play box is checked if you want to disable Google Play.
  - c. Ensure the Enable Admin Prompt box is checked

- d. Set Admin Password field to something other than the default of “admin”
17. Click the Update Config button at the bottom of the screen then click the right arrow to continue.



The screenshot shows a configuration interface with the following elements:

- Admin Password:** A text input field containing six asterisks (\*\*\*\*\*).
- Show Password:** A checkbox that is currently unchecked.
- NTP Address:** A text input field containing the IP address 192.168.0.100.
- Disable Google Play Store:** A checked checkbox.
- Enable Admin Prompt:** A checked checkbox.

At the bottom of the screen, there is a blue button labeled "UPDATE CONFIGURATION" and two circular navigation arrows (left and right).

18. The final screen is for custom configuration items which will not be used.
19. Follow the [QNC Shutdown Procedure](#) if you are finished using the QNC and wish to disconnect it.
20. Follow the [Handset Provisioning Process](#) if you are prepared to start configuring handsets with this QNC.

## Handset Provisioning Process - 87-Series

Note that this process assumes you have already configured your QNC tool following the [QNC Configuration Process](#) section in this document. Do not attempt to provision more than **four phones** at a time per QNC via USB or Wi-Fi. Attempting to provision additional phones will result in the phone becoming hung and requiring a restore defaults to recover.

1. Insert a battery into a handset and allow it to boot to the setup wizard screen which will display, QNC via USB, QNC via Wi-Fi and Google Wizard.
2. Select the QNC via Wi-Fi option and place the handset within a few inches of the QNC you are using.
3. Allow the phone to complete the provisioning process, once it displays “Connection Successful” with the green signal strength and then moves to “Installing APK’s” you can safely add another handset to the QNC for provisioning.
4. Once the handset has finished installing all APKs it will exit the QNC application and move to the Google setup wizard.
  - a. Select the appropriate language from the list and press the right arrow.
  - b. Tap the “Skip” text in the bottom right corner
    - i. Tap the “Skip Anyway” on the pop-up window
  - c. Tap the “Skip” text in the bottom right corner
  - d. Tap the “Skip” text in the bottom right corner
    - i. Tap the “Skip Anyway” on the pop-up window
  - e. Uncheck all three boxes and tap “Next” in the bottom right corner

5. The handset will now exit the wizard and you can tap “Got it” on the window that opens.

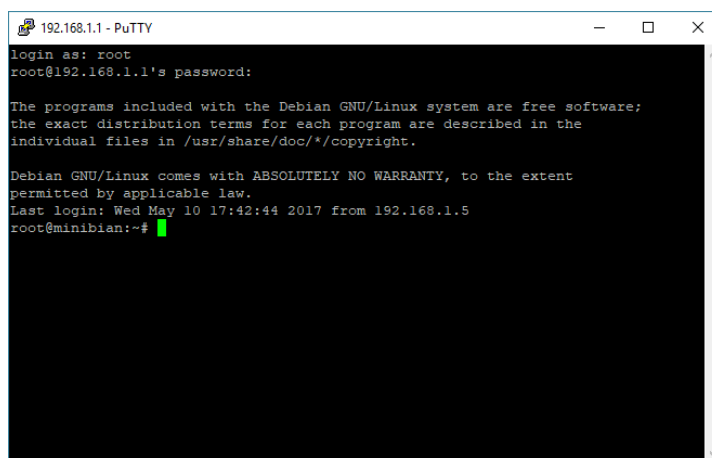
## Handset Provisioning Process - 84-Series

Note that this process assumes you have already configured your QNC tool following the [QNC Configuration Process](#) section in this document. Do not attempt to provision more than **four phones** at a time per QNC via USB.

1. Insert a battery into a handset and allow it to boot to the standby screen where you can see the carousel of icons.
2. Connect the handset via the USB cable to the QNC.
3. The handset should play a tone and reboot which will be your indication that the phone has downloaded its configuration from the QNC.
4. After the phone reboots, you can disconnect it from USB and move to the next handset.

## QNC APK Verification

1. While connected to your QNC via ethernet, open an SSH client to 192.168.1.1
2. Enter the Username: root
3. Enter the Password: raspberry

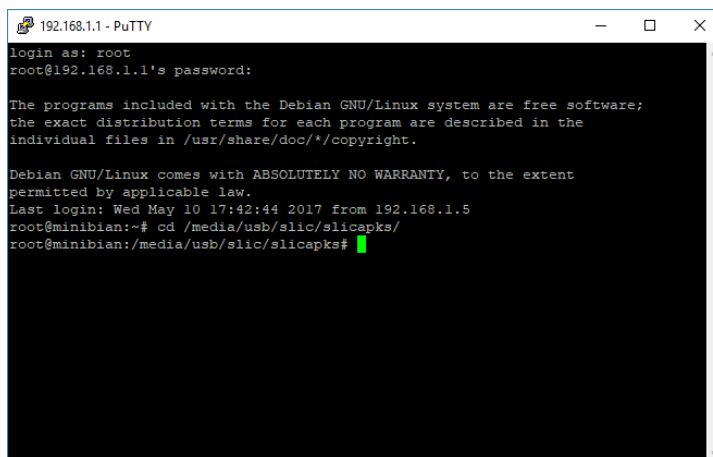


```
192.168.1.1 - PuTTY
login as: root
root@192.168.1.1's password:

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed May 10 17:42:44 2017 from 192.168.1.5
root@minibian:~#
```

4. At the prompt, enter: `cd /media/usb/slic/slicapks`
  - a. Note the change in path next to the prompt

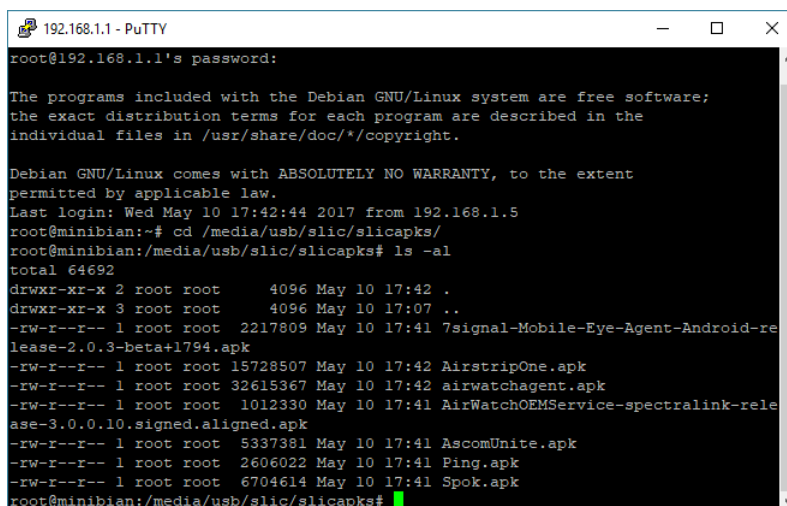


```
192.168.1.1 - PuTTY
login as: root
root@192.168.1.1's password:

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Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed May 10 17:42:44 2017 from 192.168.1.5
root@minibian:~# cd /media/usb/slic/slicapks/
root@minibian:/media/usb/slic/slicapks#
```

5. Enter the command: `ls -al`
  - a. You should now see a list of all APK files currently uploaded to the QNC along with the relative size of each file.
  - b. Verify that all your APK files are present and that the file sizes are reasonable to the size of the APK on your PC.
  - c. If there are no APK files listed, you will need to follow the procedure for uploading the APK files as noted in Step 14 of the [QNC Configuration Process](#) section in this document.
6. If you want to watch the upload process of the APK files, simply log into the QNC using this procedure prior to following the [QNC Configuration Process](#) section in this document. This will allow you to issue the above command to watch as the files appear in the QNC directory listing.



```
192.168.1.1 - PuTTY
root@192.168.1.1's password:

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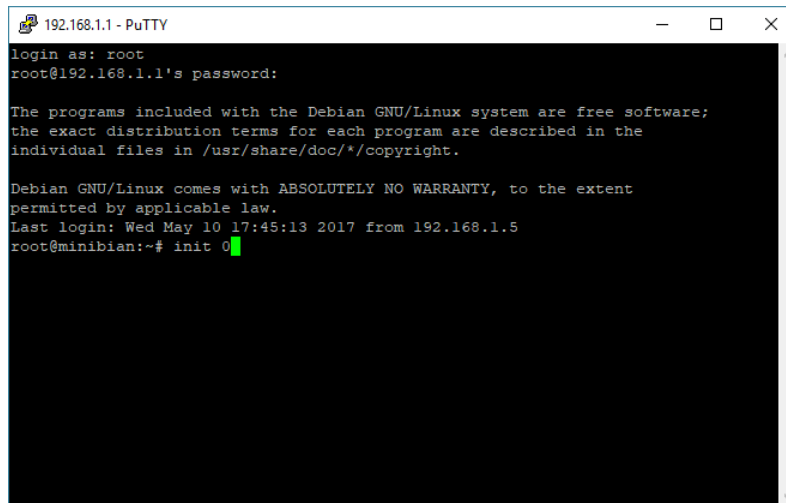
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed May 10 17:42:44 2017 from 192.168.1.5
root@minibian:~# cd /media/usb/slic/slicapks/
root@minibian:/media/usb/slic/slicapks# ls -al
total 64692
drwxr-xr-x 2 root root  4096 May 10 17:42 .
drwxr-xr-x 3 root root  4096 May 10 17:07 ..
-rw-r--r-- 1 root root 2217809 May 10 17:41 7signal-Mobile-Eye-Agent-Android-re
lease-2.0.3-beta+1794.apk
-rw-r--r-- 1 root root 15728507 May 10 17:42 AirstripOne.apk
-rw-r--r-- 1 root root 32615367 May 10 17:42 airwatchagent.apk
-rw-r--r-- 1 root root 1012330 May 10 17:41 AirWatchOEMService-spectralink-rele
ase-3.0.0.10.signed,aligned.apk
-rw-r--r-- 1 root root 5337381 May 10 17:41 AscomUnite.apk
-rw-r--r-- 1 root root 2606022 May 10 17:41 Ping.apk
-rw-r--r-- 1 root root 6704614 May 10 17:41 Spok.apk
root@minibian:/media/usb/slic/slicapks#
```

7. Once you're satisfied, you can exit the QNC by typing: `exit`

## QNC Shutdown Procedure

!!!DO NOT UNPLUG QNC WITHOUT GOING THROUGH THESE STEPS!!!

1. When you're ready to shut down the QNC, connect your PC to its ethernet interface as described in Steps 2 and 4 of the [QNC Configuration Process](#) section in this document.
2. Connect to the QNC using an SSH client at the IP address, 192.168.1.1
  - a. Enter the Username: root
  - b. Enter the Password: raspberry
3. At the prompt enter: init 0
4. The SSH client will indicate the session is closed, then wait for the ethernet interface on the QNC to power off before disconnecting power to the unit. This will take a few seconds after the SSH session ends.
  - a. Note: The QNC doesn't power down until you remove power from it.



```
192.168.1.1 - PuTTY
login as: root
root@192.168.1.1's password:

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed May 10 17:45:13 2017 from 192.168.1.5
root@minibian:~# init 0
```

5. If you want to simply reboot the QNC from the prompt, you can enter the command: init 6
  - a. This will also end the SSH session, but the unit will simply reboot.

## Handset Troubleshooting

If during the setup process you encounter issues with a handset, the following tips can be used to troubleshoot the issue. Please note that this list is by no means exhaustive but will cover the most common issues you might encounter.

1. Handset is hung in QNC Provisioning state on the "Download QNC Configuration" screen
  - a. **Explanation:** This issue will only happen if the connection to the QNC times out before the QNC can complete its download of the configuration and APK's. This is most likely to happen when more than four handsets are being provisioned on a single QNC tool.
  - b. **Resolution:** To remedy the issue, you will have to restore defaults on the phone and try provisioning again.
2. Handset appears to fail to connect to QNC tool via Wi-Fi, or indicates no configuration was available.
  - a. **Explanation:** For the handset to apply the configuration from the QNC the wireless network must be accessible to the handset at the time of configuration. If it is not

- available, accessible, or the configuration has a mismatch to the wireless LAN settings, the handset will indicate that configuration failed.
- b. **Resolution:** Ensure the wireless LAN is available and that your configuration is correct in the QNC for the network you wish the phone to associate with. Then rerun the QNC provisioning wizard to complete the provisioning process.
3. Some or all APKs fail to install on the handset after QNC provisioning
    - a. **Explanation:** This is likely due to the APK file missing from the QNC or being corrupted due to improperly shutting down the QNC tool.
    - b. **Resolution:** Reconnect to the QNC tool's web interface and push the APK files that are missing. If the files are present, then delete them upload a new copy from your PC. For handsets that did not receive the APK files you can rerun the QNC process, see [QNC Retry](#) section in this document; if you are using an EMM, you can use it to push the missing applications to the phone; or default the phone and rerun the QNC process again.
  4. Your QNC seems to stop responding to WiFi or USB connections
    - a. **Explanation:** This happens when the QNC is under continuous use for a long period of time. It's like you've processed around 50 phones before you will start to encounter the QNC acting strangely. This is caused by the QNC starting to overheat from prolonged use.
    - b. **Resolution:** You can either allow the QNC to sit idle for 10 to 15 minutes to cool down, or you might try placing the QNC in front of a fan to increase air circulation. Some customers have improved performance by adding heat sinks to their QNC units.

## *Tips and Tricks:*

### **QNC Retry**

**For 87-Series** - You can always rerun the QNC process even after a phone has been provisioned via QNC already. To do this, you will first need to enable the QNC application. Go to Settings -> Admin -> Apps and go to the last tab labeled Disabled. Locate QNC in the list, tap it and then select Enable. Now you can exit back to the home screen and tap the QNC application to run it again. It will behave just like it did the first time and apply any configuration or install any applications present on the QNC.

**For 84-Series** – You can reconnect the handset to the QNC via USB at any time. But you will need to verify that the provisioning server settings in the handset are still at the default settings or the phone will not attempt to communicate with the QNC. To verify, go to Settings -> Advanced Settings -> Admin Settings -> Network -> Provisioning and validate that the Provisioning server address is still set to 169.254.1.1.



# Document Status Sheet

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