# PIVOT WorkSmart Solution FAQs
# April 14, 2016

## PIVOT:SC and Android

### What is PIVOT?

PIVOT™ is the name of the latest product series from Spectralink. The Spectralink 8000 Portfolio that includes the PIVOT:SC 8744, with its streamlined design and smartphone feel and a rear-facing, high resolution, digital camera.

### What is Android?

Android is an open-source operating system designed for devices with touchscreens. Android is widely used with modern cellular phones & tablets. It is designed for easy application development.

### What versions of Android are there?

Android is a constantly evolving operating system from Google. Since 2008, they have incrementally improved with successive releases. Spectralink selected a version on which to base development when the R&D project started in early 2013. We originally selected version 4.1.2, also known as Jelly Bean, because it was the latest release and could be supported on our hardware platform. PIVOT supported the Android version 4.4.2 (KitKat) starting with the PIVOT 1.3 release. PIVOT release 2.0 is the first PIVOT release that supports the next Android release, known as Lollipop. The PIVOT:SC 8744 only comes with Android 5.1.1.

### How often do you upgrade your Android version?

Spectralink has modified the Android -KitKat 4.4.2 operating system to optimize it for VoWi-Fi and for better manageability in the enterprise as a "WorkSmart" device. (Refer to http://www.spectralink.com/company/why-worksmart for a better understanding of how WorkSmart devices are different than consumer smartphones and how Spectralink optimizes for VoWi-Fi.)  Given the optimization of the operating system and the frequency of updates coming from Google, Spectralink will be more deliberate and judicious in how often we deliver Android-based updates to the market. In general, we will be issuing quarterly firmware updates for bug fixes, minor enhancements and features to our customer base. These will be deployed wirelessly with seamless over-the-air (OTA) updates. Regular updates will periodically include improvements to the Android OS in the form of security improvements and new features.

### Will the phone run a Microsoft Windows or Windows Mobile application?

No. A Microsoft Windows application requires a Microsoft Windows operating system. PIVOT uses the Android operating system.

### Why didn't Spectralink use iOS or Windows Mobile for PIVOT?

Apple does not license the iOS operating system so this was never an option to Spectralink. Windows Mobile constitutes a much smaller market share than Android, and thus was not considered.

### Isn't iOS a more robust and reliable OS than Android?

This is debatable, see response above to understand the rationale behind the decision.

## Application Development

### How do I develop an XML application?

Standard web apps will work on PIVOT just like any other smartphone. Spectralink also offers additional XML extensions that allow applications to take advantage of platform features and optimizations. Our SDK provides the necessary information to develop applications that take advantage of our platform and develop web-based applications that use our Web API. Refer tohttp://go.spectralink.com/Pivot_Web_API.

### Will there be an SDK for PIVOT?

Yes - there will be. But there will be no emulator. The SDK will provide the necessary information to develop native applications that take advantage of our platform and develop web-based application that use our Web API.

### How do I develop a native Android application for PIVOT?

There are many resources available online on how to program native Android applications. Start your research at http://developer.android.com/design/index.html. You can also send an email to aims@spectralink.com or visit the Spectralink AIMS program page (http://www.spectralink.com/partners/app-developers).

### What OS API version do you support?

API 19 Android 4.4.2 (KitKat).

### Do I need to test/certify my custom developed application with Spectralink?

No. Not at this time.  See http://www.spectralink.com/partners/app-developers

# Application Integration

## Does PIVOT support HL7, Emergin, or other protocols?

PIVOT does not directly support Emergin/HL7 or other healthcare protocols directly. These can be supported using middleware e.g. Amcom/Connexall. The middleware can integrate with PIVOT via the web API or via their native middleware Android application (if available).

# Applications

## What types of applications are supported by PIVOT?

PIVOT supports native android applications and web-based applications. Native Android applications, commonly referred to as "Apps", are programs downloaded and installed onto PIVOT. Native applications have greater access to the platform hardware and can deliver great user-experiences.
Web-based applications run via a web-browser and interact with a remote web-server using standard web protocols and syntax (i.e. HTTP//XML/JavaScript). One benefit is the application is not actually installed on PIVOT, instead the user navigates web pages and enters data sent to a web server, and much like you would surfing the web. Refer to http://www.spectralink.com/partners/spectralink-sync

## What applications come out of the factory on PIVOT?

• Spectralink SIP dialer
• Camera
• Calendar
• Contacts
• Web browser
• Calculator
• Clock
• Email
• Gallery
• Sound recorder
• Search utility
• Google collection

## Is active directory supported and can it be deployed?

Yes. PIVOT supports the LDAP protocol and can integrate with Microsoft Active Directory.

## What about Google apps?

Google apps are available in R1.4 and later. See the GGL section for more information.

## How are apps installed and managed?

Apps are best installed using a combination of SLIC (see the OOB section below) and MDM (see the MDM section below). If you only need a few apps (10 or fewer) that do not exceed a specific size, you can install them using SLIC. For more apps or apps management, an MDM should be deployed.

## Can I install an iOS/iPhone application on an Android device such as PIVOT?

No. iOS applications only run on Apple devices. But because Android is so widely used, many applications written for iOS have an equivalent Android version.

## Will Application "X" work with PIVOT?

Android has over 1.3 million applications covering productivity, utilities, entertainment and specialized applications for particular work functions in healthcare, retail and many others. PIVOT is an Android OS-based device. Therefore, in general, most well-written Android applications should work as well on PIVOT as on any other Android device.

## Should there be an expectation that the Android application will work without modifications or hiccups?

Some applications may not work well if they are written assuming specific platform characteristics. For example, if the application assumes a certain screen resolution, presence of hardware (e.g. camera), or are not written in a proper manner. Android developers need to be conscientious of supporting the many different Android device platforms and versions.

## Do Voice Telephony applications (VoIP) work well on Android devices?

It depends. PIVOT has specific platform optimizations to provide seamless Wi-Fi roaming. And so our integrated SIP telephony application delivers high-quality audio while in-call and while roaming about the facility. However, the standard Android OS is not optimized to deliver seamless roaming between Wi-Fi access points while a user is in a call. So most voice applications using Wi-Fi on a typical Android device won't roam well, and users could lose audio during their calls.

If applications are written to use our special software APIs then they too can have improved roaming. If applications do not use our special APIs, then the functionality will be similar to any standard Android device with a comparable hardware platform. Spectralink is working with our key partners to ensure their applications are optimized.

## Will there be Spectralink certification process for Android applications on PIVOT?

No, not at this time.

## What happens if a downloaded application doesn't work properly on PIVOT?

Spectralink cannot fix third party applications, so issues should be raised to the application developer first. This way if the application developer subsequently identifies a platform issue they can raise the issue to Spectralink. However, applications from our Gold partners have been jointly tested and are jointly supported.

## What PBX/Call control is interoperable with PIVOT?

Please see support.spectralink.com/pivot for call server integration.

### Will you be able to download applications to PIVOT:SC from major vendors' on-line stores?

We are working diligently to provide customers with a variety of download mechanisms that can be controlled by IT resources.

## Battery Life

### What kind of battery life can be expected on PIVOT?

Standby battery life on a fully charged Battery Pack is up to 90 hours. Talk time is about 8 hours. Factors that negatively impact battery life such as screen illumination time, SAFE, Google, location services, notifications, and other applications must be considered when setting battery life expectations.

### Can you "hot swap" batteries?

The term Hot Swap is used when a nearly-discharged battery pack is exchanged for a fresh one without any interference with handset operation. Beginning with release 1.7, a user can perform a Hot Swap.

## Configuration Management System

### What is the CMS and what can it do?

The CMS is an administration tool that makes it easy to configure, provision and manage mobile device deployment. Once the handsets associate with the WLAN, its presence is recorded in the CMS and the rest of the parameters are downloaded to the phone wirelessly. Of course these parameters must first be configured by the system administrator. Parameters are organized on the system-group-user scale to provide needed generality and granularity. The CMS also offers various management tools for administering the phones, such as maintaining the list of registered phones and providing logging tools.

### Is remote provisioning available?

The CMS can administer handsets that are at a different site. But first the handsets must be provisioned to associate with the wireless LAN at their site and "pointed" to the CMS server which they contact through the cloud. Once they reach the CMS server they will be managed through the CMS -- remotely. Wireless provisioning is done manually on the Admin settings menu or via the Quick Network Connection (QNC) tool.

### Will it support other devices besides Spectralink's?

The CMS is not designed to manage third party applications or other types of devices.

### How does it play in an existing EMM/MDM environment?

Potential conflicts exist between the CMS and an EMM/MDM app if they both attempt to manage and govern the same settings. An MDM is best deployed to manage apps and CMS is used to manage the phones themselves.

### What is QNC?

The Quick Network Connection (QNC) Platform utilizes a customized version of a commercially available embedded Linux Server to simplify the provisioning of your Spectralink PIVOT:SC handset. When you web

browse to it, the QNC platform provides Spectralink software wizards that walks you through configuration parameters and produces files that can then be loaded onto a handset which is connected to the SLIC via a USB cable.

## Do I have to use QNC or CMS?

QNC and CMS are optional components but very useful if more than a couple of phones are being deployed. They should be part of any beta or test installation that will involve more than a dozen or so handsets. It is actually easier for the customer and for support to have these resources deployed.

## Do you sell the CMS software?

Yes, we sell the software. See the price list for details. We do not sell the hardware.

## How do I install CMS?

Complete installation instructions for CMS are included in the Deployment Guide, available on the spectralinkplus.com website

## Is CMS redundant?

When phone settings are configured in the CMS, they are pushed to the handsets. If the CMS server goes down, the handsets continue to work with the settings until another CMS server is deployed. No parameters are lost.

## What else can the CMS do?

The Configuration and Management System (CMS) server is a full provisioning server that allows an administrator to remotely configure both small and large numbers (>1000s) of PIVOT handsets. Using the CMS server's web-based UI, an administrator can completely configure PIVOT handsets, as well as set site, group and individual device level configuration policies.

## How secure is the communications between the CMS and the phone?

Configuration is by default sent between server and handset securely using HTTPS. HTTP can also be used but it is not secure.

## What platform is used by the CMS?

The CMS software is provided as a Virtual Machine image which is run on a customer-provided server running VMware.

## Can MDM's be used with the CMS?

Additional device management, including policing applications can be performed using 3rd-party MDMs.

Potential conflicts exist between the CMS and an EMM/MDM app if they both attempt to manage and govern the same settings. An MDM is best deployed to manage apps and CMS is used to manage the phones themselves

## Can the CMS be loaded onto a PC?

The CMS is a virtual machine and must be installed on a host computer. Optimally, this is a dedicated server using VMWare EXSi. Whether or not a non-EXSi host will be supported is under discussion.

## Is the CMS used for upgrading phone software?

Yes. Either CMS or a different provisioning server can be used for upgrading phone software

# Features

## What optional features are available for PIVOT:SC?

Optional features developed by Spectralink and offered on the PIVOT platform are:

- Push-to-talk (PTT) - a group broadcast mode that uses channels to broadcast messages to subscribed handsets.
- Panic button - a dedicated button for duress calls.
- SAFE - personal monitoring for man down functionality, including "no movement" alarms, "tilt" alarms, and "running" alarms.

## What noise canceling options will be used by PIVOT:SC?

We have noise cancellation for the front microphone.

## Does PIVOT have a VPN client or are there plans to have a VPN client?

PIVOT does not have a native VPN client installed at the factory. There are no plans to add one.

## Does PIVOT support RTCP-XR for call quality reporting?

Not at this time.

## Is Bluetooth available?

Beginning in release 2.1, Bluetooth is supported on the PIVOT product line access to the Bluetooth menu can be controlled by the device administrator.

## What redundancy features are offered by PIVOT?

Call Server redundancy is available starting with PIVOT release R 1.5. With redundancy, a phone registered to one server (the "active" server) will "failover" to another server when the active server fails.

PIVOT supports two types of redundancy scenarios:

- Preferred server configurations where a phone will failback to a preferred server when it again becomes available.

- Load balancing configurations where several call servers in a pool of servers share the phone traffic load.

## Can more than one line be configured?

A second SIP registration that is specifically designed for nurse call system integration is available in R1.6 and later.

## Are custom ring tones available?

Custom ring tones can be made available to users. Certain call servers support custom ring tones for their specific alerts that come in on the second registration.

# Google

## What is GMS?

Google Mobile Services are applications and various services that flank and utilize the Android operating system. These include Google Play Store and a collection of basic and familiar Google apps plus other services. GMS is separately licensed from Android. Spectralink is now licensed to provide GMS.

## Does the phone have to boot to show Google icons? Or can they be hidden?

Google icons are displayed at first bootup per Google certification requirements. Phone administrators are free to make any changes they want to after that.

## If an enterprise does not want to run Google Mobile Services (GMS), can they use an earlier version of code? Will we support it? If so, what version will be shipping with the phone after Certification?

After Google Certification which is R1.4, we will no longer support R1.2 or earlier. You will not be able to buy or downgrade phones to a version prior to 1.3. R1.3 will still work but will not be maintained. Bug fixes will be done on R1.4 and later. Only Google enabled releases will be available.

## Does GMS change the way apps are loaded onto PIVOT?

Most definitely. Several new solutions are now available. If the admin does not disable Google Play, then end users can load apps directly from the Play Store using a Google Account. However, inappropriate apps may then find their way onto corporate phones so this solution might be problematic for enterprise deployments. Enterprise-friendlier methods of loading apps on a group of phones are:

1) Use an EMM/MDM to host and distribute apps;
2) Use QNC to load apps at initial deployment;
3) Use a Google Play Private Channel.

## What is Google Play Private Channel?

The Google Play Private Channel for Google Apps allows Google Apps domains to distribute internally developed Android applications to their users through the Google Play Store. It is supported by R1.4 and later. Please see Google Play Private Channel documentation for more information.

## How can you maintain complete control over application deployment?

Disabling Google Play and using an EMM/MDM is the best choice if you want to maintain complete control over application deployment and maintenance. See the Spectralink AIMS Partner matrix for a list of MDMs that work with the PIVOT:SC.

## With GMS, how can an enterprise prevent their users from downloading and using non-enterprise applications on PIVOT? E.g. Facebook, angry birds. Are there any problems with this?

All apps are managed within the Admin menu. Through the Admin menu you can disable the Google Play Store and other apps. Disabling the Play Store will prevent Google apps and some third party applications from updating as well as prohibit user access to downloading those applications. You can then use another method for updating apps, such as an EMM/MDM. Disabling apps does not affect Google Cloud Messaging (GCM).

## If Google Play Store is disabled, how do Play Store apps get updated?

When you use an enterprise system (MDM/EDM/MAM) to manage apps, Google Play Store is not accessed directly by the phone. The MDM client app is loaded on PIVOT and apps are retrieved by the phone through the MDM. Apps must be updated on the MDM and then they are available to the phone.

## Can a user log into their personal Google Play store acct? Can you ever log out?

If the Play Store icon is available, a user can set up a Google account if he doesn't already have one and simply log in. The logout is under Settings> Accounts> Google.

## With GMS, will PIVOT automatically get updated with the latest Android operating system like my cell phone does?

Updates to the Android operating system are not tied to GMS, or the Google Play Store, and are completely within the control of the administrator. When Spectralink releases new code the administrator can decide when to load that on their provisioning server for distribution.

## How does the startup sequence change with Google certification?

The Spectralink recommended deployment scenario/steps:

- During initial boot the user is presented with the choice of using the Google Setup Wizard or the QNC Setup Wizard.
- QNC is specifically designed for configuration of PIVOT and Spectralink strongly recommends using QNC for deployment configuration.

What if these recommendations are not followed, can the wizards be re-run? If so, How? The wizards can be re-run by restoring the phone to the factory default. If the user just wants to re-run QNC, see the next answer.

### How do I get back to my QNC icon after I've run it previously?

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 Apps library.

### Can QNC load apps? Will it load any APK? If so when can APKs be loaded? How does it work with an MDM?

QNC will have an option to load apps. Spectralink recommends that all .apks loaded on the phone using QNC are publicly signed .apks. Up to 120 MB (combined) can be loaded. The .apk files are installed on each PIVOT as part of the usual QNC configuration procedure. First .apk files are installed and then the wireless configuration is applied. Note that the installation of .apks may take some time.

The final step in the sequence is that the QNC Wizard app is disabled on the phone and the user is taken to the Google Account setup screens of the Google Wizard. These can be stepped through. QNC is best used to install .apks when phones are initially deployed. However, QNC can be re-enabled if apps need to be loaded later.

When using an MDM that can install apps, Spectralink recommends that you use QNC to install the MDM client itself and let the MDM handle any further app deployment.

## Enterprise Mobility Management & Mobile Device Management

### What is an EMM/MDM?

(from Wikipedia) Mobile Device Management (MDM) software secures, monitors, manages and supports mobile devices deployed across mobile operators, service providers and enterprises.

### Why do I need an EMM/MDM?

EMM/MDMs are widely employed for managing enterprise cellphones & tablets. EMM/MDM vendors have cooperated with cell phone & tablet manufacturers to provide comprehensive device management of their devices.

### What EMM/MDM do you sell?

We do not sell EMM/MDM.

### What EMM/MDM do you recommend?

We do not recommend any particular EMM/MDM.

## Does the PIVOT:SC integrate to MDM vendors that an IT department might already have in place?

Yes, we work with EMM/MDMs such AirWatch and SOTI. They view PIVOT as another Android device. From the EMM/MDM you can see the PIVOT device, monitor applications, etc., but cannot configure it. Some cellphone manufacturers have worked with some EMM/MDM providers to develop extensions that allow device management and configuration directly from the EMM/MDM application. Those extensions for PIVOT are not present today, although they are being considered for a future software release. Note: you can fully monitor, manage and configure PIVOT with the Spectralink Configuration Management System (CMS).

## Can I use an EMM/MDM to provision PIVOT?

You can use QNC to install the MDM client but EMM/MDMs cannot provision all aspects of PIVOT's capabilities. It should be assumed that CMS is used to provision PIVOT's device capabilities.

# Out of Box aka QNC

## What is the "Out of Box"?

The QNC Wireless Wizard for PIVOT walks you through the wireless parameters and is used to load the wireless parameters into the PIVOT:SC handset. One of the parameters is the address of the CMS server.

## What is QNC?

The Quick Network Connection ("QNC") Platform utilizes a customized version of a commercially available embedded Linux Server to simplify the provisioning of your PIVOT:SC handsets.

When you web browse to it, the QNC platform provides Spectralink software wizards that walk you through configuration parameters and produces files that can then be loaded onto a handset which is connected to the QNC via a USB cable.

# Provisioning

## How do you provision PIVOT without QNC or CMS?

The handset can be fully configured via the handset's User and Admin Settings menus. This method is appropriate for a few handsets but would become tedious with greater numbers.

How do you provision PIVOT using QNC and CMS?

a)  For larger deployments, we recommend using QNC and the CMS in a two step process;
    Use QNC to provision the wireless settings, loading these onto each handset via USB.

b)  After PIVOT has rebooted and joined the wireless network, it will look for the CMS server which is used to configure the rest of the settings.

### Can the CMS provision multiple handsets simultaneously OTA?

For initial provisioning, you can list handsets in a CSV file with important settings. Upload the CSV file to the CMS and when each phone contacts the CMS, it gets its settings.

### How does the CMS manage multiple handsets with different requirements?

Settings can be tagged at the user, group or enterprise level. User level settings go to an individual phone. Groups are established and group member phones can be provisioned all at once with the group settings. Enterprise settings affect all phones. Settings take effect immediately when Save is clicked and the changes are sent OTA to the appropriate handsets.

## Quality of Service

### What Quality of Service features are available for PIVOT?

QoS is dependent on the wireless infrastructure. It is a complicated subject that is well-explained in the Spectralink PIVOT Best Practices Guide, available on the PIVOT support page.

### Is WMM-AC supported on PIVOT?

WMM-AC (Wi-Fi Multimedia Access Control) is a Wi-Fi QoS feature that provides for prioritization of voice over data and other types of transmissions. Starting with release R1.5, WMM-AC can be enabled on the APs utilized by PIVOT and PIVOT transmissions will be prioritized according to WMM-AC standards.

## Jailbreaking and Rooting

### Can PIVOT be jailbroken?

Generally, no. We have taken extra steps compared to a standard Android device to put the administrative accesses behind administrator password control, to disable "side access" methods, and to only allow Spectralink signed system software loads.

### What is "rooting"?

The strict definition of "rooting" is gaining privileged control, i.e. root access.

### What are the risks with rooted Android devices?

Root access can be dangerous as this can allow a user to change administrative settings and the installed software or install other software the device manufacturer or administrator would not allow and therefore present security risk.

# Security

## What networking encryption methods will the phone support at release?

PIVOT supports the following methods; WEP, WPA-Personal, WPA2-Personal, WPA2-Enterprise with 802.1X (EAP-FAST, EAP-TLS, PEAP-MSCHAPv2) with Opportunistic Key Caching (OKC) and Cisco Client Key Management (CCKM).

## When will we support TLS and SRTP?

EAP-TLS is supported with revision 1.1. SRTP is not supported at this time. Note that EAP-TLS is not supported in PIVOT release 2.0.

## How is web-based traffic secured?

Web-based browser traffic can be secured using HTTPS. Whether web traffic is encrypted is a function of the remote web-server's capabilities and their application.

## How are messaging and applications secured?

Native applications can use SSL sockets provided by the Android OS on PIVOT to encrypt communication such as for messaging applications. This of course is a function of the application and far-end capability.

## Can calls and communications, like voice and text, etc. be recorded?

Recording is a function of an application which typically stores messages and calls on a server, not on the phone. This type of functionality is usually governed by a policy issued by facility management. The Android version we use can be locked down to prevent any local applications from being downloaded that would allow recording on the device itself.

## Can user take pictures or store any PHI (personal/protected healthcare info) on device?

Only the PIVOT:SC model has a camera. Healthcare and other environments that deal with sensitive information must manage use of the camera. Typically the application controls PHI information, not the device. Therefore the handling of PHI is a function of the application and the control of that application, which are governed by policies and processes managed by the customer.

## What other security options are available?

Further options for securing data are using the encrypted file system for on-phone storage security, and EMM/MDM methods (like wiping) as further options.

## Can you comment on the security implications when deploying Android phones in general and PIVOT running R1.4 or later in particular.

Customers may have the impression that Android is insecure after reading articles about mobile malware targeting Android devices. Please understand that the security topic is complex and there is no one-size-fits-all

answer. Customers must understand and analyze THEIR risk of data exposure and potential liability in order to evaluate what safeguards they require.

Disclaimer: The information below does not eliminate the need for a customer to develop their own security strategy/policy based on their risk assessment. In practice, administrators can mitigate many risks with careful device and application management and implementing security best practices such as keeping software and patches up-to-date. The 1.4 release includes Google's new "Verify apps" capability that can help filter out malware so it is not installed. Later releases continue to implement improved security capabilities. The KitKat release also contains the SELinux kernel that makes Android even more secure.

With PIVOT 2.0 and the Lollipop code from Google, a Security patch option provides you with the exact date of the most recent security patch included in the PIVOT software.

## Are the Heartbleed and Stagefright security issues fixed in PIVOT code?

Google delivers patches for discovered issues that are then incorporated into Spectralink code. The Heartbleed issue is fixed in R1.1 and Stagefright is fixed in R1.6.1.

## Does the Spectralink code for PIVOT incorporate all Google security patches?

PIVOT code releases incorporate Android security patches released by Google up to the point of code freeze before Spectralink tests and releases the software. Within our quarterly release schedule, PIVOT code is kept current with all Android patches that Google releases.

## Troubleshooting

## How will we handle application corruptions if an app gets corrupted during OOB or upgrades?

Like any Android device, we have a "recovery" mode which can always allow the administrator to re-load the software to recover from any corruption.

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The WorkSmart Company