

Reference Document: BlackBerry for WLAN

Contents

Executive Summary	1
Webcast Summary	1
Converging Worlds	1
Solution Overview	3
Prospective Target Applications	5
BlackBerry Architecture	7
IT Policies Specific to WLAN	9
Diagnostic Screen	9
VPN Support	10
Telephony Considerations	11
Solution Benefits	12
Summary	13
Additional Resources	13

Executive Summary

This reference document is based on the webcast entitled *BlackBerry® for WLAN*. [Click here](#) to view the webcast, or visit the BlackBerry Enterprise Resource Center at:

<http://www.resourcecenter.blackberry.com/index.php?page=details&eventSelected=168>

People who are somewhat familiar with BlackBerry have a natural interest in how the new product—the BlackBerry 7270 Wireless Handheld™—fits into the WLAN space. This product is tailored for a different market and this kind of solution offers different benefits than other handhelds. This document discusses what is new and not so new when extending BlackBerry to wireless LAN and Voice over IP (VoIP).

Webcast Summary

This reference document provides a perspective on how BlackBerry can be extended into an organization's WLAN and function effectively in areas that are outside of conventional coverage. The topics covered include:

- Underlying concepts that form the basis of BlackBerry for WLAN
- Enabling features of the BlackBerry Enterprise Solution™
- Technology that makes WLAN connectivity work
- Benefits that BlackBerry for WLAN can help organizations achieve

Converging Worlds

As most people clearly recognize, convergence is upon us now, as illustrated in Figure 1. There is voice and data convergence. There is wired and wireless convergence. People are beginning to think more about what they want to do as opposed to what medium they are using and the inherent limitations of that medium. The industry is not at the point where there is a single, ubiquitous device that does everything or one solution that does it all. Nor have we reached the point where one piece of software does it all or one network does it all. We are not there yet and we may never get there, but certainly most people agree that voice and data are converging—both at a device level and at an application and services level. Additionally, wireless is now prevalent in enterprises for both voice and data. Research In Motion® (RIM®) is positioned right in the middle of this set of converging forces—the BlackBerry 7270™ is both a voice and data handheld based on wireless technology.

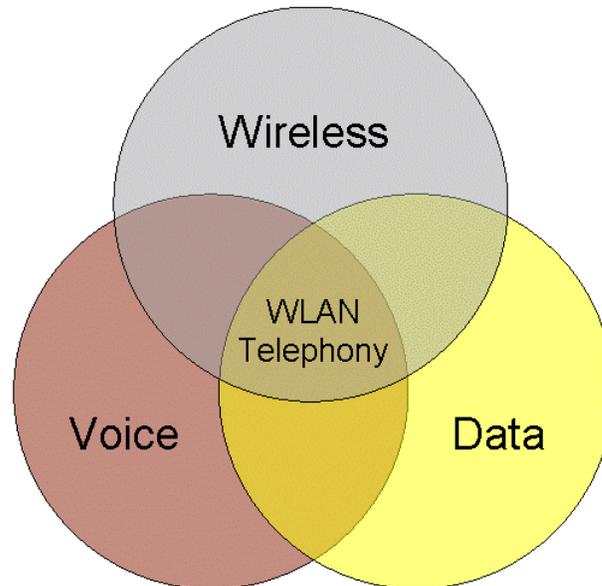


Figure 1. Worlds are colliding

The concept underlying BlackBerry for WLAN is to extend BlackBerry to another network—an enterprise's corporate environment. Organizations are rapidly deploying wireless LAN infrastructures today. The old days of “fat” wireless access points (a term used to describe first-generation wireless around 2001)—are gone or will be changing. Most organizations are adopting switched WLAN environments or other emerging architectures, driven by the need to support both voice and data simultaneously.

An Emerging Class of Users: Corridor Warriors

The BlackBerry 7270 leverages a wireless Local Area Network (WLAN) infrastructure. It is designed for areas where cellular coverage is minimal or there is no need for cellular coverage (based on the type of work being performed and the kinds of users relying on the handheld). These users—an emerging category of users—are euphemistically referred to as *corridor warriors*. Basically, this means they are not road warriors, travelling from city to city or tapping away on their BlackBerry handhelds at home. RIM already has a solution for road warriors—the standard carrier-based BlackBerry handhelds, with which most people are thoroughly familiar. This latest RIM innovation is for another class of users—a group that has not been served well in the market previously. This group may not have any mobility tools whatsoever.

BlackBerry 7270 Wireless Handheld

Figure 2 shows the BlackBerry 7270 Wireless Handheld. It looks remarkably like any other BlackBerry 7200 Series handheld and, for the most part, it is. The plastic casings are the same, the keyboard is the same and so on. However, RIM has taken out the carrier radio and replaced it with an 802.11b radio. Because this solution no longer relies on a conventional carrier infrastructure, a SIP-compliant voice platform is necessary to provide the voice services. RIM has included the SIP client that resides on this handheld to provide the voice interface.

- The “carrier” radio has been removed and a WLAN 802.11b radio is in its place
- IP Telephony Voice service is integrated through SIP compliant voice platforms
- Simple, low cost, converged, voice and data solution:
 - No requirement for a desk IP handset
 - Connected to standard BlackBerry Enterprise Server environment

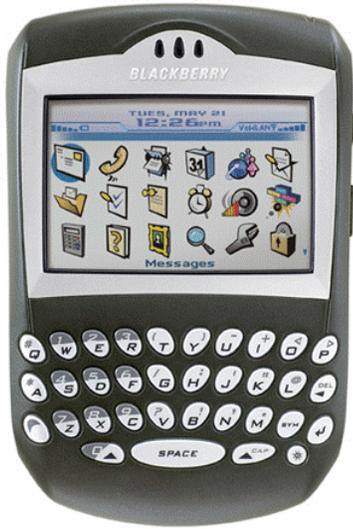


Figure 2. The BlackBerry 7270 Wireless Handheld

The result is a solution that is part of the enterprise phone system—an extension of the phone system that does not require a twin desk set component. Although that approach may be desirable in some cases, the architecture does not dictate that it has to share functionality with a desk phone. This architecture will be discussed in greater detail in later sections. The basic concept is fairly simple: the carrier radio has been replaced by an 802.11b radio and the voice functionality is delivered through SIP services.

Solution Overview

The BlackBerry 7270 bears a strong resemblance to other BlackBerry handhelds. It uses the same basic form factor, user interface, the trackwheel and so on. New users adopting the BlackBerry 7270 do not require any extra training in order to use this handheld, if they are familiar with other BlackBerry devices.

The same back-end server, the BlackBerry Enterprise Server® (v4.0 or higher), is part of the solution. The BlackBerry Enterprise Server is a fundamental requirement for the WLAN solution because the BlackBerry 7270 does not operate using a BlackBerry Internet Service™ account. Some new IT policies apply specifically to WLAN, but generally all of the other IT policies and processes and security mechanisms that are in place for carrier-based BlackBerry handhelds apply equally to the BlackBerry 7270. This includes:

- Triple DES or AES encryption
- Security model
- Push email model
- BlackBerry Mobile Data Service (MDS)
- Cradle-less operation (so that you do not need to tether the handheld to a computer)

One exception to the similarities with other BlackBerry devices exists. The first time the BlackBerry 7270 is set up, it needs to connect securely to the network. The first-time user will have to connect the handheld to a computer and associate it with the appropriate BlackBerry Enterprise Server. During this initial connection, the user enters the configuration information and from that point forward the familiar BlackBerry mode of operation applies. Some IT policies are specific to WLAN, but generally all of the other IT policies and processes are equivalent to those

that a BlackBerry Enterprise Server administrator has been using with carrier-based BlackBerry handhelds .

BlackBerry 7270 within the WLAN Landscape

Figure 3 shows where this handheld fits into the overall WLAN landscape. This handheld offers an optimal solution for people who need voice and data on the same device. The environment in the wireless landscape within a building—the in-building enterprise story—obviously includes a number of voice-centric devices. On the voice-centric side of the equation, Figure 3 shows a Cisco 7920 wireless IP phone and a Vocera pendant (an 802.11b device), which provide useful voice capabilities, but there are also limitations. Problems arise as soon as someone tries to do something other than voice. Navigation is one problem. If a user puts an application on one of these devices, the limitations of the small screen become very apparent. Also, users do not have enough buttons to perform any genuinely useful applications, other than basic view-style applications. More complex applications are very difficult to execute on these small form factors. Many of the approaches to these wireless applications also are very vendor specific—proprietary rather than being based on open standards. The Cisco phone, for example, uses SCCP—a protocol that Cisco employs to communicate with most of its end points (though not all of its end points; there is a methodology to support SIP). Generally, these voice-centric devices are not suited to do anything very sophisticated in the data realm.

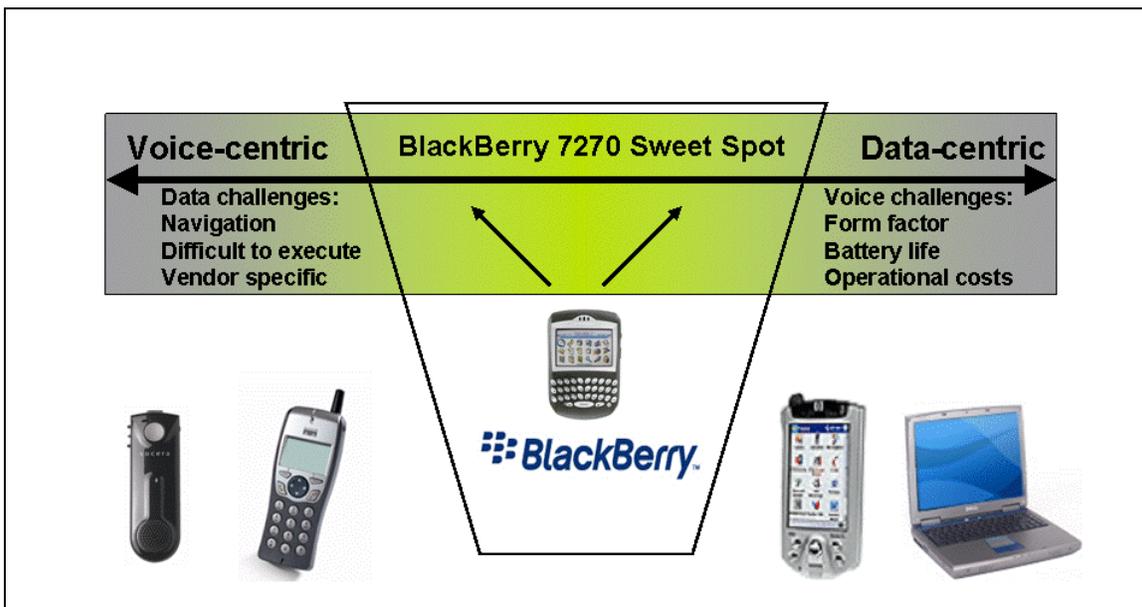


Figure 3. BlackBerry Handheld in WLAN Landscape

On the other side of the spectrum, Figure 3 shows a laptop and an iPAQ PDA-style device. These devices are very capable with data and very good at wireless communication, but their form factor poses a problem. For example, if someone wants to use one of these devices for voice communication, certain difficulties become evident. On the laptop, for example, a user could deploy a soft phone client to eliminate the need for a desk phone, but how mobile is that approach? It is not very mobile at all. A user cannot walk down the hallway with a USB headset plugged into a laptop, juggling the laptop while trying to make a phone call. This approach is just not practical.

Laptops are useful portable devices, but they are not truly mobile devices. The form factor that is suitable for walking down the hallway while talking with someone would be the iPAQ. But, the challenge with this kind of device is battery life. The battery life plummets whenever someone uses them for voice communication or even basic wireless communication. At Research In Motion, the engineers have devised many techniques for extending battery life. These techniques

include turning the radio power up or down, depending on coverage signal strength, varying the back light and controlling the internal processes of the device. All of the battery management features of the carrier-based BlackBerry devices have been ported over to the BlackBerry 7270. Some people are using the handheld in their labs, or other indoor locations, and obtaining very good radio coverage. These BlackBerry handhelds can typically go a number of days before recharging. In terms of the actual talk time, it is approximately four hours, and the standby time is quite long—certainly much longer than most of the competing devices in the marketplace.

Security Patches

Another factor to consider in relation to data-centric devices is the operational costs associated with security patches. Because of the choice of their operating systems, they do not have an inherent security model. Administrators have to layer on security features with middleware and, perhaps, deploy additional hardware on top of that. Generally, it costs a significant amount of money to run a laptop. IT managers who work with budgets or desktop support in this area know how much it costs to support laptops in the field.

BlackBerry 7270 - Positioned in the Middle

The RIM approach, and the model used with the BlackBerry 7270 Wireless Handheld, occupies a middle position—voice and data communication are performed equally well. This form factor has been adopted successfully by over 4 million people in the carrier-based market. The security model is built into the architecture and the devices have great battery life. These capabilities have opened up many opportunities for applications and have resulted in many innovative deployments that meet core requirements of businesses.

Because all of the standard BlackBerry features are supported, companies with a BlackBerry Enterprise Server can connect to IBM[®] Lotus[®] Domino[®], Microsoft[®] Exchange or Novell[®] GroupWise[®]. Through centralized management, administrators can kill a device over the air and perform all of the other useful functions for which BlackBerry devices are known. The same level of functionality that characterizes the carrier-based BlackBerry devices can also be experienced with the BlackBerry 7270 handheld.

Prospective Target Applications

A number of application types and user groups are well suited for the BlackBerry 7270 handheld. People looking for in-building only mobility will find the features very compelling. Certainly, there are some industry vertical markets that immediately come to mind. Healthcare is the best example. A great deal of communication takes place within any healthcare facility, particularly hospitals, and this communication is typically within the building. When the shift ends, healthcare workers do not take their mobility on the road. An exception might be some types of physicians and clinical staff; they would, of course, be strong candidates for a carrier-based BlackBerry device. But, there are so many types of people in a hospital that can benefit from improved communication—not just clinicians, but the administrative staff, the orderlies, the people that move beds around in a hospital.

Today, these types of healthcare workers probably have a conglomeration of devices, such as carrier-based pagers, private paging systems, overhead paging and many small-scale solutions that do not communicate well together, just to pass around basic information. These types of tasks can be accomplished very easily using the BlackBerry 7270 handheld.

Manufacturing offers another great example. Typically, cellular signals do not penetrate inside the walls of a factory because of all the glass and the steel. Also many manufacturing operations are shift-based. When workers' shifts end, they do not take their work home with them. The only mobility that these workers typically require is in-building mobility—an area that is well served with the BlackBerry 7270.

Hotels and the hospitality industry represent another promising area for WLAN solutions. There are lots of people on the move on their campus and a lot of communication between room

service, porters and other staff members. Educational facilities, such as university campuses, tend to be adopting Wi-Fi® across their campuses for a variety of reasons. Providing services to faculty members and other staff members is another area that fits the technology well. Other industry verticals that could achieve substantial benefits include distribution and retail. Figure 4 summarizes the target markets for the BlackBerry 7270.

- BlackBerry 7270 is for a 'new' campus worker audience
- Suited to Industry Verticals
 - Healthcare, Manufacturing, Hospitality, Education, Distribution, Retail
- Suited to Job Types or “Horizontal”
- Different drivers or buying visions:
 - Coverage drivers
 - Economic drivers
 - Application drivers



Figure 4. Target applications for BlackBerry 7270

Job Horizontals

There is another important industry segment that might be referred to as *job horizontals*. These are workers who may not be in a defined industry vertical, but they are mobile every day in their job. This category includes workers who perform the tasks that keep facilities running smoothly; for example, maintenance workers who might be tasked with changing light bulbs. These workers only do their job at work. They do not take their job home with them, yet they are always mobile. How do you get in contact with one of these workers to get a bulb replaced in an office or workroom? The BlackBerry 7270 provides an ideal solution for those kinds of workers. In many organizations, these mobile capabilities would be useful—even for office workers in terms of going to conferences and meetings. The BlackBerry 7270 might not be their only communication device. It might augment a desk set or a cell phone client on a laptop. However there is a clear benefit to be able to seamlessly receive messages in a quiet meeting room or during a presentation using the BlackBerry 7270.

Value Propositions for Different Organizations

Different drivers or buying visions guide the choices in determining whether the BlackBerry 7270 offers a positive value proposition for an organization. Physical coverage is one factor—the considerations associated with cellular signals not penetrating facility walls, as in a manufacturing environment. In other cases, such as a healthcare facility, cellular signals may not be allowed.

There are also economic drivers. A carrier-based BlackBerry device is simply not feasible for certain types of workers. The time that would be saved through BlackBerry use does not justify the recurring monthly costs of a cellular subscription.

Specific kinds of applications serve as drivers for this technology. For an IT help desk, workers want access to ticketing information, such as Remyd® and Peregrine. It is vital to get ticketing

information to the people who are doing desktop support, so they do not have to keep running back to their desk merely to update a ticket.

For healthcare implementations, the investment for BlackBerry 7270 handhelds is comparable to other 802.11b devices in the market today that are voice only—yet the BlackBerry handheld does both voice and data. Application-specific benefits include:

- **Healthcare:** Secure results notification (data) and extension of voice systems to mobile staff with an investment equivalent to voice-only devices.
- **Contact center:** Push response statistics to voice-equipped mobile supervisors rather than depending on them to take action when studying information on reader boards.
- **Mobile IT staff members:** Receive, update and close helpdesk tickets on handhelds without returning to the desk; reduce transcription errors and improve customer service.
- **Retail environments:** Provides a cost-effective substitute for computer kiosks, providing on-the-spot access for mobile staff members and in-store greeters. For example, a sales associate could simply key in the SKU number on the BlackBerry 7270 and give the client the price that they were looking for.

BlackBerry Architecture

In Figure 5, the top of the figure shows the carrier-based BlackBerry architecture. The various BlackBerry devices are shown in the upper right of the figure—all of the different form factors ranging from the BlackBerry 7100 Series to the BlackBerry 7520™ and BlackBerry 7290™. The small key and lock indicate the encryption that is part of all BlackBerry communications.

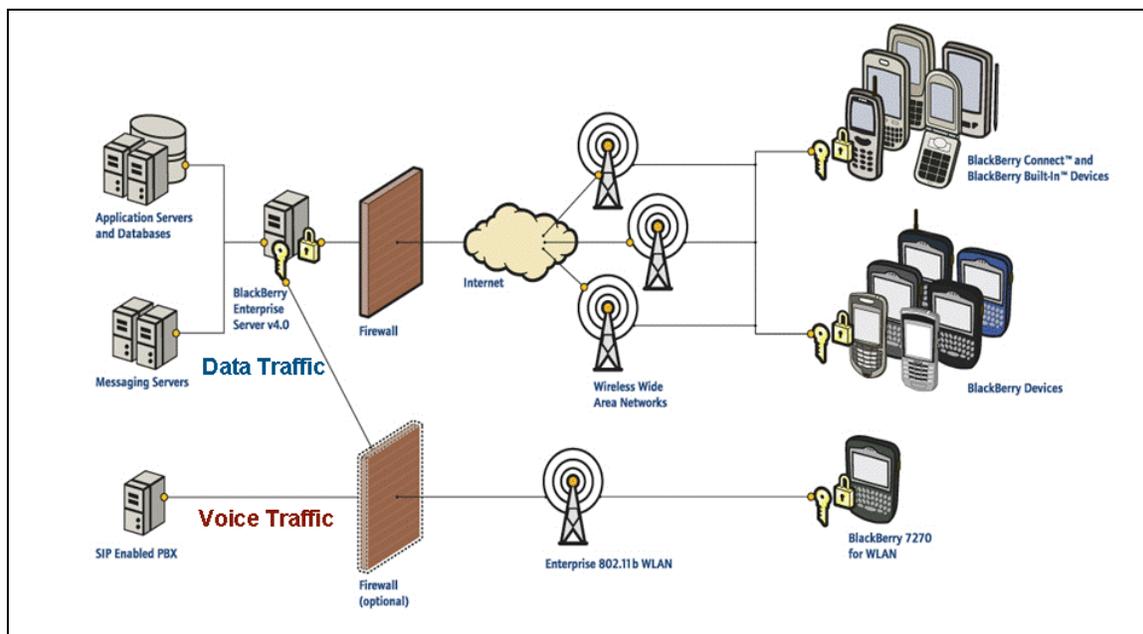


Figure 5. BlackBerry Enterprise Solution Components

The BlackBerry Infrastructure relies on the radio towers shown and the Internet, as well as the carrier networks. Communications with the BlackBerry Enterprise Server are filtered through a firewall before setting up an external two-way conversation. As shown, the BlackBerry Enterprise Server in the figure has a connection in the back end to a corporate messaging system or application servers.

In the bottom right area of Figure 5, the BlackBerry 7270 for WLAN is shown. Instead of using a carrier-based network in the BlackBerry Infrastructure, this approach relies on the enterprise wireless LAN environment. In many instances, this is literally just an extension of an existing LAN

to the BlackBerry handheld. As with data communications, handhelds connect through the firewall to communicate with the BlackBerry Enterprise Server and the encryption message starts with a secret shared key. In this case, however, the voice information goes to a SIP-enabled PBX server.

BlackBerry Mobile Data Service

From BlackBerry Enterprise Server v4.0 on, the BlackBerry Mobile Data Service (MDS) provides a far-ranging set of capabilities that extend significantly beyond email. The types of applications that most workers inside a facility are asking for involve access to enterprise data and specific vertical applications—not email. For example, they typically access the in-house ERP system. Or, for healthcare workers, they want access to the drug cross-reference data on a mobile device. Other devices these healthcare workers have used often have not been satisfactory. The opportunities fit into many vertical categories. There are both custom and off-the-shelf applications today that can move information to either a carrier-based BlackBerry device or a WLAN-based BlackBerry handheld. Figure 6 shows some of the application areas that are serviced by BlackBerry MDS.

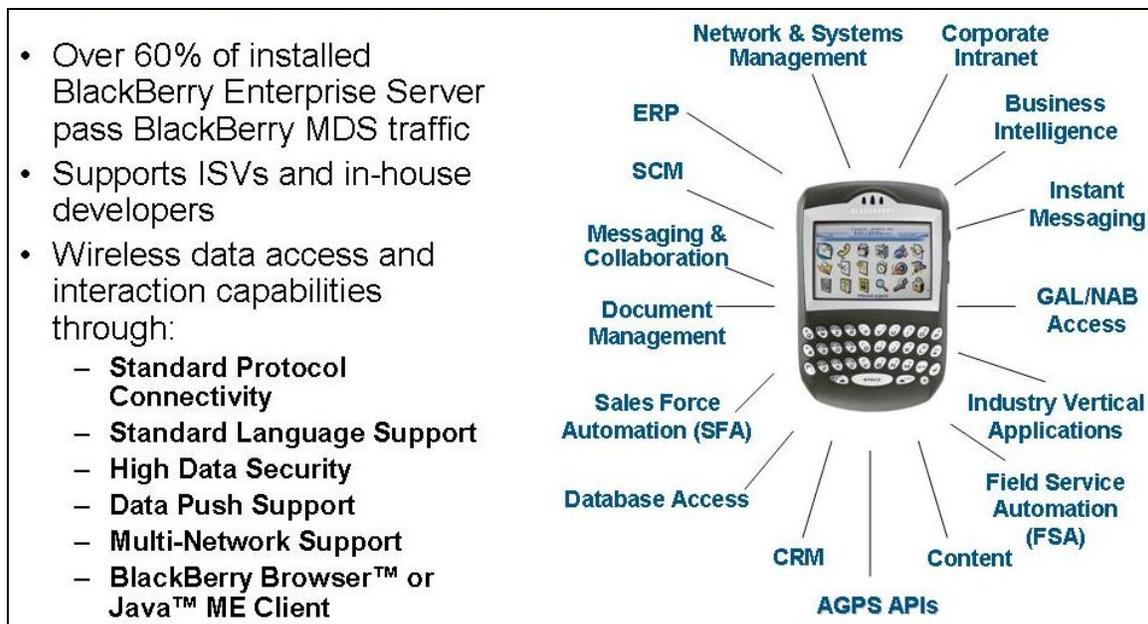


Figure 6. Applications using BlackBerry MDS

The BlackBerry architecture does not require a separate BlackBerry Enterprise Server for the WLAN traffic. Both carrier and WLAN based communication are accomplished with the same BlackBerry Enterprise Server, the same BlackBerry MDS and the same connections securely behind the firewall to the intranet (if permitted). If a company has intranet-based applications that an administrator does not want to be accessible through a mobile device, the system can be configured accordingly. The approach used with the BlackBerry carrier-based device and the WLAN-based handheld is exactly the same. A number of RIM webcasts and reference documents discuss BlackBerry MDS and how data is handled in this environment. Consult the BlackBerry Enterprise Resource Center at www.resourcecenter.blackberry.com for additional details.

Voice Communication

As previously mentioned, the data component for this solution is the same as the carrier-based BlackBerry device, except that the data is being transferred over an enterprise WLAN network. Session Initiation Protocol (SIP) was devised by the Internet Engineering Task Force (IETF) to

address control layer operations. As such, the protocol was originally designed to establish and terminate communication between devices, enabling peer-to-peer communications.

SIP, however, has evolved into a much broader protocol to allow multimedia communication sessions between devices or between end points, regardless of what they are. This could include video sessions or it might mean audio sessions, data, text and other types of content. SIP does not get involved with the actual content or payload of a datastream—only establishing and terminating the communications. A webcast offering further details about SIP is available in the BlackBerry Enterprise Resource Center. Figure 7 illustrates the architecture associated with SIP.

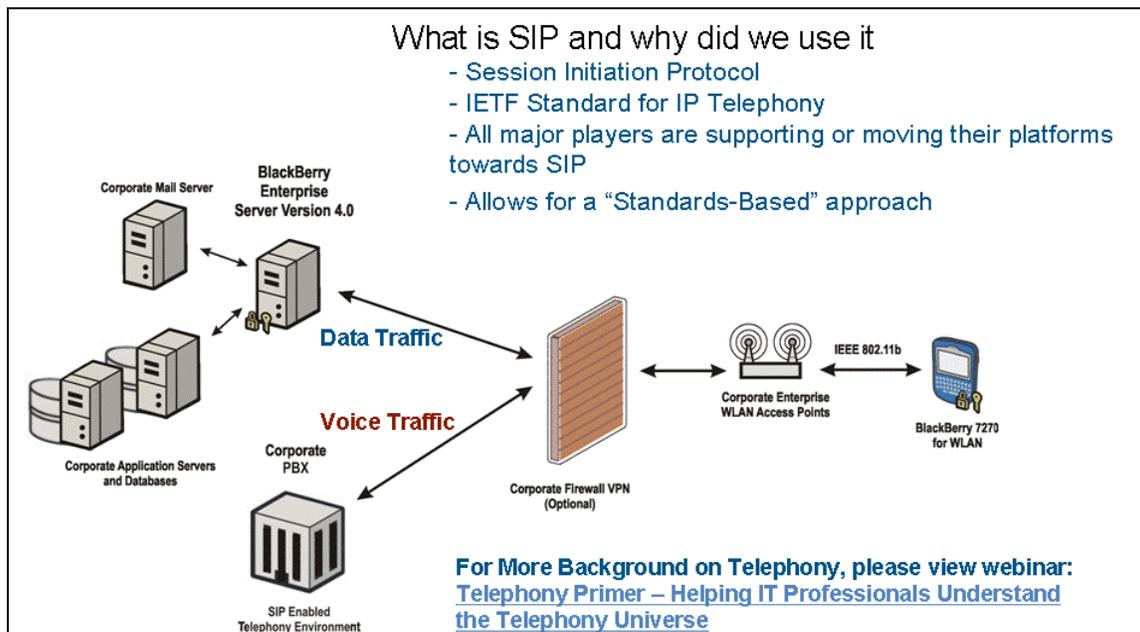


Figure 7. Session Initiation Protocol

SIP presents a challenge in that it has been an evolving protocol. Some manufacturers say they are SIP-compliant, but then they add proprietary extensions that deviate from the standard. In general, most telephony manufacturers are moving their platforms toward SIP, or at least supporting third-party SIP end points. RIM is working with the major telephony and WLAN vendors today. Companies such as 3Com, Nortel and Avaya have announced that they are committed to supporting third party SIP end points including the BlackBerry 7270.

IT Policies Specific to WLAN

Some new IT policies associated with WLAN are relevant to this BlackBerry solution. These policies typically involve voice, dialing and related areas, as well as specific WLAN considerations, such as security methods, Service Set Identifier (SSID), Wired Equivalency Privacy (WEP) and Extensible Authentication Protocol (EAP) settings. Companies often ask about 802.1x for security. RIM supports a number of authentication protocols, including EAP, LEAP, PSK with TKIP and many other methodologies for authentication and security. The BlackBerry web site lists the full range of current authentication methods that are supported.

Diagnostic Screen

One new feature that applies to the BlackBerry 7270 is the diagnostic screen as shown in Figure 8. When the handheld is running, the user can view the operational processes—as the handheld is first associated with a network (potentially with a VPN on top of it) and then on toward the SIP server. The diagnostics offer an item-by-item sequence of the logic and the processes,

providing rich information as part of the presentation. The information includes DNS address, gateway addresses, local address and much more information.

There is a vast amount of network information that can be viewed from the BlackBerry 7270. Some people use this device as a way to perform troubleshooting on their own network. Although it is not intended for this purpose, it provides an enormous amount of information for a portable device and the capabilities for doing this are a standard feature of the BlackBerry 7270.

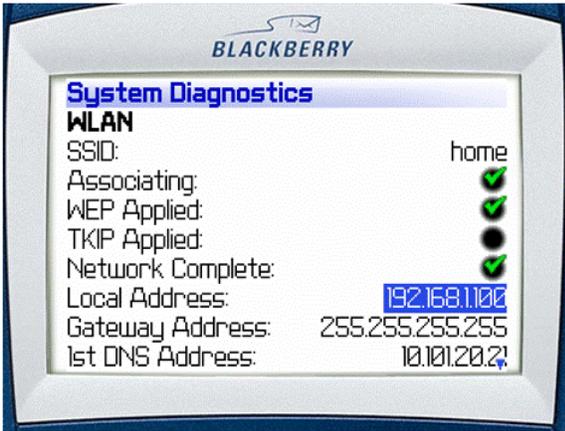
<p>Broken down into investigative areas</p> <ol style="list-style-type: none">1. Association2. Authentication3. Handheld Network Connection4. Encryption5. Connection to the BlackBerry Infrastructure <ul style="list-style-type: none">• WLAN<ul style="list-style-type: none">– SSID, Associating, WEP, Addressing, etc• VPN<ul style="list-style-type: none">– Concentrator Address, Secured Device IP, etc• VOIP<ul style="list-style-type: none">– Registration, Authentication, Call Info, Last Command Failure, Server Name• SRP<ul style="list-style-type: none">– SRP ID, BlackBerry Router Address and Port, Last contact at, etc	 <p>The screenshot shows the 'System Diagnostics' screen on a BlackBerry device. Under the 'WLAN' section, it displays the following information: SSID: home; Associating: [green checkmark]; WEP Applied: [green checkmark]; TKIP Applied: [green checkmark]; Network Complete: [green checkmark]; Local Address: 192.168.1.100; Gateway Address: 255.255.255.255; 1st DNS Address: 10.10.20.20.</p>
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Figure 8. Diagnostic Screen

VPN Support

Some companies that are installing wireless LANs do not fully trust the security methods, even though they may have a fair degree of confidence in the elements of WPA. Virtual Private Network (VPN) support strengthens any WLAN implementation. VPN support is built into the BlackBerry 7270.

The BlackBerry 7270 directly supports the major VPNs from Cisco, Nortel, Avaya and Check Point. There is no need to set up optional features or install specialized components if the VPN is covered in one of these solutions that are natively supported.

Additional optional VPN support is shown in Figure 9.

- **Optional VPN Support**
 - Avaya VSU Series
 - CheckPoint Software Technologies
 - Cisco VPN Concentrator 3000 Series
 - Cisco Secure PIX Firewall VPN
 - Cisco IOS with Easy VPN Server
 - NetScreen Systems
 - Nortel Networks Contivity VPN Switch



Figure 9. Optional VPN Support

Telephony Considerations

The BlackBerry 7270 can be used for data-only operation, and many applications do not require any connection to an enterprise phone system. A growing number of organizations, however, are starting to deploy wireless infrastructure within a campus or enterprise and then making it ready for voice and implementing IP telephony. What are the considerations when enabling the voice capabilities of this handheld?

The first and most obvious question is how much bandwidth does it consume? The BlackBerry 7270 uses the G.711 codec. In theory, this means that the voice traffic uses 64 kilobits per second of bandwidth. But, with overhead, it is probably closer to 85 or 90 kilobits per second.

The G.711 codec is widely supported by most organizations that have, or will be deploying IP Telephony. Although some companies prefer the G.729 codec, which provides a higher level of compression, G.711 provides a good balance between voice quality and bandwidth requirements.

The main issue associated with SIP involves the standards—it is not just one standard; it is a group of standards. The main one that people typically refer to is RFC 3261 compliance. RFC 3261 is a protocol that you can examine at SIP.org or other websites. Research In Motion takes standards-based development very seriously and with SIP, the standard is followed very closely (without proprietary interpretations)—everything from the way that dual tone multi frequency (DTMF) is performed to the setup and teardown of calls.

A jitter buffer and echo cancellation are also important features in any voice device that is IP telephony-based, and these are implemented in the BlackBerry 7270 design. Comfort noise generation provide aural feedback that users recognize when the phone is active, to indicate that the line has not been dropped.

Quality of Service (QoS) is the term used to describe multiple queues in a network that allow for prioritization of certain types of traffic over others, e.g., voice traffic usually requires a higher priority than data traffic. In a QoS enabled network, voice traffic is flagged as high priority when passed off to the network. If a network supports quality of service, the traffic from the BlackBerry solution is flagged appropriately for priority using Type of Service.

While this section gave a high-level overview of what RIM has done from the telephony space, there are a number of deeper issues associated with standards. As more standards emerge dealing with the quality of service and bandwidth management, RIM will add them to the software stream of this solution. The product will continue to evolve and customers can have confidence that future versions of the BlackBerry 7270 will be compliant with the most important standards.

Solution Benefits

The investment that any organization makes in a wireless LAN infrastructure is substantial and the BlackBerry 7270 can help realize the maximum benefits of that infrastructure. The solution serves a new set of users. The approach is not designed to replace existing BlackBerry devices or to try to change the habits of an executive already using BlackBerry. Instead, this solution is designed for those people who have never had a mobility device. That is the key element—the number one consideration. The second key factor is the way in which this solution leverages existing investments. Most organizations that have a BlackBerry Enterprise Server have already seen the value of BlackBerry as a platform. This solution is now merely leveraging that platform. There is no additional server component that a company needs to add to make a complete solution.

Many organizations today have recognized the value of deploying wireless LAN infrastructures, not just for this BlackBerry handheld, but for a wide range of devices ranging from notebook computers to PDAs. If an organization has adopted SIP-enabled IP telephony, they are inherently on the standards tilt and they have started to spend some money in that space. That is another consideration and reason that RIM strongly adheres to support for standards.

The solution supports new users, leverages existing investments, supports the standards that companies have already invested in, and, most importantly, includes built-in security mechanisms. The end-to-end security model that BlackBerry solution employs in the carrier-based market is also at play in this WLAN solution. It encompasses everything—from the way that keys and the physical handheld security are managed (such as shutting down a handheld over the air or locking it out) to protections against password abuse. The handheld can wipe the data contents after a certain number of unsuccessful password attempts in the same manner as a carrier-based BlackBerry device can perform this function. The security model for the BlackBerry 7270 is nearly identical to the conventional BlackBerry security features.

Total encryption applies to data communication, but, for any standards-based SIP device today, if it is truly standards-based, it is not encrypted. (The SIP used today in the BlackBerry 7270 is standards-based SIP. There is a protocol coming out called Secure SIP. RIM does not support this protocol today, because the standard is not yet ratified. When it is ratified, support will be added to the solution). However the overall method used to connect to the network employs ample security—multiple layers of security ranging from the physical device security to the way users authenticate to the network. VPN support on top of these security features provides another layer of protection for security-conscious organizations.

Summary

BlackBerry for WLAN brings convenient voice and data communication to users who may have never used a mobile device previously. By leveraging the capabilities of the BlackBerry Enterprise Server v4.0 and higher, organizations can take advantage of their existing wireless LAN infrastructure and provide capable, seamless in-building communication to staff members who need ready information while moving about a building or campus.

This solution, featuring the BlackBerry 7270 Wireless Handheld, builds on the traditional strengths of the BlackBerry solution, delivering exceptional security, the advantages of push technology, extended battery life, convenient access to enterprise applications and the means to tap into the benefits of VoIP communication in an efficient, cost-effective way.

Additional Resources

For more information, visit the BlackBerry Enterprise Resource Center at www.resourcecenter.blackberry.com.

Reference Document: BlackBerry for WLAN

*Check with service provider for availability, roaming arrangements and service plans. Certain features outlined in this document require a minimum version of BlackBerry Enterprise Server software, BlackBerry Desktop Software, and/or BlackBerry Device Software. May require additional application development. Prior to subscribing to or implementing any third party products or services, it is your responsibility to ensure that the airtime service provider you are working with has agreed to support all of the features of the third party products and services. Installation and use of third party products and services with RIM's products and services may require one or more patent, trademark or copyright licenses in order to avoid infringement of the intellectual property rights of others. You are solely responsible for determining whether such third party licenses are required and are responsible for acquiring any such licenses. To the extent that such intellectual property licenses may be required, RIM expressly recommends that you do not install or use these products and services until all such applicable licenses have been acquired by you or on your behalf. Your use of third party software shall be governed by and subject to you agreeing to the terms of separate software licenses, if any, for those products or services. Any third party products or services that are provided with RIM's products and services are provided "as is". RIM makes no representation, warranty or guarantee whatsoever in relation to the third party products and services and RIM assumes no liability whatsoever in relation to the third party products and services even if RIM has been advised of the possibility of such damages or can anticipate such damages.

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