



Questionnaire

Dear Mobile Platform Operating System Provider,

The following is a questionnaire for evaluating the capabilities of different wireless mobile platforms. By wireless mobile platforms, we are referring to data capable mobile devices that operate over wireless networks. This includes smart phones, PDAs with phone capability, PDAs connected to mobile phones (e.g., via IR, Bluetooth, cable), and PDAs with WLAN capability. We are not referring to laptop or notebook computers.

Please respond as per the cover letter attached to this questionnaire. You can edit this document directly to provide your information.

Usage Scenarios

Since the capabilities of these platforms varies widely, we are going to assess their effectiveness in the context of different usage scenarios.

Phone centric. These users mostly use their device for voice communications, have strong opinions about the ergonomics and fashionable aspects of their devices, but also wish their phone platform to be able to synchronize with their PIM applications, and may occasionally check e-mail, send/receive text or IM messages and look at some Web pages.

E-mail centric. These users are primarily interested in sending/receiving e-mail on their devices. They may also be interested in using their device for voice communications.

General-purpose mobile data. These users wish maximum flexibility for data applications, and will do e-mail, messaging, browsing, database access, file transfer, VPNs, etc. They will use a separate mobile phone for voice, and may even use the phone as a modem for their device.

Questions

Development environment. List the application development options for the platform, e.g., C++, C#, Java, browser based, other.

- 1) Java™: Data-and voice- enabled BlackBerry Wireless Handhelds™ are Java-based and deliver wireless email, phone, SMS, browser and organizer applications. The Java-based handhelds include the BlackBerry® 7200 Series, BlackBerry 7510, BlackBerry 6200 Series, BlackBerry 6510, and BlackBerry 6700 Series.

With BlackBerry handhelds and development tools, enterprise customers, developers and ISVs can easily and quickly develop applications that leverage the unique connectivity features of BlackBerry such as always-on operation, push-based services, end-to-end security and back-end integration.

RIM offers the BlackBerry Java Development Environment, a fully integrated development environment and simulation tool for building Java 2 Micro Edition applications for Java-based BlackBerry handhelds. The BlackBerry Java Developer

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Environment provides a full suite of interfaces and utilities to take advantage of some of the unique features of the BlackBerry handheld.

- 2) Browser-based: The BlackBerry handheld supports browser-based solutions for accessing content that is formatted in a standard mark-up language. Browser-based solutions allow developers to focus on developing back-end content and leverage existing browser clients on the BlackBerry handheld. Typical browsers available for the BlackBerry handheld can render standard wireless mark-up languages, including WML and compact HTML (cHTML), xHTML Basic, HTML and can use a WAP gateway to connect to the Internet or the BlackBerry Enterprise Server to connect to a corporate intranet. Browser-based solutions use an existing browser application, meaning no custom client application development is required. The BlackBerry Browser also supports typical browser security like WTLS and SSL/TLS. The BlackBerry Browser can also accept push content without being initiated by the user. In conjunction with the Mobile Data Service feature it provides the same security model as BlackBerry email.
- 3) C++: Data-enabled handhelds are C++ based, and include BlackBerry 950/850 and BlackBerry 857/957 models that feature email and organizer applications. BlackBerry software for data-enabled handhelds supports applications written in C/C++ using the BlackBerry Software Developer Kit.

Development tool vendors. List the vendors of development tools for this platform.

Used in conjunction with BlackBerry developer tools, the services and products from the vendors listed below help to simplify application development efforts. From wireless middleware, to hosting services, to portable database implementations, each of these products is designed to help the development cycle and add value to an enterprise's wireless application or service.

Peripherals / Accessories

Apriva
InStep Group

Database

PointBase

Network Carriers

AT&T Wireless Developer Program
VoiceStream Wireless
Nextel Developer Program

Books

J2ME Books

Dispatch

Dynamic Mobile Data
Nexent
Nextair
OnrampAlerts

Form Engines

Cingular - Powertool
Nextair-AIRIX
OnrampForms
Outercurve

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Security

Certicom
RSA

Development Tools

Action Engine
DynoPlex
Epicad
Kilobytes Computers
Sona Innovations

Browsers

Flowfinity
Go America
Neomar
Novarra
WolfeTech

Corporate Application Platform

AvantGo
Brience
Geoworks
iConverse
Nextair-AIRIX
Silicongo
Synchronex

Middleware

Aether
Arizan
Broadbeam
Dynamic Mobile Data
Nextair-AIRIX

Internet Tools

Everypath
Experts Exchange Developer Network

Software Distribution

Developer Resources
Handango
TUCOWS

Additional information on development tool vendors can be found at:

<http://www.blackberry.com/developers/na/java/tools/thirdparty.shtml>

In addition to third party applications, RIM also provides application development tools – including software development kits, simulation environments and documentation – to support the development applications for BlackBerry.

Applications. What is the approximate total number of business-related applications available for this platform?

With support for Java, the BlackBerry platform is open to a large and growing Java developer community. The approximate number of developers who have downloaded the BlackBerry Java Development Environment is approximately 15,194 to date. Also, the Mobile Data Service feature of BlackBerry enables companies to extend existing corporate

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applications to BlackBerry handhelds, meaning there are many in-house corporate developers who leverage the Mobile Data Service to create applications for BlackBerry. Within the BlackBerry ISV Alliance Program, there are approximately 125 third-party applications, but in addition, there are numerous other applications generated by independent vendors and in-house developers that do not fall within the Alliance Program.

Many enterprise software vendors have developed applications for BlackBerry such as CRM, Corporate Data Access & Infrastructure, Network and Systems Management, Sales Force Automation, Internet Content Services, Printing and Faxing, Financial, Instant Messaging, Medical, Real Estate, Electronic Data Collection, Business Intelligence and Decision Support Systems.

Since the BlackBerry solution is built upon industry standard protocols and connectivity, including J2ME, HTTP, XML and WML, third parties and ISVs have a flexible development environment that allows them to leverage the BlackBerry architecture, including the Triple DES security model and push-based technology, to provide customers with a variety of additional applications to expand the functionality of BlackBerry.

E-mail support. List the e-mail protocols (e.g., POP3, IMAP, Microsoft MAPI, etc.) that your platform supports. POP3, APOP, SMTP-AUTH, SSL, IMAP4

Microsoft Exchange and Lotus Domino (BlackBerry Enterprise Server), plus Outlook, Notes, MSN, Hotmail, AOL, IMAP or POP3/ISP (Web Client).

Messaging - native. List the types of messaging your platform supports natively, including SMS, instant messaging, MMS.

BlackBerry integrates the following services in a single handheld:

- Wireless E-mail
- Phone
- SMS
- Mobile Data Service (corporate data access)
- Wireless Calendar
- Web
- Attachment Service
- Organizer

Messaging – third party. List the additional messaging types supported by third parties.

In addition to inherent messaging services of BlackBerry, there are a number of third party vendors delivering other messaging services, including:

- Instant Messaging
- Unified Messaging
- Printing and Faxing
- Electronic Data Collection
- Web Browsing and Content services
- CRM (including field force dispatch, help desk and call center services, and sales force automation)
- ERP (Including inventory and supply chain management)
- Network and systems management

Browser capabilities. What markup languages does your browser support (e.g., WML, Compact HTML, HTML, XHTML, CCS)

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BlackBerry supports markup languages including HTML, and WML.

The C++ browser supports WML.

The Java browser supports WML, cHTML, HTML and XHTML Basic.

The BlackBerry Browser can also accept push content without being initiated by the user. In conjunction with the Mobile Data Service feature it provides the same security model as BlackBerry email.

Devices. What devices in the market today use this platform? List vendors, and number of devices per vendor.

A variety of BlackBerry Wireless Handhelds operate on the BlackBerry platform, delivering corporate data, email, phone, SMS, browser and organizer applications that enable mobile professionals to manage all of their critical information and communications on one integrated handheld.

BlackBerry is available through a variety of carriers and a range of networks across the world. In North America alone, RIM currently offers fifteen handhelds in the BlackBerry portfolio, with many including color screens and support for international roaming. (A complete list of these models can be found at <http://www.blackberry.com/products/handhelds/index.shtml>)

Through RIM's BlackBerry Connect licensing program, device manufacturers can extend the push-based BlackBerry data experience to their wireless devices by connecting to BlackBerry Enterprise Server using the same secure wireless architecture and infrastructure that helped popularize BlackBerry. Manufacturers can also connect their wireless devices to BlackBerry Web Client™, an Internet email service designed for individuals and small businesses that does not require server software. In addition to working with device manufacturers, BlackBerry connectivity support is being integrated into leading operating systems to enable licensees and carriers to quickly and easily offer the BlackBerry wireless service on a variety of wireless devices.

Partners already involved with the BlackBerry Connect program include PalmSource, Microsoft, Samsung, Symbian, Sony-Ericsson, HTC (which manufactures the HP iPAQ) and Nokia, and other companies are expected to be announced in the first half of this year. This licensing program provides customers with the push-based BlackBerry experience while offering device choice.

Full BlackBerry Connect licensing program details are available at <http://www.blackberry.com/blackberryconnect/index.shtml?DCPID=hmrblackberryconnect>

Multitasking. Is your operating system multitasking?

Yes, applications deployed on top of the JVM (Java Virtual Machine) environment, which is the native environment for the BlackBerry Java-based handhelds, can effectively be multi-tasked.

BlackBerry Java-enabled wireless handhelds support a fully multithreaded and multitasking operating system. Multiple applications can be running at the same time, and users can quickly toggle between these applications using the ALT-ESC key combination. This support also allows the BlackBerry push experience to work seamlessly regardless of which application the user currently has open.

Java capability. Is Java supported? What versions of Java (e.g., MIP1, MIDP2, Personal Profile) are supported?

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BlackBerry supports the Java platform, specifically Java 2 Micro Edition (J2ME). BlackBerry wireless handhelds support the J2ME Mobile Information Device Profile (MIDP 1.0) profile that is built on top of the Connected Limited Device Configuration (CLDC 1.0).

Java alternatives. If not supporting Java, what alternate higher-level approaches do you support?

N/A

VPN Support. List the VPNs (and vendors) available for this platform.

BlackBerry's inherent security model that leverages Triple-DES encryption maintains an "always on always connected" VPN type connection with the corporate Intranet. The BlackBerry handheld is effectively always "behind the corporate firewall."

For more details, see the @stake Security Assessment summary on BlackBerry security compared to the traditional VPN model. This assessment can be found at: <http://www.blackberry.com/knowledgecenterpublic/livelink.exe?func=ll&objId=645094&objAction=browse&sort=name>

From the @stake Security Assessment is the following information regarding BlackBerry compared to a VPN solution:

- BlackBerry provides similar security mechanisms to a traditional VPN solution. Traditional VPNs use IPsec to create an encrypted tunnel between the end user and the corporate network. BlackBerry uses end-to-end encryption between the handheld and the BlackBerry Enterprise server, preventing sensitive data from traveling across the Internet and wireless network unencrypted. Unique encryption keys are used for each handheld to prevent impersonation.
- Traditional VPNs generally require Access Control Lists (ACLs) to restrict the extent of individual users' access into the corporate network. BlackBerry's security model only allows handhelds to communicate with the BlackBerry Enterprise Server, removing the need for user-specific ACLs.

Conclusion: The BlackBerry security model provides the same level of security as a traditional VPN connection.

-- BlackBerry® by Research In Motion: An @stake Security Assessment, November 2003

Wireless communications. List the wireless networking technologies supported, including CDMA, GPRS/EDGE, UMTS/WCDMA, Wi-Fi, IR and Bluetooth.

BlackBerry supports multiple wireless network standards including GSM/GPRS, the Nextel IDEN network, CDMA2000 1X, Mobitex and DataTAC allowing customers to support mixed environments and enabling current customers to support new BlackBerry handhelds without changing their back-end infrastructure. BlackBerry is also employed by multinational organizations for its international reach – to date, RIM has partnered with carriers in over 30 carriers covering 50 countries, and many BlackBerry Wireless Handhelds support international roaming. RIM continually evaluates new technologies to include in the BlackBerry platform. For example, RIM plans to add Wi-Fi capabilities to BlackBerry.

Wireline communications. List the wireline communications technologies supported, including USB, serial and Ethernet.

BlackBerry Wireless Handhelds connect to a user's PC via USB (without a cradle) or serial ports (with a cradle).

In addition, all handhelds are enabled for wireless email and calendar synchronization. Users can open, read, reply, file and delete messages from their handheld, and these changes are automatically synchronized with the user's desktop inbox. With BlackBerry

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wireless calendar synchronization features, a user's online calendar and handheld calendar can be wirelessly synchronized. This enables users to initiate, accept or decline meeting requests using their BlackBerry handheld and their online calendar will be automatically updated.

With USB and cradle connectivity, users link to BlackBerry Desktop Software, which installs and runs on the individual's PC. The BlackBerry Desktop Software is an integrated suite of applications that provides tools to synchronize certain PIM applications, load and upgrade handheld applications, manage filters and folders, and back up and restore information.

Communications protocols - native. List the communications protocols that your platform supports natively, such as: TCP/IP, IPv6, HTTP, POP, IMAP, FTP, SSL, TLS, Telnet, IPSec, PPTP, L2TP.

BlackBerry enables a wide range of software application development based on open standards. BlackBerry supports TCP/IP, HTTP/HTTPS, POP, IMAP, and SSL/TLS communications protocols.

Communications protocols – third party. List any additional protocols supported through third parties.

N/A

Other features. List other pertinent aspects of your platform.

BlackBerry Java Development Environment

The BlackBerry Java Development Environment is a fully integrated development environment and simulation tool that incorporates Sun's J2ME specifications and RIM's expertise in BlackBerry wireless application development to significantly ease development efforts. The BlackBerry Java Development Environment provides a full-featured, integrated suite of development tools to support the building, testing and debugging of applications for BlackBerry, including facilities for code profiling and optimization.

In addition to full support for the J2ME CLDC and MIDP APIs mentioned above in response to the Java capability question, the BlackBerry Java Development Environment includes access to additional APIs that leverage the unique features of BlackBerry.

The BlackBerry Java Development Environment provides a complete set of APIs and tools that can be used to develop custom Java applications. Standard BlackBerry applications for these handhelds are written in Java, so custom applications can be created that extend existing enterprise applications to BlackBerry for mobile users. Custom applications can take advantage of the BlackBerry architecture and push-based wireless applications that are tightly integrated with the corporate network and enhance the wireless experience for mobile users on any wireless network running the BlackBerry solution.

The BlackBerry Java Development Environment also supports wireless application deployment. Wireless application deployment allows new applications to be deployed over-the-air, enabling customers, carriers and developers to easily manage and update software applications in the field.

RIM offers the BlackBerry Development Environment for Java free of charge to developers, enterprise customers and ISVs on its developer web site at <http://www.blackberry.com/developers>.

Mobile Data Service

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BlackBerry has been deployed in thousands of organizations because of its ability to offer an “always on,” secure, push-based architecture for delivering email to a user’s handheld. Now, enterprises can use this same proven platform to extend enterprise systems wirelessly, providing secure, mobile access to critical corporate data and applications using the BlackBerry handheld, browser and software development tools.

By leveraging the existing secure, extensible and robust architecture of BlackBerry Enterprise Server, corporations can rapidly and securely deploy additional wireless applications beyond email to BlackBerry handhelds. Mobile Data Service supports multiple languages (XML, HTTP, WML) and allows users to access data through either the BlackBerry Browser or Java applications. By using standard protocols, corporate or independent application developers can quickly deploy additional wireless applications without learning new middleware or operating systems.

Mobile users can now have the same quick and easy access to other information and services that they have with email. Application and content developers can now enable secure information exchange and collaboration between users in their organizations.

Key Features of BlackBerry For Corporate Customers

Full product feature details are available at
http://www.blackberry.com/products/blackberry/key_features.shtml.

Completely wireless handheld: BlackBerry handhelds include the most advanced wireless technology -- completely embedded (with no modem to attach), enabling "push-based," automatic data delivery. New email messages and data are sent to users' handhelds automatically, without users having to dial into the network or poll for new messages, a feature that has been central to BlackBerry's success in the enterprise.

Always On, Always Connected®: BlackBerry handhelds are designed to remain continuously connected to the wireless network so data can be easily delivered to your handheld. No effort required.

Easy-to-use: Every element of BlackBerry has been designed to be intuitive, quick, and easy-to-use. Creating and retrieving information is amazingly simple using the optimized keyboard, thumb-operated trackwheel, easy-to-read backlit screen, intuitive menu-driven interface and embedded wireless modem. The integrated QWERTY keyboard allows for easy, accurate communication and fast typing using a thumb-touch keyboard with no stylus or touch screens to worry about.

Integration with existing email: BlackBerry integrates seamlessly with multiple systems (including corporate and ISP email accounts), providing a wireless extension to existing email accounts. Users can keep an existing email address and send, receive, file, or delete messages while on the go.

Advanced security: Unlike most mobile data solutions, the BlackBerry platform provides a secure, end-to-end link between the wireless handheld and corporate e-mail, data, and PIM applications. BlackBerry supports Triple DES (Data Encryption Standard) to meet stringent corporate security requirements for remote e-mail and corporate data access. BlackBerry is the first wireless platform to have a handheld awarded FIPS-140 certification, the U.S. government's standard for wireless data transfer. BlackBerry also offers optional support for the S/MIME security standard.

Wireless email and calendar synchronization: BlackBerry features cradle-free, two-way wireless synchronization of email messages between the handheld and a user's corporate or handheld email account with support for read/unread status, deletions and filing. With

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RIM's wireless calendar synchronization features, a user's online calendar and handheld calendar can be wirelessly synchronized without the need for a cradle.

Attachment Viewing: Attachment viewing capabilities for BlackBerry support a variety of file formats such as Microsoft Word, Excel, PowerPoint, WordPerfect, Adobe PDF and ASCII text.

Integrated phone: The BlackBerry Wireless Handheld also includes an integrated phone that supports voice services with optional features such as call waiting, call answer, conference calling and call forwarding. It comes with a headset that easily attaches for convenient, hands-free conversation allowing users to read, type or retrieve information while they talk. The BlackBerry 6200 Series, BlackBerry 6510, BlackBerry 6700 Series, BlackBerry 7200 Series and BlackBerry 7510 handhelds also include an integrated earpiece/microphone designed for comfort and clarity when held to the ear. The BlackBerry 7510 includes speakerphone for added convenience when making phone calls or using the long-range digital walkie-talkie feature.

SMS: Short Messaging Service (SMS) enables short text messages to be quickly exchanged between BlackBerry handhelds and other SMS-enabled devices (including cell phones) without adding email messages to an inbox. The specially designed thumb-typing keyboard on the BlackBerry handheld is ideal for typing SMS messages quickly.

Web browser: The BlackBerry browser allows mobile access to information on the web.

Connected organizer: BlackBerry provides an integrated personal organizer that offers quick and easy access to the calendar, address book, memopad and task list that users depend on every day. When users return to the office, they simply place the handheld in its cradle, click the Intellisync® icon in the BlackBerry Desktop Manager, and information is automatically synchronized and updated between the handheld and PC.

Application integration: BlackBerry handhelds feature exceptional software integration, making it very easy to use. A single integrated address book and inbox serve all email, voice and SMS applications. Users can even click on an email address, telephone number or URL inside a message to automatically invoke an email message, call the telephone number or connect to the URL.

Remote address lookup: Remote address lookup capabilities allow BlackBerry users to wirelessly search their organization's address list.

IT friendly: BlackBerry Enterprise Server is powerful server software that integrates with an existing corporate email system. It offers IT teams the benefits of centralized administration and support and keeps a company's information running smoothly.

End-to-end solution: BlackBerry is an integrated, end-to-end solution designed to meet the specific needs of both end users and IT departments and includes hardware, software and service.

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www.blackberry.com