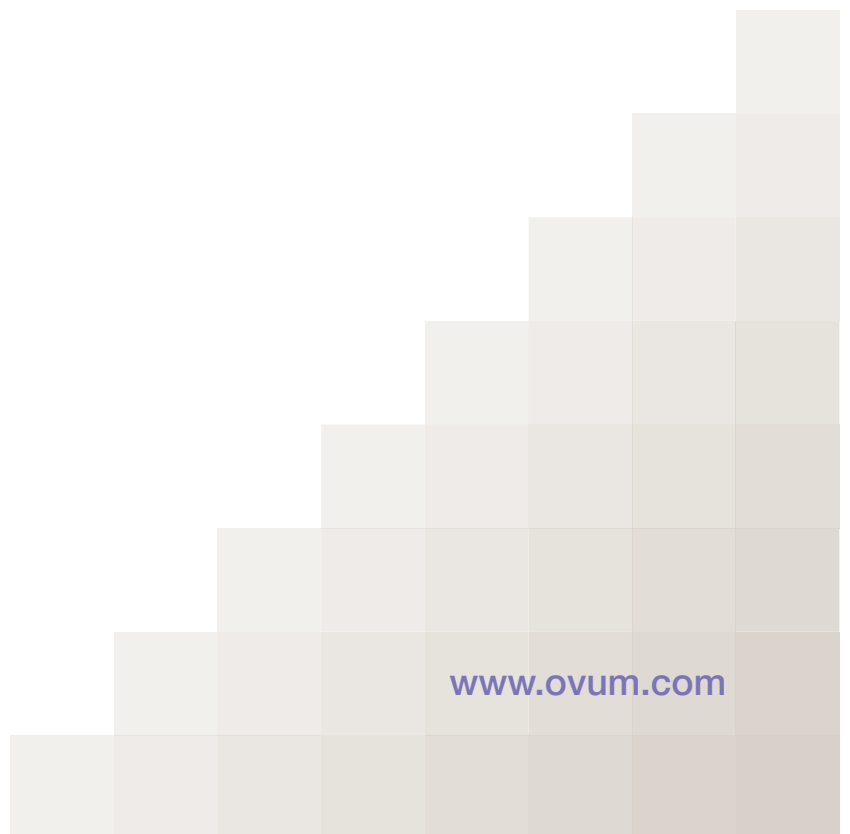




RIM in the mobile enterprise market

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RIM in the mobile enterprise market

Despite the entrance of several powerful new competitors in the mobile email market, RIM is still the dominant player here. With 12 million subscribers, RIM now has more influence in the enterprise mobility market than many larger device and software vendors; so much so that BlackBerry is seen as a synonym for wireless email. Pauline Trotter and Jeremy Green give Ovum's view on RIM's enterprise mobility strategy.

Ovum view

RIM's credentials are difficult to match

RIM was the first supplier to understand that it is almost impossible to sell mobile enterprise software on its own. Mobile enterprise software should ideally be packaged in a complete, end-to-end offering that will aggregate all the components needed to deliver the application as a service to mobile handsets, including the handset. It was also the first to successfully convince operators to sell and deliver an IT product as a service. This remains RIM's key strength in the marketplace, along with its focus on the wireless email market. No other platform vendor has the same credentials: Seven and Visto do not make handsets, while Nokia and similar vendors are not focused on wireless email.

It is perhaps no wonder that the company has enjoyed phenomenal growth over the past few years, making RIM a darling of the investor community. As the main supplier in a niche and immature market, it established itself as a clear leader on all fronts, capable of scaling its business quicker than pure software vendors. However, now that the market is maturing, RIM is facing significant challenges.

RIM's business model is its main strength, as it enables its resellers to charge for maintenance and support as part of a subscription, rather than charge an annual fee. RIM was the first company to understand that mobile applications need to be delivered as part of an integrated package, including hardware, software and services, that are both complete and simple to use. Most mobile operators find it easy to sell the BlackBerry solution to enterprise customers, and the product performs well in terms of throughput speed, latency and capacity requirements on 2.5G (and equivalent) networks, in part due to proprietary compression in both server and handheld device. However, several carriers have expressed the view to us that they would at least like to have an alternative offering in their portfolio alongside BlackBerry.

Moreover, the business model also means that RIM is dependent on operators to launch the BlackBerry service. This takes time, and the cost associated with launching can be high for smaller operators. Global presence, including small and emerging markets, can be crucial to win and extend contracts with multinationals.



A number of RIM's competitors have done a good job in popularising the belief that the BlackBerry architecture and, specifically, the NOC relay centre (through which all information sent and received by BlackBerry subscribers transits, albeit in an encrypted form) is a security issue. RIM is quick to deny this suggestion and points to its security accreditation and its established base of customers in security-conscious sectors, including government agencies in the US, Australia, New Zealand, Austria and Canada. In September 2007 RIM's BES became the first mobile platform to achieve 'common criteria' security certification, which is accepted in 25 countries. In addition to this, the BES solution has been approved for use under the CAPS programme in the UK and has several FIPS-140 validations for its embedded encryption module. The BES has also been approved for the wireless transmission of sensitive data, up to 'restricted' classification, by both NATO and the UK government.

RIM is facing tougher competition than ever before, from a range of suppliers. Until now, competition in the mobile email market was nothing to fear for RIM. Most competitors were small start-ups with less attractive offerings and limited resources. Times have changed, however, and RIM will now have to compete with powerful players that are interested in making sure BlackBerry doesn't become 'the Windows of wireless email'. One of these is Microsoft, which entered the push email market in 2006; the other is Nokia, which launched a competing product and acquired Intellisync, the company that supplied RIM with desktop synchronisation software. Unlike RIM's other competitors, Microsoft and Nokia are both large, rich and influential companies.

Microsoft and Nokia already have partnerships with operators, and both are already involved in the handset value chain. This does not mean that RIM's market share will dwindle over the coming months, but the company may be under pressure to lower the cost of its products and services in the future. Both Microsoft and Nokia are positioning themselves as cheaper alternatives to RIM, responding to demand in the market for an affordable, mass-market mobile email offering. As such, Microsoft and Nokia may not be directly competing with RIM, although they have already started a price war by diverting the attention of customers away from the functionality of individual products to their respective price.

BlackBerry is sometimes perceived as a high-end product that is not cost effective for enterprises wishing to deploy email across a large part of their organisation. Perhaps as a result, almost all RIM's competitors now position themselves as cheaper equivalents of the BlackBerry. Claims made by competitors can easily be squashed today, because there is no data supporting them. RIM itself points to third-party studies such as the Tolly report which compares the cost of the BlackBerry Enterprise Server versus Microsoft Direct Push, and shows that these perceptions are invalid.



Overview

An oddity in a fragmented market

In December 2007, RIM reported it had 12 million subscribers, most of which are enterprise users, although a large proportion of new users are now 'prosumers' (professional consumers). BIS users now represent over 30% of the total subscriber account base and RIM estimates that 34% of its user base is accounted for by non-enterprise customers.

The main reason why RIM is difficult to label or pigeonhole as a supplier is that it is both a hardware and software provider. Some even say that it is also a service provider. This makes RIM unique, but also an oddity in a fragmented market. Whilst almost all other suppliers struggled to discover a horizontal mobile enterprise application with a large enough addressable market, RIM spotted an opportunity that is still the largest in the market in terms of end users.

Hardware is by far the company's main source of income, accounting for approximately 70% of its total annual revenues. In contrast, software accounts for less than 10%. Despite attempts made over the past two years to be perceived as a software vendor, RIM's reputation now largely rests on its status as a device manufacturer. Nevertheless, RIM is one of the most important ISVs, and suppliers in general, in the mobile enterprise market.

North America remains RIM's main market in terms of revenue share, but the company is increasingly reliant on European and Asian markets for future growth. Launches in new markets such as China are crucial going forward and RIM reports that 33% of its subscriber base is now outside North America.

RIM continues to launch its service in new markets. It has already announced a number of future launches in key markets such as China, but it also needs to work on launching in smaller emerging markets such as Scandinavia and Eastern Europe. This is not an easy task, with smaller operators complaining that fees charged to operators are high. However, RIM has had some success here and over 325 networks globally now support BlackBerry.

RIM's products are primarily targeted at professionals and enterprise customers. In terms of customer demographics, BlackBerry has often been seen as an executive tool, although RIM is now capturing more of the prosumer market with new devices and services. The BlackBerry Pearl was a strong performer driving sales among prosumers, and launched with over 33 carriers across the globe. While RIM reported strong growth in its enterprise business in 3Q, the results in this quarter suggest that BlackBerry smartphones have crossed over from being primarily an enterprise product, to being marketed as a strong mainstream offering by RIM's partners. At the end of 3Q approximately 34% of RIM's subscriber base was non-enterprise.

Although wireless email is a purely horizontal application, RIM has close ties with the government sector, in the US in particular. Government is also becoming an



increasingly important segment outside the US. Users in Europe include the West Yorkshire Police and the Vatican.

Mobile enterprise offering

Four main elements

The BlackBerry offering includes four main elements. The integration between these and, in particular, the nested arrangement of address mapping between corporate mailboxes, operator-assigned dynamic IP addresses and RIM-assigned hard-coded device addresses, is part of RIM's competitive advantage. The four main elements are:

- the BlackBerry Enterprise Server (BES). The BES sits behind the firewall, inside the enterprise user's corporate IT domain. It is responsible for interfacing with existing in-house email servers such as Exchange, Lotus Domino and Novell Groupwise. Its main purpose is to map between the mailbox addresses on the corporate email system and the PIN ID, the unique factory-allocated address on each BlackBerry handheld. It also holds the encryption keys for email messages. With the Mobile Data Service (MDS) extension, enterprises may also leverage the functionality of BES to deliver data from third-party enterprise applications to BlackBerry devices
- the BlackBerry Infrastructure, also called the network operating centre (NOC). So far, the infrastructure consists of three servers (one for each global region) owned and operated by RIM. NOCs mediate between corporate-owned BESs and the mobile operators' networks. In particular, they map between PIN IDs and the IP addresses allocated by the network. These also enable a special case of 'BlackBerry roaming', which allows corporates with multiple sites across countries to use local SIMs but still have corporate BlackBerry devices within a single domain
- the mobile operators' data networks (including Mobitex, EDGE, GPRS, 3G and EV-DO). A dedicated provisioning system enables user profiles for BlackBerry services and communicates this provisioning information to the BlackBerry infrastructure. Roaming devices connect to the BlackBerry infrastructure via an APN on their home network – even though the visited network may also have an APN connection to the BlackBerry network
- the BlackBerry device. This holds the PIN ID, IMEI and (via the SIM card) the IMSI and MSISDN. It also holds, in a secure area, the encryption key needed to decrypt messages. Security is maintained through a number of discrete mechanisms. One of these is the storage of 3DES/AES encryption keys on the device and at the BES, but not at any of the points in between. This means that although the messages do flow through elements that aren't part of the corporate domain, they are always encrypted. Another is authentication between the BES and the BlackBerry Infrastructure. BlackBerry's encryption has been awarded FIPS 140-2 validation, a requirement for many government contracts in the US.



RIM's software is designed to be easy for the enterprise gatekeepers (usually purchasing or IT departments) to deploy, offering simple enterprise server or desktop software integration solutions. These allow users an easy upgrade path as their requirements grow, without placing heavy financial and resource burdens on the enterprise. The solution is also designed to remove the need for any additional software, which is something that enterprise customers have come to appreciate.

BlackBerry Enterprise Server (BES)

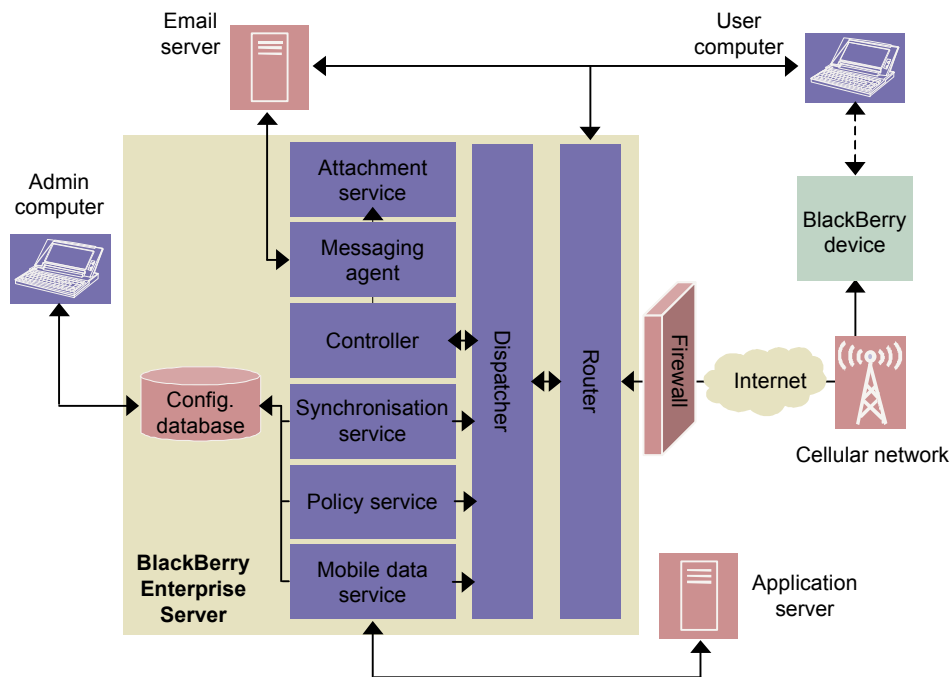
Developed over seven years, the BES software is now in version 4.1.4. BES is a middleware platform optimised to deliver email and PIM information to a mobile device as part of a complete package. This means that this product is designed to remove the need for enterprises to purchase or install additional software.

BES comes with the security, administration, set-up and maintenance software required to deliver emails to BlackBerry devices. The security and administration package is designed to give full control over BlackBerry devices and all the data they contain. IT staff can remotely activate the device, interrogate it, enforce security policies and wipe it. This set of functionality, along with the encryption of the data, is the foundation of RIM's reputation as the supplier of the most secure email product.

The latest version of the product adds a number of functionality elements that put BlackBerry in line with competing products as far as wireless synchronisation is concerned. In particular, it removes the need for desktop synchronisation, a piece of the solution that was provided by a third party, Intellisync, which is now owned by Nokia. It also provides improved attachment handling.



Figure 1 **Components of the BlackBerry Enterprise Server**



Source: RIM

BES consists of individual services or components that provide the functionality to monitor services and processes, route, compress and encrypt data, and communicate with the wireless network, as shown in *Figure 1*.

Components do not have to be deployed on a single server, and can be reused for deployments involving more than one BES. Companies can opt for a distributed architecture by running the BlackBerry router, manager, configuration database and attachment service on individual remote computers connected to several BESs.

BES is available in several pre-integrated versions:

- BES for Microsoft Exchange
- BES for Lotus Domino
- BES for Novell Groupwise.

Each version is also packaged and priced differently for RIM's three main target markets:

- small and medium-sized businesses
- enterprises
- government.



Mobile Data Service

Mobile Data Service (MDS) is a service available with BES. It provides access to corporate data beyond email and PIM. The BES and the MDS perform the following functions:

- handheld requests management – manages browser and Java application requests to provide handheld applications with access to HTTP, HTTPS or TCP content on the Internet and intranet, using the same channel that is used for BlackBerry email
- push requests management – MDS handles requests between the device and an application server located behind the firewall. MDS allows applications to push data based on the recipient email address, and to push data to custom handheld applications or to the BlackBerry browser, browser cache or message list. MDS also defines the length of time that push data persists
- authentication – MDS authenticates users. It can also proxy user credentials and cache cookies for a defined period
- access control – can assign roles to handhelds and push initiators that control their activity using the Mobile Data Service. It can also limit push requests from push initiators to specific BlackBerry users, and restrict the servers that users can access
- corporate proxy servers bypass – many corporate proxy servers do not permit internal traffic. The MDS enables the provision of access to internal content by supporting a proxy exclusion list, which defines internal URLs that the MDS routes directly instead of going through the corporate proxy server, using a proxy auto-configuration (PAC) file
- content rendering – MDS converts data to a format that can be interpreted and displayed by the handheld. It also compresses and optimises the content for viewing in the browser provided with the BlackBerry handheld, to reduce network traffic.

BlackBerry for Voice

RIM's strategy moving forward is to be able to wirelessly-enable both data and voice, offering an end-to-end secure solution for the enterprise. In May 2007 RIM announced its move into enterprise voice mobility with the launch of its 'BlackBerry for Voice' solution. This is based on the Ascendent Voice Mobility Suite, a software-based PBX extension product which allows enterprises to push voice calls and extend corporate PBX features to users of mobile handsets. RIM acquired Ascendent Systems in March 2006 and the subsidiary is now closely aligned with all RIM operating groups. At the time of the acquisition Ascendent's voice mobility product was already a mature product with over 100 installations (the current version is 4.5) and the company had distribution relationships with several carriers; Sprint Nextel is the most significant of these although other announcements are anticipated. The voice functionality – the ability to be reached anywhere from a voice perspective – will be integrated into the BlackBerry



products. The solution works with both IP and TDM PBXs and supports multiple (PBX) vendors. It can also support both wireless and wireline carrier infrastructure.

The key components of the Ascendent voice mobility suite are:

- mobility: one number, one voicemail; PBX functionality extended to mobile; seamless call mobility; any PBX, any network, any phone
- notification: broadcast notification to mass groups with integrated polling & conferencing
- conferencing: get-me; meet-me; join-me
- continuity: "Business As Usual" voice continuity in the event of outages or emergencies. The user can set up redundant mobility server in case some kind of outage with PBX. There is also carrier redirect to other mobility servers to ensure that calls continue to be routed to mobile devices.

The integrated client for Ascendent 'Desk Phone To Go' provides corporate desk phone features out to any BlackBerry device. BlackBerry users will be able to have one number which, when called, will simultaneously ring with the desk phone. There is also a single voicemail box and integration with the address book. The emphasis is on intuitive design so that BlackBerry users will find the voice solution easier to use than standard desk phones. When receiving an incoming call, BlackBerry users will be provided with desk phone features e.g. extension number for internal callers. They then have full call control and can transfer to colleague, external user, conference, add someone to call etc. The solution is totally integrated with all complexity managed out of server side with admin, who can extend control over mobile device – dialling preferences etc – in a similar way to BES admin for email. It is possible to determine which calls have to travel through PBX even if initiated from a mobile device.

Version 4.5 includes an integrated BlackBerry client, but without this client Ascendent also pushes features to other devices. Ascendent will continue to support any type of device (the difference is that desk phone features are accessed using touch-tone commands, not an interface.). The plan is to integrate the voice mobility functionality into the BES. Today, handheld device, BES and the Ascendent Server are required to make this solution work, along with the PBX. The integrated client will work with BlackBerry handhelds with Java 4.1 or higher, BES 4.1 or higher, Ascendent Voice Mobility Suite 4.5 or higher.

The main channel focus is the carriers; these are likely to be the same channels as those for the BES. In June 2007 Verizon Business announced its PBX Mobile Extension would be using the Ascendent Voice Mobility Suite.

RIM believes interest in voice mobility suite will be particularly strong in some sectors:

- financial services (the product has call recording features which will be attractive in this sector)



- professional services, such as legal and healthcare, where reachability is a priority and the ability to mask the mobile number from the client/patient as well as client billing capabilities will be useful
- federal government.

Devices

RIM announced a number of new devices in 2007, including the BlackBerry 8820, which has WiFi and GPS functionality, and the 8320 (Curve) and 8120 (Pearl) with WiFi. There are now WiFi versions of three BlackBerry handsets, the 8820, the Pearl 8120 and the Curve 8320. The new BlackBerry Curve 8320 with WiFi/UMA was included in T-Mobile's Hotspot@Home TV advertising this quarter. Orange France also introduced the 8320 with UMA support this quarter and supported the launch with a national advertising campaign. RIM believes that WiFi-enabled BlackBerry devices are gaining traction due to the cost savings and coverage benefits achieved through WiFi/UMA service.

BlackBerry Connect software enables other manufacturers' devices to use BlackBerry BES or BIS services using those devices' native email and calendar applications and functionality. It is supported by the major device vendors including HTC, Motorola, Nokia, Palm, Samsung and Sony Ericsson. BlackBerry Connect is now available on over 45 devices including the HTC Tilt, the Motorola Q9h, and the Nokia E51. BlackBerry Connect launches in EMEA during 3Q include the HTC Touch and HTC Touch Dual, as well as the Nokia E51. RIM announced in December 2007 that BlackBerry Connect is now launched in over 65 countries and over 100 carriers globally are supporting BlackBerry Connect.

In 2007 RIM also introduced the BlackBerry Application Suite, a downloadable software application, based on BlackBerry device software v4.2, for Windows Mobile 6.0 powered devices that provides users with a 'virtual BlackBerry'. The users experience standard BlackBerry applications (phone, email, text messaging, browser, instant messaging, organiser and BlackBerry Maps). The application can connect to BlackBerry services via BES and BIS and supports the BlackBerry MDS. It leverages the BlackBerry security model and IT policy support. The new BlackBerry Application Suite for Windows Mobile 6 is being trialled by several enterprise customers in the UK and Germany.

RIM says that Virtual BlackBerry is not intended to replace BlackBerry Connect. In addition to Microsoft, RIM expects support for Garnet OS (formerly Palm OS), Symbian and proprietary operating systems to follow in subsequent versions.

Application development

Over the past few years, BlackBerry has grown and developed a portfolio of Java- and browser-based applications, many of which are enterprise applications, through its developer community. RIM continues to add application partners to its developer community - in 2Q 2007 it added 50 new partners. The BlackBerry developer community includes high-profile enterprise ISVs such as Oracle and IBM,



as well as a range of specialist mobile application vendors such as Pyxis Mobile, which specialises in applications for the financial sector.

Small business, SoHo and consumer offering

Key to growth

Success in the SME, SoHo, prosumer and consumer market will be key to RIM's future growth. As well as launching more consumer-oriented devices (the BlackBerry Pearl device has been particularly successful in this segment and the latest update sports a number of consumer-friendly features, such as improved camera & video), the company has made a number of announcements that are intended to support its move into this sector.

BlackBerry Internet Service

The hosted version of BlackBerry software - BlackBerry Internet Service (BIS) - is designed for individuals, rather than enterprise customers. It provides access not only to Exchange and Domino servers, but also to up to ten personal addresses (POP3, IMAP and ISP). BIS is carrier-branded. Functionality elements available with the service do not exactly match those available with a BES, but the product is designed with different users in mind. Many operators have launched BIS services, with some offering introductory pricing and pay-as-you-go tariffs aimed at attracting consumer customers. Examples are T-Mobile USA, which offers a BIS plan at \$9.99 per month and service, Bouygues Telecom in France, which launched the BlackBerry Pearl and Curve and offers unlimited email and browsing for €9 pm, and Telefonica in Spain, which launched a new BIS plan for €5 a month for up to 3MB of data.

BlackBerry Professional Software

BlackBerry Professional Software is a cut-down version of BES for small and medium-sized businesses, with up to 30 wireless users and costs \$499 for five users. It is installed on the same server as the email system, so doesn't require an additional server, and can be integrated with Microsoft Exchange or IBM Lotus Domino. Installation and management are simplified, for example through a simplified BlackBerry Manager Interface, wizards and pre-defined IT policy templates. It also supports BlackBerry MDS (Mobile Data System) for third-party applications developed for the BlackBerry platform.

BlackBerry Unite!

RIM launched BlackBerry Unite! in 4Q 2007. This is software platform that allows small groups, such as small office or family to collaborate and coordinate activities. In addition to wireless email and web browsing, BlackBerry Unite! software provides groups of up to five users with mobile access to shared calendars, photos, music, documents and other desktop content through BlackBerry devices.



Telefónica announced a free BlackBerry Unite! Service in November 2007.

Built for BlackBerry

Built for BlackBerry is a website which offers downloadable applications for BlackBerry users. It offers games, sport and lifestyle applications for consumers, as well as news, navigation, weather and travel applications that would also be of use to business users.

This quarter RIM launched the Facebook application for BlackBerry smartphones that enables mobile access to Facebook.

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