ANDREWSEYBOLD

Pushing It to the Streets
(or to the Device)

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Executive Summary

Research In Motion (RIM) has made its name by providing email to wireless devices for more than ten years. It has made wireless email available around the globe and has pioneered a number of the technologies that are needed to provide seamless integration between corporate and desktop email systems and BlackBerrys in the field.

Over the years, it has perfected a technology known as push. Push is the ability to send an email out to a BlackBerry as soon as it is received by an email server rather than having to wait for the Blackberry to poll or pull information from the server based on a preset schedule. The advantages of push are many. Primary among these are that the BlackBerry does not have to wake up and ask the server if there are any new emails, and that it delivers email to the BlackBerry in near real time. RIM also added the ability to push out calendar appointments as well as address book updates and to synchronize the two functions over the air, again, using push technology. These push capabilities are originated at the BlackBerry Enterprise Server or in the BlackBerry desktop software and the push requests are then sent to the RIM servers which, in turn, send them on to the BlackBerry.

As the BlackBerry attracted outside software developers and the number of available applications increased, many had to revert to pull technology in order to update information for the BlackBerry customer. While this method has proven to be reliable, it tends to put a strain on the smartphone batteries, and many times the application is told that there are no data updates so, in essence, the request was unnecessary. In addition to draining the BlackBerry battery faster, pull also increases the amount of data that needs to be sent across the wireless network and, depending on the customer's data plan, this can result in additional monthly data fees.

In response to the growing number of applications that rely on updated data or alerts, RIM will be offering push capabilities to its independent software vendors who are members of the ISV Alliance program. This new capability is available now, and will make smart BlackBerry applications even smarter and will result in a new next generation of applications for these devices. Once an application using push technology has been installed on the BlackBerry, it will communicate back to the applications server where it will be activated.

From that point forward, if there is any new data or if there are new alerts for that specific BlackBerry, or a fleet of BlackBerrys with the same application, the information will be pushed out to them automatically, without the customer or the BlackBerry having to take any specific action. This will enable near instantaneous updates for news, weather and sports applications, flight schedules and stock alerts, as well as a host of other types of information to be passed along to the BlackBerry as they are available.

Corporations have had access to specific types of push applications for their BlackBerrys for some time now, but this new service is aimed at consumer applications that are either already available or that will be forthcoming. But the use of the term "consumer" can be somewhat misleading since this new technology can be used by any application from an ISV Alliance member that resides on a BlackBerry. Since the line between business and consumer usage of BlackBerrys is blurring, other applications in addition to news, weather and sports will become available with push built in. Travel, stock, event alerts, games and many more applications will be able to take full advantage of this new push capability.

With the addition of push services for non-RIM applications and services, RIM has now extended the most powerful of all of its technologies—push delivery—to include not only the RIM email and PIM applications, but also any third party application that is designed to take advantage of push moving forward. Further, RIM has built in the same type of data encryption it has been using to keep email and other corporate information secure across the networks along with a number of features that make push applications not only easy to use, but that will permit one-to-one push and alerts as well as one-to-many. Push for applications has been architected differently and does not require a BlackBerry Enterprise Server (BES). Push functionality is still provided by RIM's main servers, but without the extra step of the BES, which is required for corporate email.

The introduction of RIM's push technology for non-RIM developers is the final step in making the BlackBerry family of devices the easiest to use and the best choice for those who need information as it changes, only when it changes, as well as their email, calendar and other PIM functions. This final step puts RIM, once again, ahead of its competitors. RIM is leading the trend toward smarter devices that make use of smarter networks with smarter information servers in the background to extend the power of the BlackBerry well past wireless email.

Pushing It to the Streets
(or to the Device)

In 1999, Research In Motion (RIM) in Waterloo, Ontario, Canada, revolutionized the world of wireless email. A number of us were sending and receiving email using a variety of wireless devices including the RIM Inter@ctive 2-way pager, but we had to have two email addresses, one for our desktop and one for the wireless device. The first BlackBerry, along with the desktop software and later the server software (referred to as a BES), transformed the email world by enabling us to send and receive emails on a small wireless device. The emails were received by our desktop or server email system and sent on to the BlackBerry. When we responded or composed a new email, the from address was our desktop email address and gone for good was the pain of having dual email addresses and not knowing where your most important messages were waiting for you.

Just as important, or perhaps more important, was the fact that when RIM implemented the BlackBerry service, it decided that when a new email arrived it would be pushed out to the BlackBerry instead of having the BlackBerry periodically request anything new from the server. Not only did this enable near real time for receipt of email, it also made the network coverage appear to be better than it was. This was because every time a BlackBerry re-entered coverage, any email that had been waiting was automatically sent out to it. Even in the late 1990s, many of us realized the importance of this method for connecting to a BlackBerry. It improved the battery life and provided assurance that you would not miss any of your email.

The early BlackBerry devices only pushed out email. Our calendar, to-do list, notes and contact lists were synchronized to the BlackBerry from our desktop when we inserted the BlackBerry in its cradle. This worked and most of us were so happy to have our email pushed to us and to be able to answer as though we were sitting in front of our desktop computer, that we put up with having to connect to the desktop every time we needed to update the rest of our PIM information. But as RIM moved forward with newer devices and then devices that were combined with cell phone capabilities in 2001, it extended its software to provide over-the-air synchronization and push updating of all of our PIM functions. Our BlackBerry no longer had to be tethered and it was up to date all of the time.

The first non-RIM developed applications began to show up on BlackBerry devices in 1998, and today there are thousands of applications, both for business and consumers, available over the Internet or directly from the BlackBerry store. Many of these applications, such as stock trading programs, weather updates, flight information updates and many corporate applications need access to updated or

changed information on a regular basis. There was no way to push this information out to the BlackBerry, so these applications had to use a type of updating known as pull or fetch. The application periodically connects the BlackBerry to the network and server and requests information updates.

This method works and provides updates in a fairly timely fashion, but it also drains the battery and uses network resources even when there is no new information waiting for the application. More and more applications are being introduced for BlackBerrys and many of them require information updates. It is likely that a power user could be running three or four applications that will all be pulling information down to the device and this will further drain the battery. Further, rather than pulling data to the device, some BlackBerry applications make use of text messaging for alerts. Text messaging can add to the cost of a user's monthly bill, and requires an action on the part of the user—usually opening the application and receiving the update data.

Since 2001, RIM has had the ability to enable corporations to push out information to their own BlackBerrys. This service for corporations has been well received, but until now those making use of consumer applications have had to employ text alerting or pull in order to receive information updates to BlackBerrys in the field.

The Solution

Just as RIM started by pushing email out to the BlackBerrys and then added the ability to synchronize and push calendar, contacts and other PIM data to the BlackBerry, it is now enabling ISV (Independent Software Vendor) Alliance members to provide push capabilities within their own applications. This is the final step in expanding the role of the BlackBerry beyond email and PIM and providing push technology to non-RIM applications, which are becoming more prevalent.

This latest addition to RIM's developer platform is a very important next step in the development of BlackBerry devices and services. Being able to write applications that will be able, for the first time, to actually push data and alerts out to BlackBerrys is the final step in the evolution of push technology that RIM pioneered ten years ago.

Many different types of applications and services can benefit from having true push services. The applications that will be first to market are a good indication of the breadth of interest this new push capability is creating in the developers' community. The launch partners for the announcement include CNNMoney (news), TIME magazine (news), The Hockey News, WeatherBug (global weather), Wallace Wireless (business to business paging and forums), Handmark (games and media), MTM Technologies

(healthcare in Argentina), BBVA Stocks (a bank in Spain) and Wesafterdark/DevelopmIQ (social networking and entertainment).

There will be many more to come, there is no doubt of that, and many applications in use today will incorporate the push API (Applications Programming Interface) in the future. In fact, any consumer application that require alerts, notifications, event-driven systems and data updates are perfect candidates for this new capability. I also expect to see a number of social network applications released in short order. Today, most of these applications rely on text messaging—push will add a great deal of functionality to all of them.

The way in which RIM has designed its API for push also adds some flexibility that is not available in the polling or pull world. Because the push data is directed at the PIN ID number of the BlackBerry rather than the telephone number, push messages and alerts can be sent to a single device or a list of devices (list of PINs), and can also be broadcast to every BlackBerry with a specific application installed on it. RIM has also built in delivery notifications that can be used to verify that the information that was sent was actually received by the BlackBerry application (text messaging does not provide this). There are several options for notification including verification that the message reached the applications or the message reached the device, or it can be turned off so no notification is received.

The system is designed to work much like the existing push email and PIM service. The applications server will send a request to the BlackBerry data services where it will be acknowledged and sent on to the BlackBerry. If a notification of delivery is requested, the BlackBerry will send back an acknowledgement to the BlackBerry push server which, in turn, will send it to the server that initiated the push request. In addition, the push requesting party can query the status of the push message for up to 24 hours after it was sent, and if the message was sent to multiple BlackBerrys, the query will return a list of all of the devices and the status of the message.

And the query capabilities don't stop there. You can push a query to a BlackBerry and it will return the model number, device software version, screen resolution and additional information that will be helpful for troubleshooting and customer service issues. The system is also designed to prevent spam from being sent to devices and, of course, makes use of the existing RIM over-the-air security encryption. The push server can only send alerts, notifications or data to devices that have its specific application loaded on it, further ensuring security and another layer of protection against spam.

Setting up a push-based application for a customer appears to be very straightforward. The application is loaded onto the BlackBerry and establishes a connection with the software provider's push server via the BlackBerry servers and the application is up and running. Multiple push applications can be installed and working on a single BlackBerry device and, as mentioned, the updated information is pushed out to

the device. The beta version of the Hosted Data Push Infrastructure will be available during the fourth quarter of this year and should be in final production early next year.

The Advantages

There are many advantages for the ISV community including the ability to push information out to customers in real time as information changes, and it will enable many new types of applications. Because the Push API makes use of standard protocols, the developer learning curve will be shorter, and this API has been seamlessly integrated with other BlackBerry development tools. In many cases, because the application no longer has to use text or pull technologies to retrieve new information, the developer should be able to enjoy higher profit margins.

There are a number of more technical details available on the RIM ISV Alliance developers website that will be of great value to the ISV community, but they do not need to be covered in this paper. The end result is that RIM will be extending its push technology to applications developed by ISV Alliance partners for use with existing applications that today use pull for updates, or for new applications that will be built from the ground up. This is the first time RIM has permitted its patented push technology to be used by third party developers and as far as I am concerned, it adds real value to the BlackBerry I carry.

I started out with one of the first BlackBerrys and have had one on my belt ever since. I was very pleased to have my email pushed out to my BlackBerry device, more pleased when my calendar and phone book were added to the push, and now I am looking forward to a number of applications that I use on a regular basis becoming push capable. While this new push service is billed as being for the BlackBerry consumer audience, it will be of great value for any BlackBerry user.

BlackBerrys were first introduced into the corporate world as a business tool, but since then, the line between being a business customer and a consumer has blurred. Many of us use our BlackBerrys for both business and consumer applications, and many of us who work for small companies and use hosted BlackBerry services don't already have the advantage of push applications. So while the applications I presently use can be considered business applications, they will be greatly enhanced by being able to push updates on my airline travel and stock portfolio (what little is left of it), and I will probably try one or more of the news applications that will become available. Being able to have news I am interested in pushed to my BlackBerry when something important happens would make it easier for me to keep up with what is happening in the world regardless of where I am. Others who currently use their BlackBerrys only for business are likely to download games, sports, news and many of the other applications I expect to become available soon after this push service goes commercial.

Conclusion

When I was shown the beta of the first BlackBerry in the late 1990s, I recognized that RIM had solved a problem that the early wireless email community was struggling with—the two mailbox issue, which was keeping mainstream corporate users on the sidelines. RIM's solution provided a single email system that worked from a desktop and while mobile. Further enhancements followed when RIM added calendar and contact push and updates.

Since then, the BlackBerry has become a platform of choice for many developers and a large percentage of BlackBerry users have several applications installed on their device that they use on a regular basis. I think that with the release of Hosted Data Push Services for Consumer Applications, RIM has taken another giant step forward and provided the developer community with new tools to make their applications more compelling to BlackBerry customers. BlackBerry users now have even more reason to use the BlackBerry for more than simply resending and receiving emails.

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