

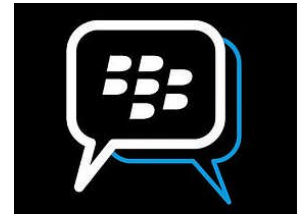
BlackBerry Messenger Down for Days

October 2011

***What did one BBM say to the other?
Nothing.***

The above statement is one pundit's description of RIM's BlackBerry Messenger service (BBM) after it went dark across most of the world for several days in October, 2011.

The outage could not have happened at a worse time for Research in Motion. Its stock was depressed after a disappointing earnings report. It was losing market share to Apple's iPhone and the raft of Android-based smart phones. Apple's iMessenger, a direct competitor to BBM, was set to launch. To make matters worse, BlackBerry services had just recovered from another severe worldwide outage in September.



Research in Motion

RIM (www.rim.com), located in Toronto, Canada, introduced its BlackBerry service in the mid-1990s. The BlackBerry rapidly became the corporate darling for cell phone and texting service and dominated the business sector for years. BlackBerry services now have 70 million subscribers worldwide.

Then came smart phones. RIM was late to enter the smart-phone race. Though businesses continued to rely heavily on BlackBerry services, RIM faced significant competition from more entrenched products such as Apple's iPhone and the myriad smart phones based on Google's Android operating system. Consequently, RIM experienced problems with attracting new subscribers and retaining current users.

RIM recently entered the tablet race but has sold far fewer PlayBook tablets than it had anticipated. It missed its quarterly revenue goal for its third quarter, and its quarterly profits plummeted by 58%. Its market share has dropped from dominance to the single digits. RIM stock has fallen from a 2008 high of \$144 per share to a recent low of \$20.

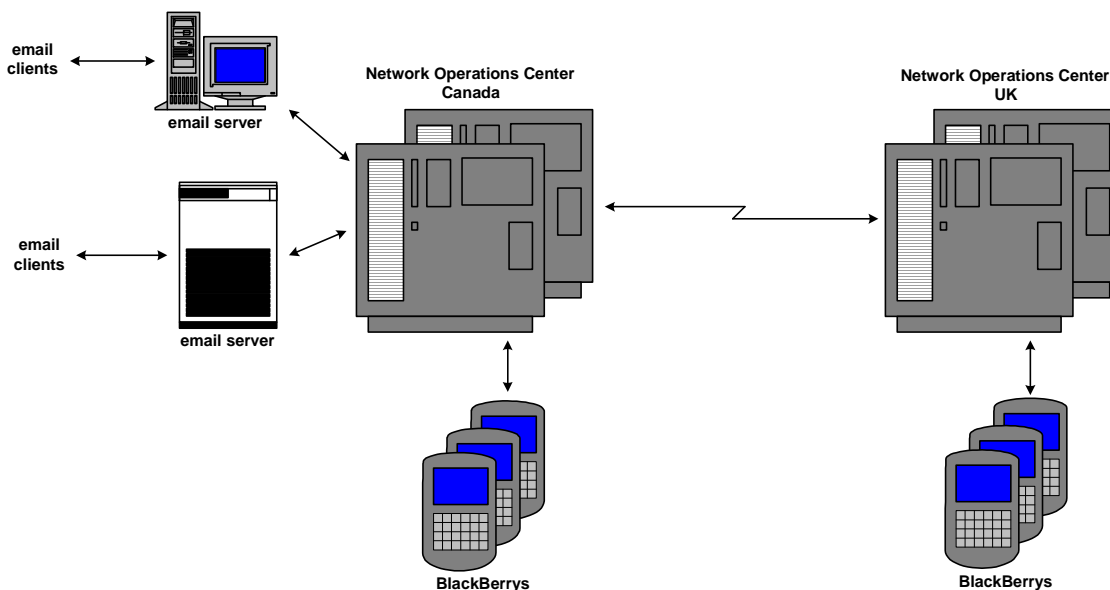
RIM cites lower demand for its products as the reason for its slumping profits.

The BlackBerry Network

The BlackBerry network comprises two Network Operations Centers (NOC), one in Canada and the other in the UK. Each NOC acts as a hub, routing email messages between the BlackBerry handheld devices and corporate email servers and email accounts such as AOL and Yahoo.

The NOC in Canada serves BlackBerry subscribers in North America and Asia-Pacific. The NOC in the UK serves subscribers in Europe, Africa, and the Middle East.

BlackBerry Enterprise Servers receive emails from the various email subscribers and route encrypted emails to the appropriate NOC. The NOC authorizes users and forwards email messages to the appropriate BlackBerrys.



Likewise, messages received from the BlackBerrys are routed either to the destination email servers or to other BlackBerrys, as appropriate. To accomplish this, each NOC interfaces with multiple mobile networks to get near-worldwide coverage.

The BlackBerry network was designed in the mid-1990s when public cellular networks were in their early stages. The network is unique among handset makers, as it compresses and encrypts data before pushing it to BlackBerry devices via carrier networks. Apple and others rely on the carrier networks to handle all routing and delivery of content.

The BlackBerry Messenger Service

To increase market penetration, RIM introduced its BlackBerry Messenger service in 2008. The BBM service allows BlackBerry users to send free text messages to other BlackBerry users.

With BBM, users can send and receive text messages of unlimited length. The sender receives confirmation that his message has been delivered and read. Friends can be added easily, and text messages can even be sent to friends who are not BBM subscribers. Photos, videos, and voice notes can be swapped. Groups can be formed to provide dedicated chat sessions in which multiple BlackBerrys communicate in a single session.

BBM has become quite popular among young consumers. This acceptance has partially compensated for RIM's losses in the corporate marketplace.

The Precursor

A month before the October outage occurred, storm clouds gathered over the BlackBerry network. On September 16, 2011, subscribers in Canada and Latin America suffered partial outages. Sporadic tweets from other countries such as England and Egypt indicated that the problem might be even more widespread.

RIM kept its users informed via the relatively informationless tweet:

“Some Canada and LatAM customers report BBM issues. Our support teams are investigating. We apologize for any inconvenience.”

Service was restored the same day.

The Outage

Monday, October 10th, looked like a repeat of the outages that had occurred during the previous month. BBM services were reported to be down throughout the Middle East, Europe, and Africa. Again, RIM acknowledged the outages and reported that they were working to correct the problem.

On Tuesday, the outages were not yet corrected. Instead, they spread to South America and Asia. Canada and the United States were engulfed by the crisis on Wednesday. The outage affected text messaging and Internet access but not regular telephone service. BlackBerry had lost its core services such as BBM, email, and web browsing. For these three days, millions of users throughout the world were without the BlackBerry services upon which they depended.

Finally, on Thursday, service began to be restored. It took another day or two to clear the backlog of messages and emails. BlackBerry was totally out of service for almost four days and then suffered additional days of slow service until things returned to normal.

The Cause

As seems to be characteristic of RIM, it was initially tight-lipped about the outage and downplayed just how widespread the problem really was. Finally, on October 11th, RIM released the following statement:

“The messaging and browsing delays being experience by BlackBerry users in Europe, the Middle East, Africa, India, Brazil, Chile, and Argentina were caused by a core switch failure within RIM’s infrastructure. Although the system is designed to fail over to a backup switch, the failover did not function as previously tested. As a result, a large backlog of data was generated, and we are now working to clear that backlog and restore normal service as quickly as possible. We apologize for any inconvenience, and we will continue to keep you informed.”

The problem was caused by a failover fault in its European NOC that spread to other network nodes. It was apparently the large backlog of email and text messages that overflowed to other switching nodes that slowly overwhelmed the network and that spread the outage slowly over several days to the rest of the world.

The Fallout

This outage was severe enough that it made the network news. TV commentators on CNN and MSNBC reported the BlackBerry failure. The CEO of RIM made a TV appearance to prove how seriously the company was taking the outage.

To add insult to injury, Apple's iMessage, a strong competitor to BBM, launched on the Wednesday of the outage.

The week's disruption was the worst since a BlackBerry outage swept North America two years ago. This most recent outage may have damaged RIM's once sterling reputation for secure and reliable message delivery - perhaps its No. 1 selling feature.

Even before the week's disruptions, many companies had started to balk at paying a premium to be locked into RIM's service. Some were allowing employees to use alternative smartphones, particularly Apple's iPhone, for corporate mail. The outage could accelerate this trend, eroding RIM's market share even further.

The corporate defections are making a big software transition even more crucial to RIM. The company is getting ready to shift its line of BlackBerry smartphones to the new central operating system first used in the poorly received PlayBook tablet. Without a successful shift, analysts fear, RIM may never regain the market share lost to the iPhone and to devices powered by Google's Android operating system.

Lessons Learned

This outage paralleled a similar outage in April, 2007, when a deficient software upgrade took down the Canadian NOC; and the backup system could not be brought into service.¹ BlackBerrys were down for a half day. Less than a year later, in February, 2008, the BlackBerry service went down for several hours because of an upgrade gone wrong.² Again, in December, 2009, BlackBerry service was up and down for over a week as RIM tried to correct another bad upgrade.³

These failures have a common thread – testing. Improper upgrades that take down a system can only be attributed to inadequate testing of the upgrades. In addition, before attempting any upgrade, there should be a fallback plan that will allow a bad upgrade to be backed out.

Failover faults, as in this most recent outage, are also often a function of inadequate testing. Testing failover of systems as large as the BlackBerry Network Operating Centers is a complex, expensive, and risky undertaking. However, if proper periodic testing is not done, the organization is depending upon faith and hope that the backup will come into service when needed. These are not the attributes on which one should bet the enterprise.

Finally, as pointed out in the other *Availability Digest* articles concerning BlackBerry failures, RIM has consistently avoided transparency when it comes to its failures. As opposed to services like Amazon and Google, where outages are fully explained, RIM keeps outage details close to its vest. It is even reluctant to inform users as to the outage status as it unfolds. Others have found that users are much more forgiving and loyal when there is good communication with them during and after an outage.

¹ [BlackBerry Gets Juiced](http://www.availabilitydigest.com/private/0205/blackberry.pdf), *Availability Digest*; May 2007.

<http://www.availabilitydigest.com/private/0205/blackberry.pdf>

² [BlackBerry Takes Another Dive](http://www.availabilitydigest.com/public_articles/0303/blackberry.pdf), *Availability Digest*; March 2008.

http://www.availabilitydigest.com/public_articles/0303/blackberry.pdf

³ [BlackBerry - OMG! It's Déjà Vu](http://www.availabilitydigest.com/public_articles/0501/blackberry_deja_vu.pdf), *Availability Digest*; January 2010.

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Acknowledgements

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RIM's BBM service experiences outage, *City News*; September 16, 2011.

Blackberry Messenger disrupted in the Americas, *Reuters*; September 16, 2011.

BlackBerry outage in Africa, Asia, Europe has poor timing, *Electronista*; October 10, 2011.

RIM breaks its silence and explains why services are down for millions of users, *Digital Trends*; October 11, 2011.

RIM: BlackBerry outages triggered by dead switch, bad backup, *Electronista*; October 11, 2011.

BlackBerry outages spread to the United States and Canada, *Digital Trends*; October 12, 2011.

Blackberry Messenger outage spreads to North America as rival iMessage launches, *geek.com*; October 12, 2011.

BlackBerry outage blamed on 'extremely critical' network failure, *CNN*; October 12, 2011.

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