

# Messaging Delays FAQ

## **New Item Discovery:**

### *How are new mail items discovered for each BlackBerry Enterprise Server platform?*

- The BlackBerry Enterprise Server for Microsoft exchange uses both UDP notification from the user Exchange Servers and a periodic mailbox poll, which occurs (on a random interval) between 15 – 30 minutes. Users do not have to request any data, as any new items that are discovered during the poll are pushed to the BlackBerry user proactively.
- The BlackBerry Enterprise Server for Lotus Domino uses a polling method to discover new mail items, which occurs every twenty seconds. Users do not have to request any data, as any new items that are discovered during the poll are pushed to the BlackBerry user proactively.
- The BlackBerry Enterprise Server for Novell Groupwise uses a polling method to discover new mail items, which occurs every twenty seconds. Users do not have to request any data, as any new items that are discovered during the poll are pushed to the BlackBerry user proactively.

### *How do I determine if UDP packets from the Exchange Server are not making it to the BlackBerry Enterprise Server? Is there a way to check this?*

If packet-level troubleshooting is required, a packet analyzer such as Network Monitor or Wireshark should be used to capture the activity at the applicable layer. This capture will enable administrators to view the UDP packets that were sent to and from the desired host, provided that the capture has been configured properly. The IP addresses of the servers that reside on either end of the conversation should be recorded proactively, to expedite the review of the capture.

### *If BlackBerry users are complaining about getting messages in batches every fifteen minutes, is the root cause of this always problems with delayed notifications?*

No, this is simply the most common root cause, due to the nature of the predictable symptom. Proper investigation determines the specific circumstances that precipitate messaging delays in each environment. The DelayedNotifications tool in the BlackBerry Enterprise Server Resource Kit can be used to qualify this symptom. The documentation for the DelayedNotifications utility (which includes how to interpret the output), as well as the associated download, can be found here:

[http://na.blackberry.com/eng/support/server\\_resourcekit.jsp](http://na.blackberry.com/eng/support/server_resourcekit.jsp)

## **Problem Isolation Questions:**

### *What questions should I have answered when messaging delays are reported?*

- Do I have a comprehensive description of the issue being experienced?
- What is the scope of the issue (how many users are affected and who are they)?
- Is redirection enabled properly for the affected users?
- Is the Messaging Infrastructure operating without issue (the mail servers)?
- What can the user ***not*** do successfully (they cannot send/they cannot receive)?
- If the user cannot send, have they reached their mailbox quota (ERR\_MAILBOX\_FULL)?
- Which Wireless Carrier are affected BlackBerry smartphones running on?
  - Is the Wireless Carrier having any interruptions in service?
  - If there are interruptions, who is expected to be impacted?
- Is the problem consistent or intermittent?

- Are there affected users on more than one Messaging Agent (if using the BlackBerry Enterprise Server for Microsoft Exchange)?
  - Which Messaging Agents have affected BlackBerry users?
- Are there affected users from more than one mail server?
- If one or more specific mail servers are responsible for all affected BlackBerry users, this could indicate a potential mail server issue and should be investigated)
- Are messages arriving on the BlackBerry in batches?
  - Is something done on the BlackBerry before the batches arrive?
- What are the PIN numbers of some affected users?
- Does PIN to PIN messaging work without issue?
- Are the accounts for affected users provisioning correctly?
- Have the affected users successfully completed an Enterprise Activation?
- Which BlackBerry Enterprise Server version are affected users on?
- What is the name of the BlackBerry Enterprise Server for the affected users?
- Were affected users moved recently from one BlackBerry Enterprise Server to another?
- Which version of the mail client are the affected users running?
- Which version of the mail server are affected user mailboxes on?
- Where is/are the BlackBerry Enterprise Server(s) that hosts the affected user(s) located?
- Are the affected users new ones or pre-existing ones?
- Has this problem always been encountered or is it an atypical experience?
- What is the true nature of the problem (outage or latency)?
- How long is the symptom lasting (sporadic or persistent)?
- Has the BlackBerry Enterprise Server just been restarted?
- Are affected users on one or more Messaging Agents?
- Do I have a RefId of an affected message?
- Collect BlackBerry Enterprise Server debug logs (Messaging Agent)
- Collect event logs (Application and System) from the user's BlackBerry Enterprise Server
  - The logs should be provided in native EVT format
- Collect event logs (Application and System) from the user's mail server
  - The logs should be provided in native EVT format
- Was the user's mail server modified/upgraded in the last 24 hours?
- Is the mail server attached to a SAN?
  - Is the SAN performing optimally?
  - What else is attached to the SAN?
- How is the mail server performing?
  - Can I get performance counters from an affected mail server?
- What is the RPC latency between the BlackBerry Enterprise Server and the affected Exchange servers (Exchange customers)?
- Are any network connectivity issues occurring in the environment?

***How much overhead does enabling MAPI statistics add to the BlackBerry Enterprise Server?***

Enabling MAPI statistics does not account for any significant load on the BlackBerry Enterprise Server or user's Exchange Servers. It represents an individual, lightweight MAPI call that is made to each user's mailbox, for the purposes of measuring the associated metrics.

***Which debug logging level should I use to collect information on messaging delays?***

It is suggested that customers use debug log level four (4) for most environments. The majority of the information that is needed to diagnose issues is provided at this debug log level.

***How long should we retain BlackBerry Enterprise Server debug log files?***

It is recommended that one week of debug log files be retained at customer sites, with two weeks being preferred. This practice allows customers and BlackBerry Support to review any historical data that may provide insight into the progression or catalyst of any problems that have occurred. There are customers

who do not physically destroy older data (or configure the BlackBerry enterprise Server to automatically delete the debug log files that are older than a specified date) but rather store the older debug logs offsite, in a company or commercial data storage facility.

***Can the HandheldCleanup and IEMSTest utilities be run against individual users and entire servers?***

The HandheldCleanup utility is MAPI-profile driven, so it is possible to specify an individual profile for a user, if desired. It's generally advantageous to review the current placement of all users at once however, since the utility does not take a significant amount of time to perform this check and it is a more efficient method to use if the users that have been moved to different mail servers are unknown. The HandheldCleanup utility is also MAPI-profile driven, so the profile for the affected user can be chosen and the requisite permissions test will occur against that user's account.

These two utilities can be found on the BlackBerry Enterprise Server, in the Utilities folder. To run these utilities, sufficient permissions must exist for the account being used for this task. If these utilities have been moved from their default location and cannot be located, they are shipped with the BlackBerry Enterprise Server and therefore can be found within the Tools folder in your installation files.

***Does running any of the utilities interfere with BlackBerry Enterprise Server operations?***

No, the utilities are non-invasive and exist to either audit/recognize configuration changes or permissions that are being used by a particular account.

***How do I use the MessageFlow utility in the BlackBerry Enterprise Server Resource Kit?***

When the utility has been downloaded, it can be run in any folder where debug logs exist or it can be directed to the appropriate path for the debug log files. The MessageFlow utility requires the BlackBerry Dispatcher, Messaging Agent and BlackBerry Router debug logs, to generate complete output, as it details the complete path of a message through the BlackBerry Enterprise Server. This output (Comma Separated Values format) enables users to see if any specific part of the path is responsible for delays, including their mail server. The documentation for the MessageFlow utility (which includes how to interpret the output), as well as the associated download, can be found here:

[http://na.blackberry.com/eng/support/server\\_resourcekit.jsp](http://na.blackberry.com/eng/support/server_resourcekit.jsp)

## **Relief Strategies:**

***What can I do to mitigate the impact temporarily, if the problem is internal?***

The symptoms that are being experienced may be relieved by taking some administrative action on the BlackBerry Enterprise Server or the user's mail server.

The BlackBerry Enterprise Server leverages user's mail servers to facilitate their BlackBerry messaging. In cases where the affected users reside on a taxed mail server and as a result, messaging delays occur, it is suggested that the performance issues on the mail server be addressed. Such issues can be diagnosed with tools available for the mail server and/or performance counters for the respective mail server application. If the problem includes the network communication between servers, it is suggested that the network connection be reviewed and optimized to acceptable levels.

If an affected user appears to be experiencing messaging delays due to their location on a congested or busy messaging agent, the user can be moved to a static messaging agent. For more information about this procedure, refer to BlackBerry Technical Knowledge center article KB12766:

[http://www.blackberry.com/btsc/search.do?cmd=displayKC&docType=kc&externalId=KB12766&sliceId=SAL\\_Public&dialogID=78593150&stateId=0%200%2078591075](http://www.blackberry.com/btsc/search.do?cmd=displayKC&docType=kc&externalId=KB12766&sliceId=SAL_Public&dialogID=78593150&stateId=0%200%2078591075)

Messaging delays that are being observed due to uneven user allocation across Messaging Agents can be relieved by changing the user distribution algorithm that the BlackBerry Enterprise Server uses to assign BlackBerry users onto Messaging Agents. For more information about this procedure, refer to the instructions at the end of this FAQ.

If the BlackBerry Enterprise Server has one particular Messaging Agent that appears to be non-responsive or problematic, the process which represents that Messaging Agent can be terminated and restarted. To accomplish this, follow these steps:

1. Determine the process for the affected Messaging Agent
2. Open Windows Task Manager by navigating to Start>Run, typing 'taskmgr' and pressing Enter
3. Ensure that Process Identifiers are being displayed in the Windows Task Manager. If they are not, click the 'Processes' tab and choose 'Select Columns' from the 'View' menu. Place a checkmark in the box beside 'PID (Process Identifier)' and click OK
4. Highlight the BlackBerryAgent.exe process with the PID that you would like to terminate
5. With the appropriate process highlighted, click the 'End process' button

If the BlackBerry Enterprise Server has multiple Messaging Agents that appear to be non-responsive or problematic, the steps outlined above may be followed for each affected Messaging agent. If all of the Messaging Agents are affected, the BlackBerry Controller service can be restarted. To accomplish this, follow these steps:

1. Open the Windows Services by navigating to Start>Run, typing services.msc and pressing Enter
2. Highlight the BlackBerry Controller service and click the 'Restart Service' button

If the affected users are being restricted from messaging due to mailbox quotas being exceeded, an administrator can perform one of the following actions:

- Increase the user's quota limit on their mail server
- Delete content from the user's mailbox (to reduce mailbox size)
- Request that the user delete or archive mail items until they fall within the quota limits

#### ***Why does it take so long after a reboot to restore messaging?***

When the BlackBerry Enterprise Server is rebooted or the BlackBerry Controller service is restarted, the BlackBerry Enterprise Server must perform a series of operations to start each user and to initialize them. This includes communication with each of their mailboxes on the mail server and checks to ensure that the user can function properly. The cumulative tasks can take an extended amount of time to complete, most often with highly populated BlackBerry Enterprise Servers that are servicing users with host mail servers in various geographic locations.

#### ***Where do I find the Exchange Best Practices Analyzer tool?***

The Exchange Best Practices Analyzer tool is designed for administrators who want to determine the overall health of their Exchange servers and topology. The tool scans Exchange servers and identifies items that do not conform to Microsoft best practices. It can be found here:

<http://www.microsoft.com/downloads/details.aspx?FamilyID=DBAB201F-4BEE-4943-AC22-E2DDBD258DF3&displaylang=en>

#### ***What can I do to mitigate the impact temporarily, if the problem is external?***

If users are being impacted by an outage at the wireless carrier network, the wireless carrier should be contacted for information on the problem and when it has been resolved. If the outage is due to scheduled maintenance, Research In Motion TSupport customers with Tx4 or Tx5 level contracts would have received advance notification of such events, so that they could be planned for, ahead of time.

If users are being impacted by an interruption of service at the Research in Motion network level, they can contact Research In Motion for information on the problem and when it has been resolved.

## **General Questions:**

*Which critical services on the BlackBerry Enterprise Server should be checked when users are experiencing messaging delays or an outage?*

The BlackBerry Dispatcher, Messaging Agent and BlackBerry Router debug logs are those which detail the complete path of a message through the BlackBerry Enterprise Server.

*We have been told that one BB user will cause as much IOPS on the Exchange server as 10 normal users. Is this true? If so why and can it be reduced?*

Research In Motion publishes a Performance whitepaper that describes the various tests that we have conducted against server environments. This white paper can be found here (select the appropriate link for the BlackBerry Enterprise Server product being used):

[BlackBerry Enterprise Server for Lotus Domino](#)  
[BlackBerry Enterprise Server for Microsoft Exchange](#)  
[BlackBerry Enterprise Server for Novell Groupwise](#)

*Is there a web portal that administrators can use to see if there are any queue delays with messages going to the wireless carrier?*

No, however the MessageFlow utility in the BlackBerry Enterprise Server Resource Kit can help to identify this symptom, as each checkpoint that the messages travel through is accounted for, via a series of acknowledgements and associated timestamps. The MessageFlow utility can be found here, as well as the associated download:

[http://na.blackberry.com/eng/support/server\\_resourcekit.jsp](http://na.blackberry.com/eng/support/server_resourcekit.jsp)

*Is there an automated way to constantly ensure that the BlackBerry users are able to receive messages?*

The BlackBerry Message Receipt Confirmation Tool in the BlackBerry Enterprise Server Resource Kit provides administrators with real-time verification that the BlackBerry Enterprise Server is sending messages to BlackBerry smartphones. The BlackBerry Message Receipt Confirmation Tool can be found here, as well as the associated download:

[http://na.blackberry.com/eng/support/server\\_resourcekit.jsp](http://na.blackberry.com/eng/support/server_resourcekit.jsp)

*Are there potential performance issues with running the BlackBerry Enterprise Server on a Virtual server? If so, what are they?*

The BlackBerry Enterprise Server supports VMWare virtual environments, so this configuration itself is not generally expected to be the sole cause of messaging delays. Information about the versions of VMWare that are supported can be found in the following BlackBerry Technical Knowledge Center article:  
[http://www.blackberry.com/btsc/search.do?cmd=displayKC&docType=kc&externalId=KB04405&sliceId=SAL\\_Public&dialogID=78521562&stateId=0%200%2078519330](http://www.blackberry.com/btsc/search.do?cmd=displayKC&docType=kc&externalId=KB04405&sliceId=SAL_Public&dialogID=78521562&stateId=0%200%2078519330)

*How can administrators track how many non-removable threads are in use?*

The amount of non-removable threads in use (before and after thread optimization) is written to the BlackBerry Enterprise Server debug logs. Here is an example of debug events 40413 and 40417, which include this information:

[40413] (07/30 10:41:46):{0x690} Before optimization: total number of worker threads 10, where 4 non-removable  
[40417] (07/30 11:09:04):{0x1470} After optimization: total number of worker threads 65, where 4 non-removable

***Where do you physically look to see locked threads and unlock them?***

Locked threads cannot be unlocked by direct user intervention. Locks are a natural occurrence in thread behavior and are necessary to ensure that a shared resource is protected while a thread is performing work against it. They only become problematic if threads enter a state where they are waiting infinitely for the resource to be freed, due to a problem. Capturing a memory dump of a process (with a debugger) will include core information about the locks and which threads are using/waiting for the resource. Some informational data regarding threads (and resources being used by specific processes) can be reviewed using the Sysinternals utility, 'Process Explorer':

<http://technet.microsoft.com/en-us/sysinternals/bb896653.aspx>

***Where can I find the message pre-population settings on the BlackBerry Enterprise Server?***

In the BlackBerry Manager, perform the following steps:

1. Click on 'Servers' under the BlackBerry Domain
2. Click 'Edit Properties' in the bottom pane (on the right-hand side)
3. Under the 'Properties' tree, select 'Messaging'
4. The right pane includes a subheading for message pre-population and the associated options

***Where is the ForceMsgPrepopOnActivation registry key located or supposed to be created?***

1. On the BlackBerry Enterprise Server, click **Start > Run**, type '**regedit**', and press **ENTER** to open the Registry Editor.
2. Go to **HKEY\_LOCAL\_MACHINE\SOFTWARE\Research In Motion\BlackBerry Enterprise Server**.
3. Right-click the **Agents** registry key, then click **New > DWORD Value**.
4. Type **ForceMsgPrepopOnActivation** as the new **DWORD Value** name, then press **ENTER**.
5. Double-click **ForceMsgPrepopOnActivation**.
6. In the **Value data** field, type **1**, then click **OK**.
7. Close the Registry Editor.

***Is the term messaging Agent specific to BlackBerry Enterprise Server for Microsoft Exchange?***

No, this naming convention exists across all BlackBerry Enterprise server platforms.

***Why is there not a process in place on the BlackBerry Enterprise Server to kill non-responsive threads, instead of having to restart the services every time?***

The BlackBerry Controller was introduced in BlackBerry Enterprise server version 4.0 for the purpose of providing proactive action in such conditions. Rather than have an administrator restart services, the BlackBerry Controller has the ability to perform this action in a number of conditions. There is further configurability for the BlackBerry Controller that allows an administrator to specify which actions should be taken and when they should occur.

***If I install the BlackBerry Enterprise Server Resource Kit on a machine other than the BlackBerry Enterprise Server, how will I test issues with the BlackBerry Enterprise Server?***

The BlackBerry Enterprise Server Resource Kit includes a wide range of tools to assist with the diagnosis and troubleshooting of a variety of issues. The tools that perform analysis of debug logs can be run in any folder and directed to where the debug log files exist. Therefore, running the tools on a server other than the BlackBerry enterprise server is inconsequential. The BlackBerry User administration tool installs a service on the BlackBerry Enterprise server for which the client can run elsewhere. The related administrative commands are relayed to the service on the BlackBerry enterprise server from the workstation where the command is executed.

***Are any of the tools in the BlackBerry Enterprise Server Resource Kit available in a GUI (Graphical User Interface) form?***

Not at this time, however this is being considered. Customers have been creating their own interfaces for the tools, as they are able to customize the interfaces to suit their environments. The most common approach is the development of a web-based application, to make calls to the specific tool that is needed (including the desired parameters).

***Is there a way to identify the top BlackBerry messaging users?***

The BlackBerry Enterprise Server Resource Kit includes the BlackBerry User Administration Tool, which has a parameter for generating user statistics for BlackBerry users. The BlackBerry User Administration Tool can be found here, as well as the associated download:

[http://na.blackberry.com/eng/support/server\\_resourcekit.jsp](http://na.blackberry.com/eng/support/server_resourcekit.jsp)

A custom database query can also be run against the BlackBerry configuration database, to ascertain the users who have the highest statistics in a number of areas. It is suggested to review the information in the UserStats table and review the information which is available to query. There is also a view named vUserConfigStats (which joins user information from both the UserConfig table and the UserStats table) that can be used for this purposes, if desired. Additionally, it is not recommended to run custom queries against the BlackBerry configuration database excessively.

***Is there a ratio of BlackBerry users to Messaging Agents algorithm?***

The BlackBerry Enterprise Server for Microsoft Exchange is the only version of the BlackBerry Enterprise Server that can run multiple Messaging Agents. Prior to BlackBerry Enterprise Server for Microsoft Exchange version 4.1 Service Pack 4, the maximum number of user that could exist on a Messaging Agent was hard-coded to 500. BlackBerry Enterprise Server for Microsoft Exchange version 4.1 Service Pack 4 introduced the capability to modify the number of BlackBerry users per Messaging Agent, through a registry key named, 'MaxUsersPerAgent'. Here are the instructions for implementing this registry key:

1. On the computer that hosts the BlackBerry Dispatcher, start the Registry Editor.
2. In the left pane, navigate to **HKEY\_LOCAL\_MACHINE\SOFTWARE\Research In Motion\BlackBerry Enterprise Server\Dispatcher**.
3. Right-click the MaxUsersPerAgent value, and click Modify.
4. In the Value data field, type the maximum number of users that the BlackBerry Dispatcher assigns to the BlackBerry Messaging Agent (the maximum value is 500 but a lower value can be used).
5. Click OK.

***Does changing the value for 'NumAgentsFullServer' require a BlackBerry Enterprise Server reboot?***

No, however if the value for 'NumAgentsFullServer' is changed, the BlackBerry Controller and the BlackBerry Dispatcher should be restarted, to ensure that operations related to the number of Messaging Agents are conducted according to the new value which was configured. Therefore, it is recommended that this modification be conducted during off-hours, to minimize user impact.

***How do I change the BlackBerry Enterprise Server user distribution mechanism from the default of the complex algorithm to use the simple algorithm?***

The BlackBerry Enterprise sever uses the default user distribution algorithm to allocate users to specific Messaging agents. The logic that is used includes consideration of the mail server of the user (users on the same mail server are grouped together where possible), which Messaging Agents are least loaded and which Messaging Agents have reached the maximum users per Messaging Agent threshold. In certain environments, depending on how and when users have been added to the BlackBerry Enterprise Server, this can result in some Messaging Agents being more populated than others. If an administrator would like

to configure the BlackBerry Enterprise Server to use the simple algorithm, which only enumerates the total amount of BlackBerry users and divides them evenly across Messaging Agents, the following instructions should be followed, to instrument this change:

1. Open the Windows Registry by navigating to Start>Run and typing 'regedit'
2. Locate the following key: **HKEY\_LOCAL\_MACHINE\SOFTWARE\Research In Motion\BlackBerry Enterprise Server\Dispatcher**
3. Create a DWORD value named 'AgentOptimizeAlgorithm'.

If the DWORD value is set to 1, the simple algorithm is used. If the value is set to 2, the complex algorithm is used. The BlackBerry Dispatcher must be restarted after this change, to begin the use of the new BlackBerry user distribution algorithm.