



DocHawk Server's Communications



The purpose of this document is narrate and clarify the protocols utilized by DocHawk Server, in addition to their specific purposes.

Several fundamental points should be understood:

- No protocols or behaviors which are implicit to the BlackBerry's communications handling have been overridden or extended by DocHawk Server.
- All communications are device-client initiated, are synchronous, and take full advantage of all available encryption capabilities, such as secure SMTP and HTTPS.
- All device-initiated communications fall under the realm of the BlackBerry Enterprise Server's IT policy definitions.
- DocHawk Server requires no changes be made to the BlackBerry Enterprise Server or its built-in Mobile Data Server.
- At no time are callbacks made back to the BlackBerry device, as all data flow steps are initiated by the client and responses from DocHawk Server are immediately received.
- Only the device used to make a submission is capable of viewing a submitted document. If, for example, a user were to lose a device, then all submitted documents would be inaccessible from the replacement device and would have to be resubmitted by the user.
- In a BlackBerry Enterprise Server environment, only provisioned, enabled devices may access inner-firewall resources via HTTP(s) via the Mobile Data Server, including, for example, DocHawk Server.

There are three stages of interaction:

1. When a submission is made by the BlackBerry user to DocHawk Server
2. When DocHawk Server receives a submission and processes it
3. When the client requests access to processed page content

Each part will now be narrated.

I. When a submission is made by the BlackBerry user to DocHawk Server

The user receives an e-mail containing one or more attachments. The user selects the e-mail message, pushes the thumbwheel and selects the "Open with DocHawk" menu item.

REQUEST: The DocHawk Client application (on the BlackBerry) immediately opens an HTTP(S) connection to the Apache Server running on the DocHawk Server host informing the server of an incoming submission. The content of the message from the DocHawk Client to DocHawk Server includes encrypted versions of the device's PIN and IMEI network identifiers.

RESPONSE: As part of the result text arriving from DocHawk Server back to the client, an OK code is received indicating that submissions from that device may be accepted. A temporary session reference is also included in this response.

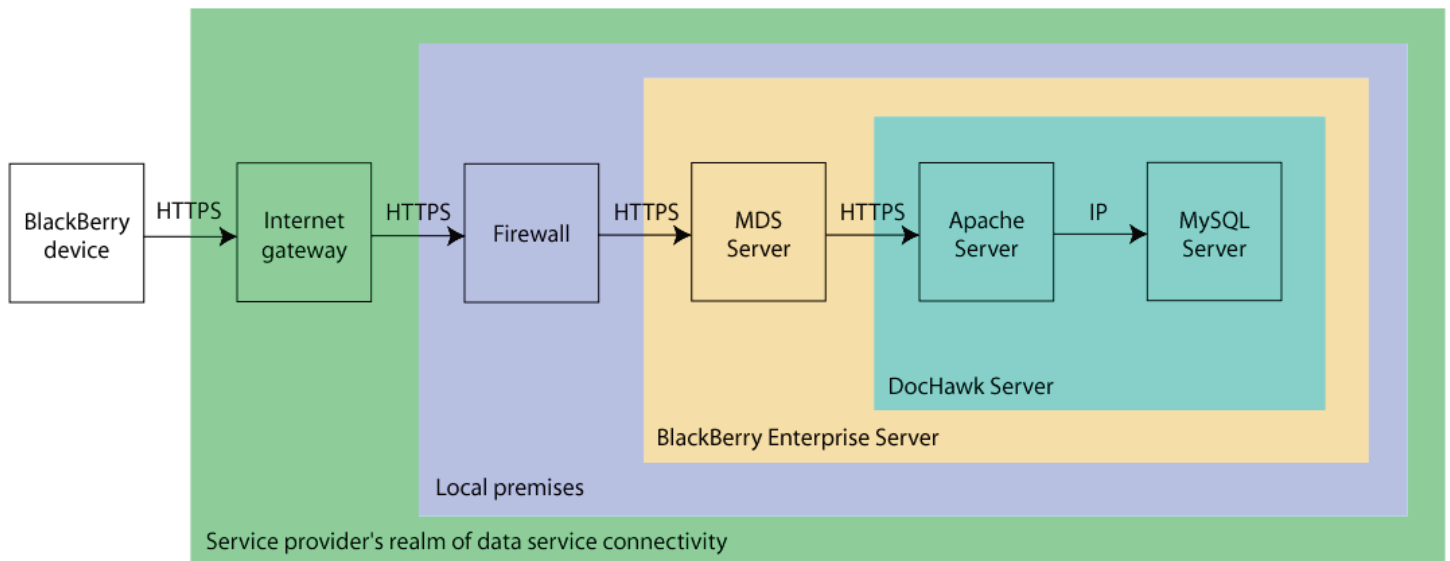
REQUEST: The DocHawk Client forwards the e-mail to a specific, defined e-mail address residing on the local premises, while changing the subject line of the forwarded message to include the session reference. The e-mail is then sent via standard BlackBerry e-mail delivery channels.

RESPONSE: As part of its standard e-mail delivery mechanism, the BlackBerry is informed of the successful delivery status of the e-mail.

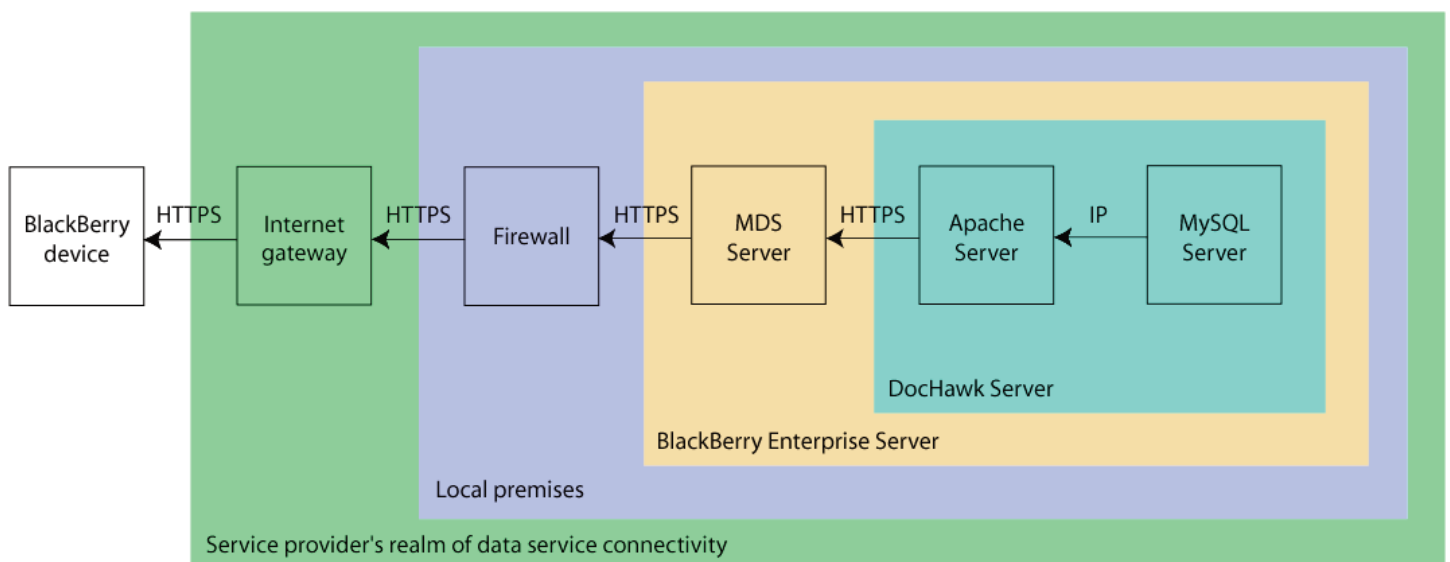
REQUEST: The DocHawk Client requests from the Apache server module of the DocHawk Server via HTTP(S) every fifteen seconds the processing status of the submission. Once the processing has been completed, the client will cease requesting status updates.

RESPONSE: DocHawk Server, via its Apache server module, provides a status code indicating the progression of the receipt, processing and accessibility of the most recent submission. This status information is provided only when the client requests such information.

Client initiated requests are made of DocHawk Server via this scheme:



Feedback is provided immediately via the HTTP(S) response from DocHawk Server:



II. When DocHawk Server receives a submission and processes it

DocHawk Server polls the incoming e-mail address to monitor if an incoming submission is pending for processing. Connectivity between DocHawk Server and the targeted e-mail server may be performed via standard POP3 or secure POP3. In an environment where Microsoft Exchange is utilized, Exchange's Outlook Web Access (OWA) HTTP(S)-based channel may also be used.

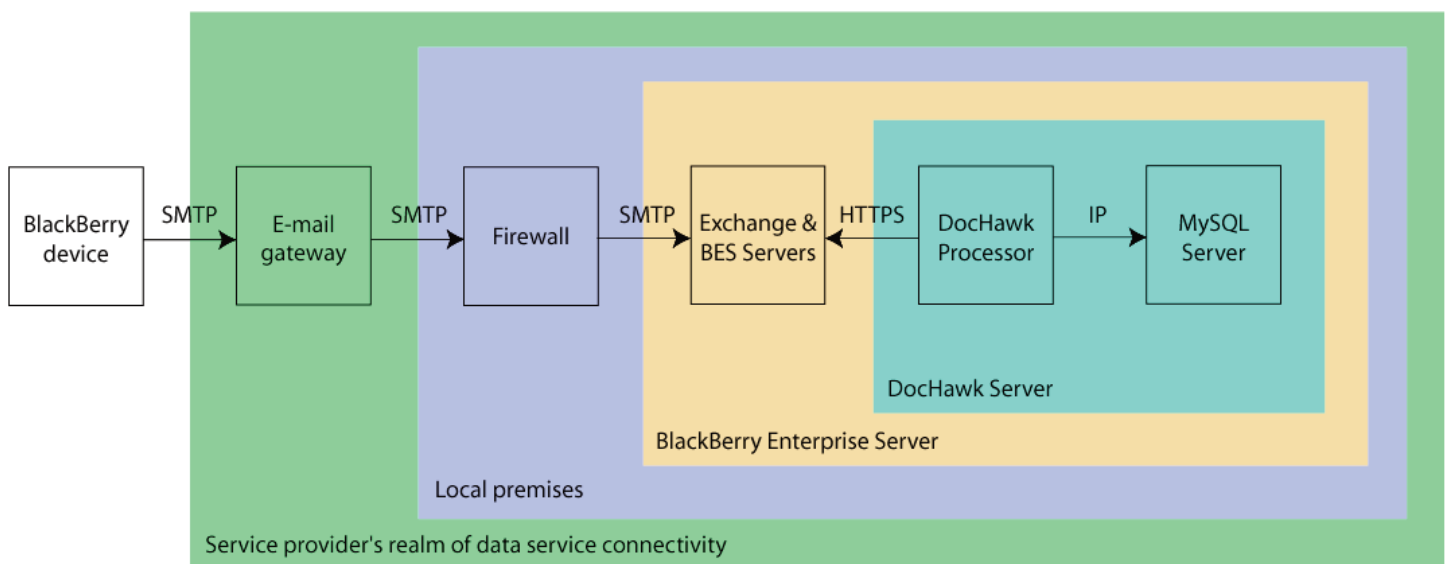
POP3(S): If this channel is used, communications are standard per the POP3(S) specification.

OWA(S): If this channel is used, DocHawk Server uses HTTP(S) to connect to Exchange's SOAP connector and queries for pending, incoming submissions.

REQUEST: DocHawk Server connects either via POP3(S) or OWA(S) in order to retrieve the next pending submission for processing.

RESPONSE: DocHawk Server receives the e-mail message, stores the attachments into a temporary directory on the DocHawk Server, deletes the source e-mail message from the submission e-mail account, immediately processes the attachments and publishes the processed content into a specified local directory on the DocHawk Server host. At each stage of processing, DocHawk Server communicates via IP with MySQL. MySQL is running on the DocHawk Server host and MySQL has been configured to allow only localhost communications.

The DocHawk Server administrator has the ability to define a shelf life for all submissions. For example, a deployment site may state that submissions may be retained, and therefore accessible to submitting users, for only a day, if desired. DocHawk Server ensures that all server-stored content will perish in the stated time window. At any time, the DocHawk Client user may also select a menu item which will destroy a submission immediately.



III. When the client requests access to processed page content

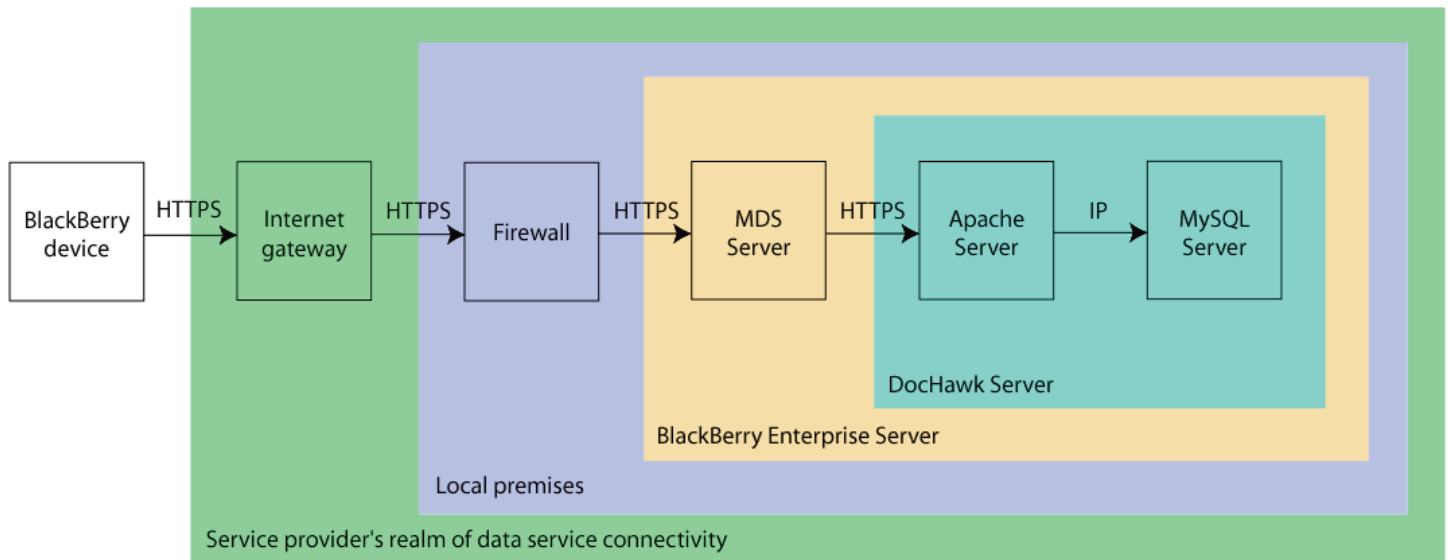
After the processing by DocHawk Server has been completed, the DocHawk Client application will be made aware of this due to its polling of DocHawk Server every fifteen seconds until the processing has been completed. Should an e-mail delivery failure take place between the DocHawk Client and DocHawk Server, the DocHawk Client will cease seeking updates after ten minutes. At any time after that time window, the user may still manually request a document list via a menu item.

When a user wishes to view the processed variant of the submitted attachment, the user selects the processed document from a list which is presented on the BlackBerry, then selects “View page 1” or “Get thumbnails of this document.” In either case, the DocHawk Client immediately requests via HTTP(S) the specified page’s content.

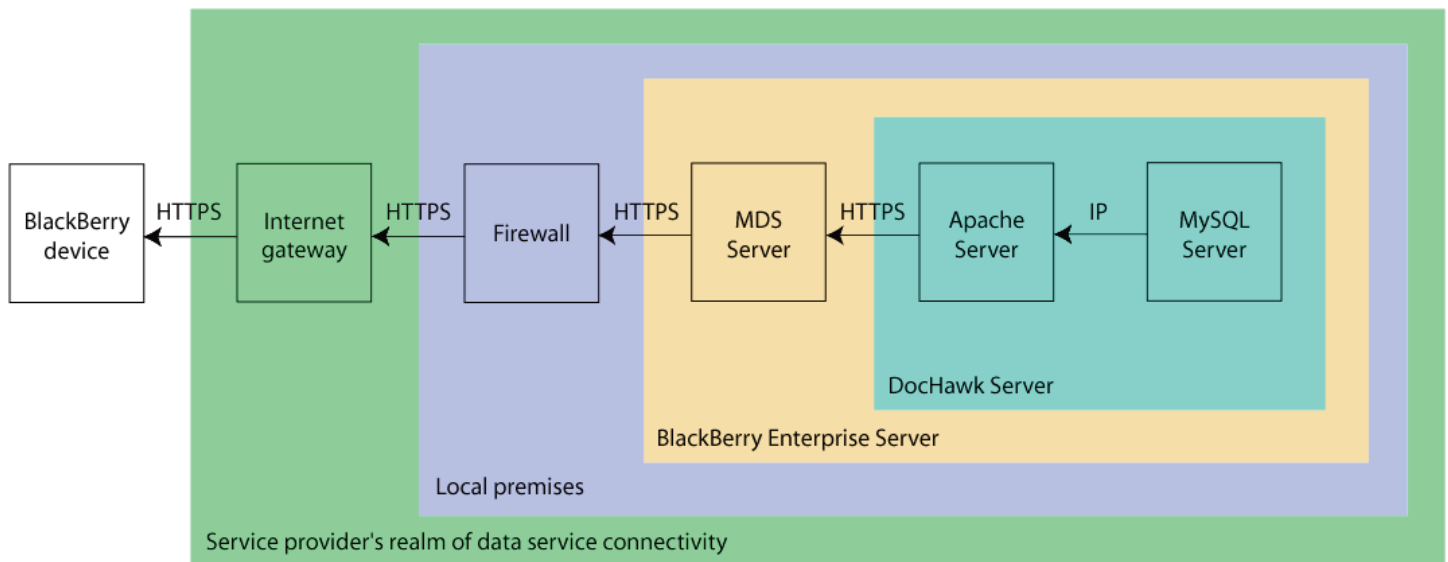
REQUEST: The user requests the presentation of a particular page. The DocHawk Client opens an HTTP(S) channel and connects to the Apache module of DocHawk Server. The request includes encrypted device information such as the device’s PIN and IMEI.

RESPONSE: As part of an immediate, synchronous response to the device, DocHawk Server provides an encrypted version of the selected page’s image, which is then presented to the DocHawk Client user.

This is the flow of communication when a DocHawk Client user requests access to a processed document’s page view.



Feedback is provided immediately via the HTTP(S) response from DocHawk Server:



While the page is being viewed, zoomed or panned, no further network communications take place. The page's image is stored in stack-level memory and is stored for the life of the DocHawk Client's running process, unless the document is deleted or cache memory is exhausted. Also, should the device be turned off, or if the DocHawk Client application is terminated, the cached content would perish, meaning that subsequent page retrievals would need to be requested once again from DocHawk Server.

At any time, should the user lose his device, an incoming signal-of-death from the BlackBerry Enterprise Server would completely wipe the memory of the device, including installed applications and associated memory. The same situation would apply should a screen-locked BlackBerry be attempted to be accessed with several incorrect password entries. DocHawk Client and any cached remnants of processed documents would be wiped from the device.

IV. Conclusion

As presented in this document, all of the BlackBerry's security features are being harnessed to ensure dependable and safe communications, all the while ensuring that only a submitting device may access processed submissions in the time window which is defined by the DocHawk Server administrator.

For any further details, please contact us at support@terratial.com.