DocHawk Server White Paper

Table of Contents

Welcome

DocHawk Server provides the ultimate in high-fidelity attachment viewing for the BlackBerry. DocHawk Server provides an excellent solution for your BlackBerry users who are dissatisfied with the BlackBerry's built-in and limited attachment viewing capabilities. Since DocHawk Server uses actual Office and Adobe Acrobat components in order to render attachment file content, compatibility is outstanding and the results are quite close to what is appreciated on a standard Windows or Macintosh system. Simply stated, DocHawk Server will provide your users with what they seek: significantly increased utility and productivity from their BlackBerrys.

Key terms

BlackBerry Enterprise Server (BES)	BES software resides behind your organization's firewall and is designed to tightly integrate with existing enterprise systems, securely extending wireless communications and corporate data to mobile users.
BES extension	A file or collection of files generally created and provided by third-party application vendors. Such an extension may add to the complexity of troubleshooting BES issues. DocHawk Server **does not** require the use of a BES extension.
Mobile Data System (MDS)	MDS an optimized framework of developer tools, administrative services and BlackBerry device software that enables applications beyond e-mail to be deployed to mobile users.
BlackBerry OS (wireless) handheld software	BlackBerry OS software represents a particular release of the device's operating system and may be updated easily by downloading an update and running it on the BlackBerry user's personal computer. A subsequent launch of the user's Application Loader is required in order to update the actual device.
BlackBerry Desktop Manager	Software which is included with each

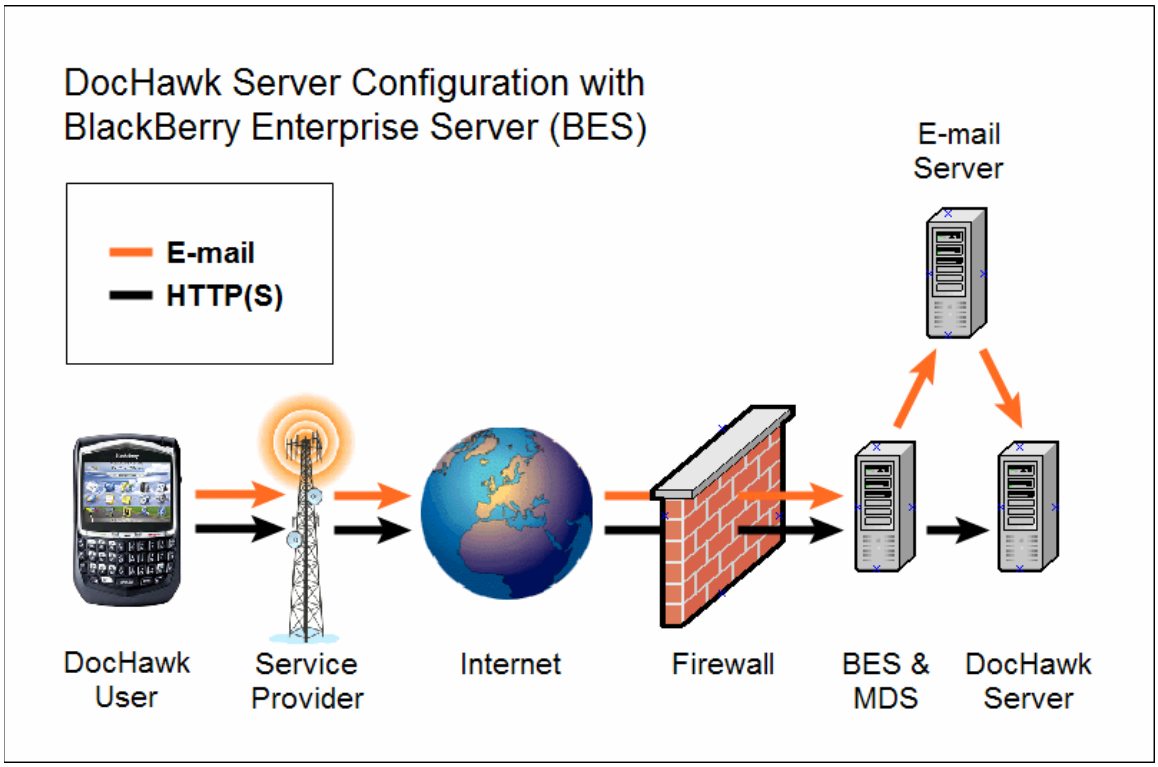
	BlackBerry device, installs and runs on your desktop PC, allowing you to customize synchronization and configuration settings for a BlackBerry device.
Application Loader	As a component of the BlackBerry Desktop Manager, the Application Loader is a wizard that allows you to update or remove applications on a BlackBerry. This tool provides a way to update operating system components as updates become available or to install additional applications that may be available from third parties.
Over-the-air (OTA)	OTA represents the BlackBerry's ability to download and install an application without having to use Application Loader. BES environments must explicitly enable the OTA feature via the defined IT Policy for the user environment.
Exchange	Microsoft's Exchange Server is the world's leading corporate e-mail server.
POP3	This is an Internet-compatible transmission method for connecting to an e-mailbox hosted by, for example, Microsoft Exchange.
SMTP	This is an Internet-compatible transmission method for sending e-mail messages.
eFax or fax received as PDF	Faxed or scanned PDF files, such as files provided by eFax, J2 JConnect, and many other fax service providers, are image snapshots of page images. Such files are difficult to read on a BlackBerry, unless DocHawk is used.

Functional overview

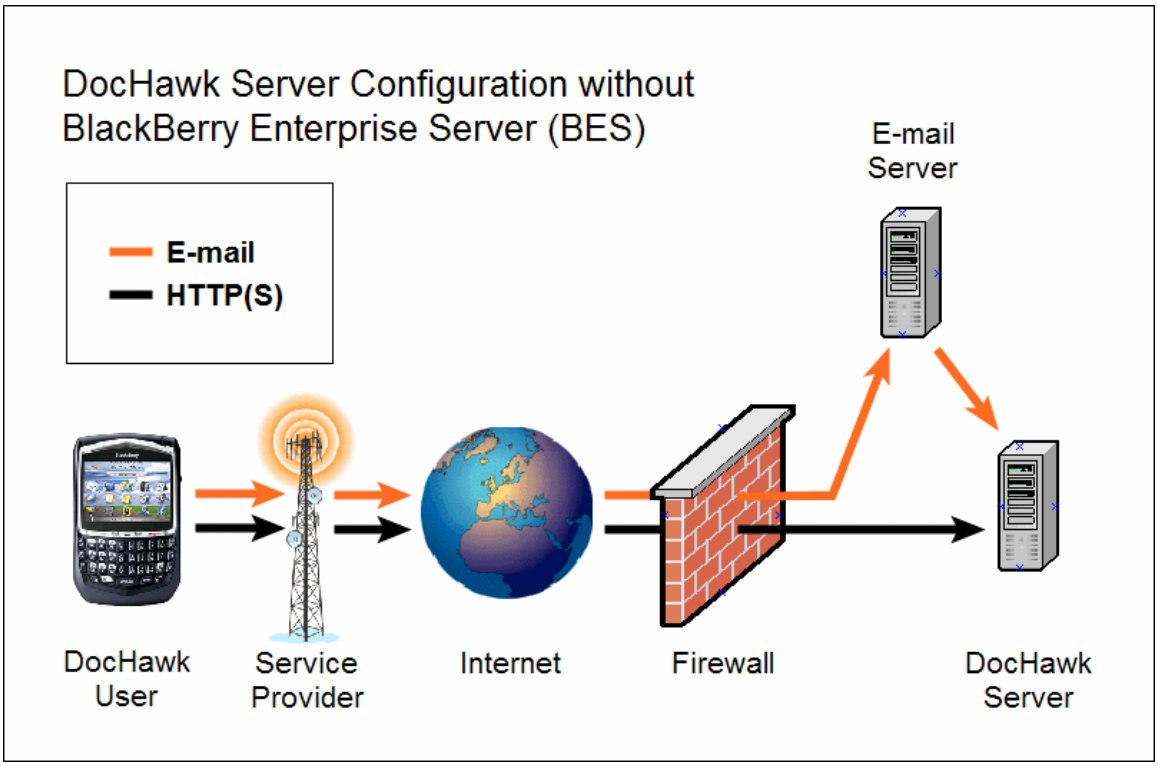
Architecture

DocHawk Server does not require the use of a BlackBerry Enterprise Server (BES); however, if BES is used, DocHawk Server requires no changes to BES. This means that should BES ever fall out of service, DocHawk will remain outside of your BES troubleshooting strategy. This helps to keep things quite simple.

If BES is used, this diagram illustrates how a typical DocHawk Server implementation appears (below).



If BES is not used, the following diagram illustrates how a typical DocHawk Server implementation appears (below).



For environments where BES is used, DocHawk Server is compatible with BES versions 3.7 and newer. Virtually any version of BES installed in the last two years should be compatible with DocHawk Server.

Whether or not BES is used, BlackBerry handheld wireless operating system release 4.0 or newer is supported by the DocHawk client application.

Benefits

When a BlackBerry user receives an attachment in an e-mail, the BlackBerry provides minimal built-in capabilities to view the document. In most cases, the text contained in the attachment is parsed from the attachment and presented as a large collection of text with little or no consideration for formatting and text attributes, such as fonts, sizes and color. For reports, for example, formats are critical in understanding the intent of the document.

DocHawk Server changes this markedly by presenting the content of the e-mail attachment in nearly the same style and layout as expected by a desktop system user.

DocHawk Server presents thumbnail images of each page, and even more importantly, enables the user to zoom in and out throughout each page while maintaining optimal

resolution. The resolution factor is significant, since even if the BlackBerry can show a graphical view of a page (usually only an image file), when maximum viewing resolution is selected, the user is not able to scroll in any particular direction. DocHawk Server changes this, since even if the maximum resolution is selected, the user is still able to scroll around the page to view the attachments freely and efficiently.

Scanned PDF file content, such as fax transmissions received as e-mail attachments, are particularly hard to render when being attempted to be read on a BlackBerry. Once again, DocHawk Server handles this in a manner which makes the BlackBerry completely functional in such scenarios.

DocHawk Server's compatibility with PDF files is true, even by the most current standard as defined by Adobe. DocHawk Server's compatibility with Office documents, such as Word, Excel and PowerPoint, ranging from file versions created with Office 97 to the currently, predominately used Office 2003, renders these document types in their true format without any distortions. DocHawk Server's strong compatibility with Office documents is one of its hallmarks, hence DocHawk Server makes no internal use of OpenOffice. Please note that Office supports WordPerfect documents too; therefore, DocHawk can process such documents as well.

DocHawk Server makes absolutely no internal use of OpenOffice, as strong compatibility with Office documents is a hallmark of our product.

It is possible that BlackBerry users will find themselves in areas where network coverage is poor and therefore their ability to access e-mail attachments may be impacted. DocHawk Server enables users to store processed attachments locally onto the BlackBerry device itself, so that even if no network service is available, attachments, once saved, may still be accessed. For example, if a BlackBerry user takes many airline flights and needs to access itinerary information while on board, the user will still be able to access the saved document pages with no network transmission being required.

Placement of DocHawk Server

We know how critical it is to have applications working even if the BlackBerry delivery infrastructure fails. DocHawk Server was designed with this possible emergency in mind.

Firstly, if BES has been deployed in your environment, DocHawk Server requires absolutely no changes be made to BES in order to accommodate the DocHawk Server solution. This means that the use of BES extensions is not needed, commonly in the form of DLL files.

Secondly, BES has a finely tuned capability to manage and monitor external processes, and therefore the ideal BES configuration is to have it running on a standalone system. DocHawk Server works in that mindset and it is recommended that DocHawk Server be installed onto its own system as well. Please note that it is still possible to install DocHawk Server onto a platform which is running some other server process, such as an e-mail server, web server, etc. Later in this document, you will learn how DocHawk Server requires the co-installation of Office 2003 (without Outlook) and Acrobat Reader 7, the latter of which is available cost-free from Adobe's web site.

In the scenario of where DocHawk Server may be installed onto an already active platform, it is the Office 2003 portion which needs to be carefully considered. The reason for this is that if Outlook is installed onto that system by mistake, an important Exchange object library file would most likely be updated to a version which was not designed to complement server processes. More concretely, updating a server-intended variant of the Exchange Collaboration Data Object (CDO) library with the variant provided by an installation of Outlook may disable the wireless synchronization capabilities of the server. There is even the potential of completely disabling Microsoft Exchange Server if its provided CDO file is overwritten by an installation of Microsoft Outlook. Please note that this installation issue is not anything which was created by DocHawk Server; however, it is important that you be aware of this commonly witnessed issue with Microsoft's platform technologies. Knowing about this issue will ensure that you will be able to avoid it, whether or not you use DocHawk Server.

Hardware requirements

As with any server platform, the stronger its hardware capabilities are, the greater its throughput. DocHawk Server's hardware requirements are minimal:

a. Pentium IV, 2.0 GHz or faster

b. Multiple- and multi-core CPU configurations are compatible, but not required

c. 1 GB of RAM, with 2 GB being ideal

d. 20 GB of hard drive space, almost all of which is used for submission archiving, if enabled by the administrator

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Software requirements

The software platform on which DocHawk Server may be deployed is straightforward:

a. Windows Server 2003 or Windows XP, with the latest service pack

b. Microsoft Office 2003, with the latest service pack, including Word, Excel and PowerPoint, but excluding Outlook

c. Adobe Acrobat Reader 7 in U.S. English

E-mail account / server requirements

Delivery of e-mail attachment content intended to be processed by DocHawk Server is performed via the standard BlackBerry delivery channels.

DocHawk Server polls a POP3-compatible e-mail account. If POP3 is not currently used in your environment, it is normally a simple process to activate a POP3 connector on your e-mail server. For example, if you are using Microsoft Exchange Server, then all that is required is the activation of the POP3 connector via the Exchange administration console. An e-mail account will need to be created as DocHawk Server will need to have exclusive usage of this account and related e-mail address. With POP3 enabled on Exchange, it is possible and simple to constrain POP3 access solely to the DocHawk e-mail account.

DocHawk Server benefits greatly by being able to use an SMTP server in order to have outgoing messages be sent to the administrators. Although this is not a requirement, administrators normally appreciate being informed as quickly as possible should DocHawk Server need to report an issue.

System user account

DocHawk Server runs as a desktop process requiring an active login into the desktop. The user account used for login into the desktop does not have to have administrative privileges.

BES and MDS configurations

As mentioned before, DocHawk Server requires no changes in your BES environment; however, it is a good practice to verify that MDS (Mobile Data System) is enabled properly. MDS is enabled by default on BES.

MDS is enabled at two locations: the BES level itself and at the individual user's level.

If the user can use the BlackBerry's MDS-provided Internet browser, which is normally identified by a "BlackBerry Browser" icon, in order to access a web site, then this is a reasonable indicator that MDS has been enabled at both levels. Please note that the user's BlackBerry will commonly also have yet another browser icon which represents direct-to-Internet data service provided by the service provider. Having the service provider's browser icon is unrelated to verifying an MDS enablement status.

To verify and potentially activate MDS, please follow these steps in the BES administration console:

1. On the left, you will notice an icon for your BES server. Please do a right-mouse click on that icon and by reading the menu items, please ensure that you see "Stop Mobile Data Service" and "Disable Mobile Data Service". If one or both are missing, please enable MDS via this menu so that both of the stated menu items are visible.

2. On the right, you will notice a list of the BlackBerrys handled by your BES server. Please locate the particular BlackBerry for the person who is trying to use MDS, do a right-mouse click on that device entry, and ensure that the menu shows "Disable Mobile Data Service" as a menu item. If you do not see that, please enable MDS for that device via this menu.

Default behavior and changing it

Server

The installation of DocHawk Server includes a powerful administrative configuration tool, called the "DocHawk Server Configuration Tool". This tool provides several categories of settings which may be altered in a straightforward manner via a graphical user interface.

POP3 configuration: POP3 server host name, user name, password, e-mail address, whether or not SSL should be used for logging into the POP3 account, and which port should be used to access the POP3 server.

SMTP configuration: the sender's e-mail address and pseudo-name which will appear in the automatically generated administrative e-mail correspondence, the SMTP server's

host name, the port which should be used to access the SMTP server, and, optionally, user credentials which should be used whenever connecting to the SMTP server.

Health monitor: up to five e-mail addresses of administrators may be entered. These named addresses will receive any important DocHawk Server status-update messages should an emergency require immediate attention.

Web access credentials: for the administration of individual DocHawk Server user accounts at the device level, all of this may be performed through a web browser from any computer which has HTTP access to the DocHawk Server. This section of the configuration tool is where the administrator's user name and password are defined in order to access this web browser facility.

Automatic account creation: it is possible to have DocHawk Server create user accounts automatically in the following way. If a user is provided access to the DocHawk client application and installs it, the account will be created automatically when the service is used for the first time. Automatic account creation is not a requirement, but it saves DocHawk Server administrators considerable time, since accounts do not have to be manually defined. This section of the configuration tool enables the DocHawk Server administrator to define how long an automatically created user account may be valid and functional without intervention.

Changing the settings via the configuration tool requires that the DocHawk Server process be restarted in order for the changes to take effect. A system reboot is not required.

Client

DocHawk Client settings

The rolling out of the DocHawk client application will be discussed in detail later in this document. The default settings in the DocHawk client application are set to what existing customers consider to be the ideal settings. The user has the ability to change a multitude of settings, such as the default zoom level and other pertinent behaviors.

Security

DocHawk Server's design was validated by an IT professional who has seventeen years of Pentagon IT security experience. Complementing this assurance, provided security

features of the BlackBerry result in a powerful and secure solution. DocHawk Server has also been approved to be sold through formal GSA (government sales) channels.

DocHawk Server is based on a communications model where the client requests and the server responds to the client. Traffic never goes in the opposite direction. Two protocols are used for connectivity between the client and server.

1. Standard outgoing e-mail delivery: E-mail forwarding is performed discretely and automatically, and makes full utilization of the existing and secure e-mail delivery channel. Whether or not BES is used, e-mail traffic from the BlackBerry is encrypted before delivery.

2. HTTP access: After a submission is made from the client to the server via the secure e-mail channel, the client automatically connects via HTTP to the DocHawk Server to inform the server of the pending delivery.

If BES is used, then MDS is used as a secure, encrypted proxy for HTTP request delivery. Not only is the delivery channel encrypted, but the content of the transmission itself is encrypted and compressed.

If BES is not used, the public MDS architecture of the BlackBerry service provider is used as a secure, encrypted proxy for HTTP request delivery. As mentioned in the description above for a BES environment, not only is the delivery channel encrypted, but also the content of the transmission itself is encrypted and compressed.

DocHawk Server does not use any kind of push-to-device feature of MDS, which means that the firewall settings of the device will play no role in reducing security.

For the actual DocHawk Server (server-side) components, all requests from client applications running on BlackBerry devices are carefully scrutinized for validity on three points: the device PIN (a unique eight-character device identifier), the device IMEI or ESN (a unique, extended value which is used by the device's service provider), and the e-mail address which is defined by the service book entries of the device. All of these details must match with an enabled account that has been defined within DocHawk Server. The identification-matching details are encrypted twice before transmission from the device and travel along the already heavily secured communications channel, whether private or public MDS, depending on whether BES is used or not.

Scalability and throughput

There are two stages of serving client users where DocHawk Server is expected to perform:

1. E-mail attachment submission and immediate processing: Depending on the processing strength of the host system which is running DocHawk Server, regular throughput is normally between ten and thirty seconds. For example, a dual Xeon processor system with 3.0 GHz CPUs will normally need around ten seconds in order to process a submission. As another example, a single Pentium IV system clocked at 2.0 GHz will need around thirty seconds to process a submission. The DocHawk Server processing turnaround time is calculated by adding the time it takes typically to deliver an e-mail from a BlackBerry to your e-mail server, with the typical document processing time.

2. Subsequent client access to processed content: Once a submission has been processed, the client application is made aware of this by its polling of DocHawk Server via HTTP(S). This polling initiates immediately upon a submission taking place and is queried every fifteen seconds automatically until the processing has been completed. There is a fixed timeout of ten minutes should there be an e-mail delivery issue as DocHawk Server is designed to consume as little battery power as possible.

DocHawk Server is aware of pending submissions for processing since it polls the POP3 e-mail account every five seconds.

Again, the DocHawk client application is able to present the current state of document processing since it polls DocHawk Server every fifteen seconds until submissions have been processed.

For environments where extremely high processing capabilities are required, it is possible to add additional DocHawk Servers. Based on the licensing of DocHawk Server, it is possible to have multiple DocHawk Servers running concurrently on separate host computers. Each DocHawk Server would need an independent POP3 e-mail account. This method of scalability has effectively no impact on a BES server, should it be used, except for simply delivering e-mail messages.

Network performance dependencies

There are potential transmission channels where latency would need to be avoided in order to ensure ideal degrees of performance:

1. The BlackBerry's network strength and its access to the data network of the service provider: These two access levels are actually independent, as it is possible for a BlackBerry to indicate 100% network strength, while the data network of the service provider may be temporarily out of service. DocHawk's client application makes this state obvious by displaying the message "No HTTP service is available". The user may retry at his convenience when the data network returns to service. Generally, if the data

service is available, and if the network strength indicated on the device shows at least two out of five bars, or higher, DocHawk Server will perform well for the BlackBerry user.

2. DocHawk Server's connectivity with the POP3 e-mail server: Normally DocHawk Server is located at the same site where the POP3 e-mail server is. Should the POP3 server reside at another location, then DocHawk may take a couple of seconds longer in order to poll the e-mail address.

Troubleshooting

DocHawk Server has been designed to work even if your e-mail delivery infrastructure experiences a failure. Because DocHawk Server does not have to add any files to your BES server, DocHawk does not have to be considered when you are determining why e-mail is not flowing to and from your BlackBerry users.

If the focus of troubleshooting is on DocHawk Server itself, many times DocHawk Server will report the issues proactively and potentially even offer a solution. In the configuration tool of DocHawk Server, it is possible to enter up to five e-mail addresses for people who should receive such reports.

Should there be an issue with the processing of submissions, DocHawk Server maintains a temporary archive of submissions, which can be activated by the administrator, thus making it straightforward to reproduce the issue.

If a DocHawk-specific problem occurs on a BlackBerry, the first thing to check for is the existence of network service. Once network service has been determined, it may be necessary to see if their data service is accessible as well. This is normally performed by attempting to use the BlackBerry's browser icon, meaning the icon which is provided by the service provider and not by MDS. If data service appears to be accessible, then the service books of the device likely need to be refreshed. This is normally performed by having the user select **Settings ➜ Options ➜ Advanced Settings ➜ Host Routing Table ➜ Register**.

Should you ever have any further support requirements, please contact us per the section below, entitled "Support".

Rolling out DocHawk

There are two aspects to performing a rollout of DocHawk Server:

1. The DocHawk Server itself must be deployed per its documented steps. This is an easy process and is documented thoroughly.

2. The DocHawk client application must be installed onto each BlackBerry which is intended to be able to use DocHawk Server. This application can be installed over-the-air (OTA) or through the user's personal computer where the BlackBerry Desktop Manager is installed. OTA is the easier method for application distribution as all you need to do is e-mail a link to the targeted BlackBerry user(s) and ask them to click the provided link and allow the download to be completed.

If the DocHawk Server administrator allows DocHawk accounts to be created automatically, the rollout is effectively performed on its own. If, on the other hand, the DocHawk Server administrator prefers to create user accounts manually, then the PIN of each BlackBerry must be entered via the web browser-based administration console for DocHawk Server. In each case, the rollout will take place quickly.

Maintenance

With DocHawk Server, we follow the ensuing principles in order to support you and your users.

Server

1. Pruning files which were produced by the DocHawk Server processing phase: DocHawk Server automatically deletes files related to "aged" e-mail attachment submissions, in the time frame as defined by the DocHawk Server administrator. This keeps hard drive space consumption down to a minimum with no human intervention required.

2. Applying patches to DocHawk Server: Terratial Technologies constantly works to improve its products and whenever an update is available for DocHawk Server, in most cases, a single file can be updated without having to perform any kind of de-installation and re-installation.

General maintenance

Adobe Acrobat updates its Reader product just about every two years. Terratial is normally ahead of the curve and monitors Adobe's release schedule. We make every

effort to ensure that your DocHawk Server implementation is prepared to handle future versions of the PDF file format.

Microsoft normally updates its Office suite of applications every three years. Terratial also carefully monitors any potential impact that such releases may have on DocHawk Server environments. Whenever a patch is necessary for DocHawk Server, we will always make this available pro-actively to our current support contract holders.

Database maintenance

DocHawk Server provides a database server, MySQL, which is an open-source and very popular system. Our database schema is straightforward to support and MySQL includes a multitude of management and maintenance tools which will ensure that you will be able to perform backups and recoveries. DocHawk Server makes no fundamental changes to MySQL, such as custom extensions, which means that any generic and freely available database management tool will be capable of assisting you with your database maintenance needs.

Client

BlackBerry wireless handheld operating system updates take place every three to six months. In a BES environment, the BES administrator makes the decision concerning when such OS updates will be made available to their users, so this keeps support needs reasonably predictable. If BES is not being used in the environment, then the carrier can only request that OS updates be applied, but such requests cannot be enforced. Terratial has a large collection of BlackBerry models connected to various service providers to keep DocHawk Server on the forefront of emerging changes made to BlackBerrys before such changes could ever cause unwanted results.

DocHawk Client

Applying updates to DocHawk client application users is simple. Over-the-air installation has already been recognized as the ideal approach to getting the application installed initially. The same mindset follows when it comes to distributing client application updates. Terratial, as part of its support contract commitment to your company, will provide client application installers which will be readily applicable in an OTA distribution scheme. The same package is compatible with BlackBerry Desktop Manager installations via the Application Loader.

Support

Terratial Technologies is serious about supporting your DocHawk Server needs. The terms of support will be included in the service support contract which is included in a DocHawk Server purchase agreement. Should your environment have special requirements, please inform your Terratial sales representative.

DocHawk Server and Client functional specifications

File types supported by DocHawk Server

All Office documents, from Office 97 to Office 2003, including Word, Excel and PowerPoint.

WordPerfect, all versions.

PDF files, including even scanned PDF files, such as for fax transmissions stored in the PDF format. All versions of the PDF specification are supported, including version 1.6.

Many image file types, including TIFF, PCX, and the commonly used image formats on the Internet.

Zoom levels supported by the DocHawk Client application

25%
50%
75%
100%
150%

BlackBerry handheld operating system versions supported

4.0 and newer

BlackBerry Enterprise Server versions supported

3.7 and newer

BlackBerry models supported

All color BlackBerry models having at least 16 MB of RAM. This generally means that every model starting with 7 or 8, with the exception of the 7210, will be compatible.

BlackBerry service providers supported

All BlackBerry service providers in North America, Western Europe and Australia are supported. For all other regions, all we ask is that data service be available. For example, all you would need to check is the effectiveness of the BlackBerry's e-mail delivery capabilities and its MDS-provided or service provider's BlackBerry Internet browser.

Further questions?

Should you have any further questions concerning the technology behind DocHawk Server, please contact us at support@terratial.com to ensure a timely response. Support is also available by telephone at +1 404 870 8121 option 3.

Information on product pricing and licensing is available at sales@terratial.com. Our sales department is also available by telephone at +1 404 870 8121 option 1.