Prior to subscribing for, installing or using any Third Party Products and Services it is your responsibility to ensure that your airtime service provider has agreed to support all of their features. Some airtime service providers may not offer Internet browsing functionality with a subscription to BlackBerry® Internet Service. Check with your service provider for availability, roaming arrangements, service plans and features. Installation or use of Third Party Products and Services with RIM's products and services may require one or more patent, trademark, copyright or other licenses in order to avoid infringement or violation of third party rights. You are solely responsible for determining whether to use, Third Party Products and Services and if any third party licenses are required to do so. If required you are responsible for acquiring them. You should not install or use Third Party Products and Services until all necessary licenses have been acquired. Any Third Party Products and Services that are provided with RIM's products and services are provided as a convenience to you and are provided ‘AS IS’ with no express or implied conditions, endorsements, guarantees, representations or warranties of any kind by RIM and RIM assumes no liability whatsoever, in relation thereto. Your use of Third Party Products and Services shall be governed by and subject to you agreeing to the terms of separate licenses and other agreements applicable thereto with third parties, except to the extent expressly covered by a license or other agreement with RIM.

Certain features outlined in this documentation require a minimum version of BlackBerry® Enterprise Server, BlackBerry® Desktop Software, BlackBerry® Device Software and/or BlackBerry Handheld Software and may require additional development or Third Party Products and Services for access to corporate applications.

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Chapter 3
BlackBerry Infrastructure

Objectives

- Describe the BlackBerry® Infrastructure (BlackBerry® Enterprise Solution and BlackBerry® Internet Service)
- Explain how BlackBerry Infrastructure and mobile application development differ from computer web development and Internet connectivity
- Describe BlackBerry® Browser capabilities and configurations

This chapter outlines the different components of the BlackBerry Enterprise Solution. To help you understand how the BlackBerry smartphone connects to the Internet, you will learn about the BlackBerry Internet Service and how this service compares with computer connectivity to the Internet. You can learn about how the BlackBerry smartphone components operate in web development compared to web development on a computer. Finally, you can become familiar with the BlackBerry Browser, its configuration, and its capabilities.
Introduction to BlackBerry Infrastructure

The two most common ways that BlackBerry smartphones receive email messages and other data from an organization and the Internet are through the BlackBerry Enterprise Solution and the BlackBerry Internet Service. These components are part of the BlackBerry Infrastructure.

- The BlackBerry Enterprise Solution is robust software that acts as the centralized link between wireless networks and enterprise applications. All data between applications and BlackBerry smartphones flow centrally through the server.
- The BlackBerry Internet Service does not require BlackBerry Enterprise Server and is not used through a corporate firewall. This service is made available through BlackBerry service providers and does not support Triple DES encryption. Secure HTTPS sites are not accessible using the BlackBerry Internet Service.

This section focuses on these BlackBerry Infrastructure components.

BlackBerry Enterprise Solution

To reduce costs and to increase data transmission speeds, the BlackBerry Enterprise Solution compresses data that is sent to and received from BlackBerry smartphone users wirelessly. The BlackBerry Enterprise Server encrypts data before it passes through public networks. This process is designed to protect data. The BlackBerry Enterprise Solution also allows administrators to manage large numbers of BlackBerry smartphone users using centralized tools and policies. The key elements of the BlackBerry Enterprise Solution infrastructure include the following applications:

- BlackBerry® Enterprise Server
- BlackBerry® Mobile Data System (MDS)
- BlackBerry smartphones
- Devices with BlackBerry® Connect™ software
- BlackBerry® Alliance Program
- BlackBerry® Solution Services

BlackBerry Enterprise Server

A BlackBerry Enterprise Server consists of various components that are designed to perform the following actions:

- Provide productivity tools and data from an organization's applications for BlackBerry smartphone users.
- Monitor other BlackBerry Enterprise Server components.
- Process, route, compress, and encrypt data.
- Communicate with the wireless network.
The BlackBerry Enterprise Solution (BES)

The BlackBerry Enterprise Solution is robust software that acts as the centralized link between wireless devices, wireless networks, and enterprise applications. The server integrates with enterprise messaging and collaboration systems to provide mobile users with access to email, enterprise instant messaging,
and personal information management tools. All data between applications and BlackBerry smartphones flows centrally through the server.

When data is sent to the BlackBerry smartphone, the BlackBerry smartphone decrypts, decompresses, and displays it. Before the BlackBerry smartphone sends data to the wireless network, it compresses and encrypts the data. Wireless networks transport data to and from the BlackBerry smartphone and send it to the Internet to be sent to its destination. The BlackBerry Enterprise Solution is compatible with many wireless networks and many wireless service providers around the world.

The following components, as outlined in the Figure above, comprise the BlackBerry Enterprise Solution:

BlackBerry Administration Service—The BlackBerry Administration Service connects to the BlackBerry Configuration Database. You can use the BlackBerry Administration Service to manage the BlackBerry Domain, which includes BlackBerry Enterprise Server components, user accounts, and features for BlackBerry device administration.

BlackBerry Attachment Service—The BlackBerry Attachment Service converts supported message attachments to a format that users can view on their BlackBerry smartphones.

BlackBerry Collaboration Service—The BlackBerry Collaboration Service provides a connection between your organization’s instant messaging server and the collaboration client on BlackBerry smartphones.

BlackBerry Configuration Database—The BlackBerry Configuration Database is a relational database that contains configuration information that BlackBerry Enterprise Server components use. For example, the BlackBerry Configuration Database includes details about the connection from a BlackBerry Enterprise Server to the wireless network, user list, and address mappings between PINs and email addresses for BlackBerry MDS Connection Service push features.

BlackBerry Controller—The BlackBerry Controller monitors BlackBerry Enterprise Server components and restarts them if they stop responding.

BlackBerry Dispatcher—The BlackBerry Dispatcher compresses and encrypts all data that BlackBerry devices send and receive. The BlackBerry Dispatcher sends the data through the BlackBerry Router, to and from the wireless network.

BlackBerry MDS Connection Service—The BlackBerry MDS Connection Service permits users to access web content, the Internet, or your organization’s intranet, and also permits applications on BlackBerry smartphones to connect to your organization’s application servers or content servers for application data and updates.

BlackBerry MDS Integration Service—The BlackBerry MDS Integration Service provides application-level integration for BlackBerry Browser Applications on BlackBerry devices. You can use the BlackBerry MDS Integration Service to install and BlackBerry Browser Applications on BlackBerry devices. The BlackBerry MDS Application Repository is a service hosted by the BlackBerry MDS Integration Service. The BlackBerry MDS Application Repository stores BlackBerry Browser Applications. Your organization’s developers can create and publish Applications using the BlackBerry Plug-in for Microsoft Visual Studio developer tools. Your organization’s developers can create
BlackBerry Browser Applications using standard text editors and publish BlackBerry Browser Applications in the BlackBerry MDS Application Repository using the BlackBerry MDS Application Console.

BlackBerry Messaging Agent—The BlackBerry Messaging Agent connects to your organization's messaging server to provide messaging services, calendar management, address lookups, attachment viewing, attachment downloading, and encryption key generation. The BlackBerry Messaging Agent also acts as a gateway for the BlackBerry Synchronization Service to access organizer data on the messaging server. The BlackBerry Messaging Agent synchronizes configuration data between the BlackBerry Configuration Database and user mailboxes.

BlackBerry Monitoring Service—The BlackBerry Monitoring Service is a web-based application that is designed to help you monitor your organization's BlackBerry Domain. Administrators can use the BlackBerry Monitoring Service to troubleshoot issues and proactively monitor the health of your organization's BlackBerry Domain.

BlackBerry Monitoring Service database—The BlackBerry Monitoring Service database stores information that it collects about your organization's BlackBerry Enterprise Server environment in a Microsoft® SQL Server® database for 57 weeks. You can access the information from the database using standard SQL call operations.

BlackBerry Policy Service—The BlackBerry Policy Service performs administration services over the wireless network. It sends IT policies and IT administration commands and provisions service books. IT policies and IT administration commands define BlackBerry device security, settings for synchronizing data over the wireless network, and other configuration settings on BlackBerry devices. The BlackBerry Policy Service also sends service books to configure settings for features and components on BlackBerry devices.

BlackBerry Router—The BlackBerry Router connects to the wireless network to send data to and from BlackBerry devices. It also sends data over your organization's network to BlackBerry devices that are connected to computers that host the BlackBerry® Device Manager.

BlackBerry Synchronization Service—The BlackBerry Synchronization Service synchronizes organizer data between BlackBerry devices and the messaging server over the wireless network.

BlackBerry® Web Desktop Manager—The BlackBerry Web Desktop Manager is a web-based application that permits users to manage their BlackBerry devices. For example, users can activate BlackBerry devices, back up and restore data, select messaging options, synchronize data, and install applications. The BlackBerry Web Desktop Manager includes the BlackBerry Device Manager.

Organization's application server or content server—Your organization’s application server or content server provides push applications and intranet content that the BlackBerry MDS Services use.

Instant messaging server—The instant messaging server stores instant messaging accounts.

Messaging server—The messaging server stores email accounts.
User's computer with the BlackBerry Device Manager—The user's computer that hosts the BlackBerry Device Manager permits users to connect their BlackBerry devices to their computers using a serial or USB connection. The BlackBerry Enterprise Server and BlackBerry devices use the connection to send data between them. Data traffic from BlackBerry devices bypasses the wireless network when BlackBerry devices are connected to users' computers. The BlackBerry Device Manager connects to the BlackBerry Router, which sends data directly to BlackBerry devices. Users can install the BlackBerry Device Manager when they install the BlackBerry® Desktop Software or at another time. The BlackBerry Device Manager is an optional component, but it is required to support a bypass connection to the BlackBerry Router.

BlackBerry MDS

The BlackBerry MDS is an optimized framework for creating, deploying and managing applications for the BlackBerry Enterprise Solution. The BlackBerry MDS provides essential components that enable applications beyond email to be deployed to mobile devices, including developer tools, administrative services, and BlackBerry® Device Software. The BlackBerry MDS is the proxy for all web communications to and from the BlackBerry smartphone. It also uses the same BlackBerry push delivery model and advanced security features used for BlackBerry smartphone email messages.

The BlackBerry MDS comprises the following three main components:

- BlackBerry® MDS Services
- BlackBerry® MDS Developer Tools
- BlackBerry® MDS Device Software

BlackBerry MDS Services are the next generation of the BlackBerry MDS. As part of the BlackBerry Enterprise Server, BlackBerry MDS Services are responsible for managing interactions and requests between BlackBerry smartphones and enterprise applications that sit behind the corporate firewall. BlackBerry MDS Developer Tools are used to create wireless applications for BlackBerry smartphones. BlackBerry MDS Device Software allows applications built with BlackBerry MDS Developer Tools to run on BlackBerry smartphones. The BlackBerry® MDS Simulator is used to simulate network connectivity to test and debug BlackBerry applications for BlackBerry smartphones.
In the preceding diagram, applications and content reside on servers behind the corporate firewall. The BlackBerry MDS Services manage connections between the application and content servers and BlackBerry smartphones. The BlackBerry MDS services communicate with application servers and content servers using *SOAP*, Custom Data, XML, HTML, and WML, all over HTTP.

**BlackBerry smartphones**

BlackBerry smartphones are integrated wireless voice and data devices that are optimized to work with the BlackBerry Enterprise Solution. The smartphones provide push-based access to email and data from enterprise applications and systems in addition to web, MMS, SMS, and organizer applications.

**Devices with BlackBerry Connect software**

Devices with BlackBerry Connect software are available from leading manufacturers that feature BlackBerry push delivery technology and connect to the BlackBerry Enterprise Server.

BlackBerry Connect software brings the advantages of BlackBerry push technology to a variety of devices from manufacturers such as Asus®, HTC®, Motorola®, Nokia®, and Sony® Ericsson.

With BlackBerry Connect technology, users can connect to BlackBerry Internet Service and BlackBerry Enterprise Server on their preferred device and access BlackBerry features like BlackBerry smartphone email messages and calendar synchronization.

BlackBerry smartphones, and devices with BlackBerry Connect software (called BlackBerry enabled devices), provide access to email messages and information without requesting delivery. BlackBerry Connect software is added to mobile devices from a variety of manufacturers to enhance mobile device functionality and allow mobile device users to take advantage of BlackBerry push technology.
BlackBerry Alliance Program

The BlackBerry Alliance Program is a large community of independent software vendors, system integrators, and solution providers that offer applications, services, and solutions for the BlackBerry Enterprise Solution. The BlackBerry Alliance Program is designed to help organizations make the most of the BlackBerry Enterprise Solution when mobilizing their enterprises.

With the BlackBerry Alliance Program a company can gain access to industry-leading resources in development, marketing, sales, and training that help to expand business opportunities.

BlackBerry Solution Services

These tools and programs are designed to help organizations deploy, manage, and extend their wireless solution. BlackBerry Solution Services is a group of services that includes the following:

- BlackBerry® Technical Support Services
- BlackBerry® Training
- BlackBerry® Professional Services
- Corporate Development Program

The BlackBerry Infrastructure is operated by RIM. It is designed to provide a secure and reliable connection to wireless service providers that operate on the various wireless network technologies around the world. The Internet transports data between the wireless networks, the BlackBerry Infrastructure, and the firewall. Data between the BlackBerry Enterprise Server and the BlackBerry smartphone travels through an outbound-initiated, two-way TCP connection on port 3101 of the firewall.

BlackBerry Enterprise Server software is installed on a computer in an organization and integrates the organization’s email messaging and application infrastructure with the BlackBerry Infrastructure. The BlackBerry Enterprise Server is designed to manage the transfer of information, encrypt and decrypt all information that flows to and from the BlackBerry smartphone, and provide secure push delivery of content to BlackBerry smartphone users.

The BlackBerry Enterprise Solution integrates with messaging and collaboration servers such as Microsoft® Exchange to allow for wireless delivery of email, messages, and data.

BlackBerry Enterprise Solution data flow

The following figure outlines the data flow when an email message is created by a BlackBerry smartphone user (User A) and received by another BlackBerry smartphone user (User B) using the BlackBerry Enterprise Solution.
The following steps describe the data flow when User A sends an email message to User B using the BlackBerry Enterprise Solution:

1. User A creates an email message on the BlackBerry smartphone and sends it. The email message is compressed, encrypted, and sent to the wireless network.
   - BlackBerry smartphones use either AES encryption or Triple DES encryption to encrypt email messages.
   - BlackBerry smartphones use service books to locate the BlackBerry Infrastructure. Each BlackBerry smartphone has several service books. Each service book provides information on how to interact with a specific BlackBerry Infrastructure service, such as email messaging or browsing, as well as information required for specific BlackBerry smartphone features and applications.
   - Each BlackBerry smartphone has a PIN that is used to uniquely identify it to the BlackBerry Infrastructure.
   - Each email message sent using the BlackBerry Enterprise Solution is assigned a RefID that is used to coordinate email message management tasks between the messaging server and the BlackBerry smartphone. For example, when a BlackBerry smartphone user deletes an email message on the BlackBerry smartphone, the RefID is used to identify the corresponding email message on the messaging server for deletion.

2. The wireless network sends the email message to the Internet through the BlackBerry Infrastructure. If the BlackBerry smartphone has been assigned the appropriate services for use with the BlackBerry Enterprise Solution (called provisioning), the BlackBerry Infrastructure sends
the email message to the appropriate BlackBerry Enterprise Server for User A’s organization using the Server Routing Protocol.

3. The email message reaches the firewall for User A’s organization, where it passes through an outbound-initiated, two-way connection to the BlackBerry Enterprise Server on TCP port 3101.

4. The BlackBerry Enterprise Server for User A’s organization decrypts the email message, decompresses it, and sends it to the messaging server, which places it in User A’s Outbox folder.

5. The messaging server that hosts User A’s mailbox sends the email message as SMTP traffic to the firewall. The email message travels across the Internet as SMTP traffic and arrives at the firewall for User B’s organization. The firewall allows the email message to pass through to the messaging server, where it is placed in User B’s mailbox. These steps occur outside the BlackBerry Enterprise Solution.

6. The BlackBerry Enterprise Server monitors User B’s mailbox and retrieves the new email message. The new email message is applied against global and personal email message filters and folder redirection settings to verify that it is approved for delivery to User B’s BlackBerry smartphone. If the email message is to be delivered to User B’s BlackBerry smartphone, the BlackBerry Enterprise Server compresses and encrypts the first 2 KB of the email message and queues it for delivery.

   • Email message filters can be used to prevent email messages from being delivered to a BlackBerry smartphone using various criteria.

   • Folder redirection settings specify the mailbox folders on the messaging server that can contain email messages that should be forwarded to a BlackBerry smartphone. By default, the Inbox folder in each BlackBerry smartphone user’s mailbox is enabled for folder redirection to allow new email messages to be sent to the BlackBerry smartphone.

   • The BlackBerry Enterprise Server assigns a RefID to the email message before it is sent to User B’s BlackBerry smartphone.

7. The BlackBerry Enterprise Server sends the email message through an outbound initiated, two-way TCP connection on port 3101 of the firewall to the BlackBerry Infrastructure.

8. If User B’s BlackBerry smartphone has been provisioned for use with the BlackBerry Enterprise Solution, the BlackBerry Infrastructure sends the email message to the wireless network. The wireless network receives the email message and forwards it to User B’s BlackBerry smartphone.

9. User B’s BlackBerry smartphone receives, decrypts, and decompresses the email message. User B’s BlackBerry smartphone sends a confirmation notification (called an acknowledgement) to the BlackBerry Enterprise Server to indicate that it has received the email message successfully.

10. User B’s BlackBerry smartphone checks the RefID of the email message and compares it to a list of previously seen RefIDs on the BlackBerry smartphone. If the RefID was previously seen, the email message is discarded. Otherwise, the email message is displayed on the BlackBerry smartphone.
BlackBerry Internet Service

The BlackBerry Internet Browser was developed to use the BlackBerry® Internet Service (BIS) as a gateway to the Internet. This component is hosted by the BlackBerry Infrastructure and is a service offered by certain carriers.

The features provided are similar to those provided through BlackBerry MDS. As an example, both are designed to optimize web content for wireless browsing, and both transcode content types into appropriate formats for display on the smartphone.

The following statements outline the key differences between the BlackBerry Internet Service and BlackBerry MDS:

- BlackBerry Internet Service does not require BlackBerry Enterprise Server.
- BlackBerry Internet Service is not used through a corporate firewall.
- BlackBerry Internet Service is made available through selected BlackBerry service providers.
- BlackBerry Internet Service does not support Triple DES encryption, and secure sites (HTTPS) are not accessible.

BlackBerry Internet Service communicates with the BlackBerry Infrastructure using HTTP over the RIM® IP Proxy Protocol (IPPP). Delivery of HTML is both faster and more efficient than HTTP over WAP in most current implementations.

BlackBerry Internet Service was designed to provide the following functionality:

- Preprocesses and compresses HTML or XHTML content before sending it to the BlackBerry smartphone, which helps to speed up transfers
- Sends processed content to the device as soon as it is available, rather than sending it only after all data has been completely processed
- Optimizes images for display on a BlackBerry smartphone
- Processes and transmits images with content to help reduce network traffic
- Transcodes specific content types for appropriate display on the BlackBerry smartphone

The BlackBerry Internet Service is designed for individuals and as an alternative to BlackBerry Enterprise Server software for small organizations. The BlackBerry Internet Service forwards email messages from various messaging servers to BlackBerry smartphones and allows BlackBerry smartphone users to send email messages over the wireless network. The BlackBerry Internet Service allows a BlackBerry smartphone user to do the following:

- Associate a BlackBerry smartphone with an email address in the blackberry.net domain (for example, <user name>@<wireless service provider>.blackberry.net).
- Associate up to ten work or personal email accounts with a BlackBerry smartphone, including Google Mail™ and Yahoo!® Mail accounts, and email accounts that can be accessed using Microsoft® Outlook® Web Access, Post Office Protocol, and Internet Message Access Protocol.
- Experience push delivery of email messages.
- Access attachments and images wirelessly in popular formats.
• Access HTML and WAP web pages using the BlackBerry Internet Service Browsing service.

The BlackBerry Internet Service contains many of the same components as the BlackBerry Enterprise Solution. However, instead of interacting with a BlackBerry Enterprise Server, the BlackBerry Infrastructure interacts with BlackBerry Internet Service servers that are maintained by RIM and administered by each wireless service provider. The BlackBerry Internet Service servers contain a user profile for each BlackBerry smartphone user. This user profile contains the PIN of the BlackBerry smartphone, as well as the information required to access the different email accounts that are configured for use with the BlackBerry smartphone, such as the BlackBerry email address and Google Mail, Yahoo! Mail, Microsoft Outlook Web Access, POP, and IMAP email accounts.

BlackBerry Internet Service subscribers can configure email accounts for use with the BlackBerry Internet Service using their BlackBerry smartphones or by accessing the appropriate BlackBerry Internet Service web site for their wireless service providers. The BlackBerry Internet Service web site also allows subscribers to resend service books to their BlackBerry smartphones, as well as create email message filters. To access the BlackBerry Internet service web site, subscribers can refer to the instructions provided by their wireless service providers when they purchase their BlackBerry smartphones.

Although the BlackBerry Internet Service compresses email messages before sending them to the wireless network, the contents of the email messages are not encrypted.

BlackBerry Internet Service data flow

The following figure outlines the data flow when an email message is created by a BlackBerry smartphone user (User A) and received by another BlackBerry smartphone user (User B) using the BlackBerry Internet Service.
The following steps describe the data flow when User A sends an email message to User B using the BlackBerry Internet Service:

1. User A creates an email message on the BlackBerry smartphone and sends it. The email message is compressed and sent to the wireless network. As with the BlackBerry Enterprise Solution, BlackBerry smartphones use service books to locate the BlackBerry Infrastructure and the appropriate services provided by the BlackBerry Internet Service.

2. The wireless network sends the email message to the BlackBerry Infrastructure. If the BlackBerry smartphone has been provisioned for use with the BlackBerry Internet Service, it is associated with the appropriate user profile in the BlackBerry Internet Service.

3. The BlackBerry Internet Service decompresses the email message and delivers it to the appropriate messaging server for User B. The BlackBerry Internet Service also updates the Sent Items folder on the messaging server for User A.

4. The BlackBerry Internet Service monitors the email accounts listed in User B’s user profile and retrieves the new email message. The new email message is applied against personal email message filters to verify that it is approved for delivery to User B’s BlackBerry smartphone. If the email message is to be delivered to User B’s BlackBerry smartphone, the BlackBerry Internet Service compresses the first 2 KB of the email message and queues it for delivery.

- For certain third-party email accounts (including AOL® Mail, Yahoo! Mail, Google Mail, Windows Live™ Hotmail®, Hostopia®, and GoDaddy® email accounts), the third-party messaging servers notify the BlackBerry Internet Service when email messages arrive.
• For Microsoft Outlook Web Access, POP, and IMAP accounts, the BlackBerry Internet Service is designed to poll for new email messages every 15 minutes. If new email messages are found, the BlackBerry Internet Service polls again after three minutes (a feature called quick polling).

• For email accounts that support IMAP IDLE, the BlackBerry Internet Service maintains a persistent connection to the messaging server to check for new email messages.

5. The BlackBerry Infrastructure sends the email message to the wireless network.

6. The wireless network receives the email message and forwards it to User B’s BlackBerry smartphone.

7. User B’s BlackBerry smartphone receives and decompresses the email message. User B’s BlackBerry smartphone then sends an acknowledgement to the BlackBerry Internet Service to indicate that it has received the email message successfully.
Quiz

1. Which one of the following systems is part of the BlackBerry Infrastructure?
   A. Global System for Mobile Communications (GMS)
   B. Mobile Data System (MDS)
   C. Enhanced Data Rates for Global Evolution (EDGE)
   D. Universal Mobile Telecommunications System (UMTS)

2. Which of the following is not a function of the BlackBerry Enterprise Server?
   A. Transports data between the wireless network and the firewall
   B. Manages the wireless transfer of information from behind the firewall
   C. Uses enhanced security to encrypt all information that flows to and from the BlackBerry smartphone
   D. Designed to allow for secure, push delivery of content to BlackBerry smartphone users

3. Which of the following steps occur within the BlackBerry Enterprise Solution during data flow?
   A. The server sends the data as SMTP traffic to the firewall.
   B. The firewall allows the data to pass through the server.
   C. The server decrypts and decompresses the data.
   D. The data travels across the Internet as SMTP traffic.

4. Which of the following are functions of the BlackBerry Infrastructure?
   A. Communicate with the wireless network
   B. Monitor other BlackBerry components
   C. Compress and encrypt data
   D. All of the above
   E. None of the above
5. What is the primary function of the BlackBerry Connect software?
   A. Provide access to data using push technology
   B. Transport data between wireless networks
   C. Transport data to and from the BlackBerry smartphone
   D. Decrypt and encrypt data

6. What is the BlackBerry Alliance Program?
   A. A group of technical support service providers
   B. A large group of software vendors who offer BES services
   C. A large group of software vendors who offer BIS services
   D. BlackBerry training services

7. The BlackBerry Internet Service requires the BlackBerry Enterprise Server. True or false?
   A. True
   B. False

8. Which of the following is a component of the BlackBerry Internet Service?
   A. BlackBerry Mobile Data System
   B. BlackBerry Enterprise Server
   C. BlackBerry Alliance Program
   D. HTTP over the RIM IPPP

9. Which of the following statements is true of the BlackBerry Internet Service?
   A. It is used through an organization’s firewall.
   B. It supports Triple DES encryption.
   C. It is available through BlackBerry service providers.
   D. It allows secure sites (HTTPS) accessibility.

10. Which of the following statements is true of the BlackBerry Enterprise Server?
A. It compresses HTML content before sending it to the BlackBerry smartphone.
B. It communicates with the BlackBerry Infrastructure using HTTP over the RIM IPPP.
C. It was developed to use the BlackBerry Internet Service as a gateway to the Internet.
D. All data between applications and BlackBerry smartphones flow centrally through the server.

11. Which of the following statements best defines the BlackBerry Mobile Data System?
   A. An optimized framework for creating, deploying, and managing BlackBerry Enterprise Server applications
   B. An optimized framework for creating, deploying, and managing BlackBerry Internet Service applications
   C. Services responsible for managing interactions between BlackBerry Internet Services and BlackBerry Enterprise Server
   D. A series of developer tools for creating wireless BlackBerry smartphone applications

12. What is the key difference between BlackBerry Internet Service and BlackBerry MDS?
   A. BlackBerry MDS is not used through an organization’s firewall.
   B. BlackBerry MDS does not require BlackBerry Enterprise Server.
   C. BlackBerry Internet Service does not require BlackBerry Enterprise Server.
   D. BlackBerry Internet Service supports Triple DES encryption.

13. Which of the following are included as BlackBerry MDS tools?
   A. Simulators
   B. SOAP/HTTP
   C. XML/HTML
   D. All of the above
   E. None of the above

14. Which of the following items is assigned to each email sent using the BlackBerry Enterprise Solution to coordinate message management tasks between the server and BlackBerry smartphone?
15. Each BlackBerry smartphone has which of the following items to uniquely identify it to the BlackBerry Infrastructure?

A. RefID
B. PIN
C. AES
D. DES

16. Which of the following statements is true of BlackBerry Internet Service?

A. BlackBerry Infrastructure interacts with the BlackBerry Internet Service servers.
B. BlackBerry Infrastructure interacts with the BlackBerry Enterprise Server.
C. BlackBerry Internet Service uses the same infrastructure as the BlackBerry Enterprise Solution.
D. BlackBerry Internet Service and BlackBerry Enterprise Solution have all identical components.

17. Which of the following BlackBerry Enterprise Solution components monitors server components and restarts them if they stop responding?

A. BlackBerry Administration Service
B. BlackBerry Controller
C. BlackBerry Dispatcher
D. BlackBerry Monitoring Service

18. Which of the following BlackBerry Enterprise Solution components compresses and encrypts all data that BlackBerry smartphones send and receive?

A. BlackBerry MDS Connection Service
B. BlackBerry Controller
19. Which of the following BlackBerry Enterprise Solution components connects to the wireless network to send data to and from BlackBerry smartphones?

A. BlackBerry Synchronization Service
B. BlackBerry Messaging Agent
C. BlackBerry Attachment Service
D. BlackBerry Router

20. Which of the following BlackBerry Enterprise Solution components performs administration services over the wireless network?

A. BlackBerry Administration Service
B. BlackBerry Synchronization Service
C. BlackBerry Policy Service
D. BlackBerry Monitoring Service
Answers

1. B
2. A
3. C
4. D
5. A
6. B
7. B
8. D
9. C
10. D
11. A
12. C
13. D
14. A
15. B
16. A
17. B
18. C
19. D

20. C
Web development

In this section, you will learn how BlackBerry Infrastructure and mobile application development differ from computer web development and Internet connectivity.

BlackBerry web development

The BlackBerry platform supports several different ways of developing applications. Each methodology has unique strengths, and all of them help you leverage the BlackBerry solution’s easy connectivity and robust security. BlackBerry web development is ideal for developers who are new to the BlackBerry solution, yet sophisticated enough for advanced applications. BlackBerry web development allows you to do the following tasks:

- Create browser-based applications and deploy them with minimal effort.
- Leverage industry standards from HTML to AJAX.
- Push data to user devices and leverage offline queuing.
- Create a web application that users can access quickly and easily through the existing BlackBerry web infrastructure.

While BlackBerry web applications are standards-based and easy to deploy, they are not limited to the development of simple applications. In addition to leveraging key BlackBerry features such as true server-side push, you can use the web technology, Web 2.0. A Web 2.0 site allows its users to interact with one another or change web site content as opposed to just viewing it. Advanced features of the BlackBerry Web Development platform include web signals, push technology, and offline queuing.

Web signals are near-real time content updates that push data directly to a user’s BlackBerry smartphone, allowing third-party content providers to add timely and relevant updates to their application portfolio. An application portfolio is an executable software component or coupled set of executable software components (one or more), deployed together, that deliver some or all of a series of steps needed to create, update, manage, calculate or display information. Web signals have a seamless distribution process after a simple BlackBerry smartphone user opt-in process.

Push technology allows users to take advantage of true server-side push communication, supported by every BlackBerry smartphone. You can send information to the browser in a variety of ways, such as channel, cache, and message, regardless of back-end server technology, whether it is Apache, IIS, WebSphere, and so on. With push technology, you can leverage industry standards such as PAP or use the simplified BlackBerry push technology. You can use push technology to reduce the amount of data being sent or received while you wait for updates.

With offline form queuing, pages are automatically queued for submittal when they re-enter the coverage area. You can use the feature of offline form queuing easily, by adding specific HTTP headers to web pages.

The BlackBerry application development platform involves the BlackBerry Browser, and BlackBerry Java ME. These tools simplify the development, deployment, and management of wireless applications.
and provide security, encryption, managed connectivity, push, centralized management, and standards-based development options for wireless applications.

Java ME is the most flexible BlackBerry development option. You can customize all aspects of your application. Because it is so flexible, application development can be complex. The BlackBerry Browser is the easiest BlackBerry development option as it is simple to use, but it provides the least flexibility and does not handle offline capabilities well.

The architecture for BlackBerry smartphone web applications leverage the wireless connectivity built into the BlackBerry platform and take advantage of the familiar web-based user interfaces. Because application data can leverage the same wireless connection, compression, encryption, and infrastructure as BlackBerry email, there is no need to build additional networking functions. Web applications are traditional client/server deployments, so there is nothing to deploy to clients and users will be familiar with the web interface.

BlackBerry Enterprise for MDS Applications provide end-to-end security, managed wireless connectivity, standard protocol interfaces, such as HTTP and HTML, and device and network-dependent push. Applications are a combination of XML and JavaScript®. BlackBerry MDS tools use standards-based protocols and specifications for integration, such as SOAP and XML for corporate data access. This eliminates the need for development and maintenance of custom integration code.

The BlackBerry MDS services simplify application development over the wireless network by making the complexities of wireless networking transparent to application developers. The BlackBerry MDS Connection service provides the connection between the corporate environment and BlackBerry smartphones on multiple wireless networks. BlackBerry smartphones appear as clients on the corporate LAN.

**BlackBerry Web Development Plug-in for Eclipse**

The BlackBerry® Web Development Plug-in for Eclipse™ allows you to debug web applications and content for the BlackBerry solution. Working through the familiarity of Eclipse™ allows simplified code profiling and increases overall efficiencies. Integration is seamless with Eclipse version 3.4, which allows comprehensive development of all BlackBerry web applications and content. The plug-in also facilitates active web development and debugging with a BlackBerry Smartphone Simulator, as well as active web profiling to optimize web projects.

**BlackBerry Plug-in for Microsoft Visual Studio**

The BlackBerry® Plug-in for Microsoft® Visual Studio® version 1.2 gives developers accustomed to creating web applications for desktop browsers the ability to write and deploy BlackBerry smartphone web applications. The plug-in enables such features as integrated device simulators and ASP.NET mobile controls. Developers working within a Microsoft.NET programming environment use their development tool of choice, while taking advantage of key benefits and features found in web technology in order to quickly create superior browser-based content and applications. Developers using the BlackBerry Plug-in for Microsoft Visual Studio can enjoy a seamlessly optimized and well integrated web development, debugging, and profiling environment, all within a single tool for Microsoft® Visual Studio® 2008.
Internet connectivity differs from mobile device infrastructure

The BlackBerry Infrastructure manages email messages on various wireless networks to and from the BlackBerry smartphone and the BlackBerry Internet Service.

The BlackBerry platform provides a robust infrastructure that supports communication with BlackBerry smartphones. It does this over the cellular wireless or the protected enterprise Wi-Fi network through a secure connection from behind the firewall. It monitors BlackBerry users’ mailboxes for email, pushes data out to end users, and also manages data requests, messages, and organizer items that are submitted from the BlackBerry smartphone. These capabilities ensure a rich, positive end user experience and provide seamless, uninterrupted workflow, wirelessly synchronizing organizer data and messages generated by the users’ enterprise accounts.

Wireless management of BlackBerry smartphones gives administrators an edge by helping to ensure that corporate security and best practices are maintained. Critical management functions, such as remote password setting, device locking, and data wiping, can be performed wirelessly. End users can also self-provision their BlackBerry smartphone wirelessly without relying on a cradle. Administrators gain flexibility in supporting an extended workforce and reduced effort in maintaining the security and availability of corporate data.

OSI model

Internet connectivity is based on the standardized Internet Protocol Suite (TCP/IP) that interconnects computer networks globally. TCP/IP stands for Transmission Control Protocol/Internet Protocol. The TCP/IP is built on the OSI model. The Open Systems Interconnection model defines Internet connectivity as a vertical stack of seven layers.

Upper layers - These layers of the OSI model represent software that provides network services like encryption and connection management.

- Application
- Presentation
- Session

Lower layers - These layers carry out hardware functions like routing, addressing, and flow control. In the OSI model, data communication starts with the top layer at the sending side, travels down the OSI model stack to the bottom layer, then travels the network connection to the bottom layer on the receiving side, and up its OSI model stack.

- Transport
- Network
- Data Link
- Physical
Internet

The Internet is a global system of interconnected computer networks. The web is one of the services or applications that run on the Internet. The internet is a system of interlinked hypertext documents that can be found using a search engine and viewed using a browser. These documents and other resources are linked by hyperlinks or web addresses. The server-name portion of the URL becomes an IP address using the global distributed Internet database known as the DNS.

A fundamental specification of web architecture is the URL. Because all languages use URIs, this allows things written in one language to refer to things defined in another language and gives them universality. The most well known URI space is HTTP, which consists of the DNS and a string of text defined by the owner of the domain name.

The browser requests the resource by sending an HTTP request to the web server at that particular address. The HTML text of the page is requested first and then parsed by the browser, which then makes additional requests for images or other files that form the web page. Browsers render the page onto the screen as specified by its HTML, CSS, and other web languages.

The structure of a web site’s architecture is recognized by a search engines through its internal linking structure. Specific information such as the anchor text of a link and the heading text on the target page. It detects a topic between linked pages using key word searches, title tags, heading tags, and html names. A search engine spider can establish relevance in search results by the web site architecture. When developing web sites, it is important to design the site, produce the content, and then build the web site.

Computers connect to the Internet through networks. Internet Service Providers provide the connection to networks by having their own dedicated servers connecting various regions. In each region, the company has a Point of Presence. The POP is a place for local users to access the company’s network, often through a local phone number or dedicated line. No one network is in control. Instead, there are several high-level networks connecting to each other through Network Access Points. Routers determine where to send information from one computer to another.

Internet servers make the Internet possible. All of the computers on the Internet are either servers or clients. The computers that provide services to other machines are servers. The computers that are used to connect to those services are clients. There are web servers, email servers, and FTP servers serving the needs of Internet users all over the world.

When you access a web site, the computer making the request for information is the client. You are connecting to the web server. The server computer finds the page you requested and sends it to you. Clients send their requests to a specific software server running on the server computer. For example, if you are running a web browser on your computer, it communicates with the web server on the server computer, not the email server.
A server has a static IP address that does not change very often. A home computer that is dialing up through a modem, on the other hand, typically has an IP address assigned by the ISP every time you dial in. That IP address is unique for your session—it may be different the next time you dial in. This way, an ISP only needs one IP address for each modem it supports, rather than one for each user.

A server computer makes its services available using numbered ports—one for each service that is available on the server. For example, if a server computer is running a content server and an FTP server, the content server is typically available on port 80, and the FTP server is available on port 21. Clients connect to a service at a specific IP address and on a specific port number. After a client has connected to a service on a particular port, it accesses the service using a specific protocol. Protocols are often text and describe how the client and server will communicate. Every content server on the Internet uses the Hypertext Transfer Protocol. An HTTP server is often used as a gateway to a series of documents or a database application. The Common Gateway Interface is an agreement between HTTP server implementors about how to integrate such gateway scripts and programs.
1. Which of the following statements is true of push technology?
   A. It originates on the server-side of communication.
   B. It originates on the client-side of communication.
   C. It increases the amount of data being sent while waiting for updates.
   D. It is back-end server dependent.

2. Which of the following software packages is built for use with an open architecture development environment?
   A. BlackBerry Plug-in for Microsoft Visual Studio
   B. BlackBerry Plug-in for Eclipse
   C. Microsoft Visual Studio
   D. BlackBerry JDE Component Package

3. Which of the following are features of the BlackBerry web development platform?
   A. Web signals
   B. Push technology
   C. Offline queuing
   D. All of the above
   E. None of the above

4. Which of the following statements is true of BlackBerry web development?
   A. Offline queuing is prohibited when creating BlackBerry web applications.
   B. BlackBerry applications are limited to using BlackBerry Infrastructure.
   C. BlackBerry provides easy connectivity and robust security.
   D. Client-side communication controls BlackBerry push technology.
5. Which of the following BlackBerry development options is easiest to use?
   A. BlackBerry Browser
   B. BlackBerry Java ME
   C. BlackBerry MDS Runtime
   D. BlackBerry Plug-in for Eclipse

6. Which of the following BlackBerry development options bridge flexibility and ease of use?
   A. BlackBerry Browser
   B. BlackBerry Java ME
   C. BlackBerry MDS Runtime
   D. BlackBerry Plug-in for Eclipse

7. Which of the following statements does not pertain to the BlackBerry Infrastructure?
   A. It is a robust infrastructure that supports communication with BlackBerry smartphones.
   B. It manages email messages on various wireless networks.
   C. It allows remote password setting, device locking, and data wiping to be done wirelessly.
   D. It provides the connection to networks for service providers.

8. Which of the following statements best defines the internet?
   A. A global system of interconnected computer networks
   B. A system of interlinked hypertext documents and resources
   C. A browser-based search engine
   D. A universal resource locator

9. Which of the following items provides universal communication among computer languages?
   A. URI
   B. URL
   C. IP address
   D. DNS
10. How does a search engine recognize a web site's architecture?
   A. Through TCP/IP
   B. Through Cascading Style Sheets
   C. Through its internal linking structure
   D. Through <body> tags

11. Which of the following layers of the OSI model implements encryption and connection management?
   A. Application, Presentation, Session
   B. Transport, Network, Data Link
   C. Physical, Transport, Session
   D. Application, Network, Presentation

12. Which of the following layers of the OSI model implements routing, addressing, and flow control?
   A. Application, Presentation, Session
   B. Transport, Network, Data Link, Physical
   C. Physical, Transport, Session
   D. Application, Network, Presentation

13. The computer from which the request for information originates is called which of the following?
   A. Server
   B. FTP
   C. Service Provider
   D. Client

14. Which of the following has a static IP address?
   A. Client
   B. ISP
15. A server computer makes its service available using numbered ______?
   A. Metadata
   B. HTML
   C. IP domain names
   D. Ports
Answers

1. A
2. B
3. D
4. C
5. A
6. C
7. D
8. B
9. A
10. C
11. A
12. B
13. D
14. C
15. D
The BlackBerry Browser

When you develop web content for the BlackBerry® Browser, you must be aware of the web standards that the BlackBerry Browser supports and determine how to develop web content that functions within those supported standards. However, to create an effective browsing experience on the BlackBerry Browser, you must understand more than just what the BlackBerry Browser supports. You must also be aware of the physical components of the wireless browsing environment in which the BlackBerry Browser exists, and how they contribute, positively and negatively, to the user’s wireless browsing experience. These physical components include the following:

- **The BlackBerry smartphones**—BlackBerry smartphone models have different versions of the BlackBerry smartphone software, different screen sizes, and different input methods.
- **The wireless network**—Wireless networks possess less bandwidth than wired networks or Wi-Fi networks. Wireless networks provide reduced data transfer rates, which results in increased network latency.
- **The network gateway**—Network gateways connect the wireless network, over which the BlackBerry smartphones communicate, to the wired network, on which web servers and data systems exist. Different network gateways offer different support for content optimization and content delivery strategies. The BlackBerry Browser is designed to communicate through several network gateways.

Developing content with the wireless environment in mind can help you to work around some of the limitations inherent in wireless browsing. With a greater understanding of the BlackBerry Browser, you can make the content development decisions necessary to provide the functionality that users require, while also providing a positive wireless browsing experience.

For a BlackBerry smartphone to access the Internet, a gateway is needed. A gateway converts incoming content into a form suitable for the BlackBerry smartphone, and converts outgoing content into a form suitable for the destination web server and site. It is only possible for a BlackBerry smartphone to access the Internet through one of three gateways: WAP, BlackBerry MDS, or BlackBerry Internet Service. The BlackBerry Browser can be configured to connect to the wireless network through one of these network gateways.

<table>
<thead>
<tr>
<th>Network gateway</th>
<th>Accessed by</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>BlackBerry MDS Connection Service</td>
<td>BlackBerry Browser configuration</td>
<td>HTTP/IPPP</td>
</tr>
<tr>
<td>BlackBerry Internet Service Browsing</td>
<td>Internet Browser configuration</td>
<td>HTTP/IPPP</td>
</tr>
<tr>
<td>WAP-compliant gateway</td>
<td>WAP Browser configuration</td>
<td>WAP 1.2 and WAP 2.</td>
</tr>
</tbody>
</table>

Users can choose the network gateway that the BlackBerry Browser communicates with by choosing the configuration that is associated with that network gateway. For example, users can choose the WAP Browser configuration to access bookmarks provided by their service provider, the Internet Browser.
configuration to access Internet content, and the BlackBerry Browser configuration to access their organization's intranet.

Users can specify the settings for each configuration to help optimize the performance. For example, to ensure the correct operation of an organization's web application, users can turn on support for JavaScript® for the BlackBerry Browser configuration. However, to download content more quickly over the Internet for personal use, users can disable JavaScript for the Internet Browser configuration.

On Wi-Fi-enabled BlackBerry smartphones, users can choose to use the Hotspot Browser to browse the Internet when they are in a Wi-Fi hotspot.

**BlackBerry MDS Connection Service network gateway**

The BlackBerry MDS Connection Service is designed to provide users with secure access to their organization's intranets, and access to the Internet. The BlackBerry MDS Connection Service is a component of the BlackBerry Enterprise Server that exists on the organization's network behind a firewall.

The BlackBerry MDS Connection Service acts as a proxy for the BlackBerry Browser, and makes requests on behalf of the BlackBerry Browser. The BlackBerry MDS Connection Service optimizes the content in the response, to enhance network efficiency and improve display on smaller screens, before it sends the content to the BlackBerry Browser.

The BlackBerry Browser accesses the BlackBerry MDS Connection Service network gateway using the BlackBerry Browser configuration. The BlackBerry Browser configuration communicates with the BlackBerry MDS Connection Service using HTTP/IPPP.

To browse the Internet or an intranet through the BlackBerry MDS Connection Service network gateway, users must specify the BlackBerry Browser configuration in the Browser Configuration settings.

Because the BlackBerry MDS Connection Service is a component of the BlackBerry Enterprise Server, administrators can specify a number of settings for the BlackBerry Browser configuration. For example, to help control the amount of bandwidth used, administrators can specify whether the BlackBerry Browser supports JavaScript.

**BlackBerry Internet Service Browsing network gateway**

Wireless service providers can use the BlackBerry® Internet Service Browsing network gateway to offer BlackBerry smartphone users access to the content optimization and compression features provided by the BlackBerry Infrastructure without using the BlackBerry Enterprise Server.

The BlackBerry Internet Service Browsing network gateway acts as a proxy for the BlackBerry Browser, and makes requests on behalf of the BlackBerry Browser. The BlackBerry Internet Service Browsing
network gateway optimizes the content in the response to enhance network efficiency and improve display on the smaller screens before it relays the content to the BlackBerry Browser.

The BlackBerry Browser accesses the BlackBerry Internet Service Browsing network gateway using the Internet browser configuration. The Internet browser configuration communicates with the BlackBerry Internet Service Browsing network gateway using HTTP/IPPP.

To browse the Internet through the BlackBerry Internet Service Browsing network gateway, users must specify the Internet browser configuration in the Browser Configuration settings.

To use the Internet browser configuration, a BlackBerry smartphone user requires a service book that is issued to the BlackBerry smartphone by the BlackBerry® Provisioning System.

## WAP network gateways

WAP network gateways are hosted by wireless service providers. WAP network gateways must support WTP-level segmentation and reassembly. Proprietary WAP extensions are not supported.

The BlackBerry Browser accesses WAP network gateways using the WAP Browser configuration. To browse the Internet through a WAP network gateway, users must specify the WAP Browser configuration in the Browser Configuration settings.

The WAP Browser configuration supports the following protocols:

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAP1.2.1</td>
<td>The WAP Browser configuration caches the WSP headers to decrease the transmission time of requests. The WAP Browser configuration sends common HTTP headers to the WAP network gateway when it sets up the WAP connection. In subsequent requests, the WAP Browser configuration sends only headers that are specific to the request or that contain values that are different from the initial values.</td>
</tr>
<tr>
<td>WAP 2.0</td>
<td>The WAP Browser configuration sends HTTP over WTCP. The BlackBerry Browser sends the HTTP request to a WAP 2.0 proxy, which then forwards the request to the server. The WAP network gateway determines the content types that the BlackBerry Browser can access. For example, some WAP network gateways can convert HTML content into a series of WML pages, or impose a limit on the size of content that the BlackBerry Browser can request.</td>
</tr>
</tbody>
</table>
Although developing web-based applications for Blackberry smartphones can be relatively easy, there are two main drawbacks. The first is connectivity where users cannot access your web site when they are out of a wireless coverage area. This can occur when users are situated in network dead-zones. If your users need constant access to your web site, a solution to this problem is developing a push application to regularly update each user’s device. The second drawback is the speed of the wireless network. The networks used by wireless devices, such as the BlackBerry smartphone, are slow compared to traditional wired networks. In order to mitigate this issue, RIM compresses data before transporting across the wireless network. Even then, access speed is compromised if web pages are large, if they rely heavily on graphic images, if network traffic is heavy, or if network coverage is spotty or weak.

The BlackBerry Browser allows users to do what desktop or laptop computer browsers allow them to do, such as the following:

- Set bookmarks and view history
- Type URLs quickly with the QWERTY or QWERTY-style keyboard
- Access videos, music, sports, and newsclips through mobile streaming
- Browse the Internet or intranets
- Read email, subscribe to other services such as voice mail
- Use the Internet Browser configuration to access web pages that enable you to subscribe to BlackBerry web push services or access ring tones.
- Use the WAP Browser configuration to access web pages from your wireless service provider that enable you to configure your account information and subscribe to services such as voice mail.
- Log in to a Wi-Fi access point and use the Hotspot Browser to browse web pages.

**BlackBerry Browser configuration**

Browser types are distinguished by their transport. Each transport breaks out to the Internet or (IP-based network) at a different point. The BlackBerry Browser breaks out to the Internet at the BlackBerry MDS Connection Service of the BlackBerry Enterprise. Data is optimized by compression, encryption, or transcoding. Transcoding means optimizing the requested data for delivery to a specific device, for example, resizing images to fit the BlackBerry smartphone screen and saving wireless network bandwidth. The BlackBerry Internet Browser breaks out to the Internet at the BlackBerry Internet Solution Infrastructure. Due to reduced optimization and a shorter signaling length, Internet browser is a faster mobile browser.

Availability of browsers is governed by which service books are available on the BlackBerry smartphone. Service books are configuration records that identify services provided for the smartphone. Service books associated with the BlackBerry Browser are the Desktop [IPPP] service book and the Desktop [BrowserConfig] service book. The Desktop [IPPP] service book is used to identify the transport for the BlackBerry Browser. The Desktop [BrowserConfig] service book stores the configuration for that particular instance of the browser application. If the Desktop [IPPP] service book gets deleted, the device software would also remove the associated Desktop [BrowserConfig] service book. If the Desktop
[BrowserConfig] service book gets deleted, the device software would automatically recreate it based on the default configuration for that particular browser. The BlackBerry Browser service books originate from the BlackBerry Enterprise Server. If accidentally deleted, these service books need to be resent from the server. The BlackBerry Internet Browser also has two service books associated with it: the BlackBerry Internet Browsing Service [IPPP] and the BlackBerry Internet Browsing Service [BrowserConfig]. These service books are sent out by the BlackBerry Internet Solution architecture.
1. Which of the following networks provide reduced data transfer rates?
   A. Wi Fi networks
   B. Wireless networks
   C. Wired networks
   D. Wide Area networks

2. Which of the following are physical components of a wireless browsing environment?
   A. BlackBerry smartphone
   B. Wireless network
   C. Network gateway
   D. All of the above
   E. None of the above

3. Which of the following components convert content into suitable formats?
   A. Gateways
   B. Clients
   C. Networks
   D. Web servers

4. Which of the following configurations access the BlackBerry MDS Connection Service?
   A. Internet Browser configuration
   B. WAP Browser configuration
   C. BlackBerry Browser configuration
   D. Hotspot Browser configuration
5. Which type of configuration has the fastest download time?
   A. BlackBerry Browser configuration
   B. Internet Browser configuration
   C. WAP Browser configuration
   D. Hotspot Browser configuration

6. Which of the following tasks slows download time?
   A. Optimizing data for download
   B. Disabling JavaScript for Internet Browser configuration
   C. Disabling JavaScript for the BlackBerry Browser configuration
   D. Specifying settings to reduce data optimization

7. Which of the following gateways is a component of the BlackBerry Enterprise Server?
   A. BlackBerry Internet Service Browsing Network Gateway
   B. WAP Network Gateway
   C. BlackBerry MDS Connection Service Network Gateway
   D. Hotspot Browsing Network Gateway

8. Which of the following gateways does not need the BlackBerry Enterprise Server?
   A. WAP Network Gateway
   B. BlackBerry MDS Connection Service Network Gateway
   C. Hotspot Browsing Network Gateway
   D. BlackBerry Internet Service Browsing Network Gateway

9. Which of the following gateways are hosted by wireless service providers?
   A. WAP Network Gateway
   B. BlackBerry MDS Connection Service Network Gateway
   C. Hotspot Browsing Network Gateway
   D. BlackBerry Internet Service Browsing Network Gateway
10. What are some of the drawbacks of developing web-based applications for BlackBerry smartphones?
   A. BlackBerry smartphone applications are more difficult to develop
   B. Limited wireless coverage area
   C. Reduced speed of the wireless network
   D. Limited push application development opportunities

11. A BlackBerry Browser can do what a desktop or laptop computer can do. *True or false?*
   A. True
   B. False

12. Which of the following items distinguish browser types?
   A. Transcoding
   B. Encryption
   C. Compression
   D. Transport

13. Configuration records that identify services provided for the BlackBerry smartphones are known as which of the following?
   A. Network packets
   B. Network gateways
   C. Service books
   D. Service providers

14. Which service books are associated with the BlackBerry Browser?
   A. Desktop [IPPP]
   B. Desktop [BrowserConfig]
   C. BlackBerry Internet Browsing Service [IPPP]
   D. BlackBerry Internet Browsing Service [BrowserConfig]
Answers

1. B
2. D
3. A
4. C
5. B
6. A
7. C
8. D
9. A
10. B and C
11. A
12. D
13. C
14. A and B
To reduce costs and to increase data transmission speeds, the BlackBerry Enterprise Solution compresses data that is sent to and received from BlackBerry smartphone users wirelessly. The BlackBerry Enterprise Server encrypts data before it passes through public networks. This process is designed to protect data.

The BlackBerry Internet Browser was developed to use the BlackBerry® Internet Service (BIS) as a gateway to the Internet. This component is hosted by the BlackBerry Infrastructure and is a service offered by certain carriers.

The BlackBerry MDS is an optimized framework for creating, deploying and managing applications for the BlackBerry Enterprise Solution. The BlackBerry MDS provides essential components that enable applications beyond email to be deployed to mobile users, including developer tools, administrative services, and BlackBerry Device Software.

The BlackBerry platform supports several different ways of developing applications. This platform includes the BlackBerry Browser, and BlackBerry Jave ME. Each methodology has unique strengths, and all of them help you leverage the BlackBerry solution’s easy connectivity and robust security. BlackBerry web development is ideal for developers who are new to the BlackBerry solution, yet sophisticated enough for advanced applications.

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With the BlackBerry Browser, you can set bookmarks and view history, type URLs quickly with the QWERTY or QWERTY-style keyboard, access videos, music, sports, and newsclips through mobile streaming, browse the Internet or intranets, read email, and subscribe to other services, such as voice mail. You can use the Internet browser configuration to access web pages that enable you to subscribe to BlackBerry web push services or access ring tones.
1. How does the BlackBerry Internet Service differ from the BlackBerry Enterprise Solution?

2. How does BlackBerry mobile connectivity differ from Internet connectivity?

3. Explain how the BlackBerry Browser can be configured to connect to a wireless network through the BlackBerry MDS Connection Service.