Mobile Communication – An overview

Lesson 07

Introduction to Mobile Computing

Mobile computing– A Definition

- The process of computation on a mobile-device
- In mobile computing, a set of distributed computing systems or service provider servers participate, connect, and synchronise through mobile communication protocols

Wikipedia Definition

- Mobile computing as a generic term describing ability to use the technology to wirelessly connect to and use centrally located information and/or application software through the application of small, portable, and wireless computing and communication devices

Mobile computing

- Provides decentralized (distributed) computations on diversified devices, systems, and networks, which are mobile, synchronized, and interconnected via mobile communication standards and protocols.
- Mobile device does not restrict itself to just one application, such as, voice communication

Mobile computing

- Offers mobility with computing power
- Facilitates a large number of applications on a single device

Ubiquitous computing

- Refers to the blending of computing devices with environmental objects
- A term that describes integration of computers into practically all objects in our everyday environment, endowing them with computing abilities
- Based on pervasive computing

Pervasive Computing

- Pervasive means ‘existing in all parts of a place or thing’.
- Pervasive computing– The next generation of computing which takes into account the environment in which information and communication technology is used everywhere, by everyone, and at all times.

Pervasive computing

- Assumes information and communication technology to be an integrated part of all facets of our environment, such as toys, computers, cars, homes, factories, and work-areas

Pervasive computing

- Takes into account the use of the integrated processors, sensors, and actuators connected through high-speed networks and combined with new devices for viewing and display

Mobile computing

- Also called **pervasive computing** *when a set of computing devices*, systems, or networks have the characteristics of *transparency*, application-aware *adaptation*, and have an *environment* sensing ability

Pervasive computing devices

- Are not PCs
- Are handheld, very tiny, or even invisible devices which are either mobile or embedded in almost any type of object

Mobile Computing

- Novel applications
- A large number of applications
- Very recently made mobile TV realizable

SmartPhone Feature Example

- A mobile phone with additional computing functions so as to enable multiple applications
- SMS (short message service), MMS (multimedia messaging service), phone, e-mail, addres book, web browsing, calender, task-to-do list, pad for memos.
- Compatibility with popular Personal Information Management (PIM) software

SmartPhone Example

- Integrated attachment viewing.
- SureType keyboard technology with QWERTY-style layout.
- Dedicated Send and End keys.
- Bluetooth® capability for hands-free talking via headset, ear buds, and car kits.

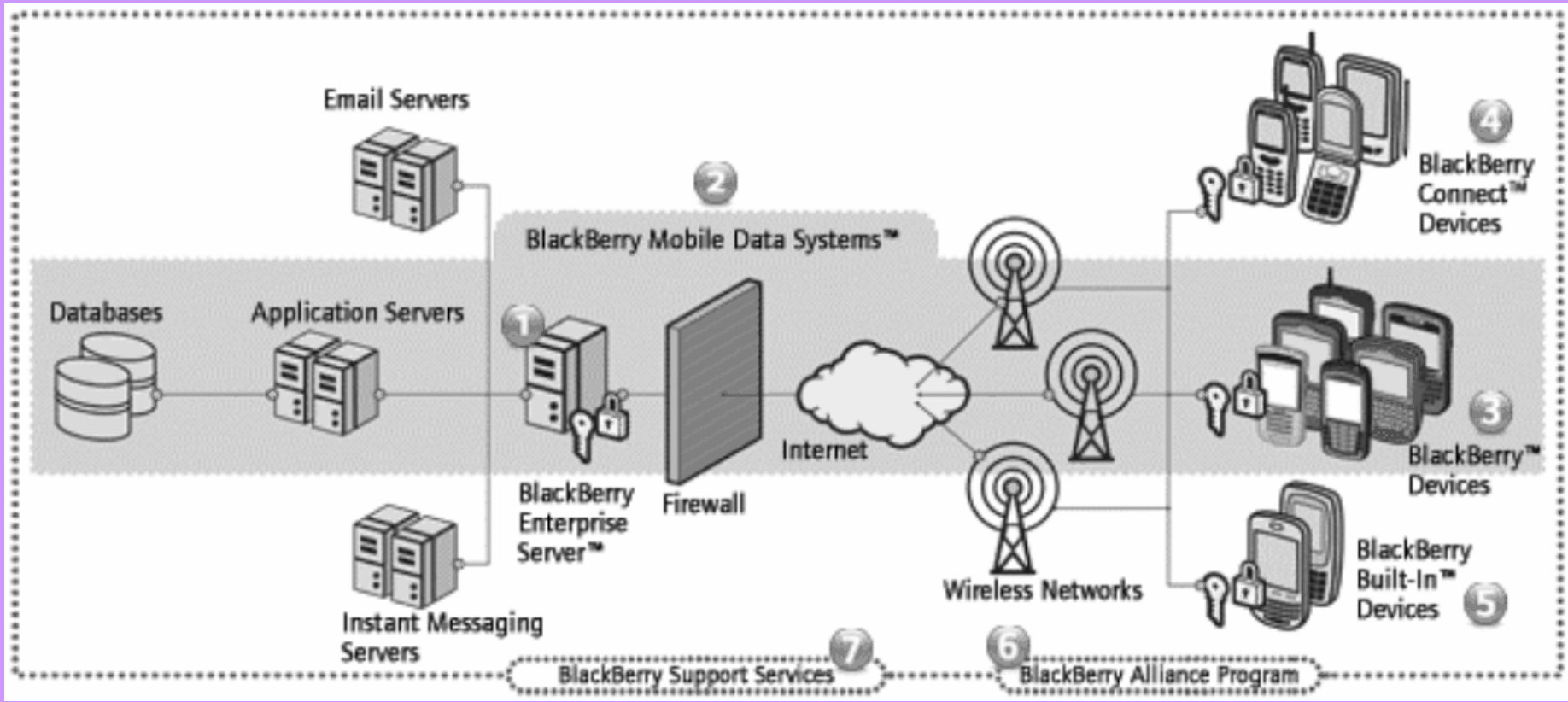
SmartPhone Example

- EvDO* support enabling the device as a wireless modem use for laptop or PC.
- Speaker phone
- Polyphonic ring tones
- 64 MB memory
- Bright, high-resolution display, supporting over 65,000 colors

Enterprise Solutions

- Enterprises or large business networks
- Huge database and documentation requirements
- Business solutions for corporations or enterprises

An enterprise solution architecture for a BlackBerry device



Mobile Computing application to Music and Video

- Example– Apple iPods enables listening to one's favourite tunes anytime and anywhere
- View photo albums
- Slide shows
- Video clips

Mobile Commerce

- Stock quotes in real time or on demand.
- The stock purchases or selling
- Bank transactions
- Retail purchases
- Supply chain management
- e-Ticketing– booking cinema, train, flight, and bus tickets

Limitations to mobile computing

- Resource constraints: Battery
- Interference: the quality of service (QoS)
- Bandwidth: connection latency
- Dynamic changes in communication environment: variations in signal power within a region, thus link delays and connection losses

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…Limitations to mobile computing

- Network Issues: discovery of the connection-service to destination and connection stability
- Interoperability issues: the varying protocol standards
- Security constraints: Protocols conserving privacy of communication

Summary

- Mobile computing — ability to use the technology to wirelessly connect to and use centrally located information and/or application software through the application of small, portable, and wireless computing and communication devices voice, data and multimedia communication standards …

…Summary

- Ubiquitous and pervasive computing
- SmartPhone
- Enterprise solotions
- Music and video
- M-commerce
- Constraints of Mobile Computing

End of Lesson 07

Introduction to Mobile Computing