# Mobile Computing

Mobile computing encompasses a number of technologies and devices, such as wireless LANs, notebook computers, cell and smart phones, tablet PCs and PDAs. Basically, any electronic device that helps you organize your life, communicate with coworkers or friends, or do your job more efficiently is part of mobile computing.

Mobile computing is a form of human–computer interaction where a computer is expected to be transported during normal usage. Mobile computing has three aspects: **mobile communication, mobile hardware and mobile software**. The first aspect addresses communication issues in ad-hoc and infrastructure networks as well as communication properties, protocols, data formats and concrete technologies. The second aspect focuses on the hardware, i.e. mobile devices or device components. The third aspect deals with the characteristics and requirements of mobile applications.

Mobile computing refers to the use of small and portable computing devices in wireless enabled networks that provide wireless connections to a central main server. These devices include laptops, notebook PCs, tablet PCs, palmtops, personal digital assistant (PDAs) and other hand held devices. A radio-signaling device is installed inside these devices for receiving and transmitting electronic data.

Wireless networks use Wi-Fi(wireless fidelity) technology for providing network coverage to offices, public places, and other small workplaces. A wireless access point device is used to provide wire free network coverage in the designated area. An access point device that is built on 802.11b and 802.11g IEEE (Institute of Electrical and Electronics Engineers) standards transmits data at 2.4 GHz whereas devices that comply with 802.11a standards transmit at 5 GHz.

WiMax (Wireless Interoperability for Microwave Access) technology represents the next generation of wireless networking and can transmit data up to a distance of forty-eight km. It can provide a maximum networking speed of seventy Mbps. It provides much better facilities than Wi-Fi such as higher bandwidth and high data security by using enhanced encryption schemes. It can provide service in both Line Of Sight (LOS) and Non-Line Of Sight (NLOS) locations, but range may vary accordingly. WiMax supports

several communication protocols, and can act as the backbone network for an ISP(Internet service provider) as well as telecom service provider.

Mobile computing devices can use any of these networks to access the Internet or connect to a LAN( local area network) or WAN(wide area network) server. They use networking software for adjusting device settings to suit specific network requirements.

Mobile computing has enabled users to remain connected while on the move. High end users can opt for satellite based networking which provides wireless connectivity anywhere in the world. However, this technology is costly and will take many years to become as affordable as Wi-Fi and WiMax.

Mobile computing embraces a host of portable technologies that makes Internet access on the go not only possible, but integral to everyday life. From notebook computers to personal digital assistants (PDAs), to standard cell phones, mobile computing has become an indispensable way of life.

Mobile laptop and notebook computers can use one of two types of wireless access services when away from the home or office. The most commonly used and least expensive is WiFi. WiFi uses radio waves to broadcast an Internet signal from a wireless router to the immediate surrounding area. If the wireless network is not encrypted, anyone can jump on. WiFi is commonly used in public places to create “hotspots.”

The drawback to WiFi is that you must locate a hotspot, then stay put within broadcasting range to use it. An alternative to WiFi is cellular broadband. This type of mobile computing technology utilizes a cellular modem or AirCard to connect to cell towers for Internet access. The AirCard fits into the PC Card or ExpressCard slot of a notebook or laptop, delivering Internet access on the go, literally. One needn’t remain stationary to use cellular broadband as the signal will remain strong everywhere there is cellular service.

Cellular broadband is also used for providing Internet access to cell phones and PDAs. Access is usually considered a premium service that either increases the monthly cost of the plan associated with the device, or incurs extra fees when used. In some cases,

restricted Internet access is allowed for free when connecting to the carrier's website to manage an account, for example, or to purchase products from the carrier such as custom ringers or wallpaper.

Another service associated with mobile computing is cloud computing, or the ability to use website services from mobile computers. Cloud computing provides access to a network-like environment with various applications and virtually unlimited resources so that field representatives, for instance, can utilize website resources rather than being supplied with weighty, expensive machines packed with company software and data. Mobile computing also provides access to a company's virtual private network (VPN) by tunneling through the Internet. It's nearly impossible to estimate the value of increased business productivity afforded by mobile computing.

The objectives of your growing business needs can be achieved through the mobile wireless networks. Today, no business is successful without the fast and in-time communication. Delayed communications in the businesses may result in the financial losses, client's dissatisfaction, reduces sales and the problems with in-time decision making. Mobile computing refers to using the small portable and hand held computing devices such as PDA, laptops, mobile phones, MP3 players, digital cameras, tablet PC and Palmtops in a wireless enabled network. In broad sense, it is referred to use any handheld computing device without the cables. In recent years the growth of mobile broadband and mobile broadband pay as you go devices have meant that many more people and business can take advantage of mobile computing.

Mobile computing services can be provided for the specific purposes and its cost varies from company to company. The laptop users, businessmen, home users and PDA users can achieve the usefulness of this technology. Additionally, there are customized mobile computing solutions that are designed for the different commercial fields like health care, business, education, pharmaceutical, IT and service providers. With the wireless technology, businesses, sales force, customers and partners will be able to maintain the smooth communication between them.