

# Introduction to Mobile Operating Systems

A mobile operating system, also called a *mobile OS*, is an operating system that is specifically designed to run on mobile devices such as mobile phones, smartphones, PDAs, tablet computers and other digital mobile devices. Modern mobile operating systems combine the features of a personal computer operating system with touchscreen, cellular, Bluetooth, WiFi, GPS mobile navigation, camera, video camera, speech recognition, voice recorder, music player, Near field communication, personal digital assistant (PDA) and other features.

Mobile OS is a mobile version of an operating system found on computers. Much like the Linux or windows operating system controls your desktop or laptop computer, a mobile operating system is the software platform on top of which other programs can run on mobile devices. Below is the list of most common operating systems (OS) found on smartphones and its manufacturers.

- **Symbian OS** – Nokia's Cell Phone operating system
- **Android OS** – Google's free, open-source cell phone operating system
- **iPhone OS (iOS )** – Apple's mobile operating system
- **BlackBerry OS** – Proprietary mobile operating system, developed by Research In Motion for its BlackBerry
- **Windows Phone 7 ( Windows Mobile )** – Mobile operating system developed by Microsoft
- **Palm OS (Garnet OS)**- mobile operating system initially developed by Palm
- **Palm webOS** – Mobile operating system from HP/Palm
- **Bada** - Mobile operating system developed by Samsung Electronics
- **Maemo OS** – from Nokia (open source, GPL)

- **MeeGo OS** – from Nokia and Intel (open source, GPL)

## **Brief History of Mobile Operating Systems**

**1979-1992:** Mobile phones have embedded systems to control operation.

**1993:** The first smartphone, the IBM Simon was introduced.

**1996:** First Windows CE Handheld PC devices are introduced, so also the launching of palm OS

**1997-1998:** Launching of palm OS 2.0 and palm OS 3.0 in October 1997 and September 1998 respectively.

**2000:** Symbian becomes the first modern mobile OS on a smartphone with the launch of the Ericsson R380.

**2001-2004:** Launching of windows pocket PC 2002, palm OS 4.0 and 5.0 in June 2001 and June 2002 respectively, windows mobile 2003 and windows mobile 2003 SE in June 2004.

**2005-**Nokia introduced Maemo OS on the first internet tablet N770, launching of windows mobile 5 in May 2005, blackberry OS 4.1 in October 2005 and Google acquired Android Inc.

**2007-** The first version of iPhone was introduced on January 9, 2007, Open Handset Alliance(OHA) formed by Google, HTC, Sony, Dell, Intel, Motorola, Samsung etc., windows Mobile 6 in February, 2007 and blackberry OS 4.2 in April 2007.

**2008-** In June 2008, Open Handset Alliance (OHA) releases HTC Dream (T-Mobile G1) as the first Android phone and also the of introduction of iPhone OS 2.0. In September 2008 blackberry OS 4.5 was introduced while windows mobile 6.1 in April 2008.

**2009-** In February 2009 android 1.1 was introduced, android 1.5(cupcake) in April 2009, android 1.6(Donut) in September 2009, android 2.0/2.1(Eclair) in October 2009, blackberry OS 5 in October 2009, windows mobile 6.5 may 2009, Samsung Bada 1.0 in November 2009, iPhone OS 3.0 in June 2009 and HP Web OS.

**2010-** Introduction of iPhone iOS 4.0 in June 2011, blackberry OS 6 in August 2010, windows phone 7 in October 2010, android 2.2(froyo) in May, 2010, Symbian^2 and Symbian^3 in February 2010.

**2011-** The first Linux based OS MeeGo is introduced, Android 3.0(honeycomb) in mid-2011.

**2012:** The Lenovo K800, first Intel powered smartphone (Android OS) introduced.

**2013:** BlackBerry releases their new OS for smartphones and tablets, BlackBerry 10.

## **Mobile Operating Systems**

A Mobile operating system, also known as a Mobile OS, a Mobile platform, or a handheld operating system, is the operating system that controls a mobile device similar in principle to an operating system such as Linux or Windows that controls a desktop computer. However, they are currently somewhat simpler, and deal more with the wireless versions of broadband and local connectivity, mobile multimedia formats, and different input methods.

In other words, mobile operating system, is an operating system that is specifically designed to run on mobile devices such as mobile phones, smartphones, PDAs, tablet computers and other handheld devices. The operating system is responsible for determining the functions and features available on your device, such as thumbwheel, keyboards, WAP, synchronization with applications, text messaging, email and more.

The mobile OS will also determine which third-party applications (mobile apps) can be used on your device.

## **Types of Mobile Operating Systems**

When a mobile device is purchased the manufacturer will have chosen the operating system for that specific device. Often, you will want to learn about the mobile operating system

before you purchase a device to ensure compatibility and support for the mobile applications you want to use.

The following are the common types of mobile operating systems.

### 1. **Android OS (Google Inc.)**

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Google Inc. purchased the initial developer of the software, Android Inc., in 2005. Android's mobile operating system is based on a modified version of the Linux kernel. Google and other members of the Open Handset Alliance collaborated on Android's development and release. The Android Open Source Project (AOSP) is tasked with the maintenance and further development of Android. The Android operating system is the world's best-selling Smartphone platform.

Android has a large community of developers writing applications ("*apps*") that extend the functionality of the devices. There are currently over 150,000 apps available for Android. Android Market is the online app store run by Google, though apps can also be downloaded from third-party sites. Developers write primarily in the Java language, controlling the device via Google-developed Java libraries. The latest release of Android is the **Android 2.3** code-named **Gingerbread** for the smart phones and **Android 3.0** code-named **Honeycomb** for Tablets

### 2. **Bada (Samsung Electronics)**

Bada is a proprietary Samsung mobile OS that was first launched in 2010 for use on mobile phones and low-end smartphones and its latest version is 2.

The Samsung Wave was the first smartphone to use this mobile OS. Bada provides mobile features such as multipoint-touch, 3D graphics and of course, application downloads and installation. It is designed to cover the range from lower-end feature phones to high-end

smartphones. Samsung claims that Bada will rapidly replace its proprietary feature phone platform, effectively converting feature phones to smartphones

### **3. BlackBerry OS (Research In Motion)**

The BlackBerry OS is a proprietary mobile operating system developed by Research In Motion for use on the company's popular BlackBerry handheld devices. The BlackBerry platform is popular with corporate users as it offers synchronization with Microsoft Exchange, Lotus Domino, Novell GroupWise email and other business software, when used with the BlackBerry Enterprise Server.

### **4. iPhone OS / iOS (Apple)**

Apple's iPhone OS was originally developed for use on its iPhone devices. Now, the mobile operating system is referred to as iOS and is supported on a number of Apple devices including the iPhone, iPad, iPad 2 and iPod Touch. The iOS mobile operating system is available only on Apple's own manufactured devices as the company does not license the OS for third-party hardware. Apple iOS is derived from Apple's Mac OS X operating system.

### **5. Palm OS (Garnet OS)**

The Palm OS is a proprietary mobile operating system (PDA operating system) that was originally released in 1996 on the Pilot 1000 handheld. Newer versions of the Palm OS have added support for expansion ports, new processors, external memory cards, improved security and support for ARM processors and smartphones. Palm OS 5 was extended to provide support for a broad range of screen resolutions, wireless connections and enhanced multimedia capabilities and is called Garnet OS.

### **6. Symbian OS (Nokia)**

Symbian is an open source operating system (OS) and software platform designed for smartphones and currently maintained by Nokia. The symbian OS is divided into series 40,

series 60, series 80, series 90. The latest release in symbian platform is the **Symbian^3** OS. It was designed to be a more 'next generation' smartphone platform. The Symbian^3 release introduced new features like a new 2D and 3D graphics architecture, UI improvements, and support for external displays via HDMI.

## **7. webOS (Palm/HP)**

WebOS is a mobile operating system that runs on the Linux kernel. WebOS was initially developed by Palm as the successor to its Palm OS mobile operating system. It is a proprietary Mobile OS which was eventually acquired by HP and now referred to as webOS (lower-case w) in HP literature. HP uses webOS in a number of devices including several smartphones and HP TouchPads. HP has pushed its webOS into the enterprise mobile market by focusing on improving security features and management with the release of webOS 3.x. HP has also announced plans for a version of webOS to run within the Microsoft Windows operating system and to be installed on all HP desktop and notebook computers in 2012.

## **8. Maemo**

Maemo is a software platform developed by Nokia for smartphones and Internet tablets. It is based on the Debian Linux distribution. The platform comprises the Maemo operating system and the Maemo SDK.

Maemo is mostly based on open source code, and has been developed by Maemo Devices within Nokia in collaboration with many open source projects such as the Linux kernel, Debian, and GNOME. Maemo is based on Debian GNU/Linux and draws much of its GUI, frameworks, and libraries from the GNOME project. It uses the Matchbox window manager, and the GTK-based Hildon as its GUI and application framework.

# Importance and Applications of Mobile Operating Systems

A mobile operating system provides an interface between the hardware and the user. It allows us to use mobile devices without having to know how to program them. Operating Systems provides services to users.

1. **Android:** has a growing selection of third party applications, which can be acquired by users either through an app store such as Google Play or the Amazon Appstore. The Play Store application allows users to browse, download and update apps published by Google and third-party developers. Applications are developed in the Java language using the Android software development kit (SDK).
2. **Bada:** the latest applications of Bada OS include: -Chat On which is used to enhance users to have better relationships with their friends or groups through internet. -Mad speaking monkey which can record whatever you say and repeat it with his crazy voice. Others are magic torch, type while walk and special FX camera.
3. **Blackberry:** Blackberry can be used on almost every carrier in the world (over 475 of them), it is available in five form factors - small keyboard, large keyboard, no keyboard, flip phone, and candy-bar, it has removable and expandable battery, it allows programs to multitask. Blackberry can also be synchronized to multiple computers simultaneously, if you have multiple computers.
4. **iPhone OS:** The iOS home screen contains these default "apps". Some of these applications are hidden by default and accessed by the user through the Settings app or another method—for instance, Nike+iPod is activated through the Settings app. Many of these apps, such as Safari, the App Store, and YouTube, can also be disabled in the Restrictions section of the Settings app.
5. **Palm OS:** standard palm OS applications include address, date book, memo pad, toDos list, preferences, security and notepad. Blazer is a web browser for Palm handhelds.

6. **Symbian OS:** the commonest applications of symbian operating system include google search client, fring, Nokia email service for symbian, nokia podcasting, google maps, joiku, qik, opera mini, handy taskman and agile messenger.
7. **WebOS:** the commonest applications of webOS includes facebook for palm, tweed, weatherman2.0, evernote, pReader, flight track, trapster, drPodder and grooveshark.
8. **Maemo:** Applications of maemo OS include gPodder(podcast client), Maemo mapper(includes gps functionality), media support, FBReader(e-book reader), rhapsody(subscription music, US only), ScummVM(game emulator) e.t.c