
S60 2nd Edition Feature Pack 2: What's New – Lead Features and APIs

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S60 platform

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Change History

September 1, 2004	Version 1.0	Initial document release. Revision on April 28, 2006: minor editorial changes including S60 terminology update.

1. Introduction

This document describes new features and APIs on S60 2nd Edition, Feature Pack 2. The key feature of Feature Pack 2 is Wideband CDMA (WCDMA) support.

S60 2nd Edition, Feature Pack 2 is compliant with S60 2nd Edition. This document describes new lead features of Feature Pack 2 that are not part of the S60 2nd Edition specification [2ND_ED]. Constraints to the platform are listed as known issues in the Forum Nokia Technical Library [FNTL].

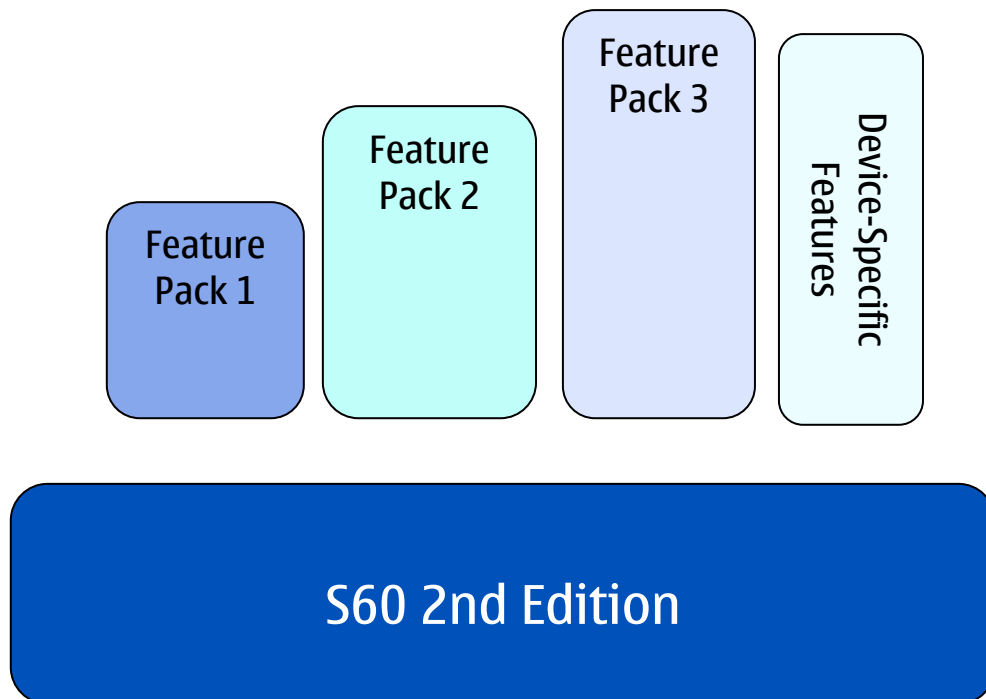


Figure 1: S60 2nd Edition and Feature Packs

2. New features in S60 2nd Edition, Feature Pack 2

This chapter describes new features of S60 2nd Edition, Feature Pack 2. All of the features described in this document may not be available on all devices based on S60 2nd Edition, Feature Pack 2. Reasons for this could include hardware constraints, for example WCDMA is supported only on devices that have cellular hardware for WCDMA.

2.1 New features of Symbian OS v8.0a

S60 2nd Edition, Feature Pack 2 is based on Symbian OS v8.0a, while Feature Pack 1 was based on Symbian OS v7.0s. Symbian OS v8.0a is backward compatible with Symbian OS v7.0s. There is also Symbian OS v8.0b, which has a real-time kernel EKA2.

More detailed information about new Symbian OS features appears in the document [What's New For C++ Developers In Symbian OS v8.0 \[SOS8\]](#).

Some of the features introduced in Symbian OS v8.0a are only available for Symbian Ltd.'s development partners, and thus are not available for S60 application developers. Also, some of the features introduced in Symbian OS v8.0 were already introduced in earlier S60 releases, thus they are not listed in this document.

2.1.1 NAND Flash support

Symbian OS supports execute-in-place (XIP) from ROM to save in RAM usage. However, less-expensive NAND Flash memories do not support XIP. It is up to device manufacturers whether they build completely NAND Flash-based devices. Most probably, there will be no impact on application development.

2.1.2 Installed application update notification

The new mechanism allows notification to be sent to a mobile device about applications, advising that they should be upgraded or uninstalled.

This feature is not included in S60 2nd Edition, Feature Pack 2.

2.1.3 Publish & Subscribe

Publish & Subscribe provides a means to store system-wide global variables and a new interprocess communication (IPC) mechanism for peer-to-peer communication between threads. Eventually Publish & Subscribe will replace System Agent functionality.

2.1.4 Message Queues

Message Queues are another new IPC mechanism for peer-to-peer communication. They provide a way to send messages to an interested party without needing to know whether someone is listening or the identity of the recipient.

2.1.5 GIF Scaler

GIF Scaler is a new API addition to the multimedia framework (MMF) image conversion library (ICL). The API provides scaling and color quantization of bitmaps as asynchronous operations.

2.1.6 Speech recognition

The multimedia framework is extended with a speech-recognition utility framework. This allows providers of speech-recognition technology to integrate their software into an MMF and make it available to client code through a standard API.

See Section 2.11 for details of Nokia S60 platform implementation.

2.1.7 MIDI

Symbian OS v8.0 provides a MIDI API that allows MIDI technology providers to integrate their software into the multimedia framework.

This feature is not included in S60 2nd Edition, Feature Pack 2.

2.1.8 3D Graphics – OpenGL ES

OpenGL ES [OPGL] is a lightweight API for bringing advanced graphics capabilities to an increasing variety of mobile and handheld devices, appliances, and embedded displays. It is based on well-defined subset profiles of OpenGL and enables the lightest-weight interface between software and hardware. Symbian OS v8.0 includes header files for the OpenGL ES 3D graphics library. The S60 platform implements the OpenGL ES engine based on the reference design of Symbian OS (see Section 2.6.5).

2.1.9 XML parser

Symbian OS v8.0 introduces a unified XML parser framework through which all XML parsing capabilities can potentially be made available. This should serve to allow greater reuse of system code, as well as making client code more portable.

2.1.10 Semitransparent windows

One modification to the Uikon GUI framework of Symbian OS v8.0 is the enabling of semitransparent windows. This is achieved by adding new methods to the RWindow class.

2.1.11 Strong stream encryption

Another improvement to Symbian OS in the security area is support for strong stream encryption. The stream encryption framework allows applications to store their data in an encrypted format, protected with a symmetric cipher based on a user password. This mechanism did not previously support the use of strong symmetric ciphers — this has been changed in Symbian OS v8.0, and the associated API now supporting the enhancements.

2.1.12 Java™ APIs

A number of enhancements have been made to the capabilities of the Symbian OS implementation of Java™ MIDP 2.0 runtime [JAVA]. All the new Java features in S60 2nd Edition, Feature Pack 2 are listed in Section 2.14.

2.2 Telephony

2.2.1 WCDMA support

S60 2nd Edition, Feature Pack 2 introduces WCDMA support for the S60 platform. The addition of WCDMA support increases the bandwidth between the mobile device and network up to 384 Kbps to downlink and 128 Kbps to uplink. The significant increase in bandwidth makes video streaming and video telephony applications more impressive. In addition, simultaneous voice call and use of WCDMA network is supported, which enables development of new kinds of applications. WCDMA support is compliant with the *3GPP Rel'99 WCDMA/GPRS Dual Mode Specification* [3GPP].

See Section 2.2.2 for details about the Circuit Switched Video Call feature.

2.2.2 Circuit Switched Video Call

The S60 platform now enables Circuit Switched (CS) Video Call, which is available in the WCDMA network. In practice, a video call is a CS (multimedia) data call that transfers both the video image and the audio. In addition, it separates image and audio data to different logical "channels." Both mobile ends of the video call recognize that this "multimedia" call is a special kind of CS data call, and it must be handled as a video call.

The Video Telephony application cannot be seen in the application grid as its own application, but it will be activated automatically when a video call turns to the Active Call state.

2.3 Networking

2.3.1 Connection Monitor API

The Connection Monitor API provides an interface for an application to get information about active data connections. It also provides a way to close any connection or all connections.

2.4 Browsing

2.4.1 XHTML Mobile Profile 1.1

The browser supports XHTML 1.1 MP, HTML 4.01, and WML for legacy support. XHTML Mobile Profile 1.1 is a strict superset of XHTML Basic and a strict superset of XHTML Mobile Profile 1.0, having support for the Scripting Module and Intrinsic Events Module [XHTM].

2.4.2 Browser Plug-In API

There is a C++ API that can be used to create plug-ins for the browser. Additional plug-ins are needed for handling additional content types in the browser. Users can install browser plug-ins during normal device usage. There will be more specific information about the Browser Plug-In API later at www.forum.nokia.com.

2.4.3 HTTP Digest authentication

HTTP Digest authentication is another type of HTTP username/password authentication in addition to the more common HTTP Basic authentication. HTTP Digest authentication can be used at Web sites that do not accept Basic authentication, thus improving the end-user experience.

2.4.4 File upload

File upload technology is used to deliver digital content from a terminal to a server. An example of a file upload service would be a photo album service that allows a user to upload photos taken with the terminal's camera to her/his own photo album on the service provider's server [XHTML].

2.4.5 Links to native applications

In addition to supporting normal `http://`, `https://`, and `file://` url schemes, the browser supports additional schemes that will launch native applications (Short Message Service [SMS], Multimedia Messaging Service [MMS], Contacts, or Calendar). It is specified in the scheme URI which application will be launched [XHTML].

2.4.6 New Accept Header

Terminals are becoming more compatible with different content types and able to accept a variety of different MIME types. This can lead to a situation where the Accept Header becomes so large that it must be sent in several packets, which in turn increases latency time. For this reason, the new Accept Header has only MIME types that are mandatory, which reduces the data flow to the server when the device is connecting, and also reduces the response time.

Mandatory MIME types:

- Markup languages (HTML, XHTML, CSS, WML)
- Multipart
- Java/JavaScript™
- Wallet
- Digital Rights Management (DRM) and Content Downloading (CoD)

2.5 Messaging

2.5.1 SMS

Phone numbers, e-mail addresses, and URLs are automatically located and highlighted in the message viewer. The user can scroll from one highlighted item

to another using a joystick. When a highlighted item is focused, a special set of menu commands related to the item are available.

2.5.2 Multimedia messaging

The S60 platform has enhanced the messaging application with support for OMA MMS 1.2 [OMMS] and the MMS Manual Fetch solution. The MMS Manual Fetch solution consists of the basic MMS Manual Fetch feature and some additional features for the remote management of messages (that is, without fetching).

All of the content classes defined in the *MMS Conformance Document 1.2* [OMMS] are supported: Text, Image Basic, Video Basic, Image Rich, and Video Rich. When images are inserted into multimedia messages, they are scaled down so that they comply with the restrictions set by the *MMS Conformance Document*.

The automatic highlight feature is also available for MMS messages (see Section 2.5.1).

2.5.3 E-mail

The S60 platform now supports automatic monitoring of new e-mail based on mailbox polling. The user is notified when new e-mail arrives, and can also select polling intervals based on days and time. Mail can be downloaded automatically when new e-mail headers are noticed to be available. At most, two mailboxes are supported for automatic monitoring.

Users can also select whether only headers, partial messages, or whole messages are downloaded automatically. Partial download means that only part of the message, which does not exceed a given kB limit, will be downloaded.

Together with supported IMAP IDLE command [IDLE], a push e-mail experience is achieved if the mail server supports IMAP IDLE. IMAP IDLE provides timely notifications without very frequent polling.

The user can also select which remote folders are available in the mobile device. This feature is only available in IMAP.

The automatic highlight feature is available for e-mail messages (see Section 2.5.1).

2.6 Multimedia

2.6.1 Enhanced Media Gallery

The Media Gallery application is completely renewed and offers an easy way to manage the various media that a S60 device can capture and display (for example, pictures, video, music, and sound). It also offers end users advanced ways to sort and organize their media according to their preferences.

The contents of the music file folder (playlists, single tracks, and albums) are shown in their own groups in alphabetical order. Note that music albums are created according to ID3tag information.

2.6.2 RealOnePlayer

RealOnePlayer [REAL] now supports the ability to play video in full screen.

2.6.3 Enhanced camera application

The camera application supports a so-called Camera Burst mode, which is useful when taking pictures of fast-moving subjects. The Camera Burst mode enables users to take up to six snapshots at short time intervals, provided that this feature is supported by the Onboard Camera API implementation and/or by the camera hardware module.

2.6.4 EXIF support

EXIF [EXIF] is an exchangeable image file format used in digital still cameras. The camera application now uses EXIF format to store images.

2.6.5 OpenGL ES implementation

The S60 platform implements an engine that is compliant with the OpenGL ES v1.0 specification [OPGL]. The OpenGL ES implementation consists of two parts: a subset of the full OpenGL pipeline, and some extended functionality that is from a set of OpenGL ES-specific extensions. The rendering system is handled via the EGL API. This API provides an interface for creating the rendering surface and the rendering context, as well as for committing the finished images to the display. Supported features include:

- OpenGL ES and EGL 3D engine
- Engine support of 12-bit and 16-bit LCD formats
- Engine support of Direct Screen Access
- Engine support of the Anti-Tearing API
- Engine support of systems that do not support the Anti-Tearing API (conditional compile)

2.7 Security

2.7.1 IPSec/VPN Client Application

S60 VPN Client is a version of the Nokia Mobile VPN Client adapted to the S60 platform. VPN Client leverages the Internet Protocol security (IPSec) support in the platform to provide Virtual Private Network (VPN) services. It enables S60 devices to have encrypted and authenticated communication with enterprise networks through the mobile network and Internet. This is an optional feature in S60 devices.

2.7.2 Full OMA DRM

DRM for themes and native applications is added, as well as superdistribution (forward media [DCF], not rights) capability. In addition, there is a new DRM Rights Manager Application and DRM License Manager API.

2.8 Synchronization

2.8.1 Data Synchronization Profile Listing API

The API provides functionality to fetch a list of synchronization profiles. In the previous platform releases, the use of the data synchronization API was difficult because of the lack of this API.

2.9 Mobile Location Framework

The Mobile Location Framework and API support location privacy management and enable the usage of positioning methods based on BT GPS, AGPS, EOTD, OTDOA, etc. In S60 2nd Edition, Feature Pack 2 only the BT GPS location data acquisition has been verified.

2.9.1 Location Acquisition API

The Location Acquisition API enables terminal applications to retrieve information related to the current location of the mobile device. In addition, the Location Acquisition API is capable of utilizing different types of hardware and positioning technologies to actually retrieve the location information.

2.10 Local connectivity

2.10.1 Basic Imaging Profile

The Basic Imaging Profile enables compatible Bluetooth devices to negotiate the size and encoding of imaging data before sending or receiving it. The Basic Imaging Profile is dependent on the Generic Object Exchange Profile.

2.10.2 Headset Profile

Support for the Headset Profile is added to expand Bluetooth accessories interoperability. Previously only the Hands-Free Profile was supported in the S60 platform. The mobile device provides a listener for accessories that connect to the phone via the Headset or Hands-Free Profile, and thus there is no need for an application running on the device.

2.11 Speech recognition

2.11.1 DevASR API

DevASR is a low-level speech recognition API. Symbian OS provides reference implementation of the DevASR component, which is reimplemented by Nokia. The API provides a uniform interface to underlying speech algorithms that may be implemented in software and potentially in hardware to take advantage of hardware acceleration. The DevASR API also facilitates development of MMF plug-ins that are not algorithmic dependent by specifying a set of operations that are common to most speech technologies.

2.11.2 Speech Recognition Utility API

The Speech Recognition Utility API is the client API for speech recognition. The API provides basic speech-recognition functionality for application developers.

2.12 Pictograph API

Pictographs are graphical symbols that can be inserted in the text in editors. They are also used in SMS and e-mail messages by Japanese operators. There is no universal standard for pictograph code values used to represent them in text. For example, Japanese operators Vodafone and DoCoMo define their own sets of pictographs, which are not compatible. Ultimately, this means that, without an appropriate conversion service, message transfer is not possible between devices from different operators, as far as pictographs are concerned. The API is part of the Avkon UI library and it is provided through the `CAknPictographInterface` class.

2.13 Japanese and Thai language

Support is added for the Japanese language system, including phrase-predictive input system, fonts, Japanese alphabetic ordering, and an additional field in the phone book for the pronunciation of names (kana).

In addition, there is support for the Thai language for S60 applications.

2.14 Java APIs and enhancements

New Java [JAVA] features in S60 2nd Edition, Feature Pack 2 include:

- CLDC 1.1 (JSR-139) — Floating-point support, Hotspot VM implementation, JTWI 1.0 (JSR-185) compliancy
- PIM API (JSR-75) — Enabling access to calendar-related data and phone book
- FileConnection API (JSR-75) — Breaking the Java™ 2 Platform, Micro Edition (J2ME™) sandbox and giving access to file system
- Mobile Media API 1.1 (JSR-135)
- OMA DRM:
 - Forward Lock (FL) support (mandatory)
 - Combined Delivery (CD) support
 - Separate Delivery (SD) support
- Mobile 3D Graphics API for J2ME (JSR-184) — JSR implementation on OpenGL ES compatible native engine
- Push registry support for Bluetooth
- JTWI-compliant security model (JSR185)
- Universal Emulator Interface

3. Terms and abbreviations

Term or abbreviation	Meaning
3GPP	3rd Generation Partnership Project
CoD	Content Downloading
CSS	Cascading Style Sheets
DRM	Digital Rights Management
EKA1	Symbian OS v6.1, v7.0, and v7.0s legacy kernel
EKA2	Symbian OS v8.0b hard real-time kernel
GPRS	General Packet Radio Service
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
IMEI	International Mobile Equipment Identifier
IMSI	International Mobile Subscriber Identifier
IPC	Inter-Process Communication
IPSec	Internet Protocol Security
J2ME	Java 2 Platform, Micro Edition
MIDI	Musical Instrument Digital Interface
MIDP	Mobile Information Device Profile
MMS	Multimedia Messaging Service
OBEX	Object Exchange
OMA	Open Mobile Alliance
SMS	Short Message Service
UIKON	UI and control framework common to Symbian OS platforms
VM	(Java) Virtual Machine
VPN	Virtual Private Network
WCDMA	Wideband Code Division Multiple Access
WML	Wireless Markup Language
WSP	Wireless Session Protocol
XHTML	Extensible Hypertext Markup Language
XML	Extensible Markup Language

4. References

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- [3GPP] *3GPP Release 1999 Specifications*,
<http://www.3gpp.org/>
- [S60IG] *S60 Platform Introductory Guide*,
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<http://www.ietf.org>
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<http://www.exif.org>
- [OBRO] Open Mobile Alliance Browsing Specifications,
<http://www.openmobilealliance.org>
- [ODRM] Open Mobile Alliance Digital Rights Management Specifications,
<http://www.openmobilealliance.org/>
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