

NetFront v3.1 SDK

NetFront v3.1 SDK is a development kit for quickly porting and customizing the NetFront embedded browser. Development is made simple by using an abstract Window System API (AWS) layer that enables NetFront to port to various Window Systems. For example, Linux/GTK+ development is simplified by using the (Glade) UI development tool. For the WAVE/ITRON version, a template UI and UI Editor is available which provides extended customization for UI development. The NetFront v3.1 SDK can accommodate a recompile module specifically designed for target environments.

WAVE/ITRON version

Win32/x86 ITRON/SH-3 and more....

Linux/GTK + version

Linux/x86 and more.... * Supports MontaVista Linux

Linux/Qtopia/QtE version

Linux/x86 and more.... * Supports MontaVista Linux

* Alliance partners offer various platform specific SDK.

Total Solution -ComponentWare-

ACCESS provides various products including the NetFront browser. We provide solutions for the newest technologies such as IrDA, Bluetooth, Java, and IPv6 which are rapidly becoming vital solutions in the non-PC market. ACCESS' product line supports communication between infrared and wireless devices as well as Internet connectivity. ComponentWare provides a total, integrated solution for the development of non-PC solutions.

[The de facto standard internet browser in digital consumer electronics]



[The micro-browser for 2.5G/3G wireless appliances]



[Java™ platform for information appliances]



[μITRON4.0 compliant real-time OS]



[IPv4/IPv6 dual TCP/IP protocol stack for embedded applicaitons]



[Web server for embedded applications]



[File system for embedded applications]



[Encryption module for embedded applications]



[Bluetooth® protocol stack for embedded applications]



[IrDA compliant infrared communication protocol stack]



[USB On-The-Go protocol stack for embedded applications]



NetFront v3.1 Operating Environment

μITRON, Linux, Palm OS, Symbian OS, Pocket PC, Windows CE, BREW

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The latest version of NetFront, the de facto standard non-PC Internet browser

NetFront browsers have connected thousands of non-PC devices to the Internet, delivering high performance in environments with limited hardware resources. NetFront supports the latest Internet technologies such as SSL, IPv6 and Java, and has achieved worldwide recognition as the most versatile and powerful browser available in the embedded market. Specifically designed for embedded applications, NetFront is a multi-platform solution that has been incorporated in Digital TVs, set-top boxes (STBs), personal digital assistants (PDAs), Web phones, Intranet terminals, video game consoles, smart-phones, e-mail terminals, automobile telematics systems and kiosk terminals. Approximately 99 million licensed copies of NetFront have been shipped for use in products representing an 80% share of the embedded market in Japan.

NetFront is a low-cost browser solution that supports any OS or CPU while offering low power consumption, easy customization and extensive plug-in support. NetFront v3.1, the latest release, integrates existing NetFront technologies with the latest Internet standards as well as new technologies unique to NetFront to better serve the needs of the ever-changing mobile and wireless market and the rapid growth of broadband. Among the new features in NetFront v3.1 is support for client-side digital certificates, a feature that provides end-users with the same level of security as desktop browsers. NetFront v3.1 is also moving closer to the PC-based Internet experience by supporting infrared messaging and advanced mobile phones that support multimedia.

NetFront

NetFront v3.1 Features

Optimized for Embedded Information Appliances

NetFront v3.1 features broad OS and CPU support ensuring high portability and smooth integration with a wide variety of devices. NetFront v3.1 was specifically designed for embedded applications and features excellent performance even in environments with limited memory and CPU power.

Flexible Configuration through Modularization

NetFront v3.1 features a flexible configuration through its modular and scalable architecture. It supports porting to various Window Systems like ACCESS' WAVE windows system and to Linux through a precisely defined API. Top modules are not dependent on the target system ensuring high portability and expandability. The UI, kernel, communication protocol and security module functions have been modularized. Also, language components such as WML, BML, and POIX are detachable according to the market.

Flexible UI Customization

NetFront v3.1's application API supports easy UI customization. The UI is independent of the browser kernel and does not affect the kernel when modified. NetFront v3.1's SDK supports the creation of UIs for Linux and offers a UI creation tool called "UI Editor" for ITRON.

Extensive Plug-in Support

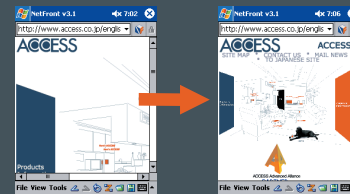
NetFront v3.1 offers support for plug-ins such as Real Networks® Helix DNA™ Client, Macromedia® Flash™, Adobe® Reader® and SVG Viewer.

NetFront v3.1 also offers the option of porting Netscape plug-in applications that run on top of Linux and on the PC because NetFront v3.1 conforms to Netscape's plug-in interface.

NetFront v3.1 New Features

Smart-Fit Rendering™

Smart-Fit Rendering uses sophisticated, patent-pending rendering technology to adapt pages coded for PC screens to your mobile device screen. Smart-Fit, renders web pages to your screen's horizontal width, eliminating the need for horizontal scrolling and enabling a powerful mobile browsing experience.



Direct-Connect™

Direct-Connect enables monitoring and control from the browser through JavaScript without a Java run-time environment. Direct-Connect is provided as an alternative to Live-Connect, a standard PC technology used in the Internet Explorer. Direct-Connect offers a security function that prevents unauthorized access and control. Direct-Connect can be utilized for various control services for phones, fax, printer control and equipment setup.

PKCS #7, #10, #12

NetFront v3.1 offers an interface for authorization, SSL client identification, and registry of public key infrastructure based digital certificates for PKCS #7, 10 and 12. NetFront v3.1 ensures interoperability with VeriSign® OnSite®, a managed PKI service provided by VeriSign. With PKCS support, NetFront v3.1 offers robust enterprise-grade security and access control.

PKCS #11

NetFront v3.1 supports PKCS #11 a client certification function that utilizes a private key stored on IC cards, PDAs, and mobile handsets embedded with NetFront, enabling strengthened security hosting of confidential information.

OMA DRM (Digital Rights Management)

NetFront v3.1 supports "forward lock/combine delivery" DRM as defined by the OMA. This feature enables download-type online distribution services for digital content with strict copyright control.

(More than 200 companies have joined OMA's DRM initiative, to standardize DRM on mobile wireless devices.)

v3.1

NetFront™ v3.1

Key Option

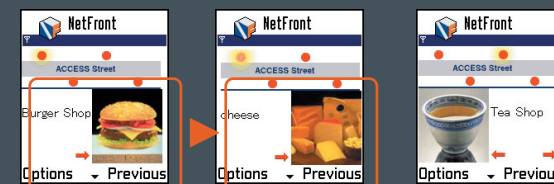
Multimedia Extension

Multimedia Extension is a multimedia extension module that shares resources with the NetFront XML v3.1 engine. SMIL player and SVG viewer (see below) are included and can load/run in conjunction or separately. Multimedia Extension is easily added to devices using NetFront v3.x. Multimedia Extension can be ported to mobile phones that support rich content, DVD players, Digital TVs, hard disk recorders, and multimedia appliances.

SMIL (Synchronized Multimedia Integration Language) Player

SMIL Player complies with W3C recommendations for SMIL Basic. Text, image, sound, moving images, animation, and various multimedia file formats can be combined and played back with SMIL Player.

Defined in XML, SMIL enables simple authoring of interactive audiovisual presentations. SMIL is typically used for rich media/multimedia that integrate streaming audio and video with images, text or any other media type.

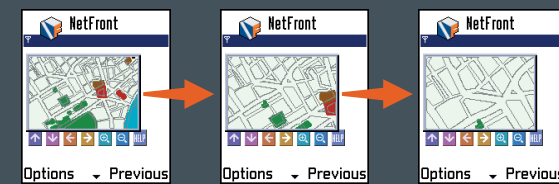


Information is displayed automatically without having to select a graphic.

SVG (Scalable Vector Graphics) Viewer

SVG Viewer complies with W3C recommended SVG Tiny. It optimizes and renders SVG content on small screens and supports various levels of zoom.

SVG is a language for describing 2D graphics in XML. SVG supports three types of graphic objects: vector graphic shapes (e.g., paths consisting of straight lines and curves), images and text.



Optimizes displayed pages within the screen of the mobile device and end-users can enlarge, shrink, and scroll the displayed page as an option.

Specifications

NetFront v3.1 Full Specification

HTML4.01, XHTML1.1 (including Mobile Profile)
CSS1, CSS2 (Partial)
ECMA Script 262 3rd Edition (equivalent to JavaScript 1.5)
DOM Level1, Level2, and Dynamic HTML (Partial)
Cache
History
Offline Browsing
Streaming Download
Direct ConnectTM
Smart-Fit RenderingTM
Graphics Format: GIF, Animated GIF, JPEG, Progressive JPEG, PNG, MNG, BMP, WBMP.

Supports Internationalization (Code set support for various characters/fonts)
HTTP Cookie (Full support)
HTTP1.1
SSL Ver2, Ver3, TLS1.0
SSL Root Certificate: VeriSign, Entrust, Thawte, Baltimore
SSL Client Authentication (PKCS #7, #10, #12)
SSL Client Authentication using IC Cards (PKCS #11)
OMA DRM
IPv4/IPv6 Dual TCP/IP Protocol Stacks
Browser feature extensions: Plug-ins, Helper applications

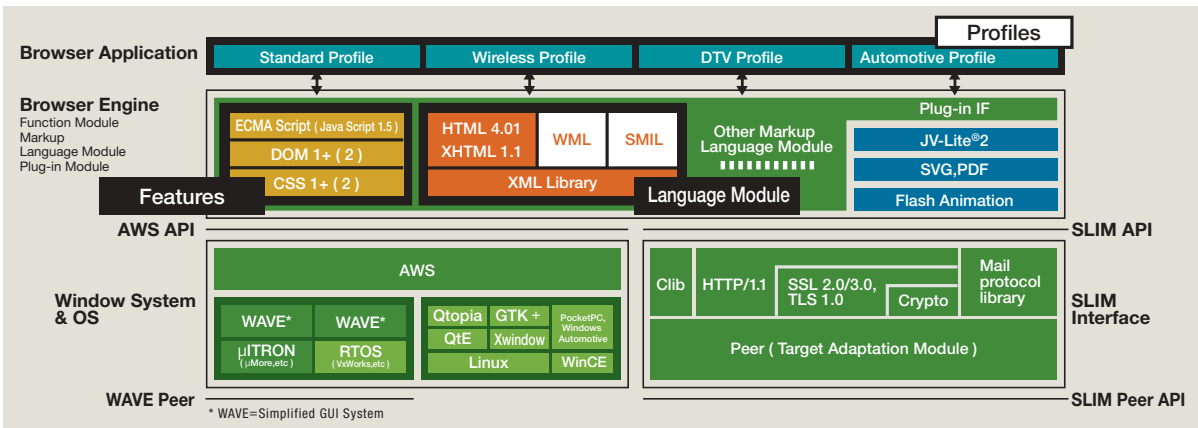
Main Features

Direct URL Input, Bookmarks, History
Page memo

Multi-window
Frames
Zoom-in/Zoom-out, Font size modification, Text encoding switch
Word wrap, Line boundary character check
Image save
Search within page
Software Keyboard
Vertical/Horizontal Scroll and Drag Scroll
URL Input History

Application Size

ROM: 1MB (Kernel +SLIM)
RAM: Depending on complexity of content viewed (1.5MB-2MB)



Options

Available from ACCESS

ACCESS Products

SMIL/SVG

SMIL/SVG is a suite of multimedia expansion modules developed by ACCESS based on W3C and 3GPP recommendations. SMIL/SVG can be implemented as a plug-in or as an individual player. Since these products utilize common resources within the browser, they require minimal hardware resources and less porting time.

JV-Lite™ 2

JV-Lite2 is a Java runtime environment authorized by Sun Microsystems, that guarantees J2ME™ interoperability. ACCESS developed JV-Lite2 as an optimized Java solution for embedded appliances.

Third-party Products

Flash™ 5/6 (Macromedia®)

Flash is a de facto standard 2D graphics player on PCs, installed on more than 97% of the Internet-enabled desktops with an adoption rate of close to 100%. Incorporating plug-in support for Flash allows NetFront v3.1 to support and view the wide body of available Flash content.

Helix DNA™ Client (Real Networks)

Helix DNA Client is a streaming player for digital content, that supports formats such as RealAudio (G2/8), RealVideo (G2/7/8/9), MP3, MPEG4, SMIL, etc. NetFront v3.1 offers plug-in support for Helix DNA, enabling interaction with multimedia content.

Adobe® Reader® for NetFront (Adobe)

Based on Adobe Reader 6, Adobe Reader for NetFront was jointly developed by Adobe and ACCESS to bring a PDF Reader to non-PC devices. NetFront v3.1 offers plug-in support for Adobe Reader enabling NetFront v3.1 to display the over 20 million PDF files currently available on the Internet. With Adobe Reader for NetFront, end-users are able to view content such as maps, weather forecasts, newspapers, and electronic books on PDAs and cellular phones.

Mascot Capsule (HI)

Mascot Capsule is a de facto standard 3D polygon engine for mobile information devices. The technology has been adopted by three major Japanese wireless operators and is used as a standard application on Vodafone Live! By integrating Mascot Capsule with NetFront v3.1 as a plug-in or by combining the Java virtual machine with JV-Lite2, one can enjoy rich 3D games or other 3D content.

Third-party Applications

Font Fusion (BitStream)

FontFusion is a font illustrator that renders fonts in high resolution and is used globally by set-top box (STBs) and interactive TV vendors. Font Fusion provides stroke-based fonts in European, Chinese, Japanese and Korean. The code size of the engine is between 32KB-105KB depending on requirements.

VoIP Engine/SIP Protocol Stack: NOSKI (Softfront)

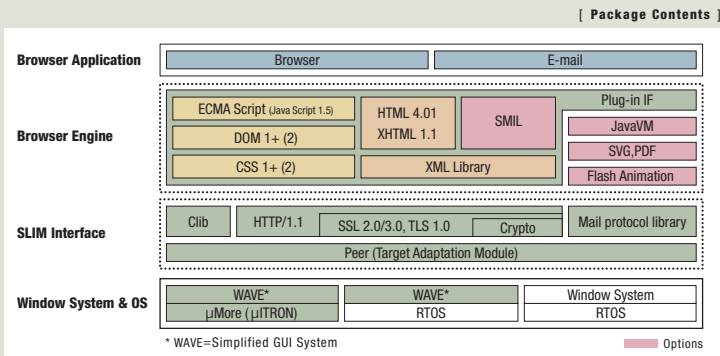
VoIP engine/SIP protocol stack runs in conjunction with IPv4/IPv6 based ACCESS AVE-TCP. SIP stack can be offered as an individual product.

Profile

NetFront v3.1 features a scalable architecture that can be flexibly customized to the target hardware. ACCESS offers four basic profiles that alone can support an extremely broad range of devices.

Standard Profile

Standard Profile is based on standard Internet protocols and supports HTML, XHTML, CSS, ECMA Script, and DOM (which uses DHTML to view content), providing a PC-like end-user experience. Standard Profile supports devices such as PDAs, game devices and AV players.

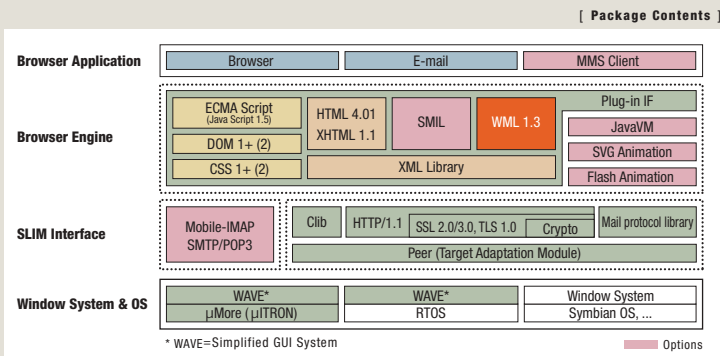


Wireless Profile

Wireless Profile is based on standard Internet protocols and complies with WAP 2.0, providing seamless connectivity between content servers and wireless devices.

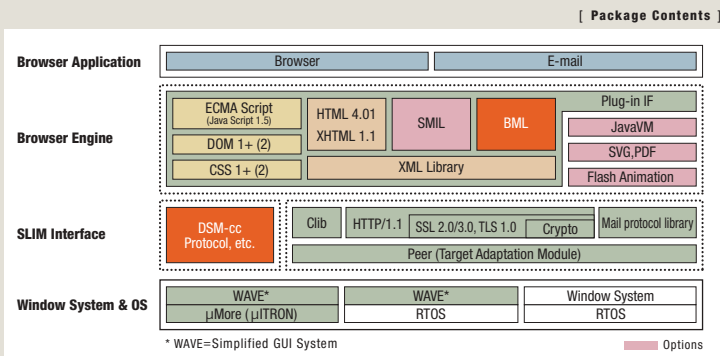
Wireless Profile supports WML 1.3, and standard markup languages such as HTML and XHTML and is capable of browsing existing WAP content. Like Standard Profile, support for standards such as CSS, ECMA script and DOM are included. JV-Lite2 (a J2ME compatible JVM), MMS Client, and Mobile-IMAP are available as options.

Wireless Profile was specifically developed for small wireless information devices such as next -generation mobile phones.



DTV Profile

DTV Profile supports BML, a data broadcasting language that has been established by ARIB and which responds to BS, CS and above ground Digital TV broadcast. DTV Profile supports not only BML, but it is also an HTML browser specifically optimized for digital televisions. DTV Profile can switch between BML and HTML and supports a wide variety of devices including Digital TV and set-top boxes (STBs).



Automotive Profile

Automotive Profile supports the basic Standard Profile specification as well as location information related functions that conform to the Mobile Web and POIX

(Point of Interest Exchange) language specification.

Automotive Profiles supports email and car navigation applications and is optimized for in-vehicle applications as well as location-based services. Automotive Profile has a flexible architecture and supports an extensive set of plug-ins, rich content and navigation applications as well as next-generation automotive telematics services.

