

## Microsoft Windows CE 5.0 Networked Media Device Feature Pack: Fast and effective development of feature-rich Set-Top Boxes and Networked Media Devices



Windows® CE 5.0 Networked Media Device Feature Pack (NMD FP) is a no additional cost<sup>1</sup>, download-only optional set of components for Windows CE 5.0. The Windows CE 5.0 NMD FP builds and expands on Windows CE 5.0 capabilities to uniquely address the needs of the latest key scenarios in the Set-Top Box (STB) and Networked Media Device (NMD) categories, such as Networked TVs, Digital Video Recorders and Digital Media Adapters.

Windows CE 5.0 was designed to address the challenge of developing a complete range of low- cost, feature-rich devices, while at the same time allowing device manufacturers to focus on innovation rather duplication. It achieves this by using well-known tools and development environments across a wide range of device categories.

With Windows CE 5.0 NMD FP, we extend this already robust, flexible, and customizable embedded platform, by adding support for the development of feature-rich NMDs and STBs with a comprehensive set of integrated multimedia, NMD middleware and applications solutions. With integrated support of must-have technologies, there's no need to waste your own development resources on features such as UPnP, media playback or Windows Media® Digital Rights Management support – we've implemented these key technologies for you.

Windows CE 5.0 NMD FP also offers a large set of integrated technologies, such as TV-enabled Internet Explorer® 6, a Digital Video Recording engine and Windows Messenger®. It allows for extensive customization through source code access and redistribution rights, as well as support for industry standard languages and tools such as the .NET Compact Framework and Visual C#®. Finally, through third-party software, additional features can be added to Windows CE 5.0 based devices.

<sup>1</sup> No additional cost to existing Windows CE core or professional licensees (component dependent).

Now device manufacturers are in control of the end- user experience, from user interface to device features to hardware capabilities, while still having the ability to use the integrated and tested set of technologies provided with Windows CE 5.0.

### Open, Compact, Robust and Customizable

- A native real-time OS, developed from the ground up for the embedded market
- Small footprint kernel, highly componentized
- Supports standard networking protocols, device drivers and a variety of processors
- Mature platform adopted across a wide variety of devices
- Large community of developers, partners, ODMs and OEMs supporting the platform. (see [www.msweb.com](http://www.msweb.com) for more info)
- Extensive source code access

### Comprehensive Multimedia and NMD Middleware Integration

- Flexible, from full software to hardware supported media playback engine
- Large set of supported codecs, either integrated or through third parties
- Flexible media playback experience through a customizable media player, web browser or the device manufacturer's own application.
- Complete NMD middleware solution from device drivers, networking and UPnP stacks to customizable NMD UI (see picture) and media-playback application
- Integrated Windows Media DRM 10 for Network Devices (at no additional cost) and Windows Media Connect 2.0 client support for fast PlaysForSure certification (see [www.playsforsure.com](http://www.playsforsure.com))

### Essential Technologies

- Microsoft® Internet Explorer 6.0 for CE with TV-friendly browser extensions including tab navigation and fixed screen layout
- E-mail client, Windows Messenger, Microsoft Passport (enables MSN® Hotmail® access)
- MPEG-2 Digital Video Recorder engine
- DVD playback, Home gateway, VoIP, RDP
- Powerful environment for the development of both managed and native applications

**Device makers and distributors working with Windows CE are also included in Microsoft's extensive IP indemnification policy.**

### For More Information

<http://www.microsoft.com/windowose>

### Features Included

#### Windows CE 5.0 with its Networked Media Device Feature Pack includes:

##### Standard protocols, device drivers, wireless standards and common processor support

- Real-time multi-threaded OS
- Low footprint kernel (250 KB), highly componentized OS (350+ individual components)
- Support for ARM, MIPS, SH4 and x86 architectures
- TCP, IPv4, IPv6, NDIS, SSL, SNMP, XML
- 802.11x, BlueTooth, IrDA, USB 2.0, SDIO
- Windows Connect Now® USB configuration
- More source code access for debugging, modification and redistribution

##### Integrated Development Environment

- Platform Builder 5.0: Device image building tool
- Application development:
  - Managed code (.Net® Compact Framework) with Visual C#® or Visual Basic®
  - Native code or Win32: Embedded Visual C++®

##### Extensive Multimedia Support

- Windows Media 9 / VC-1
  - Software VC-1 compliant codec (SD & HD), license to be acquired through MPEG LA, LLC
  - Faststart, Multicast and Unicast Streaming
  - HTTP 1.1, MMS or local file streaming
- Additional codecs:
  - Included: WAV, MP3, MPEG-1, MPEG-4 MS ISO
  - Through third parties: MPEG-2, MPEG-4 AVC/H.264, Real, On2...
- Direct Show® : flexible media playback engine for software- or hardware-assisted decoding
  - Sample media player application
  - OCX control
- Graphics through GDI, DirectX® 8 or Direct 3D Mobile

##### Integrated NMD Middleware and sample UI

- UPnP, UPnP A/V, UPnP DCP
- Windows Media Connect v2.0 compatible Media Query Engine
- Sample NMD user interface (UI) with play list management and playback (photo, video, music)
- Full UI source code provided

##### Content protection and DRM:

- Windows Media Digital Rights Management 10
  - Support for direct license acquisition (IPTV, Internet download...)
  - Windows Media DRM 10 for Network Devices (for faster PlaysForSure certification)
- Third party DVB Conditional Access Systems (CAS) available

##### Internet Technologies

- Customizable Microsoft Internet Explorer 6.0
  - Jscript, VB script, HTML 4.0
  - TV-lens for 10 foot experience: directional tabbing, disabled scrolling
- Email client, Windows Messenger, Microsoft Passport