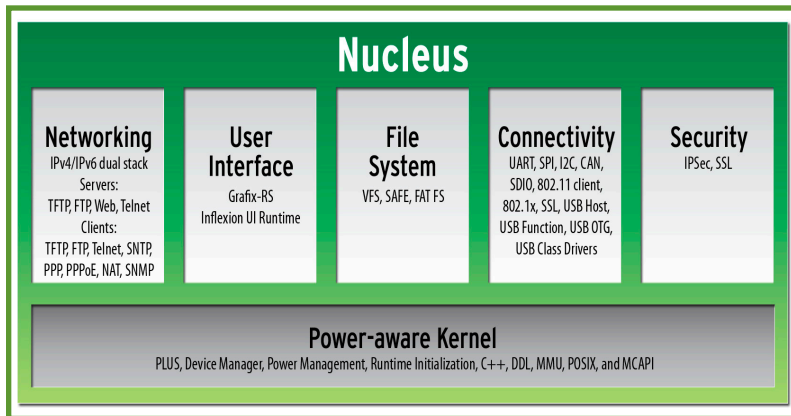


# Mentor Embedded Nucleus

D A T A S H E E T



*Nucleus is a proven, highly efficient RTOS with a comprehensive set of system services.*

## Embedded real-time operating systems matter more today

Complex microprocessors lie at the heart of every electronic device. Embedded systems today – from mobile phones and industrial controllers, to software-defined radios and medical devices – all demand sophisticated software to get the job done.

The role of an embedded operating system (OS) is to provide a software foundation that interfaces to the microprocessor, delivering a set of core services upon which to build and deploy applications. But not all operating systems are created equal. In fact, very few meet the full range of requirements demanded by today's more advanced applications. These demands include real-time responsiveness, high performance, connectivity, low-resource usage, and breadth of services.

## Nucleus - the smart choice

Mentor® Embedded Nucleus® empowers a full range of electronic products, and to date is the most deployed RTOS, running on hundreds of different types of microprocessors. Not only is Nucleus a proven, highly efficient, and reliable OS, but it offers a comprehensive set of system services that scale to any target hardware. These characteristics combine to deliver best-in-class performance while reducing resource usage, enabling developers and device manufacturers alike to bring a more profitable product to market.

## Product features:

- Supported architectures:  
MCU, MPU, DSP, FPGA
- Extensive core support:

**ARM:** Cortex™-M3, Cortex™-M4, Cortex™-R4, Cortex™-R4F, Cortex™-A8, Cortex™-A9, ARM7™, ARM9™, ARM11™

**PowerPC:** 603, e500v1, e500v2, e600

**MIPS32:** 4K, 14K, 24K, 34K, 34K MT, 74K

**MIPS16e:** 34K

**microMIPS:** 14K

**Coldfire:** MCF52XX\_V2, MCF53XX\_V3, MCF54XX\_V4

**SuperH:** SH-1, SH-2, SH-3, SH-4

## Benefits:

- Ultra flexible design configuration enables users to easily scale through the spectrum of applications - from tightly resourced MPUs to feature-rich SoCs
- Just in time board BSP development provides immediate support of new reference or custom hardware
- Professional services to speed efficient development

**Nucleus System Requirements:**  
Supported Host Development Platforms:  
Windows 7, Windows XP

## Nucleus highlights:

### - Power-aware kernel

Nucleus removes the system and application developer's burden to define power management for their embedded design by providing a standard interface for drivers and applications to participate in the power policy. Nucleus is capable of automatic discovery and management of power aware components and includes tick suppression to decrease power consumption. APIs for changing system states, peripheral states, and dynamic voltage frequency scaling (DVFS) are included.

### - Broad connectivity

Nucleus tightly integrates over 50 networking protocols, thoroughly tested with industry standard test suites, ANVL and TAHL, resulting in a validated IPv6 Ready networking package. Additional connectivity features include wired connectivity middleware such as USB 2.0/USB 3.0 and Ethernet, and wireless connectivity middleware including Wi-Fi, Bluetooth, and



ZigBee. Nucleus is also tightly integrated with a variety of bus support options, such as UART, CAN, I2C, and SPI.

### - Configuration & methodology

Nucleus consists of a single unified source tree that includes all of the Nucleus middleware components. The build and configuration system of Nucleus allows developers to set up their target environment, develop applications rapidly, and start debugging in minutes.

## Inflexion UI

Mentor® Embedded Inflexion® enables users to implement compelling and visually rich user interfaces (UIs) with significantly reduced effort, allowing developers to meet the UI demands of today's embedded devices. Inflexion UI Runtime can be integrated with Nucleus and runs on the target device executing the UI designs exported from Inflexion UI Express. Inflexion UI Runtime can use its own built-in 2D or 2.5D software rendering or OpenGL ES hardware graphics engine for 2D to 3D effects. Inflexion UI Express is the PC tool used to implement a UI through a drag-and-drop approach enabling sophisticated UIs to be created in a matter of days. Used together, Inflexion UI Runtime and UI Express enable the rapid creation and customization of visually rich, highly usable graphical user interfaces (GUIs).

## More about Mentor Embedded

The Mentor Graphics® Embedded Software Division (ESD) comprises the Mentor Embedded™ family of products and services, including embedded software IP, tools, and professional consultant services to assist developers and silicon partners optimize their products for design and cost efficiency. Mentor Embedded continues to lead the industry with involvement in the open source community (Linux®, Android, and Tizen) and in innovations such as Android beyond mobile handsets, advanced 2D and 3D UI development, open source tools, and multi-OS on multicore architectures.

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## For additional information please visit us at [mentor.com/nucleus](http://mentor.com/nucleus)

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