

Industrial Strength eCos RTOS Distribution

eCos[®] is the premier open source real-time operating system. A mature and robust system, it has many design wins to its credit in a diverse range of market segments including industrial automation, consumer electronics, telematics, aerospace, multimedia, networking and telecommunications. In the fragmented embedded operating system market eCos is one of the major players, with global market usage of around 5-6% according to multiple embedded market surveys. Examples of products incorporating eCos include the Sony PlayStation 3, Sirius satellite radios, Netgear routers, Raytheon Patriot missile system, Samsung LCD TVs, Dell SANs, Hitachi VOIP phones, Cisco cable modems, Trimble GPS and Fluke instruments. eCos also powers the control system of the \$1.5 billion Alpha Magnetic Spectrometer particle physics experiment, lofted to its home on the International Space Station on the penultimate Space Shuttle mission.

eCosPro[®] Developer's and Starter Kits are industrial strength distributions of eCos that couple a comprehensive set of development tools with a stable and feature-packed set of run-time features, providing a complete solution for embedded application development with eCos.

eCosPro Host Development Tools

- **Eclipse-based integrated development environment – customized to support eCosPro-based product development. eCos RTOS configuration and eCos application specific project types. Remote target debugging options include hardware debuggers, serial & Ethernet.**
- **Complete industry standard GNU compiler toolset including C/C++ compiler, assembler, linker, and source level debugger**
- **Graphical and command line eCos RTOS configuration tools**
- **Profiling and code coverage tools**
- **Memory allocation analysis and debugging tool**
- **Support for a wide range of Windows and Linux development environments**

eCosPro Runtime Features

- **Completely royalty and product license fee free deployment**
- **eCosPro RTOS distribution based on eCosCentric's internal stringently tested stable source base**
- **RedBoot bootloader & debug firmware**
- **Standard eCos networking, file systems, and other runtime packages**
- **New or enhanced packages and target ports that are not yet available in the public source base including:**
 - **MS-DOS compatible file system supporting FAT12/16/32, long filenames, internationalization, SD/SDHC/MMC removable media, and multi-threaded access**
 - **NAND flash library with optional YAFFS NAND flash file system add-on**
 - **NOR flash library and JFFS2 Journaling Flash File System**
 - **RBL bootloader extension and FlashSafe library for secure flash updates**
 - **Small footprint lwIP network stack with IPv6, AUTOIP and optional mDNS add on**
 - **Y2036 and Y2038 Unix and NTP millennium rollover safe, full NTP V3 client implementation**
 - **ISO 14882 conformant C++ Standard Template Library (STL) and extended math library**
- **Device support includes: Ethernet, USB host, USB device, RS232, I2C, SPI, PCI, NOR/NAND Flash, SD/SDHC/MMC, DataFlash, IDE, GPIO, ADC, Watchdog, RTC, and framebuffer (individual driver support depends on specific board port)**
- **eCosCentric middleware includes USB host and device stacks, CAN drivers, mDNS/Bonjour, SecureShell (SSH), SecureSockets (SSL) and MultiMedia file system (MMFS). Certified third-party middleware includes Aleph One YAFFS NAND flash file system, Skelmir CEE-J JVM, SYS TEC CANopen, McObject ExtremeDB and Swell PEG GUI libraries.**

The eCosPro source base is a stabilized and enhanced in-house version of the rapidly evolving public source tree. We use a fully automated 24/7 test farm to rigorously test the GNU toolchains, RedBoot firmware, and eCos RTOS for regressions and new software defects. The extensive eCos test suite is coupled with hundreds of different configuration permutations, resulting in over twenty thousand tests being run per test cycle for each target platform.

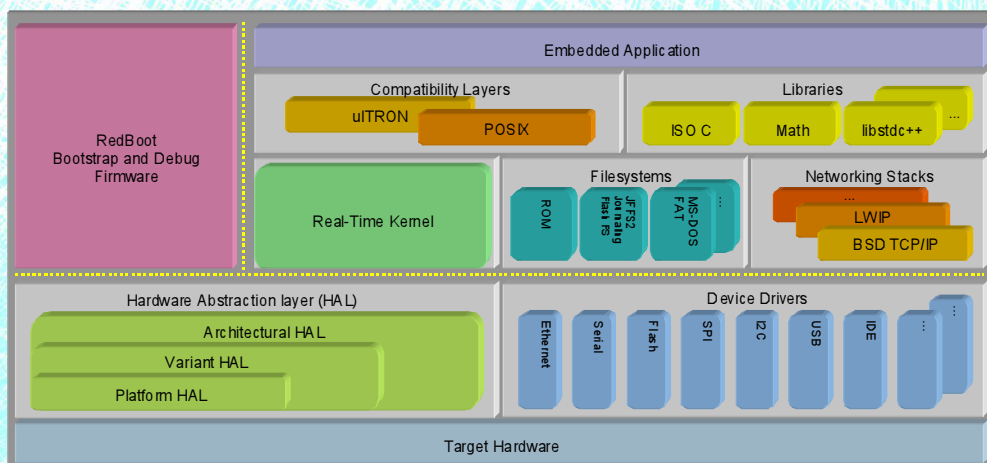
eCosPro teams open source technology with professional levels of testing and QA, and backs it all up with no-nonsense support plans – offering complete freedom with complete support.

eCos RTOS Overview

Designed from the ground up to meet the needs of deeply embedded applications, eCos places an emphasis on minimizing the resource footprint and ensuring real-time responsiveness. eCos is configurable at the source code level via a highly intuitive graphical configuration tool, and can easily be tailored to the precise needs of your application, avoiding the bloat of a traditional OS.

eCos has been engineered to work in situations where many operating systems simply will not fit. It accommodates scaling down to a few tens of kilobytes for deployment in low-cost and SoC based designs with stringent hardware resource constraints and minimal functionality requirements. It can also be easily scaled up, for example, to include full TCP/IP networking and file system functionality. eCos is fully pre-emptible, delivering real-time behaviour with minimal interrupt latencies and a rich set of synchronization primitives for full multithreading support. The configurability of eCos also extends down to the most fundamental levels, providing for example, a choice of scheduling policies; interrupt handling mechanisms and alternative semantics for dealing with priority inversions.

eCos provides all the drivers, libraries, and services you would expect from an embedded operating system, alongside compatibility layers to comply with industry standards and assist with application code migration.



An elegant and highly portable hardware abstraction layer (HAL) allows for rapid porting of eCos to prototype hardware and deployment in real products. The RedBoot™ open source bootstrap firmware shares the same HAL infrastructure, making it possible to bring up both bootstrap & debug firmware and operating system on a new board in one painless exercise. eCos supports all the main processor families as well as many less well known architectures and numerous models within each family.

- ARM7®
- ARM9®
- Cortex-A®
- Cortex-M®
- ColdFire®
- Intel® x86
- microMIPS®
- MIPS®
- NIOS II®
- PowerPC®
- SPARC®
- SuperH®

eCos's open source nature confers many benefits. On the commercial side, the absence of any royalty or product licensing fees make it particularly cost effective, especially in high volume designs. On the engineering side, eCos puts the developer in control. The availability of all the source code provides the ultimate in flexibility, aiding the debugging of complex application code and providing the ability to enhance the system's functionality and extend its feature set.