

General Information

eCos is an open source, royalty-free, real-time operating system intended for embedded applications. As an alternative to costly operating systems, eCos based applications can be developed with free GNU open source development tools including the GCC C-language compiler, GDB debugger and Insight GUI interface for GDB.

ReadyFlow Library packages for PowerPC based processor boards include an eCos enabled board support library, a complete distribution of eCos, GNU code development tools, complete documentation and example applications.

eCos Core Components

Designed as a full-featured, real-time operating system, eCos delivers a complete suite of functions needed in many embedded applications including:

Hardware Abstraction Layer (HAL) - provides a software layer that gives access to hardware.

Kernel - includes interrupt and exception handling, thread and synchronization support, a choice of scheduler implementations, timers, counters and alarms.

ISO C and math libraries - provide standard compatibility with function calls.

Device Drivers - include standard serial, Ethernet, Flash ROM, and others.

GDB support - provides target software for communication with a GDB host enabling application debugger.

Highly Configurable

A key feature of eCos is its highly configurable design. The kernel is scalable to include only the components needed for a specific application, allowing a small efficient footprint for simple applications, or a full-featured configuration for more complex systems. In addition, eCos can be built without an actual kernel for applications that might not need multi-tasking, further reducing the memory footprint and improving execution speed.

eCos configuration is performed through the graphical configuration tool shown below. The user interface displays the properties of each component including: parameters, switches, sizes, component description, etc. allowing developers to easily rebuild the kernel as needed.

Kernel Benchmarks

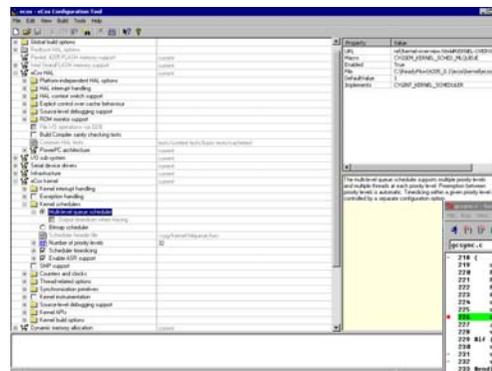
Applications developed with eCos can benefit from excellent kernel run time performance. Below are timing benchmarks generated on the Model 4205 MPC7455/57 processor board running at 600 MHz and configured with a 2 Mbyte L3 cache:

Function	Average Time (usec)
Thread Switch	0.98
Put or Get Mailbox	0.47
Mailbox Put/Get	1.27
Post Semaphore	0.22
Wait Semaphore	0.26
Post/Wait Semaphore	1.33
Wait for Flag [AND]	0.35

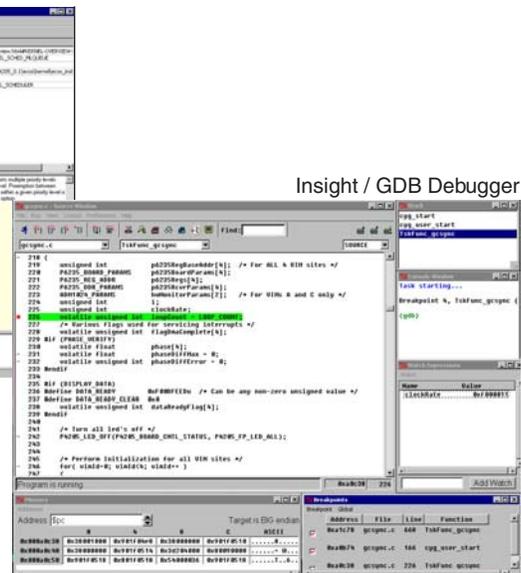
User Interfaces

Features

- Real-Time Performance
- Low Interrupt Latency
- Low Task Switching Latency
- Small Memory Footprint
- Deterministic Behavior
- Highly Configurable
- Full Feature Set
- Open Source Kernel
- No Runtime Licensing, Fees or Royalties
- Open Source GNU Development Tools



eCos Configuration Tool



Insight / GDB Debugger