



# LynxOS

The open standards RTOS for demanding real-time and embedded applications

Once a highly specialized niche-feature, hard real-time performance is now a “must-have” for an increasing number of embedded applications—from aerospace and telecommunications to consumer devices, medical and defense. At the same time, time-to-market demands make open standards and comprehensive tool chains more important than ever for embedded developers. So where do you turn to have the best of all worlds?

Today, there is only one embedded operating system capable of delivering hard real-time performance combined with open standard interfaces—LynxOS® from LynuxWorks. No wonder LynxOS is the real-time operating system (RTOS) of choice for OEMs and TEMs that must rapidly deliver advanced products that:

- Take full advantage of today’s powerful high-end microprocessors
- Support multiple applications with multiple interrupting devices
- Work in demanding environments requiring uncompromising reliability and unwavering determinism

## Accelerated time-to-market for superior solutions

LynxOS is designed from the ground up for conformance to open system interfaces. This enables OEMs to bring the superior real-time performance of LynxOS quickly to bear on mission- and life-critical applications.

The most “Linux/UNIX® system-like” RTOS, LynxOS native interfaces are those of Linux, UNIX, and POSIX. As a result, you can leverage the vast talent pool of UNIX and POSIX programmers and also take advantage of existing POSIX compliant applications—including open source Linux and Solaris applications—to speed development and reduce costs.

## Maximum versatility

LynxOS supports a broad array of processor platforms to ease the integration of multiple architectures. Supported CPU architectures include Intel, IA-32 and x86, PowerPC, PowerQUICC and MIPS. A broad array of boards and reference platforms is also supported right out of the box.

## Flexible development environment

Standing behind LynxOS is the LynuxWorks extended suite of open development tools—the most comprehensive in the industry. This flexible suite provides:

- Coverage and choice in Integrated Development Environments (IDEs) for Windows, Solaris® and Linux-based development
- Powerful code generation tools
- Highly efficient debugging tools

Developers can leverage their skills in Microsoft Visual C++/Visual Studio for Windows® or Metrowerks CodeWarrior when developing for LynxOS targets—ensuring a cohesive and familiar environment for the rapid development of high quality code.

## Hard real-time performance

LynxOS is the clear choice for OEMs in need of predictable hard real-time performance—enabled by the kernel’s unwavering deterministic behavior, short blocking times and a variety of architectural features.

## Threaded model

The LynxOS kernel includes kernel threads, which allow interrupt routines to be very short and fast, and which ensure predictable response even in the presence of heavy I/O. Kernel threads may also be used to schedule protocol servers such as TCP/IP services.

## LynxOS Advantages

- Rapid Time-To-Market —open system interfaces and flexible development environment
- Superior Real-Time Performance — absolute determinism and linear performance scalability
- Unbeatable Systems Reliability — hardened MMU-based kernel and high availability platform choices

## Linear performance

The hard real-time determinism exhibited by LynxOS is also truly linear. Even as the number of tasks running on the system increases massively, LynxOS remains deterministic.

## Reliable computing environment

LynxOS couples its hard real-time performance with strict systems reliability to meet the needs of applications that must perform unfailingly in a wide range of mission critical environments.

## MMU at the core

Memory Management Unit (MMU) support has been at the foundation of LynxOS from the beginning, residing at the lowest level of the kernel. Thus only LynxOS provides real-time capabilities plus the:

- Reliability advantages of protected memory
- Performance advantages of virtual addresses

Where other RTOSs rely on unprotected tasks running in a single flat address space, MMU-based LynxOS enables each task to run protected in its own space.

### High availability

LynxOS provides an out-of-the-box platform for building high availability systems. The MMU-based kernel itself is naturally robust and the LynxOS High Availability software package provides a framework for systems developers to create highly available systems. LynuxWorks high availability capabilities include:

- Fault resilient driver level operations
- A Fault Management Framework for managing fault tolerant take-over operations
- Redundant system slot (RSS) support
- Full CompactPCI Hot Swap support for I/O boards

Designers use the exposed interfaces and the above capabilities to add the precise level of availability protection required by particular products—including building systems capable of “five-nines” (99.999 percent) uptime.

### Long-term value

One of the few embedded software developers with an ISO 9000 certified software development process, LynuxWorks backs LynxOS customers with a comprehensive range of professional services and support programs that reflect our extensive expertise in embedded product development. Examples include:

- Porting and compatibility verification services
- Full LynxOS consulting and training services on a global basis
- Long-term support options for development and deployment support of a LynxOS release for an unprecedented 15 years

The net result is that LynuxWorks customers not only come to market quickly with high-quality real-time solutions, but are able to more effectively provide value to their own customers over the long term.

### Leveraging Linux

A strategic benefit of LynxOS is its compatibility with the LynuxWorks open source Linux distribution for embedded developers—BlueCat Linux. BlueCat Linux applications can be migrated to the LynxOS platform with no loss of functionality and with minimal effort or delay. LynuxWorks development tools support both operating systems so there are no new tools to purchase and no new learning curves. This all means that customers can develop using BlueCat Linux and then quickly migrate and deploy applications to LynxOS when real-time needs emerge.

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