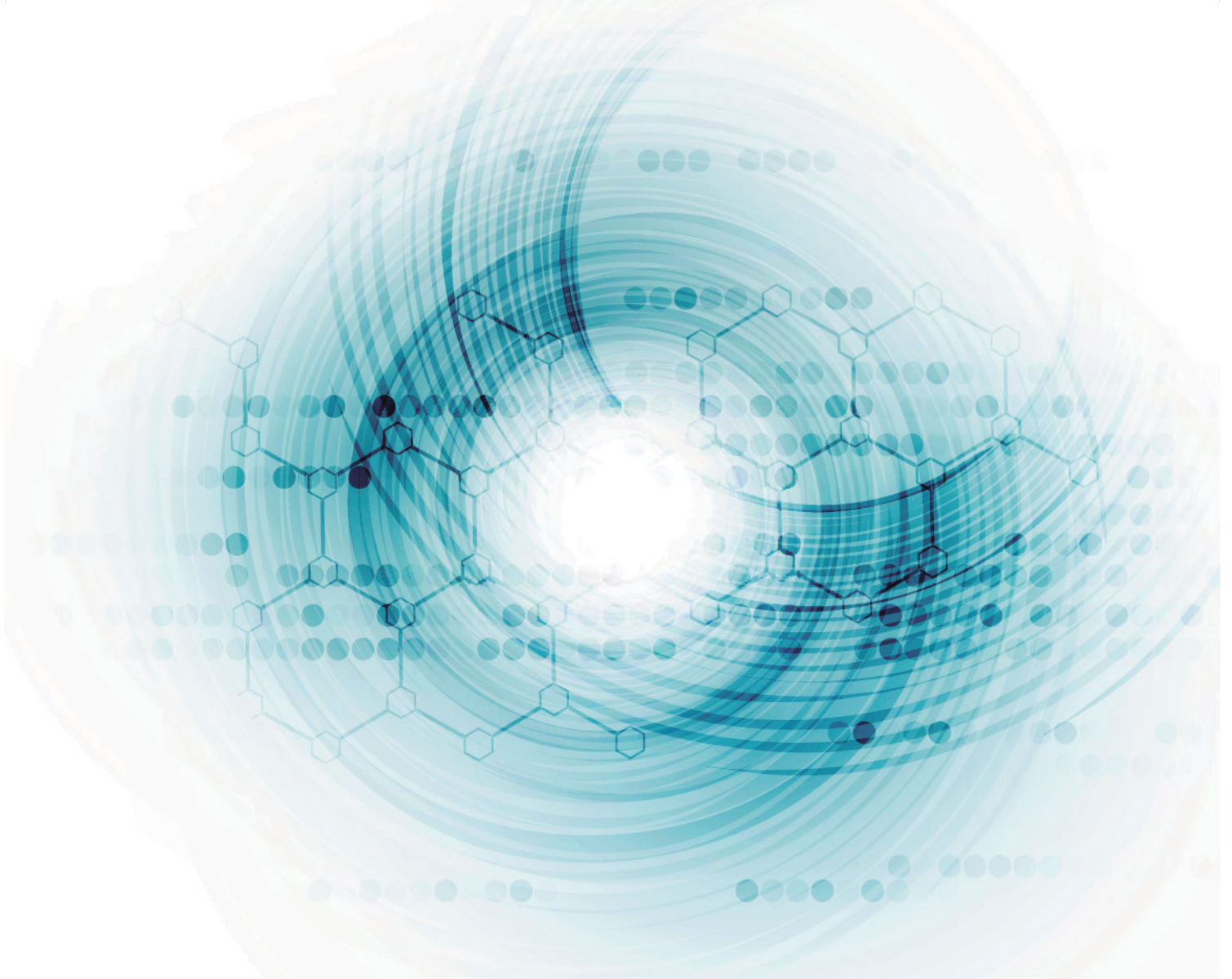


PRODUCT BRIEF

QNX Neutrino® Realtime Operating System



QNX Neutrino® is a full-featured and robust operating system designed to enable the next-generation of products for automotive, medical and industrial embedded systems. Microkernel design and modular architecture enable customers to create highly optimized and reliable systems with low total cost of ownership. With QNX Neutrino®, embedded systems designers can create compelling, safe and secure devices built on a highly reliable operating system software foundation that helps guard against system malfunctions, malware and cyber security breaches.

For over 35 years, thousands of companies have deployed and trusted QNX realtime technology to ensure the best combination of performance, security and reliability in the world's most mission-critical systems.

[Built-in mission critical reliability](#)

Time-tested and field-proven, the QNX Neutrino® is built on a true microkernel architecture. Under this system, every driver, application, protocol stack, and filesystem runs outside the kernel in the safety of memory-protected user space. Virtually any component can fail and be automatically restarted without affecting other components or the kernel. No other commercial RTOS provides such a high level of fault containment and recovery.

Inherently modular, QNX Neutrino lets you dynamically upgrade modules, introduce new features, or deploy bug fixes — without costly downtime or system outages.

[Deliver devices with modern, compelling user interfaces](#)

HMI technologies change fast. If your platform doesn't keep up, you may be stranded with outdated and unsupported software. QNX Neutrino® has a hardware optimized composition manager that enables the creation of a single unified interface from multiple HMI frameworks. Its universal application interface has the ability to easily integrate graphics and HMI technologies such as HTML5, Kanzi, OpenGL ES, Qt 5, Storyboard, video, and other 3rd party HMI frameworks.

[Built-in safety and security](#)

QNX Neutrino® provides a comprehensive system approach to security, designed to help you easily build impenetrable systems. Security policy is described in a central policy repository, which allows system architects and integrators to determine, and configure the optimal security level for their system. Security is achieved by layering different optional security mechanisms including secure boot, integrity measurement, sandboxing, access controls (mandatory or discretionary) and rootless execution. The solution also provides the ability to audit and attest to the integrity of the system.

The QNX Neutrino microkernel memory-protected architecture provides a foundation to build safety-critical systems. QNX Neutrino® is 100% API compatible with QNX pre-certified software products that address compliance with safety certifications in automotive (ISO 26262), industrial safety (IEC 61508) and medical devices (IEC 62304).

[Maximize software investments](#)

QNX Neutrino® provides a common software platform that can be deployed for safety certified and non-certified projects across a broad range of hardware platforms. Organizations can reduce duplication, costs and risks associated with the deployment of different OS/Tools variants across projects.

Developers can ramp up quickly because QNX Neutrino® looks and feels like Unix and provides a familiar open standards based development environment. Develop using C/C++, HTML5, Qt, Python, etc. Port legacy and open-source UNIX, Linux, and other source code over easily as QNX Neutrino® is certified POSIX compliant.

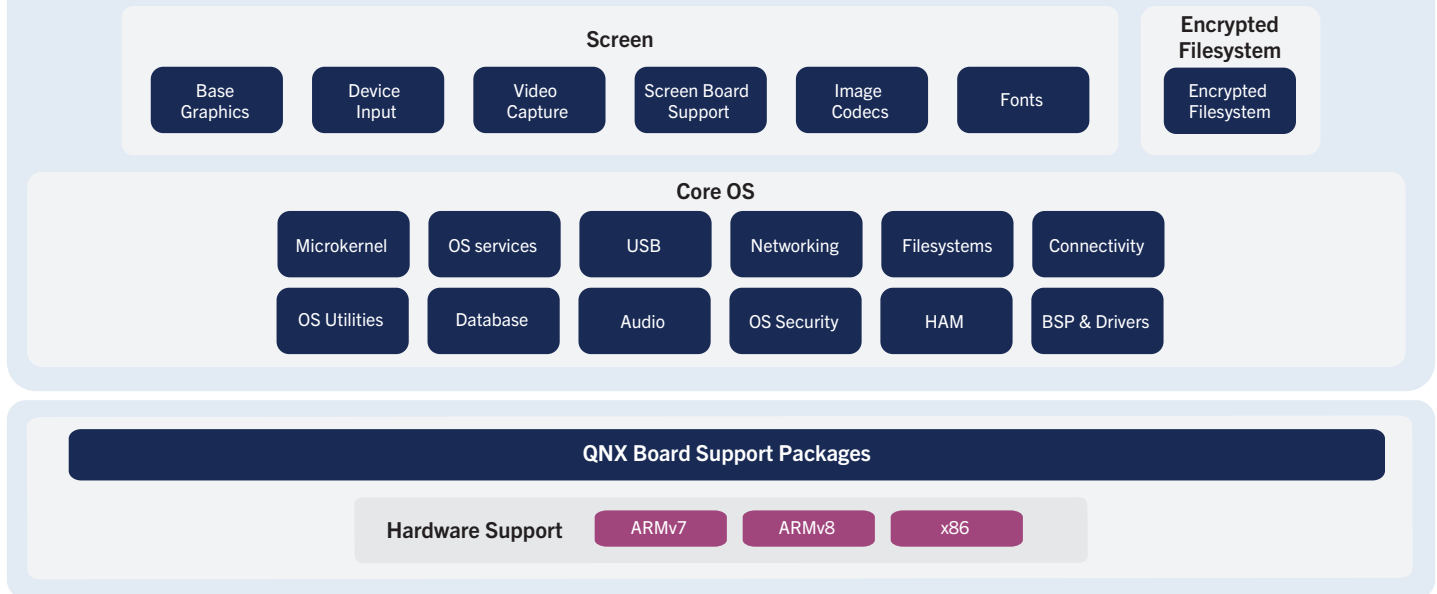
[Broad Silicon Support](#)

Choose from a broad selection of board support packages for select AMD, Intel, NVIDIA, NXP, Qualcomm, Renesas, Samsung, TI and Xilinx SoCs. Leverage industry leading GPU support for your applications based on ARM Mali, Imagination PowerVR, Intel HD, NVidia CUDA, Qualcomm Adreno and VeriSilicon Vivante.

[QNX Software Center](#)

The QNX Software Center provides a secure, centralized repository for discovery, delivery and installation of all QNX software. QNX developers are pro-actively alerted when security updates, patches and product updates are available and can easily manage dependencies, software baselines and licensing compliance.

Operating System - QNX Neutrino RTOS



QNX Neutrino RTOS architecture

The QNX Neutrino RTOS is a full-featured and robust OS designed to enable next-generation products for automotive, medical and industrial systems.

QNX Neutrino RTOS at a glance

Microkernel architecture

- Dynamically upgradable services and applications
- Fine-grained fault isolation and recovery
- Message-passing design for modular, well-formed systems

Instrumented microkernel

- System-wide performance analysis and optimization
- Fast detection of timing conflicts, hidden faults, etc.

Multi-core

- Comprehensive multi-core support
- Asymmetric, symmetric, and bound multiprocessing

Graphics and HMI technologies

- Hardware optimized composition manager supporting multiple technologies
- Single unified interface from multiple UI sources
- Modern architecture that leverages GPU acceleration and supports multi-touch input and video capture

Built-in security

- Secure Boot
- Integrity measurement
- Mandatory access control
- Rootless execution

Safe by Design

- Unique memory-protected architecture
- 100% API compatible with QNX OS for Safety
- Safety pedigree proven by certification to ASIL D in ISO 26262, SIL 3 in IEC 61508 and IEC 62304

SMMU Manager (SMMUMAN)

- Leverages VT-d or ARM SMMU derivatives to prevent unintended memory accesses via direct memory access (DMA)
- Configurable framework of boundaries for access to bus devices
- Supports monitoring and handling of boundary violation

POSIX compliance

- POSIX PSE52 certified
- Support of the broadest range of POSIX API specifications

Transparent distributed processing

- Transparent network access to remote resources
- Simplified design of fault-tolerant clusters

Networking and connectivity

- Wifi 802.11 a/b/g/n
- Full IPv6 and IPv4 stack support
- USB 3.x, Host, Device and OTG support
- Bluetooth v4.2 Classic and Low Energy protocols and profiles*

Predictable realtime performance

- Pre-emptive scheduler with choice of scheduling methods
- Distributed priority inheritance

Adaptive partitioning

- Guaranteed system resources to build secure, reliable systems without compromising performance and flexibility

File systems

- Image, RAM, Flash, QNX, Linux, DOS, CD-ROM, DVD, NFS, CIFS, Compression, NTFS, HFS+
- Power safe mass storage file system

Resource manager framework

- Device drivers are implemented in user, not kernel, space
- Drivers can be started, stopped, and debugged like any standard application

High availability

- Heartbeat for early fault detection
- Intelligent restart and transparent reconnection

Processor Support

- 64-bit support for the latest ARMv8 and x86-64 processors
- Continued 32-bit support for ARMv7 and x86

* Separate runtime component.

About BlackBerry QNX

BlackBerry QNX, is a leading supplier of safe, secure, and trusted operating systems, development tools, and professional services for connected embedded systems. Global leaders such as Ford, Audi, Cisco, General Electric, Lockheed Martin, and Siemens depend on BlackBerry QNX technologies for their next generation of secure vehicle software platforms, network routers, medical devices, industrial automation systems, security and defense systems, and other mission and/or life-critical applications. This includes full software lifecycle management via secure over the air software updates. Founded in 1980, BlackBerry QNX is headquartered in Ottawa, Canada, with its products distributed in over 100 countries worldwide.

© 2019 BlackBerry QNX, a subsidiary of BlackBerry. All rights reserved. QNX, Neutrino, are trademarks of BlackBerry Limited, which are registered and/or used in certain jurisdictions, and used under license by BlackBerry QNX. All other trademarks belong to their respective owners.

