

QNX Neutrino RTOS

Adaptive Partitioning

Innovative partitioning for secure, guaranteed realtime with maximum performance and flexibility

Solution highlights

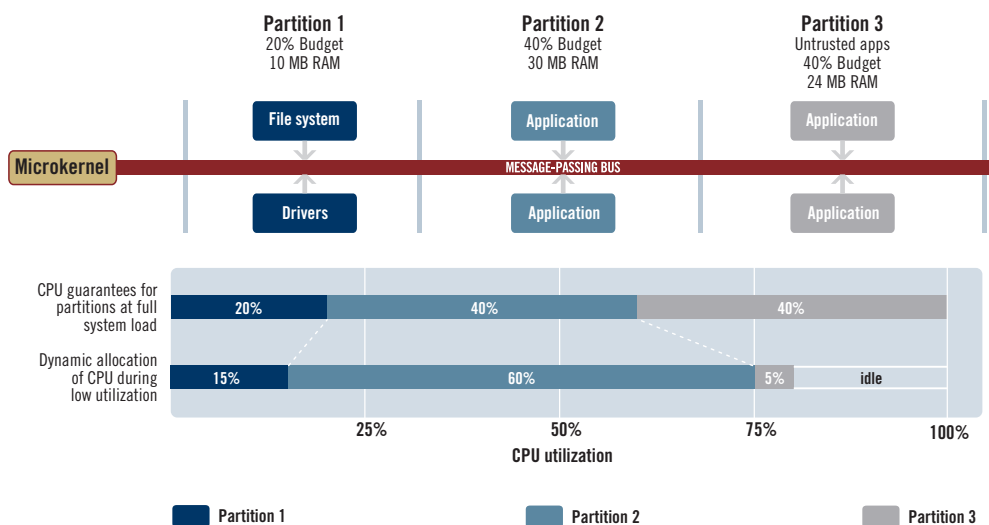
- ▶ **Build secure compartments, or partitions, around your applications to protect your system from external threats**
- ▶ **Achieve the highest realtime performance — dynamically reallocate idle CPU time from partitions that are under-utilized to partitions that can benefit from extra processing time**
- ▶ **Guarantee CPU time and memory for critical system functions**
- ▶ **Increase system availability — error detection and system-recovery operations have CPU cycles to detect and repair faults regardless of processor load**
- ▶ **Deploy adaptive partitioning without changing your code — applications and system services can be simply launched into partitions**
- ▶ **Improve time to market — eliminates complex task-starvation problems during integration phase**

The QNX Neutrino® RTOS is the only embedded operating system to provide secure, guaranteed realtime without compromising performance and flexibility. Using our patent-pending adaptive partitioning technology, you can guarantee CPU time and memory for your applications, contain threats and protect your system. Adaptive partitioning provides a simple, reliable solution for systems that need additional protection offered by a partitioning operating system.

Build secure compartments

Almost all embedded systems today are network connected devices that can be extended with untrusted add-on applications and content. If appropriate measures are not included by design, security and availability of your product can be compromised. Rogue software can prevent your critical system functions from running by starving them of CPU time or memory. To address this, QNX adaptive partitioning allows you to construct compartments around groups of applications and dedicate a portion of CPU time and memory to each compartment. For added security, the QNX Neutrino RTOS protects the process memory and resources of both applications and system-level services.

Build secure compartments for your software using adaptive partitioning



Patent-pending adaptive partitioning by QNX Software Systems enforces CPU time partition budgets when the system is loaded. CPU time budget not used by a partition is dynamically allocated to partitions that can use extra time.

Maximize realtime performance

Unlike static partitioning approaches with cyclical scheduling, adaptive partitioning recognizes that CPU utilization is sporadic and systems can often have idle time available. With adaptive partitioning, this idle time is not wasted. Since unused CPU cycles from one partition can be dynamically reallocated to other partitions, overall CPU utilization is maximized. Standard priority-based scheduling is in force when the system isn't under full load or attack. Threads in one partition can access any available CPU cycles if there is free time available. This yields a more responsive product and reduces cost by eliminating over-engineering.

Guarantee resources

Task or process starvation is a fundamental concern for any embedded system. Services provided by lower-priority threads — including diagnostic services that protect the system from software faults or denial-of-service attacks — can be starved of CPU cycles for unbounded periods of time, compromising system availability. Adaptive partitioning guarantees that all partitions get their budgeted share of CPU time to ensure your system runs correctly — under all conditions.

Use adaptive partitioning without code modification

Adaptive partitioning uses the standard POSIX programming model so you can use the same, familiar design, programming and debugging techniques as in any embedded system.

If you already use the QNX Neutrino RTOS, adaptive partitioning does not require any modification of your code. You can introduce adaptive partitioning by simply defining the partition budgets and deciding which applications and/or threads reside in each partition. With QNX adaptive partitioning, applications and system services can simply be launched into the appropriate partition.

Foundry27

This community portal for QNX software developers provides source repositories, forums, blogs, wikis, and, in the community spirit, a bazaar that lets developers share source code and binaries with one another. Whether the developer wants to download source, discuss ideas with fellow developers, or even create a new code project for the QNX community, Foundry27 offers the resources required.

About QNX Software Systems

QNX Software Systems, a Harman International company (NYSE: HAR), is the innovation leader in embedded technology with middleware, development tools, operating-system software and services. Global leaders such as Cisco, Daimler, General Electric, Lockheed Martin, and Logitech depend on QNX technology for a wide range of OEM applications. QNX Software Systems is headquartered in Ottawa, Canada, and distributes products in over 100 countries worldwide.

