

Adaptive Partitioning

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

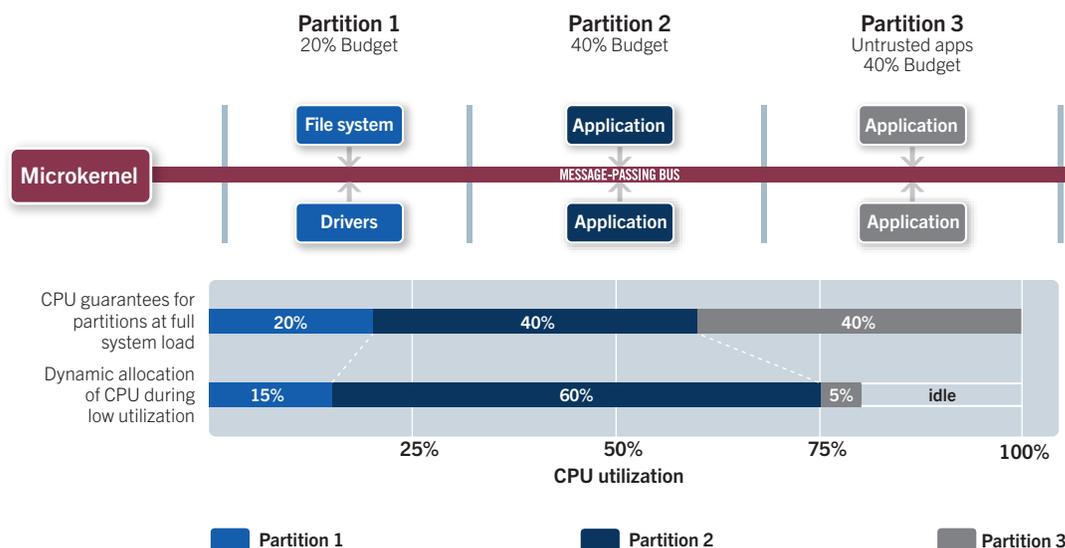
Solution highlights

- 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 underutilized to partitions that can benefit from extra processing time
- Guarantee CPU time 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 patented adaptive partitioning technology, you can guarantee CPU time 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. To address this, QNX



Patented 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.

adaptive partitioning allows you to construct compartments around groups of applications and system level resources, and dedicate a portion of CPU time to each compartment.

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 developers provides software updates, board support packages, drivers, forums, and wikis. Whether developers want to discuss ideas, post questions or answers about developing with QNX, or download drivers for the latest hardware, Foundry27 offers the resources required.

About QNX Software Systems

QNX Software Systems Limited, a subsidiary of BlackBerry, is a leading vendor of operating systems, development tools, and professional services for connected embedded systems. Global leaders such as Audi, Cisco, General Electric, Lockheed Martin, and Siemens depend on QNX technology for vehicle infotainment units, network routers, medical devices, industrial automation systems, security and defense systems, and other mission- or life-critical applications. Founded in 1980, QNX Software Systems Limited is headquartered in Ottawa, Canada; its products are distributed in more than 100 countries worldwide. [Visit www.qnx.com](http://www.qnx.com)

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