

# WIND RIVER

## Wind River Network Acceleration Platform

Networks are experiencing dramatic increases in data traffic largely driven by high volumes of bandwidth-intensive multimedia content coming from smart devices. In today's highly competitive market, network equipment providers must build products that deliver the performance and packet throughput capabilities to expand capacity and keep pace with the rising bandwidth demand.

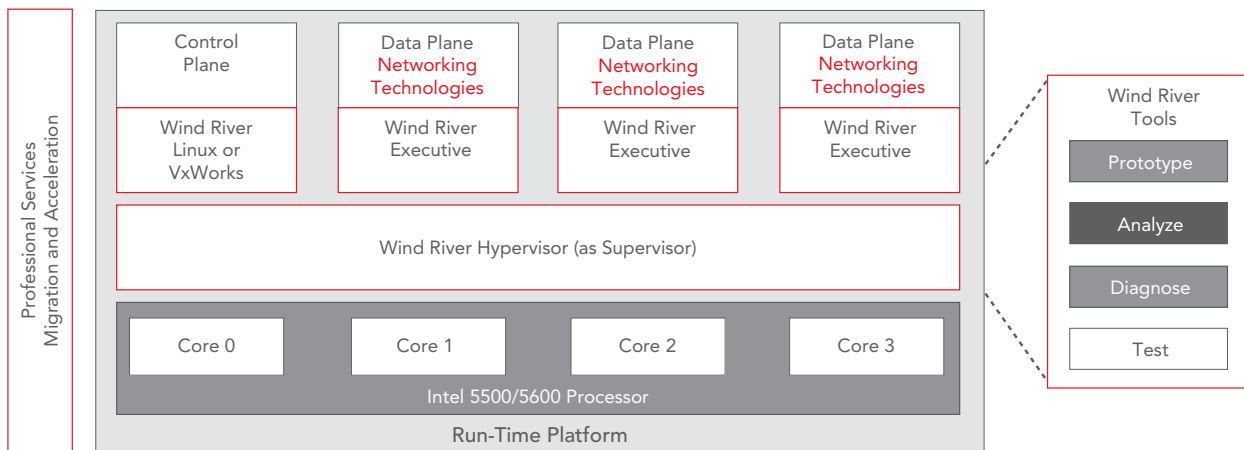


Figure 1: Wind River's multi-core packet acceleration solution

Wind River Network Acceleration Platform is a packet processing solution that leverages multi-core technology to deliver Gigabit Ethernet wire-speed performance for ultra-fast IP packet forwarding for network infrastructure equipment.

The platform is a comprehensive bundle of Wind River's industry-leading multi-core-ready run-time technologies. It comes standard with control plane operating system support—Wind River Linux or VxWorks—and data plane acceleration software, including a fast real-time bare metal executive and high-performance networking software. The platform also includes a lightweight hypervisor to load and configure individual cores and to provide abstraction of system resources. The networking-specific software stack includes IPv4/IPv6 packet forwarding protocols optimized for specific multi-core processors.

Network Acceleration Platform is designed to provide linear performance scalability. As more cores are dedicated to the data plane, packet throughput performance increases proportionately. This is an important contrast to implementations that are limited by bus, memory, or other resource constraints. While symmetric multiprocessing (SMP) plays an important role in multi-core systems, the packet processing performance curve in an SMP configuration can

flatten after only a few cores, yielding diminishing returns as more system resources are allocated to networking tasks. Wind River's asymmetric multiprocessing (AMP) technologies provide a clean separation of control plane and data plane functions, which enables greater efficiency of multiple processing cores. The data plane cores provide excellent scalability while the control plane is freed from the burden of packet processing. The platform offers flexibility to configure the allocation of cores to the control or data planes to meet a wide range of networking applications.

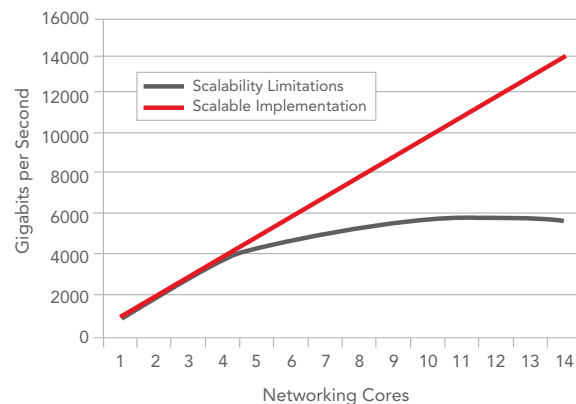


Figure 2: Scalability tests

## Control Plane Operating System

The control plane operating system is what is commonly considered the “main” operating system. In addition to supporting applications that carry out required system work, it must be able to communicate efficiently with the data plane while requiring minimal change to standard user APIs. Network Acceleration Platform offers a choice of the two most widely used operating systems for network equipment, Wind River Linux and VxWorks. Both operating systems are SMP-ready and include Wind River’s optimized multi-OS inter-process communication (MIPC) mechanism. Also included is system software that allows native Linux network configuration utilities to run seamlessly with data plane packet processing.

## Data Plane Acceleration Engine

Data plane cores, also known as network acceleration engines (NAEs), run independent from the control plane OS, and each is supported by a basic executive that allows each core to run highly efficient packet processing software. Data plane software has been optimized to use networking features incorporated into the processor. Great attention has been paid to cache and memory management to minimize contention and maximize throughput. The independent processing of the NAEs provides excellent parallelism for repetitive tasks such as header inspection, route lookups, and packet forwarding. The multi-core networking technologies include high-performance IPv4/IPv6 packet forwarding software that enables wire-speed Gigabit Ethernet throughput without degrading control plane processing capacity.

## Supervisor

The platform also includes a lightweight hypervisor that runs in a supervised AMP (sAMP) configuration. The hypervisor is used to configure and load individual cores and then allows the system software to run at full capacity. No performance penalty is incurred because this lightweight hypervisor “gets out of the way” once the cores are up and running.

## Tools Support

The platform has been fully integrated and optimized to work with Wind River Workbench. Workbench is a scalable tools platform that is highly productive to use, flexible, and tightly integrated with VxWorks and Wind River Linux. Based on the Eclipse platform, Workbench offers an end-to-end, open standards-based collection of tools for device software design, development, debugging, test, and management. From hardware and board initialization to device management, Workbench offers deep capability throughout the development process in a single integrated environment, with complete platform integration and tools for debugging, code analysis, advanced visualization, root-cause analysis, and test.

## Migration and Optimization Services

Designing multi-core technologies into existing and new projects can be very complex. Wind River offers migration and optimization services to assist project teams with fully taking advantage of the many benefits multi-core adoption has to offer. Our team of experienced professionals can assist with moving legacy single-core applications to new multi-core environments. We can also assist with fine-tuning your application to maximize the performance capabilities in the processor. Leveraging the Wind River Professional Services team can accelerate time-to-market and significantly reduce project risk.

## Benefits of an Integrated Platform

Wind River Network Acceleration Platform offers a fully integrated software system from one supplier. The platform provides world-class technical support for each component in the system. Utilizing an integrated software platform eliminates the need for complex multi-vendor troubleshooting, upgrade synchronizations, toolchain support management, and version matching. By leveraging an integrated software system, project teams can focus on higher-value competitive features. It also helps reduce development expenses, overall risk, and time-to-market.

## Architecture Support

Wind River Network Acceleration Platform currently supports the Intel architecture for the Xeon processor. Additional architectures and processors will be available soon.

## How to Purchase Wind River Solutions

Visit [www.windriver.com/company/contact-us/index.html](http://www.windriver.com/company/contact-us/index.html) to find your local Wind River sales contact. Or to have a sales representative contact you, call 800-545-9463 or write to [inquiries@windriver.com](mailto:inquiries@windriver.com).