



Powering New Generation Network Appliances

The network and telecom industries are undergoing a major transformation due to modern advances that promise cost savings and flexibility. Until now, network and telecom equipment was designed on dedicated hardware and software platforms with a long-time-to-market and rigid architectures.

Designing a new generation of network appliances based on generic hardware platforms embedding increasingly powerful processors and high speed Ethernet technologies is a very attractive solution for network vendors. Combining generic hardware platforms with virtualization also provides network vendors with a direct path to virtualize network appliances and deliver software appliances instead of physical equipment. However, this approach is possible only if networking performance on generic hardware platforms can compete with legacy architectures.

The **6WINDGate™** packet processing software solution for network appliances solves networking performance bottlenecks to enable high performance physical and virtual appliances on generic hardware platforms thus reducing time to market and providing competitive advantage.

Since the first shipment of its 6WINDGate packet processing software in 2007, 6WIND has been selected by many network vendors to unlock hidden infrastructure performance for commercial off-the-shelf (COTS) and server hardware.

Requirements For The New Generation

Requirements for the new generation of physical and virtual network appliances can be summarized as follows:

- Cost-effective generic hardware platforms
- High performance Ethernet NICs (10G, 40G and 100G)
- High performance packet processing software using minimal processor resources to remove performance bottlenecks at all levels and sustain high network throughput for complex Layer 2 – 4 protocols
- Flexible and extensible software architecture to develop physical appliances, virtualized equipment or software appliances based on commercial or open source Linux and hypervisor distributions
- Open architecture to reuse existing application software and integrate third-party network appliances

6WINDGate's solution for network vendors meets all these requirements to replace dedicated hardware with commodity servers and virtualization and develop a wide range of physical and virtualized network appliances including Broadband Network Gateways (BNGs), security appliances, Application Delivery Controllers (ADCs), load balancers, and more.

6WIND Solution For Physical And Virtual Appliances

6WINDGate is high performance Layer 2 – 4 packet processing software for market leading processors including **Cavium, Intel and Mellanox**. 6WINDGate networking software uses the services of the processor vendor's Software Development Kit (SDKs). On Intel platforms, 6WINDGate sits on top of **DPDK (Data Plane Development Kit)**.

Based on a fast path architecture, 6WINDGate transparently accelerates Linux network environments to provide more than 10x network performance improvements compared to standard software architectures. 6WINDGate acceleration is compatible with commercial and open source Linux distributions and does not require any modification of the Linux kernel. 6WINDGate also transparently reuses standard APIs such as Netlink between the userland and the kernel so that legacy control plane applications running on a standard Linux network stack can be reused without any modification on 6WINDGate's accelerated data plane.

6WINDGate packet processing software provides the most comprehensive portfolio of data plane protocols on the market including:

- High capacity for encapsulation protocols such as VLAN, VXLAN, L2TP, GRE, MPLS, and more.
- High performance and scalable IPv4 and IPv6 forwarding supporting 12 million packets per second per core on Intel platforms.
- Virtual routing support for a large number of instances.
- High performance IPsec stack to sustain more than 12 Gbps of encrypted traffic per core on Intel platforms; this stack can use external hardware crypto-engines for maximal performance.

- High performance and capacity firewall and NAT.
- Accelerated TCP/UDP stack supporting millions of concurrent sessions and session setup rates above 1 million sessions per second on an Intel server.

6WINDGate is ideal for physical appliances running Linux. It can also be used to accelerate software appliances running in Virtual Machines (VMs). When several virtual appliances, each using a VM, run on virtualized equipment, networking software performance bottlenecks at the hypervisor (host OS) level must be resolved to provide all the VMs with the expected throughput. 6WINDGate solves this performance bottleneck by providing virtual switch acceleration on the Linux host OS.

At the hypervisor level, 6WINDGate acceleration reuses the same fast path architecture as in the VM to transparently provide more performance improvements without any modification to the virtual switch or its management. Beyond pure switching capabilities, 6WINDGate also delivers enhanced networking services such as L3 forwarding, virtual routing, firewalling and more to implement network infrastructure services comprehensively.

Network vendors can combine 6WINDGate virtual switch acceleration to build high performance network infrastructure for their equipment with 6WINDGate in VMs to accelerate virtual appliances. Third-party virtual appliances can also be integrated on 6WINDGate's high performance platform.

6WIND provides equipment providers with the source code of its 6WINDGate data plane engine to be integrated in physical, software and virtualized appliances. Equipment providers can customize 6WINDGate to provide application differentiation with maximal network performance.

