

# Turbo Boost Linux: Accelerated Virtual Switch Enable High Performance Virtualization

- **6WINDGate™** packet processing software improves performance of standard **Open vSwitch (OVS)** by over 10x
- No changes required to OVS
- Can be combined with 6WIND's fast path protocols and DPDK extensions

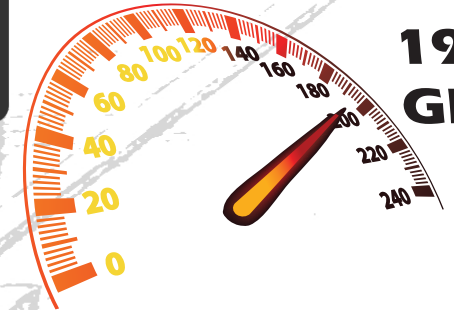
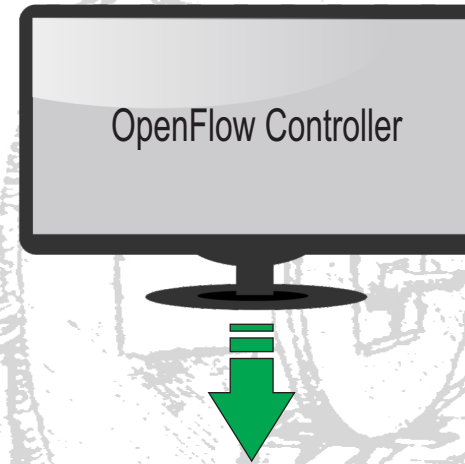
6WIND provides software solutions that address critical networking performance challenges in data centers. In the use case outlined here, the 6WINDGate™ packet processing software accelerates Open vSwitch (OVS) instantiated on an application server blade and configured using OpenFlow, delivering a performance improvement of over 10x thanks to its optimized data plane architecture.

OVS is widely used by open source hypervisors to perform switching for virtual machines (VMs). However, it experiences bottlenecks due to the Linux kernel networking stack. 6WINDGate can accelerate the virtual switch function by over 10x without any change to OVS, or the OS, hypervisor or OpenFlow Controller.

6WINDGate software adds its own networking stack and poll mode drivers on top of **DPDK**, including Layer 2-4 protocols such as VXLAN, Filtering/NAT and IPsec in addition to basic switching features.

In 6WINDGate, critical networking functions are performed in a fast path environment outside the Linux kernel. 6WINDGate OVS acceleration delivers high performance, reaching 195 Gbps throughput. This performance is achieved using **Mellanox ConnectX®-3 Pro 40G NICs** plugged on an **HP ProLiant** server running **Red Hat Enterprise Linux** and tested with an **IXIA 40G traffic generator**. 6WINDGate includes 6WIND's **Mellanox poll mode driver (PMD)** for the DPDK.

Overall performance is required no matter the architecture (legacy, SDN, NFV). Delivering performance without impact on the environment (OVS, OS, hypervisor or OpenFlow Controller) provides a solution to implement a smooth and incremental path to new architectures.



## Accelerated Open vSwitch



Open vSwitch Control Plane

Open vSwitch Data Plane

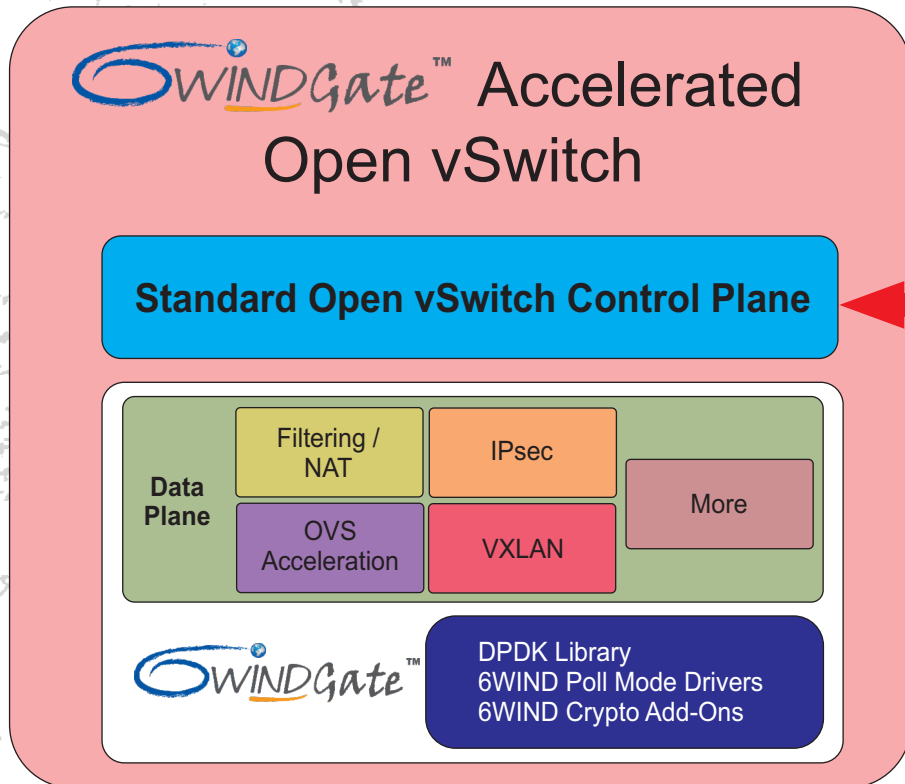


**ixia** Traffic Generator



**Turbo  
Boost  
Linux**





**Enable  
SDN / NFV  
Next Gen  
Services**



## Optimized Virtual Switch Data Plane Performance

6WINDGate accelerates the performance of Open vSwitch (OVS) by performing packet processing functions in a fast path environment, running on dedicated processor cores outside the Linux kernel.

### 10x Performance

Avoiding the overheads and latencies associated with the Linux kernel, 6WINDGate delivers over 10x the switching performance of the standard OVS implementation.

### No Change to Open vSwitch

No changes are required to OVS, hypervisor, or OpenFlow Controller when 6WINDGate is used. 6WINDGate monitors standard OVS data plane calls, intercepting appropriate packets and processing them in the fast path, transparently to the OVS control plane.

### Scalability

Unlike the standard OVS, the performance of 6WINDGate scales linearly based on the number of cores configured to run the fast path.

### DPDK (Data Plane Development Kit) for Maximum Networking Performance

To ensure maximum networking performance on standard hardware platforms, 6WINDGate leverages the DPDK software library, which enables high-performance packet processing on **Intel® Xeon processors**, combined with 6WIND's Mellanox PMD (poll mode driver).

### OpenFlow Compatibility

6WINDGate OVS acceleration is fully compatible with the OpenFlow protocol. This includes control plane configuration support as well as OpenFlow-specific data plane functions and actions.