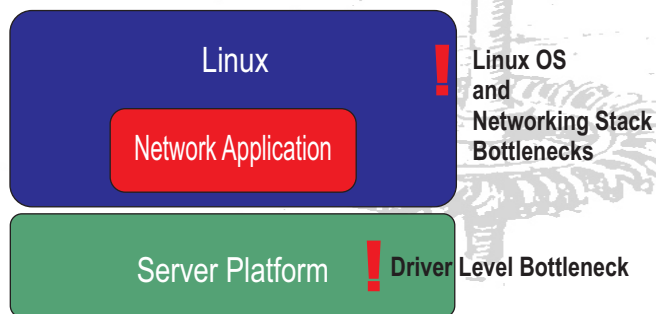# 6WINDGate™

6WIND solves performance challenges for network application developers, enabling them to outpace the competition with a fast path architecture. 6WINDGate™ packet processing software is optimized for generic hardware with a choice of multicore processors to deliver a wide variety of networking and security protocols and features on top of standard Linux. 6WINDGate offers a cost-effective value proposition, enabling the transition to the future with Software-Defined Networks (SDN) and Network Functions Virtualization (NFV).

Increase Data Plane Performance
No Change To Linux Environments
Available Across All Major Platforms
Support Extensive Set Of Protocols

L2-L4 Acceleration
IPsec VPN Gateways
TCP / UDP Termination
Virtual Switching
DPDK
And More...

fast path

Performance Bottlenecks

Linux
Network Application

Server Platform

! Linux OS and Networking Stack Bottlenecks

! Driver Level Bottleneck

Packet Processing Software
6WINDGate Deployment Options

Linux
Application Software
6WIND

Hypervisor
vSwitch
6WIND

Virtual Machine
Application Software
Linux
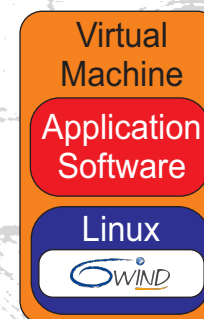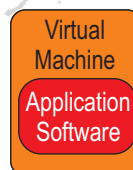6WIND

Non-virtualized environment
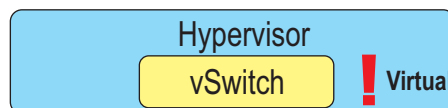
Host OS for switching and other functions

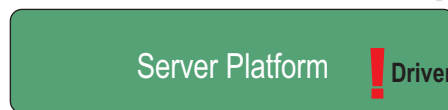**Guest OS with application functions**

To provide maximum data plane performance, 6WINDGate implements a packet processing engine running on dedicated cores, isolated from the Linux operating system, called the fast path. The same source code supports heterogeneous multicore processor hardware from Broadcom, Cavium, Intel and Tilera. 6WINDGate leverages the processor SDK to process packets directly in the fast path without involving the Linux networking stack. As an example, on Intel platforms, it leverages the Data Plane Development Kit (DPDK). The fast path architecture is transparent to Linux, so that existing applications do not need to be modified. The fast path supports major networking protocols (VLAN, IPsec, NAT, TCP/UDP Termination and more), as well as Open vSwitch acceleration and Fast vNIC drivers.

Virtual Machine
Application Software

Virtual Machine
Application Software

Virtual Machine
Application Software

! **Virtual Machine Bottleneck**

! **Communications Bottleneck Host vs Guest OS**

Hypervisor
vSwitch

! **Virtual Switch Bottleneck**

Server Platform

! **Driver Level Bottleneck**

6WINDGate™

At The Heart Of A Rich Ecosystem

Smart NICs
CAVIUM NETWORKS
TILERA

Ethernet NICs
intel
EMULEX
Mellanox TECHNOLOGIES

OS and Hypervisor
debian
ubuntu
redhat LINUX
vmware
6WIND DPDK

Multicore Processors
BROADCOM
CAVIUM NETWORKS
intel
TILERA

Hardware Platforms
DELL
ADVANTECH
radisys
hp

6WIND
6wind.com

6WINDGate Comprehensive Protocol Support
Optimized For Multicore Fast Path Processing

Control Plane

Routing/Virtual Routing	OVS	Security
BFD	SMR	L2TP PPPoE BRAS
VRRP	LACP	VPN Monitoring

Fast Path

VLAN	Link Aggregation	GRE	MPLS/VPLS Encapsulation	Ethernet Bridging
IPv4/IPv6 Forwarding	IPv4/IPv6 Multi-cast	Tunneling (IPinIP)	NAT	Filtering IPv4/IPv6
IPsec IPv4/IPv6	IPsec SVTI	QoS	Flow Inspection	TCP/UDP Termination
OVS Acceleration	VXLAN	L2TP/PPPoE BRAS	GTP-U	

Performance Benefits Scale With Number Of Cores

10X Performance

6WINDGate Accelerated

Standard Linux Becomes Unstable

Performance (Millions Of Packets Per Second)

Number Of Processor Cores
1 2 3 4 5 6 7 8 9 10

Speed Specs
Accelerated Open vSwitch: **200 Gbps**
IPv4 and IPv6 Forwarding: **10 Mpps per core**
IPsec: **190 Gbps**
TCP/UDP Termination: **5 million sockets per second**
vBRAS Network Functions Virtualization (NFV):
256,000 PPP tunnels with 800 tunnels per second