

6WINDGate™

Maximize Multicore Performance with Embedded Middleware and Minimize Design Constraints When Implementing Networking and Application Integration

KEY BENEFITS

- Portable (including Fast Path) with unified high-level APIs to interface built-in accelerators on market-leading multicore platforms
- Specifically designed as a scalable solution to meet graduate, various or multiple highest performance requirements with efficient Fast Path implementation
- Powerful solution, with ready-to-implement complete L2 / L3 networking functionalities, hides multicore complexity, eases migration to multicore architectures and maximizes software reuse
- Modular solution (Fast Path + Networking Linux Stack + Control Plane) is fully integrated with Control Plane OS (ensures optimal software reuse)
- Standards-based open architecture enables extension to ease integration of differentiating and value added features

6WIND provides an embedded software solution - 6WINDGate - that simplifies and expedites embedded multicore implementation of layer 2/3 networking and application development and integration running on multicore-based platforms.

Ideal for telecommunications, security and enterprise markets, 6WINDGate empowers the entire multicore ecosystem - chipset providers; OS providers; and equipment manufacturers - to maximize multicore technology performance in the simplest and fastest manner possible. This also enables designers to realize significant reductions in development times and costs.

6WINDGate is an off-the-shelf open software solution that acts like "middleware" between the executive environment (low level library for multicore hardware support) of a multicore processor and the actual applications running on equipment used to deliver advanced services. 6WINDGate delivers no performance penalties and actually allows designers to maximize multicore performance.

6WINDGate Advantages:

- Enables seamless migration path to multicore and simplified platform evolutions
- Maximizes ability to benefit from potential/performance gains possible with multicore
- Scales from 1 to any number of cores using simple-to-implement profiles suited to specific implementation goals
- Enables seamless integration of the multicore executive environment with a Linux architecture using an open standards-based approach
- Off-the-shelf ready with a complete set of networking features ready for implementation
- Framework to ease development of additional L2-L3 features and to maximize portability across multicore chipsets
- XML-based manageability eases integration of networking and value-added features and applications (in-house or third party)
- Maximizes software development reuse
- Significantly reduces networking software development cycles and design time (by as much as 70%) resulting in cost reductions



ADS, EDS & SDS Profiles

Development Simplified:

6WINDGate's XML-based Management Plane can also be provided. The XML-based management system is very useful to integrate the management of networking features within the management of the equipment. It also provides a Command Line Interface (CLI), Web management tools and SNMP MIBs so integration is fully covered for you.

6WINDGate has been ported and validated on market-leading multicore platforms (Cavium Networks™, Freescale™, Intel®, RMI®, etc.) and boards from major OEM vendors. It provides hardware independence so software can be easily reused for other projects thus reducing support and maintenance costs.

6WIND has strong partnerships with chipset vendors, OS vendors and board manufacturers to validate 6WINDGate on new versions of processors and boards. This saves embedded designers from time-consuming and costly development cycles associated with integration, development, maintenance and validation with each evolution of product. 6WIND's solutions are in use worldwide at tier one telecommunications equipment manufacturers.

6WINDGate Applications:

Wireless Infrastructure Equipment

- WiMAX ASN gateways / LTE gateways
- BTS / Node B: WiMAX, LTE, IP, Femto
- BSC IP
- Backhaul GSM

Security

- Telecommunications and enterprise UTM appliances
- IPsec concentrators

Up-Scaling Existing Applications

- Filters and load balancers
- Billing management systems

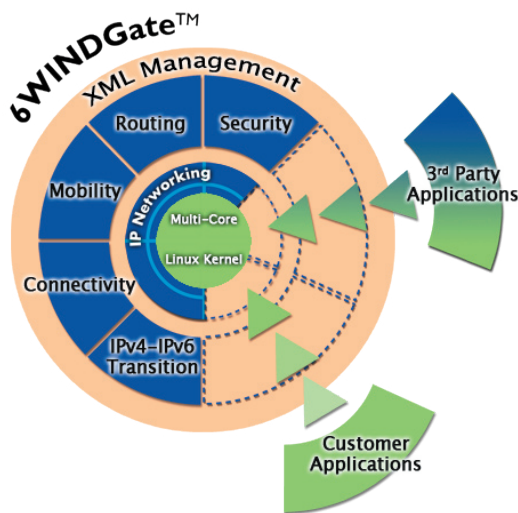
Content Inspection

- DPI
- SLA monitoring
- Content routing, etc.

IMS

- Transport layer: media gateway, SGSN, GGSN, etc.
- Control layer: S-CSCF, MGCF, etc.

Access Gateways



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ADS Profile

6WINDGate ADS is part of 6WIND's suite of software that covers the gamut of multicore design requirements from 1 to any number of cores. Simplified into three solutions covering mid to high performance application designing, 6WINDGate profiles are specifically designed to address all design requirements by adding simplicity, design time reduction and cost savings. 6WINDGate is ideal for all multicore design implementations, whether it is a migration path to multicore technology or a product evolution.

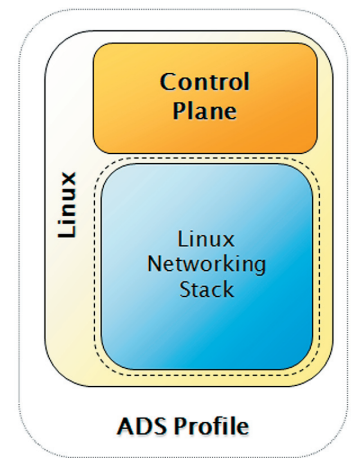
6WINDGate ADS is targeted at mid-range applications where it is ideal for the Control Plane and Data Plane to be co-localized and where the entire 6WINDGate software runs in a Linux environment. Forwarding is performed at the Linux Networking Stack level.

6WINDGate ADS architecture can be used for single-core processors or multicore processors. For multicore architectures, it means the Linux kernel with a dedicated optimized SMP networking stack is running on all the cores accordingly in order to process many packets simultaneously.

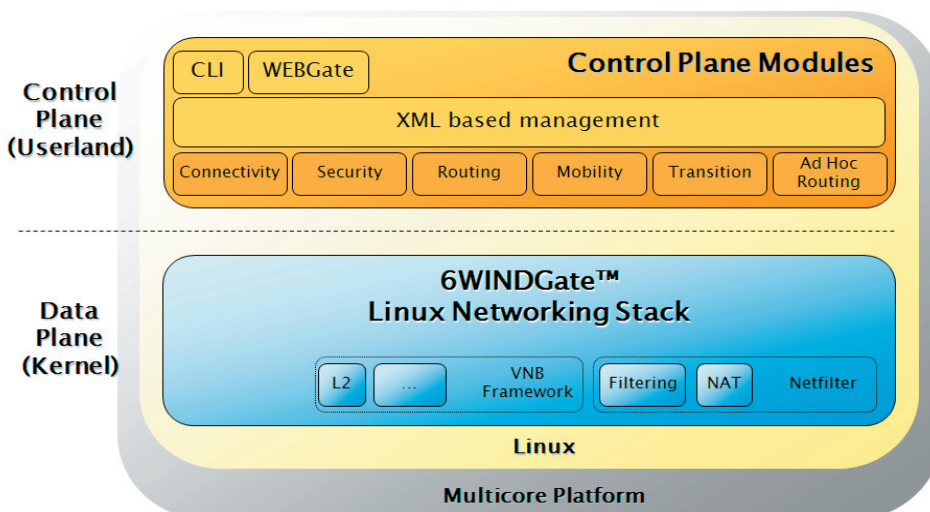
6WINDGate ADS Linux networking stack has been enhanced and hardened compared to a standard Linux stack. It allows implementation of all kernel modules of the 6WINDGate solution including IPv4 / IPv6 stack, IPsec, QoS management, multicast forwarding, filtering, VLAN, and L2 tunneling. With SMP optimizations, it runs either on a single processor or multi-core architectures. Embedded designers can easily interface with built-in crypto-processors to optimize IPsec performance thanks to the OpenBSD Cryptographic Framework (OCF). A Virtual Networking Block (VNB) framework allows simple integration of drivers and Layer 2 protocols.

Control Plane	
Routing Protocols	Static RIP (IPv4-v6), RIPng, OSPFv2, OSPFv3, BGP-4, BGP-4+, IS-IS including virtual routing, ECMP (IPv4-v6), VRRP, PIMv4-SM, PIMv6-SM, IGMP/MLD snooping & proxy
Security	IKE, IKEv2, EAP
Connectivity	PPP, multi-link PPP, PPPoE, CHDLC, VLAN, GRE, 6in6, 4in4, L2TP, DHCPv6-v4, DNS proxy, RADIUS client
Mobility	Home agent, FMIP, corresponding node, mobile node, IPsec integration, NEMO, Proxy MIP
IPv4-IPv6 Transition	NAT-PT
Ad Hoc Routing	OLSR

Linux Networking Stack (Optimized SMP Stack for Multicore)
IPv4/v6 forwarding, virtual routing, ECMP, etc.
IPsec v4/v6 with crypto integration
VLAN, GRE, bridging, link aggregation all based on VNB framework
IPv4/v6 QoS
IPv4/v6 reassembly
IPv4/v6 stateful firewall, NAT
ROHC
IPv4/v6 multicast
Flow Inspection
IPv6 transition mechanisms



6WINDGate ADS Profile	
Slow Path and Control Plane	Linux SMP
Fast Path	None
Protocol Implementation	Control Plane + Slow Path
Performances	Optimal performance for a Linux standard architecture based on multicore
Ease of Use	Simple - ideal for less intense multicore applications



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