Service Engine 1

Advanced Service Enforcer

Flexible Layer 2/Layer 3 aggregation router for advanced service enforcement

Key benefits:

- Cost efficient aggregation of multiple access technologies
- NPU-based for full feature flexibility
- Enables advanced service differentiation and customization
- Treats each service individually for separation at service level
- Cost efficiently controlled by BECS™

The Service Engine 1, SE-1, is a high-performance aggregation router for advanced service enforcement. In a compact form factor, the SE-1 offers up to 24Gbit/s (full line-rate) packet processing through its powerful 16-core network processor (NPU). The system offers a full Layer 2 bridging and Layer 3 routing feature-set, allowing it to be used in all common broadband network architectures in deployment today. The service enforcement features, including shaping, policing, Quality of Service(QoS) and deep packet inspection can be applied on both bridged and routed traffic.

Aggregation technologies

The SE-1 provides cost effective aggregation of all common access technologies, such as ADSL2+, xDSL, PON, Ethernet over COAX, Wireless technology and more. Even in a network with a mix of different access technologies, the same services can be provided on top of all technologies – a homogenous service portfolio for the network.

Policy enforcement point

Using the SE-1 the network operator is able to deliver the complete mix of broadband services including Internet, IP telephony and IPTV. Service policies defined in the SE-1 are applied to users connected through the access technology. The SE-1 replaces centralized expensive BRAS solutions to be replaced by a much more scalable and distributed solution.

Service enforcement per service

The SE-1 can treat each service individually, allowing multiple services to the same end user at the same time. Each such service can have individual parameters for packet filtering, bandwidth shaping per host, per subnet, per vlan or per interface, parameters for QoS, security and priority. Services can be bridged or routed, even in combination, and the same client host can have multiple services simultaneously where each service can have a specific bandwidth and a customized policy for routing or bridging.

Using weighted fair queuing (WFQ), clients receive optimal traffic distribution between different destinations.

Security and quality monitoring

The SE-1 provides a complete feature set for network security. Built in DHCP snooping and server capabilities are used to enforce network security and prevent users from injecting malicious traffic. The system prevents ARP, MAC and IP spoofing and ensures Layer 2 traffic separation between end-users.

The SE-1 also deploys the realtime protocol monitoring of IPTV, a vital tool to provide insight into the quality of multicast IPTV streams in the broadband network.

Advanced enterprise services

With support for the full vlan range, including full queue-in-queue (Q-in-Q), VLAN translation and several tunneling mechanisms creating VPN services have never been easier. The SE-1 can handle over 500 VPN tunnels at line-rate and the same service enforcement features can be applied to such traffic.

Controlled by BECS

The SE-1 can be fully controlled and provisioned by PacketFronts control and provisioning system BECS, including installation, configuration and software upgrades. Advanced features in BECS allow it to take a central role in service definition, client authentication and authorisation, and configuration deployment. BECS can also take a more dedicated element management role and be integrated to existing OSS and network management systems.

PacketFront®
The Future of Broadband. Today

SE-1

Features

Virtual Private Networking	500 tunnels, transparent ethernet bridging over L2TPv3, Port forwarding over L2TPv3, IP over GRE, Ethernet over GRE (for mirroring only), wirespeed IP reassembly and fragmentation
Ethernet and Bridging	IEEE 802.3z – Gigabit Ethernet, IEEE 802.1p and 802.1Q with full VLAN range, IEEE 802.1 D Spanning-tree, IEEE 802.1w Rapid spanning-tree, 16384 MAC addresses, Per VLAN learning
Routing protocol support	Unicast: OSPFv2 Multicast: PIM-SM/SSM, IGMPv2, v3

Quality of Service

Packet queueing	Weighted round robin (WRR), Weighted Fair queueing scheduling (WFQ scheduling),
Policing	4095 Single/Dual Token Bucket Policer, with packet drop or recolor (64kbps - 100Mbps)
Shaping	4095 Shapers with packet drop or recolor (64kbps - 1000Mbps)
Queuing	8 priority queues per port, L1-L4 packet classification
Management	SNMPv1, v2 and v3, TELNET, Industry standard CLI, PFDP – PacketFront Device Protocol, NTP, SYSLOG, RS232 console serial port, DHCP, Realtime Protocol Monitoring MPEG-2, NetFlow v9
Security	IP spoofing protection, wirespeed IP fragment inspection, per Layer 3- nterface packet shaper for packets destined to CPU, Restrictable multicast access, interface mirroring to local or remote interface, UNI isolated ports, DHCP snooping

IP Forwarding

Interfaces	3000 Layer 3 interfaces
Classification	Layer 2-4 packet classification with filtering Per service packets and bytes accounting Access list entry hit logging and packet counting
Unicast	15000 IPv4 routes, up to 4 paths using ECMP, 15000 IPv4 routes
Multicast	2048 S, G IPv4 multicast forwarding entries, replication per port and VLAN

Physical

Ports	10 Combo 1000 Base-T/1000 base-X (SFP) ports, 1000 Base-T ports, 2 out of band 10/100/1000 BaseT management interface, 1 RS-232 serial console port, 2 USB host port
Dimensions	443.5 (H) x 431 (W) x 500 (D) mm, (1.71" x 16.9"x 19.7")
Weight	12 kgs (26.4 lbs)
Indicators	Link indicators for all ports Power ON LED (Green) System Status LED (Green and Amber)
Cooling	4 fans with speed control

Environmental

Operating temperature	0 to 40°C, 32 to 104°F
Operating humidity	10% to 90%, non condensing
Storage temperature	-20 to 70°C, -4 to 158°F
Storage humidity	10% to 95%, non condensing
Rack mounting	Standard 19" rack mountable

Power and safety

AC model	Redundant 1+1 hot swappable power input 90-264V, 50-60 Hz, compliant with ETSI EN 300132 V2.1.1 Part1
DC model	Redundant 1+1 hot swappable power input 48V, compliant with ETSI EN300132 V2.1.1 Part2
LED indicators	Power LED and A and B for power indication/power failure
Power consumption	Typical 150W, maximum 170W
BTU/hr:	Typical 512, maximum 581

Regulatory Compliance

EMC	EN 61000-3-2:2006, EN 61000-3-3:1995/A1:2001/A2:2005, EN 55024:1998/A1:2001/A2:2003, IEC 61000-4-2:1995/A2:2000, IEC 61000-4-3:2002, IEC 61000-4-4:2004, IEC 61000-4-5:1995/A1:2000, IEC 61000-4-6:1996/A1:2000, IEC 61000-4-8:1993/A1:2000, IEC 61000-4-11:1994/A1:2000

For more information go to:
www.packetfront.com

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