

DATA SHEET

PRX-PE

TRAFFIC MANAGER FOR POLICY ENFORCEMENT

PRX-PE is a policy enforcement and monitoring system. It is designed for seamless integration with third-party policy control and quota management systems. It supports traffic redirection to value-added service (VAS) platforms and provides real-time data to accounting and billing systems. In 3G/4G mobile networks it plays the role of the Policy and Charging Enforcement Function (PCEF), receiving and requesting rules from the Policy and Charging Rules Function (PCRF).



ARCHITECTURE

PRX-PE sends statistical data to a policy management system and receives subscriber policy information from it. PRX-PE provides two interfaces: the Policy Interface (PI) and the Messaging Interface (MI). Additionally, PRX-PE provides a Provisioning Interface (PVI) for general system setup and management. PRX-PE only enforces policies. Policy decisions (e.g. quota or service plan decisions) are made by the external policy manager and are sent as real-time rules to PRX-PE.

DEPLOYMENT

PRX-PE is placed inline between the operator's network gateway (e.g. GGSN, PDSN or BRAS) and the edge router. PRX-PE sees the entire data traffic and uses its deep packet inspection engine for application-layer quality of service and traffic management. It provides carrier-grade performance, availability and DPI precision required for such a critical infrastructure element.

HIGHLIGHTS

Carrier-grade performance at 50 Gbit/s, 8.4 million packets/s and 4.2 million active subscribers

Unmatched DPI accuracy certified by independent test lab: "Close to 100% detection & regulation accuracy"

Seamless integration with third-party policy, accounting and charging systems

Completely invisible to network users

Tunnel management

POLICY INTERFACE

PRX-PE receives subscriber policy updates from the external policy management system via its Policy Interface (PI), which is equivalent to the Gx interface in a 3GPP environment. The following policy rules are supported and can be set per subscriber and per application-layer protocol or protocol group:

- Bandwidth limitations
- Bandwidth guarantees
- Priorities
- Redirecting traffic
- Usage data messaging frequency (time- or volume-triggered)

HIGH AVAILABILITY

PRX-PE features a failover architecture to support high availability requirements. The PRX-IOG hardware platform supports a fully redundant configuration within a single chassis. If one of the internal components fails, backup hardware automatically takes over.

There is no information loss in case of soft failover, i.e., the restart of a component. For a hard failover, i.e., one component fails due to a hardware fault, the worst-case information loss is determined by the length of the application traffic report interval of the Messaging Interface.

MESSAGING INTERFACE

PRX-PE's Messaging Interface (MI) is a high performance interface that provides subscriber usage data to external systems. This data can be used for policy decisions, quota management, billing and usage reporting. The amount of the messaging data is approximately 3% of the monitored data traffic.

PRX-PE PLATFORMS ¹		
Performance	PRX-5G	PRX-10 ²
L3 Throughput (Gbit/s) ³	1.8	50
Packet Rate (Packets/s) ⁴	300,000	8,400,000
Concurrent TCP/UDP Flows (million) ⁵	5	210
New TCP/UDP Flow Rate (Flows/s)	300,00	8,400,000
Active Subscribers	100,000	4,200,000
Active Subscriber Policy Rules (million) ⁶	2.5	105

¹) the system characteristics below are based on software PE 1.5.0 and are subject to change in later firmware releases in case new features and DPI applications are supported
²) IBM BladeCenter, 14 HS22 blade servers with traffic perfectly load-balanced
³) ISP Mix: 746 bytes avg. packet size
⁴) ISP Mix: 749 bytes avg. packet size
⁵) 50 flows per active subscriber
⁶) 25 policy rules per active subscriber

The following message types are supported:

- New Subscriber Activity
- Subscriber Inactivity
- Application Start: initial per subscriber traffic consumption report for an application or application group
- Application Traffic Report: per subscriber traffic consumption report for an application or application group either triggered by configured time or consumed traffic volume
- Application End: final per subscriber traffic consumption report for an application or application group once all corresponding connections are terminated
- Connection Start: initial per subscriber traffic consumption report for a TCP/UDP flow
- Connection Traffic Report: per subscriber traffic consumption report for a flow either triggered by configured time or consumed traffic volume
- Connection End: final per subscriber traffic consumption report for a flow once the connection was terminated

TRAFFIC REROUTING

PRX-PE supports data traffic rerouting to external service platforms for value-added services (VAS) such as filtering, caching and content manipulation. Triggered by IP addresses, port numbers, application protocol or subscriber identity, or a combination thereof, matching traffic can be rerouted through any third-party system by altering any of the following attributes:

- Destination MAC address
- ToS (or DSCP) IP header field
- VLAN tag
- MPLS label

