

PacketLogic Subscriber Manager (PSM)

Product Overview

PacketLogic Subscriber Manager (PSM) integrates PacketLogic with systems like AAA, OSS, BSS, provisioning and policy management. This enables per-user tracking and policies, also known as *user awareness*, as well as knowledge of where in the network the user connects, i.e. *location awareness*. User awareness is required to create personalized offerings that attract new customers, minimize churn, and increase ARPU through value-add services. Location awareness makes it possible to resolve, or even avoid, congestion, enhancing the user-experience. It can also control roaming costs through automatic policy enforcement.

PSM is a software suite that resides on a server known as PacketLogic Mediation server (PLM). The PLM can be placed in a central or distributed location to parse information and send instructions to the PacketLogic Rule system (PLR), deployed in the packet path to enforce policies and gather traffic information.

Functionality

PacketLogic manages traffic based on local host, i.e. IP address. IP addresses are in most cases assigned dynamically in a service provider network, which means that they change. A single subscriber can also have multiple IP addresses at the same time. PSM maps IP address(es) to subscriber ID (SID) by intercepting the authentication process or

interacting directly with the authentication system. NetObjects named after the SID are dynamically created and modified by PSM in the PLR. Policies and aggregation of traffic statistics can now be done per subscriber ID. The SID can be the MAC address of a cable modem, the phone number/MSISDN of a mobile broadband user, or any other unique identifier specified and made available by the service provider.

PSM facilitates two source components in PacketLogic – the RADIUS and the DHCP snoopers. The RADIUS snooper listens to a physical interface for RADIUS packets. These packets are parsed and RADIUS attributes are extracted for SID mapping. The RADIUS snooper uses *Access and Account Requests* to build the ruleset. The DHCP snooper does the same for DHCP using DHCP DISCOVER, ACK and REQUEST, but can also utilize the Option-82 information for extended categorization.

The PLM running PSM, or a designated PLM installed out-of-band, can be used to host the snoopers. Traffic is preferably forwarded to the PLM using a passive network TAP that copies all traffic. Optionally the RADIUS server can – in some cases – be configured to use the IP address of the PLM as a RADIUS destination. RADIUS proxy mode is possible, but the PLM becomes another potential point of failure.

Key Features

- **PacketLogic's Service Creation module**
- **Integration with authentication, policy management and billing**
- **Quick, simple and seamless integration** using pre-defined functions
- **Shorten time-to-market** for new broadband services
- **Source components** enabling scalability to millions of subscribers

An alternative to using snoopers is to connect directly to the authentication server using the PacketLogic Python API. Upon authentication, the API of the authentication server can send instructions to the PLM that translates them into PacketLogic instructions for the inline PLR. For further information on Python, please visit www.python.org. The API also supports interaction with standards like LDAP, SOAP and Webservices to retrieve subscribers' individual service plans. PLM provides instructions to the PLR, facilitating the SID-based NetObjects for per-user policies.

PSM also extends PacketLogic's location awareness by mapping 3GPP specific RADIUS information to SID. This makes it possible to set roaming-specific policies and proactively mitigate congestion.

Some service plans, e.g. volume based billing, require export of billing information to the BSS. This is provided by the PSM as CSV files – either as plain text files or in accordance with specified CDR (call detail records) format.

PCMM and IPDR

PSM is the interface between PacketLogic and two standards related to cable (HFC) networks. IPDR streams channel data from the CMTS to an IPDR collector. PSM has pre-defined interfaces to talk to the IPDR collector and use the data to create NetObjects that resemble the channel to enable PacketLogic functionality like prioritization and throttling on a per-channel basis.

In the PCMM framework PacketLogic can act both as policy enforcement point (PEP) and application manager. The PSM simplifies the integration between PacketLogic, especially in multi-system installations, and the policy manager using pre-defined functions.

Benefits

The real benefit of PSM is the extensive time and resource savings from using pre-defined functions to seamlessly hook into authentication, policy managers and to export billing information. The library of integrations to common systems and solutions provides a solid platform.

PSM is developed as source components. Source components enable higher performance and scalability than using API, making it possible for PSM to grow with multi-million subscriber networks. Most of the PSM functionality can be developed using PacketLogic's Python API, however this is a time-consuming and less scalable approach.

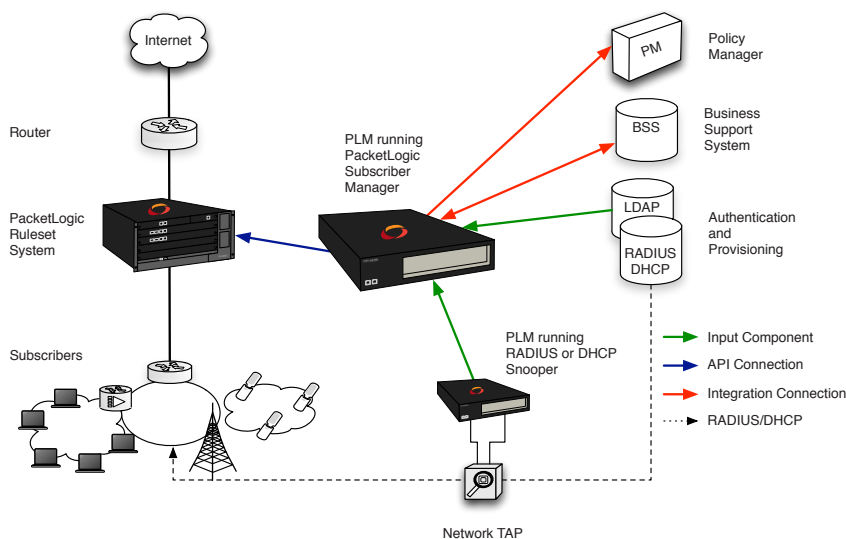
PSM can also connect to end-user portals to provide usage data and enable rules triggered by end-user selections. This is putting more power in the hands of the end-user which will offload the helpdesk and increase the barrier to change service provider since the user has customized his service to suit his specific needs.

Deployment

PSM runs on PLM, i.e. a hardware platform provided by Procera (see PL1200 datasheet for hardware options). The operating system is a customized Linux distribution and all data is stored in a PostgreSQL database. This allows redundancy based on Linux functionality. The database can be set up in a redundant fashion for a secondary system with a replicate of the current database to take over in case of failure. PSM also holds all necessary subscriber information to provision a new PLR when deployed in a fail-over scenario.

PSM is deployed in a centralized or a distributed location depending on the network design and size. The PSM should be able to connect to and interact with necessary support/management systems, like authentication and billing.

PacketLogic Deployment with PSM



Specifications

Hardware

Hardware	PL1200 2 rack unit (RU), 19" rack-mounted
Physical Dimensions (not including handles and cable holders)	3.5" (h) x 17.63" (w) x 27.5" (d) / 8.7cm (h) x 44.8cm (w) x 69.8cm (d)
Power	100-240 VAC or 36-72 VDC
Weight	77 lbs / 35 kg

System Configuration

Operating System	Custom Linux distribution (based on Ubuntu)
Database	PostgreSQL
Redundancy	RAID 1/5 on HDDs, mirroring of database, any standard Linux systems redundancy mechanism
API	PacketLogic Python API
Interfaces	RADIUS/DHCP, Webservices/XML API for global interoperability

Performance

No of subscribers per PSM system	5M subscribers
No of provisioned subscribers per second	1,000 subscribers/sec

Functionality

Subscriber mapping	Parsing current IP address(es) with subscriber ID (SID) to enable per-subscriber policies and statistics aggregation
PCMM	PacketLogic acting as application manager, providing input to the policy manager, or policy enforcement point (PEP); PSM manages the interface to/from several PLR
IPDR	PSM translating input from IPDR collector to set policies based on HFC channel information provided by the CMTS
3GPP	Subscriber mapping and location awareness using 3GPP properties in RADIUS