

## Sandvine Service Delivery Engine in Cable Networks

### Rapid enablement of new services with standards-based network policy control

The Sandvine Service Delivery Engine (SDE) is a network policy control platform that enables service providers to rapidly roll out a broad spectrum of advanced Internet services that increase network profitability and ensure subscriber satisfaction. New subscriber offerings that the SDE makes possible include toll-quality SIP voice, enhanced streaming video, special tiers for multi-player online gaming, bandwidth on demand, and implementation of fair use policies.

The SDE's highly flexible and modular design allows for easy adaption to new networks and the addition of new interfaces as required. It is compliant with CableLabs® PacketCable Multi-Media (PCMM) specifications for Policy Server Application Manager, and Policy and Charging Rules Function(PCRF).

In addition to working with PCMM interfaces for both Application Function and CMTS', the SDE works with Session Border Controllers (SBCs) and other network elements, such as Sandvine's Policy Traffic Switch (PTS), for QoS session triggering or policy enforcement.

The applications driving policy control for cable are:

- Quality of Service (QoS) for business Voice over IP (VoIP) Services
- QoS for consumer SIP-based VoIP Services
- Fairshare policy enforcement
- "Turbo-Button" and speed-preview Bandwidth On Demand offers
- QoS for improved gaming or media streaming user experience

### Architecture

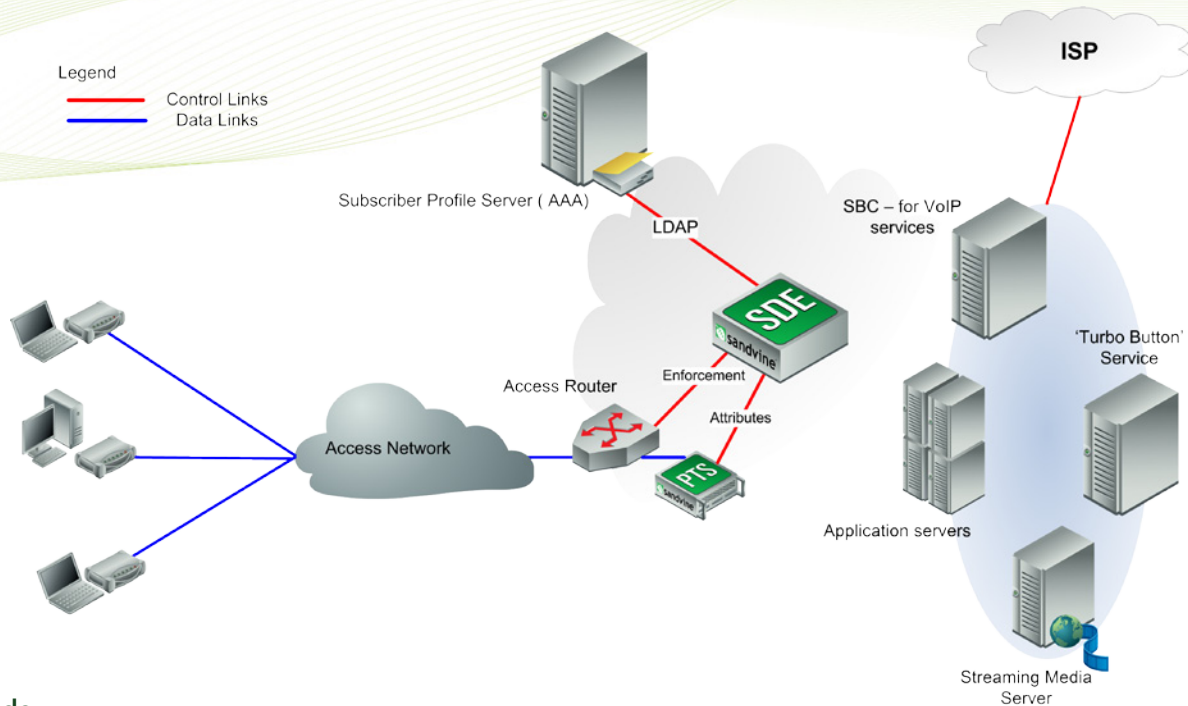
The SDE's architecture allows it to scale gracefully to the largest of networks while also offering an economic solution for the smallest networks. All modules can be centralized on one device if traffic load and network topology allow. As network scale increases, functions can be distributed as appropriate, extending to a two-layer architecture where the border policy servers are located close to an Application Function, and the edge policy servers are deployed closest to the CMTS.

### Sandvine Advantages

- Carrier-class
- High performance
- Rapid deployment
- Supports open standards, including PCMM
- Proven platform
- Deployed in some of the largest cable operators in the world
- Integrated solutions with Sandvine's Subscriber Policy Broker (SPB) and Policy Traffic Switch (PTS)



The figure below illustrates the Service Delivery Engine enforcing with the Access Router (CMTS) and /or PTS along with the Application Server and Manager elements.



## Standards

SDE Policy Control has been certified by both CableLabs® and Euro-CableLabs. The following PacketCable standards are supported:

Flow Action Interface from SDE	PCMM I02	PKT-SP-MM-I02-040930	Flow Request Interface to SDE	COPS	PKT-SP-MM-I03-051221
	PCMM I03	PKT-SP-MM-I03-051221		COPS	PKT-SP-MM-I02-040930
	PCMM I04	PKT-SP-MM-I04-080522		SOAP	PKT-SP-MM-WS-I01-051221
			SOAP	PKT-SP-MM-WS-I03-091029	

## Key Features

- Carrier Class
  - Five 9's Availability
  - Designed for mission critical applications such as voice
  - Distributed architecture for horizontal scalability and incremental capacity as the network grows
- High Performance
  - 500K simultaneous sessions per server
  - 4000 TPS (one COPS message equals 1 TPS)
- Rapid Deployment
  - Requires minimal system integration
  - Successfully IOT'ed with a multitude of external system components
  - interoperates with CMTS, OSS, SBCs (eg. Acme Packet), soft switches
- Supports Open Standards
  - PacketCable Multimedia
  - DOCSIS 1.x/2.0 /3.0
  - LDAP, SNMP, SOAP, XML
- Intuitive Management Tool
  - Simple and straight-forward user interfaces for policy rules definitions
  - Configuration, system monitoring and alarms