Policy Director

The Nalini Networks® Policy Director plays the role of a policy decision function (PDF) in 2G, 3G, WiMAX and 4G networks. It enables the service providers to provide a personalized mobile platform to its subscribers. The Policy Director derives its five nine performances from its underlying scalable, extensible and modular Subscriber Data Provisioning Architecture™. It does policy controlling at the network and application level in order to maximize operator revenue, increase its market share and enhance subscriber experience. In essence, Policy Director enables the telecom operator to shape and expedite its go-to-market strategy.

Network bandwidth is a vital resource both for the telecom operator as well as the subscriber. The extent of its availability, consistency, reliability and quality defines the mobile internet experience for the subscriber. Policy Director enables the telecom operator to manage network bandwidth in real-time and provide a rich & fulfilling mobile internet experience. It allows the telecom operator to ensure that the subscriber gets the promised bandwidth without any compromise on the SLA, launch various bandwidth plans and provide a web-based personalized portal to its subscribers to manage their accounts. The Policy Director is fully compliant with the 3GPP Policy and Charging Rules Function (PCRF) V8.0 standard and it can interoperate with the standard Deep Packet Inspection (DPI), IMS etc. solutions.

Availability of mobile data devices like laptop, smartphones and internet connection at almost every place through Wi-Fi hotspots, data cards, DSL connection, GPRS connection etc., has caused the data traffic to grow at lightening speed. This poses a challenge to operators to maintain high quality internet access while keeping OPEX in check. Policy Director enables the telecom operators to overcome this challenge in order to meet the overwhelming demand for mobile data services. It has the ability to provision bandwidth to the subscriber based on its roaming status, network congestion, application switch, current usage etc.

With the application & content marketplace and subscriber demand in this space growing at a phenomenal rate, it becomes prudent to apply policies at application level too. Policy Director enables the telecom operators to provision new applications & content (including those hosted by third-party content providers) on-the-fly. Given the dynamism of the subscriber demands, Policy Director provides the flexibility to the operator to launch new applications/content in very less time in order to increase its market share, generate revenue and retain existing customers as it grows. In essence it creates a new revenue generating stream for the service providers.

Policy Director provides a sophisticated intuitive web-based user interface that allows the service provider to define policies, based on various criteria, at will and provide value-added content & applications to subscribers thereby providing them a highly personalized service platform. It allows the service provider to authorize and track the usage of application/content by the subscriber. This way it ensures that unauthorized access is prevented and for authorized access there is no revenue leakage. With a modular and flexible framework, Policy Director has the ability to seamlessly integrate within the service provider's network.

The Policy Director enables WiMAX service providers to recognize subscribers and devices as subscribers access the network and provision their devices Over-the-Air. It delivers a core service control capability for open access business models and supports centralized device and subscriber management with carrier-grade scalability and performance. This allows service providers to offer new users additional upgrade services, including service boosts and application subscription.

Hot-Lining provides a service provider with the capability to efficiently address issues with users that would otherwise be unauthorized to access packet data services. When a problem occurs such that a user may no longer be authorized to use the packet data service, a service provider using this feature may Hot-Line the user, and upon the successful resolution of the problem, return the user's packet data services to normal. When a user is Hot-Lined, their packet data service is redirected to a Hot-Line Application which may notify (if feasible) the user of the reason(s) that they have been Hot-Lined and offers them a means to address the reasons for Hot-Lining, meanwhile blocking access to normal packet data services. The hot-lining feature enables the service provider to monitor upstream user traffic using two different scenarios: active session hot-lining and new session hot-lining. Hot-Lined subscribers can be redirected to an HTTP web address or an IP address.

There are two ways to indicate that the user has to be hot-lined. In Profile–based Hot-lining, both IP and HTTP redirection rules are pre-provisioned on the Policy Director. Policy Director will do hot-lining after receiving Filter-Id from the AAA server in either Access-Accept or CoA. In Rule-based Hot-lining, the AAA server sends actual redirection (HTTP or IP) rules in either Access-Accept or CoA radius messages that cause the MN packet data session to be redirected by sending Hot-Line Capability parameter in Access-Request and is based on the configuration that pre-configured on the Policy Director per subscriber or realm basis.

Key Features and Benefits

The Policy Director's capabilities offer service providers a broad range of features and benefits.

- **Intuitive web-based user friendly interface** that enables every service provider staff to define policies on-the-fly based on various criteria like type of application access, day of the week, location based services, type of the user etc.
- **Personalized web portal** that enables subscribers to manage their accounts that they can log into or be redirected to, thereby decreasing service providers' OPEX overhead and increase subscriber satisfaction.
- **Generic and broad application framework** that enables service providers to create targeted services in no time, generate revenue, increase the service offering portfolio and hence increase ARPU.
- **Ensure quality of service consistency** in service offerings to the subscribers, by keeping a hawk eye on factors like bandwidth usage, network congestion, subscriber behavior, resource availability etc. This leads to increase in subscriber satisfaction, ability to retain the subscriber and new subscribers due to referrals.
- **Centralized policy database** to reduce maintenance and operational expenses.
- **Various hooks that allow addition of subscriber** with identity like NAI, IMSI or MSISDN.
- **Increasing subscriber satisfaction by offering targeted services** like tariff plans with unlimited downloads & uploads, students plan, holiday plan, etc.
- **Creating pop-up revenue opportunities** by turning on services for a section of subscribers based on factors like location, profile change, time of the year etc.
- **Provide regular updates** to the subscriber related to services, account usage, new offerings etc.
- **Seamless integration with common Policy Enforcement Points** like GGSNs, ASNs, PDSNs, DPIs etc. giving various deployment options to the service provider.
- **Support for no-touch registration** and prepaid usage-based metering.
- **Carrier-grade scalability and performance** – Nalini Networks' products supports more than 100 million subscribers and handle 10 billion transactions per month for a single customer.
- **Sophisticated monitoring hooks** viz. per subscriber, per session, per application, per region etc.
- **Manage network bandwidth in-session** with adaptive policy controls that make use of the network and subscriber context to control bandwidth.
- **Support for numerous network topologies** and deployment methodologies.
- **Support for in-service modification** by the subscriber or customer service portals.
- **Automatically get new WiMAX users on the network without customer service intervention.**
- Users can **activate their new WiMAX devices** immediately.
- **Automatically update firmware on devices** to offer the latest updates and applications.
- **Connect users to the network easier and faster**, speeding revenue generation.
- **Dynamic metering** enables flexible duration-based or time-windowed service options.
- **Hot-Lining support for 3GPP2 and WiMAX subscribers.** This feature is also supported when subscribers roam across 3GPP2 and WiMAX networks.

Standards Support

The Policy Director acts as a 3GPP Policy and Charging Rules Function (PCRF) in 3G, WiMAX and 4G networks. The Policy Director is fully compliant with PCRF Release 8.0, and implements the standard

interfaces required for rapid deployment in 3GPP environments.

The Policy Director also has the flexibility to be deployed in non-standards-based environments, typically in conjunction with Deep Packet Inspection (DPI) solutions. The Policy Director is fully interoperable with the leading DPI vendor solutions, including the Cisco Service Control Engine.

The Policy Director provides Open Mobile Alliance-Device Manager (OMA-DM) standards compliant Over-The-Air Provisioning solution.

Hot-Lining feature is compliant to IS.835 D standard.

Technical Specifications

Server Requirements

Hardware

- 1 x 1.0 GHz Sun UltraSPARC T1 Processor
- 8 GB RAM
- 2 x 146 GB hard drives (minimum sizes from Sun)

Software

- Solaris 10
- OMA-DM support

The recommended basic system for the Policy Director is:

- Sun Netra T2000 Server (Sun Configuration 1)
- 1 x 1.0 GHz UltraSPARC T1 – 4 Core
- 8 GB RAM (16 x 512 MB DIMMs)
- 292 GB (2 x 146 GB) 10000 rpm SAS disks
- 1 DVD-RW
- 4 x 10/100/1000 Mbps, Ethernet ports, 3 PCI-X, 1 PCI-E
- 100-240 V AC or -48 to -60 V DC
- 2 rack units