

Solution Brief

**Application Traffic
Management Solution
– Juniper Networks and
Ellacoya Networks**

Introduction

When broadband services were introduced in the mid 90's, the Internet landscape was one of interactive best effort applications such as Web and Email. At the time, undifferentiated service delivery where all applications must contend for bandwidth on an equal basis was the norm. Flat rate billing models aligned well with the low bandwidth consumption of these applications. After all, subscribers could use the computer only so many hours per day!

More than a decade later, the landscape has completely changed. The ongoing convergence of traditional services to IP as a common transport, combined with the emergence of new application models such as peer-to-peer file sharing, have caused broadband pipes to now carry a mixture of applications with different levels of bandwidth consumption and service delivery requirements. In addition, the insatiable and unattended nature of peer-to-peer applications causes capacity upgrades to be at best short term solutions to network congestion problems.

Consequently, best-effort service delivery is quickly becoming inadequate for the broadband providers and for their subscribers.

The Solution

Juniper Networks and Ellacoya Networks have joined forces to provide a comprehensive solution for broadband providers in search of a complete service control system. The solution provides three incremental steps of functionality that allow providers to:

- Understand usage trends by gaining full visibility into network bandwidth utilization
- Control network costs and improve service performance through bandwidth management
- Gain a competitive edge through value-added differentiated services

Solution Components

Juniper Networks Service Deployment System (SDX-300)

With Juniper's SDX-300, a flexible service ware application, Providers have a new level of control to quickly define and dynamically control policy-based IP services on a per-subscriber or per-service basis concurrently in both the DOCSIS and IP domains. In addition, the SDX-300 offers the ability to configure bandwidth on demand, deliver application level quality of service (QoS), manage network resources, and perform service accounting. The PCMM-compliant SDX-300 platform also supports direct standards-based content and application server interfaces enabling a dynamic, application-driven change to network policies.

Juniper Routing Platforms

Juniper's comprehensive IP infrastructure portfolio offers a wide variety of high-performance, reliable routing platforms, including the E-series, J-series, M-series, and T-series families. Based on a common product architecture featuring the proven JUNOS modular operating system, these platforms ensure an efficient and predictable IP infrastructure, and enable secure, dependable user experiences at scale.

Ellacoya Networks IP Service Control System

Through deep packet inspection, Ellacoya's IP Service Control System provides full subscriber and application awareness and control. The system's reporting server gives providers the granular network visibility necessary to put in place the appropriate bandwidth controls and enable more compelling applications and competitive service offerings.

Industry Leading Features and Functionality

The Juniper / Ellacoya solution delivers industry leading features and capabilities, including monitoring and control of both the DOCSIS and IP network domains, utilizing standards-based products proven in Provider networks around the world.

Providing Session-based QoS

Ellacoya's IP Service Control System measures traffic by application and subscriber. Ellacoya's reporting server presents this information from many different angles: usage by application, subscriber distribution, active subscribers, top talkers, etc.

The usage trends derived from these reports allow the provider to create aggregate-level bandwidth controls in order to manage their network resources. Controls on P2P traffic, for example, increase the performance of interactive applications such as Web and Email, and allow providers to manage bandwidth costs.

The collected usage information is communicated to the SDX-300 by Ellacoya's IP Service Control System, working with the SDX-300 through the Advanced Services Gateway (a standards-based SOAP / XML interface). This provides a complete picture of subscribers' application network usage trends, and the ability to better manage network capacity based on those trends.

The SDX-300, which provides dynamic management of subscribers, services and network resources, can take the appropriate action to maximize network efficiency by setting policies that limit or prioritize applications during peak and non-peak times, secure the network, enforce application-specific volume caps per subscriber, and control bandwidth costs.

The Juniper / Ellacoya solution provides the ability to identify and QoS-enable services selectively per subscriber through the application of policies aimed at guaranteeing service performance for non-“best-effort” high value P2P applications, such as Xbox and PC on-line gaming, video, Slingbox and more. The solution allows the provider to optimize the performance of the network infrastructure, in order to offer new QoS-enhanced services.

The solution leverages the deep packet inspection capabilities of the Ellacoya switches to provide the application visibility needed for the SDX-300 to provide QoS and Bandwidth controls on a per subscriber / per application basis.

The Ellacoya e30 Switch signals the SDX-300 with details on applications and the SDX-300 applies appropriate policies to the Juniper routing platform or PCCM-compliant CMTS (Cable Modem Termination System). This intelligent application of policies allows the SDX-300 to dynamically provide session-based QoS.

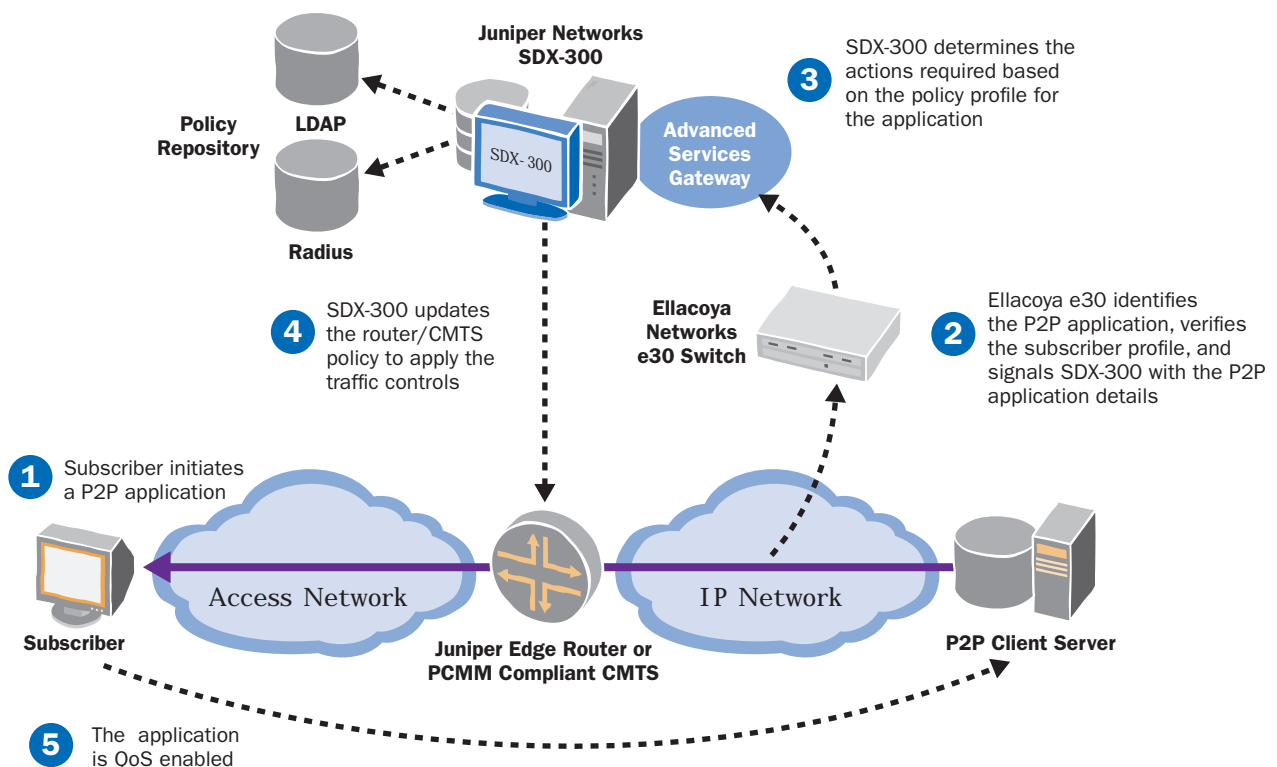
Providers can understand what type of QoS-enabled P2P traffic is running on their network at different times, categorize subscribers based on bandwidth usage, and build traffic profiles for network planning and engineering purposes. Based on these profiles, Providers have the opportunity to introduce new, innovative tiered pricing structures to increase their revenue generation.

How the Solution Works

The example below illustrates how the Juniper Networks SDX-300 and the Ellacoya IP Service Control System work together to identify, and provide QoS for high-value Peer-to-Peer applications. The solution can be used to QoS-enable any Peer-to-Peer application in need of specific service delivery guarantees or prioritization. Examples of such applications include on-line gaming console applications, VoIP, video telephony, and others.

Solution Steps

1. A subscriber initiates a P2P application targeted for service control.
2. The Ellacoya e30 Switch identifies the P2P application through deep packet inspection, and identifies if the subscriber is entitled for QoS for this application. It then signals the SDX-300 with the subscriber and traffic details.
3. The SDX-300 retrieves the policy rules from the Policy Repository for the traffic profile. This could be additional “best-effort” bandwidth, a committed information rate, a strict priority, or a constant bit rate profile – the policy rules are determined based on the Provider’s specific requirements.
4. The SDX applies the policy rules to the router or CMTS to tag the traffic and traffic controls are activated for the application.



Benefits and Advantages

The solution provides many key benefits including:

- Opportunity to provide higher service priorities for peer-to-peer applications that are “sanctioned” via direct offering or delivered via a relationship with a 3rd party.
- Opportunity to control the potential negative impacts of “unsanctioned” peer-to-peer traffic.
- The potential to realize additional revenues with application usage based pricing.
- Dynamic application of service policies to specific network areas or customer demographics.
- Service flexibility where signatures on the Ellacoya platform as well as service policies on the SDX-300 can be easily upgraded or adapted to include the latest application attributes or service plans.
- In depth understanding of traffic flows and patterns on a per subscriber or per application basis.

Summary

The Juniper Networks Traffic Management Solution offers Providers a cost effective way of controlling application traffic. Application traffic is easily characterized, identified and managed so that Providers maximize the return on investment of their network infrastructure as well as maintain overall service integrity and customer satisfaction.



CORPORATE HEADQUARTERS
AND SALES HEADQUARTERS
FOR NORTH AND SOUTH AMERICA

Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, CA 94089 USA
Phone: 888-JUNIPER (888-586-4737)
or 408-745-2000
Fax: 408-745-2100

www.juniper.net

EAST COAST OFFICE

Juniper Networks, Inc.
10 Technology Park Drive
Westford, MA 01886-3146 USA
Phone: 978-589-5800
Fax: 978-589-0800

ASIA PACIFIC REGIONAL
SALES HEADQUARTERS

Juniper Networks (Hong Kong) Ltd.
Suite 2507-11, Asia Pacific Finance Tower
Citibank Plaza, 3 Garden Road
Central, Hong Kong
Phone: 852-2332-3636
Fax: 852-2574-7803

EUROPE, MIDDLE EAST, AFRICA
REGIONAL SALES HEADQUARTERS

Juniper Networks (UK) Limited
Juniper House
Guildford Road
Leatherhead
Surrey, KT22 9JH, U. K.
Phone: 44(0)-1372-385500
Fax: 44(0)-1372-385501