

Enhanced VoIP Charging and Quality Monitoring

An Integrated Allot-Qosmos Solution



Solution Brief

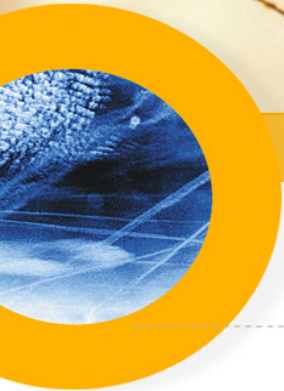


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Introduction

In recent years, Voice-over-IP (VoIP) has become an attractive value-added service that opens new revenue opportunities for broadband service providers and MSOs (Multi System Operators). Delivering telephony services together with data services over a converged IP network raises a few challenges:

- **Billing:** Unlike billing of broadband services which implements relatively simple billing schemes, voice billing is performed on per usage basis and demands greater detail and flexibility.
- **Quality:** Delivering VoIP and data over a converged IP network poses a risk to service quality and introduces a number of performance issues such as packet loss, packet latency or jitter. The aggregation of these quality impairments can be significant enough to affect customer satisfaction and churn rate. In particular, bandwidth consuming applications, such as P2P and streaming, may congest the network links and jeopardize VoIP quality.
- **Competition:** The technology of broadband networks allows any provider to offer VoIP services over any carrier's infrastructure, without investing in building and maintaining the network.

As a part of the Service Gateway approach, which combines Allot's powerful DPI engine with a wide array of services, the joint Allot-Qosmos solution addresses these challenges by offering advanced tools for monitoring VoIP quality in the network, collecting usage information and ensuring VoIP service quality. The conjoint solution also allows an easy integration with billing and anti-fraud systems to increase ARPU with flexible billing schemes and minimize losses resulting from false charges and billing frauds.

Benefits & Advantages

The joint Allot-Qosmos solution offers a series of benefits and advantages:

- **Fine-grained call statistics:** Generation of detailed CDRs (Call Detail Records) to enable real-time usage tracking.
- **In-depth voice quality monitoring:** Computation of quality indicators (MOS, jitter, latency and packet loss) per call or globally.
- **Easy troubleshooting:** Analysis of root causes for VoIP quality degradation.
- **Guaranteed VoIP service quality and availability:** Guarantee VoIP traffic priority over heavy, bandwidth-consuming applications through advanced QoS and DPI mechanisms.
- **Scalability:** Solution for 1 and 10Gbps networks.
- **Improved revenue performance:** CDR generation in real-time allows an easy integration with billing and anti-fraud systems to increase ARPU with flexible billing schemes and minimize losses resulting from false charges and billing frauds.
- **Reduced churn and support costs:** Solution significantly improves subscriber QoE.
- **VoIP usage patterns and trend identification:** for efficient marketing campaigns and capacity planning.

Solution Components

Allot NetEnforcer AC-2540 or Service Gateway Omega

The Allot NetEnforcer and Service Gateway products use Layer-7 DPI technology for bandwidth management, to identify and classify network applications in general and VoIP in particular. The Allot platforms then redirect the VoIP traffic to Qosmos information extraction appliance, improving overall system performance.

Allot NetXplorer server

The Allot NetXplorer Server enables proactive, centralized management of Allot's DPI products including in-depth network visibility, policy definition and enforcement.

Qosmos Information Extraction Appliances

Qosmos' appliances enable service providers to charge and monitor the performance of VoIP calls through the generation of detailed call statistics, supporting easy troubleshooting of the VoIP quality. Information from the appliances is also used to set dynamic QoS policies on the NetEnforcer or Service Gateway platforms to prioritize the VoIP delivery over best-effort IP traffic.

Solution Overview

The solution supports a wide variety of VoIP protocols including SIP, H.323 and MGCP.

Allot's DPI solution uses advanced methodologies to accurately detect a wide range of VoIP applications, over 1 Gigabit Ethernet or 10 Gigabit Ethernet links, enabling service providers to ensure voice service quality over their IP network. Adding Qosmos' Information Extraction solution to the DPI infrastructure will enable extraction of fine-grained call statistics and enhance the VoIP quality monitoring capabilities.

When operating with the Qosmos Information Extraction solution, Allot NetEnforcer and Service Gateway platforms utilize Allot's DPI engine to identify the VoIP traffic (signaling and media flows), and redirect this traffic to the Qosmos appliances. During this operation the NetEnforcer or Service Gateway activates the QoS policy if configured for VoIP traffic.

The Qosmos appliances monitor the redirected traffic and extract multiple VoIP parameters to provide these main capabilities:

- **Quality analysis:** Per call or global computation of VoIP quality parameters. Major quality parameters provided by the solution include: MOS (based on E-model ITU-T G.107), packet latency, jitter and packet loss.
- **Call details and statistics:** The VoIP appliances can be used for generating fine-grained CDR. The generation of real-time statistics allow a simple integration with 3rd party billing and anti-fraud systems or with 3rd party reporting tools. The extracted CDR may contain multiple statistics that include: Caller ID, Callee ID, Call Duration, Codec, Call setup time, Call end status etc.

The solution supports a variety of popular VoIP protocols including SIP, H.323 and MGCP, enabling flexible configuration with existing infrastructures.

Solution Architecture

The VoIP monitoring solution is typically located at the core or the aggregation network and can be deployed either on 1GE or 10GE links.

Solution for 1GE environment: The NetEnforcer AC-2540 connects to the network over up to two Gigabit Ethernet links. Two additional Gigabit Ethernet links connect the NetEnforcer to up to two Qosmos appliances (each appliance handles one Gigabit Ethernet link).

Solution for 10GE environment: In a similar manner, the SG-Omega connects to a single 10 Gigabit Ethernet link. The Service Gateway analyzes the traffic and redirects only VoIP traffic to the connected Qosmos appliances.

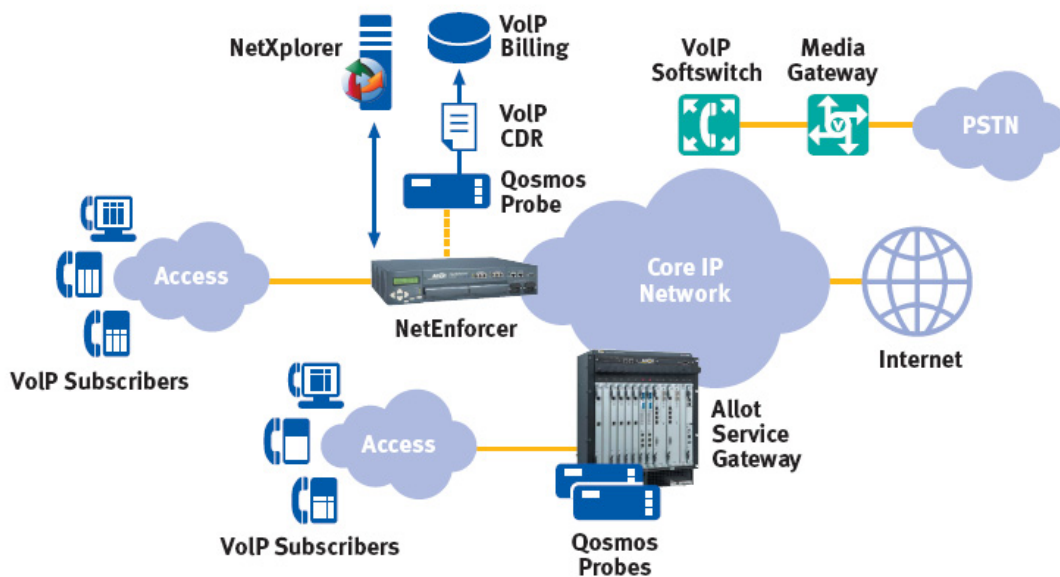


Figure 1: Typical solution architecture

Integrating Allot DPI with Qosmos Information Extraction Solution

The incorporation of Allot's DPI engine adds numerous benefits to Qosmos information extraction appliances:

- A highly efficient and selective traffic redirection capability improves the performance of the joint solution guaranteeing minimal deployment costs.
- Enhanced QoS mechanism to ensure VoIP quality over the converged IP network specifically prioritizing VoIP traffic over bandwidth-hungry applications
- Seamlessly integrate into 10GE network environment, with Allot's Service Gateway solution.
- Allot's DPI with its NetXplorer centralized management applies the information collected by the Qosmos appliance to deliver unsurpassed network analysis suitable for short-term network troubleshooting and for understanding long-term trends and usage patterns. The system provides valuable details and statistics including most active subscribers per service, BW usage per subscriber, number of subscriber using each service, distribution of traffic BW among different services and applications etc.

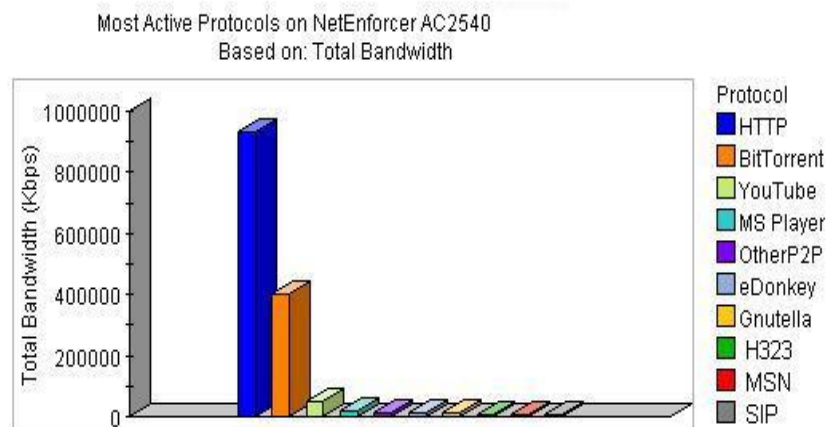


Figure 2: Example of NetXplorer application distribution graph

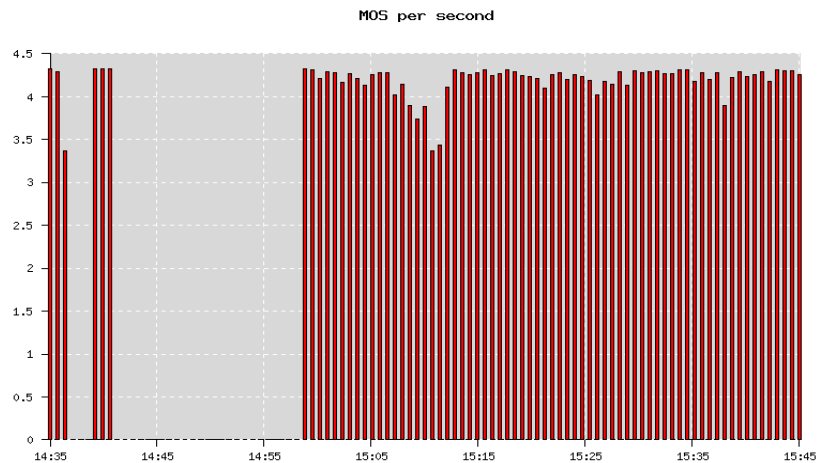


Figure 3: Real-Time MOS graph

index	^sip.*:callee	^sip.*:caller	^sip.*:call_duration n...	^sip.*:call_way	^sip.*:end_stat... ^
1	0034912102000@qosmosip....	33176260141@10.12.4....	242.818814	OUTCALL	COMPLETED
2	0141877440@qosmosip.opti...	33176260141@10.12.4....	80.674151	OUTCALL	COMPLETED
3	33176260141@10.12.4.12	141877440@62.244.88....	55.148866	INCALL	COMPLETED
4	0031203572506@qosmosip....	33176260127@10.10.3....	1800.350731	OUTCALL	REJECTED:488

Figure 4: A CDR example

Conclusion

The joint Allot-Qosmos solution helps service providers in multi-play broadband environments overcome the challenges associated with providing VoIP services such as billing, fraud prevention and guaranteeing Quality of Service. Qosmos Information Extraction appliance, empowering VoIP monitoring and charging through Call Detail Records (CDR) collection, is now seamlessly integrated with Allot's Service Gateway and NetEnforcer IP service optimization solutions to address these challenges and allow service providers to deploy higher value services without increasing operational and capital costs.

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