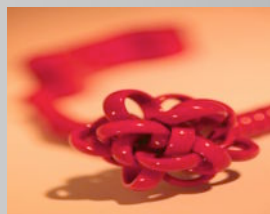




VoIP



Simplified

Solution Highlights

- All-in-one solution replaces multiple standalone systems at the customer premises by integrating:
 - VoIP Application Layer Gateway (SIP, MGCP, H.323 and SCCP)
 - VoIP aware firewall for voice and data security
 - VPN
 - IP routing
 - DHCP server
 - Traffic shaping
 - Priority queuing
 - Call admission control
 - VoIP and data monitoring and test tools
- Resolves NAT/Firewall traversal issues
- VoIP survivability for local calling when the softswitch is unavailable
- Provides a customer premises demarcation point for troubleshooting and monitoring
- Reduces cost and complexity

Introduction

IP Centrex has rapidly emerged as a significant revenue opportunity for service providers looking to increase product margins and expand their installed base. Instat/MDR predicts the service revenue opportunity for the IP Centrex market to grow from just under \$200M in 2002 to over \$3 Billion by 2007. This represents a compound annual growth rate of over 105%! While certainly a compelling opportunity service providers seeking to capitalize on this growth face challenges in several areas in order to deliver IP Centrex services in volume: cost, security, call quality and manageability.

Edgewater Networks has developed a family of products specifically designed to overcome these challenges and facilitate the deployment and management of IP Centrex services.

The Edgewater Product Family

The EdgeMarc Series converged network appliances are purpose-built to reduce the cost and complexity of securing and maintaining mission-critical voice services for enterprise customers. They are available in several models to fit any size network:

4200 Series



Ideal for SOHO and small to medium enterprise deployment the 4200 includes 4 x 10/100 ethernet LAN interfaces, a 1 x 10/100 ethernet WAN interface and support for 2, 5, 10 or 30 concurrent WAN VoIP calls.

4300T Series



Ideal for direct internet access or managed services deployed over T1 links the 4300T includes a 4 port 10/100 Ethernet switch, an integrated T1 CSU/DSU WAN interface or a 1x 10/100 ethernet WAN interface and support for up to 30 concurrent WAN VoIP calls.

5300 Series



Ideal for medium to large enterprise locations all 5300 Series appliances include a 1 x 10/100/1000 ethernet LAN interface, a 1 x 10/100 ethernet out of band management interface and optionally a 1 x 10/1000 ethernet (5300), T1 (5300T) or 2 x T1 (5300T2) WAN interface. The 5300 Series supports up to 300 concurrent WAN VoIP calls.

EdgeMarc 6400



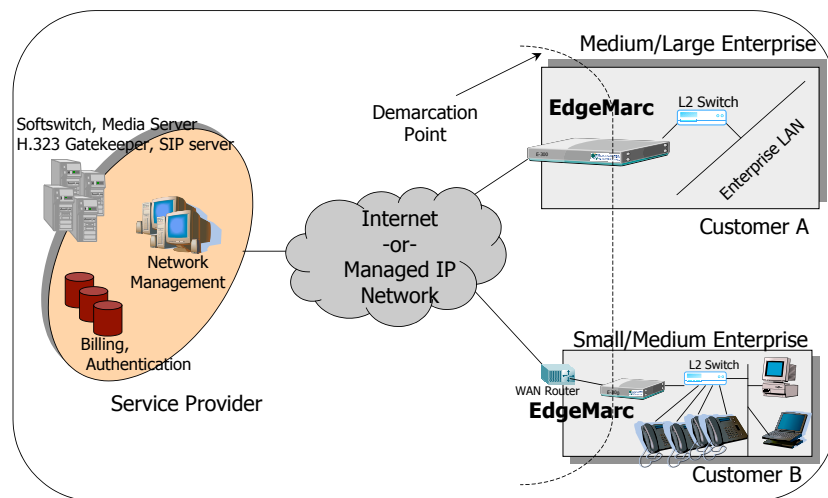
Designed for demanding environments the EdgeMarc 6400 is a dual, redundant AC or DC power system offering a 1 x 10/100/1000 ethernet LAN interface, a 1 x 10/100 ethernet out of band management interface, a 1 x 10/100/1000 ethernet WAN interface and support for 500, 1000, 5000 or 10000 concurrent WAN VoIP calls

Each network appliance replaces multiple standalone systems by integrating VoIP, network security, survivability and quality of service capabilities into a low-cost, easily managed device. The EdgeMarc Series appliances provide the following set of comprehensive features:

VoIP	QoS	Security	Management
<ul style="list-style-type: none"> • Application Layer Gateway • Survivability • SIP • MGCP • H.323 • SCCP 	<ul style="list-style-type: none"> • Traffic shaping • Diffserv packet marking • Priority queuing • Call Admission Control • Automated configuration 	<ul style="list-style-type: none"> • VoIP Aware Firewall • Stateful packet inspection filtering • NAT/PAT • DoS Protection • Hardened, purpose-built OS 	<ul style="list-style-type: none"> • Web GUI • Command line interface • Secure remote management (HTTPS, SSH, SNMPv3) • DHCP, FTP and TFTP support • Plug 'n Dial - VoIP endpoint configuration • Passive call quality monitoring (MOS, Jitter, latency, etc.)

Solution Overview

Edgewater's provides equipment that simplifies the deployment and management of IP Centrex services. Deployed at the customer premise EdgeMarc Series appliances serve as an essential demarcation point for the service provider edge and enterprise LAN. In addition to solving the NAT, security and QoS problems encountered at the customer premise EdgeMarc Series appliances include several test tools that enable the service provider to easily support their VoIP service offerings. The ability to perform comprehensive diagnostics at the demarcation point means that problems in the service provider and access



networks are easily identified and problems in the enterprise LAN are easily proven. This capability is particularly important as the perceived quality of the IP Centrex service can be negatively affected by enterprise LAN equipment not owned or maintained by the service provider. Finally, EdgeMarc appliances also provide VoIP survivability that performs local station-to-station or station-to-PSTN gateway call switching in the event of a WAN link or softswitch failure.

Benefits Of The Edgewater Solution

Significant Cost Savings

In today's economic environment it is a fundamental requirement to minimize the up-front and ongoing costs associated with delivering a managed IP service offering. Edgewater's exclusive focus on tightly integrated multi-function CPE-based systems enables us to provide as much as 75% savings in initial capital equipment purchases over alternative solutions. The total savings of the solution is much greater when considering the management features of the EdgeMarc Series appliances as well as the operational efficiencies gained by replacing multiple standalone systems with a single device. Finally, in a typical IP Centrex services offering EdgeMarc Series appliances are easily deployed as new subscribers are added to the service. In this way incremental equipment costs are only incurred along with matching revenues and large, upfront investments in VoIP infrastructure are eliminated.

Comprehensive Security That Resolves VoIP NAT/Firewall Traversal Issues

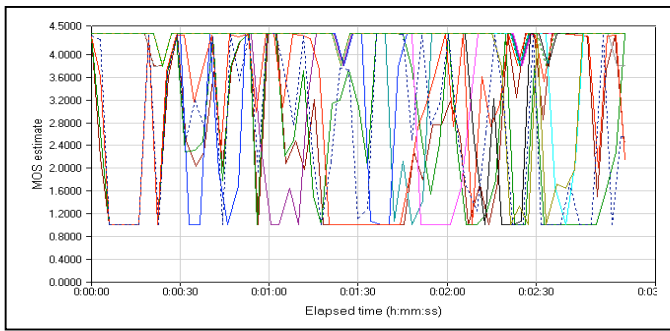
Concern about the overall security of IP-based voice services is often cited as a principal issue that limits the adoption of these services by the enterprise. Indeed, securing VoIP transmissions with traditional firewalls is a daunting task as VoIP signaling protocols require public IP addresses and utilize dynamic TCP/UDP ports that sometimes originate from outside of the firewalls. These requirements expose enterprise customers to unnecessary risks as their LAN topology is easily discovered and traditional firewalls using coarse-grained enforcement policies are easily defeated.

Edgewater EdgeMarc Series network appliances deliver comprehensive security for the enterprise through a powerful combination of network and VoIP security technologies. Each appliance includes a state-of-the-art VoIP-aware firewall and NAT server to hide private IP addresses. The firewall couples knowledge of VoIP signaling with traditional packet filtering to dynamically open and close ports and ensure that only authorized traffic reaches the protected LAN. It is equally proficient in handling non-VoIP data traffic and can either augment or replace legacy enterprise firewalls. At the same time, the included NAT server effectively hides the topology of the enterprise LAN protecting it from many network based attacks. Finally, the integrity of the EdgeMarc Series appliances themselves are protected through the use of authenticated SSH tunnels or HTTPS sessions for secure remote management. This ensures that the system is not subverted through unauthorized administrative access.

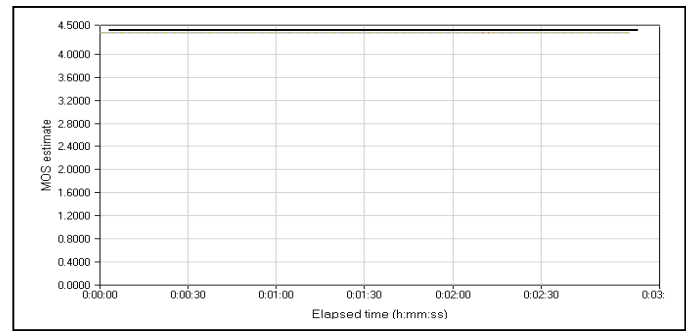
Guaranteed Performance

Edgewater EdgeMarc Series appliances provide sophisticated yet easy to use QoS mechanisms to ensure the reliability of mission critical voice and data traffic. These mechanisms are configured through flexible user-defined policies and include traffic shaping, priority queuing and DiffServ packet marking. They protect voice and data traffic from contending for the same network resources to guarantee low latency and the highest call quality possible. At the same time they ensure the best utilization of WAN bandwidth by enabling voice or data traffic to burst up to full line rate when possible. In addition Edgewater provides Call Admission Control (CAC) to protect voice traffic from being negatively affected by other voice traffic. CAC uses a deterministic algorithm to decide when there are insufficient network resources available to adequately support new calls and then return the equivalent of a "fast busy" to new call requests.

The following Mean Opinion Score (MOS) charts best illustrate the benefits provided by EdgeMarc Series QoS and CAC capabilities:



MOS without Edgewater



MOS with Edgewater

Without an EdgeMarc Series appliance users experience voice clipping, echo and dropped calls. Deploying an EdgeMarc Series appliance results in toll quality calls for every active call and prevents new calls from negatively impacting voice quality.

Simplified Management – Easy To Deploy, Easy To Manage, Easy To Scale

Edgewater EdgeMarc Series appliances are purpose built for remote installation at customer premise locations. As a result they provide several features that enable the service provider to easily deliver high quality, responsive service to enterprise customers:

- A secure, easy to use and understand browser-based Graphical User Interface (GUI) that enables the service provider to configure, upgrade and manage the appliance remotely.
- EdgeMarc Series appliances perform passive call quality monitoring that includes Mean Opinion Score (MOS), jitter, latency packet loss and much more. This information enables the network operator to assess voice quality for the purposes of SLA tracking or problem isolation. Call quality results for RTP streams in both directions of a VoIP call are calculated at call completion. Additionally EdgeMarc Series appliances can generate an alarm if call quality drops below an operator configurable level.
- Plug 'n Dial functions for MGCP phones. EdgeMarc appliances will dynamically configure many VoIP phones and IADs reducing installation time.
- Integrated packet capture and utilization of well known IP troubleshooting tools.
- EdgeMarc appliances can be managed using Edgewater's EdgeView element management system or 3rd party NMS platforms supporting SNMP.



Finally, integrating multiple functions usually provided by several standalone systems into a single appliance reduces management complexity and better positions the service provider for rapid growth.

VoIP Survivability

EdgeMarc Series appliances provide survivability features that enhance the reliability and availability of hosted VoIP service offerings. Deployed at the customer premises they provide local call switching between SIP user agents and locally connected PSTN gateways in the event of WAN link failures, softswitch failures or during periods of network congestion that result in loss of connectivity to the softswitch. They also support redundant softswitch applications.

Summary

Edgewater Networks has developed a family of converged network appliances that offer significant cost savings, comprehensive security, guaranteed voice performance, simplified management and VoIP survivability when delivering advanced voice services to enterprise customers. Please visit www.edgewaternetworks.com for additional information on EdgeMarc Series appliances.