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EMC PERSPECTIVE

Voice Over IP – Voice Quality of Service

Reader ROI

- Customer expectations are high for QoS in VoIP
- Excessive bandwidth for voice QoS not a scalable solution
- VoIP sensitive to packet delay
- Multimedia traffic, ever-increasing bandwidth demands, and economic restrictions will force an active QoS management plan
- Inspection of the Realtime Transport Protocol (RTP) packets, solid engineering, and end-to-end measurement capabilities fulfill active QoS management requirement.

Voice Over IP – Voice Quality of Service

As service providers strive to create new revenue streams, respond to competitive threats and exploit the capabilities and investments in ubiquitous IP data networks, the introduction of voice over IP (VoIP) brings a level of transport efficiency and service capabilities that are increasingly in demand by both consumers and businesses. This new capability brings substantial challenges centered on the delivery of high-quality voice communications, and moves away from the benchmark for call quality that was set by the local exchange and long-distance carriers with over 100 years of engineering and refinement applied to the traditional Transportation Demand Management (TDM) telephony networks.

Whereas there is no material impact to the transmission when IP bits from other types of data traffic arrive, voice packets delivered out of order degrade voice quality.

To address this paradigm change, BusinessEdge Solutions, an EMC® Consulting Practice, has developed a reference model that employs a systematic approach to planning, creation, delivery, and assurance—an active management approach in which QoS is systematically factored into each of the service planning, creation, and delivery and assurance phases and deployed at each layer of the OSI model to ensure a level of QoS that meets customer expectations.

Excessive bandwidth for voice QoS not a scalable solution

True voice quality is a factor of many elements, including service reliability and availability (e.g., traditional five-nines, 99.999 percent) as well as engineering and operations management.

The conventional means of managing QoS in today's early VoIP implementations is, in fact, non-management. That is, through the application of excessive bandwidth, service providers today have not found it necessary to apply active QoS management techniques. Although this may be adequate in some cases, particularly those networks with low subscriber volumes or limited scaling potential, service providers are discovering that for those networks experiencing growth, an active QoS management approach is required. Further, with the continued introduction of multimedia traffic on the IP networks and ever-increasing bandwidth demands, economic restrictions will force an active QoS management plan as bandwidth costs will rapidly escalate out of control over time.

An active QoS management approach requires the inspection of the realtime transport protocol (RTP) packets combined with solid engineering and end-to-end measurement capabilities. Unlike many other types of IP application traffic, VoIP traffic is sensitive to packet delay. Whereas delays of 150 ms are considered acceptable for traditional data applications, delays greater than 300 ms will degrade VoIP call quality. Monitoring and management of the RTP packets enables a service provider to make adjustments to network and services in order to optimize voice QoS.

Systematic steps at each step of planning and delivery

The process of applying an active management approach requires a systematic set of steps at each phase of planning and delivery.

Based on the service planning, creation, delivery and assurance considerations above, discrete technical parameters must be addressed at each layer of the OSI reference model to ensure a well engineered and active management approach to voice QoS. The key parameters by each layer are outlined in the following table:

Conclusion

The introduction of voice as a software application, separate from the transmission and switching fabric of today's traditional TDM networks, introduces a new set of challenges in terms of planning, engineering and operating the network and services. The current method of applying excessive bandwidth to create an acceptable level of voice QoS is not a scalable solution for the service provider community. Instead, BusinessEdge Solutions recommends an active management approach where QoS is systematically factored into each of the service planning, creation, and delivery and assurance phases. Further, the implementation of an active management approach to voice QoS must be deployed at each layer of the OSI model to ensure a level of QoS that meets customer expectations.

About BusinessEdge Solutions

BusinessEdge Solutions, an EMC consulting practice, offers strategy, process optimization, and information management services to clients in the telecommunications, media, and entertainment (TME); financial services; and life sciences industries. Leveraging our vertical industry thought leadership and asset-leveraged consulting, supported by pre-engineered business and information management frameworks, BusinessEdge drives competitive advantage for clients and reduces the time, cost, and risk of delivering breakthrough results.

Industry and technology expertise and experience are at the core of our commitment to create vision for our clients—and are the drivers behind the delivery of high-impact business solutions. Our consultants average 15 years of industry-specific experience and apply their deep knowledge of the industry, technology, business architecture, and business best practices to develop information management strategies that improve process effectiveness and productivity, reduce business risk, improve decision making, enable collaboration and knowledge sharing, and enable the optimization of IT spend.

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EMC Corporation
Hopkinton
Massachusetts
01748-9103
1-508-435-1000
In North America 1-866-464-7381
www.EMC.com

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For more information, contact BusinessEdge Solutions, an EMC Consulting Practice, at info@businessedge.com, call 1-800-655-EDGE extension 3040, or visit our website at www.BusinessEdge.com.