Deploying Polycom VSX Video Conferencing Systems with PacketShaper to Deliver Predictable QoE

Polycom VSX Series video conferencing systems are designed to improve communication between remote offices, unite geographically distributed teams, and reduce travel expenses. To provide these benefits, video conference sessions need to work reliably and provide a consistent quality of experience (QoE) for users at every linked site. While some organizations still maintain separate networks to protect video conferencing traffic, it’s now more common to transmit both video and application data on a single, converged network.

Converged network deployments can reduce expenses because they eliminate redundant network equipment and links. The result, however, is a network where multiple applications compete for finite resources. When left unmanaged, the more aggressive applications swamp the WAN link with traffic such as Internet downloads, file transfers, and streaming media. Adding more bandwidth to accommodate a video conferencing system seldom improves matters: the aggressive applications simply consume the larger link.

So the question remains, how can you guarantee of bandwidth to a video conferencing system when its traffic is forced to compete with other business and recreational applications? The solution is to control network traffic on a per-application basis by assigning bandwidth and priority in proportion to an application’s requirements and its value to the enterprise. This method of control is known as application accountability.

To establish application accountability between multiple locations connected by WAN links, Blue Coat recommends deploying a PacketShaper appliance at each site. When installed inside the WAN-facing router, the PacketShaper analyzes all network traffic, determines which applications are responsible and provides tools to control traffic on a per-application basis. Through the PacketShaper, network administrators can assign high priority and guaranteed bandwidth to business-critical applications such as video conferencing, and cap aggressive applications to limit their impact on overall network performance.

This Technology Primer describes how to configure the Blue Coat PacketShaper and Polycom VSX Series video conferencing systems to deliver consistent, high performance across converged networks. You can also apply the configuration principle to protect other real time applications such as VoIP and VMware.

**Deployment**

Install the PacketShaper inline, between the Polycom VSX system and the WAN-facing router.

**Configuration**

By default, Polycom VSX Series video conferencing systems are configured to adapt to congestion and correct transmission errors. For example, when the Polycom system senses network congestion, it automatically reduces the bit rate of the video conference. While this behavior reduces retransmissions and can help to ease congestion, it leaves video conferencing sessions vulnerable to reductions in quality, where bandwidth freed by the Polycom system is appropriated by more aggressive applications.
To guarantee a consistent QoE, configure the Polycom system to use a consistent amount of bandwidth per call, and then configure the PacketShaper to guarantee that bandwidth while giving Polycom traffic a higher priority relative to completing applications.

On the Polycom VSX Series:

1. Conduct several video conferencing test sessions to determine an optimal Call Speed (for example, 768k) that provide the desired tradeoff between quality and bandwidth use.

2. Specify this Call Speed as a Global Setting. If editing entries on the Polycom Global Directory Server, force a directory refresh on each client VSX system. Later, you will configure the PacketShaper to guarantee a like amount to each video conference session.

3. Review entries in the local address book on each client VSX system, and make sure that none of their Call Speed settings exceeds the default Global Setting. If the Polycom attempts a video session at a higher rate than the PacketShaper expects, the Polycom will sense contention and dramatically reduce the session’s quality.


On the PacketShaper:

1. With traffic discovery on and traffic shaping off, allow the PacketShaper to autodiscover and classify traffic generated by the Polycom. PacketShaper will discover both the control classes (ICMP, RSVP, and RTCP-I) and the content class (RTP-I). Note that the total amount of bandwidth needed per session will somewhat exceed the Polycom’s Call Speed setting, which only accounts for the video codec.

2. Allocate bandwidth and set priority:
   a. On both the inbound and outbound directions, promote the priority of each control class (ICMP, RSVP, RTCP-I) from default (3) to high (6, on a scale of 1-7).
   b. On both the inbound and outbound directions, create a rate policy for the content class (RTP-I) equal to the Polycom’s Call Speed setting plus a little extra to account for overhead. For example, if the Call Speed setting is 768k, create a rate policy of 800k.

3. Turn traffic shaping on and conduct a test video session to verify settings.

While this configuration ensures dedicated, high-priority treatment of Polycom traffic, Blue Coat recommends additional steps to segregate video conference traffic on your network, protecting it from contention but also preventing video sessions from disrupting other business-critical applications. For complete configuration instructions, see the Manage Voice and Video Sessions topic in PacketGuide:

https://hypersonic.bluecoat.com/packetguide/current/solutions/app-control/manage-voip.htm