

VoIP Deployment

Field exercise demonstrates LiveAction's all-in-one solution



To ensure maximum performance, reliability, and security of their networks, agencies of the Federal government are continuously evaluating new and promising technologies that can enhance IT staff efficiency and deliver innovative solutions for complex problems. And when mission critical applications are at stake, these groups also implement carefully staged and rigorous field exercises to test these technologies under realistic and worst-case scenarios before they can be considered for permanent deployment.

One such multi-week exercise was commissioned to evaluate technologies for a voice over internet protocol (VoIP) deployment. VoIP is technology that provides telephone services over the same networks used for data and video communications. Adding voice to an already diverse mix of information is very challenging because it must now share the same network with other services that are competing with each other for network capacity. A key requirement for VoIP is network quality of service (QoS) which allows network engineers to give voice calls a much higher priority and guaranteed bandwidth compared to other services such as email and file transfers that are not as dependent on network performance. VoIP requires a new generation of network management and QoS tools to ensure that call reliability and voice quality will remain stable no matter how busy the network gets.

Real-Time Network Situational Awareness

In this exercise, ActionPacked! Networks' intelligent management tool, LiveAction[™] was successfully deployed to manage VoIP traffic load and quality of service (QoS) to ensure network reliability. LiveAction was installed on computers running on a Microsoft XP platform at a regional network operations center (NOC) and a remote site. The LiveAction tool was used to monitor and control network traffic in real time and QoS statistics for current and historic traffic patterns across five Cisco routers (i.e. Cisco 2800, 3800, and 7600). Three of the routers were located at the NOC and connected to two routers at a remote site. LiveAction demonstrated its effectiveness as an all-in-one solution for NetFlow and QoS monitoring/configuration and Routing visualization for VoIP deployments.

LiveAction's ease-of-use enabled network operators to easily visualize and monitor traffic in real time at the system network, router and application-class level. LiveAction's visual representation and near real-time graphing made it easy for network operators to detect QoS configuration errors caused by video conferencing (VTC) and router mismarkings of DiffServ Code Points (DSCPs). Measurement of throughput for the exercise was quick and easy to implement using LiveAction.

LiveAction™ Case Study VoIP Deployment

LiveAction was extremely useful in establishing, diagnosing and monitoring QoS and bandwidth utilization of remote routers. LiveAction provided network operators with excellent insight into bandwidth management tasks within the network environment.

Exceptional Monitoring and Configuration Capabilities

The NetFlow view worked exceptionally well to enable real-time tracking of connectivity across the NOC routers. Network operators found the ability to view connectivity as it traverses multiple routers a very useful feature of the LiveAction suite. LiveAction's routing visualization and configuration display capabilities allowed them to troubleshoot the network in real-time with confidence. Its ability to isolate routing anomalies, as well as determine route advertisement, offers great potential for decreasing NOC outages due to improper routing configurations network-wide.

NOCs use screening routers to help protect the network by filtering traffic through the firewall. In this exercise, LiveAction was successfully used to monitor traffic through screening routers by showing timely, flexible collection of data by class, for VoIP and video teleconferencing over internet protocol (VTCOLP) traffic.

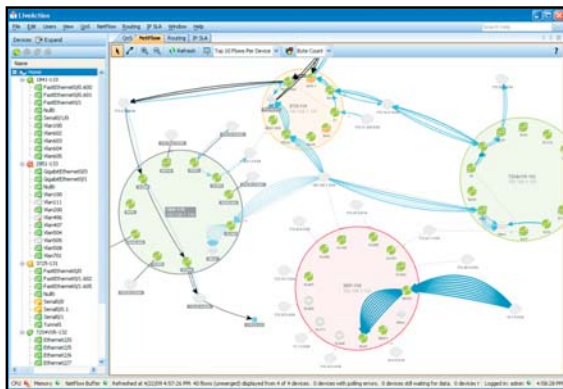


Figure 2. LiveAction system topology view allows IT managers to view network flows and routers in real time.

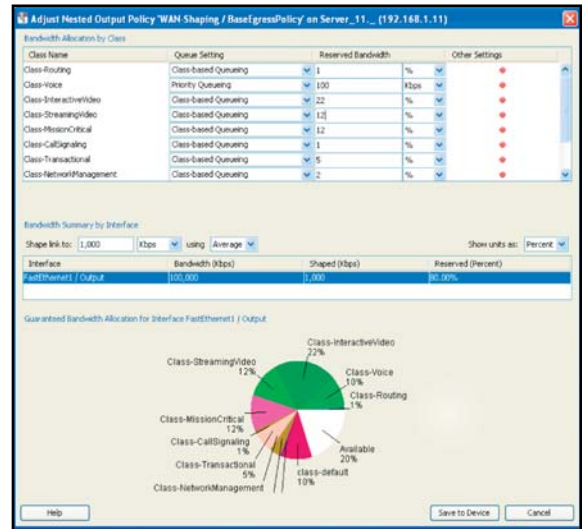


Figure 3. Easy QoS management capabilities enable IT managers to see and adjust output policy on the fly and set guaranteed bandwidth allocations for specific classes on each interface.

LiveAction was instrumental in tracing unusual VoIP and VTCOLP traffic with the wrong (DSCP) markings across the network. NOC engineers successfully implemented remote virtual network computing (VNC) to monitor and control the LiveAction deployments at a remote site. VNC is a remote desktop access system that allows one computer to take control of another, whether on a local network, or anywhere in the world over the Internet. The response time was near real time from site-to-site. QoS real-time and historical views provided needed situational awareness to debug, monitor and manage real-time traffic.

LiveAction was used to configure routers to carry VoIP bandwidth throttle tests to degrade and restore VoIP call quality. Tests over a 24-hour period successfully illustrated LiveAction's on-the-fly policy application/change capability within a few seconds demonstrating LiveAction's ease of QoS router policy configuration and application. Another key benefit of LiveAction is that it does not tax router CPU resources. LiveAction did not significantly increase router CPU utilization even when polling rates were between 10-60 seconds.

Overall, the exercise demonstrated LiveAction's features and benefits as a capable, timely, usable and easy-to-use network management tool that provides valuable situational awareness, NetFlow monitoring, QoS monitoring and configuration, and Routing visualization in managing VoIP deployments.

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