Description of the Application

Media servers are specialized publishing devices optimized to deliver audio and video content over IP networks. These products take multimedia content such as streaming audio and video, and serve them to thousands of concurrent users accessing information such as CEO webcasts, training videos or music samples.

Media servers typically have limits on the number of connections they can support. User connections are extremely long, as these devices are required to deliver a steady stream of content to media players. The quality of streaming content generally depends on user bandwidth capacity, the speed with which the content traverses the Internet, and the quality of the network connection. Media servers typically support streaming content based on both TCP and UDP protocols.

To quickly respond to requests, media servers cache (store a copy of) various streaming content. A unique data set must be stored for each resolution rate. For example, a streaming file capable of supporting 56K modems would be different than the file supporting T1 lines.

Challenges to the Application Type

Media servers and streaming media represent an opportunity for efficient corporate communications for most organizations. These technologies offer improved reach and reduced travel expense. Organizations must not only choose the correct Media server, but also look at the role their network infrastructure plays in delivering these services. The following business requirements should be considered:

Providing high availability - No critical system should have a single point of failure. Device failures, spikes in traffic rates, application problems, or even a loss of Internet connectivity can disconnect these corporate communications from the outside world. Redundancy is important for an organization that is trying to build a reliable communication channel. This importance increases as organizations use media servers to interface with external partners and customers.

Providing scalability - Media servers have limits in the number of connections, the bit rate, and disk space available to house streaming content. Because media servers need to store multiple copies of media streams, disk space can fill quickly. Web sites needing scalability should deploy multiple servers to provide the capacity to serve more content, as well as store it. This requires a traffic management product capable of intelligently distributing users to the right media servers.

Enhancing performance - To deliver the best quality of rich media to users, organizations should consider placing streaming content close to the edge of the network, in caches or other locally stored sources. Pre-positioning content can reduce bandwidth consumption and improve user experience.

F5 Solution Overview

The BIG-IP® product provides specialized traffic/application management functions which dramatically improve the reliability and performance of media server deployments.

Media servers and streaming content are especially susceptible to degradation of quality. For example, if packets are lost on the network, they are not recovered like other IP traffic. This causes skips and poor video quality. To solve this problem, many organizations have chosen to deploy multiple media servers within different network geographies. F5 Networks BIG-IP Global Traffic Manager (GTM) product provides global traffic/application management capabilities to direct users to the appropriate streaming media server. The GTM product calculates the path quality from each user to each media server, providing the connection with the highest network integrity, and guaranteeing the best quality and speed for users.

As organizations add Media servers, F5 Networks’ BIG-IP product can optimize the storage capacity across these devices. By tracking what content is cached on each media server, the BIG-IP product uses a feature called content stripping to prevent each device from simply storing replicas of caching content. Content stripes are cacheable content subsets distributed among cache servers. For example, a site with two media servers, each with 10 gigabytes of storage, will have 20 gigabytes of cacheable media storage available. That is because the BIG-IP product can be configured using rules to send image requests to one server, media content to the other server, and so on.