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PRODUCT REPORT:

Real Networks Helix Universal Server

I. Purpose:

The purpose for the development of the Real Networks Helix Universal Server is to address the difficulty of having various media formats, players, system hardware, and networks by providing successful delivery of digital media while no longer requiring different delivery infrastructures to send different media formats [1].

II. Features:

Features of the Helix Universal Server that make this product desirable include a universal platform, cost effectiveness, complexity, reliability and performance [1]. The universal platform implies the Helix Server provides support for live, and on-demand delivery of 55 different file formats such as Real Media, Windows Media Format, QuickTime, MPEG-4, MP3 [2]. In the past, streaming video over the Internet required the installation of multiple servers to offer multiple format support. By using one infrastructure to deliver media, delivery and hardware costs are reduced [3].

The complexity of the system setup and use is low for the Helix Server. According to PC Magazine [6], who set up the Helix Universal Server running on Windows 2000, "the Setup was truly effortless." They also note that there are remarkable administrative capabilities, which are entirely web-based for ease-of-use. Some administrative abilities include user lists, passwords, and virtual directory control. The Helix Server includes a graphical monitor application which allows for control over bandwidth and performance [4]. The monitor shows the CPU, memory, and bandwidth statistics that can help in aiding CPU utilization and effective bandwidth usage. The monitor also shows how many users, players, and encoders are connected.

Reliability features include live stream reconvergence and server-to-server forward error correction (FEC) for stream splitting [1]. Live stream reconvergence allows live video streams to be sent redundantly over multiple networks, while FEC allows administrators to balance the network reliability with use of bandwidth. Another impressive feature is that multiple Helix servers can be added for a "simulated Webcast" [6]. Also, in the case of network connection failure, there is an automatic server reconnect feature while client requests are routed to back-up servers [3].

The Helix Universal Sever performs better than Microsoft's Windows Media Server using their own Windows Media Technology (WMT). In a comparative study done by KeyLabs, the RealNetworks Helix Universal Server was compared against Microsoft's Windows Media Technology. The results showed that The Helix Universal Server delivers 200% more Windows Media Streams than the Windows Media Server running on the same hardware [4].

III. Technology

The Helix Server promises to "deliver over 10,000 concurrent video and audio streams on standard hardware [3]." Standard hardware entails system requirements of a minimum of 256 MB of RAM, 512 MB of memory, and 18 MB of storage space [1]. By adding additional RAM and memory, the amount of clients served and the amount of information that can be handled increases respectively [2]. The Helix Server has extensive operating system support, such as Windows, UNIX, Linux, HP/UX, IBM/AIX, Tru64, and Solaris [1].

The Helix Universal Server is based on Helix DNA server source code [2]. There are two types available: The Helix Universal Enterprise Server that is used behind firewalls on corporate networks and the Helix Universal Internet Server that operates outside the firewall on the Internet [1].

Support is provided for any media type encoder, such as Windows Media encoder, or QuickTime encoder to directly communicate with the Helix Universal Server. The server can deliver the video sequence over internal networks and the Internet to any media player type [1]. Networks using the following protocols are supported: Real Time Streaming Protocol (RTSP), Microsoft Media Services (MMS), and HyperText Transfer Protocol (HTTP).

This technology is being utilized by corporations, broadcast companies, educational, and governmental institutions [2]. Companies and organization using Helix Server on Linux platform to deliver media includes the Public Broadcasting Station (PBS), National Geographic, and SurfNet Media. Virginia Tech State University is using the Helix Server to deliver the majority of their asynchronous instructional video content. The director of media at the University is quoted as saying, "Running Helix Universal Server on Linux gives us a reliable, cost-effective platform to meet our growing distance-learning needs [5]." The Helix Universal Server is currently being trialed at operators worldwide including Telefonica, Sonera, StarHub Mobile and AT&T Wireless [7].

IV. Limitations

The RealNetworks Helix Universal Server V9 has a critical buffer overflow vulnerability. "The vulnerability allows malicious users to exploit a bug in the 'View Source' plug-in to grant themselves root level access to a target system [8]." This bug is easier to exploit on Solaris, IRIX, and Tru64 systems than Linux and Windows. RealNetworks has verified this vulnerability and suggests removing the RealNetworks View Source plug-in as a fix until a new version becomes available [5].

References:

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[3] "Helix Universal Server," Intuitiv/Products, Available at: http://www.intuitiv.net/real/products/helix_server_enterprise.htm

[4] "Helix Universal Server from RealNetworks Comparative Load Test," KeyLabs, Lab Acquisition Corp., Available at: http://www.keylabs.com/results/realnetworks/helixcomparativeload.pdf

[5]. "Helix Universal Server Vulnerability," Beyond-Security's, Securiteam.com, Available at: http://www.securiteam.com/securitynews/5QP0L1PAUO.html

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[7] "Top Content and Education Organizations Adopting Helix Universal Server on Linux," Real 2003 Press Release, Available at: http://www.realnetworks.com/company/press/releases/2003/helixlinux.html

[8] "Real Networks Helix Universal Server Buffer Overflow," Counterpane Internet Security, Available at: http://www.counterpane.com/alert-t20030829-001.html