UTAH-400 iP White Paper

The Utah Scientific UTAH-400 iP Managed Gigabit Ethernet Workgroup Router

Utah Scientific has been manufacturing routing switchers for efficient signal distribution for three decades. From its original focus on video and audio switching, the company has learned lessons applicable to the control of other types of networks, including IT networks. These lessons have been brought to bear on the development of the UTAH-400 iP Managed Gigabit Ethernet Workgroup Router. The UTAH-400 iP is the first router of its kind to dramatically improve network efficiency by giving an operator the flexibility to manage port priority, security groups, and port speed in real time.

The UTAH-400 iP's most distinctive feature is a built-in control panel that enables an engineer to control switch parameters instantly, including allocating bandwidth, QOS, and VLANS in response to the constantly changing needs of the facility. The ability to make instantaneous network changes means high-priority items coming from any device can be moved to any of three priority tiers in real time, while lower priority items wait their turn. Dynamic management also reduces errors in streaming media.

The control panel of the UTAH-400 iP also enables dynamic creation of security groups so the user can partition the network into smaller virtual networks, securing sensitive content.

Port speed control helps troubleshoot network operations and allows the operator to isolate network nodes that are using an excess of bandwidth.

A New Kind of Network Control

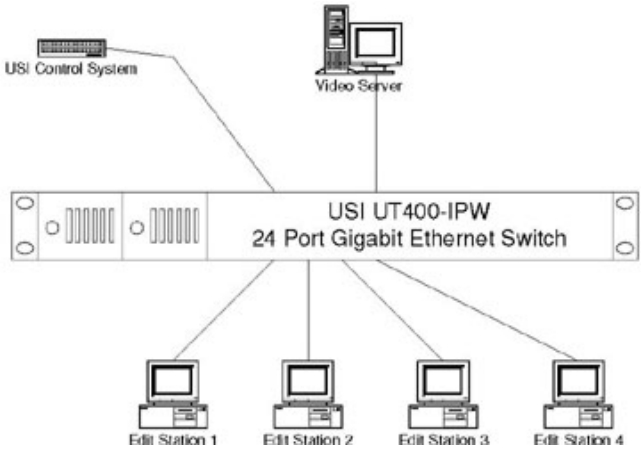
Because of the large size of digital video files, moving them across a network can take a lot of time and bandwidth, posing the risk of bottlenecks, delay, and disruption. Thus, a particular challenge in a video services network has been how to accomplish dynamic real-time control methods to minimize or eliminate potential problems. Traditional methods to control network behavior include IP TOS (type of service), DiffServ, VLAN segmentation, and ingress/egress queue

management. All of these work to give priority to predesignated types of data traffic, isolate critical network segments, and limit bandwidth for lower priority functions. However, in a traditional infrastructure, each of these methods is set and essentially fixed in the system configuration at the time the network is installed, severely limiting the day-to-day control exercised by the engineer.

In contrast, the UTAH-400 iP enables an engineer or other operator to use these same methodologies to make network changes independently, without the need to reconfigure IT functions. These changes include segmentation for maintenance and backup, which can be automated or performed manually; prioritization of critical functions; and control of authorization for individual users to protect network integrity.

The Difference is Dynamic

Ever since the inception of TCP/IP, there have been IP TOS identifiers to manage traffic priorities in a network. TOS will prioritize one type of traffic over another, but it is stymied when there are two or more competing streams of the same type traffic. If, for example, two editing workstations are trying to move video files to a server, TOS doesn't recognize that a clip set to air in 30 seconds is more important than one set to air in 30 minutes.



The UTAH-400 iP allows a user to prioritize in real time traffic coming from any device in the network to one of three priority tiers. Even if a network has a large backbone bandwidth, the connections among individual devices or network segments have finite bandwidth, and this may be overwhelmed without proper management. With dynamic TOS management, the data stream with priority arrives at the destination port regardless of tasks in progress on other devices on the network. In other words, the press of a button gives priority to the clip going to air in 30 seconds. Alternatively, priority modes may be preset if that's what the user requires.

A traditional IT network also incorporates VLANS (virtual local area networks) as a variant management strategy. A VLAN is a logically separated path within the physical network infrastructure used to segregate part of the network. The UTAH-400 iP allows the user to segregate segments of the network dynamically. In application, this network management strategy works the same way as the traditional broadcast XY router.

Bandwidth is typically represented in megabytes per second, in other words the speed of the interconnect. However, actual bandwidth can be modified by limiting queues within the input and output section of each Ethernet port on a switch. The UTAH-400 iP allows a user to do this in real time as a further means of relegating noncritical files to lower priority.

Conclusion

The UTAH-400 iP Network Switch offers a uniquely flexible real-time way to manage an Ethernet network in a broadcast environment or any situation where large video files or high-bit-rate streaming video are transferred. Because the UTAH-400 iP gives an operator new flexibility and dynamic control, it makes networks work better, faster, and more reliably.

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