The NetEnforcer in a Satellite Environment

Satellite service providers offer local services that allow many customers to share a common satellite link to remote services. A typical satellite vendor may have local server farms and hosting services that remote clients can access over the satellite and through remote WAN connections. Today advanced bandwidth control is critical for satellite voice and data networks.

Reduce Packet Loss and Network Delays

In today's typical LANs, routers or access devices simply drop packets when excess traffic congests. In a satellite network, the satellite link is the most expensive resource on the network. Long delays in packet transmission from a ground station to the satellite and then back to the ground causes serious degradation in the overall throughput of the system. This problem becomes compounded as other parts of the network introduce more, inconsistent delays, resulting in a very unpredictable end-to-end network environment. Because of this, it is critical in a satellite environment that lost traffic and packet retransmissions be reduced to a minimum.

Also in a typical satellite environment, there is a broad mix of traffic flows over channels. This includes the mixing of bursty data applications with streaming voice and video. Streaming applications demand consistent bandwidth allocation. Data applications vary from application to application and require one-hundred percent data integrity.
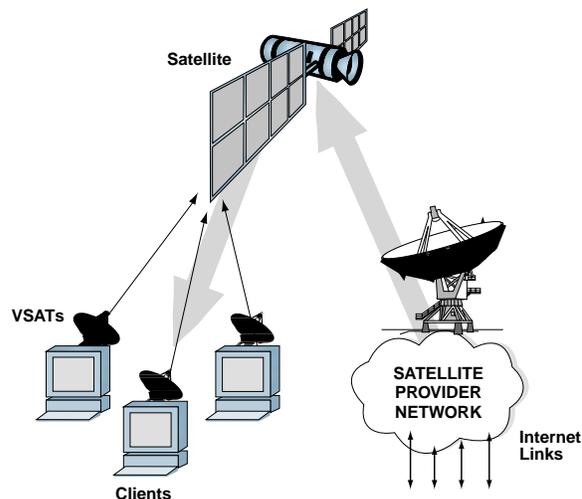

Figure 1.
Without the NetEnforcer, access devices will queue incoming traffic until it must randomly discard new traffic resulting in end-to-end retransmissions and excess delays.
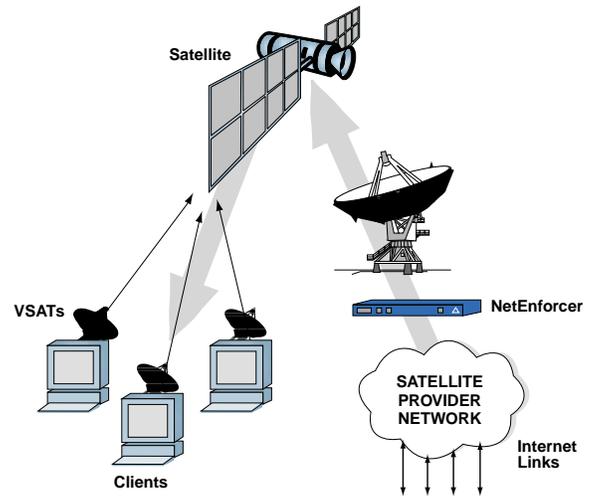

Figure 2.
With the NetEnforcer, traffic is prioritized and controlled from the end-stations allowing bandwidth to be distributed fairly over the satellite link with no retransmissions.

The NetEnforcer is a better solution for satellite systems wanting to control packet transmissions and smooth-out the overall flow of traffic. Instead of allowing traffic to accumulate at key access points, the NetEnforcer will prioritize the traffic and produce an orderly flow of applications from the end stations. The end result is the smooth flow of end-to-end traffic and the best utilization of the satellite link.

Assure Fairness

In most satellite environments, a single uplink from the service provider delivers bandwidth intended for multiple users while the downlink is broadcast simultaneously to many different networks. This results in a few low-priority users or applications taking up most of the available resources without regard to that applications' importance or overall need for bandwidth. A big challenge for satellite networks is assuring fairness between applications based on their various characteristics.

Allot
Communications

The NetEnforcer solution allows you to assign:

- Guaranteed minimum bandwidth to streaming voice and video-type applications.

- Prioritized bandwidth (such as, higher priority for mission critical and time-sensitive traffic and lower priority for less critical and background-type traffic).

- Consistent levels of service between users of the VSAT link. Because of its unique fairness algorithms for traffic priority, the NetEnforcer prevents any single application from taking over the entire satellite link or from being completely starved of bandwidth.

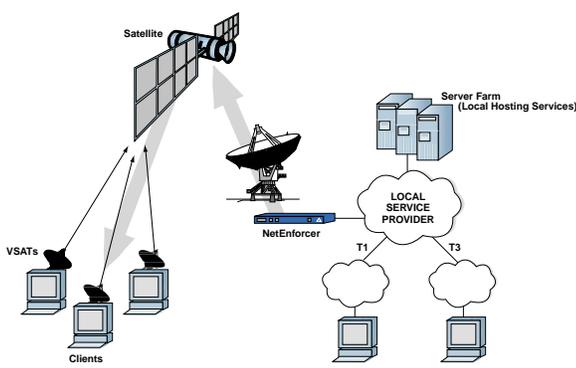## The Allot Architecture in the Satellite Environment

Figure 3. Sample Application
Satellite service providers provide local services for allowing many customers to share a common satellite link to remote services. A typical satellite vendor may have local server farms and hosting services that remote clients (over the satellite and through remote WAN connections) can access. The NetEnforcer is placed between the local network of the satellite provider and the remote satellite link and remote WAN connections.

The Allot Approach to Satellite Systems

With the NetEnforcer specific policies can be defined that compensate for the increased delays and varying types of voice, video, and data traffic traveling over the satellite channels. The result is a more controlled flow of network traffic and an efficient, more predictable user experience.

Summary

Using the NetEnforcer AC System, satellite service providers reduce data retransmissions, assure fairness by prioritizing users and applications, and provide predictable, guaranteed bandwidth for video and voice-type streaming applications. The NetEn-forcer maximizes the efficiency of traffic flowing through satellite systems. Its advanced analysis capabilities allow the intelligent distribution of traffic through WAN channels based on the overall state of the satellite link, its delays and throughput. The end-result is a more efficient, reliable, and predictable system for delivering applications over the network.