

# The NetEnforcer in a Voice or Video Environment

Real-time applications, such as voice, video and multimedia, that are running on data networks present special challenges to network managers. Users expect the same performance and service quality whether their applications run on a dedicated line or over the Internet. In order to run all of these applications in a network environment, network managers require a system that allows them to optimize the use of real-time applications.

These real-time applications are delay sensitive and require advanced bandwidth management for prioritizing and controlling traffic. With Allot Communication's NetEnforcer, policies can be defined that prioritize data applications and guarantee bandwidth to timing-critical, real-time applications. In addition, the NetEnforcer will partition excessively large data packets in order to reduce the delay of real-time traffic and create a more predictable overall traffic flow. Finally, the NetEnforcer provides a complete monitoring, reporting and accounting system for tracking, recording, and optimizing all network applications.

## Broad Traffic Mix

A typical network environment carries a broad mix of data traffic. This includes bursty data applications, such as e-mail and the web, with streaming real-time applications such as voice, video and multimedia. Streaming applications demand consistent bandwidth allocation and minimal delays while data applications have variable, unpredictable bandwidth requirements. However, in today's network environment, applications consume network bandwidth on a first come, first served basis. A single file transfer, for example, can utilize one hundred percent of an Internet link leaving no bandwidth capacity for voice or video streams.

The NetEnforcer placed in front of a WAN or Internet access router allows for control of your network and provides a predictable network environment. Through the NetEnforcer, specific voice, video and multimedia traffic flows can be identified and any of the following actions can be enforced:

- Assign guaranteed minimum bandwidth to streaming voice and video-type applications
- Assure that a single data packet does not delay voice or video packets by limiting the maximum packet size of traffic passing through the NetEnforcer
- Assure fairness and consistent levels of service between users. Because of its unique fairness algorithms for traffic priority, the NetEnforcer provides a solution whereby no single data application can use the entire link and no voice or video application will be starved from getting its minimum bandwidth
- Guarantee constant-bit rate to voice, video and other real-time applications – thus limiting jitter caused by large variances in minimum and maximum bandwidth rates common on data-oriented networks

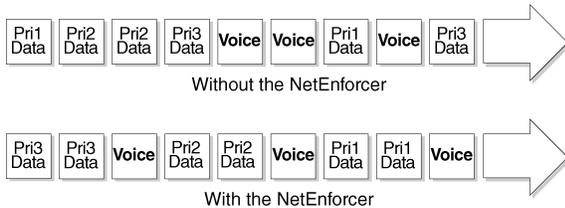
## Guaranteed and Prioritized Bandwidth

The NetEnforcer allows specific policy definition for determining traffic flow for individual connections as well as for groups of connections:

- **Prioritized Bandwidth** delivers levels of service based on a connection's importance and demand for traffic relative to other connections. This type of service is typically used for bursty data applications
- **Guaranteed Bandwidth** assigns guaranteed bandwidth to specific connections. Guaranteed rates assure predictable service quality to real-time applications

In addition, the NetEnforcer enables more advanced policy definition for limiting the number of connections allowed or for completely denying access to unauthorized applications. Using a combination of prioritized and guaranteed applications creates an optimum flow of traffic based on application and priority requirements.

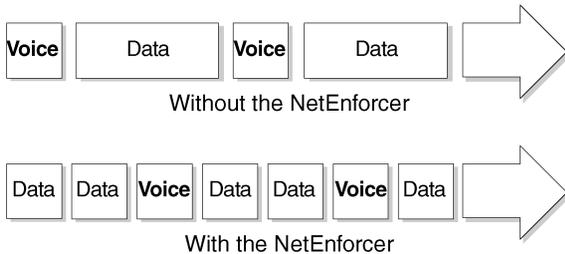




**Figure 1.** Without the NetEnforcer, data and voice packets are transmitted on a first come, first served basis. With the NetEnforcer, voice packets are identified. Then, based on defined policies, voice packets are given a guaranteed traffic rate. Mission critical data applications can be given priority over less critical resources.

## Expedite Real-Time Traffic

Even when a real-time application receives guaranteed bandwidth, it must still wait for a previous data packet to be sent over the line before it can begin to transmit over the network. A very large data packet can cause long delays that will prevent the real-time application from transmitting on time. The NetEnforcer solves this problem by partitioning large data packets into smaller units – thus allowing the real-time data to be sent at precisely the right moment.



**Figure 2.** Without the NetEnforcer, each voice or video packet must wait for the complete transmission of a data packet before it can begin to transmit. With the NetEnforcer, large data packets are fragmented into smaller units, thus allowing the voice transmission to complete sooner.

## Advanced Server Control

To completely manage real-time applications, it is important to manage both the flow of traffic from the Internet and the distribution of traffic to specific servers. With the NetEnforcer, specific servers can be designated for handling video, voice, and data applications. Based on real-time

and data policies, traffic coming in from the Internet will automatically be redirected to the appropriate server.

Traffic from local clients to the Internet can also be redirected automatically to proxy and cache servers based on specific application types. WEB traffic can be transparently redirected to cache servers while real-time applications will be automatically sent directly over the Internet or WAN link.

## Monitoring and Accounting

The NetEnforcer provides the tools necessary to continually monitor real-time traffic flow and to determine whether the applications are performing at their optimal levels. According to defined policies, the NetEnforcer can monitor data and real-time traffic flows via “Virtual Channels.”

In addition, the NetEnforcer will create accounting records for real-time applications based on defined policies. The NetEnforcer will produce an accounting record showing each time a user runs an application over the network. Thus, network user and application usage can be tracked. This data can be exported to either an ODBC or RADIUS server.

## Summary

Using the NetEnforcer, network managers can optimize the performance of real-time voice, video and multimedia applications. The NetEnforcer will guarantee bandwidth to the timing sensitive applications and prioritize traffic on standard data applications. The NetEnforcer will insure acceptable performance of real-time applications by partitioning large data packets. In addition, the NetEnforcer provides policy-based load-balancing and cache redirection of outgoing traffic to specific cache servers. Finally, the NetEnforcer will monitor and account for specific real-time applications and traffic flow, thus allowing for precise tracking and optimization of network traffic. The NetEnforcer is the premier tool for optimizing the quality and performance of real-time voice and video applications in data network environments.

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