



## Class of Service Feature

### The Need for Class of Service / Quality of Service

Recent years have witnessed rapid growth rates in computer network traffic. A wide variety of new applications have appeared and the convergence of other networks (voice and data) is underway. Increasing the bandwidth to avoid congested access links is often not sufficient since the nature of applications has also changed.

Today's IP-based networks provide a "best effort" service that is subject to unpredictable delays and data loss. The new types of network traffic vary tremendously in their operational requirement. Some applications require significant bandwidth, others have strict timing requirements.

AT&T Managed Data Network Services, Class of Service (CoS) Feature allows customers to define the priority of different applications. It enables the customer network to differentiate between traffic types and thus to ensure delivery of higher priority traffic ahead of lower priority traffic on the same Permanent Virtual Circuit (PVC).

### Easy Migration towards MPLS

To further support the requirements of network-based applications, AT&T is planning its future migration towards MPLS based networks. AT&T already runs a core backbone on MPLS and plans a staged introduction of MPLS-based IP VPN during the coming months.

With the CoS Feature it is possible to implement Quality of Service (QoS) traffic engineering on your Virtual Private Network (VPN) today while continuing to benefit from the coverage, reliability, security and end-rich services of your AT&T Managed Data Network Services.



## Benefits

- Three differentiated Classes of Service
- Quality of Service engineering by application type
- Comprehensive web-enabled reporting by Class of Service
- Based on AT&T's world class global MDNS Frame Relay Service
- Easy, seamless migration towards MPLS-based IP VPN
- Available globally
- All the value-added end-to-end network management features of MDNS

# AT&T MDNS Class of Service (CoS) feature

The focus behind AT&T MDNS CoS is to achieve predictability, reliability and availability by keeping the intelligence at the network edges, as this is where most problems (i.e. congestion) occur, and therefore minimizing complexity in the backbone. Management of latency and bandwidth in a customer network is done by applying multiple QoS techniques at the customer site router, including:

- IP Classification / Setting of IP precedence bits / Marking
- Traffic Policing and Traffic Shaping
- Packet Queuing / Class-based weighted fair queuing
- Congestion mechanisms (WRED)

Classification of the IP packets is done by defining four classes (three classes for data traffic, one class for voice traffic) and setting the precedence bits in an IP header accordingly. The classes should be set according to application requirements, delivery or site-to-site response times. These reports can either be provided by email or via web-enabled interface.

Traffic Class	Data Type	Examples
Cos 1	Designed to carry voice	Voice over IP
Cos 2	Designed to carry premium business applications	Transactional applications
Cos 3	Designed to carry critical business applications	Database applications, commercial business applications
Cos 4	Designed to carry standard business applications	File transfer, batch transfer, email web browsing and database replication

Different policies will be applied according to the classification to give a dedicated optimal bandwidth and latency to each class. Other mechanisms for traffic shaping, queuing and congestion handling are also applied.

While these principles are all applied at the network edges, the CoS traffic is also treated differently in the AT&T backbone. MDNS CoS data traffic will be transported in a dedicated PVC prioritized over all other regular MDNS customer data traffic. MDNS CoS voice traffic will be prioritized even higher and transported in a separate PVC as well.

To give customers a better understanding of their current network flow, additional reporting is also available. Besides standard PVC reports, dedicated reports for each defined Class of Service are provided, including traffic utilization, end-to-end packet delivery or site-to-site response times. These reports can either be provided by email or via web-enabled interface.

