



Intelligent
IP Traffic Management
Solutions

Dyband: Intelligent IP Traffic Management v2.2

Dyband IP Traffic Management allows service providers and enterprise network managers to deliver consistent, reliable access services by controlling the bandwidth consumption of individuals and groups, defining and managing service level agreements, and providing “visibility” tools for service management.

Dyband IP Traffic Management is an intelligent bandwidth management solution that measures and controls the bandwidth usage of individuals and groups, allowing ISPs and enterprise to control aggressive users, minimize network congestion, reduce packet loss, and eliminate congestion-related outages. By efficiently managing existing bandwidth, service providers can add more subscribers to the current Internet backbone connection, minimizing network costs.

IP Traffic Management

Dyband IP Traffic Management controls bandwidth consumption, by IP address, for up to 50,000 managed objects. These can represent individual subscribers or aggregate traffic associated with physical network devices or logical entities. Inbound and outbound traffic is managed separately at each network point in order to support asymmetric networks and provide the finest granularity of bandwidth control.

Dyband IP Traffic Management evaluates the bandwidth capacity/demand ratio 100 times a second. Bandwidth is allocated according to predetermined service levels during normal traffic patterns and automatically reduced, during periods of congestion. When congestion is detected, the Dyband software reduces transfer rates, but only at the points of congestion and only for the affected traffic direction. As soon as the lowered rates have the desired effect (i.e., congestion is relieved), the rates are allowed to return to their normal limit. Dynamic priority mechanisms give higher priority subscribers preferred transfer rates, while ensuring that lower-priority subscribers are not completely “starved” of bandwidth. If desired, the system can be configured to adjust individual transfer rates based on usage. Real-time traffic shaping capabilities minimize periods of congestion, reduce packet loss, and eliminate congestion-related outages.

Service Levels and Management

Dyband IP Traffic Management enables a virtually unlimited number of service levels that can be structured based on transfer rates and access priorities. Profiles are used to define these service levels, and once created, can be assigned manually to existing network points or automatically to auto discovered network points.

Performance Visibility

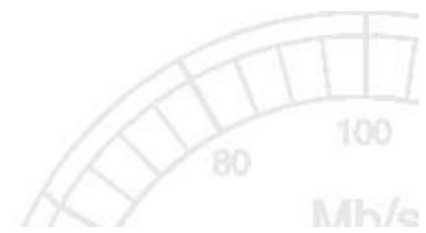
Dyband IP Traffic Management maintains a moving 24-hour window of statistics for each managed object. Reports on “Top 10” users, based on operator-defined criteria, provide real-time visibility into who is consuming bandwidth. In addition to displaying these statistics in real time, the Dyband software can store the statistics in any ODBC database for later reporting and analysis. This facilitates capacity planning, well-timed provisioning, usage-based billing, and customer and technical services.

Autodiscovery and Configuration

Dyband IP Traffic Management uses an intuitive tree-oriented display to represent all managed objects. The system automatically discovers new subscribers as they become active on the network and places them appropriately in the topology tree. The system resolves the names of newly discovered subscribers using DNS, LDAP, or RADIUS, and immediately begins shaping their traffic based on inherited SLA profiles. The Dyband software is also able to discover subnets and gateways and place them in the appropriate locations in the tree.

Single Management Interface

With Dyband IP Traffic Management, enterprise and service providers can dynamically manage bandwidth and service levels across all distribution networks from a single, easy-to-use graphical interface. Service providers can confidently deploy and manage any combination of 56K, xDSL, leased-line, Ethernet, wireless, cable, and/or satellite services. From the interface, operators can also efficiently identify management points with specific characteristics for analysis or to make global changes.



Network Architecture

The network diagram in Figure 1 depicts a multi-access network with the Dyband software installed. The Shaper is installed between the distribution network and Internet router. It is responsible for shaping all subscriber Internet traffic and collecting all real-time statistics. Since the Shaper has no user interface, a separate application — Cmon — is used to configure and manage the Shaper. With Cmon, the network administrator can view and modify the topology of managed objects, manage the profiles of service levels and view real-time statistics. ProfilePush distributes global profiles to remote Shapers. Archiver extracts real-time statistics from one or more Shapers and stores them in an ODBC database. The Miner application allows network administrators to generate and view reports that contain historical performance data.

Dyband IP Traffic Management runs on industry-standard hardware platforms and operating systems, and allows essential operational status information to be monitored by existing network management platforms via SNMP.

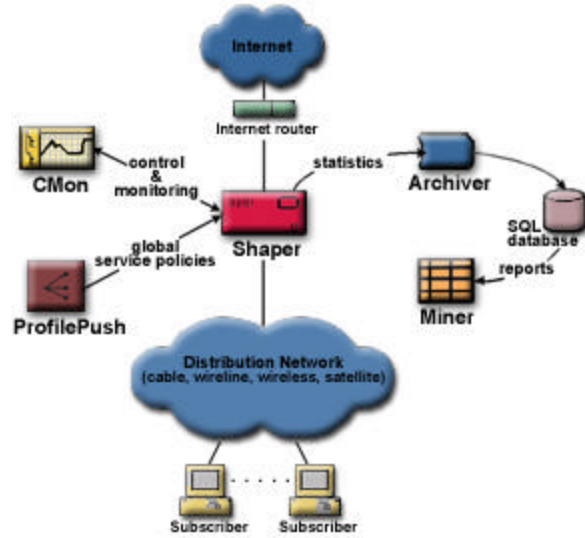


Figure 1
An Internet access network with Dyband software installed. Shaper is easily configured through the Cmon application to manage bandwidth usage and collect real-time statistics.

Technical Specifications

	Shaper	Archiver, CMon, Miner, ProfilePush										
Operating System	Windows 2000 Server or Professional SP-4 Windows XP Professional SP-1 Windows Server 2003 Red Hat Linux 7.1	Windows 2000 Server or Professional SP-4 Windows XP Professional SP-1 Windows Server 2003										
Processor	Minimum processor requirements for bandwidth up to: 45 Mbps: Pentium III processor or equivalent, 1GHz 155 Mbps: Pentium4 / Xeon or equivalent, 2.5 GHz	Pentium Processor										
RAM	<table border="1"> <tr> <td></td> <td>Topology Objects (MP's, profiles, policies)</td> </tr> <tr> <td>256 MB</td> <td>~ 8,000</td> </tr> <tr> <td>512 MB</td> <td>~ 23,000</td> </tr> <tr> <td>768 MB</td> <td>~ 38,000</td> </tr> <tr> <td>1GB *</td> <td>~ 50,000 (Shaper maximum)</td> </tr> </table>		Topology Objects (MP's, profiles, policies)	256 MB	~ 8,000	512 MB	~ 23,000	768 MB	~ 38,000	1GB *	~ 50,000 (Shaper maximum)	128 MB
	Topology Objects (MP's, profiles, policies)											
256 MB	~ 8,000											
512 MB	~ 23,000											
768 MB	~ 38,000											
1GB *	~ 50,000 (Shaper maximum)											
HD	1 GB + 3x System RAM (swap space)	Archiver: 10MB CMon: 10MB + 15MB x number of Shapers Miner: 15MB ProfilePush: 5MB										
Network Adapters	3 required (four if the Shaper is part of a fault-tolerant pair) (NDIS3 for Windows 2000, NDIS5 for Windows XP, Windows Server 2003)	One required										

* Due to the Linux memory architecture, maximum system RAM supported for Linux Shaper is 768 MB.

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