



PACKETEER®

Packeteer's PacketShaper®

Unpredictable application performance undermines business performance. Large emails, peer-to-peer downloads, and web browsing can swamp mission-critical applications such as Oracle or SAP. PacketShaper is the solution for eliminating these problems. PacketShaper is the bandwidth-management solution that brings efficient performance to applications running over wide-area networks and the Internet. With PacketShaper, you can control performance to suit applications' characteristics, business requirements, and users' needs. Then you can validate the results by utilizing PacketShaper's extensive reporting features.

Ensure Critical Application Performance

Align Application Performance With Business Goals

PacketShaper's four-step approach to safeguarding application performance controls congested WAN access links.

STEP ONE: PacketShaper automatically classifies network traffic into categories based on application, protocol, subnet, URL, and other criteria — yielding thousands of potential categories.

PacketShaper goes beyond static port-matching and IP address schemes. Its layer-7 classification capabilities pinpoint hundreds of applications, from Oracle and SAP to Gnutella and KaZaA.

STEP TWO: PacketShaper provides detailed analysis of application performance and network efficiency, describing peak and average bandwidth utilization, response times divided into network and server delays, top users, top web pages, top applications, and more.

STEP THREE: With policy-based bandwidth allocation and traffic shaping, PacketShaper protects critical applications, paces those that are less urgent, and optimizes performance of a limited WAN-access link. You specify bandwidth

minimums and/or maximums on a per-session or per-application basis.

PacketShaper's TCP Rate Control technology proactively prevents congestion on both inbound and outbound flows, eliminates unnecessary packet discards and retransmissions, and forces a smooth, even flow rate that maximizes throughput. In addition, PacketShaper's UDP Rate Control technology effectively controls UDP-based applications.

STEP FOUR: PacketShaper has extensive reporting capabilities: reports, graphs, statistics, and SNMP MIBs. With service-level agreements, you can define performance standards, compare actual performance with service-level goals, and generate reports on compliance.

Control Non-Urgent Traffic

Maximize WAN Throughput

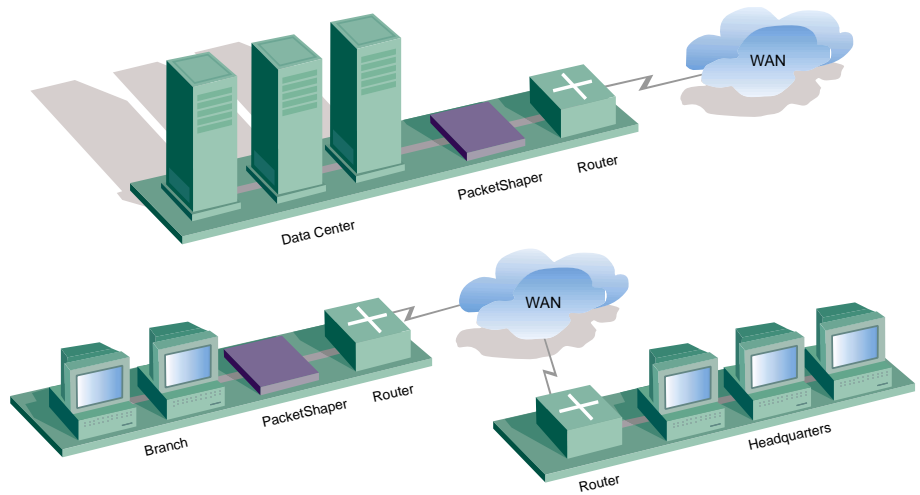
Analyze Response Times, Link Allocation, and Network Efficiency



PacketShaper & Your Network

PacketShaper brings application-based bandwidth management to a variety of business environments.

The PacketShaper 1500 series is designed for small branch offices and remote sites. The PacketShaper 2500 series handles large branch offices or mid-sized corporate data centers. The PacketShaper 4500 series is designed for larger sites such as corporate data centers. And finally, the PacketShaper 6500 and 8500 series are the highest-capacity platforms intended for the largest data centers.



PacketShaper supports multiple 10/100 Mbps and 10/100/1000 Mbps Ethernet LAN interfaces and is installed on the LAN segment that connects to a WAN router. It integrates smoothly with existing networks and requires no new protocols, router reconfigurations, topology changes, or desktop changes. PacketShaper is not a point of network failure; if it goes down or is turned off, it acts like a piece of cable. Two PacketShapers can be deployed in parallel to provide redundancy and a hot standby. An easy web-based, password-protected interface brings PacketShaper to any web browser. PolicyCenter™, a Packeteer software product, conveniently provides centralized management for large PacketShaper deployments.

Examples of Applications That PacketShaper Classifies & Controls

Client/Server CORBA Folding@Home FIX (Finance) Java Rmt Mthd MATIP (Airline) MeetingMaker NetIQ AppMgr OpenConnect- JCP SunRPC (dyn port) ERP Baan JavaClient JD Edwards Oracle SAP Internet ActiveX FTP Passive FTP Gopher IP, UDP, TCP IPv6 IRC Mime type NNTP SSMTP SSL TFTP UUCP URL Particular web browsers	Database FileMaker Pro MS SQL Oracle 7/8i Progress Directory Services CRS DHCP DNS DPA Finger Ident Kerberos LDAP RADIUS TACACS WINS whois E-mail, Collaboration Biff cc:MAIL IMAP LotusNotes- MSSQ Microsoft-DCOM (MS Exchange) Novell- GroupWise POP3 SMTP	File Server AFS CVSup Lockd NetBIOS-IP NFS Novell NetWare5 Games Asheron's Call Battle.net Diablo II Doom Kali Half-Life MSN Zone Quake I, II, & III Starsiege Tribes Unreal Yahoo! Games Host Access ATSTCP Attachmate SHARESUDP Persoft Persona SMTBF TN3270 TN5250	Legacy LAN and Non-IP AFP AppleTalk DECnet IPX FNA LAT NetBEUI MOP-DL/RC SNA Messaging AOL Inst Msnger I Seek You Chat MSN Messenger Yahoo! Messenger Misc Time Server Date-Time Music P2P Aimster AudioGalaxy eDonkey2000 Gnutella iMesh KaZaA LimeWire Mactella Morpheus MusicCity Napster Scour WinMx	Network Management Cisco Discovery ICMP by packet type Microsoft SMS NTP RSVP SNMP SYSLOG Print LPR IPP TN5250p TN3287 Push Backweb EntryPoint Marimba PointCast	Routing AURP BGP CBT DRP EGP EIGRP IGMP IGP OSPF PIM RARP RIP Spanning Tree Security Protocol DLS DPA GRE IPSEC ISAKMP/IKE key exchange L2TP PPTP SOCKS Proxy Session REXEC rlogin rsh Telnet Timbuktu VNC Xwindows	Streaming Media Multi-cast NetShow QuickTime RTP Real Audio Streamworks RTSP MPEG ST2 SHOUTcast WindowsMedia Thin Client or Server-Based Citrix Published Apps, VideoFrame RDP/Terminal Server Voice over IP Clarent CUSeeMe H.323 I-Phone MCK Commun. Micom VIP RTP RTCP T.120 VDOPhone
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Key PacketShaper Features

Feature	Description	Examples
Traffic Classification	Classify traffic by application, protocol, port number, URL or wildcard, host name, LDAP host lists, Diffserv setting, ISL, 802.1p/q, MPLS tag, IP precedence bits, IP or MAC address, direction (inbound/outbound), source, destination, host speed range, Mime type, web browser, Oracle database, Citrix published application, and VLAN. Detect dynamic port assignments, track transactions with migrating port assignments, and differentiate among applications using the same port.	<ul style="list-style-type: none"> — SAP traffic to/from a specific server — Oracle traffic to the sales database — Web traffic to e-commerce site from Netscape browser — Gnutella downloads — Passive FTP — PeopleSoft running on Citrix
Response-Time Analysis and Management	<p>Track response times, divided into server and network delays.</p> <p>Identify clients and servers with slowest performance.</p> <p>Find out who generates or receives the most traffic of a given type.</p> <p>Discover the percentage of bandwidth wasted by retransmissions. Correlate dropped packets with their corresponding applications or servers.</p> <p>View more than 30 other measured variables.</p>	<p>SAP response times:</p> <ul style="list-style-type: none"> Total Delay: 630 ms Server Delay: 210 ms Network Delay: 420 ms <p>Top Talkers for web traffic: yahoo.com, nasdaq.com, cnn.com, and espn.com</p> <p>Top Listeners: CfoPC, VpMarketingPC, DirEngineeringPC</p> <p>12% of bandwidth goes to retransmissions; jumps to 68% for a particularly overburdened server.</p>
Service-Level Agreements	Set response-time commitments in milliseconds. Measure and track service-level compliance.	SLA states that 98% of JD Edwards' OneWorld transactions should complete in 1,100ms. Actual response time averages 867ms. But only 95% complete within limits, so SLA is in violation.
Top 10	Zero in on the traffic types that generate the most traffic. Top Ten helps users spot trouble and fix it -- quickly and without a big learning curve.	46% of bandwidth goes to web browsing, 22% to music downloads, 12% to MS Exchange, and 7% to SAP.
Per-App Minimum	Protect all the traffic in one class. You specify the size of the reserved virtual link, choose if it can exceed that size, and optionally cap its growth.	Reserve a minimum of 20% of the WAN link for MS Exchange. Allow Exchange to exceed the minimum if bandwidth is available, but cap it at 60% of the link.
Per-App Maximum	Cap all the traffic in one class. Even when the traffic bursts, other applications are not impacted.	Limit FTP total to 128 Kbps in a T1 link.
Per-Session Minimum	Protect latency-sensitive sessions. Deliver a minimum rate for each individual session of a traffic class, allow that session prioritized access to excess bandwidth, and set a limit on the total bandwidth it can use.	Reserve precisely 21 Kbps for each VoIP session to avoid jitter and static.
Per-Session Maximum	Keep greedy traffic sessions in line.	Cap each FTP download at 10 Kbps.
Dynamic Per-User Minimum & Maximum	Dynamically control per-user bandwidth without need for tedious per-user configuration. Unused bandwidth is loaned to others.	Give each dormitory student a minimum of 20 Kbps and a maximum of 60 Kbps to use any way he/she wishes.
TCP Rate Control	Force a smooth, even flow rate that maximizes throughput. Reduce latency on both inbound and outbound traffic.	Measure network latency; forecast packet inter-arrival times; adjust window size accordingly; meter acknowledgement to ensure just-in-time delivery.
UDP Rate Control	Manage inbound and outbound UDP traffic to a very specific rate, guarantee precise amounts of bandwidth, and control jitter.	VoIP requires a minimum amount of bandwidth, and PacketShaper provides the precise amount to de-jitter flows and ensure reliable performance.
Denial-of-Service Attack Avoidance	Use classification and control features to contain DoS attacks. Detect and stop SYN floods or similar DoS attacks.	Detect and block ICMP variants that can plant malicious instructions. Block flows to the KeySales web server after 15,000 flows-per-minute exceeded.

Software Specifications

Classification Features

Differentiation based on:

- Application, protocol
- Subnet(s), user(s), server(s), IP Precedence, Diffserv, port, ISL, 802.1p/q, MPLS tag, VLAN, IP or MAC addresses, host speed
- URL, Oracle database, Citrix Published Application, web browser

Analysis and Reporting Features

- Application response times: server and network delays
- Network efficiency, utilization, bytes transferred
- TCP health, packets
- Top users, top applications, top web sites
- Slowest clients and servers
- Retransmissions, errors
- More than 30 other measured variables

Interoperability Features

- XML, Diffserv, IP COS, TOS, LDAP, SNMP, event-based traps
- HP OpenView and PolicyXpert, Micromuse NETCOOL, InfoVista, Concord eHealth, Aprisma Spectrum, and other third-party products

QoS Policy Features

- Bandwidth settings: Minimum guaranteed; Maximum allowed
- Choice of explicit bps, relative priority, absolute priority
- Bandwidth settings can apply to individual applications, users, groups, VLANs, or combinations
- Bandwidth settings can apply to aggregate total or each flow/session
- Diffserv and 802.1p/q packet-marking for signaling QoS in network core
- TCP Rate Control
- UDP Rate Control
- Admissions rate control

Hardware Specifications

Dimensions

- Standard 19-inch rack mount
- Height: PS 1500: 1.75 in (4.45 cm)
PS 2500, 4500, 6500, 8500: 3.5 in (8.89 cm)
- Weight: PS 1500: 13 lb (5.90 Kg); PS 2500, 4500, 6500: 16 lb (7.26 Kg); PS 8500: 30 lb (13 Kg)
- Width: PS 1500, 2500, 4500, 6500: 17.20 in (43.69 cm)
PS 8500: 17.38 in (44 cm)
- Depth: PS 1500: 14 in (35.56 cm); PS 2500, 4500, 6500: 15.3 in (38.7 cm, incl. handles); PS 8500: 17 in (43 cm)

Power

- PS 1500, 2500, 4500, 6500: 100/240 VAC, 50/60 Hz, 2A
PS 8500: 100/240 VAC, 50/60 Hz, 6A
- PS 4500, 6500: Dual, redundant, load-sharing power supplies and dual power source connections
- PS 8500: Dual, redundant, load-sharing, hot-swappable power supplies and dual power source connections

Interface Connections

- Console port: RS-232 (AT-compatible), male DB-9 connectors
- Network interface: PS 2500, 4500, 6500: 10/100 Mbps Ethernet RJ45;
PS 8500 10/100/1000 Mbps Ethernet RJ45
- PS 2500, 4500, 6500, 8500: 2 PCI slots

Device Management

- DB-9 console port
- Web-browser interface; Telnet command-line interface
- SNMP Packeteer MIB and MIB-II support

Agency Approval

- Safety: CAN/CSA-C22.2 No. 1950-95/UL 1950, IEC 60950, EN 60950
- Emissions: BSMI CNS 13438, CE EN55022, C-TICK (AS/NZS 3548), FCC Part 15, VCCI
- Immunity: EN 55024, EN 61000-3-2, EN 61000-3-3

Control Cap	Max Classes	Max Partitions	Dynamic Partitions	Max Policies	Max IP Hosts*	Max IP Flows*	Upgrades Available
PacketShaper 1500							
Monitor only	256	0	0	0	5,000	5,000/2,500	To 1500: 128K, 512K, 2M
128 Kbps	256	128	128	256	5,000	5,000/2,500	To 1500: 512K and 2M
512 Kbps	256	128	128	256	5,000	5,000/2,500	To 1500: 2M
2Mbps	256	128	128	256	5,000	5,000/2,500	None
PacketShaper 2500							
Monitor only	256	0	0	0	5,000	5,000/2,500	To 2500: 2M and 10M
2Mbps	256	128	256**	256	5,000	5,000/2,500	To 2500: 10M
10Mbps	512	256	512**	512	10,000	20,000/10,000	None
PacketShaper 4500							
Monitor only	512	0	0	0	25,000	50,000/25,000	To 4500: 10M and 45M
10Mbps	512	256	512**	512	25,000	50,000/25,000	To 4500: 45M
45Mbps	512	256	512**	512	25,000	50,000/25,000	None
PacketShaper 6500							
Monitor only	1,024	0	0	0	25,000	100,000/50,000	To 6500: 100M
100Mbps	1,024	512	5,000**	1,024	25,000	100,000/50,000	None
PacketShaper 8500							
Monitor only	1,024	0	0	0	100,000	200,000/100,000	To 8500: 1,000 or 2,000 classes
200Mbps	1,024	512	10,000**	1,024	100,000	200,000/100,000	To 8500: 2,000 classes
200Mbps	2,048	1,024	20,000**	2,048	100,000	200,000/100,000	None

*PacketShaper can support more hosts and flows, however these figures represent ideal maximums for producing optimal results; Figures represent TCP and other IP flows respectively. **If the number of static partitions is less than the maximum allowed, the unused partitions are available to be used as dynamic partitions. 1107.D 11/01 15M