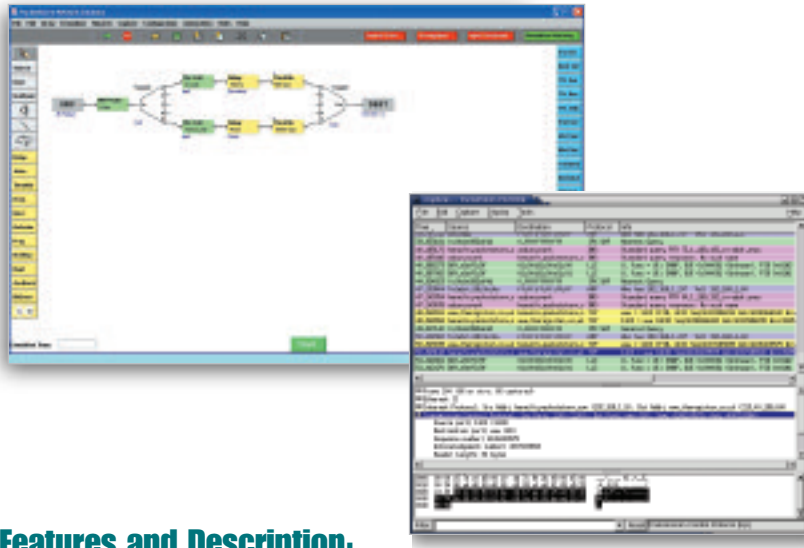




PacketStorm

IP Network Emulator

“Providing the Internet in a box”



Features and Description:

The PacketStorm IP Network Emulators reproduce the unfavorable conditions of IP Networks and WANs in a controllable and repeatable lab setting. The emulator recreates the dynamic behavior of the Internet such that any network model can be reproduced including those models that change with traffic, time, or the behavior of another traffic flow.

PacketStorm8400E

- Advanced Performance
- Four 10/100/1000 Ports
- Four SFP Ports

Hurricane II

- Superior Performance
- Five Interface Slots
- Ethernet Interfaces: Up to 1 Gbps

Hurricane

- Advanced Performance
- Five Interface Slots
- Interfaces: Up to 1 Gbps

PacketStorm2600E

- High Bandwidth Applications
- Five interface slots
- Interfaces: Up to 1 Gbps

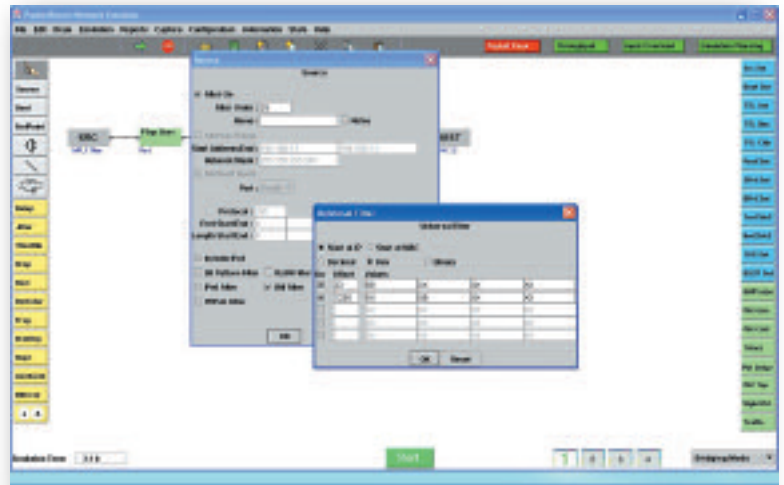
PacketStorm1800E

- Network Edge Applications
- Five interface slots
- Interfaces: Up to 155 Mbps

Packet Impairments	Packet Modifiers	Network Interfaces	Packet Filters
<ul style="list-style-type: none"> • Delay • Jitter • Drop • Decimate • Duplicate • Re-order • Throttle • Fragment • MTU • Burst Drop • Sink • Accumulate & Burst • Bit Error • MOS • Frame Relay • Insert Data • Delete Data 	<ul style="list-style-type: none"> • Source Address • Destination Address • ToS • DSCP • TTL (Set) • TTL (Decrement) • TTL (Check) • Protocol • Transport Checksum • Network Checksum • Source Port • Destination Port • Fragment (Yes) • Fragment (No) • MPLS • VLAN • MAC Address • Universal • IPv6 • Pseudo Wire Ethernet • RTP • MPEG-2 • MPEG-2 PCR 	<ul style="list-style-type: none"> • 10/100/1000 • Gigabit Ethernet • v.35 • HSSI • T1 / E1 • DS3 • X.21 • OC-3 • OC-12 • RS-232 • EIA 530A • EIA 449 	<ul style="list-style-type: none"> • Source Address • Destination Address • Source Port • Destination Port • Protocol • ToS • Diff Serv • MPLS • VLAN • Bit Pattern • MAC Address • Universal • PPPoE • MPEG-2
		<h3>Statistics</h3> <ul style="list-style-type: none"> • Bandwidth • Delay • Loss • R-factor • MOS • Delayed Factor • Media Loss Rate • Bytes • Packets 	

Advanced Filtering:

Advanced filters can address specific applications such as PPPoE, RTP, or MPEG-2. In addition, Bit Pattern and Universal filters provide the capability to filter on any field anywhere in the packet. Multiple packet fields can be combined to create a filter.



Statistics and Real Time Graphs:

The PacketStorm emulator has four statistic reporting functions: bandwidth probe, packet tap, link stats, and emulator stats. Each function can be inserted multiple times at any points within the emulator. Measurements include throughput rate (byte and packet) as well as differential delay and loss between network nodes. Statistics are updated during emulation to provide user feedback concerning their network model. In addition, real time graphs are available for all statistics.



Multiple User Interface:

The user interface is designed for ease of use while providing complete flexibility and capability. Icons are point and click to construct one or multiple IP networks. In addition, Tcl scripting allows the emulation of complex networks and the automation of sequential tests. The IP network configuration can be saved and recalled thus reducing test set-up times.

Multiple users can use the emulator at the same time. Users can reserve an even number of available ports. All functions are available to each user.

System Security & Admin:

The PacketStorm emulator supports multiple accounts. Each user account has their own password. Admin person grants different administrative permission to users. Permissions include system upgrade, remote GUI access, file transfer upload, and file transfer download. System Security and Admin is included in the Multiple User Interface option.

TIA-921 and ITU G.1050 Emulation

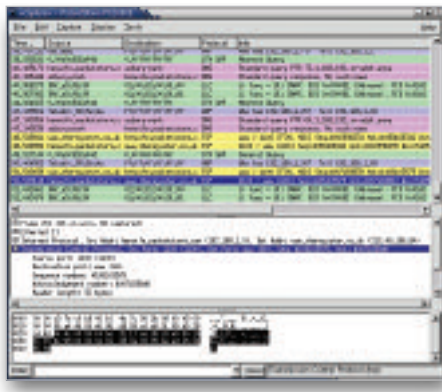
Features

- TIA-921 Standard
- ITU G.1050 Recommendation
- Custom Test Suites
- Tcl automation
- Integration with 3rd party test systems



The TIA-921 Standard and ITU G.1050 Recommendation specify an IP network model that consists of impairment combinations that are scenario based, time varying IP network impairments that provide a significant sample of impairment conditions. IP streams from any type of network device can be evaluated using this model.

The PacketStorm TIA-921 and ITU G.1050 test suite is designed for ease of use, total flexibility to emulate standard or custom impairment profiles, and complete compatibility with PacketStorm emulators. The test suite has a range of test scenarios that represent a wide range of IP networks based on service provider network information. Impairments change every millisecond to recreate time varying network conditions.

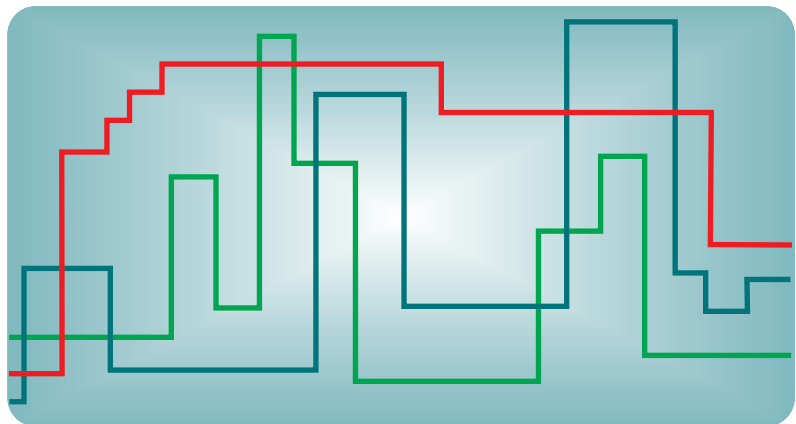


Packet Analyzer:

The PacketStorm emulator decodes over two hundred protocols (including IP RTP, iSCSI, MPLS, SIP, VLAN, WLAN, ...). The packet analyzer monitors live or captured traffic at any point within the emulator. Data can be filtered and displayed according to its protocol. Data is displayed in three formats: a packet listing, packet field decodes, and raw hexadecimal data. Multiple analyzers can capture data simultaneously.

Dynamic Emulation:

The PacketStorm emulator provides time-varying network conditions by utilizing packet timer and/or packet counter triggers. Each packet stream can have many different impairment event profiles for maximum emulation flexibility. In addition, impairment and modifier values can be changed “on-the-fly” by the user during emulation.



Loss



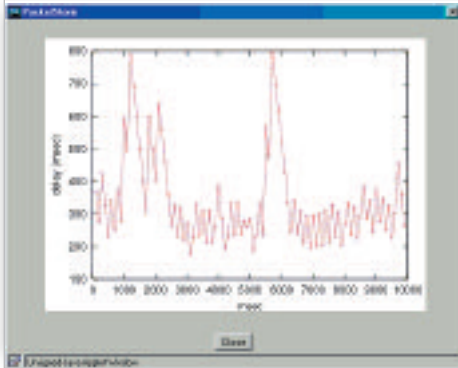
Delay



Bandwidth

Network Capture and Replay:

The Network Capture and Replay provides the capability to analyze, evaluate, and emulate an IP network. The Network Capture reports the delays and packet-lost percentages between the source node and destination node. Network Replay duplicates the time varying network conditions that affect the delays and packet-lost percentages of the network. Captured values can be played on a packet by packet or a fixed time interval basis.



IP Media Applications

Video and voice over IP is becoming more prevalent in the network. Following is a number of features designed specifically to address IP media applications: Accumulate & Burst and Delete Data impairments, MOS, RTP, and MPEG-2 modifiers, R-factor, MOS, Delayed Factor, Media Loss Rate statistics, and MPEG-2 filtering.

Layer 2 to 7 Applications:

The PacketStorm emulator impairs packets from Layer 2 to Layer 7 applications. Layer 2 applications includes ARPs and proprietary packets. Higher layer applications include: Pseudo Wire Ethernet, RTP, MPEG-2, and PPPoE. In addition, the Universal Filter and Modifier can be used for any application.

Broadcasting:

Multiple Interface Steering steers packets to specified interface ports. A filter that includes the "steering active" destination steers packets to specified ports. Interface steering overrides all routing modes (bridging, interface mapping, routing). Therefore it's possible to broadcast packets to a number of ports.

Data Replay:

Data Replay generates packets from stored Packet Analyzer or other compatible files. Data is replayed in three modes: Time Stamped, Send Fast As Possible, and User Specified Rate. Time Stamped mode recreates the original data stream with regards to inter-packet jitter. Data Replay packets can be filtered, impaired, and routed to an output port.

