



# XenaConnect

## L4-7 Gigabit test software

XenaConnect is a user-friendly application for managing Xena's Layer 4-7 Gigabit test solutions.

It is used for application emulation, performance verification, load testing, analysis and characterization of Ethernet equipment and network infrastructure.



### Core Functions

XenaConnect is a free Windows-based application for managing Xena's extreme-performance L4-7 test platforms. It is used for stateful end-to-end testing of network devices such as firewalls, switches, routers, NAT routers, proxies, load-balancers, bandwidth shapers, and more.

XenaConnect is suitable for characterizing network baseline performance for TCP. This is done by measuring connection establishment and teardown rates, number of concurrent connections/transactions, packet forwarding rate at large numbers of connections and identify performance bottlenecks.

With XenaAppMix, the platform allows users to run realistic application traffic mixes for performance verification of content-aware networks and application-aware network devices. This is extremely useful when verifying the performance of network security devices with application-awareness, such as next-generation firewalls, IPD, etc., in both network pre-production and post-production phases of enterprises. XenaConnect also allow users to replay their own captured traffic and scale up to millions of connections.

XenaConnect supports ad-hoc test execution and remote management of test equipment located in multiple locations. Xena also offers an open scripting API (XenaScripting) and automation package creation for automated testing.

### Application Emulation

XenaConnect lets you create complex traffic scenarios via XenaAppMix which is a library containing hundreds of pcap files of real-world applications. This makes it easy to verify the performance of application-aware networks and devices. With XenaAppMix's pre-defined library, different traffic mixes can be loaded and customized for various network environments, etc. enterprise environment and financial institutions.

### Connection-oriented Traffic Generation

XenaConnect makes it easy to customize TCP connections by modifying the MAC/IP/TCP headers to create variations in the generated packets.

Traffic rates are specified as a percentage of line rate, frames per second or bit-rate, and traffic generation is controlled by a load profile specifying the speed with which connections are established and terminated.

The TCP payload can be automatically generated (random, incrementing) or customized by the user via a graphical payload editor. Payloads can also be loaded from file.

### Top Features

- Wire-speed stateful TCP traffic generation and analysis
- Application emulation with real-world application traffic mixes enabled by XenaAppMix
- Replay captured traffic at scale
- Configuration and tuning of Ethernet, IP and TCP header fields for advanced traffic scenarios
- Stateful TCP connection
- HTTP get/put/head/post
- Extensive live stats and test reports
- Configurable allocation of processing resources to Ethernet test ports
- Wire-speed traffic capture
- Switched and routed network topologies, TCP proxy and NAT support
- Export packet capture to industry standard pcap/Wireshark



## Traffic Replay

XenaConnect allows users to replay their own captured network traffic on the test networks and devices. The replayed traffic can be scaled up to millions of connections for extreme performance verification. Users can define how to duplicate the captured connections/transactions, i.e. with unique MAC and IP addresses.

## Generic Load Testing

Using XenaConnect, test engineers can quickly generate millions of TCP flows with specified load profiles and configurable IP/TCP/Payload parameters. Real time statistics and test reports provide an overview of the system or device characteristics.

## Multi-user and Port Reservation

XenaConnect supports multi-user environments at the level of per port reservation. Packet Engines (PE's) can be reserved and allocated individually, depending on the test scenario, for full operational flexibility and performance.

## Automated Report Generation

XenaConnect includes an automated report generation function that makes it easy to document results as attractive, simple-to-view PDFs.

## API Scripting Made Easy

XenaScripting is a text-based Command Line Interface (CLI) API that makes test automation easy to script from any scripting environment that supports TCP/IP.

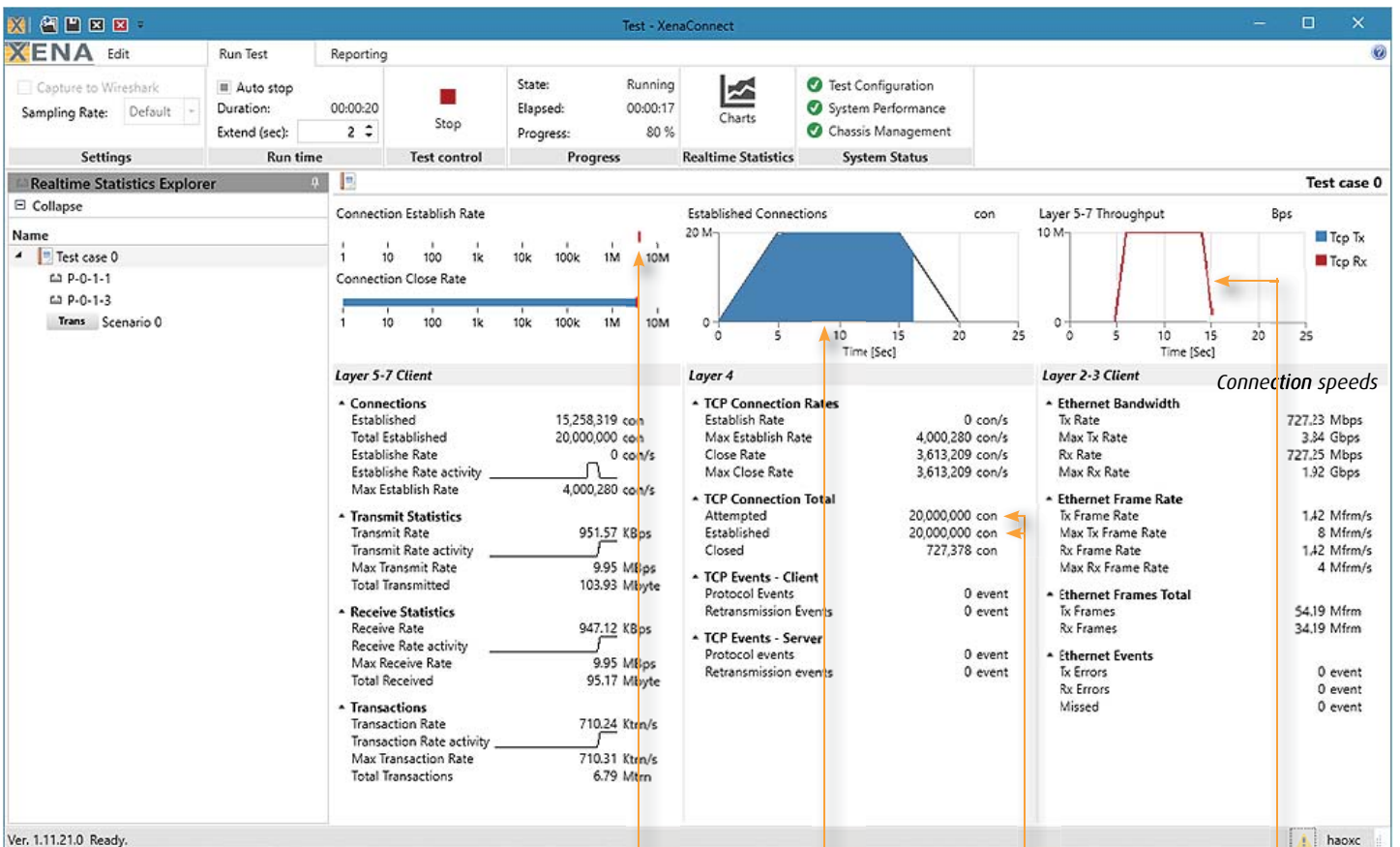
## Automated Package Creation

Automated Package Creation allows users to generate Python scripts for automated testing. The script contains all the configurations of a selected test case. Test engineers can first create the test case using XenaConnect UI and then save it into a package for future testing.

## Browser-based UI

For additional testing convenience, XenaConnect can be used via XenaWeb, enabling engineers to conduct tests via any HTML5-based browser.

Screenshot from XenaConnect



Connections Per Second (CPS)

Layer 5-7 throughput graph

Real-time graph for rapid analysis

Number of attempted and established connections



## Functional Specifications

### Application Emulation

#### Protocol-oriented

- Stand-alone application-layer protocol traffic, e.g. HTTP/S, IMAP, MQTT, SMB, FTP, FIX, etc.

#### Application-oriented

- Application traffic with various protocols, e.g. email, web browser, IoT, etc.

#### Application Mixes

- Application traffic mixes for different network environments
- Enterprise mix
- Web mix
- Finance mix
- Data center mix

### Traffic Replay

- Replay captured traffic from industry-standard pcap files
- Scale up connections to millions
- Configurable traffic composition
- Up to 50 pcap files upload per port
- Up to 1024 connections per pcap, and 2M TCP segments in pcap per port
- Up to 200 concurrent replay scenarios
- Average upload pcap size: 1GB

### TCP Connection Generation

#### TCP Applications

- Open/close – for CPS and CC testing
- Bulk data transfer – for emulation of

raw TCP network traffic

#### TCP Application Behavior

- Upload (client -> server)
- Download (server -> client)
- Bidirectional (server <-> client)

#### Basic L4+ Emulation

- HTTP GET/HEAD request/response
- HTTP PUT/POST request/response
- Custom HTTP header
- Request/response protocol exchange with custom payload & repeat option

#### TCP Payload

- Finite / Infinite lengths
- Custom/increment/random

#### Bandwidth Specification

- Per Connection Group
- Loads specified in percent of line rate

#### TCP Options and configuration

- MSS, window scale, window size

#### MAC/IP/TCP Configuration

- Ethernet address
- VLAN ID/Priority
- IP address (src/dst)
- IP DS/ECN
- TCP port (src/dst)

### Automated Package Creation

- Generate Python script of selected test case for automated testing

### Control Protocols

- ARP reply from hosts
- ARP request for hosts/GW's
- ICMP Echo replies from hosts

### Per Port Statistics

- Runtime and post-run stats
- Packets/bytes (Rx/Tx), packet/byte rates (Rx/Tx), FCS errors
- Packet checksum errors (IP + TCP)
- Protocol counters (IP, TCP, ARP, ICMP)

### Per Connection Group statistics

- Runtime and post-run stats
- TCP state counters
- TCP state rates
- Total Rx/Tx packets/bytes
- TCP Retransmissions counters
- Packet size distribution
- Histograms
- Connection establishment/ teardown times (max/min/avg)

### Network Topologies

- Switched and routed networks
- NAT routing
- TCP Proxy

#### Minimum System Requirements:

- XenaConnect (approx. 32MB) can be installed on PCs running MS Windows 7 or newer
- Microsoft .NET version 4.0 is required

#### Download

- [www.xenanetworks.com/download/](http://www.xenanetworks.com/download/)

#### Further resources:

- [www.xenanetworks.com/resources/](http://www.xenanetworks.com/resources/)



Xena Networks is an award-winning manufacturer of advanced Gigabit Ethernet test and measurement solutions.