



Key Benefits

- Faster time-to-deploy new networked applications and services
- Greater confidence that networked applications and services will perform as required once deployed
- Reduced risk by identifying network related issues before deployment
- Improved Quality of Experience / User Satisfaction
- Lower support/IT costs with fewer post deployment issues
- Improved competitive advantage by avoiding over or under engineering a solution
- More efficient and relevant trouble shooting with repeatable and automated testing

Applications

- Networked Applications
- Corporate LAN/WAN Emulation
- Real time Apps: IPTV and VoIP
- Circuit Emulation, Timing over Packet
- WAN Acceleration
- Business Continuity
- Disaster Recovery
- Server Consolidation/Migration
- Storage Extension
- Wireless / Mobile
- Satellite Network
- High speed testing – 10Gig, iWARP
- Interoperability testing
- SLA planning and verification

Customers

- Enterprise
- Application Developers
- Network and Storage Equipment Manufacturers
- Service Providers
- Systems Integrators
- Government
- Research / Education
- IC Manufacturers

Ethernet Network Emulators: GEM, XGEM



Overview

Anue Systems Network Emulators replicate the delays, bandwidth and impairments found on the Internet and Enterprise production networks. Our hardware-based architecture provides the performance and repeatability necessary to authentically emulate real world networks. Anue Systems Network Emulators are used in test labs to demonstrate performance and validate new or existing network applications, services and devices.

Highlights

- 10GigE, GigE and 10/100Mbps interfaces – all offer true line rate performance
- Precisely emulates impairments that occur on Ethernet Networks including:
 - Fixed and Variable Delay (PDV, Jitter)
 - Packet Drop, Reorder, Duplication, Modification, CRC Errors and more
- Supports simultaneous emulation of multiple network paths and classes of service through Network Profiles each with unique bandwidth and impairments
- Transparent and Router mode operation with 16 Virtual Ports per interface
- Dynamic impairment and delay changes without data loss or test restart
- Standards-based Network Impairment suite per MEF-18, ITU-TG.8261 TIA-921 and ITU-T G.1050
- IPTV – Ability to target I, P and B frames in H.262 or H.264 for impairment
- Capture and Replay
 - Line rate data capture; triggers and filters available
 - Replay data files; with or without impairments and choose bandwidth
- Profiler logs live production network impairments including delay and drop
 - Precisely replay the dynamic conditions found on the live network in your lab
- Test automation via HTML GUI and Tcl API scripting
- Professional reports for review and presentation of graphed test results
- Support for all proprietary and standard L3 – L7 protocols including IPv6
- Jumbo frame support – infinite size (12K bytes for reorder and duplication)
- Simple “drag and drop” user interface



Features

Supported Interfaces

Line rate performance is possible from 10Mbps through 10Gbps Ethernet regardless of incoming packet size.

- GEM – 10/100/1000 Base-T and optical GigE
- XGEM – 10Gig Ethernet with Optical and Copper CX4

Network Profiles

Network Profiles support emulating multiple “network clouds” per interface. For example, when emulating different paths through a network or different classes of service.

- Each Profile is defined by any combination of VLAN tag, MPLS label, MAC/IP address (IPV4 , IPV6), TCP/UDP port or any value up to 2000 bytes within the Ethernet frame
- Define unique bandwidth, delay and impairments per Profile

TIA-921 & ITU-T G.1050 Network Models - GEM

International standards based network models designed to test multimedia applications under real world conditions. Models are based on statistical information gathered from leading Service Providers around the world.

- Characterize performance or validate your solution against one or all 1064 dynamic scenarios for increased confidence
- Create custom scenarios

MEF-18 Test Suite

- Repeatable network models based on ITV-T G-8261 for MEF-18 certification tests
- MEF-18 synchronization tests 6.1-6.8

Capture And Replay

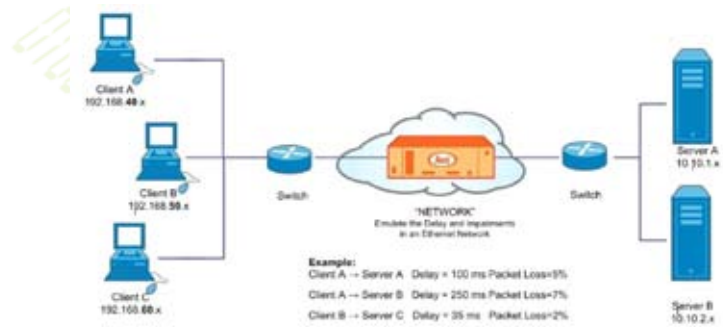
Enables inline capturing of user specified test traffic for further viewing and analysis of the data packets. User can upload and replay standard data files for traffic generation as stand alone or background traffic source.

- Filtered or unfiltered data capture at up to line rate
- Trigger capture on incoming or outgoing event
- Replay any PCAP file with control over bandwidth, with or without impairments
- Independent Capture & Replay controls per Network Profile

Profiler

Stand alone software application which displays and records the delay and impairment conditions of your live production network over time.

- Record conditions for more than 30 days
- Supports 50 simultaneous log sessions per instance
- Graphed results showing delay and loss over time
- Upload log files to GEM for network emulation replay
- Optional ability to upload Profiler logs to GEM emulator for replaying exact conditions found on live production network



Network Playback

Provides ultimate control and flexibility in creating dynamic custom network impairment scenarios. Create any impairment distribution needed with per packet control.

- Define custom impairment table with delay, drop, reorder and other impairments
- Table entries are assigned on a per packet or time basis
- Upload extremely large impairment tables for multi-day scenarios or low frequency impairment content

IPTV

- Selectively drop H.262/H.264 I, B and P frames over IPv 4/6

Delay

- Emulates static or variable delay occurring during transmission of Ethernet data through a network
- Introduce frame or packet delay variation (jitter)
- Optional delay extenders are available for extra delay

Impairment Highlights

- Fixed and random impairment distributions
- Random and filtered or targeted impairments
- Loss of Signal, Loss of Frame Synchronization
- PCS, MAC and higher layer bit errors, CRC Corruption
- Frame/Packet Drop, Reorder, Duplication, Modification
- Bandwidth Policing per Metro Ethernet Forum and Shaping

**Available Impairments are Emulator Load specific.*

Dynamic Search Filter (DSF) - GEM

- Search entire TCP/UDP payload for a user defined string pattern (up to 64 bytes) to trigger an impairment event
- Define an impairment counter (prevents a TCP timeout)

Statistics/Alarms

- Real time RX stats - disparity, code, sync and block errors, invalid block IPG and idle errors, bandwidth stats and more
- Stats for impairments introduced at output port
- Indicates alarms for Loss of Signal (LOS), Loss of Lock (LOL), Loss of Frame sync (LOF), Code and disparity errors
- Detailed logging of blade and Network Profile statistics
- Graphical reports can be generated to pdf for review