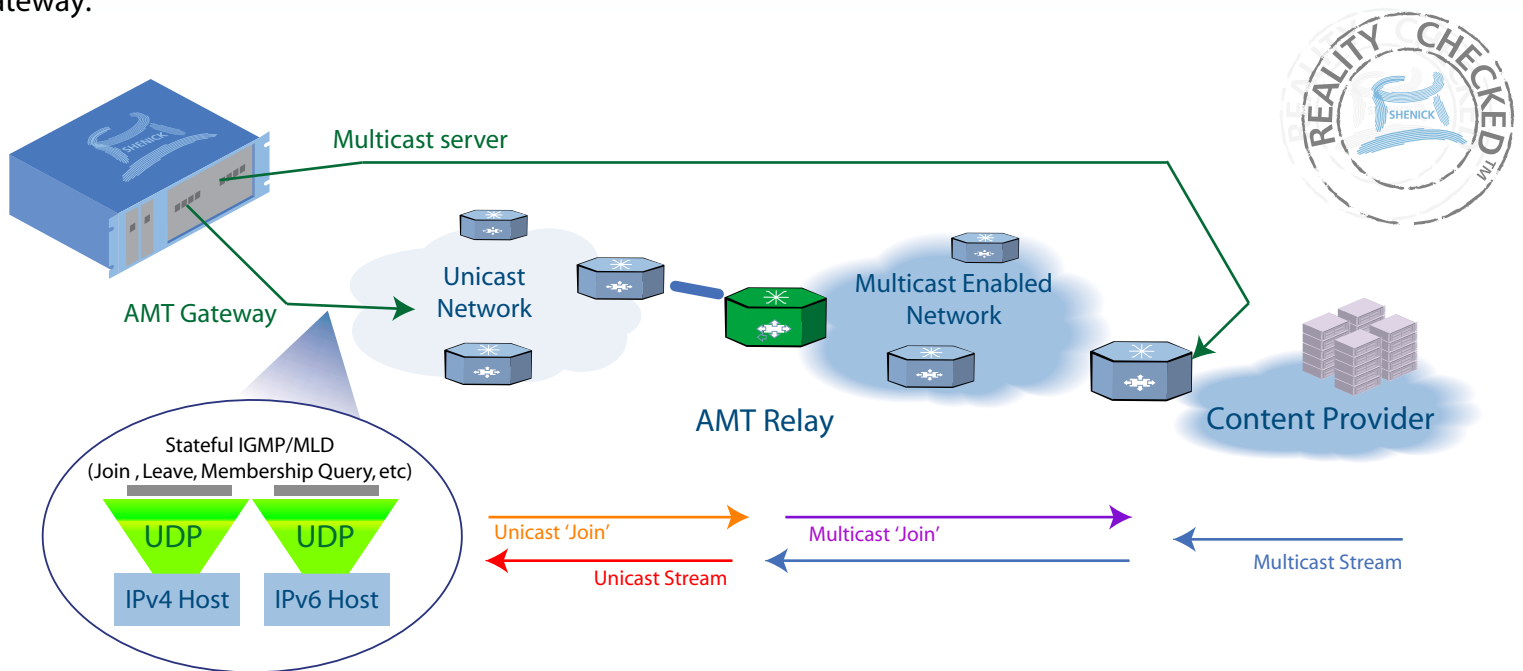




# Testing Automatic Multicast Tunneling (AMT) with diversifEye™

AMT delivers multicast streaming to parts of the network not yet equipped for native IGMP and MLD protocols using a unicast approach. Testing the scalability and performance of AMT delivery requires a per flow approach.

diversifEye is the only per flow test solution which provides emulation of AMT gateways with performance analysis on both the tunnel and streamed content. A key benefit of diversifEye is the ability to emulate multiple content requests per emulated gateway, plus measure quality on each and every one of the delivered streams per emulated AMT gateway.



## Sample AMT Gateway and Relay Test Scenarios

### Application Performance Testing -

Emulate AMT gateways of mixed IPv4 and IPv6 host devices. Request multiple multicast streams with a single emulated AMT Gateway, connect to real or emulated Multicast services. Examine each and every tunneled flows performance (Tunnel established, time to establish, etc). Assess content quality (Video MOS, Join / Leave times, etc) per flow per emulated AMT gateway.

### AMT Relay Scalability -

Emulate and analyze the impact of a high volume of IGMP/MLD join requests for unique streams, examine performance of tunnel throughput. Assess the impact of AMT Discovery and Advertisement messages on tunnel bandwidth utilization.

### Service Reliability-

Emulate tens of thousands of AMT gateways with multiple stream requests. Use failure mode testing to determine if issues occur at discovery phase, query phase or Mid-stream. Examine service reliability with large surges in channel change requests.



The key benefit to testing an AMT transition strategy with diversifEye is the ability to test and measure performance on each and every unique flow in the tunnel. diversifEye provides both AMT gateway and Multicast Server emulation.

diversifEye's per flow architecture enables users mix both IPv4 and IPv6 clients in the same test, providing concurrent testing of IGMP and MLD applications for AMT.

diversifEye is the only per flow test and measurement solution enabling thresholding and event notification, along with offering integrated network, application and security attack emulation and performance analysis for IP flows.

The diversifEye per flow architecture provides unrivaled control on a per flow basis for load testing. diversifEye's traffic profiling may include a mix of encrypted and non encrypted application flows.

The Shenick diversifEye supports per flow test, measurement and thresholding of :

### Analysis Software Overview

- DHCPv4 & DHCPv6, PPPoE
- VLAN & Double Tagging (Q-in-Q) with priority
- Concurrent IPv4 and IPv6 application flows
- IGMP V1, V2, V3 / MLD V1, V2
- AMT (Automatic Multicast Tunneling)
- Voice and Video Quality Metrics
- Telepresence
- RTSP (Video on Demand)
- VoIP (SIP & RTP)
- GTP Tunneling
- DNS
- HTTP
- HTTP adaptive streaming
- FTP
- SMTP / POP3
- P2P
- TWAMP
- Attack Traffic - Spam / Viruses / DDOS
- PCAP file replay (>1GB)
- IPSec / SSL / TLS / DTLS

### Why use diversifEye to test AMT Relay performance?

- **Real Video**                                      diversifEye's emulated AMT Gateway can request content from 3rd party content servers. Measure performance of unicast tunnel and video quality including MOS scores.
- **AMT Relay Stress testing**                      Create stateful request flows with random cycling of AMT gateways joining or leaving channels, determine the impact on the AMT Relay with thousands of clients.
- **Quality of Experience**                            Ensure in real-time, on a per AMT Gateway that each of the requested tunnels is established delivering multiple streams. Use thresholding to show any failed tunnels.
- **Compare to true Multicast**                      diversifEye provides concurrent AMT and IGMP/MLD content requests, enabling users compare performance of the true multicast network versus the unicast network.
- **Event Notification**                                diversifEye enables thresholding on any of the AMT or Multicast metrics available, when the value crosses the assigned level an event notification is generated automatically.

### diversifEye Summary Features and Benefits

- Network QoS and per flow QoE granularity for individual emulated client users across multiple devices and application traffic flow types.
- Latest protocols supported from Data Applications (HTTP, FTP, POP/SMTP, P2P), Video (Adaptive Streaming, AMT, IGMP/MLD, RTSP) and Voice (SIP/RTP, H.323, Telepresence TIP) all in a single test package.
- TCP Replay Substitution, automatically varies payloads so no two PCAP sessions are the same.
- Support for IPv4, IPv6 and /or Dual-Stack Lite.
- DHCP emulation, PPPoE and IpoE Service Interoperability Scenarios. Emulate per device MAC and IP address assignments.
- Security Attack Mitigation support for DDoS style attacks SYN/RST/UDP/ARP floods, reflective DDoS attacks, Ping of death, etc.
- Large memory space (>1GB) for PCAP replay for Instant Messaging or Web Mail.
- Client and server support on a single blade within one chassis with complete flexibility on port allocation.
- Full support for multiple daisy chained chassis all controlled from a single GUI.

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