Anritsu

IP Multicast Measurement

MU120131A/132A IP Multicast Measurement

MD1230B, MP1590B/91A
Data Quality Analyzer, Network Performance Tester

The rapid spread of broadband networks is leading to a new era of IP-network based services. One of the most important services is IP-TV using IP multicast technology. Anritsu's MD1230B and MP1590B/91A are general-purpose IP testers that also support QoS evaluation of multicast networks.

1. Background

With the rapid growth of broadband network environments, subscribers and providers are increasingly demanding and providing rich-content services including graphics, Voice, and video. However, because provision of rich content requires transmission of very large data amounts, there is concern about the loads on servers supplying the content and on the distribution networks. In video streaming services typified by IP-TV, the increasing numbers of subscribers and rising server loads mean that the old unicasting technology (one stream to one subscriber) is no longer adequate. As a result, more providers are using multicasting technology (one stream to many subscribers) as a way of reducing loads on networks and servers.

Combining Anritsu's MD1230B and MP1590B/91A with the MU120131A 10/100/1000M Ethernet Module and the MU120132A Gigabit Ethernet Module offers providers the ideal solution for verifying and evaluating multicasting networks.

2. Applications

Frequent channel switching (Zapping) on IP-TV causes extremely high loads on routers and the network. Zapping verification is a very important item in assuring and evaluating the quality of multicast services.
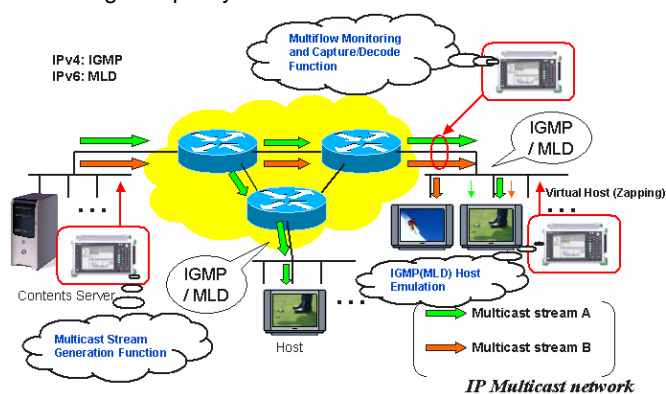

Fig. 1 Multicast Network

➢ **Three MD1230B and MP1590B/91A Functions**

The MD1230B and MP1590B/91A have the following three

functions for supporting multicast service quality assurance and evaluation.

■ **Multicast Stream Generation Function**
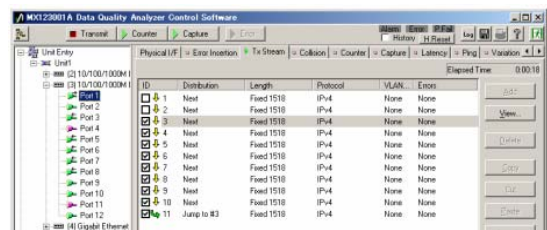This generates multiple channel streams (multiple multicast addresses).

Fig. 2 Multicast Stream Generation Function

■ **Multiflow Monitoring Function and Capture/Decode Function**
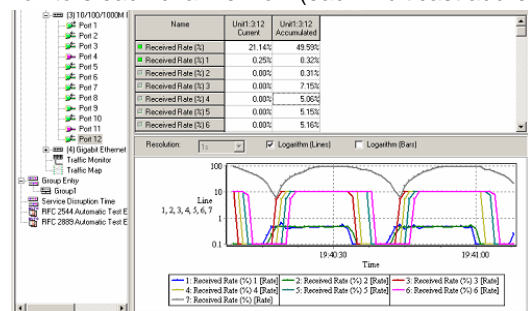This monitors each channel flow (each multicast address)

Fig. 3 Multicast Flow Monitoring Function

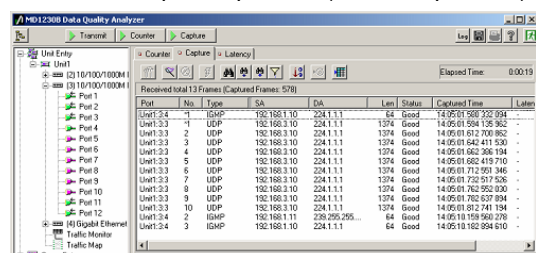and decodes the captured packets (multicast protocol).

Fig. 4 Multicast Capture/Decode Function

■ IGMP/MLD Host Emulation Function[*1]

This emulates multiple hosts. The channel switching (Zapping) load is generated using the Join/Leave function.
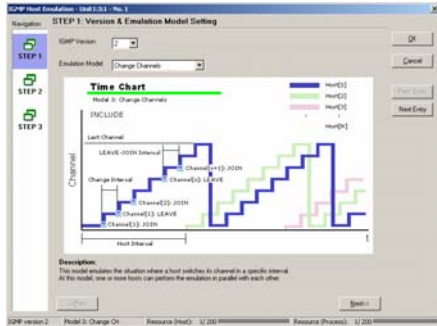
*1 Requires IPv6 expansion option

Fig. 5 IGMP/MLD Host Emulation Function

➤ Measurement Example

This example shows how to verify and evaluate performance under a high load environment caused by channel switching (Zapping).

■ Switching Time Measurement

This measures the time from switching the channel until the video is streamed.
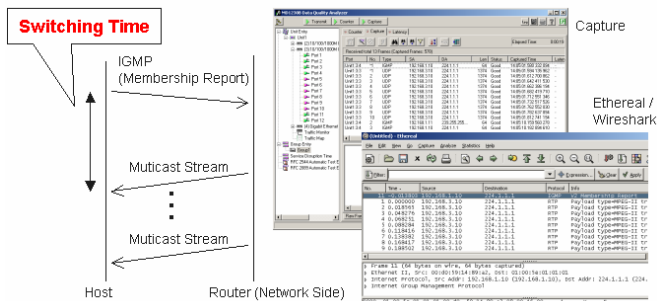

Fig. 6 Channel Switching Time Measurement

■ Delay Time Measurement

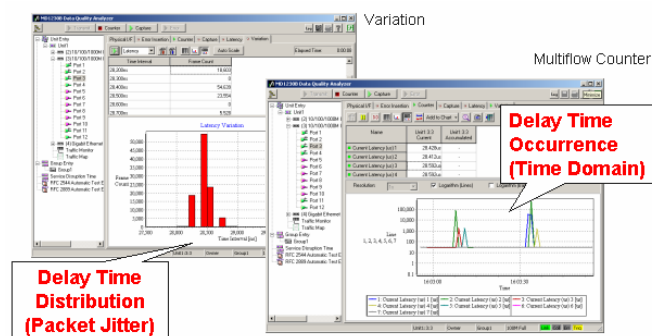This measures the delay time under high load conditions caused by Zapping.

Fig. 7 Delay Time Measurement

■ QoS Assurance

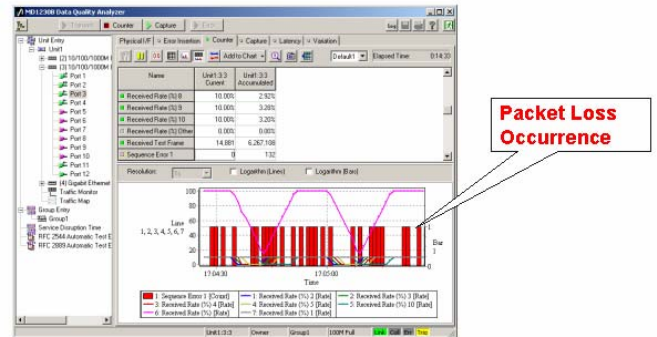This checks the impact of packet loss on quality of service (QoS).

Fig. 8 QoS Assurance

3. Product Features

- ■ Supports IPv4/IPv6 multicasting
- ■ Supports IGMPv3/MLDv2 protocol
- ■ Multiple virtual host operation supporting verification without previous need for large number of terminals, cutting costs
- ■ Automated virtual host increase/decrease and channel changing for easy creation of high load conditions that are hard to create intentionally on an in-service network

4. Summary

The MD1230B and MP1590B/91A simulate a server and connected hosts to verify and evaluate the multicast network before the start of service. Testing that previously required large amounts of test equipment and personnel can now be done quickly and at low cost, offering providers the ideal solution for assuring multicast QoS.

Composition	Main Frame:
	    MD1230B, MP1590B, MP1591A
	Plug-in Modules:
	    MU120131A or MU120132A
	Software Version:
	    Ver. 7.0 or later

Protocols	IPv4: IGMPv2, IGMPv3 IPv6: MLDv1, MLDv2 Note: Support for IPv6 requires the IPv6 expansion option.

Host Emulation	No. of Virtual Hosts:
	    Up to 2000 (IGMPv2/MLDv1)
	    Up to 200 (IGMPv3/MLDv2)

5. Ordering Information