Frame Relay over HSSI Test Software

For the HP Broadband Series Test System

E6279A

New

Playback Capture: Port 5:1

```
13:09:56.93773568  Port 5:1  Rx  FR Sig. LMI Q.933
    1   00001000   Protocol Discriminator      : User-network call control
    2   00000000     Call Reference Value       : 0
    3   01111101     Message Type               : STATUS
    1   01010001   Information Element ID        : Report Type
    2   00000001     IE Length                  : 1
    3   00000001     Report Type                : Link integrity verif. only
    1   01010011   Information Element ID        : Link Integrity
    2   00000010     IE Length                  : 2
    3   00000010     Current Sequence Number     : 2
    4   00000001     Last Received Seq Number    : 1
13:09:56.93781760  Port 5:1  Rx  LAPF
    Header:  Data Link Connection Identifier   0
             Address Size                      2
             Command/Response Bit              0
             Forward Congestion Notification   0 (Not Congested)
             Backward Congestion Notification  0 (Not Congested)
             Discard Eligibility               0 (No Discard)
             DLCI/DL-CORE Control Indicator    0 (DLCI)
             Frame Type                        UI (Unnumbered Information)
             P/F                               0
    Info:    08 00 75 51 01 01 53 02 02 01              ..uQ..S...
    FCS:     Frame Check Sequence              0x1347
13:09:56.93781760  Port 5:1  Rx  FR Sig. LMI Q.933
```

Event 2 of 10

Product Features

- Extensive PVC testing capability
- LMI decoding and emulation
- Extensive PDU editing capability
- Operates at up to 52 Mb/s
- Can be combined with Frame Relay SVC decodes or LAN decodes

The E6279 Frame Relay Over HSSI Test Software functionally verifies the correct transmission of Frame Relay traffic at speeds up to 52 Mb/s over permanent virtual circuits (PVCs). This software exploits the Broadband Series Test System's unique architecture designed specifically for high-speed testing, making it the most powerful R&D high-speed Frame Relay protocol tester available to designers, manufacturers and providers of high-speed Frame Relay products, services and networks.

The E6279 supports both real-time operation by capturing and decoding traffic as it occurs, and an off-line mode whereby captured traffic is played back from memory or a file. The decoded English-language display uses the same terminology found in standards documents. Errors are automatically detected and highlighted on-screen, complete with explanatory messages. Protocol data units can be displayed with the live viewer, or captured to memory.

Triggers and filters help you eliminate superfluous traffic and detect intermittent events -- increasing your testing productivity by focusing on specific DL-CORE frames of interest. For example, you can set up triggers to start capturing when a specified event occurs.

The E4204 HSSI Line Interface module provides additional layer 1 test functionality such as configuring and asserting physical interface leads. See HP publication 5965-5971E for further information.

Frame Relay over HSSI
Test Software
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Key Features:

Real-Time Monitoring and Analysis

The BSTS has everything you need to see exactly what happened, and when. View bidirectional frame relay traffic in real-time at full bandwidth, or capture frames for off-line analysis.

Frames are marked as "Tx" or "Rx" when displayed. Timestamps correlate events between ports when using multiple test ports.

Sophisticated filters and triggers let you view only traffic of interest, and catch intermittent events. Define up to eight different patterns of 48 octets in length for pattern-matched triggering.

LMI decodes for Q.933 Annex A, T1.617 Annex D, original LMI, and NTT LMI are provided. Encapsulated LAN over Frame Relay (RFC 1490) protocols can be tested using the E4215B LAN Protocols Test Software. LAPF decodes are also included. These are required for Frame SVC operations using the E6278A Frame Relay SVC Protocol Viewer test software.

Real-time Statistics

Count frames and matches of user-defined data patterns. Results can be viewed in numerical, line graph or bar graph formats.

Traffic Generation

Generate up to eight independent streams of data; each stream can contain a protocol data unit (PDU) or a sequence of protocol data units. You can set the frame rate separately for each stream. Includes a DL-CORE PDU editor to define headers, payloads, valid or invalid frame check sequences (FCS), and normal or aborted frames. You can link together PDUs to form complex sequences.

LMI Emulation

Includes a user program to automatically generate protocol-correct responses as per Q.933 Annex A, T1.617 Annex D, and original LMI.

Test Both Sides of Frame Relay/ATM Interworking Devices

Combine the E6279 with other modules from the BSTS' extensive range of line interfaces and Test Software to test both sides of a Frame Relay / ATM interworking device or function -- all with one tester!

Friendly User-Interface Makes Complex Testing Easy

The BSTS' state-of-the-art graphical user interface makes it easy to set up, run, save and restore tests. Includes a C-language user programming environment to automate testing or create extremely complex test scenarios.

Typical Applications:

Frame relay has been widely adopted as the access technology used to interconnect local area networks over geographically large service areas. Although most frame relay services are currently offered at speeds of 2 Mb/s or less, some applications require higher bandwidth for better performance. The high speed serial interface (HSSI) is utilized to allow the transport of frame relay traffic at higher speeds up to 52 Mb/s. The E6279 Frame Relay Over HSSI Test Software facilitates testing Frame Relay PVC operation over a HSSI interface.

Frame relay is being increasingly used to provide access to asynchronous transfer mode (ATM) backbones. This requires an internetworking function or device between the two technologies. It is obvious that testing efficiencies can be achieved when a single test system can analyze frame relay access, ATM backbones, and both sides of an interworking device.

The E6279A test software will be of interest to:

- Frame relay & ATM switch manufacturers who need traffic generation and statistics for performance and functional testing
- Frame relay access device manufacturers making products such as routers and edge switches which incorporate HSSI interfaces
- Network equipment manufacturers of high-speed (e.g. 45 Mb/s DS3)   frame relay devices

User Programming Environment

You can automate repetitive testing or create complex test scenarios by developing your own programs with the UNIX®-based C-language programming environment included with the BSTS.

Simply link your programs to the supplied library of test routines. The user programming library supports DL-CORE encoding and decoding functions, transmission and capture of protocol data units, and provides programmatic support of all functions available through the graphical user interface. In-depth user's and programmers' manuals document test software features and the test routine libraries.

E4200/E4210 Broadband Series Test System (BSTS)

The E4200/E4210 Broadband Series Test System (BSTS) is well suited to R&D engineering, product development, field trials and quality assurance. The industry-standard R&D performance and conformance tester that offers the most transmission and protocol technologies on a single platform, the BSTS is well suited to Frame Relay/ATM interworking testing.

You can test both sides of an interworking function or device with a single BSTS, since timestamps and statistics are synchronized between all modules in a BSTS chassis, allowing correlation of events and times between physical ports.

Configuration & Use With Other BSTS Line Interfaces, Hardware Modules & Test Software

The E6279 Test Software executes on an E4209A or E4209B Cell Protocol Processor. It requires an E4204A HSSI Line Interface.

Warranty & Support Options

HP Broadband Series Test System software and firmware products are supplied on transportable media such as disk, CD-ROM or integrated circuits. The warranty covers physical defects in the media, and defective media is replaced at no charge during the warranty period. When installed in an HP Broadband Series Test System, the software/firmware media has the same warranty period as the product

This test software has no components requiring calibration.

Product Numbers

- **E6279A** Frame Relay Over HSSI Test Software
- **E4206A** T1/E1 Frame Processor
- **E4207A** V-Interface Frame Processor
- **E4209B** Cell Protocol Processor
- **E4216A** Frame Relay Test Software
- **E4200B** BSTS Form-7 Transportable Chassis
- **E4210B** BSTS Form-13 Mainframe Chassis
- **E6278A** Frame Relay SVC Protocol Viewer
- **E4215B** LAN Protocols Test Software
- **E4204A** HSSI Line Interface

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For more information

For an introduction to the modular Broadband Series Test System, please request the *BSTS Product Catalog*, HP publication 5965-4721E or visit the BSTS web pages at http://www.hp.com/go/bsts.

The *BSTS Ordering Guide*, HP publication 5964-0393E, helps you determine the appropriate system configuration for your testing needs. Technical specifications detailing other dedicated test modules and test software packages for the BSTS are also available.

How to Find Out About Other HP Products, Publications & Services

For more information on Hewlett-Packard Test & Measurement products, publications or services, please call your local Hewlett-Packard sales office. A current listing is available via Web through AccessHP at http://www.hp.com. If you do not have access to the internet, please contact one of the HP centers listed below and they will direct you to your nearest HP representative.

United States:

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