# Frame Relay SVC Protocol Viewer

For the HP Broadband Series Test System

E6278A



## Product Features

- FR SVC decoding according to several variants
- Extensive real-time capabilities
- Can be used in conjunction with Frame Relay PVC Test Software
- Operates over any of the supported Frame Relay stacks

## The E6278A Frame Relay SVC Protocol Viewer

The E6278 Frame Relay SVC Protocol Viewer test software decodes and displays signalling messages in order to functionally verify switched virtual circuit (SVC) applications.

The E6278, in conjunction with E4216/E6279 (for PVC testing functionality and Layer 2 FR handling), supports both real-time operation as traffic is captured, 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 or ATM cells of interest. For example, you set up triggers to start capturing when a specified event occurs.

## Key Features:

### Real-Time Monitoring and Analysis

View frame relay SVC signalling messages in real-time, or capture them for further analysis. 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. The BSTS has everything you need to see exactly what happened, and when.

**Test Both Sides of Frame Relay/ATM Interworking Devices**

Combine the E6278 with other modules from the BSTS's extensive range of line interfaces and Test Software Applications to test both sides of a Frame Relay / ATM interworking device or function. Use the E4214 UNI Signalling and E4217 NNI B-ISDN Signalling test software packages to generate ATM signalling messages, route them to your interworking device, and then see their frame relay equivalent with the E6278 -- all with one tester!

**Friendly User-Interface Makes Complex Testing Easy**

The BSTS's 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. Initial frame relay networks used permanent virtual circuits (PVCs) which were provisioned by the service provider. However, demand for videoconferencing and other multimedia services which do not require a permanent connection, or require switched access to destinations not provided for via PVC, has accelerated the development of the next generation of frame relay, which uses switched virtual circuits (SVCs) to dynamically set up and tear down connections.

Equipment manufacturers and network operators who provide frame relay equipment or frame relay/ATM internetworking devices need to verify that signalling protocol implementations are functionally verified and meet design specifications and interoperating standards. The E6278 Frame Relay SVC Protocol Viewer software facilitates testing these aspects through protocol decoding with automatic error isolation.

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

The E6278 requires layer 2 Frame Relay functionality provided by the E4216A Frame Relay, or E6279A Frame Relay over HSSI Test Software. Unlike most other BSTS Test Software Applications, the E4216A can be executed on a Frame Processor module or Cell Protocol Processor module.The E6278 can therefore be used with any of the following configurations:

- E4216 Frame Relay Test Software, E4209 Cell Protocol Processor with appropriate BSTS physical line interface
- E4216 Frame Relay Test Software and E4206 T1/E1 Frame Processor (has integral physical interfaces)
- E4216 Frame Relay Test Software and E4207 V-Interface Frame Processor (has integral physical interfaces)
- E6279 Frame Relay over HSSI Test Software, E4209 Cell Protocol Processor, and E4204 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

- **E6278A** Frame Relay SVC Protocol Viewer
- **E4206A** T1/E1 Frame Processor
- **E4207A** V-Interface Frame Processor
- **E4209B** 0-155 Mb/s Cell Protocol Processor (CPP)
- **E4216A** Frame Relay Test Software
- **E4200B** BSTS Form-7 Transportable Chassis
- **E4210B** BSTS Form-13 Mainframe Chassis
- **E6279A** Frame Relay over HSSI Test Software
- **E4204** HSSI Line Interface

# Technical Specifications

### Real-Time Dual-Port Monitoring.

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|---|---|
| Multiport Monitoring | • Dual-ports when using E4206 Frame Relay Frame Processor or E4207 V-Interface Frame Processor modules<br>• Synchronized timestamps correlates events from two physical ports<br>• Protocol viewer works with live traffic or plays back captured data<br>• 4 MB capture buffer per port (when used with an E4206 or E4207 Frame Processor modules); 8 MB capture buffer when used with an E4209 Cell Protocol Processor |
| Modes | • Passive monitor, Network termination (emulate network), and Terminal equipment (emulate user modes when using E4206 Frame Relay Frame Processor or E4207 V- Interface Frame Processor modules<br>• UNI and NNI modes when using E4209 Cell Protocol Processor and ATM line interface modules |

### Decode Displays

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| Summary Mode | • Displays a single line description of each PDU |
| Detailed Mode | • Displays a multi-line descriptionof each event with field-by-field decoding; includes header/trailer and payload options |
| Hex Mode | • Displays the entire PDU in hexadecimal format |
| Timestamps | • Toggle on/off the display of timestamps |
| Port Identifier | • Toggle on/off the display of the VXI slot number of the module from which the data was captured; also indicates whether the captured data was transmitted or received |
| Summary Display Contents | • Event header<br>• Most significant error in PDU (if any)<br>• Message type<br>• Call reference value |
| Detailed Display Contents | • Field-by-field decode of each header and trailer field |

### Frame Relay SVC Signalling Errors

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|---|---|
| Decode Errors | • Missing octet<br>• Illegal order for item<br>• Repeat is not allowed<br>• Illegal continuous repeated items<br>• Illegal field type<br>• Invalid field<br>• Illegal multiple octet<br>• Message or information element length too short<br>• Message or information element length too long<br>• Unnecessary information element or format is present<br>• Invalid field value<br>• Mandatory information element or format missing |

### Filters

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|---|---|
| SVC Filters | • Message type<br>• Call reference flag<br>• Call reference value |
| FR Filters & Triggers | • Refer to the E4216/E6279 Datasheets |

## Applicable Standards.

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|---|---|
| SVC | • ANSI Recommendation T1.607 ISDN Layer 3 Signalling Specification for circuit switched bearer service for Digital Subscriber Signalling System Number1 (DSS 1)<br>• ANSI Recommendation T1.617 Annex D; Integrated Service Digital Network (ISDN) -- Digital Subscriber Signalling System No. 1 (DSS1) -- Signalling Specification for Frame Relay Bearer Service, June 18, 1991<br>• ITU Recommendation Q.931 (03/93)- Digital Subscriber Signalling System No. 1 (DSS 1) - ISDN user- network interface layer 3 specification for basic call control<br>• ITU Recommendation Q.933 (10/95)- Integrated services digital network (ISDN) digital subscriber signalling system no. 1 (DSS 1) - signalling specifications for frame mode switched and permanent virtual connection control and status monitoring |
| LAPF | • ITU Recommendation Q.921 (03/93) - ISDN user-network interface - data link layer specification<br>• ITU Recommendation Q.922 (02/92) - ISDN link layer specification for frame mode bearer service |
| ATM cells | • ITU Recommendation I.361 (11/95) - B-ISDN ATM layer specification |
| AAL-5 | • ITU Recommendation I.363 (03/93), Section 6 - B-ISDN ATM adptation layer (AAL) specification |
| DL-CORE | • ITU Recommendation Q.922 (02/92) -ISDN link layer specification for frame mode bearer service |
| FR-SSCS | • ITU Recommendation I.555 (11/93)- Frame relaying bearer service interworking<br>• Frame Relay Forum FRF.5 FR/ATM Network Interworking Implementation Agreement |

## 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:**

Hewlett-Packard Company
Test and Measurement Organization
5301 Stevens Creek Blvd.
Building 51L-SC
Santa Clara, CA 95052-8059
1-800-452-4844

**Canada:**

Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario L4W 5G1
905-206-4725

**Europe:**

Hewlett-Packard
International Sales Europe
Geneva, Switzerland
+41-22-780-4111

**Japan:**

Hewlett-Packard Japan Ltd.
Measurement Assistance Center
9-1, Takakura-Cho, Hachioji-Shi
Tokyo 192, Japan
(81) 426-48-3860

**Latin America:**

Hewlett-Packard
Latin America Region Headquarters
5200 Blue Lagoon Drive, 9th Floor
Miami, Florida 33126
U.S.A.
305-267-4245, 305-267-4220

**Australia/New Zealand:**

Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Australia
131-347 Ext. 2902

**Asia Pacific:**

Hewlett-Packard Asia Pacific Ltd.
17-21/F Shell Tower, Time Square
1 Matheson Street, Causeway Bay
Hong Kong
(852) 2599-7070

www.hp.com/go/bsts



**Specifications subject to change.**

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