AuroraTempo

Multiservice test equipment

Multiservice

The new concept in easy, yet comprehensive service testing

TrendCommunications

The Trend Aurora Tempo is a comprehensive test instrument that assists you in the installation, provisioning and maintenance of multi-service networks.

The Aurora Tempo is an essential tool for any engineer engaged in the installation, configuring and maintenance of networks involving any mix of Frame Relay, V5 Access Technology and ISDN services. It provides a full suite of physical tests over V/X Series interfaces and E1/T1 circuits, protocol tests, simulation and monitoring for Frame Relay networks, and comprehensive monitoring capability for V5.x and ISDN. On Frame Relay with this instrument you can quickly verify the service, or examine more complicated issues with real-time and statistical analysis for both Switched Virtual Circuits (SVCs) and Permanent Virtual Circuits (PVCs).

Aurora Tempo

Multi-service testing in a hand-held format

The Aurora Tempo is designed for:

- Public Telecommunications Service Providers
- WAN Equipment Manufacturers and Installers
- Private Network Managers
- Telecommunications Service End Users

Features

General

- Hand-held
- Real dual port operation
- Interfaces: combined V/X, E1, T1 and DDS
- Remote Control
- Field upgradeable software
- Compatible to Aurora Expert

The Aurora Tempo combines the advantages of a dual port hand-held test tool with the performance of a 2 Mbit/s test environment.

Features

continued

Frame Relay

- Simulation and Monitoring of SVC and PVC
- CPE and Switch emulation
- Full set of performance tests, e.g. CIR test
- Extensive statistics
- Frame Relay decode
- IP Ping Generation

The powerful Frame Relay option provides a full set of features to install, maintain and troubleshoot networks and links. Performance of realistic network traffic and analysing monitored data are just two of the applications.

With the flexible allocation of monitor probes and time slots the user will be prepared for each test situation, especially on V5.2 links.

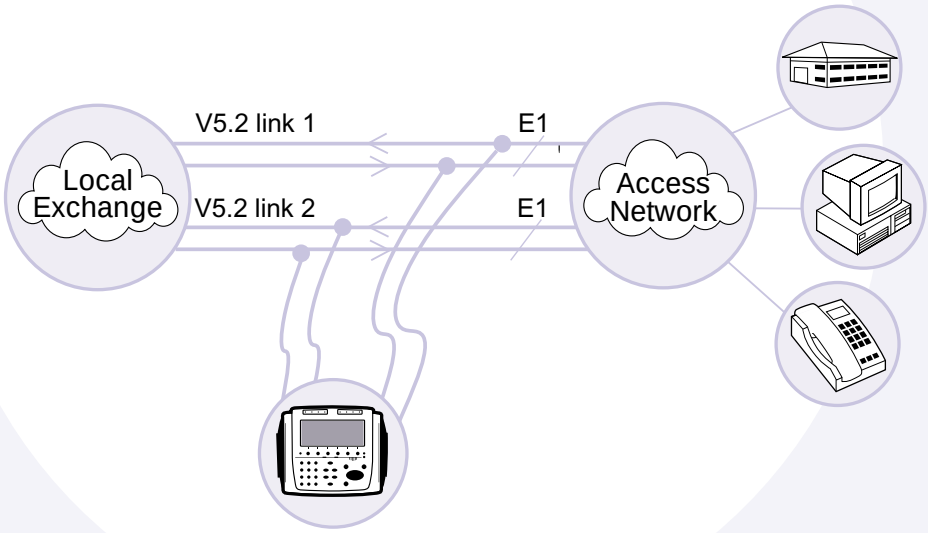
V5.1/V5.2 & ISDN Monitor

- Bi-directional monitoring of up to 4 user selectable channels per interface
- Real time protocol decode
- Support of all V5.1/V5.2 protocols
- Automatic protocol scan in V5.x
- Support of the most popular ISDN protocols

Physical Tests

- Display of alarms and states
- BERT tests conforming to G.821 recommendations
- Loop function

To prove the quality of the physical layer the physical test application is included to any test option of the Aurora Tempo.



Applications

Frame Relay

Link Management – tests for misconfigured link management and polling intervals on PVC links

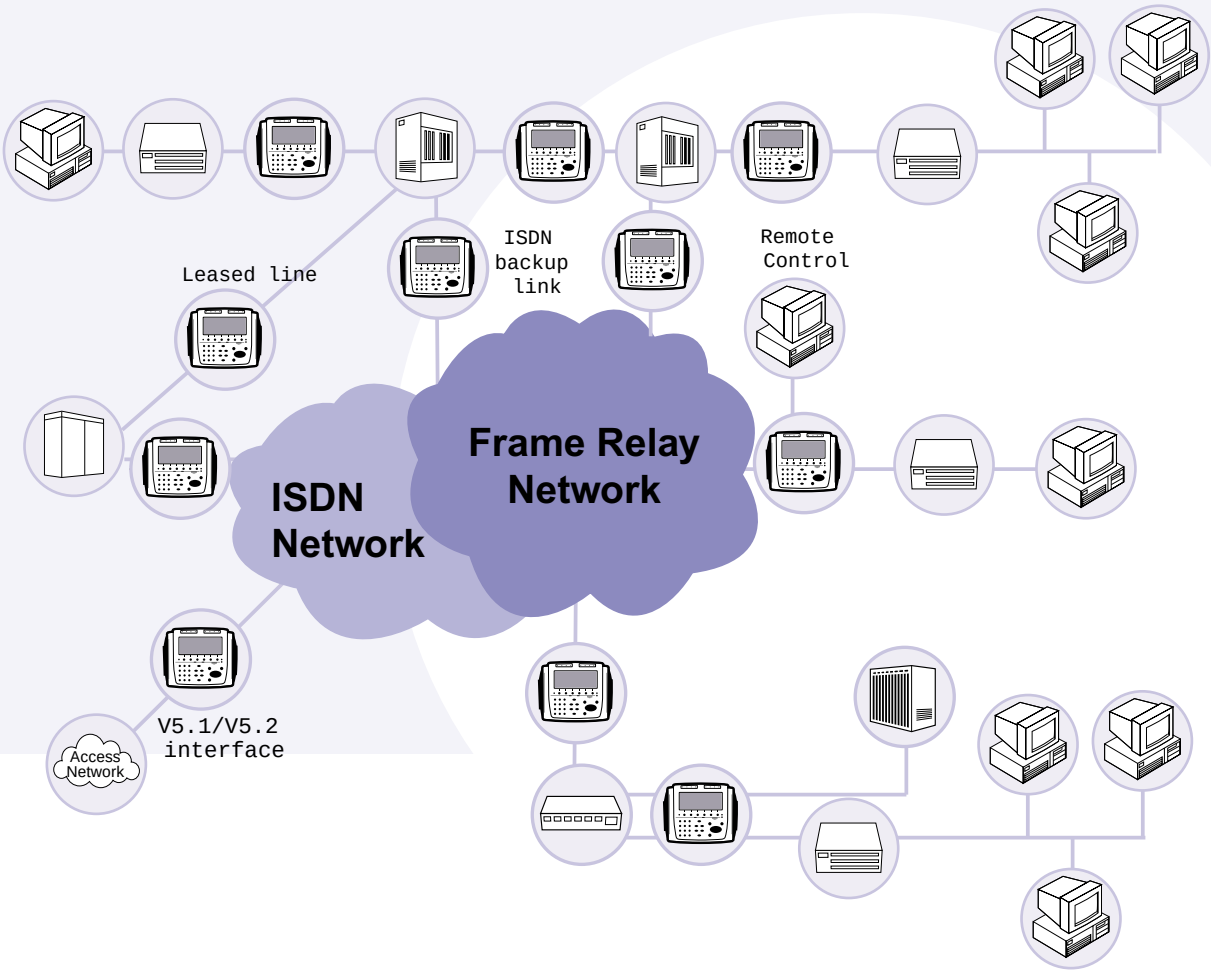
End to End Routing – proves connectivity on either PVC or SVC links by analysing the frames over each valid circuit. With IP PING the end user's IP LAN connection can be checked as well.

Stress Testing – With the extensive load generation facilities of the Trend Aurora Tempo, particularly the CIR test, you can stress the network to obtain a full set of statistics. Can also generate badly formatted frames to see how reliable network equipment copes.

Switch Emulation – tests CPE by eliminating a possibly faulty switch. Looping PVC's between the two interface ports allows effectively simulation of operation of a switch.

Frame Relay

- Verify and prove the Service Parameters
- Profile your network's performance
- Generate diverse traffic and observe your device's behaviour
- Check consistency of equipment before installion



Link configuration – check or confirm the existing link configuration of V5.2 link using the automatic scan option.

Fall back link – The V5.2 interface provides a 'protection mechanism' link in case of link failure. In dual port operation the Aurora Tempo is able to observe both primary and secondary signalling channel simultaneously. The user obtains a view of the operation of the interface.

Protocol decoding – Up to five V5.2 protocols in one, two or three C-channels – this could be a nightmare to each user. Full time synchronised decoding of the protocols in one window facilitates the search of inconsistencies.

C-channel utilisation – Is the configuration of the C-channel(s) conform to the utilisation of the Access Node? Undefined terminated and interrupted connections can be the result of a mismatch between an extended Access Node and the initial performance of the signalling channels.

V5.1/V5.2 & ISDN Monitor

enefits

- Confirm the configuration of the V5.1/V5.2 interface
- Observe the primary and secondary signalling simultaneously
- Avoid undefined termination of connections by checking the utilization
- Observe the signalling of the ISDN PABX and backup links
- Enhance the quality of the links by finding protocol inconsistencies

Remote Control

The optional feature presents a virtual Aurora Tempo to Java-enabled web browsers.

- Remote access to all key functions
- Uses Standard Web browser & Dial-Up networking

Intermittent faults – are the most unproductive and cost effective problems to be observed. Remote Control shortens the response time and the chance to catch the problem increases significantly.

Physical Testing

Bit error free links – The proper work of high-speed technologies depends on a high quality of the physical layer. To check the characteristic of a used link the Aurora Tempo provides a set of physical tests.

Status and alarms – The physical test allows the user to screen the status and alarms of the interfaces on each of the used test applications. No error on the interface will be lost and the user recognise errors occurred during his absence having a look to the history.

Direct connection or via PSTN/ISDN – The Remote Control option allows you to control the unit either direct in your test environment, e.g. the own network or lab, or you can observe the links on customer side dialling up the Aurora Tempo.

AuroraExpert

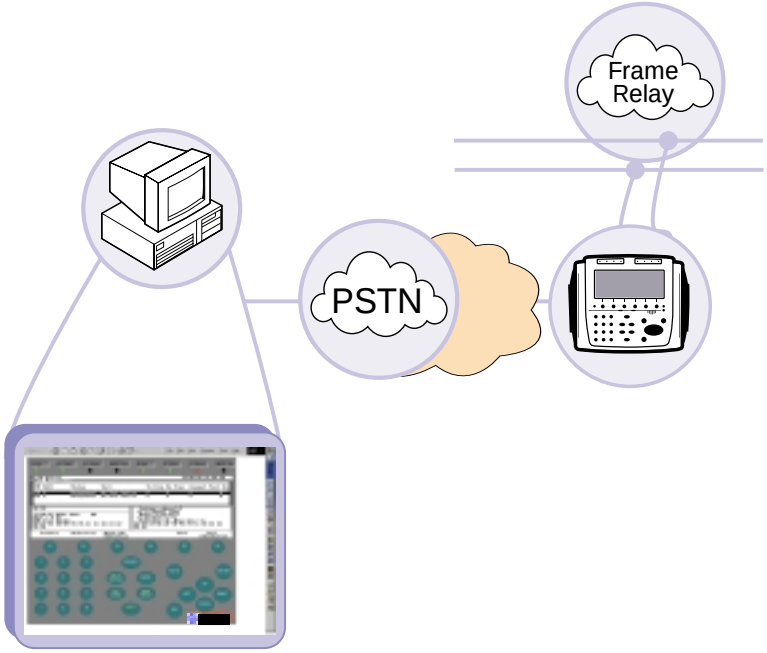
The Aurora Expert software runs on standard PC and provides a highly portable data analyser when loaded.

It allows for the transfer, filtering, display, storage and manipulation of the data, in real-time after capture by the Aurora test unit.

- Available for Frame Relay LMI, ISDN and V5 protocol decoding
- Can be used with other Aurora testers

Applications

continued



Protocols	Frame Relay	ISDN	V5
	LMI: ITU-T Q.933 Annex A; ANSI T1.617 Annex D; "Gang of Four" LMI (Original LMI, FRF LMI) **SVC**: ITU-T Q.933; FRF4; ITU-T X.36. RFC 1490 Multiprotocol Encapsulation IP Ping	**D-Channel Protocols**: ETSI; 1TR6; QSIG; CorNet-N; TN1R6N; VN4; NI2; AT&T; NORTEL; TPH1856; CR13; X.31/X.25 LAPD. **B-Channel Protocols**: X.31/X.25 (LAPB Mod 8, Mod 128)	**C-Channel Protocols**: PSTN Protocol; Control Protocol; Link Control Protocol; Bearer Channel Control Protocol; Protection Protocol and the encapsulated LAPD Protocols (ISDN and X.25) **B-Channel Protocols**: X.31/X.25 (LAPB Mod 8, Mod 128)

BERT Selections	Selectable test lengths of 10 secs, 1 min, 15 mins, 1 hour, continuous or user defined. Standard patterns: Binary 0, Binary 1, 1:1, 1:3, 1:7, 2:8, 3:24, 2^6-1, 2^9-1, 2^{11}-1, 2^{15}-1, 2^{20}-1, 2^{23}-1 Additional T1 patterns include T1-QRSS, T1-DALY, T1-2/96, T1-3/64, T1-4/120, T1-5/53, T1-55 Octet and Min/Max pattern Auto Inversion Bit Error Inject facility Fields displayed during test are: Bit errors, Bits received, Errored Seconds, Sync loss

BERT results conform to full G.821 recommendations and are output as absolute values or percentages. Pass/Fail indicated where timed tests have been initiated against a pre-set threshold. Displayed results are: Error Free Seconds, Errored Seconds, Severely Errored Seconds, Bit error rate, Unavailable Seconds

Interface Modules	E1 Interface ITU-T G.703	T1 Interface ANSI T1.403	V/X Series Interface V.35, RS232, RS449, EIA530, X.21
Connectors	2 x RJ45/BNC for Receive ports 1 x RJ45/BNC for Transmit port 1 x RJ48C	2 x Bantam for Receive ports 1 x Bantam for Transmit port 1 x RJ48C	37 way D-type connector
Set up options	framed or unframed CRC4 on/off CAS Multiframe on/off Configurable slotmap	framed or unframed B8ZS or AMI coding CRC6 on/off Selectable line length to 7000ft Configurable slotmap	DCE or DTE mode Flow control
Error inject facility	Framing errors Multiframe errors CRC errors	Framing errors CRC errors Bipolar violation	
Error indication	Extensive E1 error reporting e.g. CRC4 errors/1000 frames	Extensive T1 error reporting e.g. BPV Error Seconds	Control Line Status
Line frequency measurement	Measurement of line frequency and deviation to 5ppm	Measurement of line frequency and deviation to 5ppm	
Signalling bit monitoring	Signalling bit monitoring CAS Signalling bit monitoring		

Screen	Resolution: 640 x 200 graphic monochrome LCD with backlighting and contrast control
Interface indicators	Interface Assigned, Layer One Status, Layer One History, BERT sync, RX, TX – vary with interface type
Indicator LEDs	Battery low indicator, Battery charging indicator
Connectors	Serial port: 9 way D type (PC AT), DC power in, External clock input: BNC
Environmental	Storage temperatures: -20°C – +60°C Operating temperatures: 0°C – +40°C
Dimensions	280 x 245 x 78mm (11" x 9.65" x 3")
Weight	2.5kg (5.5lbs) inc. batteries
Power	6 x 1.5V standard D cells, 7.2V Ni-Cd rechargeable pack, or 12V DC from mains conversion
Options	Remote Control, **Aurora**Expert, Frame Relay, PVC & SVC, ISDN, V5

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Distributor

To arrange a demonstration or to obtain the latest information on the Trend **Aurora**Tempo or any of Trend's other test equipment, contact your nearest Trend Distributor.

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