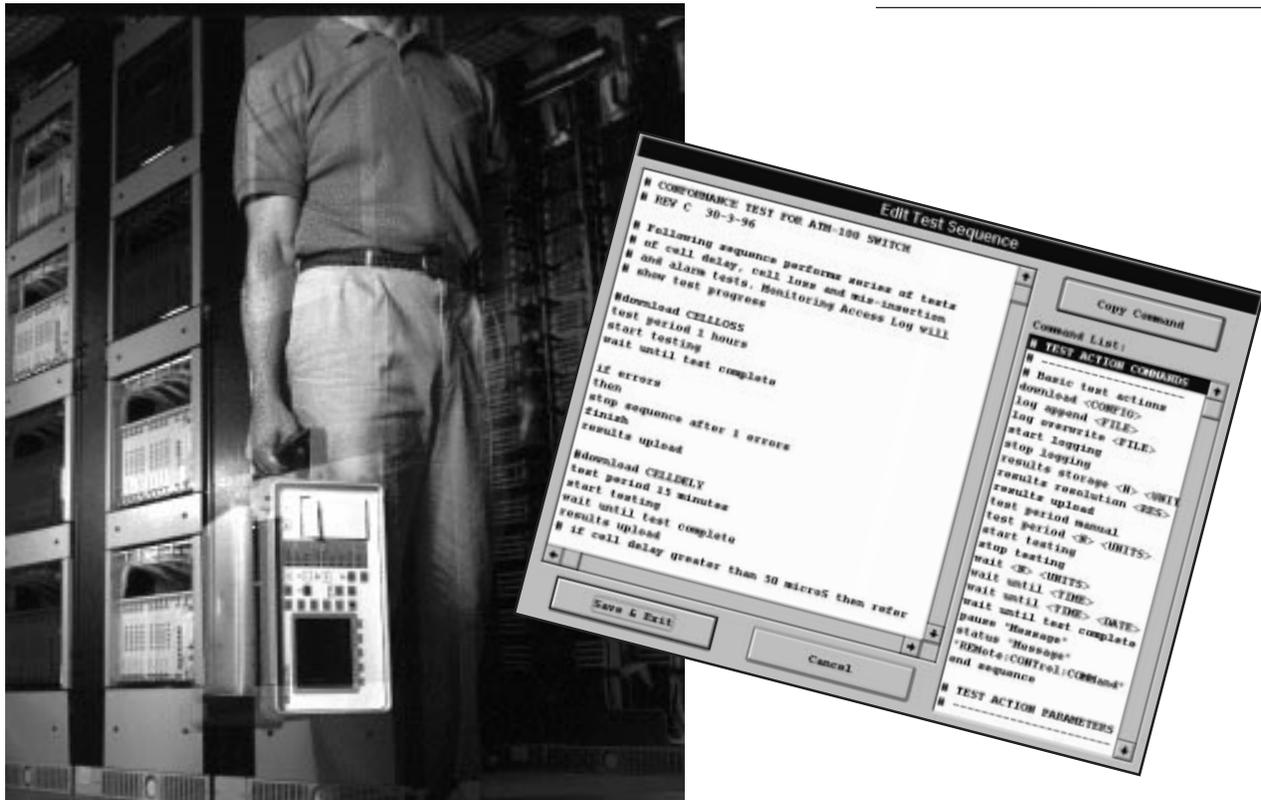


Automated test sequences for more effective testing of SDH and ATM networks

Product note

HP E4540A distributed network analyzer software



One of the key ways to success in the competitive telecoms market is to roll out services faster than the competition. Today, customer expectations are for continuous availability from new SDH networks and the broadband services promised from ATM. Meeting the rapid provision of these requirements, however, is a daunting task when the knowledge in installing and maintaining SDH and ATM network elements lies with a limited number of experts.

This product note describes how technical experts can now spread their SDH and ATM knowledge to technicians through the creation and distribution of automated test sequences.

Putting an expert in every network location

Introduction

To ensure network elements (NEs) are installed and maintained correctly, technicians need to be competent with testing the new SDH and ATM technologies.

Typically, extensive training is given covering not only the new technology but also the testing required on specific NEs. The main drawback is that it's expensive and time-consuming to continuously train technicians as technologies and network equipment evolve. Technicians must also be provided with detailed, written test procedures that are expensive and time-consuming to produce.

The HP E4540A distributed network analyzer software, for HP 377xxx PDH, SDH, ATM and jitter performance analyzers, offers a more practical solution. This software enables the technical experts to create automated test sequences on disk for distribution to the technicians for faster, more efficient testing of NEs.

Complex testing made easy

One of the problems usually encountered in the creation of automated test procedures is the need for specialized programming skills. Another is the time involved in pro-

gramming the various test set-ups that are necessary to test the installation of different NEs.

In contrast, the PC-based HP E4540A software's test sequence facility doesn't require any programming skills. Furthermore, it significantly reduces the time to create a test procedure. Operating on the Windows® platform, this software provides pre-written command lines that are easily incorporated into the test procedures for simpler and faster programming.

In addition, test sequences along with pre-programmed test configurations can be embedded into other test procedures for the quick production of complex tests. And as more and more test sequences are created, a library of test routines for different NEs can easily be built up.

Once the test sequences are created, distribution to the technicians is via a floppy disk. The technicians can then run the appropriate sequence on a laptop to test the NE at the test site. This way, the same tests are performed at each installation—saving time and effort, and ensuring consistency.

Test information and diagrams of the test set-ups can also be supplied as part of the test sequence. This provides the technicians with all the information needed to complete their tasks.

After installation testing, the test sequence facility can be used to provide a measure of the network's quality of service before a customer service is made available. Test sequences can monitor the network for the recommended 24 hour or 7 day periods. By retrieving the results remotely, technicians avoid having to travel back and forward to pick up the daily results.

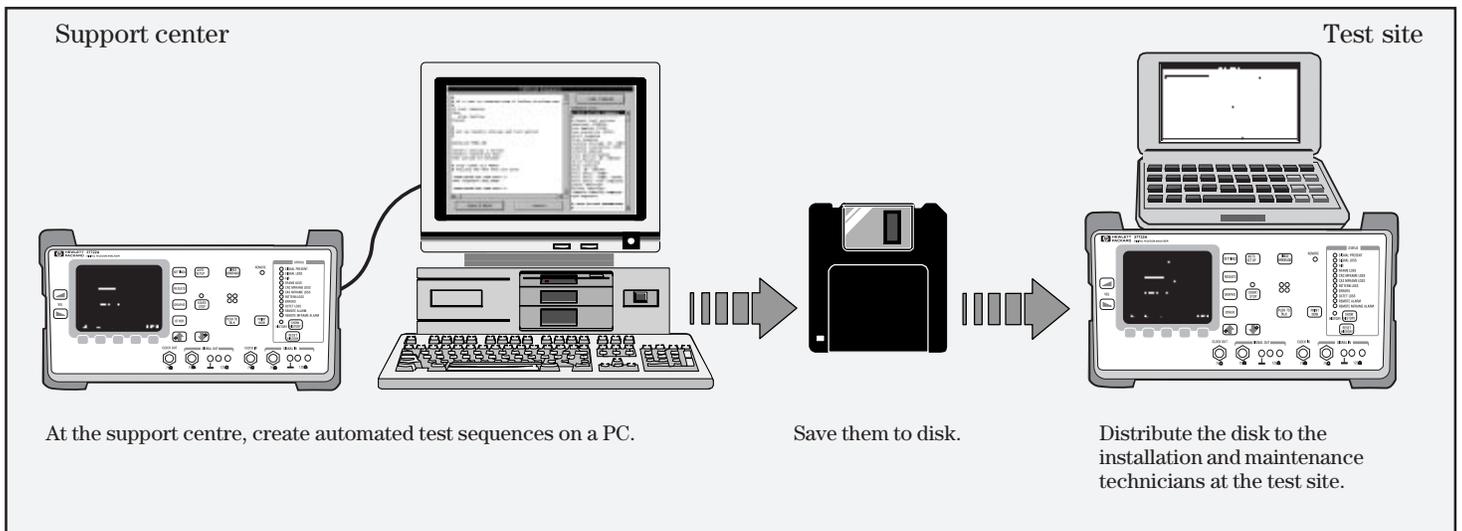
Configuring the equipment

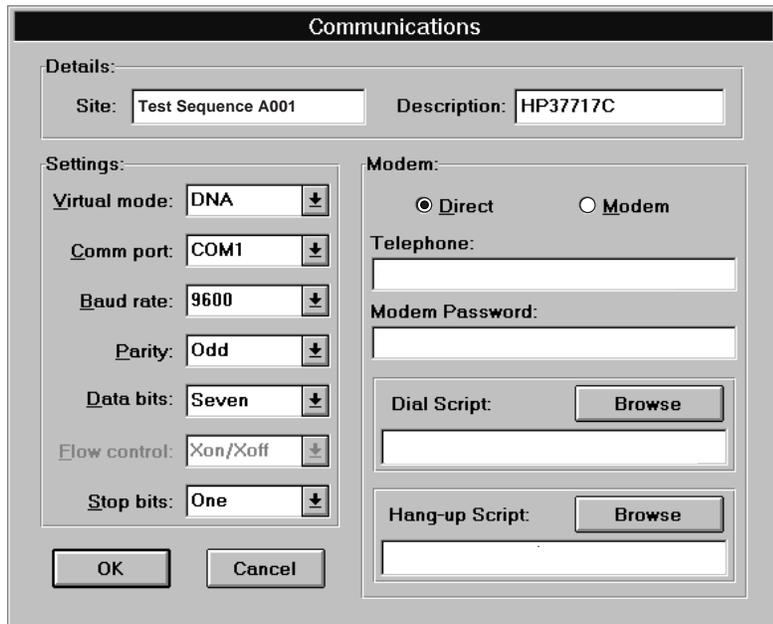
To create a test sequence, a HP 377xxx test set is connected to the PC running the DNA software. Connection is via the spare 'com' port at the rear of the PC.

Once connected, simply double click on the DNA icon to start the program.

Note: If this is the first time a connection has been made then the connection link must be set up. Click on the 'New' icon to display the 'Communications' window. This window comprises three parts. Fill in the 'details' section with the instrument details and description. Set the 'settings' section to match the instrument settings (described below). Set the 'modem' section to 'Direct'.

On the instrument, set up communications by selecting the 'Other' key and then 'remote control' page. Set





The communications window has to be completed only once. Access to the test sequence facility is then just a key press away at any time.

the comms port to 'RS-232', the controller type to 'computer', and Xon/Xoff to 'Tx & Rx'.

Creating a test sequence

The procedure to create a test sequence is given below. It requires the setting up of the instrument and storing (on the PC) the configuration for each NE test. These instrument configurations can then be uploaded and recalled in the order required.

Conditional statements are used in the test sequences to set, for example, test durations, retrieve results and act on test results.

1. Set up the instrument configuration required for the first test of NE being installed.
2. On the PC, select the 'configuration' icon and upload and store under an appropriate file name. Repeat process for all configurations required.

3. Select the 'test sequence' icon.



4. Click on 'edit'. A list of commands is displayed. These are used to simplify the construction of the sequence. Highlight the required command and click on 'copy command' to add it to the sequence.
5. Prefixing lines with # allows comments to be made. Enter the appropriate comments specifying the equipment to be tested and any other relevant information.

Note that it is possible to add full test procedure and set-up information by selecting 'edit description'.

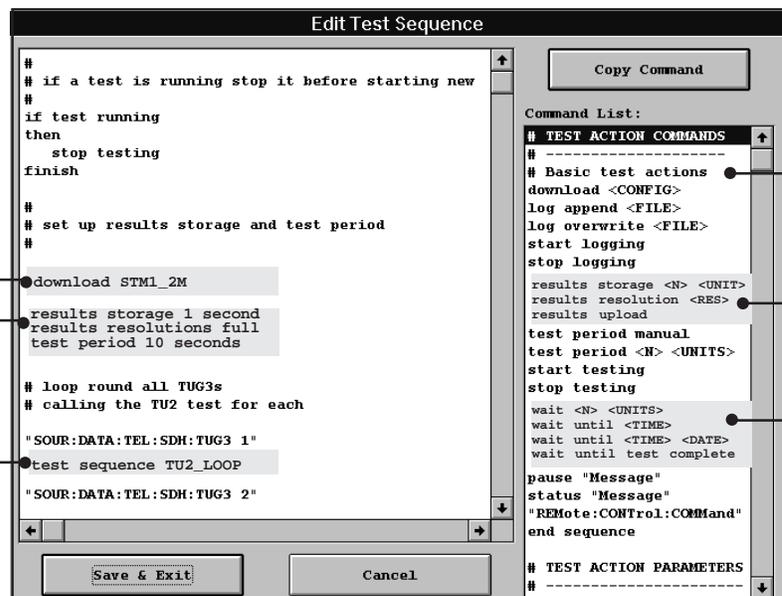
6. Highlight 'download' and enter the configuration file name. Select and enter the results period and retrieve the results as required. Repeat this step for all the test configurations required.
7. Select conditional statements and pauses (when displaying instructions). Standard remote-control commands can also be added.

Once complete, the test sequence can be copied to floppy disk and distributed. At the test site, technicians simply select the sequence from the list of files on their laptop for the NE-under-test and press 'run' to execute the test.

Pre-configured set-up

Select monitor period

Embed test sequences or configurations



List of commands

Retrieve results

Specify when you want results

HP E4540A distributed network analyzer software

The HP E4540A software is available for use with the HP 377xxx range of test equipment for measurement and characterization of SDH/PDH/ATM digital networks and tributaries.

Key features include:

- Virtual instrument display that allows a technical expert at a central site to support technicians troubleshooting at a remote site
- Simplified testing using stored test sequences and configurations
- Robust automatic results retrieval
- Transfer of results into Windows applications for analysis or to produce graphs and reports.

This software is compatible with PC or laptop running Windows 3.1, Windows NT or Windows 95 software.

HP 37717B/C communications performance analyzer

These rugged, portable testers allow comprehensive functional testing of SDH, PDH and ATM equipment including jitter generation and test. The HP 37717C analyzer has a color display and graphics printer, with the monochrome HP 37717B analyzer providing a budget solution, and a 20-column printer. Both instruments include a 3.5-inch disk drive to ease results retrieval, test firmware upgrades, and analysis.

Related literature

- HP E4540A brochure, 5964-2240E
- HP E4540A product note: Interactive diagnosis for more effective support of SDH and ATM networks, 5965-4912E
- HP 37717B/C comms performance analyzer brochure, 5964-0106E
- HP 37778A STM-16 test set brochure, 5965-4969E
- HP 37722/32A telecom/datacom analyzer brochure, 5965-3192E



For more information on Hewlett-Packard Test & Measurement products, applications or services please call your local Hewlett-Packard sales offices. 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.

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Test and Measurement Organization
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Canada:

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Measurement Assistance Center
9-1, Takakura-Cho, Hachioji-Shi
Tokyo 192, Japan
Tel: (81-426) 56-7832
Fax: (81-426) 56-7840

Latin America:

Hewlett-Packard
Latin American Region Headquarters
5200 Blue Lagoon Drive
9th Floor
Miami, Florida 33126
USA
(305) 267 4245/4220

Australia/New Zealand:

Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Australia
1 800 629 485

Asia Pacific:

Hewlett-Packard Asia Pacific Ltd.
17-21/F Shell Tower, Times Square
1 Matheson Street, Causeway Bay
Hong Kong
Fax: (852) 2506 9285

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Hewlett-Packard manufactures the HP E4540A distributed network analyzer software (for HP 377xxx PDH/SDH/ATM range of test equipment) under a quality system approved to the international standard ISO 9001 plus TickIT (BSI Registration Certificate No FM 10987).

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