COMPAQ

Software Product Description

PRODUCT: Compaq TeMIP Access Module for Generic TL1 implementation   SPD 70.75.01

DESCRIPTION

The Compaq TeMIP Generic TL1 Access Module (AM) is part of this program and provides a basis to build AMs for equipment implementing a TL1 management protocol. This Access Module is a bi-directional module addressing fault management. It receives and processes unsolicited messages, as well as sends management commands and receives associated responses.

TeMIP for Tru64 UNIX® is a family of software products for the management of telecommunications and corporate networks, including fixed wire and mobile/cellular voice and data, multi-vendor, multi-technology networks. TeMIP V4.0 provides comprehensive off-the-shelf fault and trouble management functions such as Alarm Handling, Event Logging and Trouble Ticketing for telecommunications network management.

TeMIP supports the International Standards Organization (ISO) management standards ISO 10164-x and ISO 10165-x, the OMNIpoint 1 standards as defined by NMF and T1M1. TeMIP and its features are applicable in the context of the International Telecommunication Union-Telecom Standard Sector (ITU-T) X.73x and Telecommunications Management Network (TMN) M.3010 and M.3100 Recommendations. TeMIP gives network operators a global view of their networks, and enables them to activate management functions and operations from single or multiple workstations.

TeMIP is built on top of the TeMIP Framework and fully benefits from the object oriented and truly distributed software architecture.
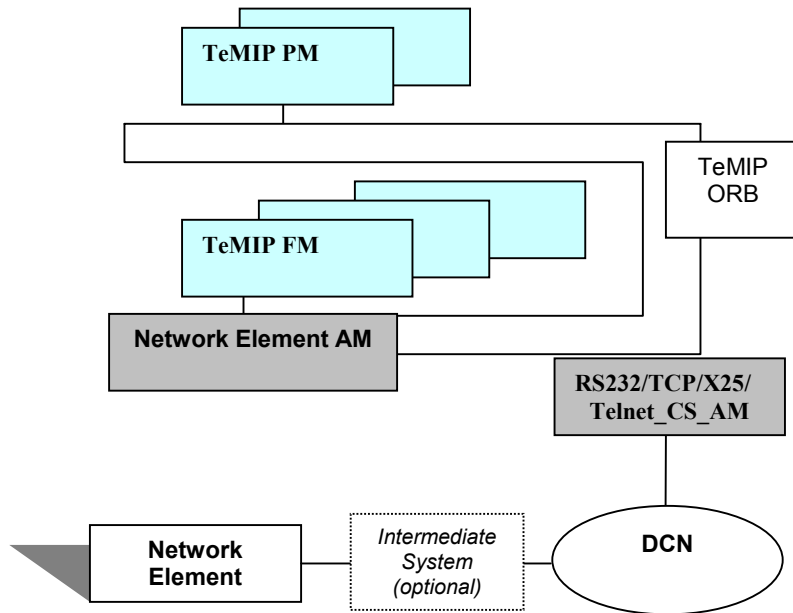
SOLUTION COMPONENTS

The piece of equipment is either directly interfaced to TeMIP or accessed through an intermediate system providing a TL1 interface. On the TeMIP side the solution is made of a combination of Management Modules:

- The TCP Communications Server Access Module, responsible for establishing and maintaining the physical connection to the equipment. (As an alternative to the TCP Communications Server, either the X.25 (SVC), RS232 or Telnet Communications Servers could also be envisioned),

- The Network Element AM (derived from the Generic TL1 AM) is responsible for the Information Model representing the management capabilities of the equipment as well as all associated semantic translations between its ASCII-based messaging interface and TeMIP data models.

The solution components are shown in Figure 1.

Figure 1: Solution Components

```
        ┌─────────────────┐
       ┌┤                 │
    ┌──┤  TeMIP PM       │
    │  │                 │
    │  └─────────────────┘
    │                              ┌──────────┐
    │                              │  TeMIP   │
    │                              │  ORB     │
    │       ┌─────────────────┐   │          │
    │      ┌┤                ┌┤   └──────────┘
    ├──────┤ TeMIP FM        │
    │      │                 │
    │      └─────────────────┘
    │  ┌────────────────────────┐
    └──┤ Network Element AM     │
       └────────────────────────┘
                                   ┌──────────────────┐
                                   │ RS232/TCP/X25/   │
                                   │ Telnet_CS_AM     │
                                   └──────────────────┘

    ┌──────────────┐   ┌──────────────┐    ╭──────────╮
    │ Network      │   │ Intermediate │    │          │
    │ Element      │───│ System       │────│   DCN    │
    │              │   │ (optional)   │    │          │
    └──────────────┘   └──────────────┘    ╰──────────╯
```

INFORMATION MODEL OUTLINE

The Generic TL1 supports the Information Model given in Table 1.

The Network Element is represented by the information Model introduced in Figure 2. Physical units, except environmental components, are modelled via the Equipment class, all other "facilities" including environmental components will coincide with the TMPL_NE global class.

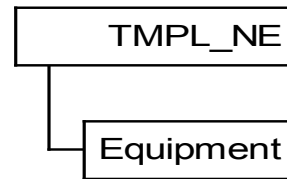**Figure 2: Information Model Overview**

Table 1: Generic TL1 AM Hierarchy Description

Global Class	Child Class	Child Class	Description
TMPL_NE			Template Network Element
	Equipment		Physical units (except environmental components)

MANAGEMENT CAPABILITIES SUMMARY

Autonomous Messages Support

The Generic TL1 AM shall handle the following unsolicited messages pertaining to the Surveillance Interface:

- REPT ALM: Report Alarm,
- REPT ALM ENV: Report Alarm Environment,
- REPT EVT: Report Event.
- REPT PM: Report Performance Monitoring
- REPT COND: Report Condition,

Limitation: the REPT ALM ENV, REPT PM and REPT COND messages are processed to the extent where they are parsed. No further processing of the parsed data shall be provided.

Commands support

The following commands pertaining to the Surveillance Interface shall be supported:

- RTRV-HDR: Retrieve Header,
- RTRV-ALM-ALL: Retrieve Current Alarms,
- RTRV-ALM-ENV: Retrieve Current Alarm Environment,
- RTRV-COND-ALL: Retrieve Current Conditions,
- ALW-MSG-ALL: Enable Autonomous Message Reporting,
- INH-MSG-ALL: Inhibit Autonomous Message Reporting,
- ALW-PMREPT-ALL: Enable Performance Monitoring Reporting,
- INH-PMREPT-ALL: Inhibit Performance Monitoring Reporting,
- ACT-USER: Session Logon,
- CANC-USER: Session Logoff,
- SET-TH: Set Performance Monitoring Threshold,
- RTRV-TH: Retrieve Performance Monitoring Threshold,
- RMV: Remove Facility,
- RST: Restore Facility.

Limitation: the RTRV-COND, RTRV-ALM-ENV, ACT-USER, CANC-USER commands are implemented to the extent where they are defined and formatted but they are not mapped onto any directive of the Management Model.

Miscellaneous Management Capabilities

The Generic TL1 AM shall implement the features listed below:

- Keep-Alive message generation at regular/controllable intervals,

- Automatic Detection and reporting of communication failure,

- Automatic alarm state re-synchronization after communication failure,

- Duplicate alarms filtering.

Supported Messages, Commands and Responses

Table 2 indicates the Autonomous Messages, the Commands and their associated Responses that can be handled by the AM.

Table 2: Generic TL1 AM Supported Messages, Commands and Responses

	Type	Description
1.	Autonomous	REPT ALM : used to report one or more changes in state of some alarm condition
2.	Autonomous	REPT ALM ENV : used to report environmental alarms
3.	Autonomous	REPT EVT : used to report event logs, alarms of warning or indeterminate severity, and PM (Performance Monitoring) threshold alerts
4.	Autonomous	REPT PM : used to report PM counts. Only the non-zero PM counts are reported
5.	Autonomous	REPT COND : used to report outstanding alarms of any severity on a regular basis. It is sent per NE. Environmental alarms are not reported in this message
6.	Command	RTRV-HDR : Retrieves Header (mapped on KeepAlive directive)
7.	Command	RTRV-ALM-ALL : Retrieves Current Alarms (mapped on Resynchronisation directive)
8.	Command	RTRV-ALM-ENV : Retrieves Environmental Alarms
9.	Command	RTRV-COND-ALL : Retrieves the current standing conditions or states associated with one or more specified equipment or facilities in the target Network Element
10.	Command	ALW-MSG-ALL : Enables the reporting of alarms (including environmental alarms) (mapped on ReportAlarm directive)
11.	Command	INH-MSG-ALL : Stops the reporting of alarms (including environmental alarms) (mapped on SuspendAlarm directive)
12.	Command	ALW-PMREPT-ALL : Resumes reporting of performance monitoring counts (mapped on ReportPM directive)
13.	Command	INH-PMREPT-ALL : Stops reporting of performance monitoring counts (mapped on SuspendPM directive)
14.	Command	ACT-USER : Session logon to start a session with Network Element
15.	Command	CANC-USER : Logoff to log out of a session with the Network Element
16.	Command	SET-TH : Sets the current performance monitoring threshold level (mapped on WriteThreshold directive)
17.	Command	RTRV-TH : Retrieves the current performance monitoring threshold level (mapped on ReadThreshold directive)
18.	Command	RMV : Removes a facility from service (mapped on RemoveFacility directive)
19.	Command	RST : Restores a facility to service (mapped on Restore directive)
20.	Response	Normal Response without Textblock
21.	Response	Error Response
22.	Response	Retrieve Alarm normal response
23.	Response	Retrieve Alarm Environment normal response
24.	Response	Retrieve Condition normal response
25.	Response	Retrieve Performance Monitoring Threshold normal response

HARDWARE REQUIREMENTS

Supported Alpha AXP Processors:

DIGITAL Personal Workstation au series
DIGITAL Ultimate Workstation
AlphaStation 600
AlphaServer 800, 1000A, 1200
Compaq AlphaServer DS10, DS20

AlphaServer 2000, 2100, 4000, 4100
Compaq AlphaServer ES40

AlphaServer 8200, 8400
Compaq AlphaServer GS60, GS140

Disk Space Requirements:

Disk space required for installation:
Subset copy: 9 Mbytes
Installation: /usr 25 Mbytes

Disk Space Required for Use (Permanent):
No specific requirement

Memory Requirements:

The minimum memory supported, due to a TeMIP Framework prerequisite, is 128 Mbytes. However, the use of this software in conjunction with increased memory capability improves performance.

SOFTWARE REQUIREMENTS

Compaq Tru64 UNIX® Operating System V4.0F

TeMIP Framework V4.0

OPTIONAL SOFTWARE

TeMIP Graphical ASCII Toolkit V4.0

GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the current version requirements.

YEAR 2000 READY

This product is Year 2000 Ready.

"Year 2000 Ready" products are defined by Compaq as products capable of accurately processing, providing, and/or receiving date data from, into and between the twentieth and the twenty-first centuries, and the years 1999 and 2000, including leap year calculations, when used in accordance with the associated Compaq product documentation and provided that all hardware, firmware and software used in combination with such Compaq products properly exchange accurate date data with the Compaq products.

For additional information visit Compaq's Year 2000 Product Readiness web site located at http://www.compaq.com/year2000

To ensure that this product is Year 2000 Ready, code assessment and system tests to verify the transition between December 31st 1999 and January 1st 2000 were utilized.

To ensure that this product interoperates properly with other hardware and software, the system tests involving Compaq's TeMIP V4.0 are applicable, as this product was verified as being Year 2000 Ready.

DISTRIBUTION MEDIA

This software is available by electronic means, distributed directly by Compaq TeMIP Engineering Team in Sophia Antipolis, France. The team can be contacted through your local Compaq office, which sends an internal e-mail to vbetemipsupp@compaq.com (containing customer identification and proof of license purchase).

ORDERING INFORMATION

Compaq TeMIP Access Module for Generic TL1 (Fault Management)

Software License:

- QM-6BFAA-AA

Software Product Services

- QT-6BF**-** or QR-SP6BF-A9

Notes:

1. * denotes variable fields. For additional information on available services, or hardware platform tiers, refer to the appropriate price book.

2. The QM number corresponding to the TeMIP Graphical ASCII Toolkit V4.0 (Run-Time) must also be purchased (QM-5SMAA-AA).

SOFTWARE LICENSING

This software is furnished under the licensing provisions of Compaq Computer Corporation's Shrinkwrap Terms and Conditions. The license is a Corporate wide license, i.e. can be copied as many times as necessary on systems using the same TeMIP Namespace.

However, one Graphical ASCII Toolkit runtime license per copy of the Access Module is required.

For more information about Compaq's licensing terms and policies, contact your local Compaq office.

COMPAQ TRU64 UNIX LICENSE MANAGEMENT

This product uses the FLEXlm Software License Key system.

A FLEXlm key must be obtained using information provided with the license deliverable. An authorisation number is provided for each license, which allows the user to obtain license keys from an Internet Web Server according to instructions provided with the License Certificate.

SOFTWARE PRODUCT SERVICES

A variety of service options are available from Compaq. For more in formation, contact your local Compaq office.

SOFTWARE WARRANTY

This software product is provided by Compaq with a 90-day conformance warranty in accordance with the Compaq warranty terms and applicable to the license purchase.

The above information is valid at the time of release. Please contact your local Compaq office for the most up-to-date information.

TRADEMARK INFORMATION

® UNIX is a registered trademark in the United States and other countries licensed exclusively through X/Open Company Ltd.

® FLEXlm is a registered trademark of GLOBEtrotter Software, Inc.

™ The Compaq Logo, AlphaStation, AlphaServer, and TeMIP are trademarks of Compaq Computer Corporation and its affiliated companies.