COMPAQ

Software Product Description

PRODUCT: Compag TeMIP Access Module for Lucent 5ESS Wireline Switch

SPD 70.50.01

DESCRIPTION

The Compaq TeMIP 5ESS Wireline Access Module (AM) provides an interface to the 5ESS Wireline switching system (software version: 5EE7). This Access Module supports fault management capabilities, receiving and processing unsolicited messages (Fault Management).

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.

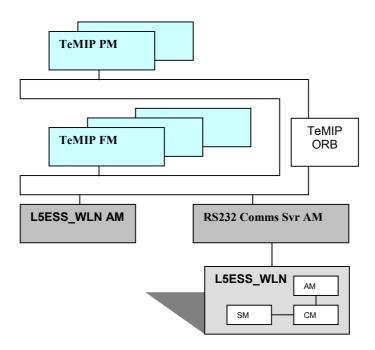
SOLUTION COMPONENTS

The 5ESS Wireline switch inter-operates with TeMIP by means of a combination of Management Modules:

- The RS232 Communications Server Access Module, responsible for establishing and maintaining the physical connection to the equipment. (As an alternative to the RS232 Communications Server, either the X.25 (SVC), TCP or Telnet Communications Servers could also be envisioned).
- The 5ESS Wireline AM, 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



INFORMATION MODEL OUTLINE

The 5ESS Wireline is represented by the Information Model shown in Figure 2.

Figure 2: Information Model

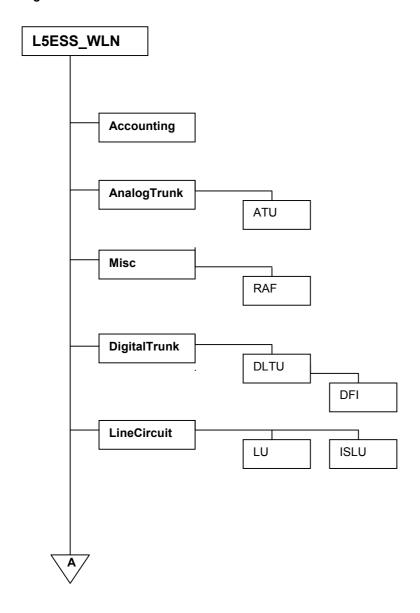
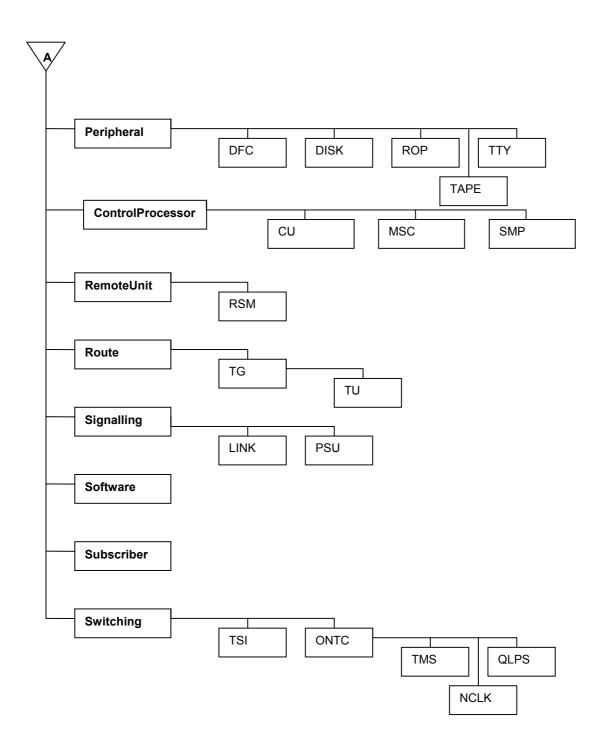


Figure 2: Information Model (continued)



The switch is modelled as 13 subsystems, which present a standard view of Wireline Switches, independent of technology. The subsystems are represented by the first level of child class and have just one instance each. This allows TMN managers to

have a common view of different exchanges in a multivendor environment. The classes that show the specific hardware/software of 5ESS are located below the subsystem level.

The meaning of each class is described in Table 1.

Table 1: L5ESS_WLN Hierarchy Class Description

Class	Child	Child	Description	Cardinality
L5ESS_WLN			Represents the switch itself.	N
Accounting			Exchange accounting (billing) subsystem.	1
AnalogTrunk			Hardware parts related to analog connections to other switches.	1
	ATU		Analog Trunk Unit.	N
Misc			Auxiliary hardware responsible for: MFC/DTMF signalling, tone generation, test equipment, announcement machine.	1
	RAF		Recorded Message Facilities.	N
DigitalTrunk			Hardware parts related to digital connections to other switches.	1
	DLTU		Digital Line Trunk Unit.	N
		DFI	Digital Facilities Interface.	N
LineCircuit			Hardware parts related to analog and digital subscriber connections.	1
	LU		Line Unit.	N
	ISLU		Integrated Services Line Unit – ISDN.	N
Peripheral			I/O processor, and all other I/O equipment (disk, printer, terminal, tape).	1
	DFC		Disk File Controller.	N
	DISK		Mobile Head Disk Controller and Device.	N
	ROP		Receive Only Printer.	1
	TAPE		Tape Controller and Device.	N
	TTY		TTY Controller and Device.	N
ControlProcessor			Call processor, and all other processors, except SS7 and I/O.	1
	CU		Control Unit.	N
	MSC		Message Switch Controller.	1
	SMP		Switch Module Processor.	N
RemoteUnit			Hardware parts located outside the switch, but functionally dependent, to connect subscribers remotely.	1
	RSM		Remote Switch Module.	N
Route			Group of all routes logically programmed in the switch.	1

	TG		Trunk Group.	N
		TU	Trunk Unit.	N
Signalling			Signalling System Number 7.	1
	LINK		Common Channel Signalling Link.	N
	PSU		Packet Switching Unit.	N
Software			All other software of the exchange (for example, file system).	1
Subscriber			Software subsystems logically related to subscribers.	1
Switching			Hardware parts responsible for call switching.	1
	TSI		Time Slot Interchange.	N
	ONTC		Network Timing Controller.	1
		TMS	Time Multiplexed Switch.	N
		QLPS	Quad Link Packet Switch.	1
		NCLK	Network Clock	1

MANAGEMENT CAPABILITIES SUMMARY

Unsolicited Messages Support

The 5ESS Wireline exchange can generate a huge number of different messages (greater than 3000 types). The 5ESS Wireline AM can handle all unsolicited messages sent by the switch that have some level of severity, that is, TeMIP can capture all alarm types (message names) with severity critical, major or minor, sent by the switch. A few message names without any severity are simply discarded by the 5ESS Wireline AM. However, because not all alarms are relevant or usual, the 5ESS Wireline AM maps messages to the ITU-T Standards in various levels of detail. Usual messages are carefully mapped to the Standards while unusual messages are roughly mapped to default values. The proprietary alarm message is always present in the Additional Text field for both Usual and Unusual messages.

Alarm Clearance

Several unsolicited messages have a correlated clearance alarm.

Table 2: 5ESS Wireline Switch Alarm Table

REF	MESSAGE
1	CMPR MHD x [RO] FINAL SUMMARY
2	DGN MCTSI=x-x COMPLETED x
3	DGN PSUCOM=x-x-x COMPLETED x
4	OP ODD PAGE x OF x

These messages are not clearly defined as such, nor do they clearly identify which message should be cleared.

According to ITU-T standards, correlated alarm clearance can be based on the following rule:

 An alarm with severity clear that has the same values for Managed Object Instance, Event Type and Probable Cause as a previous alarm will clear that alarm.

The 5ESS Wireline AM uses this rule to perform alarm correlation.

For these messages the 5ESS Wireline AM generates the necessary information (Managed Object, Event Type, Probable Cause) so that the correct alarm correlation can be performed.

Alarm Information

Table 2 lists the 5ESS Wireline alarm messages that are mapped (Usual) by the AM.

REF	MESSAGE
5	REPT ALM PWR x=x[-x] [x]
6	REPT ALM x x x
7	REPT AML REACHED TG=x SZ=x
8	REPT APC TYPE=x SM=x OPC=x APC=x x
9	REPT CCSLK TYPE=x SM=x OPC=x
10	REPT CGA

REF	MESSAGE
	REPT CU x ERROR INTERRUPT x x
12	REPT DAILY x THRESHOLD EXCEEDED ON FAC=x
13	REPT DAYLOG - x OLD ENTRIES LOST
14	REPT DPC TYPE=x SM=x OPC=x DPC=x
15	REPT GFS DISK USAGE
16	REPT HOURLY x THRESHOLD EXCEEDED ON
17	FAC=x REPT LONG CONVERSATION CALL
	REPT MHD x x x x
	REPT NAILUP - CONNECTION FAILURE - REASON
19	X
20	REPT NC x x EVENT=x
21	REPT OFFNORMAL DAYLOG ACTIVITY
22	REPT PASSWORD BREAK ATTEMPT
23	REPT PHASE x IN PROGRESS
24	REPT POWER x x [COMMUNITY=x]
25	REPT QPH SM TO SM ACCESSIBILITY CHANGE
26	REPT SM x [x] ISOLATED FROM AM
	REPT SM x TO AM x COMMUNICATION FAILURE
28	REPT SM=x HASHSUM FAILURE x SIDE x
	[EVENT=x]
29	REPT SM=x INITIALIZATION [TRIGGER=x] EVENT=x
30	REPT TRBL, x x x
31	REPT TRFPR
	RST DFI=x-x-x x
33	RST MCTSI=x-x x [x]
	RST NLI=x-x-x STOPPED TROUBLE ANLYSIS
	RST ONTCCOM=x x [x]
	RST RAF=x-x x [x]
	VFY MHD x EARLY TERM VFY FAILED x
	REPT CFT LIB x x
	REPT MIDA X X X [X]
	REPT MANUTENANCE PEQUEOTO LOCA
	REPT MAINTENANCE REQUESTS LOST
	REPT DIAMON
	REPT TLP ERROR x [PACKNO = x] [ERRNO = x]
	REPT ANALY TLP x x x
	REPT DAP ABORT LIMIT EXCEEDED DAP=x
	REPT DAP INIT FAILURE DAP=x EVENT=x
	REPT SM x x PRIORITY x LOCKOUT
48	REPT AM x x PRIORITY x LOCKOUT
49	REPT UNK x x PRIORITY x LOCKOUT
50	REPT PSM ERROR H'x x x
51	REPT RTS x x x
52	REPT SIM UTILITY IDS OF PROCESSES KILLED DURING CFT INIT
53	REPT SIMCHK x [x]
54	REPT SIOF ERROR - x x x

	NEO-10-
REF	
	REPT REX x x x REPT REX SUMMARY x
	REPT-LIB TEAM x AM x SM x x
	REPT LIBC ERROR EXEC x x
	REPT LIBC FAULT IN x FLTCODE x PA x
	REPT LIBC ERROR FORK x x
61	REPT LIBC PROGRAM ADDRESS BACKTRACE UTID: x
62	REPT LIBC SAVE STATE REGISTERS UTID: x
63	REPT LIBC ERROR START COULD NOT OPEN
64	ROOT DIR ERR.NO X REPT SM X LINK MAP INCONSISTENCY
	REPT SM x TO AM x COMMUNICATION RESTORED
	REPT SM=x POWER x
	REPT SM=x POWER RESTORED
	REPT SM=x FAST PUMP FAILURE: x
	REPT PUMP: x x
	REPT TRBL REMOVE MCTSI=x-x REASON=x
70	EVENT=x
71	REPT CRITICAL PH OVERLOAD CONDITION
72	REPT x HASHSUM FAILURE x x
73	REPT TAC=x-x-x TRBL TU SERV REQ FAILURE
74	EVENT=x REPT GRIDBD=x-x-x-x TRBL GDXGRID POWER
	ALARM EVENT=x
75	REPT LUCOMC=x-x-x TRBL x EVENT=x
76	REPT LUAUX=x-x-x TRBL AUXILIARY SERVICE REQUEST EVENT=x
77	REPT LINE PST THRESH x MINUTES x LPST
70	OCCURRENCES
/8	REPT TRBL DATA LINK DSL x=x-x LCEN=x-x-x-x CH D COMPL
79	REPT NAILUP - CONNECTION RESTORED
80	REPT RSM x ISOLATED FROM HSM x
81	REPT RCL GROUP x RSM=x x RSM=x AT SITE=x
82	REPT RRCLK=x-x-x x TRBL x EVENT=x
83	REPT FAULT x x [COMMUNITY=x]
84	REPT PDERR x x [COMMUNITY=x]
85	REPT MSKP_ENVIRONMENT:
86	REPT STW AUTOMATIC NETWORK DATA
87	SYNCHRONIZATION REPT ADP MAJOR ALARM AUTORST
_	REPT ADP MINOR ALARM AUTORST
	REPT ADP AUTORST
	REPT ADP AUTORST, UNIT IS x FOR x x [x] [x]
	REPT ADP INTERFACE ERROR x [x] [x] [x]
	REPT ADP INHIBIT ACTIVE x x [x] [x]
	REPT ADPAB MAJOR ALARM RESTORE FAILURE
	FOR x x [x] [x]
94	REPT ADPAB MINOR ALARM RESTORE FAILURE
95	FOR x x [x] [x] REPT C/D ERROR x x
1	1

REF	MESSAGE
	REPT C/D GETTY x x x x x x
	REPT C/D POKER x x x x
	REPT C/D STARTER x x
	REPT CONFIG FAULT TYPE x
	REPT CONFIG FAULT TYPE X REPT CONFIG RECONFIGURATION
101	REPT SYSTEM IS IN MINIMUM CONFIGURATION MODE
102	REPT INHADM x x x
	REPT INIT DEVICE STATUS
104	REPT PMGR ERROR x x [x] [x]
105	REPT PCPMD FAULT TYPE x
106	REPT RMTGETTY x x x x
107	REPT DLGGETTY x x x x
108	REPT SHLGETTY x x x x
109	REPT DLGSHL x x x x
110	REPT MAXINTVL x
111	REPT POWER {RESTORED REMOVED} x x [x] [x]
112	REPT POWER FAULT x x [x] [x]
113	REPT POWER FAULT DISTRIBUTION FRAME [x] x
114	REPT POWER FAULT CLEARED x x [x] [x]
115	REPT PMSLOT
116	REPT CURSTRMV x x x x
117	REPT CU x x
118	REPT DGN CU ERROR x
119	REPT RMF x [x]
120	REPT RCVRY CU x COMPLETED
121	REPT ERSLOT
122	REPT MMGR001 DKDRV STAT x
123	REPT MMGR002 x x x x x
124	REPT MMGR003 ADD [EXTENDED] MEMORY
125	FAILED, REPT MMGR004 SWAP SPACE REQUEST FAILED
	REPT MMGR005 AVAILABLE [EXTENDED]
427	MEMORY NOW REPT DMQ x x x
	REPT DRING X X X
	REPT DFC x x x x
	REPT DKDRV x x x
	REPT DISK INDEPENDENT OPERATION MODE x
132	REPT DIOP x x x
133	REPT DKDIP x
134	REPT SDLRTN
135	REPT GROWTH MHD x FAILED
136	REPT DEGROWTH MHD x FAILED
137	REPT DKDIP MESSAGE
138	REPT IORMVRST ERROR x x
139	REPT IOP x x x
	REPT RCVRY IOP x x [x]

REF MESSAGE
141 REPT RCVRY SCSDC x x [x]
142 REPT RCVRY SDL x x [x]
143 REPT RCVRY SDLC x x [x]
144 REPT IODRV x x [x]
145 REPT IODRV ERR H'1d50000 x x x x x x x
146 REPT EALXXX
147 REPT EAI ** WARNING ** x ON CU x
148 REPT SCSD x
149 REPT SCSDC x
150 REPT SCSDA x x x
151 REPT OUTPUT MESSAGES LOST
152 REPT SOP x
153 REPT CSOP IN SERVICE
154 REPT CSOP FORMATTING
155 REPT CSOP x x x
156 REPT SDL x x
157 REPT SDLRTC
158 REPT HSD x
159 REPT RCVRY HSD x x [x]
160 REPT HSDC x
161 REPT RCVRY HSDC x x [x]
162 REPT MT x x
163 REPT RCVRY MT x x
164 REPT MTC x x
165 REPT RCVRY MTC x x
166 REPT MTTY x
167 REPT RCVRY MTTY x x
168 REPT MTTYC x
169 REPT RCVRY MTTYC x x
170 REPT TTY x
171 REPT RCVRY TTY x x
172 REPT TTYC x
173 REPT RCVRY TTYC x x
175 REPT ROP x
176 REPT RCVRY ROP x
178 REPT DUI x
179 REPT RCVRY DUI x
180 REPT DUIC x
181 REPT RCVRY DUIC x
182 REPT LGN x ON x x
183 REPT MANUAL ACTION ASSERT=x, MOD=x,
EVENT=X 184 REPT FAN ALARM x CABINET
185 REPT FAN ALARM CLEAR x CABINET
186 REPT FAN NHIBIT[S] x
187 REPT FAN INHIBIT[S] CLEARED x
188 REPT FAN Y FAILURE X X
100 KEF I FAN X FAILURE X X

REF	MESSAGE
	REPT FAN x ALARM CLEARED x x
	REPT ALM PERIPHERY FS x
	REPT ALM CLR PERIPHERY FS x
	REPT ALM ALARM RLG x SM x ISLU2
	REPT ALM CLEAR RLG x SM x ISLU2
194	REPT ALM FAN x=x[-x] x
195	REPT ALM CLR FAN x=x[-x] x
	REPT ALM x [x] [x] CLEARED
197	REPT ALM [x] RBPSC x x SM x
198	REPT ALM CLEAR RBPSC x x SM x
199	REPT ALM [x] RIBMSC x x SITE x
200	REPT ALM CLEAR RIBMSC x x SITE x
201	REPT ALM [x] RISLUSC SM x RISLU x SITE x
202	REPT ALM CLEAR RISLUSC SM x RISLU x SITE x
203	REPT AUTOINH x [x] x
204	REPT AUTOINH x [x] x CLEARED
205	REPT INHIBIT SCAN POINT x ON SCSD x
206	REPT PWR x x=x[-x] [x]
207	REPT SWITCH LEFT IN ROS POSITION x=x[-x] [x]
	REPT FIELD MAINT x
209	REPT SCHEDULED COMMAND FAILED THREE
212	CONSECUTIVE TIMES
	REPT MKDSK
	REPT FILESYS x OVERFLOW x
	REPT OFFLINE BOOT
	REPT OLBCONFIG FAULT TYPE x
	REPT ERRPORT x x
	REPT RCV: x x x x
	REPT EMERGENCY DUMP PARTITION FULL
217	REPT GFS DTP FAILURE
218	REPT GENERAL FILE SERVICE
219	REPT INH DTP
220	REPT GFS BOOTSTRAP FSM
221	REPT GFS CLEANUP FSM
222	REPT GFS FLUSH FSM
223	REPT GFS PROCESS ERROR
224	REPT GFS ECD CORRUPTION
225	REPT GFS BACKGROUND AUDIT
226	REPT GFS MONITOR
227	REPT GFS MESSAGE ERROR
228	REPT GFS RETROFIT x
229	REPT CALL TRACE COMPL
230	REPT TRBL PCDA x
231	REPT SUBRG
232	REPT DFRG
233	REPT CCV DISK
234	REPT EECM DISK

255	W500.05
REF	MESSAGE REPT SECM DISK
	REPT CALL ACCOUNTING TROUBLE STREAM=X
	REPT AMATAPE
	REPT ISD LOG FILE IS APPROXIMATELY 85
	PERCENT FULL
	REPT AMA DISK STORAGE IS x% FULL FOR STREAM x
	REPT AMA DISK WRITER FOR STREAM x
	*C ****WARNING!WARNING!****
	REPT AMA CRIT ALARM DOWNGRADED TO A MAJOR ALARM FOR STREAM x
	REPT AMA MAJOR ALARM DOWNGRADED TO A MINOR ALARM FOR STREAM x
244	REPT AMA MINOR ALARM HAS BEEN RETIRED FOR STREAM x
245	REPT AMA SESSION CONNECT FAILED FOR STREAM x
	REPT AMA TRANSFER BUFFER OVERFLOW
	REPT MD
248	REPT LSBAND x x x x x
	REPT NADPC x x
250	REPT NAAPC x
	REPT CCS6LK
252	REPT CIRCULAR ROUTING CONTROL FOR DPC x FROM APC x
253	REPT EXCMSG x x x x x VALUE x THRESHOLD x
254	REPT AUDSTAT x
	REPT DGN AUDIT x
	REPT PCPAUD FAULT TYPE x ASSERT = x
	REPT FMGR ECD x PID=x UID=x x
	REPT FMGR x TABLE x FAIL
	REPT FMGR NONTASK FAULT x ADDR x
	REPT FMGR TASK STATUS - x, PID= x TYPE= x ADDR= x
	REPT FMGR x UNMOUNTED DUE TO DISK REMOVAL
	REPT FMGR ACCESS WINDOW TO BLOCK DEVICE FOR MOUNTED FILE SYSTEM IS X
263	REPT FMGR DIR Software FAILED: INODE x OPEN BY PID x ON x
264	REPT ECDMAN x
265	REPT KAUPRC FAULT CODE x [AUDIT x x]
266	REPT ULARP x
267	REPT UNIX INIT
268	AUD CCSTQ TKGMN
	AUD ENV=x x COMPLETED ERRORS=x EVENT=x
270	AUD ENV=x ABORTED ERRORS=x EVENT=x
271	AUD ENV=x x ERROR-CODE=x EVENT=x
272	AUD ENV=x x DUMP [x] EVENT=x
273	AUD ENV=x x FAILURE-CODE=x EVENT=x
274	AUD SM=x x COMPLETED ERRORS=x EVENT=x
275	AUD SM=x x ABORTED ERRORS=x EVENT=x

REF	MESSAGE
276	AUD SM=x x ERROR-CODE=x EVENT=x
277	AUD SM=x x DUMP [x] EVENT=x
278	AUD SM=x x FAILURE-CODE=x EVENT=x
279	AUD ENV=RTR CUSTAT 1 x
280	AUD ENV=RTR CUMEM 1 x
281	AUD ENV=RTR FSBLK x x
282	AUD ENV=RTR FSLINK x x
283	AUD ENV=RTR FSCMPT 1 x
284	AUD ENV=RTR FMGR [1-9] x

REF	MESSAGE
285	AUD ENV=RTR ECD x
286	AUD ENV=RTR ECDOWN 1 x
287	AUD ENV=RTR PMS x
288	AUD ENV=RTR MMGR x
289	AUD MMGR NOT STARTED
290	AUD ENV=RTR MSGBUF x
291	AUD ENV=RTR PROAD 1 x

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 Compag AlphaServer GS60, GS140

Disk Space Requirements:

Disk space required for installation: Subset copy: 20 Mbytes

Installation /usr 100 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 Lucent 5ESS Wireline Switch (Fault Management)

Software License:

QM-686AA-AA

Software Product Services:

QT-686**-** or QR-SP686-A9

Notes:

- * 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) for each system where the AM software is installed.

SOFTWARE LICENSING

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

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This product uses the FLEXIm Software License Key system.

A FLEXIm key must be obtained using information provided with the license deliverable. An authorization 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.

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