



Software Product Description

PRODUCT: TeMIP Access Module for Motorola EMX2500 Switch

SPD 70.76.00

DESCRIPTION

TeMIP 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 V3.2 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.

The TeMIP EMX2500 Access Module (AM) provides an interface to the Motorola EMX2500 Cellular Switch (software version 2.6.1.0.68E and SC9600 Base Stations). The EMX2500 Exchange System

supports both analog (AMPS) and digital radio technology Code Division Multiple Access (CDMA), but this Access Module supports fault management capabilities for AMPS technology, receiving and processing unsolicited messages (Level 1 AM).

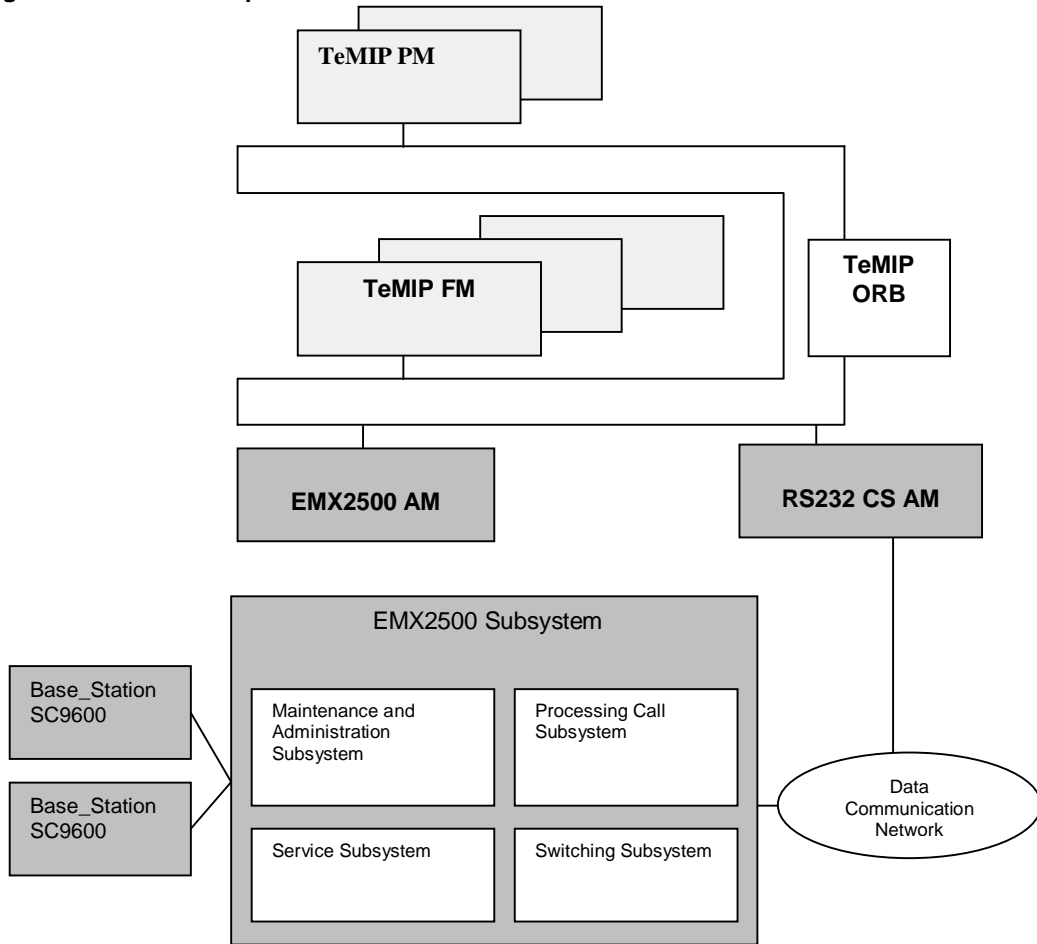
SOLUTION COMPONENTS

The EMX2500 cellular switch is directly interfaced to TeMIP by means of a combination of Management Modules:

- The RS232 Communication 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) or TCP (IP sockets) Communications Servers could also be envisioned)
- The EMX2500 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.

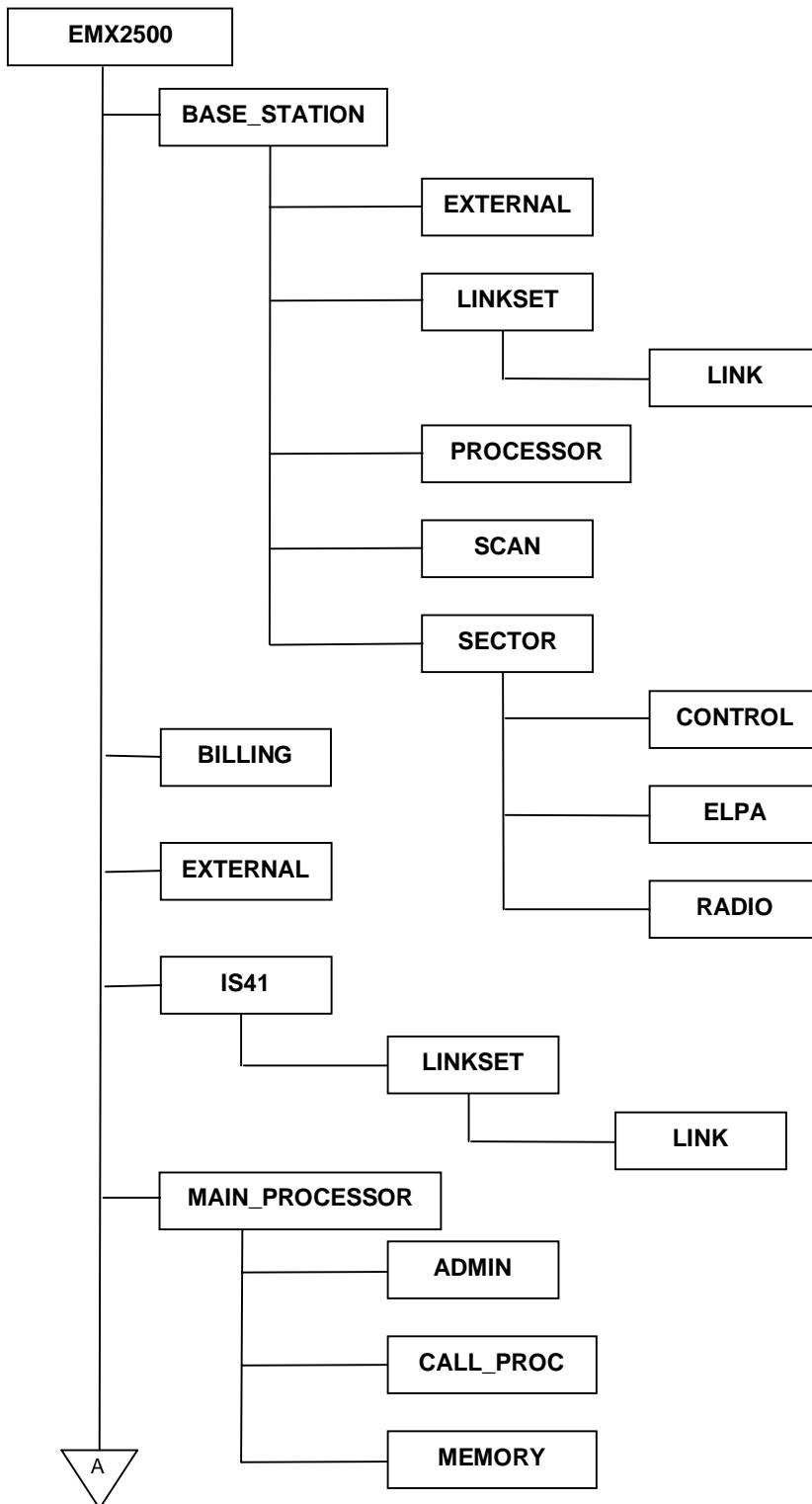
Figure 1: Solution Components

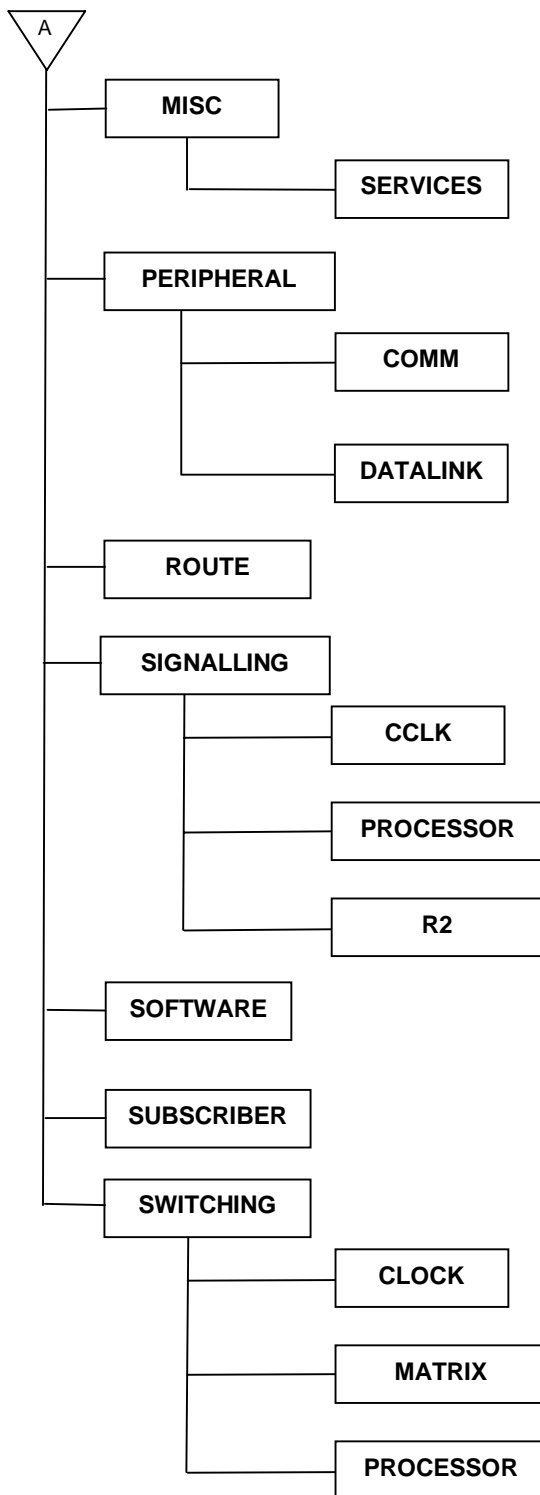


INFORMATION MODEL OUTLINE

The EMX2500 is represented by the information Model shown in Figure 2

Figure 2: Information Model





The Exchange is modelled as 12 subsystems, which present a standard view of cellular Mobile Telephonic system, independent of the technology used. This allows TMN managers to have a common view of different exchanges in a multi-vendor environment. The subsystems are represented by first level of child classes. The classes that show the specific hardware/software of

the EMX2500 are located below the subsystem level.

The switch itself is represented by the EMX2500 global class having 12 subsystems children classes.

The meaning of each child class is described in Table 1.

Table 1: EMX2500 Child Classes Hierarchy Description

Child Class	Child Class	Description	Cardinality
BASE_STATION		Remote station that contains the Radio Units responsible for subscriber unit connection	N
	EXTERNAL	Related to Base Station external alarms.	1
	LINKSET	Logical Links between Exchange and Base_Station	1
	LINK	Physical Links between Exchange and Base_Station.	3
	PROCESSOR	Base_Station Controller	1
	SCAN	Base Station Scan (SCN CHANNEL).	1
	SECTOR	Base Station Sector.	2,4
	CONTROL	Base Station Signalling Channel (SIG CHANNEL).	1
	ELPA	Base Station Power Amplifier.	1
	RADIO	Base Station Radio Channel (TCH CHANNEL).	1
BILLING		Exchange Billing Subsystem	1
EXTERNAL		Related to Exchange external alarm	1
IS41		IS41 Signalling.	1
	LINKSET	IS41 Logical Links.	1
	LINK	IS41 Physical Links.	3
MAIN_PROCESSOR		Exchange Main processor	1
	ADMIN	Maintenance and Administration Subsystem Processors (ADM, ADMX).	1
	CALL_PROC	Call Processing Subsystem Processors (CPM, CPMX, TRP, LTM, LTP).	1
	MEMORY	Memory Card.	1
MISC		Exchange Auxiliary Hardware	1
	SERVICES	Service Subsystem Processors (CONF, DAN).	1
PERIPHERAL		I/O equipment (disk, tape, terminal).	1
	COMM	Communication Subsystem.	1
	DATALINK	Communication Link with peripherals.	1
ROUTE		Route (trunk group).	N
SIGNALLING		Signalling Subsystem: CCITT7, ISUP and proprietary.	1
	CCLK	Common Channel Link	1

Child Class	Child Class	Description	Cardinality
	PROCESSOR	Signalling Subsystem Processors (MCM, MCMX, CGM, LEM, CCM, CCD, BSLK).	1
	R2	R2 Signalling Link.	1
SOFTWARE		Software failure detected by Exchange.	1
SUBSCRIBER		Related to Subscriber Alarms.	1
SWITCHING		Call Switching Subsystem.	1
	CLOCK	Related to Switching Matrix Synchronism	1
	MATRIX	Management of Switching Matrix	1
	PROCESSOR	Switching Subsystem Processors (SMM, SMMX, SMP, CBI, SMT, PCMI, MUX, TSI, SMI).	1

MANAGEMENT CAPABILITIES SUMMARY

Unsolicited Messages Support

The EMX2500 messages are named IPR (Information and Problem Reports) and can be any of the following types: ADMIN, AMA, AUDIT, CALL, COMM, CONFIG, CONTROL, MAINT, MCON, MISC, NETWORK, OPSYS, REMOTE, SVCKTS or TRUNKS.

The EMX2500 AM processes all AMA, COMM, CONTROL, MISC, NETWORK, REMOTE, SVCKTS and TRUNKS messages with minor, major or catastrophic severity, according to IPR's description obtained with IPRDICT command. Some IPRs, even though they do not have any severity are treated because of their importance.

The ADMIN, AUDIT, CALL, CONFIG, MAINT, MCON and OPSYS IPRs do not generate alarm message but only informative messages. Nevertheless the IPRs referenced in document "Very Important IPR (68P09201A31-A)" are treated because they indicates serious problems on EMX2500 operation. All other unimportant IPRs are discarded by the EMX2500 AM.

The failure messages (IPR) treated by EMX2500 AM are described in Table 2 and generate corresponding alarms to TeMIP.

The mapping of the alarm fields to the ITU-T Standards complies with the following guidelines:

- **Managed Object:** The managed object class is driven from an Alarm Mapping Table. The managed object instance can be the "GEN" instance for the classes that have only one instance (refer to Table 1) or can be built from the information extracted from message body,
- **Severity:** The alarm severity is driven from an Alarm Mapping Table,

- **Event Type and Probable Cause:** These fields are driven from an Alarm Mapping Table and depend only on the alarm type,
- **Additional Text:** The Additional Text field contains the original alarm message generated by the Exchange.

Alarm Clearance

Most alarms generated by EMX2500 have a message that turns off the alarm condition.

According to ITU-T standards, the clearance of an alarm can be done based on the following rules:

- An alarm is cleared when another one with severity clear and with same event arguments for **Managed Object** and **Notification Id** is received.
- An alarm is cleared when another one with severity clear and with same event arguments for **Managed Object**, **Probable Cause**, **Event Type** and **Specific Problem** is received.

The EMX2500 Access Module uses both rules for alarms correlation. The first rule correlates alarms message, which informs failure on different devices but with the same values in <IPR type> and <IPR number> fields. In these cases, the EMX2500 AM uses information retrieved from the alarm body to define **Managed Object** and **Notification Identifier** event arguments. The second rule is used on alarm messages in which <IPR type> and <IPR number> fields are enough to determine values for **Managed Object**, **Probable Cause**, **Event Type** and **Specific Problem** fields and to do alarm correlation.

Alarm Information

Table 2 lists the EMX2500 alarm messages that are processed by the EMX2500 Access Module.

Table 2: EMX2500 Alarm Table

MESSAGE NAME	MESSAGE NAME
MANUAL MODE ON (CONTROL#1)	CALL PROCESSING QUEUE OVERLOAD (MISC#277,#280)
AUTOMODE ON (CONTROL#0)	CP QUEUE OVERLOAD CLEAR (MISC#298)
CNM: ADMIN B TO C (CONTROL#45)	MESSAGE QUEUE OVERFLOW (MISC#278,279)
CNM: ADMIN B TO C (CONTROL#46)	CP QUEUE OVERFLOW CLEAR (MISC#297)
MANUAL PROCESSOR REMOVAL (CONTROL#3)	NO MOBILE PAGES (MISC#281)
MANUAL PROCESSOR RESTORAL (CONTROL#2)	TRUNK LIST QUEUE CORRUPTION (MISC#284)
AUTO PROCESSOR REMOVAL (CONTROL#5)	NO MOBILE HANDOFFS UNDER CGM (MISC#286)
AUTO PROCESSOR RESTORAL (CONTROL#4)	CALL THROTTLING STARTED (CALL#744)
BOTH PROCESSORS OF PAIR OSV (CONTROL#7)	THROTTLING ON (CALL#755)
PROC RESTORED PAIR PREV OSV (CONTROL#6)	THROTTLING OFF (CALL#756)
CELL OUT OF SERVICE (REMOTE#32)	THROTTLING-LOW FREE BUFFERS (CALL#761)
CELL IN SERVICE (REMOTE#33)	THROTTLING OFF (CALL#762)
BSC PAGI (REMOTE#95)	THROTTLING ON (CALL#767)
BSC PAGI (REMOTE#96)	THROTTLING OFF (CALL#768)
BSC DATA (REMOTE#97)	CCS7: SLM LINK OUT OF SERVICE (COMM#89)
BSC DATA (REMOTE#98)	CCS7: SLM LINK IN SERVICE (COMM#90)
BSC LOAD SHED IN PROGRESS (MCON#219)	CCS7: TM&M LINK THRESHOLD ONSET (COMM#245)
BSC LOAD SHED CLEARED (MCON#220)	CCS7: TM&M LINK THRESHOLD ABATED (COMM#246)
BSC FUSE (REMOTE#15)	ALT. MATRIX CLOCK REPEATER FAIL (MISC#70)
BSC FUSE (REMOTE#16)	ALT. MATRIX CLOCK REPEATER OK (MISC#71)
SITE RELAY ALARM SET (REMOTE#77,#79,#81)	MAIN MATRIX CLOCK REPEATER FAIL (MISC#72)
SITE RELAY ALARM RESET (REMOTE#78,#80,#82)	MAIN MATRIX CLOCK REPEATER OK (MISC#73)
GLI OUT OF SERVICE (REMOTE#101)	SCLK VCO PULL-IN RANGE ALARM (MISC#74)
GLI IN SERVICE (REMOTE#102)	SCLK VCO PULL-IN RANGE ALM RESET (MISC#75)
DISK OPEN FAILED (AMA#1)	SCLK S2 REF OSC OUT OF TOLERANCE (MISC#76)
DISK READ FAIL (AMA#2)	SCLK S2 REF OSC IN TOLERANCE (MISC#77)
DISK WRITE FAIL (AMA#9)	SCLK S2 REF OSC OVEN STATUS BAD (MISC#78)
BATCH OVERWRITE (AMA#10)	SCLK S2 REF OSC OVEN STATUS OK (MISC#79)
APPROACHING BATCH FILE OVERWRITE (AMA#11)	T1A/T1B NOT PRES AT SCLK A (MISC#162,#164,#219,#221,#223,#225)
MINOR ALARM OFF (AMA#24)	T1A/T1B NOT PRES AT SCLK A RES (MISC#163,#165,#220,#222,#224,#226)
BATCH FILE OVERWRITE IS IMMINENT (AMA#12)	SCLK BOARD FRAME LOCKING NOT VAL (MISC#166)
MAJOR ALARM OFF (AMA#25)	SCLK BOARD FRAME LOCKING VALLID (MISC#167)
DISK CLOSE FAIL (AMA#14)	T1A/T1B NOT PRES AT SCLK B (MISC#215,#217,#227,#229,#231,#233)
TAPE OPEN FAIL (AMA#18)	T1A/T1B NOT PRES AT SCLK B RES (MISC#216,#218,#228,#230,#232,#234)
TAPE CLOSE FAIL (AMA#19)	PCM CLOCK REM (NETWORK#1,#3)
TAPE MOUNT REQ'D (AMA#20)	PCM CLOCK REM (NETWORK#0,#2)
INV CDR/CR MSG (AMA#29)	ALARM ON: SYSTEM TIMING GEN CARD (SVCKTS#55,#57,#59)
INV DISK BLOCK (AMA#30)	ALARM OFF: SYSTEM TIMING GEN CARD (SVCKTS#56,#58,#60)
AUTOCLOSE SUSPENDED (AMA#36)	ALARM ON: SYSTEM TIMING GEN OSC (SVCKTS#61,#63,#65)
RESUME AUTOCLOSE (AMA#37)	ALARM OFF: SYSTEM TIMING GEN OSC (SVCKTS#62,#64,#66)
INVALID AMA DISK BLOCK (AMA#42)	ALARM ON: SYSTEM TIMING BUS (SVCKTS#109,#111,#113)
CDR TRANSFER BUFFER FULL (AMA#45)	ALARM OFF: SYSTEM TIMING BUS (SVCKTS#110,#112,#114)
CDR FROM CPM IS OUT OF SEQUENCE (AMA#46)	ALARM ON: OSC EXTERNAL SYNCH LINE (SVCKTS#151,#153,#155)
AMA DATA CANNOT BE SENT TO DISK (AMA#49)	ALARM OFF: OSC EXTERNAL SYNCH LINE (SVCKTS#152,#154,#156)
NO CDRS BEING COLLECTED (AMA#50)	ALARM ON: STG TYPES MISMATCH (SVCKTS#164)
NO SERIAL DAS LINK AVAILABLE (AMA#53)	LOGICAL LINK FAILURE (COMM#67)
SERIAL DAS TRANSFER RESUMED (AMA#54)	LOGICAL LINK ERROR (COMM#68)
LINK DUMP ABORT (AMA#69)	LOGICAL LINK RESTORED (COMM#69)
SEQUENCE EVENT RECORD ERROR (AMA#76)	SEAS UAL-UAL PVC OUT-OF-SERVICE (COMM#243)
CDR TRANSFER BUFFER AT 80% MARK (AMA#80)	SEAS UAL-ALL IN-SERVICE (COMM#242)
CDR TRANSFER STABILIZED UNDER 80% (AMA#79)	SEAS UAL-ALL PVC OUT-OF-SERVICE (COMM#244)
CDR TRANSFER BUFFER FULL (CALL#38)	SEAS UAL-UAL IN-SERVICE (COMM#241)
X.25: PHYS DATALINK LINK FAILURE (COMM#56)	LOG DATALK REMOVED AUTO (CONTROL#84,#86,#88)
DATALINK PHYSICAL LINK RESTORED (COMM#57)	LOG DATALK RESTORED AUTO (CONTROL#85,#87,#89)
PHYS DATALK REMOVED AUTO (CONTROL#72,#74,#76)	LOG DATALK REMOVED MANUAL (CONTROL#90,#92,#94)
PHYS DATALK RESTORED AUTO (CONTROL#73,#75,#77)	LOG DATALK RESTORED MANUAL (CONTROL#91,#93,#95)
PHYS DATALK REMOVED MANUAL (CONTROL#78,#80,#82)	SIG-XCVR OUT OF SERVICE (REMOTE#110)
PHYS DATALK RESTORED MANUAL (CONTROL#79,#81,#83)	SIG-XCVR IN SERVICE (REMOTE#111)
AUTO TRUNK PROC REMOVAL (CONTROL#9)	
AUTO TRUNK PROC RESTORAL (CONTROL#8)	
MANUAL TRUNK PROC REMOVAL (CONTROL#11)	
MANUAL TRUNK PROC RESTORAL (CONTROL#10)	
LOW BUFFER LEVEL (CONTROL#43)	
BUFFERS RESTORED (CONTROL#44)	
NO JOB BLOCKS AVAILABLE (MISC#272)	
JOB BLOCK QUEUE NO LONGER EMPTY (MISC#273)	

MESSAGE NAME
LINK OUT (REMOTE#45)
LINK IN (REMOTE#44)
DROP OUT OF SERVICE (REMOTE#47)
DROP IN SERVICE (REMOTE#46)
LCI OUT (REMOTE#90,#94)
LCI IN S (REMOTE#89,#93)
LCI NOT (REMOTE#91,#92)
MAJOR LPA (REMOTE#99)
CATASTRO (REMOTE#100)
LCI OUT OF SERVICE (REMOTE#104)
LCI IN SERVICE (REMOTE#105)
POWER BAD (MISC#0,#2,#4,#238)
POWER GOOD (MISC#1,#3,#5,239)
SHELF FUSE FL (MISC#6,#8,#10,#12,#14,#16)
SHELF FUSE OK (MISC#7,#9,#11,#13,#15,#17)
RECTIFIER CURRENT LOW (MISC#18)
RECTIFIER CURRENT OK (MISC#19)
RECTIFIER FL (MISC#20)
RECTIFIER OK (MISC#21)
RING GEN FAIL (MISC#22)
RING GEN OK (MISC#23)
LOW VOLTAGE MAP FAILURE (MISC#24)
LOW VOLTAGE MAP OK (MISC#25)
HIGH VOLTAGE MAP FAILURE (MISC#26)
HIGH VOLTAGE MAP OK (MISC#27)
FUSE ALARM FL (MISC#28,#30)
FUSE ALARM OK (MISC#29,#31)
FRAME COOLING FAN FAILURE (MISC#32)
FRAME COOLING FAN OK (MISC#33)
POWER SUPPLY TOLERANCE FAILURE (MISC#38,#40,#41,#42,#44,#45,#47,#48,#50,#51, #52,#54,#64,#65,#144,#146,#148,#150,#151#,#152, #153,#154,#155)
POWER SUPPLY TOLERANCE OK (MISC#39, #43,#46,#47,#49,#51,#53,#55,#145,#147,#149)
POWER SUPPLY LOAD SHARE FAIL (MISC#56,#58,#60,#62,#146,#148,#156,#157)
POWER SUPPLY LOAD SHARE OK (MISC#57,#59,#61,#63,#142,#143,#147,#149)
12V FUSE BLOWN (MISC#66,#68)
12V FUSE OK (MISC#67,#69)
PD48A FUSE FL (MISC#80,#82,#84,#86,#88,#90)
PD48A FUSEOK (MISC#81,#83,#85,#87,#89,#91)
POWER FAIL 48V A FL (MISC#92)
POWER FAIL 48V A OK (MISC#93)
PD48B FUSE FL (MISC#94,#96,#98,#100,#102,#104)
PD48B FUSE OK (MISC#95,#97,#99,#101,#103,#105)
POWER FAIL 48V B FL (MISC#106)
POWER FAIL 48V B OK (MISC#107)
DPD-1 FUSE FAIL (MISC#132,#134,#136,#138,#140)
DPD-1 FUSE OK (MISC#133,#135,#137,#139,#141)
PD48-0A FUSE BLOWN (MISC#299,#301,#303,#305,#307)
PD48-0A FUSE ISV (MISC#300,#302,#304,#306,#308)
PD48-1A FUSE BLOWN (MISC#309,#311,#313,#315)
PD48-1A FUSE ISV (MISC#310,#312,#314,#316)
PD48-0B FUSE BLOWN (MISC#317,#319,#321,#323,#325)
PD48-0B FUSE ISV (MISC#318,#320,#322,#324,#326)
PD48-1B FUSE BLOWN (MISC#327,#329,#331,#333)
PD48-1BFUSE ISV (MISC#328,#330,#332,#334)
BT IV FL (MISC#335,#337)
BT IV ISV (MISC#336,#338)
IPU FAILURE (MISC#339,#341)
IPU ISV (MISC#340,#342)
5V FAIC POWER FL (MISC#343,#345)
5V FAIC POWER ISV (MISC#344,#346)
FFP FUSE F1-F8 BLOWN (MISC#347)
FFP FUSE F1-F8 ISV (MISC#348)
FFP FUSE F9-F14 BLOWN (MISC#349,#351,#353,#355,#357)
FFP FUSE F9-F14 ISV (MISC#350,#352,#354,#356,#358)
CELNET LINK PAIR MANAGE'T FAILED (COMM#202)
UNUSUAL EVENT ROUTER/REFORMATTER (COMM#204)
CELNET LINK - INITS MAJOR ALARM (COMM#208)

MESSAGE NAME
UNUSUAL EVENT IN CELNET LINK FM (COMM#203)
CELNET LINK PAIR - BOTH LINKS OOS (COMM#206)
CELNET LINK MARKED ACTIVE (COMM#207)
HARD PROTOCOL VIOLATION (MAINT#375,#376)
ONE MASTER COULD NOT POLL SLAVE (MAINT#421)
PCM MUX REM (NETWORK#8,#9,#10,#14,#15,#16)
PCM MUX REST (NETWORK#11,#12,#13,#17,#18,#19)
PCM TSI REM (NETWORK#20,#21,#22,#26,#27,#28)
PCM TSI REST (NETWORK#23,#24,#25,#29,#30,#31)
ALARM ON: PCM INTERFACE CARD (SVCKTS#37,#39,#41)
ALARM OFF: PCM INTERFACE CARD (SVCKTS#38,#40,#42)
ALARM ON: SWITCH MATRIX INT CARD (SVCKTS#67,#69,#71)
ALARM OFF: SWITCH MATRIX INT CARD (SVCKTS#68,#70,#72)
ALARM ON: MATRIX INBOUND GROUP (SVCKTS#73,#75,#77)
ALARM OFF: MATRIX INBOUND GROUP (SVCKTS#74,#76,#78)
ALARM ON: MATRIX OUTBOUND GROUP (SVCKTS#79,#81,#83)
ALARM OFF: MATRIX OUTBOUND GROUP (SVCKTS#80,#82,#84)
ALARM ON: MATRIX INBOUND SUBGROUP (SVCKTS#85,#87,#89)
ALARM OFF: MATRIX INBOUND SUBGROUP (SVCKTS#86,#88,#90)
ALARM ON: MATRIX OUTBOUND SUBGROUP (SVCKTS#91,#93,#95)
ALARM OFF: MATRIX OUTBOUND SUBGROUP (SVCKTS#92,#94,#96)
ALARM ON: MATRIX SUBSYSTEM (SVCKTS#97,#99,#101)
ALARM OFF: MATRIX SUBSYSTEM (SVCKTS#98,#100,#102)
ALARM ON: MATRIX SUBORD CNTL BUS (SVCKTS#103,#105,#107)
ALARM OFF: MATRIX SUBORD CNTL BUS (SVCKTS#104,#106,#108)
ALARM ON: MATRIX STAGE (SVCKTS#127,#129,#131,#133,#135,#137)
ALARM OFF: MATRIX STAGE (SVCKTS#128,#130,#132,#134,#136,#138)
ALARM ON: MATRIX SPACE SWITCH (SVCKTS#139,#141,#143)
ALARM OFF: MATRIX SPACE SWITCH (SVCKTS#140,#142,#144)
ALARM ON: MATRIX TIME SWITCH (SVCKTS#145,#147,#149)
ALARM OFF: MATRIX TIME SWITCH (SVCKTS#146,#148,#150)
PCM BUS BAD -- USR (MAINT#324)
MANUAL EXTERNAL MEMORY REMOVAL (CONTROL#15)
MANUAL EXTERNAL MEMORY RESTORAL (CONTROL#14)
EXT MEM PARITY ERROR (CONTROL#47)
LAST ISV MEMORY CARD INSANE (CONTROL#100)
DATA DISCREPANCY IN EXTERNAL MEM (CONTROL#101)
CORRECTABLE EXT MEM PARITY ERROR (MISC#108)
READ EXT MEMO (ADMIN#93)
EXT MEM READ ERR (ADMIN#127)
EXT MEM WRT ERR (ADMIN#128)
EXT MEM RD ERR (CONFIG#11)
EXT MEM WR ERR (CONFIG#12)
EXTERNAL MEMORY READ ERROR (CONFIG#1601)
EXTERNAL MEMORY WRITE ERROR (CONFIG#1602)
EXT MEM LINK LIST CONTAMINATION (MAINT#230)
DCG ON ALTERNATE SOURCE (CONTROL#58)
DCG ON PRIMARY SOURCE (CONTROL#59)

MESSAGE NAME
ALARM MUX REMOVED - AUTO (CONTROL#60,#62,#64)
ALARM MUX RESTORED - AUTO (CONTROL#61,#63,#65)
ALARM MUX REMOVED (CONTROL#66,#68,#70)
ALARM MUX RESTORED (CONTROL#67,#69,#71)
DSS1 D CHAN ON QUEUE (MISC#275)
NO DSS1 D CHAN ON QUEUE (MISC#276)
DSS1 DCP CHAN AOS (MISC#282)
DSS1 DCP CHAN AOS RESET (MISC#283)
AUTO DISK REMOVAL (CONTROL#21)
AUTO DISK RESTORAL (CONTROL#20)
DISK USAGE EXCEEDED 99 PERCENT (CONTROL#48)
DISK READ ERROR (CONTROL#1613)
DISK WRITE ERROR (CONTROL#1614)
MOUNT TAPE FOR LOAD BULK TREXT (MISC#158)
LOAD BULK TREXT ALARM OFF (MISC#159)
MOUNT TAPE FOR DUMP BULK TREXT (MISC#160)
DUMP BULK TREXT ALARM OFF (MISC#161)
WARNIG DISK ERR REACH THRESHOLD (MISC#274)
WARNING - DISK RD AFTER WR ERROR (MISC#295)
DISK READ AFTER WRITE OK (MISC#296)
DISK READ ERROR (NETWORK#1613)
DISK WRITE ERROR (NETWORK#1614)
READ DISK ERR (ADMIN#110,#112)
DISK READ ERR (ADMIN#150)
DISK WRITE ERROR (ADMIN#151)
DISK ERROR (ADMIN#220)
DISK READ ERROR (ADMIN#1613)
DISK WRITE ERROR (ADMIN#1614)
DISK READ ERROR (AUDIT#1613)
DISK WRITE ERROR (AUDIT#1614)
DISK RD ERR (CONFIG#13)
ERROR OCCURS DURING DISK RESTORE (CONFIG#14)
DISK READ ERROR (CONFIG#1613)
DISK WRITE ERROR (CONFIG#1614)
DISK READ ERROR REPORTED TO FISO (MAINT#167)
DISK WRITE ERROR REPORTED TO FISO (MAINT#168)
DISK TEST ERROR REPORTED TO FISO (MAINT#246)
CONST MON DISK TEST FILE OPER ER (MAINT#275)
CNM: DISK ERROR (MAINT#286)
DISK READ ERROR (MAINT#1613)
DISK WRITE ERROR (MAINT#1614)
R2 CHAN REM (SVCKTS#165,#166,#167,#171,#172,#173)
R2 CHAN REST (SVCKTS#168,#169,#170,#174,#175,#176)
CALL COMPLETED WITH FLAGGED CFC (CALL#42)
TCH-XCVR OUT OF SERVICE (REMOTE#107)
TCH-XCVR IN SERVICE (REMOTE#108)
T-1 REMOTE ALARM (MISC#109,#256,#258)
T-1 REMOTE ALARM RESET (MISC#110,#257,#259)
T-1 CARRIER LOSS OOS ALARM (MISC#111)
T-1 CARRIER LOSS OOS ALARM RESET (MISC#112)
T-1 BI-POLAR ALARM (MISC #113,#115,#117,#241)
T-1 BI-POLAR ALARM RESET (MISC#114,#116,#118,#242)
T-1 FRAME SLIP ALARM (MISC#119,#121,#123)
T-1 FRAME SLIP ALARM (MISC#120,#122,#124)
T-1 FRAME ALIGNMENT ALARM (MISC#125,#127,#129)
T-1 FRAME ALIGNMENT ALARM RESET (MISC#126,#128,#130)
T-1 CMI VIOLATION ALARM ON (MISC#169,#171,#173)
T-1 CMI VIOLATION ALRM OFF (MISC#170,#172,#174)
T-1 RECEIVE ALARM ON (MISC#175,#177,#179)
T-1 RECEIVE ALARM OFF (MISC#176,#178,#180)
T-1 SEND ALARM ON (MISC#181,#183,#185)
T-1 SEND ALARM OFF (MISC#182,#184,#186)
T-1 FRAME LOCK ALARM ON (MISC#187,#189,#191)
T-1 FRAME LOCK ALARM OFF (MISC#188,#190,#192)
T-1 MULTI-FRAME OL ALRM ON (MISC#193,#195,#197)
T-1 MULTI-FRAME OL ALRM OFF (MISC#194,#196,#198)
T-1 TNR1 ALARM ON (MISC#199,#201,#203)
T-1 TNR1 ALARM OFF (MISC#200,#202,#204)
T-1 TNR2 ALARM ON (MISC#205,#207,#209)

MESSAGE NAME
T-1 TNR2 ALARM OFF (MISC#206,#208,#210)
T-1 FRAME LOSS ALARM (MISC#246,#248)
T-1 FRAME LOSS ALARM RESET (MISC#247,#249)
T-1 MULTI-FR LOSS ALARM (MISC#251,#253)
T-1 MULTI-FR LOSS ALARM RESET (MISC#252,#254)
T-1 REMOTE MULTI-FR AL (MISC#261,#263)
T-1 REMOTE MULTI-FR AL RES (MISC#262,#264)
T-1 OOS AIS ALARM (MISC#265)
T-1 OOS AIS ALARM RESET (MISC#266)
T-1 BIT ERROR ALARM (MISC#267,#270)
T-1 BIT ERROR ALARM RESET (MISC#268,#271)
TRUNK GRP REM (TRUNKS#7,#8,#19,#20)
TRUNK GRP REST (TRUNKS#10,#11,#22,#23)
T1 SPAN REMOVED (TRUNKS#36,#37,#38,#42,#43,#44)
T1 SPAN RESTORED (TRUNKS#39,#40,#41,#45,#46,#47)
DIGITAL TRUNK CARD REMOVED (TRUNKS#60,#61,#62,#66,#67,#68)
DIGITAL TRUNK CARD RESTORED (TRUNKS#63,#64,#65,#69,#70,#71)
UPPER THRESHOLD PER TRUNK GROUP (TRUNKS#88)
LOWER THRESHOLD PER TRUNK GROUP (TRUNKS#89)
CLS50 BUF FULL (CALL#529)
SCN-XCVR OUT OF SERVICE (REMOTE#113)
SCN-XCVR IN SERVICE (REMOTE#114)
MANUAL DGTL ANNUNCIATOR REMOVAL (CONTROL#35)
MANUAL DGTL ANNUNCIATOR RESTORAL (CONTROL#34)
CPTD/CONF CHAN REM (SVCKTS#1,#7)
CPTD/CONF CHAN REST (SVCKTS#4,#10)
CPTD CHAN REM (SVCKTS#2,#3,#8,#9)
CPTD CHAN REST (SVCKTS#5,#6,#11,#12)
RCVR CHAN REM (SVCKTS#13,#14,#15,#19,#20,#21)
RCVR CHAN REST (SVCKTS#16,#17,#18,#22,#23,#24)
SNDR CHAN REM (SVCKTS#25,#26,#27,#31,#32,#33)
SNDR CHAN REST (SVCKTS#28,#29,#30,#34,#35,#36)
ALARM ON: ANNUNCIATOR BUS (SVCKTS#122,#124,#126)
ALARM OFF: ANNUNCIATOR BUS (SVCKTS#123,#125,#127)
ALARM ON: DAN/MATRIX TONE GEN (SVCKTS#157,#159,#161)
ALARM OFF: DAN/MATRIX TONE GEN (SVCKTS#158,#160,#162)
NO SERVICE CKT AVAILABLE (SVCKTS #163)
DAN NOT ACTIVE (MAINT#319)
CSS7: SRC DPC FAILED (COMM#137)
ALL CONFIGURED DPCS ARE ACTIVE (COMM#214)
REMOTE AUTH VALIDATION STOPPED (COMM#163)
REMOTE AUTH VALIDATION RESTARTED (COMM#164)
TCAP REJECT MESSAGE RECEIVED (COMM#165)
TCAP REJECT CONDITION CORRECTED (COMM#166)
CAC SWITCHOVER FAILURE (CONTROL#38)
CAC MANUAL SWITCHOVER COMPLETE (CONTROL#41)
CAC AUTO SWITCHOVER COMPLETE (CONTROL#42)
NO DATA LINKS AVAILABLE (CONTROL#39)
CCS7: SEQ SUBSYS RECOVERY ABORTED (COMM#83)
CCS7: SEQ SUBSYS RECOVERY COMPLETE (COMM#87)
RESOURCES EXHAUSTED (COMM#2)
PROGRAM CHECKSUM ERROR (CONTROL#40)
INVALID AUTHCODE (MISC#131)
CHKSUM - VERIFY FAILED (MISC#235)
UNABLE TO CREATE TMM FTP FILE (MISC#292)
CI-NUMERIC VALIDATION ERROR (ADMIN#96)
UPL-ADMIN UNEXPECTED END OF DATA (ADMIN#300)
UPL-ADMIN REC'V'D BAD MSG SEQ NUM (ADMIN#301)
UPL-ADMIN UNEXPECTED MSG RECVD (ADMIN#302)
UPL NO OUTPUT TASK AVAILABLE (ADMIN#303)
UPL DISK BLOCK RLSD TWICE (ADMIN#304)
UPL FAILURE TO ALLOC DISK BLOCK (ADMIN#305)
UPL INVALID - ADMIN DIALOGUE STATE (ADMIN#306)

MESSAGE NAME
AUXPRM DOWNLE READ/WRITE ERROR (ADMIN#357)
DOWNLE - PROCESSOR UPDATE ERROR (AUDIT#1)
DOWNLE - TABLE NOT IN A50 (AUDIT#9)
DOWNLE - READ/WRITE SIZE ERROR (AUDIT#10)
DOWNLE - OUT OF CONTROL BLOCKS (AUDIT#31)
DOWNLE - DOWNLOAD X_RRREAD ERROR (AUDIT#34)
ALL TRUNKS BUSY FROM ROUT LIST (CALL#43)
CANNOT READ SYSTEM TIME (CALL#46)
EKOS ERROR (CALL#106)
BAD TABLE ID (CALL#436)
CDR NOT ACKD (CALL#549)
RCVR: NO RECEIVER CHAN AVAILABLE (CALL#559)
CALL BLOCK LOCKED (CALL#665)
NO PATH AVAILABLE (CALL#676)
LINK LIST MALF (CONFIG#1)
EXT MEM RD ERR (CONFIG#4)
EXT MEM WR ERR (CONFIG#6)
NO PATH TO PROC - BLOCKED AT (CONFIG#220)
DISK COPYING IN PROGRESS (CONFIG#221)
ACTIVATE PROC NACK (CONFIG#230)
ACTIVATE PROC TIMEOUT (CONFIG#231)
PROCESSOR ACTIVATION (CONFIG#232)
SOFTWARE ANOMALY DETECTED (CONFIG#243)
NON-RESIDENT PROGRAM OUT OF SERVICE (MAINT#49)
FISO: INV INTRPT (MAINT#53)
BAD MSG FORMAT REPORTED TO FISO (MAINT#54)
MSG RTG ERR REPORTED TO FISO (MAINT#55)
MSG TOO BIG REPORTED TO FISO (MAINT#56)
FISO: PROC CRASH (MAINT#57)
FISO RECEIVES/PROCESS ERROR REPT (MAINT#114)

MESSAGE NAME
EXCHANGE OVERRUN (MAINT#152)
UNABLE TO RELEASE BUS (MAINT#231)
SUCCESSFULLY STOLE BUS FROM MATE (MAINT#232)
WALL CL R/W REPORTED TO FISO (MAINT#239)
PROC NORESP REPORTED TO FISO (MAINT#240)
EPROM CKSUM REPORTED TO FISO (MAINT#243)
EKOS SYSTEM CALL ERROR RETURN (MAINT#262)
EKOS EXCHANGE OVERRUN (MAINT#267)
PROC NOT RECEIVING BY INTERRUPTS (MAINT#371)
SOFT PROTOCOL VIOLATION (MAINT#374)
XM CARD STATUS TABLE CONTAMINATE (MAINT#435)
FAULTY MEM MANAGEMENT UINT (MMU) (MAINT#436)
SW ERROR IN HANDOFF CODE (MCON#20)
SW ERROR IN PAGING CODE (MCON#24)
SW ERROR IN CELULAR CALL PROC (MCON#28)
CRASH UPLOAD (OPSYS#5)
MALICIOUS CALL TRACE (MISC#293)
tone GEN REM (NETWORK#5,#7)
tone GEN REST (NETWORK#4,#6)
ALARM ON: MATRIX CONTROL BUS INT (SVCKTS#43,#45,#47)
ALARM OFF: MATRIX CONTROL BUS INT (SVCKTS#44,#46,#48)
ALARM ON: SWITCH MATRIX TEST CARD (SVCKTS#49,#51,#53)
ALARM OFF: SWITCH MATRIX TEST CARD (SVCKTS#50,#52,#54)
ALARM ON: TONE BUS (SVCKTS#115,#117,#119)
ALARM OFF: TONE BUS (SVCKTS#116,#118,#120)

MISCELLANEOUS MANAGEMENT CAPABILITIES

Autoconfiguration Tool

The Autoconfiguration Tool ensures data coherency between the exchange configuration and TeMIP object instances. The Autoconfiguration Tool queries the exchange about the configuration of the MSC components and updates the Management Information Repository by creating new instances, deleting non existing instances or setting attributes used to map alarms. The Autoconfiguration Tool is a Launched Application and can be started under operator selection. During regular operation it should be run once a day, due to the dynamic environment of a Cellular Service Provider. It is effective not only during regular operation but also for initial set-up and configuration.

The Autoconfiguration Tool creates/deletes instances for the following Object Classes:

- *Base_Station, Base_Station Links, Base_Station Sectors, IS41 Links and Routes*

The Autoconfiguration Tool updates the following attributes:

- *DAS_Link, Route_List, Scan_List, Base Station Type, LinkSet_Status, Radio_List and Radio_Quantity*

HARDWARE REQUIREMENTS

Supported Alpha AXP Processors:

AlphaServer 8200
AlphaServer 8400
DEC/4600, DEC/4700
DEC/7600, DEC/7700
DEC/10600

AlphaServer 2000
AlphaServer 2100
AlphaServer 4000
AlphaServer 4100
AlphaStation 600
DEC/3500, DEC/3500S, DEC/3500X
DEC/3800, DEC/3800S
DEC/3900

AlphaServer 300 (Melmac)
AlphaServer 400
AlphaServer 800

AlphaServer 1000
AlphaStation 200
AlphaStation 250
AlphaStation 255
AlphaStation 400
AlphaStation 500
DEC/2300S
DEC/2500
DEC/3300, DEC/3300L,
DEC/3300X, DEC/3300LX
DEC/3400, DEC/3400S
DEC/3600, DEC/3600S
DEC/3700

PWS 433
PWS 500
PWS 600

Ultimate Workstation 533

Disk Space Requirements:

Disk space required for installation:
Subset copy: 29,000 Kbytes
Installation: /usr 104,000 Kbytes

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

DIGITAL UNIX Operating System V4.0D
TeMIP Framework V3.2
Tcl 8.0 or newer version
Tk 8.0 or newer version
Expect 5.25 or newer version

OPTIONAL SOFTWARE

TeMIP Graphical ASCII Toolkit V2.0

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.

The testing used to confirm the Year 2000 readiness of this product included code assessment and system tests to verify transition dates.

DISTRIBUTION MEDIA

This software is available by electronic means, distributed directly by the Engineering Team in NSIS/CIS Telecom, who can be contacted through your local Compaq office, which sends an internal e-mail to ybetemipsupp@compaq.com (containing customer identification and proof of license purchase).

ORDERING INFORMATION

TeMIP Access Module for Motorola EMX2500 Switch

Software License: QL-6BKA9-AA

Software Product Services: QT-6BK**-**
or QR-SP6BK-A9

Notes:

- * denotes variable fields. For additional information on available services, or hardware platform tiers, refer to the appropriate price book.
- The QL number corresponding to the TeMIP Graphical ASCII Toolkit V2.0 (Run-Time) must also be purchased (QL-5SMAM-3B).

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A FLEXIm key must be obtained using the request form provided with the Cover Letter, *temip-license-form.txt*

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