Service

HiPath 4000 Troubleshooting

Service Manual

A31003-H3130-S100-4-7620

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SIEMENS

Reference No.: A31003-H3130-S100-4-7620

Content

1 Error codes

1.1 Fundamentals

While the system is starting up the current status of the board (DP or bus board) is displayed on the 7-segment display.

Apart from signaling with a 7-segment display it is also possible to output the error code via a terminal connected to the board.

When the startup is complete, error codes can also be displayed as advisory messages on the service terminal.

Additional information

> 7-segment display

> 7-segment display error codes

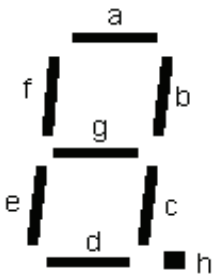
1.1.1 7-segment display

The 7-segment displays on the boards signal the

- Start-up,
- Operating status of the board,
- Error code.

1.1.1.1 Segments

Segment labels in the 7-segment display:



A distinction is made between 3 sub-functions:

- Track point
- Decimal point (monitor display)
- Error code

1.1.1.2 Track point (segment)

The input parameter track point is encoded in the display code by the hexadecimal code, stored in the memory and then displayed. Track points are displayed on the DP while the shell is booting.

1.1.1.3 Decimal point (h)

The input parameter decimal point is decoded and displayed with the track point stored in the memory.

1.1.1.4 DP error codes

If the PABX fails to operate even when reset, the following displays should be noted:

- 7-segment display on each DP (all digits, see error code)
- 7-segment display on each firmware processor

- Status of the RUN-LEDs on each DP (lighting, flickering, dark)

It is only possible to ascertain which processor did not boot on the basis of the above after POWER_ON Reload

Additional information

> Fundamentals

> 7-segment display error codes

1.1.2 7-segment display error codes

If the error code is output on the 7-segment display, the following applies:

The display algorithm of the error code runs in a repetitive error loop if the Ret parameter is 0. Otherwise, the following algorithm is run 5 times.

- The track point is decoded and alternately displayed for approx. 0.3 seconds and then cleared for approx. 0.3 seconds 8 times.
- The display is then cleared for approx. 0.7 seconds.
- Display the other digits for approx. 0.4 seconds and clear them for approx. 0.4 seconds.
- Clear the display for 0.6 seconds after each digit
- When all parameters have been output, the procedure is started again with the track point.

Example of an output on the 7-segment display:
E 8800 (8800 is the error code)

If the ADS-DP has not been booted, the following error codes are possible which are output via the 7-segment display or a terminal connected to the DP:

Error code value range:

Table: Possible DP error codes in the ADP

Value range (Hex code)	Signaling subsystem	Error name
00-96 4000 8000-8020	Nucleus	ON_Y_E_...
02 8400-844C	PGL286 PBO286	MC_Y_E_...
8800-8830	PCL286	OP_Y_E_...

092B 8840 - 8863	NFD286 (part of BOOT)	E$...
8880 8A0F	BPL286 (part of BOOT)	excep$code
1000 - 1039 2000 - 2003 3000 - 3015 3200 - 32FF 3300 - 33FF 4000 - 4546	BOOT BOOT BOOT 32xx: FWLP error (ADP) Restart Manager error Pentium board error	WA_E_...

Table: Possible DP error codes in the SWU

Value range (Hex code)	Signaling subsystem	Error name
02 8400-844C	PGL286	MC_Y_E_...
8400 884B	IPL286	MC_Y_E_...
1000 - 1039 2000 - 2003 3000 - 3015 3100 - 31FF 3200 - 32FF	BOOT 31xx: LAN error (CC only) 32xx: FWLP error (CC only)	WA_E_...

Additional information

> Fundamentals

> 7-segment display

> BOOT error codes

> IPL286, PGL286 and PBO286 error codes

> PCL286 error codes

> FAM/BIOS error codes

> Operating system error codes

1.2 BOOT error codes

The BOOT FW controls the HL (in the CC and in the ADS) until transferred to the SYSLOAD. BOOT functions can then be called up via a FAR_GATE.

The BOOT HL is classified into a CC-HL or ADS-HL.

The following table contains error codes that can be issued by the DP in the CC and ADS.

- BOOT error codes in the ADP and the CC
- BOOT error codes when booting as CC
- BOOT error codes when booting as ADP
- BOOT error codes during the FWLP
- BOOT error codes while determining the reason for the restart
- BPL286 error codes (BOOT Program Loader)
- NFD286 error codes (Named File Driver)
- IPL286, PGL286 and PBO286 error codes

Additional information

- Fundamentals
- 7-segment display
- 7-segment display error codes
- IPL286, PGL286 and PBO286 error codes
- PCL286 error codes
- FAM/BIOS error codes
- Operating system error codes

1.2.1 BOOT error codes in the ADP and the CC

Table: BOOT-FW error codes

Hex code	Name	Explanation	Recommended action

1000	WA_E_NMEM	No memory in system	Check load tables or increase number memory (either with MIP, M8M or by inserting memory modules in DM4L)
1002	WA_E_LAYB	PGL/IPL not ready for loading	Wait since PGL may be overloaded at the moment; otherwise reload or update APS if necessary
1004	WA_E_INT	General protection fault	Retry or switch on/off and check BOOT FW and APS
1005	WA_E_NOCO	Available queue in DPR is empty	Retry because system is overloaded
1006	WA_E_PCON	Container address for PUT_CONTAINER wrong	If necessary, trigger reload or exchange IP/MIP FW
1007	WA_E_FCON	Container address for FREE_CONTAINER wrong	If necessary, trigger reload or exchange IP/MIP FW
1008	WA_E_IND1	INDEX1 in LO_P_FAR incorrect	Check BOOT FW and Sysload
1009	WA_E_IND2	INDEX2 in LO_P_FAR incorrect	Check BOOT FW and Sysload
100A	WA_E_HOFA	Acknowledgment of RSTA message wrong	If necessary, trigger reload or exchange BOOT FW
100B	WA_E_CCHL	Common control will not boot	Check BOOT FW on both sides that they are equivalent and up-to-date
100C	WA_E_WDT	1-ms clock failed	Exchange DP
100D	WA_E_MEME	Memory defective	Exchange DP
100F	WA_E_DLNK	Incorrect DT information in link field	Reload or correct APS if necessary
1010	WA_E_RRSA	Wrong response to RSTA message	If necessary, trigger reload or exchange BOOT FW
1011	WA_E_RLSY	Wrong response to LOAD_SYSLOAD message	If necessary, trigger reload or exchange BOOT FW and check APS

1012	WA_E_RLAL	Wrong response to LOAD_ALL message	If necessary, trigger reload or exchange BOOT FW and check APS
1013	WA_E_RLJO	Wrong response to LOAD_JOB message	If necessary, trigger reload or exchange BOOT FW and check APS
1014	WA_E_RDMP	Wrong response to DUMP message	If necessary, trigger reload or exchange BOOT FW and check APS
1015	WA_E_RRSE	Wrong response to RSTE message	If necessary, trigger reload or exchange BOOT FW and check APS
1016	WA_E_SIDT	Segment descriptor in IDT	Check APS
1017	WA_E_SLOT	Start selector invalid	Check APS
1018	WA_E_LINK	Descriptor link interrupted	Check APS
1019	WA_E_SDDL	Too many data areas for SDD request	Check APS
1020	WA_E_SDT	Descriptor outside the descriptor table	Check APS and BOOT FW
1021	WA_E_HOME	Error in WA_P_HOME	Check APS and BOOT FW
1030	WA_E_PMT_GET	No free entry in PMT	Check load tables
1031 to 1036	WA_E_PMT_ADO_x	Error entering a memory area in the PMT (Physical Memory Table)	Check APS and BOOT FW
1038	WA_E_COMPUTE_RANGE	Error in defining area for selector	Check APS and BOOT FW
1039	WA_E_NO_SIOP	Illegal call of SIOP functions	Check BOOT FW and IOPx
2000	WA_E_TIP	IP is not collecting container	Check IP FW
2001	WA_E_LOCK	Queue blocked for too long	Check IP FW
2002	WA_E_RSIP	IP cannot be reset	Check IP FW and BG
2003	WA_E_IPER	IP has reset itself	Check IP FW

3000	WA_E_TADM	Partner (ADS) not responding	ADS probably not yet booted or faulty	
3001	WA_E_ADMH	ADS will not boot	Check boards in the ADS	
3002	WA_E_TRCN	Transmit counter wrong	Check IP/MIP FW	
3003	WA_E_TPID	Error in PID request	Check IP/MIP/BOOT FW	
3004	WA_E_QBLK	Queue block byte set	Check IP/MIP/BOOT FW	
3005	WA_E_DLNG	Data length too big	Check IP/MIP/BOOT FW	
3010	WA_E_IECB	Bus handler error (not from BOOT)	Check IP/MIP FW	
3011	WA_E_TOUE	Time overflow error	Check IP/MIP/BOOT FW	
3012	WA_E_QBSH	Queue block short container	Check IP/MIP FW	
3013	WA_E_QBLO	Queue block long container	Check IP/MIP FW	
3014	WA_E_NOPA	IP cannot set up a connection	Check IP/MIP FW	
3015	WA_E_CONE	Wrong task code	Check IP/MIP/BOOT FW	
4003	WA_E_TEMPERATURE	Board-/ambient temperatur to high	Check fan	from cPCI boards
4100	WA_E_PCI_NO_MEMORY	No memory in system	Connect/check memory	Pentium boards and higher
4200	WA_E_NO_HOSTBRIDGE	Hostbridge not found in the system	Exchange DP	Pentium boards and higher
4204	WA_E_PCI_NO_DSCC4	No DSCC4 controller found	Exchange DP	Pentium boards and higher
4300	WA_E_PCI_UNEXPECTED_DEVICE	Wrong PCI controller found	Check DP/if necessary update LW	Pentium boards and higher
4400	WA_E_FW_NO_MATCH	FW ID does not correspond to board ID	Check DP/LW, if necessary, check HD	Pentium boards and higher
4545	WA_E_MONOPROC_DETECTED	one DPC5 is booted as MONO	Restart (HR at least)	DPC5 only

4546	WA_E_SLOT_NOT_DETERMINED	Wrong slot	Check slot	Pentium boards and higher
4566	WA_E_JUMPER_6_SETTING	Wrong jumpering on board	Check jumper 6 (above battery jumper) (jumper must be inserted for ADP and MONO systems)	Pentium boards and higher
8001	WA_E_NO_OR_UNKNOWN_DEV	Unknown device or no device found at the PCI bus	Check board (particularly the PMC slot) - exchange DP	Pentium boards and higher
8002	WA_E_RESERVED_DEVICE	PCI device recognized at wrong slot	Check FW	Pentium boards and higher
8003	WA_E_PCI_INIT_ERROR	Error during PCI initialization	Check board	Pentium boards and higher
8004	E_PARAM	Wrong parameter	Check IP/MIP/BOOT FW	

Recommended action:

- Retry: the action cannot be executed at the moment; please try again. If, after several retries, the action will not execute, please contact your system expert.
- Verify load tables: Check that the correct applications have been activated.
- Check FW: Check that the respective firmware is up-to-date.
- Check APS: Check that the APS used does not contain any errors, or that all necessary patches have been activated.
- Verify subsystem(s): Check that the subsystem(s) are available on load medium.
- Reinstall subsystem(s): Subsystem(s) on load medium defective; the subsystem(s) must therefore be reinstalled.
- If an action has not been recommended, the software probably contains an error.
- In this case, please contact your system expert with the full log and the relevant extracts from the history file

For a detailed error diagnosis, a log from the startup of the DP is also required. This can be obtained by connecting a terminal to the V.24 interface of the DP (or DM) with 4800 baud.

Additional information

1.2.2 BOOT error codes when booting as CC

The following table contains error codes that are only reported when the CC is booted. In this case, the error codes 31xx for LAN errors and 32xx for FWLP (FirmWare Loading Process) are used

LAN errors (error code 3100 - 31FFH) indicate a defective LAN connection between the CC and ADP. These errors may be specific to either LAN, TPS (Transport Service) or TCP (Transmission Control Protocol).
The most frequent LAN error is 310A: The DP4L does not have a LAN connection. The HUB board may not be plugged in or may be faulty.

Causes and solutions:

- Check the HUB module at the slot and check the functions of the CC and ADP (modules inserted correctly?),
- Release of FW/LW of DP4L/DPC5 (CC) and DM3L/DM4L/DPC5 (in ADP),
- Board exchange, if necessary.

FWLP errors usually originate either on the LW (Load Ware) file, which is located on the load device or on the access path.

The most common FWLP error is 3212: An error occurred while sending/receiving to/from PGL (mostly timeout). For further information, please refer to the BOOT ERROR INFO.

Solutions/procedure:

- in the case of 3212 CC, restart with reload or power on,
- check file saved on load device (with rmx commands or with AMO sta-list:":pds:apsc/cfw/cdp4l010",,100;

Table: BOOT-FW error codes when booting as CC

Hex code	Name	Explanation	Recommended action
3101	WA_E_BASE_INIT	LAN driver layer error	Wait until ADS has booted and check boards incl. FW
3102	WA_E_BLOCK_INIT	- " -	- " -
3103	WA_E_INTERR_INIT	- " -	- " -
3104	WA_E_RDRFILL_INIT	- " -	- " -
3105	WA_E_NO_STP_ENP	- " -	- " -
3106	WA_E_ETH_LONG	- " -	- " -
3107	WA_E_ETH_SHORT	- " -	- " -
3108	WA_E_RCV_NOBUFF	- " -	- " -
3109	WA_E_TR_RDYERR	- " -	- " -
310A	WA_E_LAN_INT	- " -	- " -
310B	WA_E_INT_STUCK	- " -	- " -
310C	WA_E_TDR_FULL	- " -	- " -
3141	WA_E_IP_RCVLEN_IMPL	IP layer error (Internet Protocol)	- " -
3181	WA_E_CON_ALREADY_EXIST	TCP layer error	- " -
3182	WA_E_CON_PLAUS_ERR1	- " -	- " -
3183	WA_E_CON_PLAUS_ERR2	- " -	- " -
3184	WA_E_CON_SETUP_DENIED	- " -	- " -
3185	WA_E_CON_SETUP_TIMO	- " -	- " -
3186	WA_E_DATASEND_SEND	- " -	- " -
3187	WA_E_NODATASEND_BUFFLACK	- " -	- " -
3188	WA_E_RSTSEND_BUFFLACK	- " -	- " -
3189	WA_E_RSTSEND_SEND	- " -	- " -
31A0	WA_E_IMPLAUS_STATE_OPEN	Error inside TCP state machine	- " -
31A1	WA_E_IMPLAUS_STATE_SEND	- " -	- " -
31A2	WA_E_IMPLAUS_STATE_RECEIVE	- " -	- " -

31A3	WA_E_IMPLAUS_STATE_ABORT	- " -	- " -
31A4	WA_E_IMPLAUS_STATE_SEGARIV	- " -	- " -
31A5	WA_E_IMPLAUS_EVENT	- " -	- " -
31A6	WA_E_CON_NOT_CLOSED	- " -	- " -
31A7	WA_E_BAD_SEND_STATE	- " -	- " -
31A8	WA_E_BAD_RECEIVE_STATE	- " -	- " -
31A9	WA_E_BAD_ABORT_STATE	- " -	- " -
31AA	WA_E_SEGARIV_ILLFLAGS1	- " -	- " -
31AB	WA_E_SEGARIV_ILLFLAGS2	- " -	- " -
31AC	WA_E_SEGARIV_ILLFLAGS3	- " -	- " -
31AD	WA_E_SEGARIV_REACHERR	- " -	- " -
31C0	WA_E_WAIT_MSEC	TPS Layer Error	- " -
31C1	WA_E_GLOBAL_1	- " -	- " -
31C2	WA_E_GLOBAL_2	- " -	- " -
31C3	WA_E_AVBUFF_LACK	- " -	- " -
31C4	WA_E_SEND_QUIT_1	- " -	- " -
31C5		- " -	- " -
31C6	WA_E_SND_NOBUFF_1	- " -	- " -
31C7	WA_E_RCV_PLAUS_1	- " -	- " -
31C8	WA_E_RCV_THROWAWAY_1	- " -	- " -
31C9	WA_E_RCV_THROWAWAY_2	- " -	- " -
31CA	WA_E_ACK_BUFF_LACK	- " -	- " -
31CB	WA_E_SET_SEL_BASE	- " -	- " -
31CC	WA_E_PLAUS_GET_DATA	- " -	- " -
31CD	WA_E_GET_SEL_BASE	- " -	- " -
31CE	WA_E_SET_WD	- " -	- " -
31CF	WA_E_RCV_THROWAWAY_3	- " -	- " -
31D0	WA_E_RCV_THROWAWAY_4	- " -	- " -
3201	WA_Y_WRONG_HEX_POINTER	FWLP - pointer to hex-file do not start with offset "0"	Check BOOT LW

3202	WA_Y_IMPLAUS_RECORD	FWLP - the read record from the MCS86-file contained an wrong record type (MCS86 format)	Check BOOT LW
3203	WA_Y_IMPLAUS_BASE_ADDR	FWLP - while incrementing the base_address the last base_address was already greater	Check BOOT LW
3204	WA_Y_HEX_FILE_OVER_LIMIT	FWLP - the created hex-file was too great	Check BOOT LW
3205	WA_Y_RES_1	FWLP - not used	Check BOOT LW
3206	WA_Y_GET_FILE_LEN_ERROR	FWLP - the file on HD is too great	Check BOOT LW
3207	WA_Y_CHKSUM_LEN_ERROR	FWLP - the file length is not an odd value	Check BOOT LW
3208	WA_Y_CHKSUM_CALC_ERROR	FWLP - checksum was '0000'	Check BOOT LW
3209	WA_Y_FM_PROGRAM_ERR	FWLP - error while programming the FLASH memory	Check BOOT LW and if necessary check board
320A	WA_Y_FM_ERASE_ERR	FWLP - error while erasing the FLASH memory	Check BOOT LW and if necessary check board
320B	WA_Y_WRONG_FILE_TYPE_ON_HD	FWLP - the read file from HD is not MCS86 format	Check BOOT LW
320C	WA_Y_WRONG_MCS86_POINTER	FWLP - pointer to MCS86-file do not start with offset '0'	Check BOOT LW
3210	WA_Y_SET_SEL_ERR	FWLP - the BOOT function 'set_selector' returned an error	Check BOOT LW
3211	WA_Y_GET_SEL_ERR	FWLP - the BOOT function 'get_selector' returned an error	Check BOOT LW
3212	WA_Y_SEND_REC_LAY_ERR	FWLP - the called PGL returned an error	Check BOOT LW and ADS

8004	E_PARAM	Wrong parameter	Check BOOT LW

Recommended actions:

- Retry: the action cannot be executed at the moment; please try again. If, after several retries, the action will not execute, please contact your system expert.
- Check LW: Check that the respective LW (on path :pds:apsc/cfw/cdxxxx) is up-to-date and, if necessary, upgrade it to the latest version.
- Check FW: Check that the FW implemented (EPROM) is up-to-date and, if necessary, upgrade it to the latest version
- Check APS: Check that the APS used does not contain any errors, or that all necessary patches have been activated.
- Check ADS: Check whether the modules in the ADP are inserted in the correct slot; whether the ADS powered up correctly; whether the FW of the relevant modules 'are up to date' .
- Check board: check that the respective board is plugged in correctly (if necessary, unplug board and plug in again). If the error could not be recovered, change board and have the faulty board tested in the test field.
- If an action has not been recommended, the software probably contains an error.
  In this case, please contact your system expert with the full log and the relevant extracts from the history file.

For a detailed error diagnosis, a log from the startup of the DP is also required. This can be obtained by connecting a terminal to the V.24 interface of the DP (or DM) with 4800 baud.

Additional information

> BOOT error codes
> BOOT error codes in the ADP and the CC
> BOOT error codes when booting as ADP
> BOOT error codes during the FWLP
> BOOT error codes while determining the reason for the restart
> BPL286 error codes (BOOT Program Loader)
> NFD286 error codes (Named File Driver)

1.2.3 BOOT error codes when booting as ADP

The following errors can be issued by the BOOT in the ADP.

Table: BOOT-FW error codes in the ADP

Hex code	Name	Explanation	Recommended action
2B	WA_E_IO	Device IO error	Check SCSI-ID of the load medium and, if necessary, exchange HD or MO
2C	WA_E_IOPS	IOPS error	Check SCSI-ID of the load medium and, if necessary, exchange HD or MO
0001	E_TIME	Time has elapsed, load SP300-V3.3 or later from FD	retry or wait
0004	E_LIMIT	The response cannot be linked in	retry or wait
0005	E_CONTEXT	Synchronous and asynchronous calls at the same time	retry or wait
0006	E_EXIST	The addressed area does not exist	Check load medium
0007	E_INCONSISTENT	Inconsistent bit set for PDS area. Alternatively, switched to HD or MO.	Check load medium
002B	WA_E_IO	IO time out	Check load medium
012B	WA_E_IO	Recovered error	Check load medium
022B	WA_E_IO	Drive not ready	Check load medium
032B	WA_E_IO	Non-critical error	Retry and, if necessary, check load medium
042B	WA_E_IO	Hardware error	Check load medium
052B	WA_E_IO	Wrong response	Retry and, if necessary, check load medium
062B	WA_E_IO	Advisory information from output device	Retry and, if necessary, check load medium
072B	WA_E_IO	Non-critical write error	Retry and, if necessary, check load medium
182C	WA_E_IOPS	SCSI not available	Retry and, if necessary, check load medium
1A2C	WA_E_IOPS	Device not initialized	Retry and, if necessary, check load medium
1B2C	WA_E_IOPS	Ready changed: READY/NOT READY/READY	Retry and, if necessary, check load medium
1C2C	WA_E_IOPS	Ready changed: READY/NOT READY	Retry and, if necessary, check load medium

202C	WA_E_IOPS	Task not implemented	Check IOPx FW
212C	WA_E_IOPS	Command not known	Check IOPx and BOOT FW
222C	WA_E_IOPS	Command not known	Check IOPx and BOOT FW
232C	WA_E_IOPS	Status unknown	Check IOPx and BOOT FW
2A2C	WA_E_IOPS	Task not running	Check IOPx and BOOT FW
302C	WA_E_IOPS	Bus device outside permitted values	Check IOPx and BOOT FW
322C	WA_E_IOPS	Inconsistent data transfer direction	Check IOPx and BOOT FW
382C	WA_E_IOPS	Maximum number of devices set up has been reached	Too many devices on the SCSI BUS
392C	WA_E_IOPS	Wrong device type	Check load medium
402C	WA_E_IOPS	No response from the device connected to the SCSI	Check load medium
412C	WA_E_IOPS	The number of bytes is wrong (n < b*l)	Check IOPx and BOOT FW
422C	WA_E_IOPS	The number of bytes is wrong (n < b*l)	Check IOPx and BOOT FW
442C	WA_E_IOPS	SCSI bus is being used by another device	Check devices at the SCSI bus

Recommended action:

- Retry: the action cannot be executed at the moment; please try again. If, after several retries, the action will not execute, please contact your system expert.
- Check APS: Check that the APS used does not contain any errors, or that all necessary patches have been activated
- Check ADS: Check whether the modules in the ADS are inserted in the correct slot; whether the ADS powered up correctly; whether the FW of the relevant modules 'are up to date'.
- Check FW: Check that the FW of the DP / DM boards or IOPx is up-to-date. In the case of IOPx, the jumper positions may have to be checked.
- Check load medium: Check that the hard disk or MO has the correct connection. Similarly, check the associated IOPx (IOPA, IOPS or IOPX). If several devices are at the SCSI bus, check the SCSI IDs of the individual devices
- If an action has not been recommended, the software probably contains an error.
- In this case, please contact your system expert with the full log and the relevant extracts from the history file.

For a detailed error diagnosis, a log from the startup of the DP is also required. This can be obtained by connecting a terminal to the V.24 interface of the DP (or DM) with 4800 baud.

Additional information

> BOOT error codes

> BOOT error codes in the ADP and the CC

> BOOT error codes when booting as CC

> BOOT error codes during the FWLP

> BOOT error codes while determining the reason for the restart

> BPL286 error codes (BOOT Program Loader)

> NFD286 error codes (Named File Driver)

1.2.4 BOOT error codes during the FWLP

Errors during the firmware loading process are also signaled at the SSD. The following errors can occur:

Table: BOOT error codes for the firmware loading process

Hex code	Name	Explanation	Recommended action
3201	WA_Y_WRONG_HEX_POINTER	FWLP - pointer to hex-file do not start with offset '0'	Check BOOT LW
3202	WA_Y_IMPLAUS_RECORD	FWLP - the read record from the MCS86-file contained an wrong record type (MCS86 format)	Check BOOT LW
3203	WA_Y_IMPLAUS_BASE_ADDR	FWLP - while incrementing the base_address the last base_address was already greater	Check BOOT LW
3204	WA_Y_HEX_FILE_OVER_LIMIT	FWLP - the created hex-file was too big	Check BOOT LW
3205	WA_Y_RES_1	FWLP - not used	Check BOOT LW
3207	WA_Y_CHKSUM_LEN_ERROR	FWLP - the file length is not an odd value	Check BOOT LW

3208	WA_Y_CHKSUM_CALC_ERRO R	FWLP - checksum was ’0000’	Check BOOT LW
3209	WA_Y_FM_PROGRAM_ERR	FWLP - error while programming the FLASH memory	Check DM4L board
320A	WA_Y_FM_ERASE_ERR	FWLP - error while erasing the FLASH memory	Check DM4L board
320B	WA_Y_WRONG_FILE_TYPE_ ON_HD	FWLP - the read file from HD is not MCS86 format	Check BOOT LW
320C	WA_Y_WRONG_MCS86_POI NTER	FWLP - pointer to MCS86-file do not start with offset ’0’	Check BOOT LW
3220	WA_Y_SET_SEL_ERR	FWLP - the BOOT function ’set_selector’ returned an error	Check BOOT LW
3221	WA_Y_GET_SEL_ERR	FWLP - the BOOT function ’get_selector’ returned an error	Check BOOT LW
3222	WA_Y_ATTACH_VOL_ERR	FWLP - the NFD function ’attach_volume’ returned an error	Check BOOT LW
3223	WA_Y_DETACH_ERR	FWLP - the NFD function ’detach_volume’ returned an error	Check BOOT LW
3224	WA_Y_NAM_SETUP_ERR	FWLP - the NFD function ’nam_setup’ returned an error	Check BOOT LW
3225	WA_Y_BLOCK_READ_ERR	FWLP - the NFD function ’block_read’ returned an error	Check BOOT LW
3226	WA_Y_WAIT_DEV_ERR	FWLP - the NFD function ’wait_device’ returned an error	Check BOOT LW
3227	WA_Y_NFD_DEV_ERR	FWLP - the NFD was called with incorrect values	Check BOOT LW
3230	WA_E_FM_UNKNOWN	FWLP - Flash module not detected	Exchange DP, Pentium boards and higher
3231	WA_E_FM_DEVICE_NOT_SU PPORTED	FWLP - Flash module not support-ed	Check BOOT LW - exchange DP, Pentium boards and higher

3232	WA_E_FM_BLOCK_ERASE_FAIL	FWLP - Error while deleting	Check BOOT LW, Pentium boards and higher
3233	WA_E_FM_PROGRAM_FAIL	FWLP - Error while writing	Check BOOT LW, Pentium boards and higher
3234	WA_E_FM_NOT_ALIGNED	FWLP - Parameter error	Check BOOT LW - check APS, Pentium boards and higher
3235	WA_E_FM_OUT_OF_RANGE	FWLP - Parameter error	Check APS, Pentium boards and higher
3236	WA_E_FM_PARAM	FWLP - Parameter error	Check APS, Pentium boards and higher

Recommended action:

- Retry: the action cannot be executed at the moment; please try again. If, after several retries, the action will not execute, please contact your system expert.
- Check BOOT LW: Check that the BOOT LW (:pds:apsc/cfw/cdxxx) stored on the load device is up-to-date.
- Check load medium: Check that the hard disk or MO has the correct connection. Similarly, check the associated IOPx (IOPA, IOPS or IOPX). If several devices are at the SCSI bus, check the SCSI IDs of the individual devices.

For a detailed error diagnosis, a log from the startup of the DP is also required. This can be obtained by connecting a terminal to the V.24 interface of the DP (or DM) with 4800 baud.

Additional information

> BOOT error codes

> BOOT error codes in the ADP and the CC

> BOOT error codes when booting as CC

> BOOT error codes when booting as ADP

> BOOT error codes while determining the reason for the restart

> BPL286 error codes (BOOT Program Loader)

> NFD286 error codes (Named File Driver)

1.2.5 BOOT error codes while determining the reason for the restart

The following errors can occur while determining the reason for the restart:

Hex code	Name	Explanation	Recommended action
3301H	WA_Y_E_AREA_NOT_AVAILABLE	Load area not available	Check the load medium, if necessary, exchange HD or MO
3302H	WA_Y_E_AREA_ONLY_ONE		
3303H	WA_Y_E_CONFIG	Invalid configuration	Check configuration
3304H	WA_Y_E_SUBFUNCT_NOT_PLAUS	Restart manager was activated using an invalid function	Exchange BOOT LW
3305H	WA_Y_E_REST_NOT_DETERMINED	No reason could be found for the restart	
3306H	WA_Y_E_NO_AREA_AVAILABLE	No load area available	Check the load medium, if necessary, exchange HD or MO
3310H	WA_Y_E_BS_INFO_SUBFCT_NOT_PLAUS		

For a detailed error diagnosis, a log from the startup of the DP is also required. This can be obtained by connecting a terminal to the V.24 interface of the DP (or DM) with 4800 baud.

Additional information

> BOOT error codes

> BOOT error codes in the ADP and the CC

> BOOT error codes when booting as CC

> BOOT error codes when booting as ADP

> BOOT error codes during the FWLP

> BPL286 error codes (BOOT Program Loader)

> NFD286 error codes (Named File Driver)

1.2.6 BPL286 error codes (BOOT Program Loader)

The error codes of the BOOT Program Loader (used to load the IPL) consist of the command used (e.g. ATTACH_VOLUME), the error which occurs (e.g. incorrect parameter transfer) and a basic error code (8880H).

Example:

```
Command: MP$ATTACH 0010H

Error extension: E$USER$PARAM 0000H

Basic error code: 8880H

---------

ERROR 8890H
```

Table: Error extension for BPL286

Hex code	Name	Explanation
0	E_USER_PARAM	Errors in task parameter
1	E_FILE	File not available/readable (IPL286)
2	E_OMF	Error in the OMF of the load file
3	E_APS	Memory/descriptor overlap
4	E_INT_PARAM	Parameter errors (internal and external)
5	E_INT_DATA	Data errors (internal and external)
6	E_INTERN	Internal program error
7	E_LOCKED	File access is locked
0FH	E_NESTED	Nested error

Table: BPL286 error codes

Hex code	Name	Explanation	Recommend action
8880	E_USER_PARAM	General execution error in the BPL286	Check BOOT FW
889x	E_MP_ATTACH	Error executing command 'ATTACH_VOLUME'	Check BOOT FW
88Ax	E_IBM_FILES	Error accessing IBM-formatted files	Check BOOT FW/ IOPx and APS

88Bx	E_OPEN_FILE	Error opening file	Check BOOT FW/ IOPx and APS
88Cx	E_READ_FILE	Error reading file	Check BOOT FW/ IOPx and APS
88Dx	E_CLOSE_FILE	Error closing file	Check BOOT FW
88Ex	E_DETACH	When executing command 'DETACH_VOLUME"	Check BOOT FW
88Fx	E_INIT_PHYSICAL	Error initiating physically addressed block	Check BOOT FW and load device
890x	E_READ_PHYSICAL	Error reading a physically addressed block	Check BOOT FW and load device
891x	E_COPY_PHYSICAL	Error copying physically addressed blocks	Check BOOT FW and load device
892x	E_COMPUTE_RANGE	Error comparing first/last segment address	Check BOOT FW and load device
893x	E_PMT_INIT	not used	
894x	E_PMT_GET	not used	
895x	E_PMT_PUT	not used	
896x	E_PMT_ADD	not used	
897x	E_AL_TAB_COMPARE	not used	
898x	E_DC_TAB_INIT	Error in the descriptor check table	Check BOOT FW
899x	E_DC_TAB_SEARCH	Error searching for an associated table for the specified descriptor	Check BOOT FW
89Ax	E_DC_TAB_ADD	Error adding in the descriptor check table	Check BOOT FW
89Bx	E_INSTALL_DSC	Error installing a descriptor	Check BOOT FW
89Cx	E_INSTALL_SPECIAL	Error installing a descriptor	Check BOOT FW
89Dx	E_LOAD_MODULE	Error loading an OMF Bootable file	Check BOOT FW and load device
89Ex	E_HD_MODULE	Error loading from hard disk	Check BOOT FW and load device
89Fx	E_FD_MODULE	Error loading from floppy disk (e.g. MODisk)	Check BOOT FW and load device
8A0x	E_BPL_MODULE	Error loading the IPL	Check BOOT FW and load device

Recommended action:

- Retry: the action cannot be executed at the moment; please try again. If, after several retries, the action will not execute, please contact your system expert.
- Check BOOT FW: Check that the BOOT FW implemented is up-to-date
- Check APS: Check that the version of APS implemented is up-to-date.
- Check load device: Check that the load device is in working order (e.g. using RMX commands).
  Check that the hard disk or MO has the correct connection. Similarly, check the associated IOPx (IOPA, IOPS or IOPX). If several devices are at the SCSI bus, check the SCSI IDs of the individual devices.

For a detailed error diagnosis, a log from the startup of the DP is also required. This can be obtained by connecting a terminal to the V.24 interface of the DP (or DM) with 4800 baud.

Additional information

> BOOT error codes

> BOOT error codes in the ADP and the CC

> BOOT error codes when booting as CC

> BOOT error codes when booting as ADP

> BOOT error codes during the FWLP

> BOOT error codes while determining the reason for the restart

> NFD286 error codes (Named File Driver)

1.2.7 NFD286 error codes (Named File Driver)

Table: NFD286 error codes

Hex code	Name	Explanation	Recommended action
092B	E_MEDIA_CHANGED	Drive has been changed	Check load device
8840	E_DRIVE	Drive not okay; New initialization	Check load device
8841	E_FNODE	Fnode number is too big	Check BOOT FW and load device

8842	E_EOF1	File is empty	Check load device
8843	E_EOF2	File/disk is inconsistent	Check load device
8844	E_SETUP	File was opened before loading/writing	Check BOOT FW
8846	E_FTYP	Invalid file type	Check BOOT FW and load device
8847	E_BUFLEN	User buffer too small	Check BOOT FW or caller
8848	E_DEVGRAN	Device granularity is greater than buffer	Check BOOT FW or caller
8849	E_INIT	Drive was not initialized before reading/writing	Check BOOT FW and load device
884A	E_FILENAME	Invalid file name/character	Check BOOT FW or caller
884B	E_NOTFOUND	File not contained in catalog	Check BOOT FW and load device
884C	E_MODE	Structure mode not supported	Check BOOT FW or caller
884D	E_DELETED	File deleted	Check BOOT FW and load device
884E	E_SHORTEN	Block length greater than last block	Check BOOT FW and load device
884F	E_LENGTHEN	Block length smaller than last block	Check BOOT FW and load device
8850	E_UNDFLW	More read than written	Check BOOT FW or caller
8851	E_OVFLOW	FIFO too small	Check BOOT FW or caller
8852	E_INCONSISTENCE	FIFO inconsistent/not initialized	Check BOOT FW or caller
8853	E_PNAFID_SUPPORT	(read_area_offset Blocksize > 64k	Check BOOT FW or caller
8854	E_DDENSITY	FD is not single density	Check load device
8855	E_WRITEPROTECT	File is write protected	Check load device
8856	E_SYSDATA	No system file permitted apart from directory	Check BOOT FW or caller
8857	E_NAME_LEN	File name too long	Check BOOT FW
8858	E_IBM_HDR	IBM header1 does not contain a volume file	Check BOOT FW and load device
8859	E_EBC_ZIFF	Number field does not contain an EBCDIC number	Check load device

885A	E_DEV_TYPE	File type is not valid for NAFID	Check load device
885B	E_CON_TAB	Connection table overflow	Check BOOT FW
885C	E_CONNECTION	Connection not valid for user	Check BOOT FW or caller
885D	E_IBM_ONLY	Only IBM format permitted	Check BOOT FW or caller
885E	E_ERMAP	Reserved tracks on FD	Check BOOT FW or caller
885F	E_VOL1	IBM format not supported data inconsistencies	Check BOOT FW
8860	E_NO_RS232	No RS232 connection (SBC only)	Check BOOT FW and load device
8861	E_DATCAT_FUL	Too many catalog entries in DAT	Check DAT
8862	E_DATCAT_EMPTY	No catalog entries in DAT	Check DAT
8863	E_DAT_NOSUPPORT	Function not supported for DAT	Check DAT
8880	E_USER_PARAM	Errors in task parameter	Check BOOT FW
8881	E_FILE	File not available/readable (IPL)	Check load device
8882	E_OMF	Error in the OMF of the load file	Check BOOT FW and load device
8883	E_APS	Memory/descriptor overlap	Check BOOT FW
8884	E_INT_PARAM	Parameter errors (internal and external)	Check BOOT FW
8885	E_INT_DATA	Data errors (internal and external)	Check BOOT FW
8886	E_INTERN	Internal program error	Check BOOT FW
8887	E_LOCKED	File access is locked	Check load device
888F	E_NESTED	Nested error	Check BOOT FW

Recommended action:

- Retry: the action cannot be executed at the moment; please try again. If, after several retries, the action will not execute, please contact your system expert.
- Check BOOT FW: Check that the BOOT FW implemented is up-to-date
- Check DAT: Check that the files stored on the DAT are contained in the correct directories.
- Check caller: Check the caller of the NFD function (mostly Sysload).

- Check load device: Check that the load device is in working order (e.g. using RMX commands).
  Check that the hard disk or MO has the correct connection. Similarly, check the associated IOPx (IOPA, IOPS or IOPX). If several devices are at the SCSI bus, check the SCSI IDs of the individual devices.

For a detailed error diagnosis, a log from the startup of the DP is also required. This can be obtained by connecting a terminal to the V.24 interface of the DP (or DM) with 4800 baud.

Additional information

> BOOT error codes

> BOOT error codes in the ADP and the CC

> BOOT error codes when booting as CC

> BOOT error codes when booting as ADP

> BOOT error codes during the FWLP

> BOOT error codes while determining the reason for the restart

> BPL286 error codes (BOOT Program Loader)

1.3 IPL286, PGL286 and PBO286 error codes

Table: IPL, PGL, PBO286 error codes

Hex code	Name	Explanation	Recommended action
02	MC_Y_E_MEM	Insufficient memory	Retry
8430	MC_Y_E_OMF_ERR	Error in OMF286	Reinstall subsystem
8431	MC_Y_E_TAB_ERR	Physical memory table error(s) or error(s) in descriptor table, link table, load table	Verify load tables, reinstall subsystem(s)
8432	MC_Y_E_USER_ERR	User error	Verify time out
8433	MC_Y_E_OS_ERR	Error in operating system	
8434	MC_Y_E_RMX_ERR	Error in RMX nucleus	
8435	MC_Y_E_DMS_ERR	Error in data management system	
8436	MC_Y_E_DSC_ERR	Descriptor overlap	Reinstall subsystem(s)
8437	MC_Y_E_CHSU_ERR	Checksum error	Reinstall subsystem(s)

8438	MC_Y_E_MEM_ERR	Insufficient memory	Insert more memory; verify load tables
8439	MC_Y_E_NAFID_ERR	Error in the named file driver	Verify load device
843A	MC_Y_E_INT_ERR	Internal PGL/PBO error; descriptors in memory and on load volume not the same	
843B	MC_Y_E_CONT_ERR	Continuous error	Check first error message
8410	MC_Y_E_WAIT	Task cannot be processed at the moment	Retry
8441	MC_Y_E_EXIST	Subsystem already loaded	Verify load tables
8442	MC_Y_E_NOT_EXIST	Object etc. does not exist	
8443	MC_Y_E_CNR_CHK	Wrong computer number	Verify DP HW/FW
8444	MC_Y_E_CONTEXT	Wrong task sequence	
8445	MC_Y_E_LOGNAME	Logical device name wrong	Verify logical device name (AMO DDSM)
8446	MC_Y_E_LOCK	Directory locked	Retry
8447	MC_Y_E_REQUEST	UNLOCK before LOCK finished	Retry
8448	MC_Y_E_WRITE	Error writing to lock table	
8449	MC_Y_E_LTBCNT	Too many entries in the lock table	
844A	MC_Y_E_BREAK	Load process interrupted by PGL	Retry
844B	MC_Y_E_BREAK_PBO	Load process interrupted by PBO	Retry
844C	MC_Y_E_RESCUE_MODE	ADP running in RESCUE mode	Reinstall the load device
8847	MC_Y_E_BUFLEN	User buffer too small	
884B	MC_Y_E_NOTFOUND	File not contained in catalog	Verify subsystem(s)

Recommended action:

- Retry: the action cannot be executed at the moment; please try again. If, after several retries, the action will not execute, please contact your system expert.
- Verify load tables: Check that the correct applications have been activated.
- Verify subsystem(s): Check that the subsystem(s) are available on load medium.

- Reinstall subsystem(s): Subsystem(s) on load medium defective; the subsystem(s) must therefore be reinstalled.
- If an action has not been recommended, the software probably contains an error.
  In this case, please contact your system expert with the full log and the relevant extracts from the history file.

Additional information

> Fundamentals
> BOOT error codes
> PCL286 error codes
> FAM/BIOS error codes
> Operating system error codes

1.4 PCL286 error codes

Table: PCL286 error codes

Hex code	Name	Explanation	Recommend-ed action
8800	OP_Y_E_WARNINGS	No hardware, warning flags output	None
8801	OP_Y_E_PGLIBM	Internal PGLIBM error	
8802	OP_Y_E_MEM	Insufficient memory	Retry
8803	OP_Y_E_HARD_WARN	Errors can occur with other commands or options	
8804	OP_Y_E_COMMAND	Invalid or inconsistent parameter	
8805	OP_Y_E_LOADER_SUPPORT	Command or module not supported	
8806	OP_Y_E_FILE	Invalid file name	
8807	OP_Y_E_EOF	End of file before MOD_END	Reinstall
8808	OP_Y_E_REC_FMT	Object Module Format (OMF) error(s)	Reinstall
8809	OP_Y_E_CHECKSUM	Object Module Format (OMF) error(s)	Reinstall
880A	OP_Y_E_SAVE_TYPE	LTL data cannot be saved	
880B	OP_Y_E_NO_SAVE_SEG	No segment definition for SAVE_DATA	
880C	OP_Y_E_HEADER	OMF error	Reinstall
880E	OP_Y_E_ALIGN	Mixed ABS/LTL segments	Reinstall

880F	OP_Y_E_NO_NAME	No name definition found	Reinstall
8810	OP_Y_E_NAME_COUNT	OMF error	Reinstall
8811	OP_Y_E_NAME_INDEX	OMF error	Reinstall
8812	OP_Y_E_NO_SEGS	No segment definition found	Reinstall
8813	OP_Y_E_SEG	OMF error	Reinstall
8814	OP_Y_E_SEG_COUNT	OMF error	Reinstall
8815	OP_Y_E_SEG_INDEX	OMF error	Reinstall
8816	OP_Y_E_GRP	OMF error	Reinstall
8817	OP_Y_E_GRP_COUNT	OMF error	Reinstall
8818	OP_Y_E_GRP_INDEX	OMF error	Reinstall
8819	OP_Y_E_CNF_COUNT	More than one CNF segment found	Reinstall
881A	OP_Y_E_CNF_SIZE	CNF segment is too big	Reinstall
881B	OP_Y_E_CNF_GRP	CNF segment is part of a group	Reinstall
881C	OP_Y_E_NO_DESCRIPTOR	Data record does not have a corresponding segment	Reinstall
881D	OP_Y_E_DSC_ADDR	No space for segment in the load area output	Reinstall
881E	OP_Y_E_DSC_STATUS	Record does not have a valid corresponding segment	Reinstall
881F	OP_Y_E_OFFS_OVFLW	Segment (beginning and) length over 64 Kbytes	Reinstall
8820	OP_Y_E_IT_SAVE_DATA	Iterated record in save-area	
8821	OP_Y_E_FIXUP	OMF error	Reinstall
8822	OP_Y_E_REJ_FIX	OMF error	Reinstall
8823	OP_Y_E_BUF_SIZE	Record to be processed is too long	Reinstall
8824	OP_Y_E_EXPAND	Expanded iterated record > 64kB	Reinstall
8825	OP_Y_E_STACK_SIZE	Too many recursions f. iterated record	Reinstall
8826	OP_Y_E_COVER_TAB_SIZE	Internal PGLIBM table is too small	
8827	OP_Y_E_DSC_TAB_SIZE	Too many names/segments/groups specified	
8828	OP_Y_E_TRANS_LEN	Length of bytes transferred is zero	Reinstall
8829	OP_Y_E_MEM_OVFL	Addressing attempt over 16 Mbytes	Reinstall

882A	OP_Y_E_ATM_OVFL	Attempt to address an ATM register higher than 7	Reinstall
882B	OP_Y_E_ATM_NUM	No free ATM register for destination address	Reinstall
882C	OP_Y_E_INT_DSC_OVLP	Internal area DSC overlap	Reinstall
882D	OP_Y_E_DSC_OVLP	Descriptor overlap	Reinstall
882E	OP_Y_E_ABORT	Loading of buffer was aborted	Retry

- Recommended action:
- Retry: the action cannot be executed at the moment; please try again. If, after several re-tries, the action will not execute, please contact your system expert.
- Reinstall: The loadware on the load device is defective and must therefore be re-installed.
- If an action has not been recommended, the software probably contains an error.
  In this case, please contact your system expert with the full log and the relevant extracts from the history file.

Additional information

> Fundamentals
> BOOT error codes
> IPL286, PGL286 and PBO286 error codes
> FAM/BIOS error codes
> Operating system error codes

1.5 FAM/BIOS error codes

Table: DMS error codes

Hex code	Name	Explanation	Recommended action
01	ON_Y_E_TIME	Wait time elapsed	Switch on area/device with ACT-DSSM
04	ON_Y_E_LIMIT	No space in catalog	Retry, if necessary initiate a soft restart
06	ON_Y_E_EXIST	Connection/mailbox does not exist	Switch on area/device with ACT-DSSM

08	OD_Y_E_CONFIG	Task not supported	Check file type
20	OD_Y_E_FILE_EXIST	File already exists	Check file name entered
21	OD_Y_E_FILE_NOT_EXIST	File does not exist	Check file name entered
22	OD_Y_E_DEV_NOT_EXIST	Device and file driver incompatible	See below
23	OD_Y_E_SUPPORT	Parameter combination not supported	See below
24	OD_Y_E_EMPTY_ENTRY	Directory is empty	See below
25	OD_Y_E_DIR_END	Directory does not contain so many entries	See below
26	OD_Y_E_ACCESS	Invalid access mode	See below
27	OD_Y_E_FILE_TYPE	Operation for file type invalid	Check file type
28	OD_Y_E_SHARE	Invalid parallel access	Check file name entered; if necessary, try DEACT-DSSM, then ACT-DSSM on the relevant device/area
29	OD_Y_E_SPACE	No free space on the volume	Delete unnecessary files
2A	OD_Y_E_ILL_DD_RQ	Illegal device driver request	See below
2B	OD_Y_E_IO	IO error (hardware fault)	Check hardware (cable connections, device switched on?)
2C	OD_Y_E_FLUSHING	Connection was cleared before task completed	Repeat command
2D	OD_Y_E_ILL_VOL	Device incorrectly formatted	Save data and reinitialize area
2E	OD_Y_E_DEV_OFFLINE	Device is OFFLINE	Switch on device
2F	OD_Y_E_ILL_FD_RQ	Illegal file driver request	See below
30	OD_Y_E_FRAGMENTATION	Expansion not possible (fragmentation)	Save data and reinitialize area
31	OD_Y_E_DIR_NOT_EMPTY	Directory is not empty	See below
32	OD_Y_E_NOT_FILE_CONN	Not a file, but a device connection	See below
33	OD_Y_E_NOT_DEVICE_CONN	No device connection	See below

34	OD_Y_E_CONN_NOT_OPEN	Connection not open	Repeat command
35	OD_Y_E_CONN_OPEN	Connection is already open	Soft restart, repeat command
36	OD_Y_E_BUFFERED_CONN	Connection opened by EIOS, used by BIOS	Soft restart, repeat command
37	OD_Y_E_OUTSTANDING_CONNS	In the case of soft restart, must connect to device	See below
38	OD_Y_E_ALREADY_ATTACHED	Device is already switched on	Soft restart, repeat command
39	OD_Y_E_DEV_DETACHING	Addressed device is just being detached	Repeat command
3A	OD_Y_E_NOT_SAME_DEV	Files on different devices	Check file names entered
3B	OD_Y_E_ILLOGICAL_RENAME	Error in specified new_pathname	Check file names entered
3C	OD_Y_E_STREAM_SPECIAL	Unexpected task for a Stream_File	See below
3D	OD_Y_E_ILL_FNODE	Connection refers to illegal Fnode	Area logically destroyed, save data and reinitialize
3E	OD_Y_E_PATHNAME_SYNTAX	Path name contains invalid characters	Area logically destroyed, save data and reinitialize
3F	OD_Y_E_FNODE_LIMIT	Maximum number of Fnodes exceeded	Delete unnecessary files
40	OD_Y_E_LOGNAME_SYNTAX	Invalid path name	Check file names entered
41	OD_Y_E_CLOSE	Error closing file	Soft restart, repeat command
42	OD_Y_E_IOMEM	Insufficient memory in the BIOS preventing processing	Soft restart, repeat command
44	OD_Y_E_MEDIA	Addressed device is not ONLINE	Switch on device, insert or exchange medium
45	OD_Y_E_LOGNAME	Logical name contains an error	Check file names entered
46	OD_Y_E_NOT_OWNER	Not owner of the device being detached	See below

47	OD_Y_E_IO_JOB	Size for object directory too small	See below
50	OD_Y_E_IO_UNCLASS	Unknown IO error	See below
51	OD_Y_E_IO_SOFT	Minor IO error, try again	Repeat command
52	OD_Y_E_IO_HARD	Critical IO error	Exchange device
53	OD_Y_E_IO_OPRINT	Addressed device is OFFLINE	See below
54	OD_Y_E_PROTECTED	Volume is write-protected	Remove write protection
55	OD_Y_E_IO_NO_DATA	No other data found	See below
56	OD_Y_E_IO_MODE	Write/read conflict	See below
8004	OD_Y_E_DMS_PARAM	Wrong parameter	See below
8020	OD_Y_E_ILL_FILE_DRIVER	Wrong file driver for the file type	Check file type
8021	OD_Y_E_NO_USER	No users defined	See below
8022	OD_Y_E_NO_PREFIX	No prefix defined	See below
8023	OD_Y_E_BAD_BUFF	Illegal use of buffers for IO	See below
802B	OD_Y_E_DEL_RECORD	Record deleted (with SAM files)	See below
802C	OD_Y_E_VOL_NOT_IN_DEV	Volume has not been inserted	Insert volume
8040	OD_Y_E_NOT_LOGNAME	Object is not a device or a file connection	See below
8041	OD_Y_E_NOT_DEVICE	Token object, but not a device connection	See below
8042	OD_Y_E_CONNECTION	Token object, but not a device connection	See below
8043	OD_Y_E_SUSY_NOT_LOADED	Subsystem not loaded	See below
8101	OD_Y_E_DMS	Error in DMS	See below
8102	OD_Y_E_EOF	End of file identified	See below
8103	OD_Y_E_DEV_NOT_ATTACHED	Device not connected	Switch on area/device with ACT-DSSM
8104	OD_Y_E_VOL1	No VOL1 ID	See below
8105	OD_Y_E_VOLID	Volume ID does not exist	Check tape names entered
8106	OD_Y_E_USERID	User ID does not exist	Check tape names entered

8107	OD_Y_E_HDR	Not standard HDR label	See below
8108	OD_Y_E_EOD	Logical tape end (end of data) identified	See below
8109	OD_Y_E_EOT	Physical tape end (End of Tape) identified	See below
8201	OD_Y_E_SAM	File is not a SAM file	See below
8202	OD_Y_E_RECORD_LENGTH	Record length error	See below
8203	OD_Y_E_CAT_INCONSISTENT	Catalog inconsistent or not available	Reinitialize DAT tape
8204	OD_Y_E_CAT_NOT_EXIST	Catalog cannot be found	Reinitialize DAT tape
8205	OD_Y_E_CAT_PARTIT_TOO_SMAL	Catalog partition too small	Use new tape
8206	OD_Y_E_DEVICE_NOT_ATTACHED	Device not connected	Switch on area/device with ACT-DSSM
8207	OD_Y_E_NO_DEV_CONNECTED	No connection to the device/no device available	Switch on area/device with ACT-DSSM/check or connect device
8208	OD_Y_E_NO_ERR_INFO	Error information cannot be found	See below
8209	OD_Y_E_NO_RESPMBX	No or wrong mailbox signal	See below
8210	OD_Y_E_NO_SS_NO_CATALOGED	Device not entered in the DB	Enter Siemens part number with AMO DTSM
8211	OD_Y_E_NOT_MEDIUM_CONN	Connection is not a volume connection	Check file names entered
8212	OD_Y_E_TSK_OR_MBX_INVALID	Task or mailbox symbol contains an error	Check file names entered
8213	OD_Y_E_BYTE	File is not a byte file	See below
8300	OD_Y_E_DD_IO_HARD	Hardware error; normally device faulty	Exchange device
8301	OD_Y_E_DD_IO_SOFT	Software error	Repeat command, if necessary exchange device
8302	OD_Y_E_DD_LIMIT	Block too big	See below
8303	OD_Y_E_DD_DRIVE_NOT_READY	Drive not ready	Switch on power at the device, then activate with ACT-DSSM

8304	OD_Y_E_DD_UNIT_ATTENTION	New attempt	If the action has not been carried out, retry
8305	OD_Y_E_DD_REJECT	Disconnection error (magnetic tape)	See below
8306	OD_Y_E_DD_SCSI_CNTR	Diagnosis error (magnetic tape)	See below
8307	OD_Y_E_DD_FILE_PROTECT	Write protection	Remove write protection
8308	OD_Y_E_DD_UNIT_RESERVED	Device reserved for another controller	See below
8309	OD_Y_E_DD_VOL_OVERFLOW	End of tape reached; Rewind?	See below
830A	OD_Y_E_DD_FILE_MARK	File marking found	See below
830B	OD_Y_E_DD_EOT	End of tape reached	See below
830C	OD_Y_E_DD_TOO_LARGE	Transfer length too large	See below
830D	OD_Y_E_DD_MED_ERROR	Tape error	Exchange volume
830E	OD_Y_E_DD_VAR_MODE	Unit is in variable mode	See below
830F	OD_Y_E_DD_WRONG_SIZE	Incorrect block size	See below
8310	OD_Y_E_DD_BOT	Beginning of tape reached	See below
8311	OD_Y_E_DD_IO_PARITY	Parity error	Check parity settings on SCSI bus; if necessary exchange device/IOPA(X)
8312	OD_Y_E_DD_ILL_REQUEST	Illegal request (wrong parameter in command block (CDB))	See below
8313	OD_Y_E_DD_ILL_FUNCTION	Illegal function	See below
8314	OD_Y_E_DD_DUIB_NOT_FOUND	Device information block not found	See below
8315	OD_Y_E_DD_ILL_SPECIAL	Special command not accepted by the BIOS	See below
8316	OD_Y_E_DD_BLANK_TAPE	Part of a blank tape was read	See below
8317	OD_Y_E_DD_DENSITY	Incorrect density (format)	See below

8318	OD_Y_E_DD_ABORT	SCSI command aborted	Check SCSI bus (cable connections, terminating resistors), if necessary exchange IOPA(X)
8319	OD_Y_E_DD_COPY_ABORT	SCSI 'COPY' Aborted	Check SCSI bus (cable connections, terminating resistors), if necessary exchange IOPA(X)
831A	OD_Y_E_DD_EOD	End of data on the tape reached	See below
831B	OD_Y_E_DD_SETMARK	SETMARK found	See below
831C	OD_Y_E_DD_BOP	BOP found	See below
831D	OD_Y_E_DD_TAPE_LOAD	Tape load executed	See below
831E	OD_Y_E_DD_DEV_RESET	Device has been reset	Repeat command
831F	OD_Y_E_DD_IOP_WRONG_FW	IOP has the wrong FW version	Upgrade IOPA(X) firmware to the latest version
8320	OD_Y_E_DD_IOP	IOP error	Exchange IOPA(X) firmware and/or board IOPA(X)
8330	OD_Y_E_DD_RES_END	-	-

General procedure for DMS errors (unless an action has been given in the above table):

1. Repeat command.
2. If the same or another error should occur:
3. initiate a soft restart in the ADP and repeat the command.
4. If the same or another error should occur after this, the software probably contains an error
   In this case, please contact your system expert with the full log and the relevant extracts from the history file.

Additional information

> Fundamentals

> BOOT error codes

> IPL286, PGL286 and PBO286 error codes

> PCL286 error codes

> Operating system error codes

1.6 Operating system error codes

Table: Operating system error codes

Hex code	Name	Explanation	Recommended action
0001	ON_Y_E_TIME	Timeout	
0002	ON_Y_E_MEMORY	Insufficient memory	
0004	ON_Y_E_LIMIT	Object limit reached	
0005	ON_Y_E_CONTEXT	System call made at incorrect position	
0006	ON_Y_E_EXIST	Object address of the token does not exist	
0007	ON_Y_E_STATE		
0009	ON_Y_E_INT_SATURATION		
000A	ON_Y_E_INT_OVERFLOW		
000C	ON_Y_E_NAK_MBU1	No acknowledgment from MBU1	
000D	ON_Y_E_NAK_MBU2	No acknowledgment from MBU2	
000E	ON_Y_E_NAK_MBU3	No acknowledgment from MBU3	
000F	ON_Y_E_NAK_MBU4	No acknowledgment from MBU4	
0010	ON_Y_E_NAK_LONG_MSG	No acknowledgment from receiving processor	
0011	ON_Y_E_BG_NOT_READY	Bus processor could not be booted	
0022	ON_Y_E_OBJFOR	Continuous number of tasks to mail-box, semaphore or region	
0023	ON_Y_E_OBJLINK	Token in obj. link not in available memory or object link continuous	
0024	ON_Y_E_EXTLINK	Error for object inspection with debug	
0025	ON_Y_E_TASKLINK	Error for object inspection with debug	
0026	ON_Y_E_CHILDLINK	Error for object inspection with debug	

0028	OL_Y_E_RESOURCE_BUSY	The requested TCP/IP resource is already in use	Check TCP/IP configuration
0029	OL_Y_E_WOULD_BLOCK	The complete performance of the activated function would block the activating party for an unspecified period of time	
002A	OL_Y_E_CONN_LOSS	Loss of connection	Check LAN connections
002B	OL_Y_E_TIMEOUT	Timeout occurred before function was executed.	Check LAN connections
002C	OL_Y_E_DUMMY_CALLED	A dummy was activated rather than the function requested	Check whether the TCP/IP application is activated using the load table
002D	OL_Y_E_BAD_PARAM	Parameter has an invalid value.	Check TCP/IP configuration
002E	OL_Y_E_FATAL_INTERNAL	Internal TCP/IP transport layer error	
002F	OL_Y_E_CONNECTING	TCP/IP connection is being set up	
0088	ON_Y_E_SCHREIBSCHUTZ	No longer used	
4000	ON_Y_E_NO_ACKNOWLEDGE	The system waits for an response for another processor to no avail. Check whether all central boards have been booted	
8000	E_ZERO_DIVIDE	No longer used	
8001	E_OVERFLOW	No longer used (Interrupt 4)	
8002	ON_Y_E_TYPE	Token references existing OS object, this is, however, not the type required	
8003	undefined	No longer used	
8004	ON_Y_E_PARAM	A parameter unequal to token contains an invalid value.	
8005 - 800E	reserved by the iRMX Nucleus	No longer used	

800F	ON_Y_E_BAD_ADDR	The logical address is invalid. The selector either displays an invalid segment or the offset is outside the segment limits

General procedure for operating system errors:
Operating system errors are usually caused by a software error or hardware and operating errors which are not taken into sufficient consideration by the software. An accurate diagnosis cannot be made without any further details (call code, user address, etc.). Some operating system error codes overlap the DMS error codes. If an error occurs while the DMS is in use, it should be investigated first (DMS error code table). If an error cannot be cleared and if this same error continues to occur, please contact your system expert with the full log, the relevant extracts from the history file, the specification of the system software and hardware configuration and a description of the circumstances under which the error occurred or recurs.

Additional information

> Fundamentals

> BOOT error codes

> IPL286, PGL286 and PBO286 error codes

> PCL286 error codes

> FAM/BIOS error codes

2 AM handling of alarms

- AMOs used
- Validation data for central and periphery alarms
- Configuring, modifying and deleting SWU logical alarms
- Deactivating and activating alarms
- DEVICE ALARM
- Changing the message priority to alarm
- Variable HW contacts in the case of individual alarms (V3.6/R6.5 and later)
- Configuring the validity period for SLA
- Activating the snapshot function
- Regenerating the validation data
- Controlling alarm output
- Alarm mirror
- Resetting alarms

2.1 AMOs used

The AMO's below are used in conjunction with alarms, error messages or message outputs:

- AMO-VADSU / VADSM
- AMO-GRA
- AMO-HISTA / HISTO
- AMO-SIGNL
- AMO-TDCSU
- AMO-ASSGN

2.2 Validation data for central and periphery alarms

The threshold values and validation times of the central and periphery alarm classes can be modified. Exceptions: threshold values of certain central alarms that are marked in the tables of central alarm classes (see Troubleshooting, Alarm concept).
The validation data and threshold values are modified by means of the AMOs VADSU (SWU) and VADSM (ADP/SM).

Example:

Modifying the threshold value and validation time of the major alarm for central alarm 5 in the SWU:

```
CHANGE-VADSU: CATEGORY=MMA,ALARM CL=CENTRAL,ALARMNO=5,
THRESHD2=4,TIME2=1000;
```

2.3 Configuring, modifying and deleting SWU logical alarms

The special alarms (alarms numbers 1 to 7) are already assigned by the system. Only threshold values and validation times can be modified for these alarm classes with the AMO VADSU. The assignment to trunk circuits is performed with the AMOs TACSU / TDCSU (for further information see Alarm concept, Special alarms).

Directional and personal alarms are configured and deleted with the AMO VADSU. The AMO searches on request for a free alarm number. The validation time and the threshold value as well as the alarm name can be changed in the case of an alarm that has already been configured.

The directional alarms configured with the AMO VADSU are assigned to PENs with the AMOs TACSU, TDCSU and TSCSU. TACSU configures analog circuits, TDCSU configures digital circuits and TSCSU configures special circuits for toll lines, special equipment and service modules. When configuring a circuit, the search for a free PEN can be left to the AMO. The B-channels in an S2 circuit can be configured individually, in groups or completely with a single command. Individual B-channels in an S2 circuit can also be added or removed.

A directional alarm can also be assigned to a group of trunk circuits configured beforehand with the AMO BUEND.

In the same way, personal alarms configured with the AMO VADSU can be assigned to station numbers with the AMOs SBCSU and SCSU. The AMO SBCSU configures the S_0/U_{p0} ports for digital terminals and SET 500/600/700. The AMO SCSU configures the ports of all other terminals.

See also:

> Differences between SWU-logical alarm classes depending on the version

2.3.1 Differences between SWU-logical alarm classes depending on the version

In versions SP300-V3.4/R6.3 and later, the number of directional alarm classes increased from 56 to 512. This change also results in the redistribution of directional and personal alarm classes (see list below).

Version	Alarm class range directional	Alarm class range personal
V3.3 and later	8 - 63 (56)	64 - 127 (64)
V3.4 and later	8 - 519 (512)	520 - 583 (64)

:

Creating a (directional) alarm for an S0 link (no CO trunk):
The first step is to add an alarm with the AMO VADSU:

If you do not specify an alarm number, the AMO looks for the first free alarm class (in the example below this is the first directional alarm No. 8).

```
ADD-VADSU:TYPE=DIR,THRESHD1=10,THRESHD2=20,TIME1=300,TIME2=600, NAME=AL1;
```

The AMO-VADSU then issues the following advisory message:

```
H01: ALARM NUMBER  08 WAS CONFIGURED.
```

Or you can select the alarm number yourself:

```
ADD-VADSU:ART=DIR,ALARMNO= 63,THRESHD1=10,THRESHD2=20,TIME1=300,TIME2=600,
NAME=AL1;
```

The AMO-VADSU then issues the following advisory message:

```
H01: ALARM NUMBER  063 WAS CONFIGURED.
```

The next step is to assign the newly added alarm number to the PEN (created beforehand) of your choice:

```
CHA-TDCSU:PEN=01-02-103-00,ALARMNO=08,DEV=S0CONN;
```

The AMO TDCSU then issues the following advisory messages:

```
H03 : CIRCUIT FOR PEN 1-2-103-0 CHANGED
```

You can use the AMO VADSU to display the PENs assigned to directional alarms and the station numbers assigned to personal alarms:

Example:

Valid for SP300-V3.3: To display assignments of logical alarm numbers 08 through 66 (i.e. of directional alarms 08 through 63 and personal alarms 64 through 66):

```
DIS-VADSU: ASS,08&&66;
```

Display output:

```
ASSIGNMENT: DIRECTIONAL ALARMS
ALARM NO.        PENS ASSIGNED
08               1-2-103-00
63               1-1-007-05

ASSIGNMENT: PERSONAL ALARMS
ALARM NO.   STATION NUMBERS ASSIGNED
64          2500  2501  2503  2507  2511  2533  2534  2535
            2536  2541
65          3405  3502
66          3300  3301
```

(valid for SP300-V3.4 and later)

To display assignments of logical alarm numbers 08 through 522 (i.e. of directional alarms 08 through 519 and personal alarms 520 through 522):

```
DIS-VADSU: ASS,08&&522;
```

Display output

:

```
ASSIGNMENT: DIRECTIONAL ALARMS
ALARM NO.        PENS ASSIGNED
08               1-2-103-00
324              1-1-007-05

ASSIGNMENT: PERSONAL ALARMS
ALARM NO.   STATION NUMBERS ASSIGNED
520         2500  2501  2503  2507  2511  2533  2534  2535
            2536  2541
521         3405  3502
522         3300  3301
```

If the PEN or station number is assigned to an SWU-log. alarm, the PEN/station number is monitored only by this alarm and monitoring by the appropriate SWU periphery summation alarm is deactivated. Monitoring by the SWU periphery summation alarm is reactivated when this assignment is deleted.
When the PEN or station number is assigned to the new alarm class, it is automatically assigned to the new alarm number in all HW error messages which reference this PEN/station number (DEV/CIR/Board FMs).

The corresponding assignments are automatically canceled when you delete a personal or directional alarm.

Example:

To delete directional alarm 8:

```
DEL-VADSU:08;
```

The AMO then issues the following advisory message:

```
H04 : ALARM NUMBER  8 WAS DELETED
ASSIGNMENT TO FOLLOWING PENS CANCELED :
1-2-103-0
```

2.4 Deactivating and activating alarms

- General
- Deactivating/activating alarms, version SP300-V3.4/R6.3 and earlier
- Deactivating/activating alarms, version SP300E-V1.0/ R6.4 and later

2.4.1 General

Broadly speaking, all alarm classes can be deactivated and activated. Deactivation means that alarm handling for the relevant alarm class is disabled. Activation re-enables alarm handling for the alarm class in question.

If an alarm is waiting at the time when its corresponding alarm class was deactivated, the alarm is reset immediately after deactivation (signaling of an A9002 / A9003 / A9007 message). The alarm is immediately signaled following reactivation (A9000 / A9001 / A9006), if at this time one of the threshold alarms is violated.

However, in the interests of system safety, deactivation of the central alarms and the SWU periphery summation alarms should be avoided:

2.4.2 Deactivating/activating alarms, version SP300-V3.4/R6.3 and earlier

Activation and deactivation by means of the AMOs VADSU/VADSM by changing the thresholds.

Changing the thresholds to **65535** (SP300-V3.3 and later) prevents signaling of the alarm type (minor/major alarm).

Conversely, a deactivated alarm can be reactivated by changing the time of 65535 to xxxx.

Example:

To deactivate directional alarm 8 (major and minor alarms):

```
CHA-VADSU:LOGICAL,ALARMNO=08,THRESHD1=65535,THRESHD2=65535;
```

The AMO then issues the following advisory message:

```
H04 : ALARM NUMBER 8 WAS DEACTIVATED
```

2.4.3 Deactivating/activating alarms, version SP300E-V1.0/ R6.4 and later

Activation and deactivation by means of the AMOs VADSU / VADSM using DEACTIVATE / ACTIVATE. The advantage of the new functions is that it is no longer necessary to memorize the most recent threshold, because this value is stored and is again available when the alarm is reactivated.

Example: To deactivate, display, activate, and again display SWU periphery alarm 4

```
DIS-VADSU:PERIPHER,4;
H500:  AMO VADSU STARTED


ALARM CLASS: SWU PERIPHERY ALARM CLASS
AL.   THRES THRES FAIL. FAIL  TOTAL [TIM  TIME  TIME  PR  NAME
OR.   1     2 IN  ABS.  IN %  AB-   E1    2     [H]
      IN %  %                 SOL.  [SEC  [SEC
                                  ]     ]
4     10    90    27    57    58    600   600   0     0   TIE LINE

AMO-VADSU-84        NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY CARRIED OUT;
```

```
DEACT-VADSU:PERIPHER,4;
H500:  AMO VADSU STARTED
H02: MINOR ALARM 4 DEACTIVATED.
```

```
H03: MAJOR ALARM 4 DEACTIVATED.
AMO-VADSU-84        NMC ALARMS CONFIGURATION, SWITCHING UNIT
DEACTIVATION COMPLETED;
```

DIS-VADSU:PERIPHER,4;

```
H500:  AMO VADSU STARTED


ALARM CLASS: SWU PERIPHERY ALARM CLASS
AL.    THRES THRES FAIL. FAIL  TOTAL TIME1 [TIME TIME  PR  NAME
NR.    1     2 IN  ABS.  IN %  AB-   [SEC] 2     [H]
       IN %  %                 SOL.        [SEC]
4      DEACT DEACT 27    57    58    600   600   0     0   TIELINE

AMO-VADSU-84        NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY CARRIED OUT;
```

ACT-VADSU:PERIPHER,4;

```
H500:  AMO VADSU STARTED
H09: MINOR ALARM 4 ACTIVATED.
H10: MAJOR ALARM 4 ACTIVATED.
AMO-VADSU-84        NMC ALARMS CONFIGURATION, SWITCHING UNIT
ACTIVATION COMPLETED;
```

AB-VADSU:PERIPHER,4;

```
H500:  AMO VADSU STARTED


ALARM CLASS: SWU PERIPHERY ALARM CLASSES
AL.    THRES THRES FAIL. FAIL  TOTAL TIME  [TIME TIME  PR  NAME
NO.    1     2 IN  ABS.  IN %  AB-   1     2     [H]
       IN %  %                 SOL.  [SEC  [SEC]
                                     ]
4      10    90    27    57    58    600   600   0     0   TIE LINE

AMO-VADSU-84        NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY CARRIED OUT;
```

2.4.3.1 Deactivation combinations

The method used in the past to deactivate an alarm level of an alarm - e.g. MAJOR ALARM - can also be combined with the extended method described above. Note, however, that an alarm level deactivated with the old method cannot subsequently be reactivated with ACTIVATE.

Example:

You deactivate the MAJOR alarm level of the DIGITAL VOICE DEVICES alarm with CHA-VADSU, then deactivate the entire alarm with DEACT-VADSU and subsequently reactivate the entire alarm with ACT-VADSU.

Old method:

```
ACT-VADSU:PERIPHER,ALARMNO=04 THRESHD2=65535;
```

The AMO then issues the following advisory message:

```
H03 :  MAJOR ALARM 4 DEACTIVATED.
DEACT-VADSU:PERIPHER,4;
H500:  AMO VADSU STARTED
H02: MINOR ALARM 1 DEACTIVATED.
H03: MAJOR ALARM 4 DEACTIVATED.
AMO-VADSU-151       NMC ALARMS CONFIGURATION, SWITCHING UNIT


DEACTIVATION COMPLETED;
```

New method

```
EINS-VADSU:PERIPHER,1;
H500:  AMO VADSU STARTED
H10: MAJOR ALARM 4 ACTIVE.
H11: AN ALARM INITIALIZED WITH 'DEACT' MUST BE ACTIVATED WITH 'CHANGE-
VADSU'
AMO-VADSU-151        NMC ALARMS CONFIGURATION, SWITCHING UNIT
ACTIVATION COMPLETED;
```

2.5 DEVICE ALARM

The “DEVICE alarm” should be used in SP300-V3.4 and later.

The features which distinguish the DEVICE alarm form minor/major alarms are as follows:

- The threshold always corresponds to a unit, e.g. terminal, line.
- The validation time is longer (max. 255 hours)

This alarm type is a special application. The DEVICE alarm is generally employed for long-term monitoring of trunks or tie lines. If, for example, a trunk is out of service because of a line fault in the exchange, the DEVICE alarm can be used to signal excessively long down times (up to 255 hours). This can be used to demonstrate to the network operator how long a line was not available.

The alarm type can be activated for all alarm classes, but as a rule the function is of practical use only in the above-mentioned case

The DEVICE alarm is activated and deactivated with **CHA-VADSU** (CHA-VADSM).

Example:

Activate SWU periphery alarm 1 (TIE LINE): Monitoring time 5 hours:

```
CHA-VADSU:DA,PERIPHER,1,5;
```

Check the change:

```
DIS-VADSU:PERIPHER,1;
```

The AMO displays the following:

```
ALARM CLASS: SWU PERIPHERY ALARM CLASS
AL.    THRES THRES FAIL. FAIL  TOTAL TIME1 [TIME TIME  NAME
NO.    1     2 IN  ABS.  IN %  AB-   [SEC] 2     [H]
       IN %  %                 SOL.        [SEC]
1      50    90    57    83    69    600   600   5     TIE LINE
```

You always deactivate the DEVICE alarm by setting Time = 0:

Example:

```
CHA-VADSU:DA,PERIPHER,1,0;
```

2.6 Changing the message priority to alarm

The message priority of the single alarm messages (A9000-A9003 / A9006-A9007) Ex/Mx is configured and changed with the AMO-SIGNL. This setting, however, is always valid only for one alarm number, in other words all A9000 messages, for example, have the same priority.

This functionality is available with versions SP300E-V1.0/R6.4 and later. It enables you to assign a message priority 0-11 to any alarm, i.e. to the corresponding alarm class.

In this way you can selectively assign individual alarms priorities other than those configured with the AMO-SIGNL.

You can change priorities with the AMO-VADSU/VADSM.

The default is Priority "0", i.e. the alarm messages have the message priority assigned with the AMO-SIGNL.

You can, however, assign **priorities 1 - 11**.

The functions of the priorities changed with the AMO VADSU/VADSM:

PRIO 0 :

The individual alarm messages for the corresponding alarm class retain the message priority assigned to the alarm number with the AMO-SIGNL.

PRIO 1 - 8 :

The individual alarm messages for the corresponding alarm class have the priority assigned to this alarm class. The message identifier M/E remains unchanged, however, which means that the character output is the one configured for the alarm number with the AMO-SIGNL. All output devices configured, e.g. AFR1, DPT1, receive the alarm message with the new priority.

PRIO 9 :

The individual alarm messages for the corresponding alarm class are not sent to AFR1 (HTS). All other output devices configured receive the alarm messages with the priority configured for the alarm number with the AMO-SIGNL.

PRIO 10 :

The individual alarm messages for the alarm class are not sent to AFR2 (DMS). All other output devices configured receive the alarm messages with the priority configured for the alarm number with the AMO-SIGNL.

PRIO 11 :

The individual alarm messages for the alarm class are not sent to AFR1 (HTS) and AFR2 (DMS). All other output devices configured receive the alarm messages with the priority configured for the alarm number with the AMO-SIGNL.

Example:

In HTS you want to prevent the TIE LINE alarm being sent to PERLE as a fault by a certain PABX. You do this by changing the priority of this alarm to 6, for example. In HTS the filter can now be set in such a way that alarms with priority 6 are not sent to PERLE.

Example:

To change a message PRIO for the TIE LINE alarm:

The priority set for message number A9001 with AMO-SIGNL is, for example, PRIO M4. This means that all MAJOR ON alarms are signaled with M4.

```
A9001 M4 N3290 NO ACT   BPB   NMCALARM MAJOR ALARM ON          96-07-25
07:26:44
ALARM CLASS:SWU-PER:001
ALARM NAME:TIE LINE
FORMAT:2D
```

```
DIS-VADSU:PERIPHER,1;
H500:  AMO VADSU STARTED
```

```
ALARM CLASS: SWU-PERIPHERY ALARM CLASS
AL.   THRES THRES FAIL. FAIL  TOTAL TIME  [TIM  TIME  PR  NAME
NO.   1     2IN % ABS.  IN %  AB-   1     E2    [H]
      IN %                    SOL.  [SEC  [SEC
                                    ]     ]
1     10    90    27    57    58    600   600   0     0   TIE LINE

AMO-VADSU-84        NMC ALARMS CONFIGURATION; SWITCHING UNIT
DISPLAY CARRIED OUT;
```

CHA-VADSU:PERIPHER,1,,,,,,6;

```
H500:  AMO VADSU STARTED
H12: NOTES ON ALARM PRIORITIES  :
PRIO = 0 : ALARM MESSAGES FOR THIS ALARM ARE ASSIGNED MESSAGE PRIORITY, CONFIGURED BY THE AMO SIGNL
(SEE A9000 TO A9007)
PRIO = 1 THIS PRIORITY IS USED AS THE MESSAGE PRIORITY FOR THE ALARM MESSAGES CONCERNING THIS ALARM
(A9000 - A9007)
PRIO = 9 BIS 11 : ALARM MESSAGES FOR THIS ALARM ARE ASSIGNED MESSAGE PRIORITY, CONFIGURED BY THE AMO
SIGNL (SEE A9000 TO A9007)
(PRIO =  9 : ALARM OF THIS ALARM CLASS IS NOT SENT TO AFR1 (HTS)
(PRIO = 10 : ALARM OF THIS ALARM CLASS IS NOT SENT TO AFR2 (DMS)
(PRIO = 11 : ALARM OF THIS ALARM CLASS IS NOT SENT TO AFR1 (HTS) AND AFR2 (DMS)
AMO-VADSU-84        NMC ALARMS CONFIGURATION, SWITCHING UNIT
CHANGE COMPLETED;

DIS-VADSU:PERIPHER,1;
H500:  AMO VADSU STARTED
```

```
ALARM CLASS: SWU PERIPHERY ALARM CLASS
AL.   THRES THRES FAIL. FAIL  TOTAL TIME1 [TIME TIME  PR  NAME
NO.   1     2 IN  ABS.  IN %  AB-   [SEC] 2     [H]
      IN %  %                 SOL.        [SEC]
1     10    90    27    57    58    600   600   0     6   TIE LINE

AMO-VADSU-84       NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY CARRIED OUT;
```

After this change the alarm message is always signaled with M6 (see example below).

```
A9001 M6 N3290 NO ACT   BPB   NMCALARM MAJOR ALARM ON 96-07-25 07:26:44
ALARM CLASS:SWU-PER:001
ALARM NAME:TIE LINE
FORMAT:2D
```

Example:

You do not want the SWU-logical alarm 'Dir1' to be sent to AFR1. All you have to do is set priority 9 for this message. The alarm message retains the message priority assigned with the AMO SIGNL.

```
CHA-VADSU:LOGICAL,157,,,,,,9;
H500:  AMO VADSU STARTED
H12: NOTES ON ALARM PRIORITIES:
PRIO = 0 : ALARM MESSAGES FOR THIS ALARM ARE ASSIGNED MESSAGE PRIORITY, CONFIGURED BY THE AMO SIGNL
(SEE A9000 BIS A9007)
PRIO = 1 TO 8 :    THIS PRIORITY IS USED AS THE MESSAGE PRIORITY FOR THE ALARM MESSAGES CONCERNING
THIS ALARM  (A9000 - A9007)
PRIO = 9 TO 11 :       ALARM MESSAGES FOR THIS ALARM HAVE THE MESSAGE PRIORITY CONFIGURED BY THE AMO
SIGNL  (SEE A9000 BIS A9007)
(PRIO =  9   : ALARM OF THIS ALARM CLASS IS NOT SENT TO AFR1 (HTS)
(PRIO = 10   : ALARM OF THIS ALARM CLASS IS NOT SENT TO AFR2 (DMS)
(PRIO = 11   : ALARM IN THIS ALARM CLASS NOT SENT TO AFR21 (HTS) AND
AFR22 (DMS) SENT
AMO-VADSU-84         NMC ALARMS CONFIGURATION, SWITCHING UNIT
CHANGE COMPLETED;

DIS-VADSU:LOGICAL,157;
H500:  AMO VADSU STARTED


ALAM CLASS: SWU LOGICAL ALARMS
AL.    THRES THRES FAIL. FAIL  TOTAL TIME  [TIM  TIEM  PR  NAME
NO.    1     2 IN  ABS.  IN %  AB-   1     E2    [H]
       IN %  %                 SOL.  [SEK  [SEK
                                     ]     ]
157    10    90    27    57    58    600   600   0     9   DIR1

AMO-VADSU-84         NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY CARRIED OUT;
```

2.7 Variable HW contacts in the case of individual alarms (V3.6/R6.5 and later)

EV2.0/ R6.5 and earlier: all MINOR alarms were allocated to LED1 (MINOR LED) and all MAJOR alarms were allocated to LED2 (MAJOR LED). This feature has been extended in EV2.0/ R6.5 and later. It is now possible to allocate individual alarms to a HW contact (LED) with the AMO-VADSU/VADSM. Important alarms can thus be signaled individually (see AMO description).

The HW contacts have the following meaning.

SU: (Standard) The alarm is not assigned to a HW contact, a summation report is compiled with the other MINOR/MAJOR and it is signaled at the appropriate LEDs. Alarms assigned to an SU HW contact are only signaled at LEDs which have not yet been allocated a HW contact. If, for example, alarms have been allocated to S1 and none have been allocated to S2, all SU alarms (both minor and major) are signaled at LED2 (MAJOR LED). When alarms have been allocated to S1 as well as to S2, alarms which have an SU HW contact are not signaled at an LED.

S1: The alarm is allocated to LED1 (MINOR LED). If a MINOR/MAJOR ALARM (which one is irrelevant) is issued for this alarm, this is signaled at LED1 (MINOR LED).

S2: The alarm is allocated to LED2 (MAJOR LED). If a MINOR/MAJOR ALARM (which one is irrelevant) is issued for this alarm, this is signaled at LED2 (MAJOR LED).

Example:

Every alarm is allocated to the SU (standard) HW contact. The SWU central alarm "SIGNAL UNIT" should be allocated individually to the MINOR LED to aid monitoring.

Once major and minor alarms have been allocated to the S1 HW contact, they are categorized under the alarm class "SIGNAL UNIT" and signaled at the MINOR LED. Any other alarms (minor and major) are signaled at the MAJOR LED.

```
CHA-VADSU:CENTRAL,20,,,,,,,S1;
H500:  AMO VADSU STARTED
H13: ONLY ALARMS WITH HWCONT = S1 ARE
SIGNALED IN THE CASE OF LED P2 (PAL) ON IOP AND NAL ON DP. THE SUMMATION DISPLAY (ALL NON-URGENT
ALARMS) IS DEACTIVATED FOR THIS HW CONTACT. IT ONLY REACTIVATES IF HWCONT = S1 IS NOT SET AT ANY
ALARM.
AMO-VADSU-79        NMC ALARMS CONFIGURATION, SWITCHING UNIT
CHANGE COMPLETE;
```

```
DIS-VADSU:CENTRAL,20;
H500:  AMO VADSU STARTED


ALARM CLASS: SWU CENTRAL ALARM CLASS
AL.    THRES THRES FAIL. TIME1 [TIME TIME  PR    HW-   NAME
NO.    1     2     ABS.  [SEC] 2     [H]         CON
                                [SEC]
20     1     2     0     900   900   0     0     S1    SIGNAL UNIT

AMO-VADSU-84        NMC ALARMS CONFIGURATION, SWITCHING UNITN
DISPLAY COMPLETE
```

To allow the alarm "LTU FAILURE" to be monitored more closely, the alarm can be allocated to the S2 HW contact. This alarm is then signaled individually at the MAJOR LED and the summation statement for all other alarms with a HW contact is not displayed at any LED.

```
CHA-VADSU:CENTRAL,2,,,,,,,S2;
H500:  AMO VADSU STARTED
H14: ONLY ALARMS WITH HWCONT = S2 ARE SIGNALED IN THE CASE OF LED C3 (ZAL) ON IOP AND UAL ON DP. THE
SUMMATION DISPLAY (ALL NON-URGENT ALARMS) IS DEACTIVATED FOR THIS HW CONTACT.IT ONLY REACTIVATES IF
HWCONT = S2 IS NOT SET AT ANY ALARM.
AMO-VADSU-79        NMC ALARMS CONFIGURATION, SWITCHING UNIT
CHANGE COMPLETE;
```

2.8 Configuring the validity period for SLA

Valid for HiPath 4000 V1.0. and later

You can set the time of day during which the individual IP connections in an NBCS system should be monitored for the alarm, "BAD IP CONNECTIVITY". You can set a start and an end time for the relevant SLA (Service Level Agreement) with the AMO VADSU. Outside this period, the "BAD IP CONNECTIVITY" alarm is automatically deactivated (see `DIS-VADSU`). The alarm is reactivated the following day at the start time of the SLA and is then monitored and signaled. The SLA is normally valid for the whole day (from 0:00 to 24:00).

If the SLA period (= SLA valid) is modified, these modifications take effect an hour later.

Example:

The IP connections in an NBCS system should only be monitored from 5:00 until 22:00 (this applies daily). Outside this SLA period (from 22:00 until 5:00) the "BAD IP CONNECTIVITY" alarm is deactivated.

```
ADD-VADSU:SLATIME,5,00,22,00;
H500:  AMO VADSU STARTED
AMO-VADSU-79        NMC ALARMS CONFIGURATION, SWITCHING UNIT
CONFIGURATION COMPLETED;
```

```
DIS-VADSU:SLATIME;
H500:  AMO VADSU STARTED
|  SLATIME
|       START:   05:00   END:   22:00
AMO-VADSU-79        NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETE;
```

2.9 Activating the snapshot function

The snapshot function is available in HiPath 4000 V1.0 and later.

Units which have been preventively configured and which are not in operation or which are blocked by an AMO are considered "defective" when snapshot is not activated. These units consequently trigger alarms.

The Service Department can use the snapshot function at any given time to reduce the current alarm situation to the real alarm situation. SWU periphery units which have the status NPR (Not PResent) at the moment when the snapshot is taken can be removed from alarm monitoring with the AMO VADSU. This action deletes the SWU alarms which are activated due to missing boards, terminals or trunks.

These units, which were removed from alarm monitoring for the purpose of the snapshot, are reinserted when:

- the snapshot is deactivated with the AMO VADSU.
- a unit is activated or deactivated, whether this be automatic (e.g. loss of line alarm) or manually by the Service Department (board/terminal activation).

The snapshot function can be **activated** several times whereas it can only be **deactivated** once. Thus, any SWU periphery units which have gained the status NPR after the last snapshot are removed from alarm monitoring.

The snapshot function has no effect on SWU periphery units which have system-wide repercussions (e.g.: trunks for ALUM alarms, RGEN/WEGEN or periphery SIU boards).

Example:

When the snapshot function is activated, the unavailable SLMO board with 10 OPTISETs is removed from alarm handling and the configuration and alarm counter for DIGITAL VOICE DEVICES is decremented by 10.

```
DIS-VADSU:PERIPHER,4;
H500:  AMO VADSU STARTED


ALARM CLASS: SWU PERIPHERY ALARM CLASS

AL.     THRES1 THRES2 FAIL.   FAIL    TOTAL   TIME1  [TIME  TIME   PR   NAME
NO.     IN %   IN %   ABS.    IN %    ABSOL. [SEC]  2      [H]
                                                [SEC]
```

```
ALARM CLASS: SWU PERIPHERY ALARM CLASS

4       10      90      10      50      20      600     600     0       0     DIGITAL VOICE
                                                                              DEVICES

AMO-VADSU-79         NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY CARRIED OUT;
```

ACT-VADSU:SNAPSHOT;

```
H500:  AMO VADSU STARTED
AMO-VADSU-79        NMC ALARMS CONFIGURATION, SWITCHING UNIT
ACTIVATION COMPLETED;
```

DIS-VADSU:SNAPSHOT;

```
H500:  AMO VADSU STARTED
SNAPSHOT DISPLAY OUTPUT: STATUS
|              SNAPSHOT -  STATUS : ON
AMO-VADSU-79        NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY CARRIED OUT;
```

DIS-VADSU:PERIPHER,4;

```
H500:  AMO VADSU STARTED


ALARM CLASS: SWU PERIPHERY ALARM CLASS
AL.     THRES1  THRES2  FAIL.   FAIL    TOTAL   TIME1   [TIME   TIME    PR    NAME
NO.     IN %    IN %    ABS.    IN %    ABSOL.  [SEC]   2       [H]
                                                        [SEC]
4       10      90      0       0       10      600     600     0       0     DIGITAL VOICE
                                                                              DEVICES

AMO-VADSU-79         NMC ALARMS CONFIGURATION, SWITCHING UNIT
DISPLAY COMPLETE;
```

2.10 Regenerating the validation data

You can use the AMO REGEN to create an AMO command batch that the AMO GENDB can then use to match the status of another PABX to the current status. To accomplish this the AMO REGEN calls other AMOs with the "REGENERATE" action. The regenerate function of the AMOs VADSU and VADSM is thus used to create the ADD and CHANGE commands needed to create the current alarm status from basic initialization.

2.11 Controlling alarm output

The following AMOs are used to control how alarms are output:

AMO SIGNL:	The AMO SIGNL is used, among other things, to define which messages (error, alarm and advisory messages) will be sent to which symbolic device. This custom setting can be overridden by the (symbolic) error number 1000. If error number 1000 is assigned to a symbolic device, all selected messages will be sent to the device in question.
AMO ASSGN:	This AMO is used to display and change a variety of device assignment tables containing the assignments between symbolic and physical devices. The Standard Assignment Table for Internal Connections (SATIC) is important as regards alarm output. This table is used by PABX programs that are not AMOs for output to a device.
AMO HISTO: AMO-HISTA	If a file is selected as physical device (must always be DPT4), it can be read with the AMO HISTO or HISTA. (AMO-HISTA replaces AMO-HISTO in SP300 V3.4 and later).

When a PABX is installed, the following standard settings are created with the aid of an AMO batch.

- Only service-relevant messages are sent via AFR (Automatic Fault Report) to HTS (HICOM-Teleservice).
- All error and advisory messages are collected in a history file for diagnostics purposes (the HISTO file is assigned to the symbolic device DPT4).
- In addition, all alarms (except the RESTART alarms) are displayed via the Maintenance and Alarm Panel (MAP) or the IOPA (x) display.

When you call any of the AMOs listed above, take care not to change the default setting (all changes should affect only additional alarm outputs).

See also:

> Displaying alarm messages at the terminal

> Saving and searching for alarm/error messages in HISTO files

2.11.1 Displaying alarm messages at the terminal

The alarm messages can be output to a terminal by means of the following AMO calls:

1. To assign all alarm messages to the symbolic device DPT1:

   ```
   CHA-SIGNL:MID,A,1000;
   ```

2. To assign the symbolic device DPT1 to the physical device CO1:

```
CHA-ASSGN:SATIC,DPT1,CO1;
```

2.11.2 Saving and searching for alarm/error messages in HISTO files

- AMO-HISTO (SP300-V3.3 and earlier)
- AMO-HISTA (HISTO search)
- HISTA "alarming" function

2.11.2.1 AMO-HISTO (SP300-V3.3 and earlier)

Alarm messages (also error and advisory messages, if desired) can be saved in a cyclically written file (e.g. HICOM-Teleservice log file). The following AMO calls can be used for this purpose:

1. To assign all alarm and error messages to the symbolic device DPT4 with AMO SIGNL:

   ```
   CHANGE-SIGNL:MID,F,1000,,,DPT4;
   ```

You can use "DELETE-SIGNL:MID,F,1000,ALL;" to restore the previously valid individual assignments.

2. To assign this symbolic device to the HISTO file with AMO ASSGN: The internal messages sent to DPT4 are entered in the newly generated file "`:AMD:C-HISTO-01`" for which 100 Kbytes are reserved:

   ```
   CHANGE-ASSGN:SATIC,DPT4,CFILE,C-HISTO-01,100000;
   ```

The 100-Kbyte file C-Histo1 can store approximately 300 messages.

3. You can use the AMO HISTO to view the file on screen. You can fetch the most recent 10 alarm messages from C-HISTO-01 with the call:

   ```
   START-HISTO:C-HISTO-01,A,,,NUMBER,10;
   ```

2.11.2.2 AMO-HISTA (HISTO search)

This new AMO has powerful search criteria and fast recovery times (approx. 10 seconds) for improved error-message searches in HISTO files (HISTO database). You can use it to search for error messages by time, error number, alarm, the PEN, the station number, the priority, function complex, exception-code/call-code/user-addr. It is also possible to display the current alarm status in table form.

Example:

- Assign a HISTO file:

  ```
  CHANGE-ASSGN:SATIC,DPT4,CFILE,C-FBTHIST,7000;
  ```

- Assign all error numbers to output devices DPT1 and DPT4 (HISTO-FILE) ;

```
CHANGE-SIGNL:MID,F,1000,FREE,,DPT1&DPT4,DPT1&DPT4;
```

- Create a HISTA database (size of database from 500 Kbytes to 2500 Kbytes).
  A 2.5 MB database can accommodate approximately 1200 error messages. In this range the database size you define must be a multiple of 500 (500, 1000, 1500.).

  ```
  ADD-HISTA:FSIZE=2500;
  ```

- Display existing messages;

  ```
  DIS-HISTA;
  ```

The AMO displays the following message, for example;

```
H500 :  AMO HISTA STARTED
DATABASE SIZE :                2500KB
NUMBER OF ENTRIES :             2
OLDEST ENTRY :          95-09-06 07:58
MOST RECENT ENTRY :               95-09-06 08:05
DISPLAY CARRIED OUT;
```

- Start a search for error messages relating to PEN 1-3-25-0:

  ```
  START-HISTA:SEARCH,95-09-06/00-00,95-09-06/12-00,y,PEN,1,3,25,0;
  ```

The AMO displays the number of messages found and asks you whether you want to view these messages

```
H01:  00001 ERROR MESSAGES FOUND
CONTINUE (Y/N/F)
ANS: Y
Fxxxx .................    error message listing
```

2.11.2.3 HISTA “alarming” function

The ADD command also has an option for activating an "Alarming" function, i.e. a potential loss of error messages by overwriting the HISTO file is signaled by a MAINTENANCE alarm (see also F6524). The MINOR alarm is a warning before the file is overwritten and the MAJOR alarm signals that messages are overwritten.

The "**ALARMING**" parameter controls this function. The parameter is optional: if it is not specified the function remains deactivated.

Example:

```
ADD-HISTA: FSIZE=2500,ALARMING=ON;
```

Alarming is not activated. You must first delete the HISTO file in order to deactivate alarming (caution: deletion means a loss of messages, see ’Data backup’ in the description of error message F6524).

Example:

DEL-HISTA;
ADD-HISTA:2500; OR
ADD-HISTA:FSIZE=2500,ALARMING=OFF;

2.12 Alarm mirror

There are two ways of displaying the system's current alarm mirror.

1. With **AMO GRA**
   You can use AMO GRA to request the following alarm-mirror messages:

Version	ALL (all processors)	BP (Switching unit)	A1 (Administation and data processor)	C1 (Call charge server)	T1 -T3 (Text and fax server)	V1 -V3 (Voice mail server)
V3.3 and earlier	A9005	A9005	A9005	A9005	A9005	A9005
V3.4 and later	A9012 A9013 A9014 A9015	A9012 A9013 A9014	A9012 A9015	A9012 A9015	A9012 A9015	A9012 A9015

See Alarm concept for an evaluation of alarm mirror messages.

Example:

Display the alarm mirror of the SWU:

```
DIS-GRA:BP;
```

Remark:
In this case the AMO terminates without display.The requested alarm-mirror message or messages are output to the output devices in the form of the above-mentioned alarm messages.

2. With **AMO HISTA**

If the AMO HISTA is added (see ADD-HISTA), you can output the alarm mirror with the following command;

```
START-HISTA:MIRROR;
```

The AMO displays the current alarm mirror in the following form:

```
ALARM          ABS       ALARM          ALARM          ALARM NAME
GROUP                    NUMBER         PRIO

CENTRAL        BPB       005            MINOR          CC RESTARTS

ALARM          ABS       ALARM          ALARM          ALARM NAME
GROUP                    NUMBER         PRIO

SWU-PER        BPB       001            MINOR          TIE LINE

SWU-PER        BPB       004            MAJOR          DIGITAL VOICE DEVICES

ALARM          ABS       ALARM          ALARM          ALARM NAME
GROUP                    NUMBER         PRIO

CENTRAL        A1        028            MAJOR          SYSTEM TIME FAILURE
```

2.13 Resetting alarms

You can use the AMO GRA to reset certain SWU or server alarms. The following central alarms are deletable:

- In SWU: 0, 5, 7, 9, 16, 17, 19, 23, 24, 27, 29.
- In ISP: 9, 10, 21, 23, 27, 29.
- In ISS: 13, 22, 23, 29.

All central alarms (SWU and ADP) can be deleted in HiPath 4000 V1.0 and later.

Example:

You want to delete central alarm 05 (CC RESTARTS).

```
DEL-GRA:BP,5;
```

3 Controlling error signalling with AMO SIGNL

- Current (ASD) / Configured (CSD) output devices
- Output device definition with F1000 and individual error no.
- Error message filter (SP300V3.3 / SP300-V3.4 /SP300-V1.0)

3.1 Current (ASD) / Configured (CSD) output devices

AMO-SIGNL supports a function that allows you to transfer the devices specified by the **ASD** parameter to those specified by the **CSD** parameter.

Example:

The following output devices were created for F2109 for example in a SIGNL batch:

```
CHA-SIGNL:TYPE=MID,CD=F,NO=2109,OUTPUT=FREE,,ASD=DPT1&DPT4&AFR1,CSD=DPT1&DPT4&AFR1;
```

This means that the actual (ASD) devices are the same as the configured (CSD) devices. For test purposes we can change the actual symbolic devices (ASD) for this error number (only DPT1).

```
DEL-SIGNL:MID,F,2109,FREE,,DPT4&AFR1;
```

This means that the error number will now be output only to DPT1. It is not necessary to make a note of the original device configuration, which can be restored simply by entering the command:

```
SET-SIGNL:MID,F,2109;
```

The effect of this command is to restore the actual symbolic devices (ASD) as the devices entered for CSD.

3.2 Output device definition with F1000 and individual error no.

The command CHA-SIGNL:MID,F,1000,FREE, ,DPT4,DPT4; directs **all error messages** to the output device DPT4 (HISTO file). This does not mean that the error numbers of individual configurations are suppressed.

In this case output is directed to the output devices in the F1000 and the output devices of the individual error numbers (if defined).

Example:

The following commands have been executed:

```
CHA-SIGNL:MID,F,1000,FREE,,DPT4,DPT4;
CHA-SIGNL:MID,F,2109,FREE,,DPT1&AFR1;
```

with the result that F2109 is output on DPT1, DPT4 and AFR1.

3.3 Error message filter (SP300V3.3 / SP300-V3.4 /SP300-V1.0)

Source-code level error message filters are available in the SIT. These filters distinguish between service-relevant and diagnosis-relevant error messages. This means:

All error messages assigned by the AMO-SIGNL to the output devices AFR1 (HTS) and AFR2 (DMS) are not output on these devices if

- the error message contains the action NO ACT or STATIST. Exceptions to this rule are error messages which are assigned the following alarm classes:
  - LTG RESTARTS
  - CC RESTARTS
  - IS RESTARTS
  - SM RESTARTS
  - CHARGE COMPUTER
  - POWER SUPPLY
  - UNIX FAILURE
  - SYSTEM TIME FAILURE
  - MAINTENANCE NOTE
- the error numbers F5140 / F5141 and F5063 and in the case of AFR22, the F2750 - F2754 (trace)

This filter prevents the transmission of the above set of non-service-relevant error messages to the remote output devices AFR1 / AFR2.
The filter has no effect as regards other output devices.

4 Alarm Generation

4.1 Generating SWU logical alarm classes

In SP300 V3.3 and later, the AMO VADSU supports generation of SWU-logical, individual alarm classes. A distinction is made between the generation of directional alarm classes and personal alarm classes.

Alarm-class generation permits user definition of the validation data, i.e.

- the MINOR / MAJOR alarm level is definable,
- the time preceding alarm signaling is definable, symbolic alarm names can be assigned.
- A symbolic alarm name can be assigned.

This dependability feature thus permits selective alarm signaling of individual or individually grouped lines/station terminals. This means a finer degree of detail in signaling hardware failure (HTS / DMS) and easier searching for the pertinent error information (error messages).

Basic generation similar to SWU periphery accumulated alarm classes is impractical. The advantage of this new feature is that, depending on the PABX configuration, you can use it to implement alarm signaling for your custom-defined failure units. The time this takes should be allowed for in PABX generation. At this point it is also advisable to decide on the lines/line groups or terminals for which you want to generate new alarm classes. You can then incorporate alarm-class generation in the generation batch run.

4.1.1 Potential uses of directional alarm classes

Directional alarm classes are used for selective monitoring of lines (TRUNK / TIE / special lines) and all other terminals identified by a PEN and **not** by a station number.

Generation of alarm classes as a function of trunk groups (e.g. tie lines) is an example of how this feature can be used.

In V3.4 and later, the number of directional alarms is increased to 512 so that a separate alarm can be assigned to each trunk group.

Specials such as APSE are another potential use for directional alarm classes.

4.1.2 Potential uses of personal alarm classes

Personal alarm classes are used for selective monitoring of terminals identifiable by their station numbers.

Selective failure monitoring of a customer's particularly important station numbers is one potential use for personal alarm classes.

For reasons associated with data protection and confidentiality, never use real names when generating personal alarms. Always use station numbers or synonyms.

4.1.3 Alarm class generation

The procedure for generating alarm classes is illustrated in general terms by the example below

1. Generate an alarm class with **ADD-VADSU**.
   Use the DIR or PERS parameter to select the subgroup. The AMO itself supplies the alarm number if you do not enter an alarm number.
   Take the number of lines or terminals into account when you define the thresholds (e.g. when monitoring more than one line (a trunk group)). It is advisable to set the threshold such that the alarm is not signaled as soon as the first line fails. Empirical values are 30-50% for the MINOR threshold and 90% for MAJOR. Only one threshold has to be activated for single monitoring, i.e. the MINOR threshold can be set to 65535 (inactive) and the MAJOR threshold to 0% (the alarm is signaled when the first line fails).
   The validation times (parameters: Time1 / Time2) should be set to 10 minutes (Time = 600) to avoid unnecessarily frequent alarms signaling sporadic line failures with ON / OFF.
   The alarm name is always included in the alarm message, where it appears along with a prefix, e.g. Dxxx: / Pxxx: (D for directional, P for personal, xxx is the physical alarm number assigned by either the AMO or the user).

In the case of a directional-alarm class the first 4 characters of the name must be unique in the entire set of directional alarms (this is checked by the AMO VADSU). This restriction is for identification when systems are integrated in networks and when systems are administrated via NMC / DMS (Network Management Center / Domain Management System).
In this case, the first 4 digits of the alarm name should define the DIR1, i.e. the partner system. These can be identical, for example to the trunk group number or the trunk group name. From the point of view of network administration the advantage is that each alarm has a unique identifier (originator of alarm and identifier for the route).

2. Use *DIS-VADSU:LOGISCH* to check the configured data

3. Assign the alarm number you generated to the PENs or station numbers.
   You assign the number with the CHANGE command of the corresponding configuration-AMO TDCSU / TACSU / TSCSU.
   Before assigning the alarm number, use the DISPLAY command of the AMO TDCSU / TACSU / TSCSU to check whether an alarm number is already entered. Use the parameter **ALARMNO** for basic initialization, this is performed with **0** (no alarm class).
   After generating the alarm class, use the AMO TDCSU or TACSU to assign the alarm number to the PENs, e.g.
   `CHA-TDCSU:PEN=1-1-109-0,ALARMNO=50,DEV=S2CONN,BCGR=0;`
   (All other parameters remain unchanged).

This change command changes the relevant PEN from the default DH-TYPE-dependent SWU periphery summation alarm to the newly generated alarm, i.e.the dependability system removes the relevant PEN from the configuration counter of the summation alarms and adds it to the configuration counter of the new alarm. You can revoke the change by setting ALARMNO = 0 in the relevant AMO.
The relevant PEN is thus monitored by either the summation alarm, e.g. TIE-LINE, or the individual alarm, e.g. TGRP1 SYS4.
If, at the time of assignment with CHA-TDCSU for example, the PEN status was NPR and if the threshold value for MINOR was exceeded in the SWU periphery alarm class TIE LINE (i.e. an alarm message exists for TIE LINE), the change is followed by OFF alarm signaling for the TIE LINE alarm. If the threshold of the new alarm class is set to a value such that the newly added PEN (NPR) causes the threshold to be exceeded, the new ALARM is signaled by ON.

4. After assigning the alarm number, use `DISPLAY-VADSU` to check the assignment.
   `e.g.: DIS-VADSU:LOGICAL,DIR,50;`

The field TOTAL ABSOLUTE (configuration counter) now contains the number of assigned PENs (in the cause of circuits with B-channels the number of B-channels is included in the count). This counter is not updated if the line of the terminal is blocked by AMO at this time. The counter is not updated until such times as startup is effected by AMO.

The FAILED IN % field (number of failed lines/terminals as percentage of total absolute value) is not updated unless the status of the assigned line or assigned device is not READY/ MAN_AMO/HIR_AMO at this time.
e.g.: `DIS-VADSU:ASS,50`
A list of all PENs or station numbers assigned to this alarm class is then displayed.

4.1.4 Alarm-relevant error messages

The dependability system usually assigns SWU periphery error messages the alarm class or classes which correspond to the device-handler types of the PENs. A BOARD error message for a DIUS2, for example, is assigned the alarm class SWU-PER. 001 (TIE LINE). This information is in line 2 of the error message:
- SP300-V3.3 and earlier: in the DEV CLASS line
- SP300-V3.4 and later: in the ALARM CLASS line.

If a new directional alarm class is generated for the PENs of this board, this new alarm class is also entered in the error message (SWU-LOG xxx). The error message in question can thus be found by its SWU periphery alarm class as well as by its new alarm class with the appropriate search tools such as HTS / DMS, or with AMO HISTA in SP300 V3.3 and later.
Please ensure that the PENs are monitored only by the new alarm class.

4.2 DEVICE ALARM

Valid for SP300-V3.4/R6.3 and later

The **DEVICE ALARM** (A9006 / A9007) is only signaled as an alarm if generated with an AMO.

The **DEVICE ALARM** is activated or deactivated with AMO VADSU / AMO VADSM.

The alarm type can be configured for all periphery SWU and SM alarms and for certain central alarms.

- Activation:
  The alarm type is activated with CHA-VADSU (for SM). This alarm type is activated by changing the threshold from "0" to a value between "1" and "255" (number of hours).
- Deactivation;
  The alarm type is deactivated with CHA-VADSU (for SM). This alarm type is deactivated by changing the threshold to **"0"**.
- Display;
  With DIS-VADSU (DIS-VADSM) to check whether the alarm is activated and the time (output column: DEV-T) entered.

4.2.1 General notes for this alarm type

This alarm type is normally configured when long-term monitoring is activated for trunk or tie lines. It can show how long lines were out of service. This can be used as proof against claims by the owner of the line.

The activation of this alarm type is thus only possible if the status of the device or line to be monitored is READY.
The alarm type can also be activated for a periphery alarm to which multiple lines or devices are assigned. In this case the first line/device to fail is signaled in principle. The monitoring time started in this way remains valid even if subsequent failures occur.

Example:
Generate an SWU directional alarm with subsequent activation of the DEVICE alarm for a digital trunk or tie line:

1. Use DIS-SDSU to display the status of the line to be monitored. Do not proceed to the next step unless the line status is READY.
2. Add directional alarm with ADD-VADSU
3. Assign the alarm class you generated to the PEN with CHA-TDCSU
4. Activate DEVICE ALARM with CHA-VADSU (e.g. for 24 hours)

4.3 F4704 Handling

Valid for SP300-V3.3/R6.3 and later

This section describes errors which can occur in association with SWU logical/periphery alarms. In conjunction with an alarm, an inconsistency in a configuration counter has led to falsification of the alarm validation. Consequently, this alarm can no longer accurately reflect the as-is alarm situation of the PENs in question.

This situation is signaled by a **MAINTENANCE NOTE** central alarm Alarm. The advisory message described below is available under this alarm (either directly as a log message or determined with AMO-HISTA, using the alarm number or error number as search criterion)

F4704 M4 Nxxxx NO ACT BPA DEP MAINTENANCE xxxxxxxx

Format:2C

ATTENTION PLEASE : INCONSISTENT CONFIGURATION COUNT OF NMC-ALARM

[1] R50: RV50 QUER FD270

[2] REPAIR MEASURE: s.SERVICE-MANUAL/SECTION:ALARM MESSAGES/F7404 HANDLING

- [1]: Alarm name (e.g. R50 means a directional alarm, alarm number 50)
- [2]: The text output by older software may be: **SUGGESTED MEASURE : SYSTEM RESTART**.

In both cases you should proceed as follows:

1. Read message F4704 to discover the name of the SWU alarm which has been triggered (see the example above).
2. If the string at the start of the alarm name is Dxx: or Pxx:, the alarm is an SWU-logical alarm, so you should follow the instructions in Step 3 below. All other cases are either SWU periphery summation alarms or SWU-logical alarms (1 - 7); and you should proceed as described in Step 4.
3. Directional or personal alarms
   In order to re-establish the consistency of the configuration counter of the relevant alarm so that the alarm class can be reused, you must first delete and then re-add the alarm.

You then have to reassign the PENs or station numbers originally assigned to the alarm. The following instructions lead you through the process step by step (the example taken illustrates the handling required for the error message mentioned above).

Read the alarm number (Dxx/Pxx) from the error message.

Use DIS-VADSU:LOGICAL,DIR,50; to display the alarm class details (the current information on this alarm is displayed).

Delete the alarm with `DEL-VADSU,50;`
The relevant configuration counter is thus deleted, along with all data assigned to this alarm (Control: `DIS-VADSU:DIR,50;` should no longer display any data for this alarm).

Re-add the alarm you deleted using the instructions given under point c). Use the same parameter values as for the alarm just deleted - the command is.

```
ADD-VADSU:DIR,50,100,600,600,RV50 TIE FD270;
```

Use DIS-VADSU:LOGICAL,DIR,50; to check the result of your actions.
The fields **TOTAL ABSOLUTE** (configuration counter) and **FAILED IN %** (percentage of logical units failed) must both contain **0**.

Use the appropriate configuration AMO to reassign the alarm number to the PEN or station number (in the case of a personal alarm), for example for a directional alarm with

```
CHA-TDCSU:PEN=1-1-115-0,ALARMNO=50,DEV=S2CONN,BCGR=0;
```

After each assignment with DIS-VADSU:LOGICAL,DIR,50; as described under point e), always check the information displayed. The values output in the **TOTAL ABSOLUTE** and **FAILED IN %** fields change as a function of the number of logical units assigned (single lines/B-channels or terminals) and their states.

Example
If the status of a PEN (e.g. an S2 line with 30 B-channels) is READY (display with DIS-SDSU), the value in the **TOTAL ABSOLUTE** field must be 30.
If the status is NPR, the **FAILED IN %** field must contain the corresponding percentage (e.g. 100% for 30 B-channels).
The two fields should not have changed if the status of the circuit is MAN_AMO, i.e. the two fields change as a function of the number of logical units assigned and their status.

After assigning the alarm number to the PENs/station numbers, use DIS-VADSU again to recheck the alarm-assignment details. The **TOTAL ABSOLUTE** field should not be 0 unless the status of all assigned PENs station numbers is MAN-AMO.

Use DEL-GRA to delete alarm No. 29 (MAINTENANCE NOTE).

4. SWU periphery alarms.
   A SYSTEM RESTART is the only way of restoring the consistency of the configuration counter assigned to this alarm, i.e. a hard restart of both the active and the stand-by CC is necessary.
   A system restart can usually be performed only in a light-traffic period or perhaps only with

the approval of the customer, so in the interim it is best to deactivate the alarm with AE-VADSU (set the thresholds for MINOR and MAJOR to 65535).
On account of the inconsistency of the alarm's configuration counter, an alarm could be signaled that would lead to an unjustified fault report (e.g. with HTS or DMS).
Delete the original alarm MAINTENANCE NOTE (alarm No. 29) with AMO GRA (DEL-GRA).
After the hard restart, do not forget to reactivate the alarm with CHA-VADSU (re-enter original thresholds for MINOR and MAJOR).

5 Alarm concept

The alarm message output format is different in versions SP300-V3.3/R6.2 and earlier. Please refer to the relevant description for the older versions (SP300-V3.3/R6.2 and earlier).

  - Table SM periphery alarms
  - Description of SM periphery alarms
  - List of alarms: **SM-PER**
- Alarm signaling
  - Message priority
  - Variable HW contacts in the case of individual alarms
  - Alarm signaling on the MAP/IOPA/DM80
- Hex binary table

5.1 Important information

Intervention at the customer system can sometimes cause malfunctions which will be detected by the system and reported to the HTS. You should therefore shut down the HTS system before beginning work with the AMO-AFR.

Connected boards can only be configured in the PABX software after the necessary removal (terminals, trunk and tie lines, etc.).

5.2 Alarm definition

In general:

- An alarm is signaled when a threshold value is reached and the alarm count does not drop below this value within a specific time period.
- The alarm is reset only if the threshold value remains undershot for a specific time period.

This approach prevents sporadic failures (such as short-term line alarms) being transferred to HTS or NMC.

5.3 AMOs used

In SP300-V3.3 and later the following AMOs are used in conjunction with the alarm concept:

- AMO ASSGN
  - Assignment between symbolic and physical devices for alarm output.
- AMO GRA (Get Reset Alarm)
  - Requesting alarm mirror messages (ALARM MIRROR).
  - Deleting alarms.

- AMO HISTA
  - Outputting the current alarm status.
  - Specific error searches (by search criteria).
- AMO HISTO
  - Reading error and alarm messages from the HISTO file.
- AMO SIGNL
  - Establishing which alarms should be output at which symbolic device.
- AMO TEST (only for SP300-V3.2)
  - Requesting alarm mirror messages (ALARM MIRROR).
  - Deleting static central alarms.
- AMO VADSM (VAlidation Data Service Module)
  - Alarm validation in ADS/SM.
- AMO VADSU (VAlidation Data Switching Unit)
  - Alarm validation in the SWU.
  - Configuring customer-specific personal and directional alarms.
  - Activating and deactivating the SNAPSHOT function.
  - Configuring the start and end time for the valid SLA (Service Level Agreement).

See also AM handling of alarms.

5.4 Threshold value and validation time

The threshold value can be set as an absolute value or a percentage value.
An alarm is signaled if the threshold value is not exceeded for a specific time period (validation time).

5.5 Alarm types

There are three alarm types:

- **DEVICE ALARM**

  This alarm type is only signaled if previously activated. The threshold value cannot be changed for this alarm, i.e. the alarm is always indicated after the first failure of a unit assigned to the alarm class or alarm class concerned (once the validation time has run out) e.g. failure of a peripheral line during long-term supervision.

- **MINOR ALARM**

  Low priority alarm. The threshold value "TRESH1" was reached within the validation time "TIME1" specified.
  e.g. failure of 50% of the trunk lines.

- **MAJOR ALARM**

  High-priority alarm. The threshold value "THRESH2" was reached within the validation time "TIME2" specified.
  e.g. failure of 90% of the trunk lines.

The discrimination and prioritization of the alarms thus depends on the different threshold values.

See also

> DEVICE ALARM

> Alarm classes

> Assigning error messages

> Single alarms and alarm mirror

> Alarm mirror

> Evaluating the alarm mirror

5.6 DEVICE ALARM

The DEVICE ALARM (*SP300-V3.4/R6.3 and later*) type can be activated for all the SWU and SM periphery alarm classes (see DEVICE ALARM and AM handling of alarms).

The DEVICE ALARM alarm type is only signaled if generated by AMO (A9006 / A9007).

The DEVICE ALARM is activated and deactivated with the AMOs VADSU / VADSM.

This alarm type can be generated for all SWU periphery and server periphery alarms, as well as for certain central alarms.

Activation:
The alarm type is activated with the `CHA-VADSU` command (for servers). This alarm type is activated by increasing the threshold value from "0" to between "1" and "255" (number of hours).

Deactivation:
The alarm type is deactivated with `CHA-VADSU` (for servers). To deactivate, set the threshold value to "0" again.

Display:
The `DIS-VADSU` (`DIS-VADSM`) command allows users to check that the alarm type is activated and what time was entered (output column: `TIME`).

In general, this type of alarm is activated in order to provide a long-term monitoring function for a specific exchange line or tie-line. It can show how long lines were out of service.

The DEVICE ALARM alarm type can be activated for all the SWU alarm classes.

5.7 Timed decrementing system

The timed decrementing system is used for a number of central device alarms, which are not initiated by the activation or deactivation of system units.
With this system, the respective alarm counters are reset at regular intervals, provided the counter value is greater than 0 but has not yet reached the threshold value. The decrementing interval timer of each counter is the same as the validation time of the respective alarm.
Resetting the counters means that the error count is not entered in the error statistics. This means that low-impact ('tolerable') errors cannot lead to an alarm under normal circumstances. Only an abnormal, rapid succession of errors within one decrementing interval will lead to an alarm. The decrementing system also reacts when the error counter has reached 70% of the threshold value:
In this case, the timed decrementing system does not reset the counter until four decrementing interval timers have elapsed. If enough additional errors occur in this time, the counter will reach the threshold value and an alarm will be initialized.
The alarms used for this procedure are identified in the description.

5.8 RESET ALARM function

In HiPath 4000 V1.0 and earlier, the only means of clearing a range of central alarms was with a module restart.
The following additional options exist for clearing alarms in these alarm classes:

- Automatic clearing
  A timer (18 hours) is started for each alarm which is initiated. When it expires, the alarm is cleared automatically. If the error condition has not been eliminated within this time period, the alarm is immediately initiated again.
- Manual clearing
  - With the AMO GRA
  - Via an NMC command
    The relevant alarm can be reset by means of an external NMC command, see NMC Administrator Manual (A31003-G8014-A100-*-35).

The alarms effected by the RESET alarm function are described later in the alarm description.

In HiPath 4000 V1.0 and later, all central alarms can be cleared with the AMO GRA.

5.9 Alarm classes

The designations ALARM-CLASS and DEV-CLASS have the same meaning.

The system is divided into alarm classes. These alarm classes represent groups of associated functional units. The alarm classes are:

- Central alarm class
  LTG failures, CC Restarts.
- SWU periphery alarm class
  Exchange/tie-trunk failures, all analog or digital voice services.
- SWU logical alarm classes
  Exchange trunk failures and individual alarms.
  - Directional alarms: assigned to a specific PEN.
  - Personal alarms: assigned to a specific user's station number
- SM periphery alarm class
  Service-specific HW for TTX or data storage units/volumes such as hard disks.

See also

> Alarm types

> Assigning error messages

> Single alarms and alarm mirror

> Alarm mirror

> Evaluating the alarm mirror

> List of alarms: **CENTRAL**, **SWU-PER**, **SWU-LOG**, **SM-PER**

5.10 Assigning error messages

Every error message is assigned to one or more alarms.

Error messages contain the ALARM CLASS in the second line. This line is suppressed in the case of output via NMC and is displayed in the case of output via HTS or printer.

In the following example alarm class assignment is arbitrary. Six combination options describe the appearance of the second line of an error message.

In the central group, only one alarm class that does not provide for combination with peripheral groups is specified.

Periphery alarm classes can contain up to six alarm classes, these are separated by "/" characters.

Only the SWU-PER and SWU-LOG groups can occur in combination.

```
Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                    01-10-29
14:51:41

      ALARM-CLASS:SWU PER:001/002/003/004/005/006 SWU LOG:201/202/203/204/
205/206

or:

      ALARM-CLASS:SWU-PER:001/002/003            SWU-LOG:206

      ALARM-CLASS:SWU-PER:001/002/006

      ALARM-CLASS:SWU-LOG:416

      ALARM-CLASS:SM-PER: 011/012/013/014/015/016

      ALARM-CLASS:CENTRAL:026
```

See also

> Alarm types

> Alarm classes

> Single alarms and alarm mirror

> Alarm mirror

> Evaluating the alarm mirror

> List of alarms: **CENTRAL**, **SWU-PER**, **SWU-LOG**, **SM-PER**

5.11 Single alarms and alarm mirror

Alarm signaling occurs in the following formats:

- Single alarms:
  - A9000 - A9003, A9006, A9007
    These messages contain only one alarm.

- Summation alarms (alarm mirror):
  - A9004 - A9005 (SP300-V3.3/R6.1 and earlier)
    When using these alarms, the alarm mirror for all alarm classes is sent.
  - A9008 - A9015: (V3.4/R6.3 and later)
    When using these alarms, the alarm mirror is sent for each individual alarm class.

See also

> Alarm types

> Alarm classes

> Assigning error messages

> Alarm mirror

> Evaluating the alarm mirror

5.12 Alarm mirror

The alarm messages A9004 and A9005 no longer exist in this version. The alarm mirror output is carried out with the aid of alarm messages which contain all the set alarms of an alarm class. The following alarm messages are possible:

- **A9008** contains all the alarms set in the central alarm class (SWU or server).
- **A9009** contains all the alarms set in the SWU periphery alarm class.
- **A9010** contains all the alarms set in the SWU logical device alarm class.
- **A9011** contains all the alarms set in the server periphery alarm class.
- **A9012 to A9015**. these summation alarms can only be interrogated manually with the aid of the AMO GRA, or by means of an external NMC command, see NMC Administrator Manual (A31003-G8014-A100-*-35).

See also

> Alarm types

> Alarm classes

> Assigning error messages

> Single alarms and alarm mirror

> Evaluating the alarm mirror

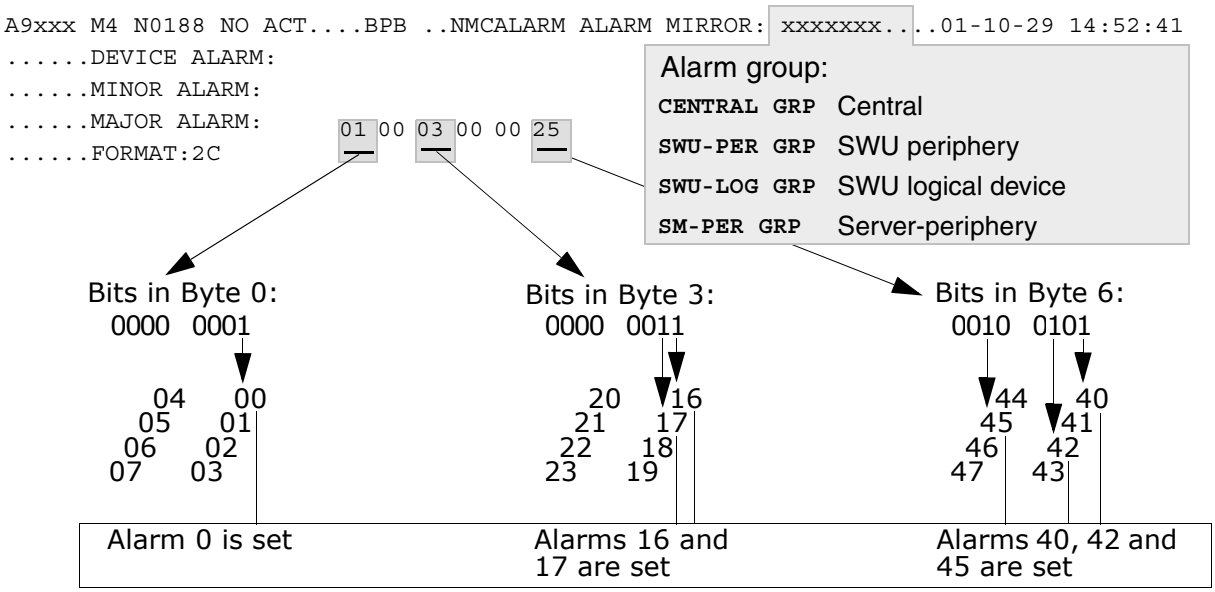
5.12.1 Evaluating the alarm mirror

In SP300-V3.4 and later there are 512 directional SWU-logical alarm classes.

In HiPath 4000 V1.0 and later, there are 64 central alarms (SWU and ADP) and 32 SWU periphery alarms.

The following example shows the interpretation of the bit lines in alarm messages in SP300-V3.4/R6.3 and later. Direction of the information to be read:

- the bytes from **left to right** in ascending order.
- bits within a bytes from **right to left**.



The interpretation of the bit line for DEVICE/MINOR and MAJOR is identical.

Alarm mirror of the central alarm class

```
A9008 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: CENTRAL GRP     01-10-29
15:34:25
      DEVICE ALARM: 1122334455667788
      MINOR ALARM:  1122334455667788
      MAJOR ALARM:  1122334455667788
      FORMAT:30
```

11 = Byte 1
22 = Byte 2
33 = Byte 3
44 = Byte 4

55 = Byte 5 (HiPath 4000 V1.0 and later)
66 = Byte 6 (HiPath 4000 V1.0 and later)
77 = Byte 7 (HiPath 4000 V1.0 and later)
88 = Byte 8 (HiPath 4000 V1.0 and later)

Bytes 1 to 4 contain the 32 central alarms (SP300H-V1.0 and earlier).
Bytes 1 to 8 contain the 64 central alarms (HiPath 4000 V1.0 and later).

Alarm mirror of the SWU periphery device class

```
A9008 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SWU-PER GRP     01-10-29
13:58:45
      DEVICE-ALARM: 11223344
      MINOR ALARM:  11223344
      MAJOR ALARM:  11223344
      FORMAT:30
```

11 = Byte 1
22 = Byte 2
33 = Byte 3 (HiPath 4000 V1.0 and later)
44 = Byte 4 (HiPath 4000 V1.0 and later)

Bytes 1 - 2 contain the 16 SWU periphery alarms (SP300H-V1.0 and earlier).
Bytes 1 - 4 contain the 32 SWU periphery alarms (HiPath 4000 V1.0 and later).

Alarm mirror of the SWU logical device class

```
A9010 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SWU-LOG GRP     01-10-29
13:58:45

   DEVICE-ALARM:

      11222222222222222222222222222222222222222222222222222222
      22222222222222222222222222222222222222222222222222222222
      22222222233333333333333

   MINOR-ALARM:

      11222222222222222222222222222222222222222222222222222222
      22222222222222222222222222222222222222222222222222222222
      22222222233333333333333

   MAJOR-ALARM:

      11222222222222222222222222222222222222222222222222222222
      22222222222222222222222222222222222222222222222222222222
      22222222233333333333333
```

```
    FORMAT:30
```

11 = Byte 1 contains the 8 specific alarms
22 = Bytes 2 to 65 contain the 512 directional alarms
33 = Bytes 66 to 73 contain the 64 personal alarms

Alarm mirror of the server periphery class

```
A9011 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SM-PER GRP      01-10-29
13:58:45
      DEVICE-ALARM: 112233
      MINOR ALARM:  112233
      MAJOR ALARM:  112233
      FORMAT:30
```

11 = Byte 1
22 = Byte 2
33 = Byte 3

Bytes 1 to 3 contain the 24 SM periphery alarm class.

See also

> Alarm types

> Alarm classes

> Assigning error messages

> Single alarms and alarm mirror

> List of alarms: **CENTRAL**, **SWU-PER**, **SWU-LOG**, **SM-PER**

> Alarm mirror

5.13 Central alarm class

This group comprises 32 alarms (SP300H-V1.0 and earlier) or 64 alarms (HiPath 4000 V1.0 and later), which cannot be unambiguously assigned to one of the periphery device class, as well as alarms defined as central alarms due to their functionality.
Central alarms are permanently defined and are assigned by the system and are available for:

- SWU (administered with the AMO VADSU).
- ADS and server (administered with the AMO VADSM).

Examples:

```
A9008 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: CENTRAL GRP      01-10-29
15:34:25
      DEVICE-ALARM: 0000000000000000
      MINOR ALARM:  0000000000000000
      MAJOR ALARM:  0000000000000000
                    1 ------------> 64

Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                    01-10-29
14:51:41
      ALARM CLASS:CENTRAL:026
```

See also

- > Table of central alarms
- > List of central alarms: **CENTRAL**
- > Alarm classes
- > Evaluating the alarm mirror

5.13.1 Table of central alarms

Alarm number	Alarm name	Threshold value and validation time for					Message priority
		MINOR ALARM (absolute value)	MAJOR ALARM (absolute value)	MINOR ALARM (seconds)	MAJOR ALARM (seconds)	DEVICE ALARM (hours)	
CENTRAL:000	LTG RESTARTS	2	4	1800	1800	0	E0
CENTRAL:001	LTG FAILURE	1	2	420	420	0	E0
CENTRAL:002	LTU FAILURE	1	2	600	600	0	E0
CENTRAL:003	PHONEMAIL ALARM	1	deact.	300	0	0	E0
CENTRAL:004	LTU STANDBY CABLE	1	deact.	300	0	0	E0
CENTRAL:005	CC RESTARTS	2	3	1800	1800	0	E0
CENTRAL:006	STBY-CC FAILURE	1	deact.	900	0	0	E0
CENTRAL:007	LTUR RESTARTS	3	6	900	900	0	E0
CENTRAL:008	RMS FAILURE	deact.	1	0	600	0	E0
CENTRAL:009	CHARGE COMPUTER	0	1	0	600	0	E0
CENTRAL:010	IS RESTARTS	4	6	1800	1800	0	E0
CENTRAL:011	NOT USED	--	--	--	--	0	E0

CENTRAL:012	NOT USED	--	--	--	--	0	E0
CENTRAL:013	ALTERNATE LOAD AREA	deact.	1	0	1	0	E0
CENTRAL:014	NOT USED	--	--	--	--	0	E0
CENTRAL:015	EXTERNAL SERVER	0	100	600	600	0	E0
CENTRAL:016	LTG CENTRAL CONTROL	5	deact.	900	0	0	E0
CENTRAL:017	CC CENTRAL CONTROL	1	deact.	900	0	0	E0
CENTRAL:018	SWITCHING NETWORK	1	2	900	900	0	E0
CENTRAL:019	CLOCKING SYSTEM	2	4	900	900	0	E0
CENTRAL:020	SIGNAL UNIT	1	2	900	900	0	E0
CENTRAL:021	IS CENTRAL CONTROL	5	deact.	900	0	0	E0
CENTRAL:022	SM CENRAL CONTROL	5	8	900	900	0	E0
CENTRAL:023	SW ERRORS	deact.	deact.	0	0	0	E0
CENTRAL:024	SYSTEM MESSAGES	deact.	deact.	0	0	0	E0
CENTRAL:025	POWER SUPPLY	1	2	1	1	0	E0
CENTRAL:026	SM FAILURE	deact.	1	0	1800	0	E0
CENTRAL:027	UNIX / XENIX FAILURE	1	2	1	1	0	E0
CENTRAL:028	SYSTEM TIME FAILURE	deact.	1	0	1	0	E0
CENTRAL:029	MAINTENANCE NOTE	1	2	1	1	0	E0
CENTRAL:030	SWITCHING UNIT FAILURE	deact.	1	0	1	0	E0
CENTRAL:031	NOT USED	--	--	--	--	0	E0
CENTRAL:032	ACCESS POINT FAILURE	1	2	120	120	0	E0
CENTRAL:033	BAD IP CONNECTIVITY	10%	50%	120	120	0	E0
CENTRAL:034	LW-SW VERSION CONFLICT	1	deact.	120	0	0	E0
CENTRAL:035	HW DEFECT	deact.	1	1	1	0	E0
CENTRAL:036	PER-BOARD SWITCHOVER	1	2	120	120	0	E0
CENTRAL:037	AP EMERGENCY	deact.	1	1	1	0	E0
CENTRAL:038	CC-AP UNAVAILABLE	deact.	1	1	1	0	E0
CENTRAL:039	ENCRYPTION PROBLEM	1	2	1	1	0	E0
CENTRAL:040	SECURE TRACE	1	2	1	1	0	E0
CENTRAL:041	NOT USED	--	--	--	--	0	E0
CENTRAL:0xx	NOT USED	--	--	--	--	0	E0
CENTRAL:063	NOT USED	--	--	--	--	0	E0

See also

> Central alarm class

> List of alarms: **CENTRAL**

> Alarm classes

CENTRAL

Alarm classes: **CENTRAL** -- **SWU-PER** -- **SWU-LOG** -- **SM-PER**

Central alarm class
Table of central alarms

CENTRAL:000	**CENTRAL:001**	**CENTRAL:002**	**CENTRAL:003**
CENTRAL:004	**CENTRAL:005**	**CENTRAL:006**	**CENTRAL:007**
CENTRAL:008	**CENTRAL:009**	**CENTRAL:010**	**CENTRAL:011**
CENTRAL:012	**CENTRAL:013**	**CENTRAL:014**	**CENTRAL:015**
CENTRAL:016	**CENTRAL:017**	**CENTRAL:018**	**CENTRAL:019**
CENTRAL:020	**CENTRAL:021**	**CENTRAL:022**	**CENTRAL:023**
CENTRAL:024	**CENTRAL:025**	**CENTRAL:026**	**CENTRAL:027**
CENTRAL:028	**CENTRAL:029**	**CENTRAL:030**	**CENTRAL:031**
CENTRAL:032	**CENTRAL:033**	**CENTRAL:034**	**CENTRAL:035**
CENTRAL:036	**CENTRAL:037**	**CENTRAL:038**	**CENTRAL:041**
CENTRAL:063			

See also

> Alarm classes

> Evaluating the alarm mirror

A9000 -- F1000 -- F2000 -- F3000 -- F4000 -- F5000 -- F6000 -- F7000 -- F8000

CENTRAL:000

LTG RESTARTS

Not relevant to the US release.

This alarm indicates that at least 1 LTG has undergone too many restarts within the defined period of time. Although the above alarm is a summation alarm, the number of LTG restarts are logged by separate counters for each LTG.

Restart alarm criteria:

- The error counters are controlled via error messages. One of the messages assigned to the restart alarm contains a restart flag. This message causes the appropriate error counter to be incremented.

- Each type of restart is counted.
- The alarm is set 1 minute after the threshold value is reached. This value is not the same as the validation time, but is a separate, fixed time.
- The timed decrementing system is used for this alarm.
- These alarms can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or AMO GRA (`CHA-GRA`). If this is not done, the alarm is automatically cleared after 18 hours.

> List: **CENTRAL**

CENTRAL:001

LTG FAILURE

Not relevant to the US release:

This alarm indicates failure of an entire LTG or one GP half.

Assignment to error messages:
F5057, F5059 and F5069

Alarm criteria:

- Minor alarm: failure of at least one standby LTG
- Major alarm: failure of at least one active LTG
- The alarm is reset as soon as the LTG/GP half is available again. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.
- The threshold values for this alarm are fixed at source-code level and cannot be changed with AMO-VADSU.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:002

LTU FAILURE

This alarm indicates failure of an LTU shelf, a SYN-clock or the failure of the ac generator AC-GEN/ac ringing voltage generator RG.

The error which generates this alarm can also generate other SWU periphery alarms, e.g. DIGITAL VOICE DEVICES as a secondary reaction. The number of secondary alarms has been reduced considerably in HiPath 4000 V1.0 and later.

The failure or deactivation of the LTU shelf power supply also generates this alarm. This situation is also signaled by the POWER SUPPLY alarm of the SWU. Consequently, in the event of an LTU FAILURE, a search should always be carried out for the POWER SUPPLY alarm.

The failure of an Access Point in NBCS systems also generates this alarm.

Assignment to error messages:
F5300 - F5336.

Alarm criteria:

- Minor alarm: Failure of at least one ACGEN/RG board
- Major alarm:
  Failure of at least one LTU (or an Access Point)
  Failure of at least one SYN_1/SYN_2 clock
  Failure of at least one HDLC DCL path
- The alarm is reset as soon as all above-mentioned units are back in operation. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.
- The threshold values for this alarm are fixed at source-code level and cannot be changed with AMO-VADSU.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:003

PHONEMAIL ALARM

US-specific alarm release.

This alarm signals the failure of Phonemail (PM) nodes.

Assignment to error messages:
F5700-F5701

Alarm criteria:

- The alarm is controlled by the error messages F5700 and F5701
- The alarm is set if F5700 (Alarm on) is signaled for at least one PM node.

- The alarm is reset if all failed PM nodes have been put back into operation, i.e. an F5701 (Alarm off) must exist for every PM that has been put back into operation. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:004

LTU STANDBY CABLE

US-specific alarm release LTUR HW STATUS BUS (SP300E-V2.0/R6.5 and earlier) was replaced in SP300E-V3.0/R6.6 and later by LTU STANDBY CABLE.

This alarm indicates a cabling problem between the STBY-CC and the LTUCX board. This happens when the cables to the board are defective, disconnected or connected in the incorrect sequence.

Assignment to error message:
F5906

Alarm criteria:

- The alarm is controlled by the above-mentioned error message
- The alarm is set when at least one cable to the board is disconnected/defective.
- The alarm can only be cleared with the AMO GRA (`DEL-GRA`). The external NMC delete tasks (see NMC Administrator Manual A31003-G8014-A100-*-35) and the automatic timed decrementing system (18 hours) are not used for this alarm.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:005

CC RESTARTS

This alarm indicates that the CC (both active and standby) has undergone too many restarts.

Restart alarm criteria:

- The error counters are controlled via error messages. One of the messages assigned to the restart alarm contains a restart flag. This message causes the appropriate error counter to be incremented.
- Each type of restart is counted.

- The alarm is set 1 minute after the threshold value is reached. This value is not the same as the validation time, but is a separate, fixed time.
- The timed decrementing system is used for this alarm.
- The alarm can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or the AMO GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL**

CENTRAL:006

STBY-CC FAILURE

This alarm indicates failure of the standby CC half.

Error messages assigned:

The following error messages indicate the loss of the connection to the STBY-CC. These messages can be found via the alarm classes CC CENTRAL CONTROL or SW ERROR. The cause of the error is indicated via the restart error messages of the alarm class CC RESTARTS when availability has been restored.

SP300-V3.4/R6.3 and earlier (CCH Cross channel): F5019 - F5021
SP300E V1.0/R6.3 and later (LAN): F8266 - F8272

Alarm criteria:

- A minor alarm only is generated for this alarm: STBY-CC failure
- The alarm is reset automatically as soon as the standby CC half is back in operation. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.
- The threshold values for this alarm are fixed at source-code level and cannot be changed with AMO-VADSU.

> List: **CENTRAL -- A9000 -- F5000 -- F8000**

CENTRAL:007

LTUR RESTARTS

US-specific alarm release (valid for SP300H-V1.0/R6.6 and earlier).

This alarm indicates that the LTUR has undergone too many restarts

Assignment to error messages:

F5804 - F4806 / F5808 - F5810 / F5822 - 5823

Alarm criteria:

- The alarm is set via the above-mentioned error messages.
- The timed decrementing system is used for this alarm.
- The alarm can either be deleted via an external NMC order (see NMC Administrator Manual A31003-G8014-A100-*-35) or via the AMO-GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:008

RMS FAILURE

This alarm indicates failure of a remote shelf RMS. Each RMS has one error counter, but the alarm is a summation alarm.

Assignment to error message:
F5336

Alarm criteria:

- A major alarm only is generated for this alarm.
- The alarm is only controlled via the F5336 message.
- The alarm is set if at least one RMS has failed. The indicator is the DIUR error message F5336 with the action "OUT SERV".
- The alarm is reset automatically, if the DIUR error message F5336 was sent with the action "IN SERVICE" for all failed RMSs. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:009

CHARGE COMPUTER

Not relevant to US release.

This alarm indicates failure of the call charge computer connected to the V.24 interface of the ADS.

Assignment to error message:
F7650

Alarm criteria:

- A major alarm only is generated for this alarm.
- The error counter is controlled via the above error messages (incrementing).
- The timed decrementing system is used for this alarm.
- The alarm can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or the AMO GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL -- A9000 -- F7000**

CENTRAL:010

IS RESTARTS

This alarm indicates that the ADS has undergone too many restarts.

Restart alarm criteria:

- The error counters are controlled via error messages. One of the messages assigned to the restart alarm contains a restart flag. This message causes the appropriate error counter to be incremented.
- Each type of restart is counted.
- The alarm is set 1 minute after the threshold value is reached. This value is not the same as the validation time, but is a separate, fixed time.
- The timed decrementing system is used for this alarm.
- These alarms can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or the AMO GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL**

CENTRAL:011

NOT USED

> List: **CENTRAL**

CENTRAL:012

NOT USED

> List: **CENTRAL**

CENTRAL:013

ALTERNATE LOAD AREA

In HiPath 4000 V1.0 and later, the Alarm **SM RESTARTS** is replaced by the alarm **ALTERNATE LOAD AREA**.

This alarm indicates that a system reload has occurred as a result of a serious software or hardware error. Thus an escalation to a "fallback medium" (MO, GLA, Rescue SW) has taken place.

Assignment to error message:

F6507

Alarm criteria:

- A major alarm only is generated for this alarm.
- The alarm is controlled via the error messages mentioned above.
- The alarm is set when the load device conflicts with the HD (MO, GLA, Rescue SW) after a system reload without manual intervention (AMO REST). The alarm is reset when the error is removed (e.g.: regenerate the HD), the HD is then rebooted.
- The alarm can be reset by means of AMO GRA (`DEL-GRA`). The external reset command (see NMC Administrator Manual A31003-G8014-A100-*-35) and the timed decrementing system (18 hours) are not available for this alarm.

> List: **CENTRAL -- A9000 -- F6000**

CENTRAL:014

NOT USED

> List: **CENTRAL**

CENTRAL:015

EXTERNAL SERVER

This alarm indicates that the external server is not available from the point of view of the SWU, i.e. the SWU periphery modules that have a physical connection (via a LAN for example) to an external server monitor this connection.

At the moment, this alarm clearly indicates the non-availability of the TC server (telecommuting).

The error messages assigned to this alarm only refer to the SWU periphery hardware. The actual cause of the error in the server is not indicated by means of HICOM error messages, but must be ascertained by means of a separate administration interface of the server.

Assignment to error message:
F5870/F5871

Alarm criteria:

- MINOR alarm: A minor alarm is signaled if at least one SLMPX module identifies a loss of connection to a TC server.
- MAJOR alarm: A major alarm is signaled if the only SLMPX module or all SLMPX modules identify a loss of connection to a server.
- The alarm is reset if each SLMPX module has restored the connection to its server. In HiPath 4000 V1.0 and later, this alarm can also be reset with AMO GRA.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:016

LTG CENTRAL CONTROL

Not relevant to US release.

See Central alarm SWU: CC CENTRAL CONTROL (A/17)

Assignment to error messages:
F2200 - F2201,
F3000 - F3010,
F3050 - F3059,

F3150 - F3174,
F5030 - F5041,
F5160 - F5173

> List: **CENTRAL -- A9000 -- F2000 -- F3000 -- F5000**

CENTRAL:017

CC CENTRAL CONTROL

This alarm can occur both in the SWU and in the ADP (EV1.0/R6.4 and later).

SWU:

This alarm indicates too many errors in the central hardware of a CC half.
Critical errors of this type which lead to a processor restart are indicated via the alarm CC RESTARTS.

Assignment to error messages:
F2200 - F2201,
F3000 - F3010,
F3150 - F3174,
F5140 - F5141,
F7100 - F7132,
F5060 - F5076 (apart from the error messages see LTG FAILURE, CLOCKING SYSTEM)
F3100 - F3110 (apart from the error messages, see SM FAILURE)

Alarm criteria:

- The error counter is controlled via the above error messages (incrementing).
- The timed decrementing system is used for this alarm.
- This alarm can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or AMO GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

ADP:

In the ADP, this alarm is signaled as an **emergency alarm** (major alarm) whenever the connection to both CC halves is lost (> 15 minutes). The alarm is reset when the connection to the active CC has been restored.

Error messages have not been assigned to this alarm.

The messages F8264 - F8271 relating to the connection to the CC have been assigned to the alarm class SW ERROR and can be found in the HISTO file using the command `STA-HISTA:SEARCH,,J,Alarm,CENTRAL,CENTRAL_23`.

The actual cause of the failure of the CC can only be ascertained after the CC has been booted (search with AMO-HISTA, alarm class CC RESTARTS).

When the SWU fails, it is not normally possible to signal this alarm to the service center, if the remote connection has been configured over SWU routes. In this situation, the hardware contact for the TFT is switched via the ADP alarm SWITCHING UNIT FAILURE (Trunk failure transfer TFT). Thus, this emergency situation can be signaled to an external monitoring unit.

> List: **CENTRAL -- A9000 -- F2000 -- F3000 -- F5000 -- F7000**

CENTRAL:018

SWITCHING NETWORK

This alarm indicates failure of system units, e.g. CSN, GSN, MTS, HIGHWAY, TIMESLOT and MBU (if > 0). Separate error counters exist for these system units, but the alarm is a summation alarm.

The failure of the central hardware, e.g. MTS causes the SWU to be restarted and the error is thus indicated via the alarm CC RESTARTS. In this case the error messages are also assigned to the alarm class CC RESTARTS.

The alarm "SWITCHING NETWORK" is therefore mainly signaled when individual hardware units fail. The relevant error messages are F5180 - F5183.

Assignment to error messages:
F5050 - F5059,
F5180 - F5183,
F5200

Alarm criteria:

- Minor alarm:
  Failure of at least one passive CSN half
  Failure of at least one TSL (GSN/CSN)
  Failure of at least one standby MTS (GSN/CSN)
  Failure of at least one CONF-HWY
  Failure of GSN-Standby-HWY <100%
  Failure of GSN-ACT-HWY <50%
  Failure of CSN-Standby-HWY <50%
- Major alarm:
  Failure of at least one MBU
  Failure of at least one MTS-ACT (GSN/CSN)

Failure of GSN-Standby-HWY =100%
Failure of GSN-ACT-HWY >50% or all HWY for a peripheral board
Failure of CSN-ACT-HWY >50

- The alarm is automatically reset as soon as all above units are back in operation. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.
- The threshold values for this alarm are fixed at source-code level and cannot be changed with AMO-VADSU.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:019

CLOCKING SYSTEM

This alarm indicates errors in the system clock, i.e. in the PCG/CCG modules. Critical errors however cause the SWU to restart. The error messages can still be ascertained via the alarm class CC RESTARTS (AMO-HISTA).

Assignment to error messages:
F5100 - F5107,
F5070 - F5075,
F5553 - F5586,
F5588 - F5591

Alarm criteria:

- The error counter is incremented via the following error messages: F5100-F5107, F5557, F5573.
- When an external clock box / front reference is implemented (EV2.0/R6.5 and later), this alarm can also be automatically reset. This is controlled by means of the error messages F5588-F5591.
- The timed decrementing system is used for this alarm.
- This alarm can be reset either by means of an external NMC / DMS command (see NMC Administrator Manual A31003-G8014-A100-*-35) or AMO-GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:020

SIGNAL UNIT

This alarm indicates failure of central and peripheral SIU and CONF functions. Separate error counters exist for these system units, but the alarm is a summation alarm. The alarm is controlled by means of the status changes of the units (SIU/CONF/SIU functions).

Critical errors in the standard SIU, or conf cause the SWU to restart. In this case the error messages can be ascertained via the alarm class CC RESTARTS (AMO-HISTA).

Assignment to error messages:
F5220 - F5241,
F5260 - F5292,
F5340 - F5374 (only for SIU board type 2/3)

Alarm criteria:

- Minor alarm:
  CONF failure in at least one standby GP half
  Failure of the central SIU in at least one standby GP half
  Failure of < 80% of the peripheral SIU functions of a GP half s
- Major alarm:
  CONF failure in at least one active LTG
  Failure of the central SIU in at least one active LTG
  Failure of > 80% of the peripheral SIU functions of an LTG
- The alarm is automatically reset as soon as all above units are back in operation. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.
- The threshold values for this alarm are fixed at source-code level and cannot be changed with AMO-VADSU.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:021

IS CENTRAL CONTROL

See **CENTRAL:022**.

> List: **CENTRAL**

CENTRAL:022

SM CENTRAL CONTROL

Not relevant for US release.

These alarms are central alarms of the ADS and the different servers. They indicate too many errors in the central hardware of the server (MEM/IP/MULTIBUS), as well as the hardware interrupts of the DP. Critical errors of this type which lead to a processor restart are indicated via the alarms 'IS RESTARTS' (ADS), or 'SM RESTARTS'.

Assignment to error messages:
F2200 - F2201,
F7050 - F7079,
F7100 - F7132,
F7153 - F7194,
F7200 - F7202

Alarm criteria

- The error counter is controlled via the above-mentioned error messages (incrementing).
- The timed decrementing system is used for this alarm.
- The alarm can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or AMO GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL -- A9000 -- F2000 -- F7000**

CENTRAL:023

SW ERRORS

See **CENTRAL:024**.

> List: **CENTRAL**

CENTRAL:024

SYSTEM MESSAGES

Both alarms are also defined as "NO-ALARM" classes.
SW errors are not normally indicated via alarms, unless a SW error causes a module restart. In this case, the appropriate reset alarm is set if the alarm threshold value has been reached. This also applies to the SYSTEM MESSAGES, status messages of the Recovery system and the VECO system.

It is always recommended when analyzing alarms for HTS or NMC that you run a search in the error messages for these alarm classes. The alarm class, SYSTEM MESSAGES, can help to indicate how the error might be solved.

Assignment to error messages:

- SW ERRORS:
  F2000 - F2099,
  F4008 - F4094,
  F4100 - F4199,
  F4250 - F4299,
  F6000 - F6033,
  F6050 - F6083,
  F6103 - F6198,
  F6200 - F6298,
  F6300 - F6333,
  F6600 - F6653,
  F6700 - F6701
- SYSTEM MESSAGES
  F2050-F2099,
  F2450,
  F2750 - F2752,
  F4352 - F4399,
  F4400 - F4419,
  F4450 - F4457,
  F4500 - F4509,
  F6103 - F6198,
  F6200 - F6298,
  F6300 - F6333,
  F7000 - F7005

> List: **CENTRAL -- A9000 -- F2000 -- F4000 -- F6000 -- F7000**

CENTRAL:025

POWER SUPPLY

This alarm is valid for SWU and ADP. The alarm is controlled by the following error messages.

SWU:

Assignment to error messages:
F8014 - F8019 / F8020 / F8021

Alarm criteria:

- Minor alarm: A power supply unit in the CC/periphery shelf has failed.
- Major alarm: More than one power supply unit in the CC/periphery shelf has failed
- Alarm on/off:

CC shelf: F8014 / F8015 (pow fail powerfail CC on/off)
Per. shelves: F8016 / F8017 (pow fail power fail LTUE on/off)
Per. shelves: F8018 / F8019 (pow fail power fail LTU on/off)
Battery card: F8020 / F8021 (pow fail Batt mgr card failed/ok)

ADP:

Assignment to error messages:

F8010 - F8013 / F8023 - 8030

Alarm criteria:

- Minor alarm:
  Inverter in the ADS:
  F8012 / F8013 (pow fail converter on/off)
  Redundancy lost:
  F8025 / F8026 (pow fail redund loss/back ac/dc sys)
  F8029 / F8030 (pow fail redund loss/back dc/dc sys)
- Major alarm:
  Mains power failure: F8010 / F8011 (pow fail start/end)
  F8023 / F8024 (pow fail start/end AC/DC sys)
  F8027 / F8028 (pow fail start/end DC/DC sys)
- The alarm is reset automatically when a return of power is signaled, i.e. the devices are back in operation. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.
- The threshold values for this alarm are fixed at source-code level and cannot be changed with AMO-VADSU.

> List: **CENTRAL -- A9000 -- F8000**

CENTRAL:026

SM FAILURE

Not relevant to US release.

This alarm indicates failure of server units, with the exception of the ADS. The failure status and, subsequently, the return to ready status of the server concerned is detected by status polling, and the alarm validation in this alarm class is controlled by the poll results. Internal error counters exist for this alarm, but the alarm is a summation alarm.

Assignment of error messages:
F3106, F3109, F3110

Alarm criteria:

- Minor alarm: is not generated
- Major alarm: Failure of at least one server
- The alarm is reset automatically as soon as all the configured servers are back in operation. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.

> List: **CENTRAL -- A9000 -- F3000**

CENTRAL:027

UNIX / XENIX FAILURE

This alarm indicates failure of XENIX/UNIX software in the server, e.g. call charge computing. This alarm can also indicate the failure of UNIX software in servers that are connection to the Atlantic LAN via the HUB. The alarm is controlled by means of the error messages listed below.

Assignment to error messages:
F2100 - F2115

Alarm criteria:

- MINOR alarm: F2112 (unix hw err) / F2103 (unix err) / F2107 (unix appl err) / F2101 (xenix err)
- MAJOR alarm: F2114 (hw fatal err) / F2105 (fatal err) / F2109 (appl fatal err)
- Alarm escalation to a MINOR alarm or if a MINOR alarm already exists, to a MAJOR alarm: F2104 (unix err escal) / F2108 (appl err escal) / F2113 (hw err escal er)
- Automatic resetting of the alarm: F2110 (sw reset alarm) / F2115 (hw reset alarm)
- The timed decrementing system is used for this alarm.
- This alarm can also be reset either by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or the AMO GRA (`CHA GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL -- A9000 -- F2000**

CENTRAL:028

SYSTEM TIME FAILURE

This alarm indicates failure of the system time or of the HW clock on the IOPA/MAC module or on the central processor module of the ADP. The alarm is controlled by means of the error messages listed below.

Assignment to error messages:
F3106, F3109, F3110

Alarm criteria:

- MAJOR alarm: F8100 / F8101 (time date valid/invalid)
- MINOR alarm: F8104 / F8105 (battery power fail/on) F8106 / F8107 (battery switch off/on)
- The alarm is reset automatically as soon as a valid system time is available again or when the battery has been switched on again and is fully operational. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.

> List: **CENTRAL -- A9000 -- F8000**

CENTRAL:029

MAINTENANCE NOTE

The alarm indicates that the system requires routine maintenance work on one or more SW or HW devices. The SW or HW error messages (SW / HW errors) assigned to this alarm show which device requires your attention.
Examples of routine maintenance devices are the call data recording system (loss of call charge data) or the DAT recorder (tape heads need cleaning).

Assignment to error messages:
HW: F7407 / F7408 (Event DRIVE)
SW: All error messages which contain the subevent, MAINTENANCE.

Alarm criteria:

- This alarm can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or the AMO GRA (`CHA-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL -- A9000 -- F7000**

CENTRAL:030

SWITCHING UNIT FAILURE

This alarm is signaled by the dependability system in the ADP if loss of connection to the active CC has been identified for a period exceeding the soft restart time of the CC (valid only for the 600 ECX model). In this situation, the CC software can no longer control the hardware contact/ LED for the ALUM (or Trunk failure transfer TFT). This function is therefore controlled by the alarm in the ADP. This means that an external alarm signal is also possible in this case.

- There are no error messages assigned to this alarm.
- The alarm is automatically reset as soon as the connection to the SWU is restored, i.e. as soon as message traffic is again possible. In HiPath 4000 V1.0 and later, this alarm can also be cleared with the AMO GRA.
- The threshold values for this alarm are fixed at source-code level and cannot be changed with AMO VADSM.

> List: **CENTRAL**

CENTRAL:031

NOT USED

> List: **CENTRAL**

CENTRAL:032

ACCESS POINT FAILURE

In HiPath 4000 V1.0 and later, this alarm indicates a serious error in an ACCESS POINT (e.g.: the expansion box is not available, the power supply for the expansion box has failed, failure of fans, faulty V24 interface or Ethernet driver, problems with resources, survivability problems).

Assignment to error messages:

F5916, F5917, F5305 depending on the reason field.

Alarm criteria:

- The alarm is controlled by the error messages mentioned above.
- The alarm is set if one of the errors mentioned above occurs and the error message is output.

- The alarm can be reset by means of an external NMC command (see NMC Administrator Manual A31003-G8014-A100-*-35) or the AMO GRA (`DEL-GRA`). If this is not done, the alarm is deleted after 18 hours.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:033

BAD IP CONNECTIVITY

In HiPath 4000 V1.0 and later, this alarm monitors the IP connection between the host system and the Access Points.

Assignment to error messages:

F5915, F5750, F5470 - F5472

In contrast to the central alarms, the error counter and the threshold values for this alarm are not absolute values but percentage values. The error counter performs its calculations on the basis of the faulty IP connections and the configured IP connections.

The time frame during a day when the Service Level Agreement (SLA) is valid can be set with the AMO VADSU. The alarm is automatically deactivated outside this period and it is therefore not signaled. The alarm is automatically activated if the SLA becomes valid again.
Note: If the SLA period is modified with AMO VADSU, these modifications come into force an hour later.

The quality of the IP connections often fluctuates, the alarm is therefore set and reset sporadically. If need be, the alarm can be either be deactivated or the priority of the alarm can be changed with the AMO VADSU, this means that the alarm is not reported to the Service Center (Prio 11).

Alarm criteria:

- The alarm is mainly controlled by the error messages described above. The status of the IP boards (NCUI,STMI) is also taken into consideration.
- Minor alarm:
  The faulty connection has reached/surpassed the percentage values defined for the MINOR threshold.
- Major alarm:
  - The faulty connection has reached/surpassed the percentage values defined for the MAJOR threshold.

  - An IP board (NCUI,STMI) has failed.
  - A Layer1 loss has been reported for a (physical) IP cable.

- The alarm can be reset by means of the AMO GRA (DEL-GRA). The external reset command (see NMC Administrator Manual A31003-G8014-A100-*-35) and the timed decrementing system (18 hours) are not available for this alarm.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:034

LW-SW VERSION CONFLICT

In HiPath 4000 V1.0 and later, this alarm signals a version conflict between the loadware and AMO/UW7 interface.

Assignment to error message:

F5870

Alarm criteria:

- A minor alarm only is generated for this alarm.
- The alarm is controlled by the error messages described above.
- The alarm can be reset by means of AMO GRA (DEL-GRA). The external reset command (see NMC Administrator Manual A31003-G8014-A100-*-35) and the timed decrementing system (18 hours) are not available for this alarm.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:035

HW DEFECT

As of HiPath 4000 V2.0, this alarm indicates a fatal HW error in the environment of the central processor boards. At present, only the fans of the PCI systems are monitored.

Assignment to error messages:

F7084

Alarm criteria:

- Only a major alarm is generated for this alarm.
- The alarm is controlled by the above-mentioned error message.

- A major alarm is set when one of the fans fails, for example, or if the set rotation speeds (RPM) cannot be reached.
- The alarm can be deleted with the AMO-GRA (DEL-GRA). The external NMC delete tasks (see NMC Administrator Manual A31003-G8014-A100-*-35) and the automatic timed decrementing system (18 hours) are not used for this alarm.

> List: **CENTRAL -- A9000 -- F7000**

CENTRAL:036

PER-BOARD SWITCHOVER

As of HiPath 4000 V2.0, this alarm signals the switchover of a redundant peripheral board (e.g., a switchover to the standby HFA board).

Assignment to error messages:

F5880 depending on Reason field.

Alarm criteria:

- The alarm is controlled by the above-mentioned error message.
- The alarm can be deleted with the AMO-GRA (`DEL-GRA`). The external NMC delete tasks (see NMC Administrator Manual A31003-G8014-A100-*-35) and the automatic timed decrementing system (18 hours) are not used for this alarm.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:037

AP EMERGENCY

As of HiPath 4000 V2.0, this alarm signals the Access Point Emergency Mode. The Access Point Emergency Mode is enabled when the Access Point Emergency Shelf has control over at least one access point.

Assignment to error messages:

F5919, F5920, F5921

Alarm criteria:

- Only a major alarm is generated for this alarm.
- This alarm can only be set at the Access Point Emergency Shelves.
- The alarm is controlled by the above-mentioned error messages.

- A major alarm is set when the Access Point Emergency Shelf has assumed control over at least one access point.
- The alarm can be deleted with the AMO-GRA (DEL-GRA). The external NMC delete tasks (see NMC Administrator Manual A31003-G8014-A100-*-35) and the automatic timed decrementing system (18 hours) are not used for this alarm.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:038

CC-AP UNAVAILABLE

As of HiPath 4000 V2.0, this alarm monitors the availability of the Access Point Emergency Shelves from the viewpoint of the host system.

Assignment to error messages:

F5922, F5923

Alarm criteria:

- Only a major alarm is generated for this alarm.
- This alarm can only be set at a host system.
- The alarm is controlled by the above-mentioned error messages.
- A major alarm is set when the host system can no longer reach at least one Access Point Emergency Shelf.
- The alarm can be deleted with the AMO-GRA (DEL-GRA). The external NMC delete tasks (see NMC Administrator Manual A31003-G8014-A100-*-35) and the automatic timed decrementing system (18 hours) are not used for this alarm.

> List: **CENTRAL -- A9000 -- F5000**

CENTRAL:039

ENCRYPTION PROBLEM

From HiPath 4000 V4.0 this alarm indicates if any kind of encryption problem exists in the whole system.

Assignment to error messages:

F5881,F5781,F5924,F5477

Alarm criteria:

- Only a major alarm is generated for this alarm.

- The alarm is controlled by the above-mentioned error messages.
- Major alarm will be set when the first Encryption problem in the whole system happens and it should remain so until the last problem disappears.
- The alarm can be deleted with the AMO-GRA (DEL-GRA). The external NMC delete tasks (see NMC Administrator Manual A31003-G8014-A100-*-35) and the automatic timedecrementing system (18 hours) are not used for this alarm.
- The encryption problem status (i.e.: type of active encryption problems) can be displayed with AMO-UCSU, AMO-BCSU and AMO-SDSU for the given CGW/NCUI board or IP trunk.

Note: Since there is only one alarm for all encryption problems and they might happen simultaneously, the error log has to be checked for all related error messages! Each encryption problem has to be checked and solved before manual reset of the alarm by AMO!

> List: **CENTRAL -- A9000 -- F5000**

>

CENTRAL:040

SECURE TRACE

From HiPath 4000 V4.0 this alarm indicates if secure trace is activated on at least one NCUI/ CGW board.

Assignment to error messages:

F5882

Alarm criteria:

- Only a major alarm is generated for this alarm.
- The alarm is controlled by the above-mentioned error message.
- Major alarm will be set when the first secure trace activation in the whole system happens and it should remain so until there is not any activated secure trace.
- The alarm can be deleted with the AMO-GRA (DEL-GRA). The external NMC delete tasks (see NMC Administrator Manual A31003-G8014-A100-*-35) and the automatic timed decrementing system (18 hours) are not used for this alarm.
- The secure trace status can be displayed together with the encryption problem status with AMO-UCSU and AMO-BCSU for the given CGW/NCUI board.

>

CENTRAL:041

CENTRAL:041 to CENTRAL:063

NOT USED

These alarms are not yet in use.

> List: **CENTRAL**

CENTRAL:063

CENTRAL:039 to CENTRAL:063

NOT USED

These alarms are not yet in use.

> List: **CENTRAL**

5.14 SWU-specific alarm classes

This alarm class indicates failure of the SWU periphery, i.e. terminals and connection lines (CO/TIE), as well as SWU periphery boards. In SP300-V3.3 and later these alarms are administered with the AMO VADSU.

The alarm type, DEVICE ALARM, can be activated for all SWU alarm classes.

There are two types of SWU-specific alarms:

- SWU periphery alarm class:
  The SWU periphery alarms are not HW-dependent; they are functionally assigned to the different device types. For example, the failure of a TMBD which is configured with the device type designation 'MOSIG', is indicated by an alarm of the 'CO-TRUNK/EXCH-LINE' alarm class. The threshold of these alarm classes corresponds to the number of configured terminals or lines of device types_HKZ assigned to a class.
- SWU logical alarm classes:
  This group comprises up to 576 alarms, divided into special alarms.

Assignment to error messages:
F5340 - F5374, F5420 - F5459, F5500 - F5644, F5680 - F5685

See also

> SWU-specific alarm criteria

> Alarm classes

> Evaluating the alarm mirror

> List: **SWU-PER** -- **SWU-LOG** -- **A9000** -- **F5000**

5.14.1 SWU-specific alarm criteria

The following alarm criteria apply to the SWU periphery alarms and the SWU logical device alarms:

- **Validation threshold value**
  In contrast to the central alarms, the threshold values are not absolute values but percentage values, for example, the relevant alarm is set if 50% of the exchange lines have failed.
- **Alarm level**
  The alarm level contains the sum of all the configured devices of the device type assigned to the alarm type. If a terminal is deactivated by means of an AMO, or if a higher-level device in the device hierarchy (LTG / LTU / BOARD / CIRCUIT) is deactivated, the alarm level is decremented by the number of (dependent) terminals which have been put out of service. This means that deactivated terminals are not taken into consideration in the validation threshold count. Conversely, the alarm level is incremented by the number of terminals blocked by AMO which have been put back into service and thus affect alarm handling.
- **Alarm count**
  The alarm count contains the sum of all the terminals of the device type assigned to the alarm, which are blocked by the dependability system. If a terminal is put out of service by the error analysis system FA (status is DEF/NPR/TRS), or if a higher-level device in the device hierarchy (LTG / LTU / BOARD / CIRCUIT) is out of service (i.e. status is UNACH / UNACHA), the alarm count is incremented by the number of terminals which have been put out of service. Conversely, the alarm count is decremented by the number of terminals put back into service. The alarm is not set unless the validation threshold is reached.
  If terminals or higher-level devices are put out of service by means of an AMO after being blocked by dependability, then both the alarm level and the alarm count are decremented by the number of terminals thus deactivated. This means that terminals which are blocked via AMO are not taken into consideration in the validation threshold count.

5.15 SWU periphery alarm class

This group comprises 16 alarms (SP300H-V1.0 and earlier) or 32 alarms (HiPath 4000 V1.0 and later) which correspond to the various terminal types and device types. The threshold values and the validation times can be set with the AMO VADSU.

The assignment of the device type to an individual board can be seen in the table Device types / Board assignments.

The alarm type, DEVICE ALARM, can be activated for all SWU alarm classes.

The assignments of error messages of the SWU periphery BOARD / CIRCUIT / terminal to the alarm classes below are also dependent in the DH device type, i.e. in the case of a BOARD error message more than one alarm class may be assigned.

Examples:

```
A9008 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SWU-PER GRP      94-04-19
13:58:45
      DEVICE ALARM: 00000000
      MINOR ALARM:  00000000
      MAJOR ALARM:  00000000

                    0 ---> 32

Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                     01-10-29
14:51:41
      ALARM CLASS:SM-PER:011/012/013/014/015/016
```

In the case of LTU failure, the number of SWU secondary resultant alarms has been reduced considerably in HiPath 4000 V1.0 and later.

The periphery boards in Access Points can be loaded later for NBCS systems. The relevant alarms (e.g.: DIGITAL VOICE DEVICES, ANALOG VOICE DEVICES, etc.) can remain set until the end of the load operation. These alarms can be prevented, this increases validation times.

See also

- > SWU-specific alarm classes
- > Table of SWU periphery alarm
- > Description of SWU periphery alarms
- > List of alarms: **SWU-PER**
- > Alarm classes
- > Evaluating the alarm mirror

5.15.1 Table of SWU periphery alarm

Alarm number	Alarm name	Threshold value and validation time for					Message priority
		MINOR ALARM (percent)	MAJOR ALARM (percent)	MINOR ALARM (seconds)	MAJOR ALARM (seconds)	DEVICE ALARM (hours)	
SWU-PER:000	C-O-TRUNK/EXCH-LINE	50%	90%	600	600	0	E0
SWU-PER:001	TIE LINE	50%	90%	600	600	0	E0
SWU-PER:002	MULTIPLE DEVICES	50%	90%	600	600	0	E0
SWU-PER:003	ANALOG VOICE DEVICES	10%	90%	600	600	0	E0
SWU-PER:004	DIGITAL VOICE DEVICES	10%	90%	600	600	0	E0
SWU-PER:005	ATTENDANT CONSOLE	deact.	0%	0	600	0	E0
SWU-PER:006	C-O/EXCHANGE DATA LINE	50%	90%	600	600	0	E0
SWU-PER:007	TIE DATA LINE	50%	90%	600	600	0	E0
SWU-PER:008	BASE STATION	1%	50%	600	600	0	E0
SWU-PER:009	LOGICAL DEVICES	0%	90%	600	600	0	E0
SWU-PER:010	TFS LINE	25%	50%	600	600	0	E0
SWU-PER:011	VMS LINE	25%	50%	600	600	0	E0
SWU-PER:012	APSE	50%	90%	600	600	0	E0
SWU-PER:013	OTHER DEVICES	deact.	deact.	0	0	0	E0
SWU-PER:014	DATA DEVICES	10%	90%	600	600	0	E0
SWU-PER:015	CONVERSION RESOURCES	1%	50%	600	900	0	E0
SWU-PER:016	NOT USED	--	--	--	--	0	E0
SWU-PER:0xx	NOT USED	--	--	--	--	0	E0
SWU-PER:032	NOT USED	--	--	--	--	0	E0

See also

> SWU-specific alarm classes
> SWU periphery alarm class
> Description of SWU periphery alarms
> List of alarms: **SWU-PER**
> Alarm classes
> Evaluating the alarm mirror

5.15.2 Description of SWU periphery alarms

These alarms are assigned to appropriate DH device types.

Assignment to error messages:
The assignments of error messages of the SWU periphery BOARD / CIRCUIT / terminal to the alarm classes are also dependent in the DH device type, i.e. in the case of a BOARD error message more than one alarm class may be assigned.

The alarm type, DEVICE ALARM, can be activated for all SWU alarm classes.

SWU-PER

Alarm classes: **CENTRAL** -- **SWU-PER** -- **SWU-LOG** -- **SM-PER**

Description of SWU periphery alarms
Table of SWU periphery alarm

SWU-PER:000	**SWU-PER:001**	**SWU-PER:002**	**SWU-PER:003**
SWU-PER:004	**SWU-PER:005**	**SWU-PER:006**	**SWU-PER:007**
SWU-PER:008	**SWU-PER:009**	**SWU-PER:010**	**SWU-PER:011**
SWU-PER:012	**SWU-PER:013**	**SWU-PER:014**	**SWU-PER:015**
SWU-PER:016	**SWU-PER:032**		

See also

> Alarm classes

> Evaluating the alarm mirror

A9000 -- F1000 -- F2000 -- F3000 -- F4000 -- F5000 -- F6000 -- F7000 -- F8000

SWU-PER:000

C-O-TRUNK/EXCH-LINE

This alarm is a summation alarm for indicating trunk failures.
Associated device types:

DB_DH_DEV_TYP	_HKZ
"	_IKZ
"	_HAS_SCH
"	_HAS_WTK
"	_TMAU_LW
"	_TMAG
"	_TMAU_UEF
"	_TMFS_AMT
"	_TMGSR_GS
"	_TMGSR_SR
"	_TMLS
"	_NW_DIGITAL_B, only if CP-TYP=DB_CP_DEVTYP_TMD_AMT_ISDN

"	_NW_DIGITAL_P, only if CP-TYP=DB_CP_DEVTYP_TMD_AMT_ISDN
DB_DH_DEV_TYP	_HKZ

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:001

TIE LINE

This alarm is a summation alarm for indicating tie-trunk failures.
Associated device types:

DB_DH_DEV_TYP	_QS_SIM
"	_QS_WES
"	_QS_SCH
"	_QS_TF
"	_QS_EM
"	_TMAU_ABZ
"	_TMAU_LW_QV
"	_TMD_QUER_CH
"	_TMFS_QV
"	_NW_ANALOG
	_NW_S1
	_NW_S1_D
"	_NW_DIGITAL_B, only if CP-TYP=DB_CP_DEVTYP_TMD_VERB_ISDN
"	_NW_DIGITAL_P, only if CP-TYP=DB_CP_DEVTYP_TMD_VERB_ISDN

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:002

MULTIPLE DEVICES

This alarm is a summation alarm for indicating failures of multi-function devices, e.g. CTE or multipoint configurations (S_0 bus configurations).
Associated device types:

DB_DH_DEV_TYP	_CTE
"	_CTE_AB
"	_CTE_X21
"	_T3510
"	_S3510
"	_HAUSPOST
"	_U_STERN_CLC

" _DCI_U200
" _SB_ALLG
" _SB_FKT_EG
" _MULT_LINE_8
" _MULT_LINE_30

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:003

ANALOG VOICE DEVICES

This alarm is a summation alarm for indicating failures in the analog voice service.
Associated device types:

DB_DH_DEV_TYP _ANATE

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:004

DIGITAL VOICE DEVICES

This alarm is a summation alarm for indicating failures in the digital voice services.
Associated device types:

DB_DH_DEV_TYP _DIGITE
" _DIG_M
" _CRNT_VOICE
_MOPO_DIG
_DIG_M
_KEYSYSTEM
_OPS
_DIGITE_DYAD
_CRNT_KEYSYS
_SYMPHONIE

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:005

ATTENDANT CONSOLE

This alarm is a summation alarm for indicating attendant console (ATND) failures.
Associated device types:

DB_DH_DEV_TYP _VPL

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:006

C-O/EXCHANGE DATA LINE

This alarm is a summation alarm for indicating failures of special data lines to a public switched data network.
Associated device types:

DB_DH_DEV_TYP _X21_NC
" _TMX_21, only if CP-TYP=DB_CP_DEVTYP_TTX_AMT_IDN
" _TMX21PPH

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:007

TIE DATA LINE

This alarm is a summation alarm for indicating failures of special data lines to a PABX in a network, or a satellite PABX.
Associated device types:

DB_DH_DEV_TYP _TMCL_UA
" _TMX_21, only if CP-TYP=DB_CP_DEVTYP_TTX_VERB
_TMCL_HA

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:008

BASE STATION

In SP300E V1.0 / R 6.4 and later, this alarm is a summation alarm for indicating failures of base stations (mobile radio) connected to an SLMC board.
Associated device types:

DB_DH_DEV_TYP _SYM_CMI_BASE
DB_DH_DEV_TYP _SYM_CMI_OPTI *
DB_DH_DEV_TYP _SYM_CMI_ADMI *

* These DH types are pseudo devices and are not monitored by this alarm.

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:009

LOGICAL DEVICES

This alarm is a summation alarm for indicating the failure of so-called logical or fictitious devices that do not have a physical module connection, for example as in the WAML2, SLMY. Failure of these modules is thus essentially monitored.

Associated device types:

DB_DH_DEV_TYP _SYM_FICTITIO
DB_DH_DEV_TYP _TC_REM_PORT
DB_DH_DEV_TYP _TC_FIC_PORT

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:010

TFS LINE

This alarm is a summation alarm for indicating line failures of lines to the integrated TEXT and FAX service.
Associated device types:

DB_DH_DEV_TYP _SM_FAX
" _SM_TTX
" _SM_FAXTTX
" _SM_VM, only if CP-TYP=DB_CP_DEVTYP_FAX_U_TTX_SM

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:011

VMS LINE

This alarm is a summation alarm for indicating line failures of lines to the integrated Voice Mail Service:
Associated device types:

DB_DH_DEV_TYP _SM_VM, only if CP-TYP = DB_CP_DEVTYP_VOICEMAILTTX_SM

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:012

APSE

This alarm is a summation alarm for indicating failures of various special-circuit equipment, e.g. door intercom, code-calling system or dictation equipment.
Associated device types:

DB_DH_DEV_TYP	_APSE_PSE
"	_APSE_PSM
"	_APSE_TE
"	_APSE_ELA
"	_APSE_DE
"	_APSE_ANSE_M
"	_APSE_ANSE_A
	APSE_ANSE_S
"	_APSE_WKE

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:013

OTHER DEVICES

This alarm is a summation alarm for indicating failures of DH device types, which cannot be assigned to specific alarm classes.
Associated device types:

No valid DH devices at present.

> List: **SWU-PER**

SWU-PER:014

DATA DEVICES

This alarm is a summation alarm for indicating the line failure of special data lines to SWU terminals, e.g. CorNet terminals.
Associated device types:

DB_DH_DEV_TYP	_CRNT_DATA	
"	_TMX_21, only	if CP-TYP=DB_CP_DEVTYP_DEE_X21_IDN
"		or CP-TYP=DB_CP_DEVTYP_DEE_X21_VERB
SKY_MANAGER		
SKY_PHONE		
SKY_LINE		
CRNT_DATA		

See Device types for the boards required.

> List: **SWU-PER**

SWU-PER:015

CONVERSION RESOURCES

This alarm signals a summary of the failure of special resources (conversion resources) for converting A-Law/µ-Law and for echo cancellation. The CBMMs (Central Byte Manipulation Modules) are available on LTUCC and NCUI boards.

> List: **SWU-PER**

SWU-PER:016

SWU-PER:016 to SWU-PER:032

NOT USED

These alarms are not yet in use.

> List: **SWU-PER**

SWU-PER:032

SWU-PER:016 to SWU-PER:032

NOT USED

These alarms are not yet in use.

> List: **SWU-PER**

5.15.2.1 Device types

The following table illustrates the assignment of boards to device types:

DB_DH_DEV_TYP_	Board
ANATE	SLMA
APSE_ANSE_A	TMOM
APSE_ANSE_M	TMOM
APSE_DE	TMOM
APSE_ELA	TMOM
APSE_PSE	TMOM
APSE_PSM	TMOM
APSE_TE	TMOM
APSE_WKE	TMOM
CRNT_DATA	SLMU, SLMQ, SLMS, STMD
CRNT_VOICE	SLMU, SLMQ, SLMS, STMD, (Set 500 / 700)
CTE	SLMA, TMX21
CTE_AB	SLMA, TMX21
CTE_X21	TMX21
DCI_U200	
DIG_M	SLMB, (Set400)
DIGITE	SLMB, SLMB16, SLMD
HAS_SCH	TMBM
HAS_WTK	
HAUSPOST	SLMD
HKZ	TMBD, TMFS, DIUC, DIUC64
IKZ	TMBD, DIUC, DIUC64
MSN_DEVICE	SLMU, SLMQ, SLMS, STMD
MULTI_LINE_30	DIUS2/VCM
MULTI_LINE_8	SLMU, SLMQ, SLMS, STMD, VCM
NW_ANALOG	TMBC_NW, TMBS, TMEM_NW, TMIPI, TMIPO,
NW_DIGITAL_B	STMD

DB_DH_DEV_TYP_	Board
NW_DIGITAL_P	DIUS2,SLMN,WAML
QS_EM	TMEMW, TMEM, TMSVF, DIUC, DIUC64, TMEMW, TMSVF
QS_SCH	TMLR
QS_SIM	TMBP
QS_TF	TMEMW, TMEM, DIUC, DIUC64
QS_WES	TMBC, DIUC, DIUC64
SB_ALLG	SLMU, SLMQ, SLMS, STMD, (Set 600)
SB_FTK_EG	SLMU, SLMQ, SLMS, STMD, DIUS2
SM_FAX	SLMD
SM_FAXTTX	SLMD
SM_TTX	SLMD
SM_VM	SLMD
S3510	SLMD
SYM_CMI_BASE	SLMC
SYM_CMI_OPTI	SLMC
SYM_CMI_ADMI	SLMC
SYMPHONY	SLMO,SLMQ
TMAG	
TMAU_ABZ	TMAU
TMAU_LW	TMAU
TMAU_LW_QV	TMAU
TMAU_UEF	TMAU
TMCL_HA	TMCL
TMCL_UA	TMCL
TMD_VERB_ISDN	WAML
TMFS_AMT	TMFS, DIUC, DIUC64
TMGSR_GS	
TMGSR_SR	
TMLS	DIUC, DIUC64, TMBLN, TMEMW, TMACH, TMAG, TMAU, TMAS, TMAS8, TMEDG, TMGSR, TMCOW, TMELS, TMGSR, TMLRW, TMLBL,TMEMW, TMLRS, TMLRW, TMLRP, TMLSF, TMLSL, TMLSR, TMN2S
TMX21	TMX21
TMX21PPH	
T3510	SLMD
U_STERN_CLC	
VPL	SLMD

DB_DH_DEV_TYP_	Board
X21_NC	
SYM_FICTITIO	SMLY
TC_REM_PORT	SLMPX
TC_FIC_PORT	SLMPX

See also

> SWU periphery alarm class

> Table of SWU periphery alarm

> List of alarms: **SWU-PER**

> Alarm classes

5.16 SWU logical alarm classes

This alarm class consists of three groups with a total of 584 alarms administered with the AMO VADSU, as follows.

1. Special alarms (SWU-LOG:001 - SWU-LOG:007)
   see Table of SWU logical device alarms.

2. Directional alarms
   8 - 519 (SP300-V3.4/R6.3 and later)
   Directional alarms offer variable PEN-assignment, e.g. for trunk group supervision in networked systems (see AMO VADSU).
   The directional alarm classes, expanded for SP300 V3.4 / R6.3 and later to a total of 512, allow one directional alarm to be generated for each configured trunk group (max. 512).

3. Personal alarms
   520 - 583 (SP300-V3.4/R6.3 and later)
   Personal alarms offer variable STNO assignment, e.g. for off-hook recall destination supervision and supervision of important devices (see AMO VADSU). (see AMO VADSU).
   The NMC alarms 'INWARD TRUNK/EX-LINE' and 'OUTWARD TRUNK/EX-LINE' control the TFT (trunk failure transfer) switchover.

4. Board alarms
   8 - 519 shared with directional alarms (from Hipath4000 V3.0)
   The board alarms offer variable PEN-assignment for each peripheral board and for each LTU/Access Point (AP). There is no restriction on the board type (e.g.: trunk board) in contrast to the directional alarms.

The alarm type, DEVICE ALARM, can be activated for all SWU alarm classes.

Examples:

```
A9010 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SWU-LOG GRP      94-04-19
13:58:45

DEVICE-ALARM:

       1122222222222222222222222222222222222222222222222222222222
       2222222222222222222222222222222222222222222222222222222222
       2222222223333333333333333

MINOR-ALARM:

       1122222222222222222222222222222222222222222222222222222222
       2222222222222222222222222222222222222222222222222222222222
       2222222223333333333333333

MAJOR-ALARM:

       1222222222222222222222222222222222222222222222222222222222
       2222222222222222222222222222222222222222222222222222222222
       2222222223333333333333333

       0 ---------------------------------------------------------->
       ---------------------------------------------------------->
       ------------------------> 583

Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                    01-10-29
14:51:41
      ALARM-CLASS:SWU-LOG:201/202/203/204/205/206
```

See also

- > SWU-specific alarm classes
- > Table of SWU logical device alarms
- > Description of SWU logical Special alarms
- > Description of SWU logical Directional alarms
- > Description of SWU logical Personal alarms
- > List of alarms: **SWU-LOG**
- > Alarm classes
- > Evaluating the alarm mirror

5.16.1 Table of SWU logical device alarms

Alarm number as of SP300-V3.4/R6.3	Alarm name as of SP300-V3.4/R6.3	Threshold value and validation time for MINOR ALARM (percent)	MAJOR ALARM (percent)	MINOR ALARM (seconds)	MAJOR ALARM (seconds)	DEVICE ALARM (hours)	Message priority
SWU-LOG:000	OTHER DEVICES	deact.	deact.	0	0	0	E0
SWU-LOG:001	INWARD-TRUNK/EX-LINE	deact.	deact.	0	0	0	E0
SWU-LOG:002	OUTWARD-TRUNK/EX-LINE	deact.	100	0	1	0	E0
SWU-LOG:003	NOT USED	deact.	deact.	0	0	0	E0
SWU-LOG:004	DIU-Cas-Italien	1	deact.	300	0	0	E0
SWU-LOG:005	PHONEMAIL-ACCESS	50	90	600	600	0	E0
SWU-LOG:006	NOT USED	deact.	deact.	0	0	0	E0
SWU-LOG:007	NOT USED	deact.	deact.	0	0	0	E0
SWU-LOG:008	Directional alarm	see Directional alarms Alarm can be configured to suit specific requirements with AMO VADSU.					
SWU-LOG:0xx	Directional alarm	see Directional alarms Alarm can be configured to suit specific requirements with AMO VADSU.					
SWU-LOG:519	Directional alarm	see Directional alarms Alarm can be configured to suit specific requirements with AMO VADSU.					
SWU-LOG:520	Personal alarm	see Personal alarms Alarm can be configured to suit specific requirements with AMO VADSU.					
SWU-LOG:xxx	Personal alarm	see Personal alarms Alarm can be configured to suit specific requirements with AMO VADSU.					
SWU-LOG:583	Personal alarm	see Personal alarms Alarm can be configured to suit specific requirements with AMO VADSU.					

See also

> SWU-specific alarm classes

> SWU logical alarm classes

> Description of SWU logical Special alarms

> Description of SWU logical Directional alarms

> Description of SWU logical Personal alarms

> List of alarms: **SWU-LOG**

> Alarm classes

> Evaluating the alarm mirror

5.16.2 Special alarms

The alarm type, DEVICE ALARM, can be activated for all SWU alarm classes.

Examples:

```
A9010 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SWU-LOG GRP      94-04-19
13:58:45

DEVICE-ALARM:

       112222222222222222222222222222222222222222222222222222
       222222222222222222222222222222222222222222222222222222
       222222222333333333333333

MINOR-ALARM:

       112222222222222222222222222222222222222222222222222222
       222222222222222222222222222222222222222222222222222222
       222222222333333333333333

MAJOR-ALARM:

       112222222222222222222222222222222222222222222222222222
       222222222222222222222222222222222222222222222222222222
       222222222333333333333333

       0 ---------------------------------------------------------->
       ---------------------------------------------------------->
       ------------------------> 583

Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                    01-10-29
14:51:41
      ALARM-CLASS:SWU-LOG:001/002/003/004/005/006
```

> List of alarms: **SWU-LOG**

SWU-LOG

Alarm classes: **CENTRAL** -- **SWU-PER** -- **SWU-LOG** -- **SM-PER**

Special alarms

Directional alarms
Personal alarms
Table of SWU logical device alarms

SWU-LOG:000 **SWU-LOG:001** **SWU-LOG:002** **SWU-LOG:003**
SWU-LOG:004 **SWU-LOG:005** **SWU-LOG:006** **SWU-LOG:007**

SWU-LOG:008 to **SWU-LOG:519**

Directional alarms (alarm can be configured to suit specific requirements with AMO VADSU)

SWU-LOG:520 bis **SWU-LOG:583**

Personal alarms (alarm can be configured to suit specific requirements with AMO VADSU)

See also

> Alarm classes

> Evaluating the alarm mirror

A9000 -- F1000 -- F2000 -- F3000 -- F4000 -- F5000 -- F6000 -- F7000 -- F8000

SWU-LOG:000

OTHER DEVICES

Any dummy devices or unknown devices configured at the PABX will be assigned the OTHER DEVICES alarm. The OTHER DEVICES alarm is not output.

> List: **SWU-LOG**

SWU-LOG:001

INWARD-TRUNK/EX-LINE

See **SWU-LOG:002**

> List: **SWU-LOG**

SWU-LOG:002

OUTWARD-TRUNK/EX-LINE

These two special alarms are summation alarms for indicating exchange trunk failures. They discriminate between 'incoming traffic' (INWARD TRUNK/EX-LINE) and 'outgoing traffic' (OUTWARD TRUNK/EX-LINE). Only one of these two alarms can be generated. In accordance with the DBP Telekom guidelines, for example, the 'OUTWARD TRUNK/EX-LINE' alarm is generated in German systems. At the same time, regardless of which alarm is generated, the alarm leads to a trunk failure transfer (TFT). In Germany, trunk failure transfer may only take place if 100% of all outgoing or bothway trunks have been out of service for at least one second.
The alarm 'INWARD DIALING' is generated for the United Kingdom, for example. The validation data is generated in accordance with the appropriate British Telecom specifications. The alarm is triggered if 60% of the incoming or bothway exchange trunks have been out of service for longer than 16 seconds.

To monitor a trunk lines using the NMC alarm, trunk lines had to be assigned a device class in SP300-V3.2 and earlier with the parameter 'GERKLA' in the AMO TACSU/TDCSU. In SP300-V3.3 and later, the trunk lines are assigned by setting the parameter 'ALARMNO' to 0,1,2 or 4 (see also the parameter descriptions for AMOs TACSU/TDCSU).
Please ensure that for the device class, outgoing/bothway trunk lines, no trunk lines, tie lines or incoming/digital lines are entered. Otherwise, the ALUM function is not activated by a failure or by the failure of tie/S0/S2 lines.

> List: **SWU-LOG**

SWU-LOG:003

NOT USED

This alarm is not yet in use.

> List: **SWU-LOG**

SWU-LOG:004

DIU-Cas-Italien

This special alarm is the Italian variant of the exchange line alarm. It specifically indicates failure of the DIUC exchange lines. The trunk failure transfer may only take place if this alarm is triggered and all DIUC exchange lines are out of service. In order for the alarm to indicate the failure of the DIUC exchange lines, the parameter 'GERKLA' with 'AMTGV' must be set in the AMO TDCSU (SP300 V3.2 and earlier), or the parameter 'ALARMNO' set to '2' (see also AMO description for TDCSU).

> List: **SWU-LOG**

SWU-LOG:005

PHONEMAIL-ACCESS

USA-specific alarm.

> List: **SWU-LOG**

SWU-LOG:006

NOT USED

This alarm is not yet in use.

> List: **SWU-LOG**

SWU-LOG:007

NOT USED

This alarm is not yet in use.

> List: **SWU-LOG**

5.16.3 Directional alarms

Directional alarms (SP300-V3.3 and earlier max. 56 with the alarm numbers 8 - 63, SP300-V3.4/R6.3 and later max. 512 with the alarm numbers 8 - 519) are used to indicate faults in trunk groups consisting of tie trunks, special equipment (TCOM / APSE) lines or call charge lines. Lines of this type are configured via the PEN. The subscriber chooses how to combine these lines, i.e. a single line, several lines, a configured trunk group or an individual trunk group containing lines can be assigned to the alarm.

The AMO VADSU can be used to create or change threshold values, validation times and alarm names.

The AMOs TACSU, TDSCU and TSCSU are used to assign the directional alarm numbers configured by means of the AMO VADSU to "PENs".

Exchange trunk groups and individual exchange lines can also be assigned to a directional alarm. However, if the TFT function is required, the special alarms C/1 and C/2 must be used.

The alarm type, DEVICE ALARM, can be activated for all alarm classes.

EXAMPLES:

```
A9010 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SWU-LOG GRP      94-04-19
13:58:45

DEVICE-ALARM:

       112222222222222222222222222222222222222222222222222222222
       222222222222222222222222222222222222222222222222222222222
       222222222333333333333333

MINOR-ALARM:

       112222222222222222222222222222222222222222222222222222222
       222222222222222222222222222222222222222222222222222222222
       222222222333333333333333

MAJOR-ALARM:

       112222222222222222222222222222222222222222222222222222222
       222222222222222222222222222222222222222222222222222222222
       222222222333333333333333
       0 ---------------------------------------------------------->
       ---------------------------------------------------------->
       ------------------------> 583

Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                    01-10-29
14:51:41
      ALARM-CLASS:SWU-LOG:008/010/203/404/405/519
```

See also

- SWU-specific alarm classes
- SWU logical alarm classes
- Table of SWU logical device alarms
- Description of SWU logical Special alarms
- Description of SWU logical Personal alarms
- List of alarms: **SWU-LOG**
- Alarm classes

> Evaluating the alarm mirror

5.16.4 Personal alarms

Personal alarms (max. 64; for SP300 V3.3 and earlier: alarm numbers 64 to 127; for SP300 V3.4/R6.3 and later: alarm number 520 - 583) are used to indicate errors in terminals with a specific station number (SP300-V3.3).

All terminals with station numbers (incl. multifunction terminals) are assigned the appropriate alarm.

The AMO VADSU can be used to create or change threshold values, validation times and alarm names. The AMOs SBCSU and SCSU are used to assign the personal alarm numbers configured with VADSU to station numbers.

The alarm type, DEVICE ALARM, can be activated for all SWU alarm classes.

Examples:

```
A9010 M4 N1001 NO ACT   BPA   NMCALARM MIRROR: SWU-LOG GRP     94-04-19
13:58:45

DEVICE-ALARM:

       1122222222222222222222222222222222222222222222222222222222
       2222222222222222222222222222222222222222222222222222222222
       2222222222333333333333333

MINOR-ALARM:

       1122222222222222222222222222222222222222222222222222222222
       2222222222222222222222222222222222222222222222222222222222
       2222222222333333333333333

MAJOR-ALARM:

       1122222222222222222222222222222222222222222222222222222222
       2222222222222222222222222222222222222222222222222222222222
       2222222222333333333333333

       0 ---------------------------------------------------------->
       ---------------------------------------------------------->
       ------------------------> 583

Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                    01-10-29
14:51:41
      ALARM-CLASS:SWU-LOG:520/510/513/583
```

See also

- SWU-specific alarm classes
- SWU logical alarm classes
- Table of SWU logical device alarms
- Description of SWU logical Special alarms
- Description of SWU logical Directional alarms
- List of alarms: **SWU-LOG**
- Alarm classes
- Evaluating the alarm mirror

5.16.5 Board alarms

The board alarms (from HiPath4000 V3.0) are a more general version of the directional alarms and they share the same alarm number range (8-519).The board alarms provide individual alarm supervision possibility for each peripheral board and for each LTU/Access Point (AP) - practically there is no restriction on the board type (e.g.: trunk board) in contrast to the directional alarms.

At first the user has to define with the help of AMOs VADSU, BCSU, UCSU which board alarm should supervise the given boards or LTUs.

Note: The given board or LTU has to be deactivated with DEACT-BSSU or DEACT-USSU before the alarm assignement happens othervise the alarm counters might have incorrect values. Of course after the assignement the board or LTU can be activated again.

Based on this board-alarm assignment the board alarms will be set or reset according to the state transitions of the proper peripheral boards or LTUs/APs. Only the given level (LTU or board) will be considered in the alarm evaluation and the subordinate units (e.g.: trunks) not. For example if all trunks on a trunk board get defective but the board itself remains ready then the assigned board alarm won't be set. It happens only if the board itself goes defective too.

If a board alarm is configured it does not affect the other alarms and it provides an additional and independent supervision possibility even for the same system element. For example if there is a board alarm configured for the AP 34 and this AP has a failure then both the default central alarm "LTU FAILURE" and additionally the board alarm will be set as well.

See also

- SWU-specific alarm classes
- SWU logical alarm classes
- Table of SWU logical device alarms

> Description of SWU logical Special alarms

> Description of SWU logical Directional alarms

> List of alarms: **SWU-LOG**

> Alarm classes

> Evaluating the alarm mirror

5.16.6 TRS state in case of the individual logical alarms

Although there are some exceptions but generally the alarm counters won't be incremented if a device (e.g.: phone) gets into the TRS state. The individually configurable logical alarms (e.g.: personal alarm) are used for individual supervision of important system elements. Therefore the handling of the TRS state can be changed optionally (from HiPath 4000 V4.0, R1) so that even the TRS state would trigger the individual alarms (especially personal alarm). This means if a device gets into the TRS state the error counter for the proper personal alarm will be incremented.

This feature can be switched ON/OFF with the help of AMO DIAGS (Default OFF):

- Activation: `AEN-DIAGS:PROCID=CC,KOMP=NMC,S03=EIN;`
- Deactivation: `AEN-DIAGS:PROCID=CC,KOMP=NMC,S03=AUS;`

In both cases the changes has to be saved and at least a HARD RESTART is necessary for the SWUs.

```
EXEC-UPDAT:BP,ALL;
EXEC-REST:MODUL,BP,HARD; (*1)
```

*1 - On duplex switches it has to be executed for the both SWUs.

5.17 SM periphery alarm class

The server periphery alarm class signals the failure of SM periphery units, such as LBC / LCX / LCX channel, or IOP / HARD DISK / CARTRIGDE / magnetic tape. All alarms of this type depend on the server dependability system, which controls the blocking and subsequent release of the devices, modules and channels (i.e. whether they are put out of service, and when they are to be put back in service).

Alarms in the VADSU server periphery alarm class are administered by the AMO VADSM.

Examples:

```
A9011 M4 N1001 NO ACT...BPA ..NMCALARM MIRROR: SM-PER GRP......01-10-29
13:58:45
      DEVICE ALARM: 000000
      MINOR ALARM:  000000
      MAJOR ALARM:  000000

                    0 -> 23

Fxxxx M4 N1769 xxxx      xxx   xxx xxxx xxxx                    01-10-29
14:51:41
      ALARM CLASS:SM-PER: 006/007/008/014/015/016
```

See also

- > Table SM periphery alarms
- > Description of SM periphery alarms
- > List of alarms: **SM-PER**
- > Alarm classes
- > Evaluating the alarm mirror

5.17.1 Table SM periphery alarms

Alarm number	Alarm name	Threshold value and validation time for					Message priority
		MINOR ALARM (percent)	MAJOR ALARM (percent)	MINOR ALARM (seconds)	MAJOR ALARM (seconds)	DEVICE ALARM (hours)	
SM-PER:000	SERVICE TELETYP	deact.	1	0	600	0	E0
SM-PER:001	SERVICE UTC	deact.	1	0	600	0	E0
SM-PER:002	SERVICE TTX	deact.	1	0	600	0	E0
SM-PER:003	SERVICE FAX	deact.	1	0	600	0	E0
SM-PER:004	SERVICE VOICE	deact.	1	0	600	0	E0
SM-PER:005	SERVICE XENIX	deact.	1	0	600	0	E0
SM-PER:006	SERVICE BSC	deact.	1	0	600	0	E0
SM-PER:007	SERVICE ISO	deact.	1	0	600	0	E0
SM-PER:008	SERVICE IBM	deact.	1	0	600	0	E0
SM-PER:009	NOT USED	--	--	--	--	0	E0
SM-PER:010	NOT USED	--	--	--	--	0	E0
SM-PER:011	NOT USED	--	--	--	--	0	E0

SM-PER:012	NOT USED	--	--	--	--	0	E0
SM-PER:013	NOT USED	--	--	--	--	0	E0
SM-PER:014	IS FLASH MEMORY	deact.	1	0	600	0	E0
SM-PER:015	SM FLASH MEMORY	deact.	1	0	600	0	E0
SM-PER:016	IS DAT RECORDER	deact.	1	0	600	0	E0
SM-PER:017	SM DAT RECORDER	deact.	1	0	600	0	E0
SM-PER:018	IS HARD DISK	deact.	1	0	600	0	E0
SM-PER:019	IS CARTRIDGE	deact.	1	0	600	0	E0
SM-PER:020	IS TAPE	deact.	1	0	600	0	E0
SM-PER:021	SM HARD DISK	deact.	1	0	600	0	E0
SM-PER:022	NOT USED	--	--	--	--	0	E0
SM-PER:023	NOT USED	--	--	--	--	0	E0

See also

> SM periphery alarm class

> Description of SM periphery alarms

> List of alarms: **SM-PER**

> Alarm classes

> Evaluating the alarm mirror

5.17.2 Description of SM periphery alarms

The following alarm criteria apply to the server periphery alarms:

- Validation threshold
  In contrast to the central alarms, the threshold values are not absolute values but percentage values. For example, the appropriate alarm is set if 50% of the configured VMS lines have failed.
- Alarm level
  The alarm level contains the sum of all the configured channels of a specific CMS service, e.g. TELETYPE or FAX. In the case of the backup periphery, it is the sum of the configured devices. If an LBC/LCX/LCX channel or a peripheral backup device is deactivated by means of an AMO, the alarm level is decremented by the number of units which have been put out of service. This means that deactivated units are not taken into consideration in the validation threshold count. Conversely, the alarm level is incremented by the number of terminals blocked by AMO and which have been put back into service and thus affect alarm handling.

- Alarm count
  The alarm count contains the sum of all the peripheral units assigned to the CMS service-dependent alarm and which are blocked by the dependability system. If peripheral units are blocked by the server dependability system (SM-DEP), the alarm count is incremented; the count is decremented by the units are put into service. In the case of the line periphery, the number of units by which the alarm count is incremented/decremented is dependent on the switching job (LBC/LCX/CHANNEL). The alarm is not set unless the validation threshold is reached.

Error messages assigned:

- Server line periphery:
  F7530 - F7584, F7600 - F7642, F7700 - F7701
- Server backup periphery:
  F7356 - F7365, F7400

> List of alarms: **SM-PER**

> List of error messages: **A9000**, **F7000**

SM-PER

Alarm classes: **CENTRAL** -- **SWU-PER** -- **SWU-LOG** -- **SM-PER**

Description of SM periphery alarms
Table SM periphery alarms

SM-PER:000	**SM-PER:001**	**SM-PER:002**	**SM-PER:003**
SM-PER:004	**SM-PER:005**	**SM-PER:006**	**SM-PER:007**
SM-PER:008	**SM-PER:009**	**SM-PER:010**	**SM-PER:011**
SM-PER:012	**SM-PER:013**	**SM-PER:014**	**SM-PER:015**
SM-PER:016	**SM-PER:017**	**SM-PER:018**	**SM-PER:019**
SM-PER:020	**SM-PER:021**	**SM-PER:022**	**SM-PER:023**

See also

> Alarm classes

> Evaluating the alarm mirror

A9000 -- F1000 -- F2000 -- F3000 -- F4000 -- F5000 -- F6000 -- F7000 -- F8000

SM-PER:000

SERVICE TELETYP

This alarm is a summation alarm for indicating line failures on asynchronous V.24 lines.

> List: **SM-PER**

SM-PER:001

SERVICE UTC

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service UTC (Universal Teletex Controller), a PC connection for TELETEX, is configured in the TCS.

> List: **SM-PER**

SM-PER:002

SERVICE TTX

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service TTX is configured. The channels link the server to the SWU periphery, (e.g. SLMD).

> List: **SM-PER**

SM-PER:003

SERVICE FAX

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service FAX is configured. The channels link the server to the SWU periphery, (e.g. SLMD).

> List: **SM-PER**

SM-PER:004

SERVICE VOICE

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service VOICE is configured. The channels link the server to the SWU periphery, (e.g. SLMD).

> List: **SM-PER**

SM-PER:005

SERVICE XENIX

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service XENIX is configured, e.g. ETD or even NMC / DMS. The channels usually link the server to special terminals.

> List: **SM-PER**

SM-PER:006

SERVICE BSC

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service BSC (synchronous V.24) is configured. The channels usually link the server to an IBM or other mainframe, or to PCs, via modem.

> List: **SM-PER**

SM-PER:007

SERVICE ISO

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service ISO is configured. The channels usually link the server to an IBM or other mainframe, or to PCs, via modem.

> List: **SM-PER**

SM-PER:008

SERVICE IBM

This alarm is a summation alarm for indicating failures of server channels, for which the CMS service IBM is configured. The channels usually link the server to an IBM or other mainframe, or to PCs, via modem.

> List: **SM-PER**

SM-PER:009

NOT USED

This alarm is not yet in use.

> List: **SM-PER**

SM-PER:010

NOT USED

This alarm is not yet in use.

> List: **SM-PER**

SM-PER:011

NOT USED

This alarm is not yet in use.

> List: **SM-PER**

SM-PER:012

NOT USED

This alarm is not yet in use.

> List: **SM-PER**

SM-PER:013

NOT USED

This alarm is not yet in use.

> List: **SM-PER**

SM-PER:014

IS FLASH MEMORY

This alarm indicates a flash memory failure. The alarm is automatically reset, when the flash memory is back in operation.

> List: **SM-PER**

SM-PER:015

SM FLASH MEMORY

This alarm indicates a flash memory failure. The alarm is automatically reset, when the flash memory is back in operation

> List: **SM-PER**

SM-PER:016

IS DAT RECORDER

This alarm indicates a DAT recorder failure. The alarm is automatically reset, when the DAT recorder is back in operation

> List: **SM-PER**

SM-PER:017

SM DAT RECORDER

This alarm indicates a DAT recorder failure. The alarm is automatically reset, when the DAT recorder is back in operation.

> List: **SM-PER**

SM-PER:018

IS HARD DISK

This alarm indicates failures of the hard disk drive of the ADS.

> List: **SM-PER**

SM-PER:019

IS CARTRIDGE

This alarm indicates failures of the cartridge drive of the ADS.

> List: **SM-PER**

SM-PER:020

IS TAPE

This alarm indicates failures of the tape unit of the ADS.

> List: **SM-PER**

SM-PER:021

SM HARD DISK

This alarm indicates failures of a server hard disk drive.

> List: **SM-PER**

SM-PER:022

NOT USED

This alarm is not yet in use.

> List: **SM-PER**

SM-PER:023

NOT USED

This alarm is not yet in use.

5.18 Alarm signaling

- Message priority
- Variable HW contacts in the case of individual alarms
- Alarm signaling on the MAP/IOPA/DM80

5.18.1 Message priority

SP300E-V1.0/R6.4 and later: individual alarm messages (A9000 to A9007) are identified with a variable message priority. The message priority can be changed with AMO VADSU/VADSM (see AMO description). The meaning of message priority is:

E0: (Default) The alarm message has the message priority configured for the alarm number with AMO SIGNL.

E1-E8: The alarm message has the message priority configured for the alarm class with AMO VADSU/VADSM.

E9:The alarm message is assigned the message priority that was configured with AMO SIGNL for the alarm number. However, alarm messages with this message priority are not output to AFR1 (HTS).

E10: The alarm message is assigned the message priority that was configured with AMO SIGNL for the alarm number. However, alarm messages with this message priority are not output to AFR2 (DMS).

E11: The alarm message is assigned the message priority that was configured with the AMO SIGNL for the alarm number. However, alarm messages with this message priority are not output to AFR1 (HTS) and AFR2 (DMS).

See also

> Variable HW contacts in the case of individual alarms

> Alarm signaling on the MAP/IOPA/DM80

5.18.2 Variable HW contacts in the case of individual alarms

SP300E-V1.0/R6.4 and earlier: all MINOR alarms were allocated to LED1 (MINOR LED) and all MAJOR alarms were allocated to LED2 (MAJOR LED). This feature has been extended in SP300E-V2.0/R6.5 and later. It is now possible to allocate individual alarms to a HW contact (LED) with the AMO-VADSU/VADSM. Important alarms can thus be signaled individually (see AMO description).

The HW contacts have the following meaning:

SU: (Standard) The alarm is assigned to a HW contact for which a summation report is compiled with the other MINOR/MAJOR and signaled at the appropriate LEDs. Alarms assigned to an SU HW contact are only signaled at LEDs which have not yet been allocated a HW contact. If, for example, alarms have been allocated to S1 and none have been allocated to S2, all SU alarms (both minor and major) are signaled at LED2 (MAJOR LED). When alarms have been allocated to S1 as well as to S2, alarms which have an SU HW contact are not signaled at an LED.

S1: The alarm is allocated to LED1 (MINOR LED). If a MINOR/MAJOR ALARM (which one is irrelevant) is issued for this alarm, this is signaled at LED1 (MINOR LED).

S2: The alarm is allocated to LED2 (MAJOR LED). If a MINOR/MAJOR ALARM (which one is irrelevant) is issued for this alarm, this is signaled at LED2 (MAJOR LED).

See also

> Message priority

> Alarm signaling on the MAP/IOPA/DM80

5.18.3 Alarm signaling on the MAP/IOPA/DM80

The alarms are indicated on the MAP (standard cabinet systems) or the IOPA (modular/stacked cabinet systems) or DM80 (Hicom 3X3). The alarms are indicated as summation alarms. The sum of all MINOR and MAJOR alarms is indicated.
In this way the alarms can be indicated by external LED panels via the relay controlled by MAP / IOPA / DM80. This permits alarm signaling on external panels, for example e.g. company security departments (gate security or fire prevention, see MAP and boards IOPA / DM80).
The Restart alarms are an exception to the rule. These alarms are suppressed, since the system is available after a restart. Only persistent (static) errors are signaled on the MAP / IOPA / DM80.
The LEDs / displays / relays have the following meanings in SP300-V3.2 and later:

System Version	Indication by	MINOR ALARM	MAJOR ALARM	ALUM	System Alarm	Board
Standard cabinet, V3.2 and later	LED	TS	AL1	ALUM	SYS	MAP
	Relay	TS	AL1	ALUM	SYS	MAC
Modular/stacked, V 3.2 and later	7-segment	P2	C3	A	Blitz	IOPA
	Relay	PAL	ZAL	ALUM	SYS	IOPA
Hicom 3X3 V 3.2 and later	LED	NAL (ge)	UAL (rt)	--	--	DM80
	Relay	NAL	UAL	ALUM	--	DM80

See also

> Message priority

> Variable HW contacts in the case of individual alarms

6 HISTA backup measures

Structure and organization of the HISTA database

The error message database of the HISTA function consists of 20 file pairs and a control file.

```
:AMD:HISTORY/INIT
:AMD:HISTORY/TEXT01 :AMD:HISTORY/INFO01
...
:AMD:HISTORY/TEXT20 :AMD:HISTORY/INFO20
```

The pairs are overwritten cyclically, i.e. once pair #20 has been described, the system starts again at pair #1. The TEXTnn files contain the error messages and the INFOnn files contain the appropriate research information. If a backup is only required for the error messages, the TEXTnn files must be saved (minimum information required for backup function).

Text file structure:

1st - 4th byte in the file : Length of valid data in the file

Error message 1
1st byte : Index of the error message in the file
1st word : Length of the net data of the error message
Net data (actual error message)

Error message 2
.....

Error message n

Recommendation:

It is recommended to save all TEXTnn and INFOnn pairs as well as the file .../INIT with the pair #20 in order to have a complete database available for use with the HISTA. If a database of this kind is copied to a system (e.g. a reference system) with an unconfigured C-FBTHIST file, the user can read or run a search for the database after performing a SOFT restart of the HISTA.

Data backup:

A data backup of the error messages is only carried out at the express request of a customer. This means that the alarm notification by the HISTA task is not normally active. In order to be able to carry out a backup, you will need an appropriate medium, i.e. a second HD, an MO-drive or enough free space on the original hard disk (>2.5MB). Remote backup is not recommended since this requires a high-speed modem. However, it may still be worthwhile if the service center modem is fast enough or if the customer decides to initiate the data transfer himself via the DMS file transfer function. The transmission of the database can either be carried out via remote file transfer, or with the START-COPY AMO and even with the HISTA AMO (START-HISTA:SEARCH,...).
Once the data backup has been carried out, the alarm must be reset with the GRA AMO.

Remark:

In order to deactivate the HISTA alarm notification, the HISTO file must first be deleted (DEL-HISTA) and then re-configured with ADD-HISTA ALARMING=OFF. Before you delete the HISTO file, make sure you have a backup (see also AM handling of alarms).

7 Error messages

Alarm and Error Messages

A9000 -- F1000 -- F2000 -- F3000 -- F4000 -- F5000 -- F6000 -- F7000 -- F8000

7.1 System Messages (PFS)

Breach of contract

```
CONFIGURATION AMOS OF SWU HAVE BEEN BLOCKED

DUE TO AN INCONSISTENCY IN YOUR CONTRACTED DATA.

RECOMMENDED ACTIONS: SEE SERVICE HANDBOOK ERROR F2244
```

User interface block: YES.

This message is output in English, regardless of the AMO language configured.

Codeword expiry date

The following message appears when a codeword has been successfully configured with an expiry date:

```
*** PFS CHECK TASK: ***

CODEWORD WILL EXPIRE AT <dd>.<mm>.< yyyy>

CODEWORD GUELTIG BIS < dd>.< mm>.<yyyy>
```

dd: Day
mm: Month
yyyy: Year

This message is output in English and German, regardless of the AMO language configured.

Counter error for used licences

The control count for licences used for a feature outputs a value other than those configured in AMO setup. This error message indicates an internal software error. There is either a counting error in the PFS task or in the AMO setup of the feature to be counted:

```
--- PFS CHECK TASK: FEATURE COUNT ERROR ---

THE COUNTED VALUE OF THE FOLLOWING FEATURE DOES NOT MATCH WITH THE ASSIGNED

VALUE ADJUSTED BY AM:

FEATURE: <Feature> AM: <Value1> COUNTED: <Value2>

THE ASSIGNED VALUE IS SET TO THE COUNTED!!!
```

User interface block: NO.

This message is output in English, regardless of the AMO language configured.

Codeword check error

An error occurred during the codeword check.

```
--- PFS CHECK TASK: CODEWORD INVALID ---

THE CODEWORD CHECK WAS FINISHED WITH ERROR CODE: <error code>

THE AMO INTERFACE WILL BE LOCKED!!!
```

<error code>:

WRONG HW ID	The codeword does not match the dongle
WRONG VERSION	The codeword does not match the Hicom variant
NO SYSTEMDATE	There is no valid system date
CONTRACT EXCCEDE	For one or more features, the codeword contains a licence number lower than that already in use
DATE EXPIRED	The codeword has an invalid expiry date
ILLEGAL CODEW LEN	The length of the codeword is invalid
WRONG SERIAL NUMBER	The serial number of the new codeword is lower than the number already configured.

User interface block: YES.

This message is output in English, regardless of the AMO language configured.

Dongle check error

Dongle not available or dongle communication error (dongle is defective)

```
--- PFS CHECK TASK: DONGLE MISSING OR READ ERROR ---

THE AMO INTERFACE WILL BE LOCKED!!!
```

User interface block: YES.

This message is output in English, regardless of the AMO language configured.

Codeword expired

The codeword expiry date has been reached:

```
--- PFS CHECK TASK: BYPASS CODEWORD EXPIRED ---

THE AMO INTERFACE WILL BE LOCKED!!!
```

User interface block: YES.

This message is output in English, regardless of the AMO language configured.

User interface block

Once the user interface has been blocked, the following message appears when certain AMOs are called:

```
S48: STARTEN DES AMO <amo-noun> NICHT ERFOLGREICH

GRUND : EINE INKONSISTENZ IN IHRER SOFTWAREFREISCHALTUNG WURDE FESTGESTELLT

BITTE GEBEN SIE DIESE MELDUNG AN IHREN ZUSTAENDIGEN SERVICE WEITER

S48: START OF AMO SBCSU NOT SUCCESSFUL

CAUSE : AN INCONSISTENCY IN YOUR CONTRACTED SW HAS BEEN DETECTED

PLEASE CONTACT YOUR SERVICE CENTER AND QUOTE THIS MESSAGE
```

Logon to blocked user interface

The following system output appears if the user interface is already blocked when logon is executed.

```
ADMINISTRATION DER SWU IST BLOCKIERT:

EINE INKONSISTENZ IN IHRER SOFTWAREFREISCHALTUNG WURDE FESTGESTELLT

BITTE GEBEN SIE DIESE MELDUNG AN IHREN ZUSTAENDIGEN SERVICE WEITER


ADMINISTRATION OF SWU IS BLOCKED:

AN INCONSISTENCY IN YOUR CONTRACTED SOFTWARE HAS BEEN DETECTED

PLEASE CONTACT YOUR SERVICE CENTER AND QUOTE THIS MESSAGE
```

7.2 Error messages structure

- Signaling
- Message composition
- Format structure
- Structure of the singnaling formats:
  - Header line for HW/SW messages
  - Hardware slot information
  - Software program information
  - Error structure data
  - Operating system (OS) information
  - Channel data
  - DAT drive and FM data
  - OMS data
  - Test cancellation data
  - Interrupt data
  - INFO data
  - Auxiliary data
  - Advisory information texts
  - SIT-specific messages
  - Undefined, non-plausible messages
- Error message evaluation

7.2.1 Signaling

Since the system security logic (DEP-S) for error signaling does not have direct access to the internal peripherals in the operating and data server (ADS), it will require a communication partner there. This is the signaling task (SIT).

The task of the SIT is to prepare the error messages and alarms for device classes that have been received with differently structured formats and to distribute them to defined output devices as signaling messages. These messages must be selectable and suppressible. This is particularly important for PABX startup as well as for Maintenance and Customer Service. The signaling messages can be re-routed to other output devices with the AMO SIGNL.

7.2.2 Message composition

The signaling messages consist of the following elements making it easy for operators and maintenance staff to assess them at a glance and facilitating automatic evaluation in the Service Center:

- Unique message identification with key identification and number
- Error class/error location
- Type of error
  - Action taken
  - Date and time
  - Supplementary information

Supplementary information includes the following

- Message priority for evaluation in the Service Center,
- Error diagnosis results for
  - hardware errors: physical structure data such as cabinet, shelf, board, slot, line, device,
  - SW errors: program information (e.g. error codes, program addresses)
- Error-specific auxiliary data.

7.2.3 Format structure

The scope and variety of the information means that the signaling messages have to be classified and formatted in signaling formats.

The *signaling formats* consist of the following

- Header line,
- DEV-CLASS
  Each error message contains the DEV-CLASS line which is required by NMC / DMS for search functions.
  The DEV-CLASS line is divided into

  - the central device class,
  - the SWU periphery device class,
  - the SWU logical device class and
  - the server periphery device class.
- Additional line(s) for information explaining the content of the message for
  - HW errors with slot information,
  - SW errors with program information,
  - text messages with user-specific texts

as well as for existing additional lines with optional

- auxiliary data lines.

Example for hardware error:

```
F7551  E4          N0043       OUT      SERV   BPR     LCU        LCU      CENTRAL   ERROR   90-08-21  *1
       DEV-CLASS:              00000000 0000000000000000000      00000000000000000 000000            *2
       P105:SM     :TF11:013:  Q2051    VCD    BGS:01  FW:A333-A                                      *3
       P105:SM     :TF11:037:  Q2036    LCC    BGS:01  FW:A333-A                                      *3
                   02
       0103        0918        0000     0000   0000    0000       0000     0000                       *4
```

*1 Header line

*2 DEV-CLASS line for NMC/DMS searches

*3 Additional lines (HW errors with slot information)

*4 Aux. data line

Example for software error:

```
F6063  E4          N3456                      A1       CMS        MES      HEAD     FAULT   90-08-27  *1
       DEV-CLASS:           00000000  0000    0000000000000000   0000000000000000 000000            *2
       CC:37011    EC:35001 UA:0000A700:013E  SP:0000:A308:0201  LD:                                  *3
```

*1 Header line

*2 DEV-CLASS line for NMC/DMS searches

*3 Additional lines (SW errors with program information)

*4 Aux. data line

The output formats are designed for standard output on a service terminal with 80 characters/ line.

The same output messages go to the attendant console, but not more than 3 text lines. Since the display on the attendant console is limited to a maximum of 40 columns / line, a page break occurs after the 40th column.

7.2.4 Header line for HW/SW messages

The header line with the fields a-h applies to both hardware and software messages alike. The number bar 1-80 indicates the exact column position of the individual fields on the screen.

This is not displayed, but serves to clarify the description.

Output columns and field numbering on the service terminal

```
aaaaa   bb  ccccc  ddddddddd eeeee  f1====f1  f2==================f2  gg-gg-gg hh:hh:hh
```

Example:

```
F5264   E4   N0010   OUT SERV   BPR   CONF  HW ERROR           91-03-27   17:22:34
F7537   E4   N0034   LCX REST   A1    LCX   LCX PLAUS ERROR    91-02-28   17:22:35
```

Explanations:

a Message identification

Each output message is assigned a unique message identification consisting of a key identification and message number

The following key identifications have been defined:

The following ranges generally apply for message numbering

A range of numbers is assigned to each signaling format, e.g. F2017-F2048 are software messages of the operating system (OS).

A for alarm messages
F for error (standard identification)
H for advisory information
U for undefined error element

1000 ... 1110 for SIT,
2000 ... 8013 for SWU/SM hardware and software messages,
9000 ... 9005 for NMC/DMS alarm messages.

b Message priority

for Automatic Fault Report (AFR) to the Service Center

The priorities for AFR consist of a key identification and a single decimal digit.
The following key identifications have been defined:
The priority is supplied for each individual message.
It is used as a basis for making decisions as to what action should be taken in the Service Center or in the Service Call Center.

E for unique messages
M for ambiguous messages
1 ... 8 priority number range

c Message serial number

This serial number is simply used for classification and as an aid for responding to the output messages.
The date and time are also required for uniquely identifying the message.
The messages are numbered in cycles within the range: 0001 - 9999

d ACTION

Using the ACTION set, the security logic (FA-SWU or DEP-SM) make known the action carried out in the system for signaling.
The signaling task (SIT) finds out the relevant output text from a coordination table (SDT).
The field length is fixed at a maximum of 8 characters for the output texts.
The following entries are possible:

CHAN OOS = channel not operating
HRCCTSA = hard restart CC target state active
HRCCTSS = hard restart CC target state standby
HRLTGTSA = hard restart LTG target state active
HRLTGTSS = hard restart LTG target state standby
HREXSRRE = soft restart changed to hard restart (due to DB inconsistencies)
IN SERV = in service
OUT SERV = out of service
SR-CC = soft restart CC
SWITCH CCG = switch CCG
SWITCH LTG = switch LTG
SWITCH SWU = switch SWU

e Sender module/unit

Sender modules are the data processors (DP) or base processors (BP) and group processors (GP) of the switching unit (SWU) as well as the maximum of 16 possible servers (SM).
The number of servers is limited by the number of stations on the IEC bus. LTGs can also

send messages to the SWU.
The output message text is ascertained by the signaling task (SIT).
Output message text length: 5 characters max.

f1/f2 Error class and error

The field lengths are defined as follows for the message texts:
8 characters max. for: error class (EVENT-CODE) or error location
22 characters max. for: error type (SUBEVENT-CODE)

g/h Date/time

Date/time contain the information about the time when the error was noticed by the security logic. This does not have to be the time on the printout, i.e. consecutive error messages in the printout do not have to have consecutive times.

7.2.5 Hardware slot information

A hardware error message can consist of 1 - 6 slot lines; this will depend on how many boards are logged on simultaneously.

Output columns on the service terminal

```
jjjj. kkkkk  llll    .mmm.n ooooooooo  pppp    BGS:qq  FW:rrrrr
      .              n                                  r
```

Example:

```
P205.B   :LTU3:013:01      Q2057-X   SLMA   BGS:01  FW:A996-A
```

Other examples:

```
P205.B    :LTU3 :013: 01        Q2057-X   SLMA       BGS:01  FW:A996-A
    **  :LTG1 :LTU2 :031:  0   : 0  Q2158-X   SLMO24     BST:01  PLS:-A4
    **  :     :CC   :103:  0   : 0  Q2246-X   SLMA24     BST:01  FW: -
    **  :     :A1 B  :062:          Q2230-X100 DM3L       BST:01  FW: D653-E
```

j Physical cabinet name

consisting of

Cabinet row : Pn e.g.: P2,
Cabinet number: mm e.g.: 05.

**: no cabinet name (monoprocessor system, e.g. 80CM)

k Logical cabinet name (CAB)

consisting of

CAB_TYP : max. 3 characters right-justified (e.g: B,E,C,P,SM,LTG),
CAB_TYP_NUM: max. 2 characters left-justified (range 1-32).

l Logical shelf number

consisting of

Consecutive LTU number: 1 ... 16,
Shelf index: 1, 2, 3 for server.

m Circuit PEN

(slot)

n Optional field for sub-unit

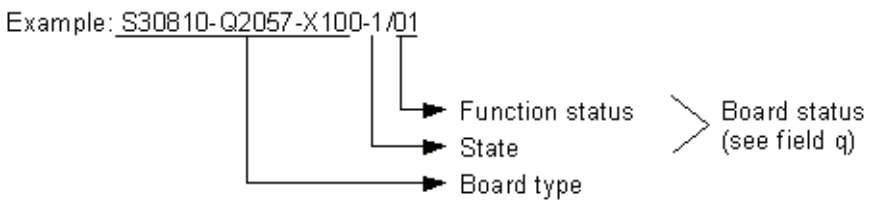
consisting of

Circuit number (SU) or
Line number or
Channel number or
Terminal number.

Remark: Error messages for terminals contain an additional terminal number in addition to the circuit number. This number is always '0' for analog or functional terminals. In the case of S0 bus connections, this number is the TSI (terminals selection ID) and can range between 1 - 8.

o Brd. ID in Part No

(abbreviation of the parts list number)



The table for converting board type to board part number and vice versa is contained on the hard disk and must be loaded subsequently by the signaling task (SIT).

State: Change status within a specific function status; changes with error corrections in the board without functional changes.

Function status: Functionality; changes when board functions are changed or upgraded.

p Board abbreviation

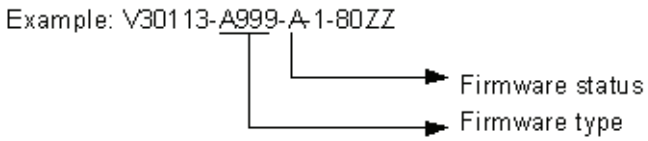
e.g. SLMA

q Board status (BGS:02)

Generic term from "board type" and "board status", value range: 1 to 16
The *board status* is implemented by means of 4-bit bridge variants on the board and changes when components or circuit diagrams are changed.

r Firmware ID (FW)

The *Firmware ID* consists of the 2nd and 3rd block of the master data name. It changes to the firmware status in correction versions.



Parts list number status (PLS)

Instead of the FW status, the PLS (Part List Status) can also be given for new components with flash memory. This name refers to the parts list of the component.

7.2.6 Software program information

Instead of slot information (for hardware messages), software messages have a line with program information or operating system information. In addition, this can be followed by 1 - 8 lines of hexadecimal data.

Output columns on the service terminal

```
CC:jjjjj  EC:kkkkk   UA:llll:llll:llll        SP:mmmm:mmmm:mmmm LD:nn-n-nnn-nn
```

Example:

```
CC:15008  EC:202  UA:0612:D1E1:BDCC  SP:020A:4B3F:03C6  LD:01-1-001-01
```

Explanations:

j CALL CODE (ON_M_WORD_RNG)

The CALL CODE refers to the position in the program which identified the error. (Error location)
Signaling format:

max. 5-digit with no leading zeroes (decimal number)

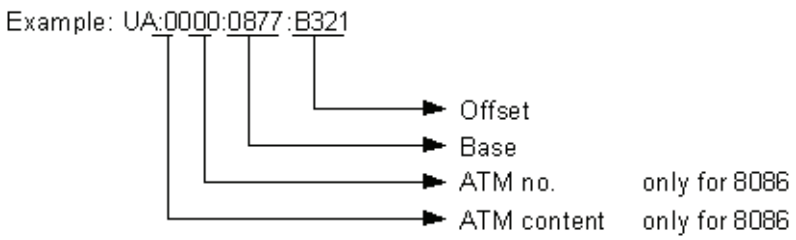
k EXCEPTION CODE (DB_M_WORD_RNG)

The EXCEPTION CODE establishes what type of error occurred in the program. (Error type e.g.: TIMEOUT or unknown EVENT)
Signaling format:

max. 5-digit with no leading zeroes (decimal number)

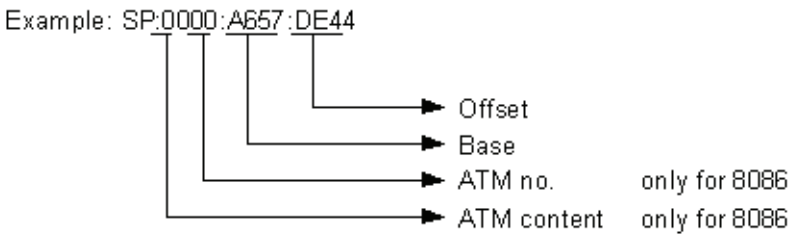
l USER ADDRESS (ON_M_ADDRESS_STR)

The USER ADDRESS (continuation address) contains the currently valid command counter status for OS-CALL errors.
Signaling format:



m STACK POINTER (ON_M_ADDRESS_STR)

This data unit supplies the contents of the currently valid task stack pointer for OS-CALL errors.
Signaling format:



n LOGICAL DEVICE

In the case of plausibility errors in the SWU programs, the peripheral device addresses are output with decimal numbers in the following format: LTG-LTU-SLOT-CIRCUIT

7.2.7 Error structure data

In addition to the program information or operating system information line, software messages can also contain a line with error structure data. In addition, this can be followed by 1 - 8 lines of hexadecimal data.

Output columns on the service terminal

```
CC:jjjj  EC:kkkk  UA:llll:llll:llll                    SP:mmmm:mmmm:mmm  LD:nn-n-nnn-
j        k                                             m                 nn
DT:oo    ST:pp    SN:qqqq           CEVT:rr  CSEV:ss  CST:tt
```

Explanations:

o Destination task

p Source task

q Sequence number

r Event code

s Subevent code

t State (State)

7.2.8 Operating system (OS) information

Output columns on the service terminal

```
PARTNER-PROCESSOR:jjjjj  DEST-TYPE:kkkkkkkk  DEST:lllllllllllll
```

Example:

```
PARTNER-PROCESSOR:T1     DEST-TYPE:TOKEN    DEST:00280000xxxxxx
```

Explanations:

j PARTNER PROCESSOR (TX_PARTNER_PROC DB_M_PROCESSOR_ID_SET)

The processor name is entered in field j in the character format.
(Partner processors: partner with regard to message traffic)

k DESTINATION-TYPE (TX_DEST_TYPE ON_M_DEST_TYPE_SET)

The elements of the ON_M_DEST_TYPE_SET (DESTINATION) provide information on how the destination of a message specified in ON_M_DEST_STR is to be interpreted.

DIRECT : The destination of the message is specified by the following structure:

Byte 0 (no information)

Byte 1 Processor ID of the destination processor

Byte 2-5 24-bit address of the destination data field

INDEX M : The destination of the message is specified by an index:

Byte 0.1 Index (for module index catalog) of the destination mailbox

INDEX S : The destination of the message is specified by an index:

Byte 0.1 Index (for system index catalog) of the destination mailbox

NAME M : The destination of the message is specified by a name:

Byte 0-6 Name (for module name catalog) of the destination mailbox

NAME S : The destination of the message is specified by a name:

Byte 0-6 Name (for system name catalog) of the destination mailbox

TOKEN : The destination of the message is specified by a token:

Byte 0-3 Token of the destination mailbox

OS : The destination of the message is the operating system (OS) internal mailbox of the respective destination processor

Byte 0 (no information)

Byte 1 Processor ID of the destination processor

ACK TSM : Acknowledgment for long messages. The destination of the message is the transort controller of the respective destination processor

Byte 0 (no information)

Byte 1 Processor ID of the destination processor

ACK TSDD : Acknowledgment for long messages. The destination of the message is the transport controller of the respective destination processor

Byte 0 (no information)

Byte 1 Processor ID of the destination processor

TERM DIRECT : Recipient = node. Identical to DIRECT, but ignores the specified processor ID. Message is always intended for the received processor.
The destination of the message is specified by the following structure:

Byte 0 (no information)

Byte 1 Processor ID of the destination processor

Byte 2-5 24-bit address of the destination data field

TERM TOKEN : Recipient = node. Same as TOKEN, processor ID specified is ignored. Message is always intended for the received processor.
The destination of the message is specified by a token:

Byte 0-3 Token of the destination mailbox

TERM OS : Recipient = node. Same as OS, processor ID specified is ignored. Message is always intended for the received processor.
The destination of the message is the operating system (OS) internal mailbox of the respective destination processor

Byte 0 (no information)

Byte 1 Processor ID of the destination processor

A destination that was specified by the message sender using the type INDEX M :, INDEX S :, NAME M :, NAME S :, OS or TERM, can (!) have been converted into the type TOKEN : already in the error message.

l DESTINATION (TX_DEST ON_M_DEST_STR)

The field l contains the data that depend on the DESTINATION-TYPE in hexadecimal format.
The following apply for each destination type:

DIRECT : 6 byte code

INDEX M : 2 byte code

INDEX S : 2 byte code

NAME M : 7 byte code

NAME S : 7 byte code

TOKEN : 4 byte code

OS : 2 byte code

7.2.9 Channel data

Output columns on the service terminal

```
CHAN-NO:ss  CHAN-TYP:ttttttttttt    CHAN-SI:uuuuuuuuuuuuuuuuu
```

Example:

```
CHAN-NO:01  CHAN-TYP:2.B2 CHAN    CHAN-SI:HDCL V24 AM
```

Explanations:

s Channel number
t Channel type
u Channel service

7.2.10 DAT drive and FM data

Output columns on the service terminal

```
Drive
:
FORMAT: 11
aaaa  aaaa  bbbb  cccc  cccc  dddd  eeee  eeee  ffff  gggg  gggg  hhhh iiii  iiii kkkk  kkkk
iiii  iiii  kkkk  kkkk  llll  mmmm  mmmm  nnnn  oooo  oooo  pppp  qqqq qqqq  rrrr ssss  ssss
tttt  uuuu  uuuu  vvvv  vvvv  wwww  wwww  xxxx  xxxx  yyyy  zzzz  zzzz zzzz  zzzz zzzz  zzzz
zzzz  zzzz  zzzz  zzzz  zzzz  zzzz
```

Explanations:

a-l New Log Book information
m-y Old Log Book information
z Volume name
a,m Current number of groups copied
b,n Current number of read attempts after write procedure
c,o Current number of groups read

d,p Current number of ecc_3 retries
Remark: Current values are valid during a session (ACT-RTAPE to DEACT-RTAPE).

e,q Previous number of groups copied

f,r Previous number of read attempts following write procedure

g,s Previous number of groups read

h,t Previous number of ecc_3 retries
Remark: Previous values are not evaluated by the security logic.

I,u Sum of groups copied

k,v Sum of read attempts after write procedure

l,w Sum of groups read

m,x Sum of ecc_3 retries
Remark: Sum values are only reset when the tape is formatted.

n,y Tape change counter

7.2.11 OMS data

Output columns on the service terminal

```
OMS-SEV:ss   DEP-CODE:tttt
```

Example:

```
OMS-SEV:47   DEP-CODE:D000
```

Explanations:

s OMS subevent code

t DEP code
Byte 1 = Subevent code
Byte 2 = OMS PID

7.2.12 Test cancellation data

Output columns on the service terminal

```
LAST-TEST:sssssssssssss          CHAN-NO:tt
```

Example:

```
LAST-TEST:FCD LOBA TEST     CHAN-NO:04
```

Explanations:

s Name of the last test

t Channel number

7.2.13 Interrupt data

Output columns on the service terminal

```
PROCs  CELL         PHYS:tttttttt
NMI    LOG-ADR:     uuuu:vvvv      NMI           PHYS-ADR:           wwwwwwww
NMI    LOG-STACK    :xxxx:yyyy     NMI           PHYS-STACK:zzzzzzzz
TASK   START ADDR   :++++:++++     STATICPRIO:@                      DYNAMIC PRIO:%%
                                   @
```

Explanations:

s MB_PROC 0-7

t MEM_CELL_PHYS

u NMI logical address BASE

v NMI logical address OFFSET

w NMI physical address

x NMI logical stack address BASE

y NMI logical stack address OFFSET

z NMI physical stack address

+ Start address of the ready task

@ Priority when copying the task

% Priority assigned in the short term, e.g. to release regions

7.2.14 INFO data

Output columns on the service terminal

```
CS-TYP:iiiii    FEHLERORT:jjjjj
```

Example:

```
CS-TYP:IOCG   FEHLERORT:GPA
```

Explanations:

I Module/unit consisting of IOCC, IOCG or IP-SM.

j Converted processor identification

7.2.15 Auxiliary data

Specification of auxiliary data in the DEP-S message is optional. The auxiliary data area (AUX-DATA in the error message) with a length of a maximum of 256 bytes can contain implausible data that could not be interpreted by the system security logic (DEP-S) or the signaling task (SIT). The auxiliary data is output in hexadecimal format without structuring.

The data is output as and from column 10 in the signaling message (with 9 leading blanks). 16 or 32 bytes are edited for each line. Each byte is represented by two hexadecimal digits.

The output is limited to:

- 64 bytes = 4 lines in H formats (hexadecimal formats, 16 bytes per line)
- 128 bytes = 4 lines in H formats (expand. hexadecimal formats, 32 bytes per line)
- 256 bytes = 8 lines in X formats (expand. hexadecimal formats, 32 bytes per line)

Auxiliary data examples:

- Line data
- Message header
- Mailbox TOKEN
- Implausible message

In the case of service-specific error messages additional data is listed that output

- auxiliary data in their message (AUX-DATA) and
- can be interpreted by the service department on site.

Counting of the bytes always begins with byte 0 in the auxiliary data line.

Example of the counting method:

```
F5412 M4        N3291    OUT       SERV            GP1A            CIR    L1     ERROR    91-03-
                                                                                          18
```

DEV-CLASS:	00000000	0000	0000000000000000	0000000000000000	000000		
* *	:LTG1	:LTU2:001:	0: 0	Q2096-X	DIU-S2	BGS:02	FW:B069-D

```
FORMAT:22
050000000000FFFFFFFFFFFFFFFFFFFF....------> Hilfsdatenzeile
```

05 = Byte 0 (first byte)

00 = Byte 1 (second byte)

Example of the interpretation in the service manual:

```
F5412 L1 ERROR
```

Byte 0 = Error type (DB_M_QF_CIR_L1_ERR_SET)

00	= corruption on the line
01	= corruption on the line
02	= corruption on the line
03	= line interruption
etc.	

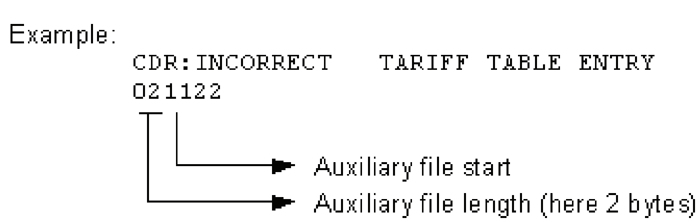
7.2.16 Advisory information texts

Advisory texts can also be output on the service terminal with an error message.

Output columns on the service terminal

```
tttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttttt
yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
```

Example:



Explanations:

t Advisory information text (TEXT_IDX RANGE (0:255))

An advisory information text which is limited to 74 characters is signalled.

y Auxiliary data (ARRAY (0:45 ON_M_BYTE_RNG))

7.2.17 SIT-specific messages

Error messages whose assignment is not known can also be output. These errors are packaged into an array of 256 bytes and output with header information.

The formats consist of the following:

1 Line for header information

1-8 Lines for optional auxiliary data in different output formats.

7.2.18 Undefined, non-plausible messages

Output columns on the service terminal

```
aaaaa bb ccccc  ddddddddddddddddddddddddddddddddddddddddddddddddddddddddd ggggggggg   hhhhhhhh
```

Example:

```
F1030 E4     V0011 MESSAGE NOT PLAUSIBLE   91-02-21  16:22:35
      5800   0000  0000                    0000      0000     0000 0000 0000
      0000   0000  0000                    0000      0000     0000 0000 0000
      0000   0000  0000                    0000      0000     0000 0000 0000
      0000   0000  0000                    0000      0000     0000 0000 0000
```

max. 4 LINES = 64 Bytes

Explanations:

a Message identification

Each output message is allocated a unique message identification consisting of key identification and message number.
The following key identifications have been identified:
A for alarm message
F for error (standard identification)
H for advisory information
U for undefined error element

The following ranges generally apply for message numbering
1000 ... 1110 for SIT,p.
2000 ... 8107 for SWU/SM hardware and software messages,
9000 ... 9005 for NMC/DMS alarm messages.

Each signaling format has been allocated a part number range.

b Message priority for Automatic Fault Report Task (AFRT)

(automatic transfer of error to Service Center)
The priorities for AFR consist of a key identification and a single decimal digit.
The following key identifications have been defined:
E for unique messages
M for ambiguous messages
1 ... 8 priority number range

The priority is established for each individual message in the message distribution table (SDT) by initializing it.

c Message serial number

This serial number is simply used for classification and as an aid for responding to the output messages. The date and time are also required for uniquely identifying the message. The numbering is cyclical in the range 0001 - 9999

d Message text

Messages for which the event code status has been entered in the distribution table as undefined (DA_ST_EVT_UNDEF) are assigned the message text EVENT NOT DEFINED in field d of the header line.

Messages in which sender and/or error class are not plausible are assigned the message text MESSAGE NOT PLAUSIBLE in the header line.

Messages in which the message class is not plausible are assigned the message text MESSAGE CLASS NOT DEFINED in the header line.

Messages in which the error type is not defined are assigned the message text SUB-EVENT NOT DEFINED in the header line.

Messages in which the action has not been defined are assigned the message text ACTION NOT DEFINED in the header line.

7.2.19 Error message evaluation

In the following sections error messages from the security logic (DEP) are listed according to their complexes. Error messages that are not accessed are not documented.

These error messages are listed with

- the error number,
- the event,
- the subevent (error message text),
- the appropriate format for the error and
- the following cause and action:
  This text explains the error and, if possible, a remedy is described or the action taken by the PABX.

Procedure for tracing errors with DEP error messages:

- Using the error number (serves as a search word) search for the associated explanation.
  The error number is not always binding, i.e. if error numbers were output whose sub-event (error message text) does not match the specified error number, the error must always be interpreted according to the error number and not according to the sub-event.
  This error may be due to the fact that the security logic subsystem does not have the same output status in the administration and data server ADS as the security logic subsystem in the switching unit SWU.
- Each error message in the security logic is assigned a specific format. The format associated with the error complex is specified with its hexadecimal value.
  The format number is also output with error messages. The hexadecimal data values are output as additional interpretation aids.
  Due to different error outputs for specific messages, several formats may apply.

All error messages are flagged as service-specific or diagnosis-specific. Notify your product specialist if you are unable to evaluate diagnosis-relevant error messages.

7.3 SW/Interrupt/Stack message interpretation

This chapter deals largely with the interpretation of so-called stack messages. The examples show which messages are associated with one another and from which function complex they originate.

Due to their complexity, specific actions in the event of such errors cannot be given here. Nevertheless, in the case of software messages for example, certain data from the message can be used for searches. For example, the CC (call code) / EC (exception code) / UA (user address) can be used to search for patches or preliminary corrections that may be available, thus making it possible to find a solution. A possible solution can thus be determined.

If an immediate solution is not possible, all data relating to the error situation should be saved and passed on to the system specialist (see also Section 7.8, "next level of support"). It is also important to know which actions preceded the error, e.g. starting AMOs, so that it can be further interpreted by the developers for example. The data backup should always contain the last AMO commands (see AMO logbook). In some situations it also advisable to back up the history file (at least the last two hours before the error occurred).

SP300E V1.0 / R 6.4 and earlier:

- Stack outputs for interrupts, SYSLOAD
  - Temporary subsystems signaling
  - Stack signaling
  - Task address signaling
  - Stack header message signaling
- Stack outputs for non-maskable interrupts (NMIs), ZONINTH0:
  - Watchdog
  - Multibus timeout
  - Example: Stack data message
  - Example: Header message
- Software exception handling in the SWU / ADP
- Interpretation of hexadecimal data in the stack message:
  - Stack and stack pointer
  - Stack data messages
  - Format for stack outputs in SP300E-V2.0/R6.5 and later

– Restart prevention for call processing (CP) protection error

7.3.1 Stack outputs for interrupts, SYSLOAD

The SYSLOAD handles processor interrupts. When the system has finished booting, all interrupts apart from INT2 (NMI) are handled by SYSLOAD. The number of messages output for an interrupt depends on a number of requirements - however the sequence in which they are output is fixed. Throughout the following all of the messages are listed in the order in which they are output.

7.3.2 Temporary subsystems signaling

The originator will determine whether or not a "TEMPORARY SUSY" message (F2204) is output first for an interrupt. This message is generated only for tasks of a reloadable subsystem.

Example:

```
F2204 M4 N0089 NO ACT   BPA   PROC INT INFO TEMPORARY SUSY     96-08-20 14:47:03

ALARM CLASS:CENTRAL:005 FORMAT:17

:AMO:REGEN/C

92B81E0D 92C83305 92C029F3 92D80D94 92E026E7 92D00023 9248240B 92F00027

92F82D0C 93080926 93000009 931006FE 93180011 93200003
```

The first line under the format specification contains the name of the temporary subsystem. This is followed by a maximum of two more lines which consist of blocks of four bytes; the first word contains the selector of a code or data segment, the second contains the relevant limit. The mapping of the subsystem can be used to determine which module is using which selector. This information is obtained through the unique allocation of the selectors to the module names in the mapping.

Should it become necessary to abort signaling of temporary subsystems because the limit of the reentry capability has been reached, an advisory message to this effect is displayed.

Example:

```
F2204 M4 N0089 NO ACT   BPA   PROC INT INFO TEMPORARY SUSY     96-08-20 14:47:03

ALARM CLASS:CENTRAL:005

FORMAT:17

SIGNALLING TMP SUSYS STOPPED
```

7.3.3 Stack signaling

A fixed component of interrupt signaling is the output of the stack. This can consist of up to 5 messages depending on the stack size.

Example:

(Stack message 1:)

```
F2201 M4 N0010 NO ACT   A1    PROC INT STACK                    96-06-13 14:19:07
ALARM CLASS:CENTRAL:010

CC:    1  EC:    5  UA:0000:0280:3969  SP:0000:0024:0000

FORMAT:14

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
```

(Stack message 2:)

```
F2201 M4 N0011 NO ACT   A1    PROC INT STACK                    96-06-13 14:19:07

ALARM CLASS:CENTRAL:010

CC:    2  EC:    5  UA:0000:0280:3969  SP:0000:0024:0080

FORMAT:14

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
```

The number of stack messages to be signaled is set out in EC; the messages are counted in the entry CC. The user address (UA) is always the same in these messages. The stack pointer SP points to the first byte in the hexadecimal data.

7.3.4 Task address signaling

The output of the running task address also forms a component part of interrupt signaling.

Example:

```
F2203 M4 N0091 NO ACT   BPA   PROC INT TASK ADDRESS            96-08-20 14:47:03

      ALARM CLASS:CENTRAL:005
```

```
CC:    0  EC:    0  UA:0000:92FC:083C  SP:0000:946C:08AC
FORMAT:14
9314 06BA
```

Example (from SP300 EV2.0):

```
F2203  M4 N0033 NO ACT   BPA   PROC INT TASK ADDRESS            97-07-07 09:56:44
       ALARM CLASS:CENTRAL:005
       FORMAT:17   MESSAGE-ID: 00001
       TASKADDRESS 4F58:042D
```

The first word of the hexadecimal data under the format specification indicates the selector, the second indicates the offset of the address.

7.3.5 Stack header message signaling

SYSLOAD interrupt signaling is concluded by the stack header message. It provides information on the register contents at the time when the interrupt occurs and the stack is linked.

Example:

```
F2218 M4 N0092 SOFTREST BPA   PROC INT GENERAL PROTECTION      96-08-20 14:47:03
ALARM CLASS:CENTRAL:005
INTERRUPT:0D   AX:C701 BX:0011 CX:07F0 DX:92FC BP:08BC SI:0002 DI:06E0
CS:92FC IP:083C CSLIM:2D0C CSAR:9B  SS:946C SP:08AC SSLIM:08FF SSAR:93
DS:9304 DSLIM:0009 DSAR:93   ES:9884 ESLIM:0029 ESAR:93   NMI REG:0000
STACK:  013F 930C 0000 947C 08EA   5A5A 0000 05F4 9314 0000
        5A5A 0000 05F4 9314 0000   947C 0002 9594 0001 001F
        06F1 0000 947C 0000 947C   0000 ffff 9474 06BA 9314
        0000 0000 0000 0000 0000   0000 0000 0000 0000 0000
FORMAT:2C
```

Meaning of individual fields:

The entries show the important register contents at the time of the interrupt.

Interrupt	Number of interrupts
AX, BX, CX, DX, BP, SI, DI:	Default register
CS:	Code segment selector

Interrupt	Number of interrupts
IP:	Offset for the location of the error
CSLIM:	Code segment limiter
CSAR:	Code segment access rights
SS:	Stack segment selector
SP:	Stack pointer
SSLIM:	Stack segment limit
SSAR:	Stack segment access rights
DS:	Data segment selector
DSLIM:	Data segment limit
DSAR:	Data segment access rights
ES:	Extra segment selector
ESLIM:	Extra segment limit
ESAR:	Extra segment access rights
NMI REG:	NMI register for specifying the interrupt

7.3.6 Watchdog

In the case of Watchdog 0 and Watchdog 1 NMI's not only is the data relating to the task that was interrupted (running task) output, but also information on the tasks that were in "ready" mode at the time of the Watchdog run.

The values for the tasks in "ready" mode are output for the tasks with task priority 35 - 189 (WD0) or 35 - 192 (WD1). Thus, tasks that are continuously running in the background such as RTO tasks are not displayed as they are not relevant to the diagnosis.

The number of tasks output per interrupt is limited to 8 tasks due to the size of the BCA memory.

For each task, the data output consists of (depending on the length of the stack area occupied) 1 - 5 stack data messages and a header message (message block).

The data of the running tasks are always output in the first block. If the stack pointer addresses of the NMIs and the OS data are not identical, 2 message blocks are output for the running task.

The same stack and user address are used to identify associated header and stack messages.

7.3.7 Multibus timeout

If an address that is not contained in the multibus address catalog is addressed, i.e. that the read or write command is not acknowledged by the addressed hardware unit (e.g. memory chip), a multibus timeout (MBTO) is initiated.

The interrupt handler logs this interrupt with 1 - 5 stack data messages and a header message.

The same stack and user address are used to identify associated header and stack messages.

Example: Stack data message

```
F3150 M4 N6568 NO ACT   BPA   SWU-INT  WATCHDOG 0              96-01-12 14:18:03
ALARM CLASS:CENTRAL:005

CC:    2  EC:   3  UA:0000:BBC8:7B61  SP:0000:CFF0:0D26

FORMAT:14

4E200D52 0E62B8D0 0634BE38 00020D84  001C05DF B8D0546F B8D00002 0D840002

0D840E62 52940007 17B8002F 0E6201B4  BB500002 0D840002 0D840000 00000000

00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000

00000000 0000B8B8 A0816370 0698B8B8  25766480 0DA405B7 B9900000 3B860DAC
```

Action is always NO ACT for stack data messages

CC: serial number of the stack data message

EC: number of stack data messages (max. 5)

UA: Interruption address.

SP: the address always points to the first word of the stack data message.

In the auxiliary data, the stack data is output with incrementing addresses word for word.

Example: Header message

Watchdog message:

```
F3150 M4 N6571 SOFTREST BPA   SWU-INT  WATCHDOG 0              96-01-12 14:18:03

ALARM CLASS:CENTRAL:005

P001:     :CC A :058:          Q2250-X    DP4L/3     BST:01  FW: D654-D

PROC1  CELL PHYS::

NMI LOG ADDR: 1160:D1    NMI PHYS ADDR: 16469E1

NMI LOG STACK:31D8:261E  NMI PHYS STACK:16B5898

TASK START ADDR:FFFF:FFFF  STATIC PRIO:FF  DYNAMIC PRIO:FF
```

```
FORMAT:28
```

Multibus timeout:

```
F3153 M8 N3804 STATIST  BPA   SWU-INT  MULTIBUS TIMEOUT        95-08-01 15:59:52

DEV CLASS:00020000 0000 0000000000000000 0000000000000000 000000

P104:     :CC A:020:          Q2200-X100  DP486     BST:01  FW:C960-E

PROC1  CELL PHYS::

NMI LOG ADDR: 1160:D1    NMI PHYS ADDR: 16469E1

NMI LOG STACK:31D8:261E  NMI PHYS STACK:16B5898

TASK START ADDR:FFFF:FFFF  STATIC PRIO:FF  DYNAMIC PRIO:FF

FORMAT:28
```

- Action:
  WD: only differs from NO ACT for the running task.
  MBTO: STATIST, after the 3rd interrupt SOFTREST
- The 3rd line describes the location of the DP on which the NMI was identified.
- PROC1: number of the processor that caused the MBTO (only relevant in the case of MBTO)
- CELL PHYS: describes the physical address that was incorrectly addressed (only relevant in the case of MBTO)
- NMI LOG ADDR: interrupt address
- NMI LOG STACK: value of the stack pointer at the time of the interrupt
- TASK START ADDR: start address of the task (only relevant in the case of ready tasks, otherwise FF).
- STATIC PRIO: static priority of the task (only relevant in the case of ready tasks, otherwise FF).
- DYNAMIC PRIO: dynamic priority of the task (only in the case of ready tasks with WD interrupt, otherwise FF)

7.3.8 Software exception handling in the SWU / ADP

The error analysis in the SWU / ADP handles software exceptions which generate user tasks in the SWU / ADP. These exceptions are output with several stack messages and a header message. Messages with the same CC, EC, UA and SP field belong to one and the same exception. First of all, up to 5 stack messages are output, then the header message is output. If the user

task belongs to a reloadable subsystem (AMOs), a “Temporary subsystem message" (F2205) is also output prior to all other messages. For a description of the “Temporary subsystems signaling”, see above.

Example

(Stack message 1:)

```
F4250 M4 N0998 STATIST  BPB   DEP      IMPLAUSIBLE EVT CODE    97-04-17 14:16:09
ALARM CLASS:CENTRAL:023
CC:25306  EC: 9045  UA:0000:34F0:4854  SP:0000:F478:27E0  LD:01-01-031-00
DT:40  ST:AE  SN:  1B  CEVT::1A  CSEV::50  CST::FF
FORMAT:24
2BB02BB0 34A81386 34F0001B 01000007  F7280102 00000200 2BB0F390 138D0007
000B10E8 0000005D 0000F468 FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF
```

(Stack message 2:)

```
F4250 M4 N0999 STATIST  BPB   DEP      IMPLAUSIBLE EVT CODE    97-04-17 14:16:09
ALARM CLASS:CENTRAL:023
CC:25306  EC: 9045  UA:0000:34F0:4854  SP:0000:F478:27E0  LD:01-01-031-00
DT:40  ST:AE  SN:  1B  CEVT::1A  CSEV::50  CST::FF
FORMAT:24

FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF  FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF
FFFFFFFF FFFFFFFF 56FF9300 80002900  00F01170 11782952 0A061110 298CF478
018E0000 56FC0000 296808EB F490298C  2966F478 0091F528 29680523 00010000
29900EDE 1110298C
```

(Header message:)

```
F4250 M4 N1003 STATIST  BPB   DEP      IMPLAUSIBLE EVT CODE    97-04-17 14:18:09
ALARM CLASS:CENTRAL:023
CC:25306  EC: 9045  UA:0000:34F0:4854  SP:0000:F478:27E0  LD:01-01-031-00
DT:40  ST:AE  SN:  1B  CEVT::1A  CSEV::50  CST::FF
FORMAT:24

0040AE1B 001A5000 00000001 02012007  2D423120 20200100 00005A5A 00840001
005AA08E 37360000 07010102 02040200  01000615 02020200 01000100 0100ffff
00000000 00000000 00000000 00000000  00000000 00000000 00000000 00000000
00000000 00FFFFFF FFFFFFFF FFFFFF5A  5A5A5A5A 5AA00000 00
```

Meaning of individual fields

Error class	Complex of the user task which generated the exception
Error:	Type of exception
CC:	Call code; location of the exception
EC:	Exception code; further specification of the type of exception
UA:	User address; user address at which the exception was generated
SP:	Stack pointer at the time when the exception was generated
LD:	Logical device insofar as the exception occurs in the context of a device
DT:	Destination task
ST:	Source task
SN:	Sequence number
CEVT:	Current event
CSEV:	Current subevent
CST:	Current state

Hex. data of stack message: Contents of the stack
Hex. data of header message: Data of user tasks

Comment on LD:
If the LD field contains a valid address, e.g. LTG / LTU / slot / circuit, it can be used to ascertain the status of the relevant units (LTU / BOARD / CIR / DEV) by means of AMO-SDSU. The infor-

mation in the LD field can also be used to ascertain all error messages affecting this situation from the history file via AMO-HISTA. This information together with the above-mentioned error messages should always be part of a data backup.

7.3.9 Stack and stack pointer

As part of the startup procedure, each task is allocated a memory area (stack memory) for storing temporary data. Data such as return addresses for procedure calls (command CALL), transfer parameters for procedure calls, data description entries at procedure level or saved register values (command PUSH) are stored in this memory area.

The next free address in the stack memory is stored in the **stack pointer (SS:SP)**. The offset of the stack pointer (SP) is assigned the value of the stack segment limit at the start of the task and is decremented each time data is stacked. This means that the older data is assigned higher addresses and the more recent data is assigned the lower addresses.

In the case of a procedure return (command RET) the offset of the stack pointer is increased by the number of the parameter and the return address so that the stack memory is freed up again. The same applies to the reading of saved data (command POP).

The register BP is important. At the beginning of each procedure the command sequence
PUSH BP
MOV BP,SP
is used to store the current value of the SP so that the location of the data in the higher procedure in the stack memory can be worked out from this.

7.3.10 Stack data messages

The first word in the first stack data message contains the last word saved and the stack pointer points to this word (SS:SP). The addresses are counted in ascending order in the messages and the last word (if all data is displayed, max. 5 messages) corresponds to the oldest entry.

What is important for the diagnosis is the establishment of the respective addresses of the individual procedures involved in the interrupt or exception in order to be able to trace the sequence of the program. The parameters for calling the procedure are of secondary importance.

Both pieces of information are stored in the stack memory as shown in the above figure.

Up until and including SP300E V1.0 / R 6.4, the value of the BPs is not ascertained when generating the messages.

To ascertain the respective return addresses, the stack data (beginning with the first stack data message) is searched for possible selectors (end digit 0 or 8).

The relevant offset is immediately in front of this. This CS:IP value can be used to find the corresponding program location in the DALIST with the function "Locate".

The procedure parameters are immediately after the return address whereby the last parameter is located immediately after the return address.

The BP value is stored immediately in front of the return address or is separated from the return address by a stored register. This value points to the offset of the next procedure level. The return address of the next procedure level is stored after this offset.

Example:

```
F4066 M8 N0621 NO ACT   BPA   CP       ADVISORY                97-02-24 09:29:58

ALARM CLASS:CENTRAL:023

CC:15215  EC:02019  UA:0000:BE70:017E  SP:0000:CDC8:0844  LD:05-04-025-09

DT:6C  ST:6C  SN:FB01  CEVT: B  CSEV:: 0  CST: 0

FORMAT:24

5A5A0000 FFFFCDD0 097EB978

APS S0-EH0.10.40
```

The call location of ON_P_SIGNAL_EXCEPTION is ascertained from the exception address (UA:BE70:017E) with the ”Locate” function in the Dalist:

--> Procedure CP_P_SYM_GEN_ADVISORY in the module CB050SC.

CP_P_SYM_GEN_ADVISORY was called up by a procedure with the return address BE78:213E (first selector of the stack data)

--> Procedure CP_P_DLG_MENU_AFT_STATE_TR in the module CB50SD,
CP_P_SYM_GEN_ADVISORY is called on offset 2139.

The location of the data of the next highest procedure is ascertained from the BP value 858 (first word of the stack data with the address SS:SP, therefore CDC8:0844):

BP on address CDC8:0858 with the value 0862

The next return address is stored after this (BE78:224E):

--> CP_P_DLG_MENU_AFT_STATE_TR in the procedure CP_P_DLG_MENU_AND_STORE called up with the parameter 0045 (value immediately after the return address).

Data of the next highest procedure:

BP on address CDC8:0862 with the value 0878

Return address: BBB8:0C9E

Next level:

BP on address CDC8:0878 with the value 0888

Return address:B978:1331 etc.

7.3.11 Format for stack outputs in SP300E-V2.0/R6.5 and later

When compared with Version E V1.0, only the output formats of the stack messages have changed. These have been standardized and supplemented with additional information.

Stack data message:

```
F3153 M4 N0376 STATIST  BPA   SWU-INT  MULTIBUS TIMEOUT        97-05-06 10:45:49
     ALARM CLASS:CENTRAL:017
     CC:    0  EC:    0  UA:2128:003C  SP:8178:0594  BP:059C  LD:00-00-000-00
     FORMAT:45 MESSAGE-ID:  00009
     STACK-DATA-MESSAGE 01 OF 04
     ---4---6 ---8---A ---C---E ---0---2  ---4---6 ---8---A ---C---E ---0---2
     007E8178 05BA17E0 05BE2023 21F005BA  81789FFF 00530206 05B814EC 9FFF5A5A
     00020000 00C021F8 01F8065C 177E5A5A  5A5A5A5A 5A5A5A5A FF5A5A9F 025A0800
     00000100 5A5A5A5A 5A5A5A5A 5A5A5A5A  5A5A5A5A 5A5A5A5A 5A5A5A5A 5A5A5A5A
     5A5A5A5A 5A5A5A5A 5A5A5A5A 5A5A5A5A  5A5A5A5A 5A5A5A5A 5A5A5A5A 5A5A5A5A
     5A5A5A5A 5A5A5A5A 5A5A5A5A 5A5A5A5A  5A5A5A5A 5A5A5A5A 5A5A5A5A 5A5A5A5A
     5A5A5A5A 5A5A5A5A 5A5A5A5A 5A5A5A5A  5A5A5A5A 5A5A5A5A 5A5A5A5A 00010000
```

CC: Call Code, for NMI's assigned the default value 0.

EC: Exception code, for NMI's assigned the default value 0.

UA: Interruption address.

SP: The address always points to the first word of the respective stack data message.

BP: Value of the BPs (address of the subsequent BPs in the stack data, here with the value 05BE).

LD: Location, for NMIs assigned 0.

MESSAGE-ID: Messages with the same message ID belong to a single event

STACK-DATA_MESSAGE N OF M: message of m.

The ruler shows the value of the lowest half-byte of the SS:SP address (here "4" from 8178:0594). The first word in the first line of the stack data thus has the address 8178:0594, the second word has the address 8178:596, etc. The first word of the second line of the stack data therefore has the address 8178:05C4, the second word has the address 8178:5C6, etc.

In the auxiliary data, the stack data is output with incrementing addresses word for word.

Header message:
No changes in relation to Version EV1.0.

7.3.12 Restart prevention for call processing (CP) protection error

From SP300 E V2.0 (system output 6)

If a processor interrupt 13 occurs while the CP task is running, a soft restart is generally not executed, but error messages are generated with stack data, task address, register data and user data (received CP message and extract from call-related data). This type of error is signaled with CC: 9999 and EC 9999

The relevant connection is cleared down. If this CP response is not practical (because the relevant device cannot be cleared down) or clearing down the connection would result in subsequent errors, a soft restart is executed after all.

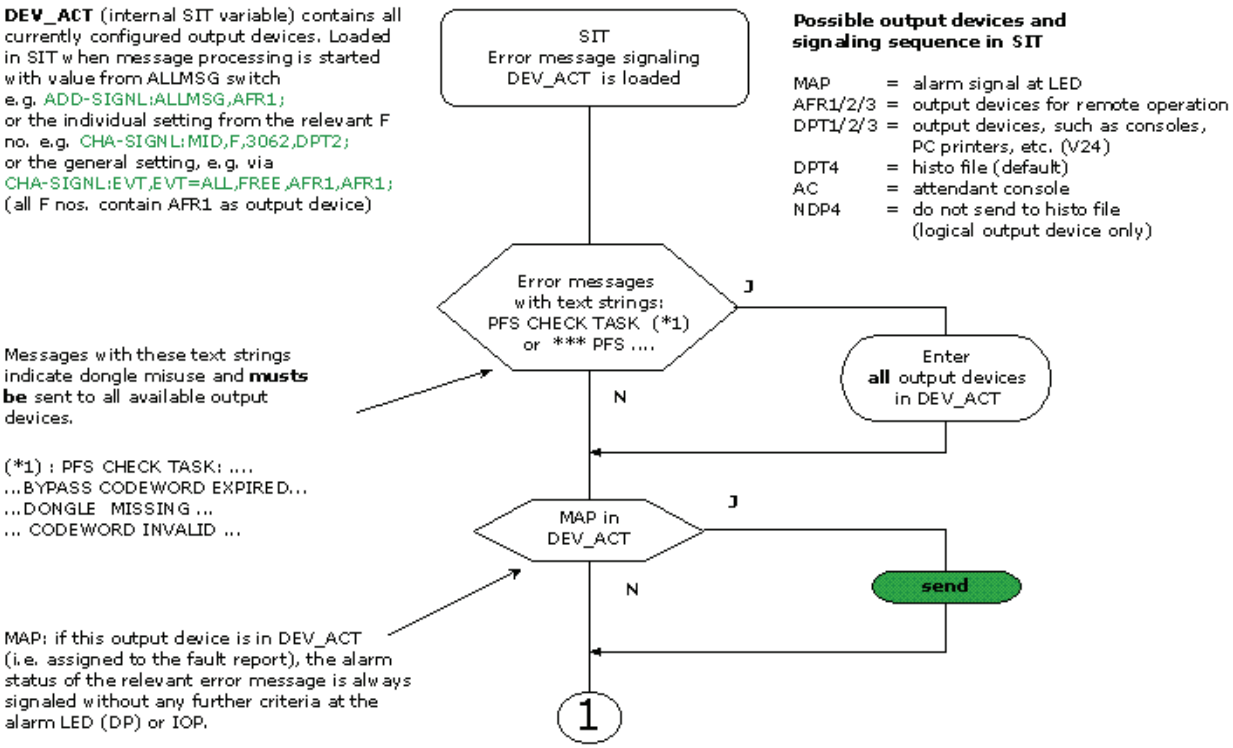
Even if the restart is prevented in this case, a 'CC RESTARTS' alarm signal need not occur. This means that the error profile is only signaled in the same way as a normal user error.

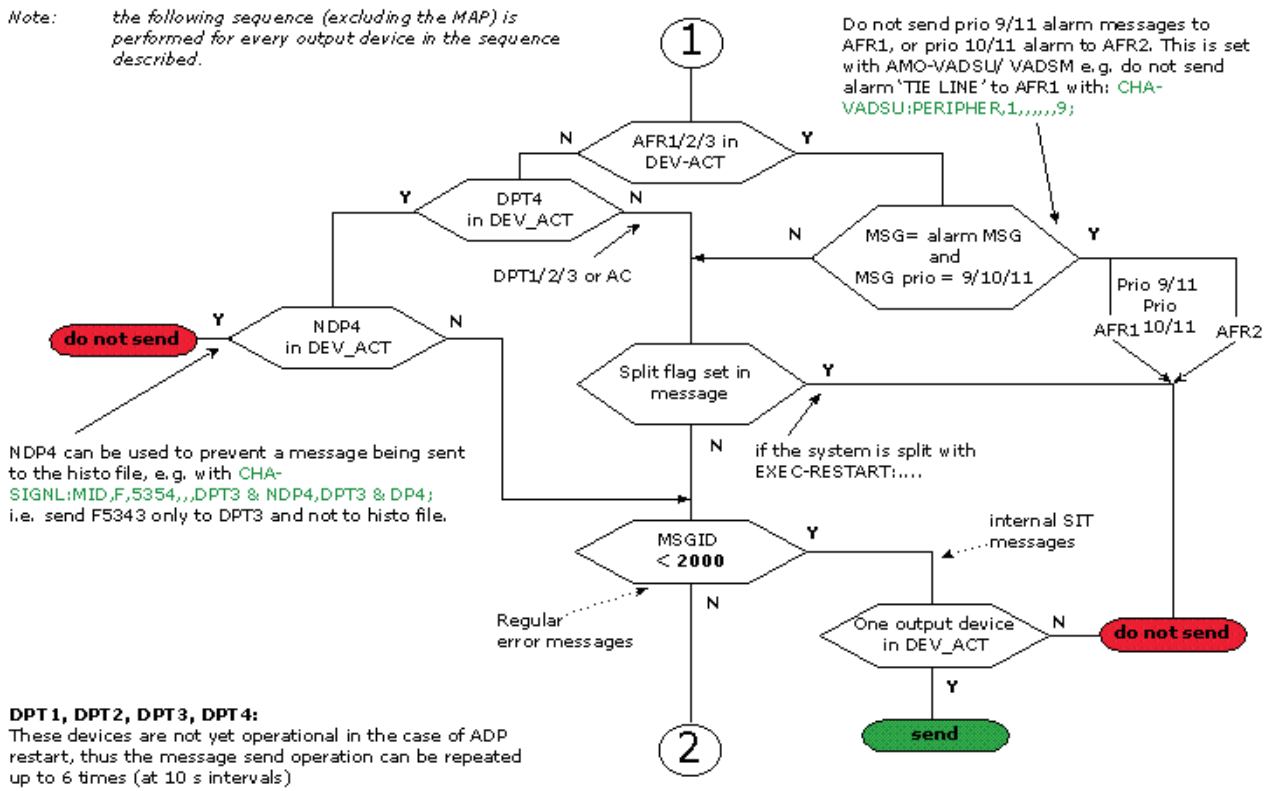
However, the search for this error profile in the Histo file is also facilitated by a unique call / exception code (= 9999). The error messages corresponding to the error profile of a customary protection error are also output without being modified (with the exception of the 'Action' field in the messages).

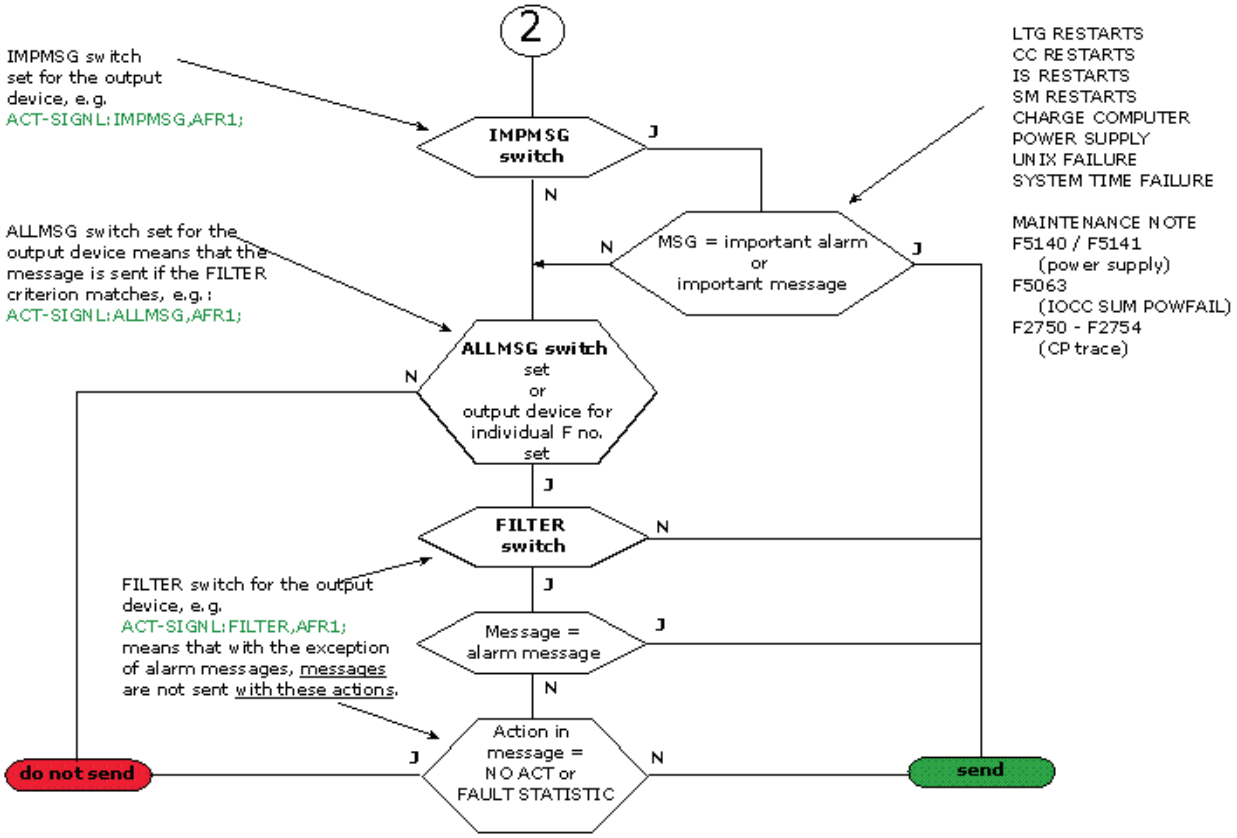
It is therefore advisable to use both the station PEN address or the telephone number and the CC/EC=9999 in the future when searching for user error messages in the Histo file using the HISTA AMO.

It may also be practical to disable this function, i.e. to permit restarts, for analysis purposes in certain diagnosis situations. Use the DIAGS AMO (diagnosis switch S01 of the complex CP) to disable the function. To do this, the switch must be set to 'ON' (CHANGE-DIAGS: CC, CP, ON;).

7.4 Error message signaling in SIT




Note: the following sequence (excluding the MAP) is performed for every output device in the sequence described.
1
Do not send prio 9/11 alarm messages to AFR1, or prio 10/11 alarm to AFR2. This is set with AMO-VADSU/ VADSM e.g. do not send alarm 'TIE LINE' to AFR1 with: CHA-VADSU:PERIPHER,1,,,,,,9;
AFR1/2/3 in DEV-ACT
N
Y
DPT4 in DEV_ACT
Y
N
DPT1/2/3 or AC
MSG= alarm MSG and MSG prio = 9/10/11
N
Y
Prio 9/11
Prio 10/11
AFR1
AFR2
do not send
Y
NDP4 in DEV_ACT
N
Split flag set in message
Y
N
if the system is split with EXEC-RESTART:....
NDP4 can be used to prevent a message being sent to the histo file, e.g. with CHA-SIGNL:MID,F,5354,,,DPT3 & NDP4,DPT3 & DP4; i.e. send F5343 only to DPT3 and not to histo file.
MSGID < 2000
Y
internal SIT messages
N
Regular error messages
One output device in DEV_ACT
N
do not send
Y
send
2
DPT1, DPT2, DPT3, DPT4:
These devices are not yet operational in the case of ADP restart, thus the message send operation can be repeated up to 6 times (at 10 s intervals)


2
IMPMSG switch set for the output device, e.g. ACT-SIGNL:IMPMSG,AFR1;
IMPMSG switch
J
N
LTG RESTARTS
CC RESTARTS
IS RESTARTS
SM RESTARTS
CHARGE COMPUTER
POWER SUPPLY
UNIX FAILURE
SYSTEM TIME FAILURE
MAINTENANCE NOTE
F5140 / F5141
(power supply)
F5063
(IOCC SUM POWFAIL)
F2750 - F2754
(CP trace)
MSG = important alarm or important message
N
J
ALLMSG switch set for the output device means that the message is sent if the FILTER criterion matches, e.g.: ACT-SIGNL:ALLMSG,AFR1;
ALLMSG switch set or output device for individual F no. set
N
J
FILTER switch
N
J
FILTER switch for the output device, e.g. ACT-SIGNL:FILTER,AFR1; means that with the exception of alarm messages, messages are not sent with these actions.
Message = alarm message
J
N
Action in message = NO ACT or FAULT STATISTIC
J
N
do not send
send

7.5 Device names

Valid as of SP300E-V2.0/R6.5 for error messages with the Event TERM or or CIRCUIT.

The SWU periphery error messages for circuits and terminals generally contain a device name. This device name is **identical** to the device names configured using the configuration AMO.

Example of an error message with device names:

```
F5645 M4 N0379 OUT SERV BPB   CIRCUIT  L1 ERROR S0            97-07-24 10:00:15
      ALARM CLASS:SWU-PER:004
         P101:LTG1 :LTU1 :091:  1   : 0 Q2115-X    SLMU16     BST:01  FW: C812-G
      REASON:04H  NO SIGNAL        (LOCAL ALARM)
      FORMAT:36      DEVICE NAME:  CPP
       DEVICE NAME: CPP
```

(Device name CPP has the following meaning: circuit line with cornet point-to-point connection)

The tables below contain all of the error messages that feature in the error messages, their meanings, as well as their allocation to the configuration AMO.

- AMO ACSU
- AMO MPOOL
- AMO SBCSU
- AMO SCSU
- AMO SSCSU
- AMO TACSU
- AMO TDCSU
- AMO TSCSU
- Special allocation table for circuit error messages

Allocation to the DB_M_DH_GERAETE_TYP_SET (see table Device type / Board table) is also available. This connection is derived from the device type which is allocated to an SWU periphery alarm class described in the Alarm concept.

7.5.1 AMO SCSU

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
ANATE	ANATE	ANATE	Analog telephone
ANATE	ANATEGEB	ANATECM	Analog telephone with call charge counter
ANATE	ANA&BTX	ANA&VTX	VTX device (analog ss)
U_STERN_CLC	CLC	CLC	CLC server fixed
ANATE	ANA&DEE	ANA&DTE	DTE device (analog ss)
CTE_X21	DEED	DTEDIG	DTE device (x.21 ss)
DIGITE	DIGI211	DIGI211	Voice terminal 211
DIGITE	DIGI260	DIGI260	Voice terminal 260
ANATE	ANA&FAX	ANA&FAX	Fax machine
DIG_M	SET400	SET400	Voice terminal 400 (digitem)
CTE_X21	TTX	TTX	TTX device (analog ss)

7.5.2 AMO TSCSU

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
APSE_ANSE_A	ANSEA	RA	Recorded announcement
APSE_ANSEM	ANSEM	ANS	Answering machine
APSE_ANSE_S	ANSES	RAS	Recorded announcement device, synchronized
TMX21	ASX21DEE	TCX21DTE	Trunk circuit x21 for DTE
TMX21	ASX21TTX	TCX21TTX	Trunk circuit x21 for TTX
APSE_DE	DIKT	DICT	Dictating machine
TMCL_HA	HAMFCALT	MMCOLD	MFC call data line in a main PBX of type HDW/EMD
TMCL_HA	HAMFNEU	MMFNEW	MFC call data line in a main PBX of type ESK/EMS
APSE_ELA	LAUT	SPKR	Loudspeaker
APSE_PSE	PSE	CC	Code calling device, single
APSE_PSM	PSM	CCM	Code calling device, multiple

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
TMX21	QSX21DEE	TLX21DTE	Tie line X.21 for DTE
TMX21	QSX21TTX	TLX21TTX	Tie line X.21 for TTX
SM_FAX	SMFAX	SMFAX	Service module for fax service
SM_TTX	SMTTX	SMTTX	Service module for TTX service
SM_VM	SMVM	SMVM	Service module for voice mail service
APSE_TE	TUER	DOOR	Door phone
TMCL_UA	UAMFCALT	SMFNEW	MFC call data line in satellite PBX of type HDW/ EMD
TMCL_UA	UAMFNEU	SMCOLD	MFC call data line in satellite PBX of type ESK/EMS

7.5.3 AMO SBCSU

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
SYM_ANA_EG	ANABTX	ANAVTX	Analog terminal for VTX service
SYM_ANA_EG	ANADEE	ANADTE	Analog terminal for DTE service
SYM_ANA_EG	ANAEG	ANADEV	Analog terminal for all services
SYM_ANA_EG	ANAFAX	ANAFAX	Analog terminal for fax service
SYM_ANA_EG	ANATTX	ANATTX	Analog terminal for TTX service
SYM_CMI_BASE	BASIS	BASE	CMI base station, UP0/Cornet-TS
SB_ALLG	BTX	VTX	Terminal or terminal adapter for VTX service
SYM_CMI_ADMI	CMIADM	CMIADM	CMI board administration, UP0/Cornet-TS
CRNT_DATA	DCI500	DCI500	Integrated terminal adapter V24, UP0/Cornet-TS
CRNT_DATA	DCI700	DCI700	Stand-alone terminal adapter V24, S0/Cornet
SB_ALLG	DEE	DTE	Terminal or terminal adapter for DTE service
SB_ALLG	FAX	FAX	Terminal or terminal adapter for fax service
CRNT_VOICE	KEY300	KEY300	Voice terminal KEY300
SYM_CMI_OPTI	MOBIL	RADIO	CMI mobile voice terminal, UP0/Cornet-TS

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
MSN_DEVICE	MSN	MSN	MSN phone number
SYMPHONY	OPTISET	OPTISET	Optiset voice terminal, UPN/Cornet-TS
CRNT_DATA	PCCARD	PCCARD	PC card with UP0 interface
CRNT_VOICE	SET5/700	SET5/700	Voice terminal SET500, UP0/Cornet
SB_ALLG	SET600	SET600	Voice terminal SET600, S0/DKZ
CRNT_VOICE	SET700	SET700	Voice terminal SET700, S0/Cornet
SB_ALLG	TTX	TTX	Terminal or terminal adapter for the TTX service
SB_ALLG	VLVERB	EXTLINE	CMI extended lines, S0/DKZ
SB_ALLG	S0PP	S0PP	S0 point-to-point connection, 2 B-channels
SB_ALLG	S2PP	S2PP	S2 point-to-point connection, 30 B-channels

7.5.4 AMO TDCSU

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
NW_DIGITAL_P	ATMIW	ATMIW	Digital ATM circuit for interworking
NW_DIGITAL_P	ATMPBB	ATMPBB	Digital ATM circuit for PBX backboning
NW_DIGITAL_P	LAN	LAN	Digital LAN tie line circuit
NW_DIGITAL_P	MKAMT	MCCOD	Digital multi-channel trunk circuit
NW_DIGITAL_P	MKTERM	MCTERM	Digital multi-channel terminal
NW_DIGITAL_P	MKVERB	MCCONN	Digital multi-channel tie line circuit
NW_DIGITAL_B	S0AMT	S0COD	Digital trunk circuit with S0 interface
NW_DIGITAL_B	S0VERB	S0CONN	Digital tie line circuit with S0 interface
NW_DIGITAL_P	S2AMT	S2COD	Digital trunk circuit with S2 interface
NW_DIGITAL_P	S2VERB	S2CONN	Digital tie line circuit with S2 interface
NW_DIGITAL_P	S7AMT	S7COD	Digital trunk circuit with SS7 interface
NW_DIGITAL_P	S7VERB	S7CONN	Digital tie line circuit with SS7 interface

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
NW_DIGITAL_P	SKAMT	VCCOD	Digital trunk circuit with voice compression
NW_DIGITAL_P	SKVERB	VCCONN	Digital tie line circuit with voice compression

7.5.5 AMO SSCSU

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
SB_ALLG	DEE	DTE	Hicom Trading Board data terminal
SKY_LINE	HTBLINE	HTBLINE	Hicom Trading Board line
SKY_MANAGER	HTBMNGR	HTBMN-GR	Hicom Trading Board Manager
SKY_PHONE	HTB-PHONE	HTB-PHONE	Hicom Trading Board Manager
SB_ALLG	HTBVLV	HTBVLV	Hicom Trading Board extended connection
SB_ALLG	NTVLV	NTEXT	Net-Team Extended Connection
TYP_SYMPHONY	REMOPTI	REMOPTI	Physically Remote Optiset
TC_FIC_PORT	REMOPTI	REMOPTI	Logical Telecommuting Subscriber
TC_REM_PORT	TCVLV	TCEXT	Telecommuting Extended Connection

7.5.6 AMO ACSU

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
VPL	AC2	AC2	Attendant Console on SLMB
AC_CRNT_TS	AC3	AC3	Attendant Console on SLMO or SLMQ

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
AC_CRNT_T	ACWIN	ACWIN	Attendant Console PC application on SLMO or SLMQ

7.5.7 AMO MPOOL

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
MOPO_DIG	MOPOOL	MOPOOL	Modem Pool

7.5.8 AMO TACSU

DB_M_DH_GERAETE_TYP_SET

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
TMLS	A3GUSL	A3CISL	Trunk circuit, 3-wire, DC-Sign., local, for CIS
TMLS	A3GUST	A3CIST	Trunk circuit, 3-wire, DC-Sign., local, for CIS
TMLS	ANDIDLP1	ANDIDL1	Trunk circuit 2-wire, loop signaling
TMLS	ANDIDLP2	ANDIDL2	Trunk circuit 2-wire, loop signaling
TMLS	ANDIDLP3	ANDIDL3	Trunk circuit 2-wire, loop signaling
TMLS	ANDIDLP4	ANDIDL4	Trunk circuit 2-wire, loop signaling
TMLS	ANDIOLP1	ANDIOL1	Trunk circuit 2-wire, loop signaling
TMLS	ANDIOLP2	ANDIOL2	Trunk circuit 2-wire, loop signaling
TMLS	ANHKZ	ANMOSIG	Trunk circuit, 2-wire, loop sign, MSI
TMLS	ASDCL	BWLD	Bothway trunk circuit, loop calling
TMLS	ASEC	BWEDG	Bothway trunk circuit, ground start
TMLS	ASELS	BWELS	MSI exchange, Bothway with loop interruption
TMLS	ASELSC	BWELSC	MSI exchange, Bothway release control (China)
TMFS_AMT	ASFS	BWFS	Bothway trunk circuit, f-criteria

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
TMLS	ASGCL	BWLG	Bothway trunk circuit, loop calling
TMLS	ASGS	BWGS	Bothway trunk circuit, ground start
TMLS	ASLRS	BWLRS	Bothway trunk circuit, France, no DID
TMLS	ASLS	BWLS	Bothway trunk circuit, loop start
TMLS	ASLSR	DIDLSR	Incoming circuit, Italy
TMLS	ASSR	BWSR	Bothway trunk circuit, silent reversal
TMLS	DFADAS1	DFADAS1	Bothway trunk circuit, 600/750 hz, CIS (adase)
QS_TF	DFADASE	DFADASE	Bothway trunk circuit, 1200/1600hz, CIS (adase)
TMLS	DIDBELG	DIDBELG	Incoming circuit, Belgium
TMLS	DIDIT	DIDIT	Incoming circuit, Italy
TMLS	DIDLRB	DIDLRB	Incoming circuit, Brazil
TMLS	DIDN2	DIDN2	Incoming circuit, Finland
TMLS	DIUCBRAS	DIUBRAZ	Bothway trunk circuit, Brazil
TMLS	DIUCQ421	DIUCQ41	Bothway trunk circuit, Brazil
TMLS	DODBELG	DOBELG	Outgoing circuit, Belgium
TMLS	DODFR	DODFR	Outgoing circuit, France
TMLS	DODIT	DODIT	Outgoing circuit, Italy
TMLS	DODN2	DODN2	Outgoing circuit, Finland
TMLS	EB5NAL	EB5NAL	Bothway trunk circuit (German Reichsbahn)
TMLS	EMCONT	EMCONT	CO/tie trunk, e&m/pcm30, India
TMLS	EMDISC	EMDISC	CO/tie trunk, e&m/pcm30, India
TMLS	GW	GW	Group selector - connection
NW_ANALOG	HAEM	MAINEM	Main PABX circuit for e&m/wtk1 Networking
NW_ANALOG	HASCHNW	MAINLP-NW	Main PABX circuit, DC loop, Networking
NW_ANALOG	HAWTK	MAINVF-SS	Main PABX circuit for wtk1, Networking
HKZ	HKZ	MOSIG	Main station signaling
TMLS	HKZA	BWA	Bothway trunk circuit, no DID, Brazil

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
TMLS	HKZALS70	BWALS70	Bothway trunk circuit, no DID
TMLS	HKZCH	BWMSCH	Bothway trunk circuit, no DID
TMLS	HKZCSU	BWCSU	Bothway trunk circuit, Czech Rep./Slovakia
TMLS	HKZDK	BWDK	Bothway trunk circuit (MSI-sig. Denmark)
TMLS	HKZFR	BWMFR	Bothway trunk circuit, no DID
TMLS	HKZU	BW	Bothway trunk circuit, no DID
IKZ	IKZ	DP	Pulse signaling
TMLS	IKZALS70	DIDALS70	Incoming circuit, with DID
TMLS	IKZCSK	BWCSK	Bothway trunk circuit, Czech Rep./Slovakia
TMLS	IKZDK	BWDK	Bothway trunk circuit (DP-sig. Denmark)
TMLS	IKZGRI	BWGR	Bothway trunk circuit, DP, Greece
TMLS	IKZGUSL	BWCISL	Bothway trunk circuit, DP, CIS, local
TMLS	IKZGUST	BWCIST	Bothway trunk circuit, DP, GUS, fern
TMLS	IKZPOL0	BWPOL0	Bothway trunk circuit (Poland)
TMLS	IKZPOL1	BWPOL1	Bothway trunk circuit (inverse sig. Poland)
TMLS	IKZRSA	BWRSA	Bothway trunk circuit, South Africa
TMLS	IKZSF	BWFIN	Bothway trunk circuit, Finland
TMLS	IKZVRC	BWCHI-NA	Bothway trunk circuit with DID (csn1-r2)
TMLS	LSF	ICF	Incoming circuit, MFC-DID
TMLS	LSLCH	ICLCH	Incoming circuit, MFC-DID
TMLS	LSLN	ICLLP	Incoming circuit, block: low-resistance
TMLS	LSLP	ICLFB	Incoming circuit, block: potential
TMLS	LSLU	ICLIB	Incoming circuit, block: interruption
TMLS	LW	LNSEL	Line selector - connection
IKZ	N2G	OGN2	Outgoing circuit, n2 criteria
TMLS	N2S	ICN2	Incoming circuit, n2 criteria
TMLS	NDIDIT	NDIDIT	Bothway trunk circuit, Italy
TMLS	NDIDN2	NDIDN2	Incoming circuit, Finland

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
TMLS	OB	OB	Trunk circuit, OB signaling, Poland)
TMLS	QSABZ	TSBR	Tie trunk, branching line
QS_SCH	QSAUS	TSAUST	Tie trunk, DC loop (Australian Version)
QS_EM	QSEMAL	TSEMU	Bothway tie trunk (gen. cont. signal)
QS_EM	QSEMAL2	TSEMU2	Bothway tie trunk (gen. cont. signal)
QS_EM	QSEMCOF	TSECOF	Bothway tie trunk (earth off idle)
QS_EM	QSEMCON	TSECON	Bothway tie trunk (earth on idle)
QS_EM	QSEMDD	TSEMD	Bothway tie trunk, delayed dial
QS_EM	QSEMDD2	TSEMD	Bothway tie trunk, delayed dial
QS_EM	QSEMID	TSEMI	Bothway tie trunk, immediate dial
QS_EM	QSEMID2	TSEMD2	Bothway tie trunk, immediate dial
QS_EM	QSEML1	TSEML1	Bothway tie trunk (cept-l1)
QS_EM	QSEML12	TSEML12	Bothway tie trunk (cept-l1)
QS_EM	QSEMSCH	TSEML	Bothway tie trunk (loop signaling)
QS_EM	QSEMSCH 2	TSEML2	Bothway tie trunk (loop signaling)
QS_EM	QSEMUSD	TSMUSD	Bothway tie trunk (usa, delay dial.)
QS_EM	QSEMUSD 2	TSEMUSD 2	Bothway tie trunk (usa, delay dial.)
QS_EM	QSEMUSI	TSEMUSI	Bothway tie trunk (usa,immediate dial)
QS_EM	QSEMUSI 2	TSEMUSI 2	Bothway tie trunk (usa,immediate dial)
QS_EM	QSEMUSW	TSMUSW	Bothway tie trunk (usa, wink start)
QS_EM	QSEMUSW 2	TSEMUW 2	Bothway tie trunk (usa, wink start)
HKZ	QSFS	TSRTT	Bothway tie trunk (simple tie traffic)
TMLS	QSLW	TSD	Tie trunk, line selector - connection
QS_SCH	QSSCH	TSILP	Tie trunk, DC loop (idle: loop)
QS_SIM	QSSIM	TSSIM	Tie trunk, DC - simultaneous dial

(DB_DH_DEV_TYP_...	Device names AMO (D)	device name AMO (GB)	Meaning
QS_SCH	QSSPE	TSIFD	Tie trunk, DC loop (idle: feed)
QS_TF	QSTF	TSC	Bothway tie trunk (pulse signaling)
QS_TF	QSTF2	TSC2	Bothway tie trunk (pulse signaling)
TMLS	QSTFZ	TSCZ	Bothway tie trunk (German Reichsbahn)
QS_WES	QSWES	TSAC	Tie trunk, AC dial
TMLS	SFADASJ	SFADASJ	Bothway tie trunk, 1600/2600 hz, CIS (adase)
TMLS	SFGUSL	SFCISL	Trunk circuit, 4-wire, 2600hz-sign., local, for CIS
TMLS	SFGUST	SFCIST	Trunk circuit, 4-wire, 2600hz-sign., local, for CIS
TMLS	SMFSPA	SOCSPA	Incoming circuit, Spain
TMLS	SOCOTFR	SOCFR	Incoming circuit, France
TMLS	SOCOTFR2	SOCFR2	Incoming circuit, France
TMLS	TFUNG	TSEHUN	Bothway tie trunk, carrier frequency, Hungary
TMLS	TMLRUD	TMLRUD	Bothway tie trunk, r2, with DID, India
NW_ANALOG	UAEM	SATEM	Main PABX circuit for e&m/wtk1, Networking
NW_ANALOG	UASCHNW	SATLPNW	Satellite PABX circuit, DC loop, Networking
NW_ANALOG	UAWTK	SATVFSS	Satellite PABX circuit for wtk1, Networking
TMLS	UEFS	SFS	Incoming circuit
TMLS	VRC2600	PRC2600	Bothway trunk circuit, 2600 hz, China
NW_ANALOG	ZVG2	ITT2	Inter tie trunk outgoing, 2-wire
NW_ANALOG	ZVG4	ITT4	Inter tie trunk outgoing, 4-wire
NW_ANALOG	ZVK	ITTIC	Inter tie trunk incoming

7.5.9 Special allocation table for circuit error messages

In a number of circuit error messages the device name is not identical to the configured device names. This applies to circuits with device bus connection. Therefore names that point to the bus connection or the bus configuration are output.

DB_M_BUS_TYPE_ SET db_bus_...	Device names AMO (D)	device name AMO (GB)	Meaning
FUNKT_CORNET	MBUS	MBUS	Circuit connection contains mixed bus connection (CorNet-T terminals and functional terminals)
NUR_FUNKT	FBUS	FBUS	Circuit connection with fbus (only functional terminals)
NUR_CORNET_T	CBUS	CBUS	Circuit connection with cbus (only cornet-t terminals)
PUNKT_PUNKT_COR	CPP	CPP	Circuit connection with cornet point-to-point connection
PUNKT_PUNKT_S0	FPPS0PP	FPPS0PP	Circuit connection with point-to-point connections for functional S0 connections
PUNKT_PUNKT_S2	FPPS2PP	FPPS2PP	Circuit connection point-to-point connections for functional S2 connections
FUNKT_MIT_EAZ	FKTEAZ	FKTEAZ	-
S0_NI)	S0NI	S0NI	-
ONLY_SYMPHONY	ONLYSYM	ONLSYM	Circuit connection contains device bus with Optiset terminals only
SYMPHONY_CORNET	SYMCRNT	SYCRNT	Circuit connection contains device bus with Optiset and Cornet terminals
SYMPHONY_FUNCT	SYMFNCT	SYMNCT	Circuit connection contains device bus with Optiset and functional terminals
SYM_CORNET_FUNCT	SYMCRFNT	SYMCRFNT	Circuit connection contains device bus with Optiset / Cornet and functional terminals
ONLY_AC_CRNT_T	OACCRT	OACCRT	Attendant console with Cornet-T connection
ONLY_AC_CRNT_TS	OACCRTS	OACRTS	Attendant console with Cornet-TS connection

7.6 Device type / Board table

Device types that are allocated to an SWU periphery alarm class (as describe din the Alarm concept).

Device type DB_DH_DEV_TYP_	Board
ANATE	SLMA
APSE_ANSE_A	TMOM
APSE_ANSE_M	TMOM

Device type DB_DH_DEV_TYP_	**Board**
APSE_DE	TMOM
APSE_ELA	TMOM
APSE_PSE	TMOM
APSE_PSM	TMOM
APSE_TE	TMOM
APSE_WKE	TMOM
CRNT_DATA	SLMU, SLMQ, SLMS, STMD
CRNT_KEYSYS	xx
CRNT_VOICE	SLMU, SLMQ, SLMS, STMD, (SET 500 / 700)
CTE	SLMA, TMX21
CTE_AB	SLMA, TMX21
CTE_X21	TMX21
DCI_U200	
DIG_M	SLMB, (Set400)
DIGITE	SLMB, SLMB16, SLMD
DIGITE_DYAD	xx
HAS_SCH	TMBM
HAS_WTK	
HAUSPOST	SLMD
HKZ	TMBD, TMFS, DIUC, DIUC64
IKZ	TMBD, DIUC, DIUC64
KEYSYSTEM	xx
MSN_DEVICE	SLMU, SLMQ, SLMS, STMD
MULTI_LINE_30	DIUS2, VCM
MULTI_LINE_8	SLMU, SLMQ, SLMS, STMD, VCM
MOPO_DIG	xx
NW_ANALOG	TMBC_NW, TMBS, TMEM_NW, TMIPI, TMIPO,
NW_DIGITAL_B	STMD
NW_DIGITAL_P	DIUS2, SLMN, WAML
NW_S1	xx
NW_S1_D	xx

Device type DB_DH_DEV_TYP_	**Board**
OPS	xx
QS_EM	TMEMW, TMEM, TMSVF, DIUC, DIUC64, TMEMW, TMSVF
QS_SCH	TMLR
QS_SIM	TMBP
QS_TF	TMEMW, TMEM, DIUC, DIUC64
QS_WES	TMBC, DIUC, DIUC64
SB_ALLG	SLMU, SLMQ, SLMS, STMD, (Set 600)
SB_FTK_EG	SLMU, SLMQ, SLMS, STMD, DIUS2
SM_FAX	SLMD
SM_FAXTTX	SLMD
SM_TTX	SLMD
SM_VM	SLMD
S3510	SLMD
SYM_CMI_BASE	SLMC
SYM_CMI_OPTI	SLMC
SYM_CMI_ADMI	SLMC
SYMPHONY	SLMO, SLMQ
TMAG	
TMAU_ABZ	TMAU
TMAU_LW	TMAU
TMAU_LW_QV	TMAU
TMAU_UEF	TMAU
TMCL_HA	TMCL
TMCL_UA	TMCL
TMD_VERB_ISDN	WAML
TMFS_AMT	TMFS, DIUC, DIUC64
TMGSR_GS	
TMGSR_SR	

Device type DB_DH_DEV_TYP_	**Board**
TMLS	DIUC, DIUC64, TMBLN, TMEMW, TMACH, TMAG, TMAU, TMAS, TMAS8, TMEDG, TMGSR, TMCOW, TMELS, TMGSR, TMLRW, TM-LBL,TMEMW, TMLRS, TMLRW, TMLRP, TMLSF, TMLSL, TMLSR, TMN2S
TMX21	TMX21
TMX21PPH	
T3510	SLMD
U_STERN_CLC	
VPL	SLMD
X21_NC	
SYM_FICTITIO	SMLY
TC_REM_PORT	WAML2
TC_FIC_PORT	WAML2

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7.7 Error message formats

Format	FORMAT DB_RS_	Structure
00	NO_FORMAT	
01	FORM_OS_ERR	DB_M_TX_DP_PLAUS_ER_STR
02	SWU_FORM_CP_MSG	DB_M_RS_AUX_SWU_CP_MSG_STR
03	SM_FORM_1_BOARD	DB_M_RS_AUX_SM_1_BOARD_ARY
04	SM_FORM_N_BOARD	DB_M_RS_AUX_SM_N_BOARD_STR
05	SM_FORM_LCX_PLAUS	DB_M_RS_AUX_SM_LCX_PL_STR
06	SM_FORM_LCX_SPO	DB_M_RS_AUX_SM_LCX_SPO_STR
07	SM_FORM_LCX_UNL	DB_M_RS_AUX_SM_LCX_UNL_STR
08	SM_FORM_CHARGE_COM	DB_M_RS_AUX_SM_CHARCOM_STR
09	SM_FORM_LCX_OMS	DB_M_RS_AUX_SM_LCX_OMS_STR
0A	SM_FORM_LCX_TAB	DB_M_RS_AUX_SM_LCX_TAB_STR
0B	SM_FORM_LCR_SPO	DB_M_RS_AUX_SM_LCR_SPO_STR
0C	SM_FORM_RES8	DB_M_RS_AUX_SM_TEXT8_STR
0D	SM_FORM_CHAN_HWN	DB_M_RS_AUX_SM_CH_HWN_STR
0E	SM_FORM_CHAN_SPO	DB_M_RS_AUX_SM_CH_SPO_STR
0F	SM_FORM_CHAN_TO	DB_M_RS_AUX_SM_CH_TO_STR
10	SM_FORM_LINE	DB_M_RS_AUX_SM_LINE_STR
11	SM_FORM_DRIVE	DB_M_RS_AUX_SM_DR_ER_STR
12	SM_FORM_MEM	DB_M_RS_AUX_SM_STR
13	SM_FORM_IP	DB_M_RS_AUX_SM_STR
14	SM_FORM_DP_PLAUS	DB_M_TX_DP_PLAUS_ER_STR
15	SM_FORM_TEXT	DB_M_RS_AUX_SM_TEXT8_STR
16	SM_FORM_INS	LO_M_RBCA_STR
17	SM_FORM_TEXT8	DB_M_RS_AUX_SM_TEXT8_STR
18	SWU_FORM_1_BOARD	DB_M_RS_AUX_SWU_1_BD_ARY

Format	FORMAT DB_RS_	Structure
19	SWU_FORM_2_BOARD	DB_M_RS_AUX_SWU_2_BD_ARY
1A	SWU_FORM_PCG	DB_M_RS_AUX_SWU_PCG_STR
1B	SWU_FORM_DP_I	DB_M_RS_AUX_SWU_DP_I_STR
1C	SWU_FORM_MEM_I	DB_M_RS_AUX_SWU_MEM_I_STR
1D	SWU_FORM_MEM_1B	DB_M_RS_AUX_SWU_MEM_1B_STR
1E	SWU_FORM_FW_ERR	DB_M_RS_AUX_SWU_FW_ERR_STR
1F	SWU_FORM_DCL_P	DB_M_RS_AUX_SWU_DCL_P_STR
20	SWU_FORM_SIU	DB_M_RS_AUX_SWU_SIU_STR
21	SWU_FORM_1_PORT	DB_M_QF_MTS_CDC_STR
22	SWU_FORM_BOARD_DATA	DB_M_RS_AUX_BOARD_DATA_STR
23	SWU_FORM_BOARD_INIT	DB_M_RS_AUX_BOARD_INIT_STR
24	SWU_FORM_SW_ERROR	DB_M_TX_DP_PLAUS_ER_STR
25	SWU_FORM_REC	DB_M_RS_AUX_DATA_REC_ARY
26	SWU_FORM_VECO	DB_M_TX_DP_PLAUS_ER_STR
27	SM_FORM_DP	DB_M_RS_AUX_SM_STR
28	SWU_FORM_INT	DB_M_RS_AUX_SWU_INT_STR
29	SWU_FORM_INFO	DB_M_RS_AUX_SWU_INFO_STR
2A	SWU_FORM_TEXT	DB_M_MMI_MASK_IDX_RNG
2B	FORM_PROC_INTERR	DB_M_RS_AUX_PROC_INTERR_ST
2C	FORM_NCC_ALARM	DB_M_RS_AUX_NCC_DEPALA_STR
2D	FORM_NCC_UPDATE	DB_M_RS_AUX_NCC_UPDATE_STR
2E	SWU_FORM_CP_TRACE	DB_M_RS_AUX_SWU_CP_TR_STR
2F	SM_FORM_IP_PARTNER	DB_M_RS_AUX_SM_IP_STR
30	FORM_NCC_ALARM_MIRROR	not defined
31	SM_FORM_WATCHDOG	DB_M_RS_AUX_SM_WD_STR
32	SM_FORM_IOP	DB_M_RS_AUX_SM_IOP_STR
33	FORMAT_MAINTENANCE	DB_M_RS_AUX_ALARM_DATA_STR

Format	FORMAT DB_RS_	Structure
34	SWU_FORM_CP_PIN	DB_M_RS_AUX_SWU_CP_PIN_STR
35	FORM_NCC_AL_AMO	DB_M_RS_AUX_NCC_AL_AMO_STR
36	SWU_FORM_PCM	DB_M_RS_AUX_BOARD_DATA_STR
37	SWU_FORM_PCM_TOT	DB_M_RS_AUX_BOARD_DATA_STR
38	SWU_FORM_RMS_US	DB_M_RS_AUX_BOARD_DATA_STR
39	SWU_FORM_RMS_EU	DB_M_RS_AUX_BOARD_DATA_STR
3A	FORM_UNIX	DB_M_RS_AUX_SM_UNIX_STR
3B	FORM_SW_FW_LW	DB_M_RS_AUX_SW_FW_LW_STR
3C	FORM_FRU	DB_M_RS_AUX_FRU_STR
3D	FORM_AL_SUM	DB_M_RS_AUX_AL_SUM_STR
3E	FORM_STNO	DB_M_RS_AUX_STNO_STR
3F	FORM_PEN	DB_M_RS_AUX_PEN_STR
40	SWU_FORM_BOARD_TEXT	DB_M_RS_AUX_BOARD_TEXT_STR
41	FORM_REST_LEVEL	DB_M_RS_AUX_REST_LEV_STR
42	FORM_TEXT_VAR	DB_M_RS_AUX_TEXT_VAR_STR
43	FORM_BOARD_TEXT_VAR	DB_M_RS_AUX_BD_TXT_VAR_STR
44	FORM_MAINT_VAR	DB_M_RS_AUX_MAINT_STR
45	FORMAT_STACK	DB_M_RS_AUX_STACK_STR
46	FORM_INFO_ADP	DB_M_RS_AUX_INFO_ADP_STR
47	FORMAT_PCI	DB_M_RS_AUX_PCI_STR
48	FORM_CPU_LOAD	DB_M_RS_AUX_CPU_LOAD_STR
49	FORMAT_ASCII	DB_M_RS_AUX_ASCII_STR
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7.8 next level of support

"Save error message data and contact your next level of support or notify product specialist"

Error messages that suggest this action are generally software error messages.
You should find out whether a patch is available which can solve this problem.

In general, if other actions are not suggested, or if a specialist has to be consulted for the interpretation of auxiliary data, the next level up in the Service Department must be contacted, e.g. CSC -> ITSC -> Product Support.

Save all information pertaining to the error (this includes the error messages or the HISTO file dump as well as all previous operations carried out in the system, e.g. AMO-LOGBUCH) and discuss how you should proceed with the next highest level in the Service Department.

8 Highways

The following tables show the allocation of voice highways to the peripheral boards (sorted according to hardware architectures).

8.1 Atlantic hardware

600ECX

	Highway number of the system software				Highways of the shelf quarter			
					Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
LTU	1	5	8	12				
	0	32	64	96	x	x		
	1	33	65	97	x	x		
	2	34	66	98			x	x
	3	35	67	99			x	x
	16	48	80	112	x	x		
	17	49	81	113	x	x		
	18	50	82	114			x	x
	19	51	83	115			x	x
LTU	2	6	9	13				
	4	36	68	100	x	x		
	5	37	69	101	x	x		
	6	38	70	102			x	x

	7	39	71	103			x	x
	20	52	84	116	x	x		
	21	53	85	117	x	x		
	22	54	86	118			x	x
	23	55	87	119			x	x
LTU	3	7	10	14				
	8	40	72	104	x	x		
	9	41	73	105	x	x		
	10	42	74	106			x	x
	11	43	75	107			x	x
	24	56	88	120	x	x		
	25	57	89	121	x	x		
	26	58	90	122			x	x
	27	59	91	123			x	x
LTU	4	11	15					
	12	76	108		x	x		
	13	77	109		x	x		
	14	78	110				x	x
	15	79	111				x	x
	28	92	124		x	x		
	29	93	125		x	x		
	30	94	126				x	x
	31	95	127				x	x

Table 8-1 Allocation of highways to the LTU's in 600ECX

- SIU highways: 62, 63
- CONF highways: 44 to 47 and 60, 61

80CMX

HWY number of the system SW	Highways of the shelf quarter			
	Slot 1-4, 9	Slot 5-8, 10	Slot 9-12	Slot 13-16
LTU 1				
0	x	x		
1	x	x		
16	x	x		
17	x	x		
LTU 2	Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
4	x	x		
5	x	x		
6			x	x
7			x	x
20	x	x		
21	x	x		
22			x	x
23			x	x

Table 8-2 Allocation of the highways to the LTU's in 80CMX

- LTU1 (base shelf), slot 9 and 10, expansion shelf (LTU2) all slots 1-17 distributed. Slots 9 and 10 in SP300E V2.0 / R6.5 and later only.
- SIU part is connected to highways 14 and 15,
- CONF part with 12 and 13.

80CXE

HWY number of the system SW	Highways of the shelf quarter

		Slot 1-4, 9	Slot 5-8, 10	Slot 9-12	Slot 13-16
LTU 1					
	0	x	x		
	1	x	x		
	16	x	x		
	17	x	x		
LTU 2		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
	4	x	x		
	5	x	x		
	6			x	x
	7			x	x
	20	x	x		
	21	x	x		
	22			x	x
	23			x	x
LTU 3		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
	8	x	x		
	9	x	x		
	10			x	x
	11			x	x
	24	x	x		
	25	x	x		
	26			x	x
	27			x	x
LTU 4		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16

	12	x	x		
	13	x	x		
	14			x	x
	15			x	x
	28	x	x		
	29	x	x		
	30			x	x
	31			x	x
LTU 5		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
	32	x	x		
	33	x	x		
	34			x	x
	35			x	x
	48	x	x		
	49	x	x		
	50			x	x
	51			x	x
LTU 6		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
	36	x	x		
	37	x	x		
	38			x	x
	39			x	x
	52	x	x		
	53	x	x		
	54			x	x
	55			x	x

		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
LTU 7					
	40	x	x		
	41	x	x		
	42			x	x
	43			x	x
	56	x	x		
	57	x	x		
	58			x	x
	59			x	x

Table 8-3 Allocation of the highways to the LTU's in 80CXE

- LTU1 (base shelf) slot 9 and 10, expansion shelf (LTU2-7) all slots 1-17 distributed. (LTU5-7 only for extended use of LTU-shelf)
  slots 9 and 10 in SP300E V2.0 / R6.5 and later only.
- SIU part is connected to highways 62 and 63,
- CONF part with 44 - 47

40CMX

	HWY number of the system SW	Highways Slot 1-4,
LTU 1		
	0	x
	1	x
	16	x
	17	x

Table 8-4 Allocation of the highways to the LTU's in 40CMX

- With the DSC80 or DSCX board is the SIU part connected to the highways 14 and 15, the CONF part with 12 and 13.

8.2 Extended compact hardware 600

600EC

	Highway number of the system software				Highways of the shelf quarter			
					Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
LTU	1	**7** (without 8)	**7** (with 8)	**8** (with 7)				
	0	32	32		x			
	1	33	33			x		
	2	34		34			x	
	3	35		35				x
	16	50		50	x			
	17	51		51		x		
	18	48	48				x	
	19	49	49					x
LTU	2	5						
	4	36			x			
	5	37				x		
	6	38					x	
	7	39						x
	20	52			x			
	21	53				x		
	22	54					x	
	23	55						x
LTU	3	6						
	8	40			x			
	9	41				x		

	10	42				x	
	11	43					x
	24	56		x			
	25	57			x		
	26	58				x	
	27	59					x
LTU	4						
	12			x			
	13				x		
	14					x	
	15						x
	28			x			
	29				x		
	30					x	
	31						x

Table 8-5 Allocation of the highways to the LTU's in 600EC

- CONF highways are 44 to 47, 60 and 61
- SIU highways are 62 and 63

8.3 Extended compact hardware 3000

3000EC (LTU's in 3000EC, LTG with 4 LTU)

	Highway number of the system software	Highways of the shelf quarter			
		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
LTU 1					
	0	x			
	1		x		

	2			x	
	3				x
	16	x			
	17		x		
	18			x	
	19				x
LTU 2					
	4	x			
	5		x		
	6			x	
	7				x
	20	x			
	21		x		
	22			x	
	23				x
LTU 3					
	8	x			
	9		x		
	10			x	
	11				x
	24	x			
	25		x		
	26			x	
	27				x
LTU 4					
	12	x			
	13		x		
	14			x	

15						x
28		x				
29			x			
30				x		
31						x

Table 8-6 Allocation of the GSN highways to the LTU's in 3000EC, LTG with 4 LTU

- CONF highways are 46, 47
- SIU highways are 62 and 63

3000EC (CSN in 3000EC, LTG with 4 LTU)

LTG 1 to 16	GSN highway number of the system software	CSN board number					
	36, 37, 52, 53	1					
	38, 39, 54, 55		2				
	40, 41, 56, 57			3			
	42, 43, 58, 59				4		
	44, 45, 60, 61					5	
	32, 33, 48, 49						6
	34, 35, 50, 51						7

Table 8-7 Allocation of the GSN highways to the CSN in 3000EC, LTG with 4LTU

3000EC (LTU's in 3000EC, LTG with 5 LTU)

LTU 1	Highway number of the system software	Highways of the shelf quarter			
		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
	0	x			
	1		x		

	2			x	
	3				x
	16	x			
	17		x		
	18			x	
	19				x
LTU 2					
	4	x			
	5		x		
	6			x	
	7				x
	20	x			
	21		x		
	22			x	
	23				x
LTU 3					
	8	x			
	9		x		
	10			x	
	11				x
	24	x			
	25		x		
	26			x	
	27				x
LTU 4					
	12	x			
	13		x		
	14			x	

	15				x
	28	x			
	29		x		
	30			x	
	31				x
LTU 5					
	32	x			
	33		x		
	34			x	
	35				x
Continuation: see below					
Continuation					
LTU 5					
	50	x			
	51		x		
	48			x	
	49				x

Table 8-8 Allocation of the GSN highways to the LTU's in 3000EC, LTG with 5 LTU

- SIU highways are 62 and 63,
- CONF highways are 46,47

3000EC (CSN in 3000EC, LTG with 5 LTU)

	GSN highway number of the system software	CSN board number
LTG 1 to 16		| | | |
	36, 37, 52, 53	1
	38, 39, 54, 55	2
	40, 41, 56, 57	3

	42, 43, 58, 59	4
	44, 45, 60, 61	5

Table 8-9 Allocation of the GSN highways to the CSN in 3000EC, LTG with 5LTU

8.4 Cabinet design 600 compact

600C

	Highway number of the system software	Highways of the shelf quarter			
		Slot 1-4, 17	Slot 5-8	Slot 9-12	Slot 13-16
LTU 1					
	0	x			
	1		x		
	2			x	
	3				x
	16	x			
	17		x		
	18			x	
	19				x
LTU 2					
	4	x			
	5		x		
	6			x	
	7				x
	20	x			
	21		x		
	22			x	
	23				x

LTU 3					
	8	x			
	9		x		
	10			x	
	11				x
	24	x			
	25		x		
	26			x	
	27				x
LTU 4					
	12	x			
	13		x		
	30			x	
	31				x

Table 8-10 Allocation of the GSN highways to the LTU's in 600C

- SIU highways are 14 and 15,
- CONF highways are 30, 31

8.5 Cabinet design 600

600

Highway number of the system software	Highways of the shelf half	
	Slot 1-10	Slot 11-20
LTU 1		
0	x	
1		x
16	x	
17		x

LTU 2			
	2	x	
	3		x
	18	x	
	19		x
LTU 3			
	4	x	
	5		x
	20	x	
	21		x
LTU 4			
	6	x	
	7		x
	22	x	
	23		x
LTU 5			
	8	x	
	9		x
	24	x	
	25		x
LTU 6			
	10	x	
	11		x
	26	x	
	27		x

Table 8-11 Allocation of the highways to the LTU's in 600

- SIU highways are 14 and 30,
- CONF highways are 12, 13 and 28, 29.

9 Tables

9.1 ASCII table

Hex	Dez.	ASCII	...	Hex	Dez.	ASCII
00	00	NUL		40	64	@
01	01	SOH		41	65	A
02	02	STX		42	66	B
03	03	ETX		43	67	C
04	04	EOT		44	68	D
05	05	ENQ		45	69	E
06	06	ACK		46	70	F
07	07	BEL		47	71	G
08	08	BS		48	72	H
09	09	HT		49	73	I
0A	10	LF		4A	74	J
0B	11	VT		4B	75	K
0C	12	FF		4C	76	L
0D	13	CR		4D	77	M
0E	14	SO		4E	78	N
0F	15	SI		4F	79	O
10	16	DLE		50	80	P
11	17	DC1		51	81	Q

12	18	DC2	52	82	R
13	19	DC3	53	83	S
14	20	DC4	54	84	T
15	21	NAK	55	85	U
16	22	SYN	56	86	V
17	23	ETB	57	87	W
18	24	CAN	58	88	X
19	25	EM	59	89	Y
1A	26	SUB	5A	90	Z
1B	27	ESC	5B	91	[
1C	28	FS	5C	92	\
1D	29	GS	5D	93	]
1E	30	RS	5E	94	^
1F	31	US	5F	95	_
20	32	SP	60	96	`
21	33	!	61	97	a
22	34	"	62	98	b
23	35	#	63	99	c
24	36	$	64	100	d
25	37	%	65	101	e
26	38	&	66	102	f
27	39	'	67	103	g
28	40	(	68	104	h
29	41	)	69	105	i
2A	42	*	6A	106	j
2B	43	+	6B	107	k
2C	44	,	6C	108	l
2D	45	-	6D	109	m

2E	46	.	6E	110	n
2F	47	/	6F	111	o
30	48	0	70	112	p
31	49	1	71	113	q
32	50	2	72	114	r
33	51	3	73	115	s
34	52	4	74	116	t
35	53	5	75	117	u
36	54	6	76	118	v
37	55	7	77	119	w
38	56	8	78	120	x
39	57	9	79	121	y
3A	58	:	7A	122	z
3B	59	;	7B	123	{
3C	60	<	7C	124	|
3D	61	=	7D	125	}
3E	62	>	7E	126	~
3F	63	?	7F	127	DEL

Table 9-1 ASCII character set (English)

9.2 EBCDIC table

This table is required when performing a trace on an ACL interface for example.

hex	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x	NUL	SOH	STX	ETX	PF	HAT	LC	DEL			SMM	VT	FF	CR	SO	SI
1x	DLE	DC1	DC2	DC3	RES	NL	BS	HL	CAN	EM	CC	CU1	IFS	IGS	IRS	IUS
2x	DS	SOS	FS		BYP	LF	ETB	ESC			SMM	CU2		ENQ	ACK	BEL
3x			SYN		PN	RS	UC	EOT				CU3	DC4	NAK		SUB
4x	SP										¢	.	<	(	+	
5x	&										!	$	*	)	;	¬
6x	-	/									|	%	_	>	?	
7x										`	:	#	@	´	=	"
8x		a	b	c	d	e	f	g	h	i						
9x		j	k	l	m	n	o	p	q	r						
Ax		~	s	t	u	v	w	x	y	z				[		
Bx														]		
Cx	{	A	B	C	D	E	F	G	H	I						
Dx	}	J	K	L	M	N	O	P	Q	R						
Ex	\		S	T	U	V	W	X	Y	Z						
Fx	0	1	2	3	4	5	6	7	8	9						

9.3 Hex binary table

You can use the following table to evaluate the DEV-CLASS line or ALARM MIRROR message.

Hex	Binary	..	Hex	Binary	..	Hex	Binary	..	Hex	Binary
0	0000		4	0100		8	1000		C	1100
1	0001		5	0101		9	1001		D	1101
2	0010		6	0110		A	1010		E	1110
3	0011		7	0111		B	1011		F	1111

9.4 HW and SW assignment IM/US

HW configurations

Sales name	Internal development name		Processor Type	SW Versions	
	IM	**US**		**IM SP300...**	**US Release**
Mono architectures					
-	Model 30	180CN	DP3DM	as of V3.2 E-V1.0 and earlier	as of R6.1 R6.4 and earlier
			DP4PL	E-V2.0	R6.5
-	Model 80	600EC	DP3DM	V3.2	R6.1
			DP486	as of V3.3 E-V1.0 and earlier	as of R6.2 R6.5 and earlier
310E 310H	-	40 CMX	DSC80	E-V3.0 H-V1.0	-
-	Model 30E	80CM	DM80E	V3.3	R6.2
			DM3L	V3.4	R6.3
330E 330H	Model 30EP (SIPAC)	80CMX DSC / 80CXE	DSC80	E-V2.0	R6.5
		-	D.C.	-	R6.6 H-V1.0
330E	-	80CXE W (Extended LTU)	DSCX-X		-
330E	-	80CXE Large	DSCX-X		-
330E 330H	Model 30EX	80CMX Standard Performance	DM3L	V3.4	R6.3

			DM4L	as of E-V1.0 E-V2.0 and earlier	as of R6.4 R6.5 and earlier
			DPC5	E-V3.0 H-V1.0	R6.6 H-V1.0
350E	Model 80EX	600ECX Mono Standard	DM3L-X	as of V3.4 E-V1.0 and earlier	as of R6.3 R6.4 and earlier
			DM4L-X	as of E-V1.0 E-V2.0 and earlier	as of R6.4 R6.5 and earlier
Dual architectures					
350E	-	600ECX Standard	DM4L-X	E-V2.0 and earlier	-
350E	-	600ECX Large	DM4L-X	E-V2.0 and earlier	-
350E 350H	Model 80 EX	600ECX Standard	DPC5-X	E-V3.0 H-V1.0	R6.6 H-V1.0
350E 350H	Model 80 EP	600ECX Large	DPC5-X	E-V3.0 H-V1.0	R6.6 H-V1.0

SW versions

	IM	**US**
SP300-V3.1/R6.0	SP300-V3.1	Release 9006.0
SP300-V3.2/R6.1	SP300-V3.2	Release 9006.1
SP300-V3.3/R6.2	SP300-V3.3	Release 9006.2
SP300-V3.4/R6.3	SP300-V3.4	Release 9006.3
SP300E-V1.0/R6.4	SP300E-V1.0	Release 9006.4
SP300E-V2.0/R6.5	SP300E-V2.0	Release 9006.5
(SP300E-V3.0/R6.6) SP300H-V1.0	*(SP300E-V3.0)* SP300H-V1.0 IM	*(Release 9006.6)* *(SP300E-V6.6)* SP300H-V1.0 US

(SP300E-V3.1) SP300H-V1.0 UK	*(SP300E-V3.1)* SP300H-V1.0 UK	-

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