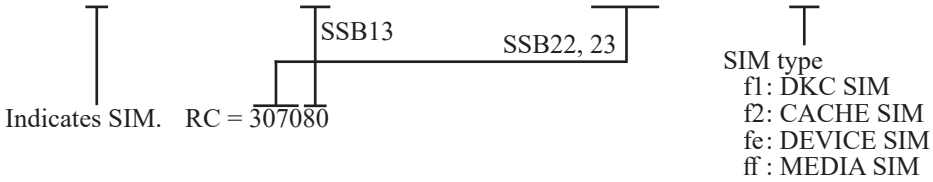
# *SIM RC SECTION*

# Contents

# 1. Reference Code

A six-byte reference code (RC) is provided for a SIM (service information message) to identify an error and error section. The following shows 32 SIM bytes and reference codes.

| Byte | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIM SSB | 00 | 90 | 10 | 00 | 00 | 00 | 8f | e0 | 44 | 10 | 00 | 04 | 00 | 80 | 04 | 0c | 69 | 00 | 00 | 00 | 00 | 02 | 30 | 70 | 05 | 10 | 42 | c0 | f1 | 00 | 02 | 00 |




There are the following error levels of SIM reference codes.
If errors occur in multiple parts, see “Maintenance priority flow” (TRBL02-05-10) to determine the order in which to remove errors from the failure parts regardless of the error levels. If different SIMs for the same part are reported at the same time, first recover the SIM with a smaller.

| Error Level | Description |
|---|---|
| Acute | All operations of the storage system are stopped. |
| Serious | Operations of the part that has a failure are stopped. |
| Moderate | Partial failure |
| Service | Minor failure |

Notice for z/Linux :

If the host is z/OS, SIM-RC is displayed by 32 bytes on the console message, but if the host is z/Linux, SIM-RC is displayed by 4 bytes as follows.

SIM-RC = wwxxyyzz
- ww : Byte 22 on SIM SSB
- xx : Byte 23 on SIM SSB
- yy : Byte 11 on SIM SSB
- zz : Byte 12 on SIM SSB

E.g.) : The SIM displayed on the console.
SIM-RC = 30700400
- 30 : Byte 22
- 70 : Byte 23
- 04 : Byte 11
- 00 : Byte 12

Therefore, on the z/Linux configuration, if the SIM-RC is displayed on the console message, refer the first 2 bytes (Byte 22 and Byte 23) and confirm the SIM on SVP, then estimate the error site.

## 2. Reference Codes

SIMs are roughly classified into two types: SIMs detected by the processor and SIMs detected by the SVP.

SIM report specifications are shown below.

1. Time in SIM Log is basically “at the time of generating the phenomenon concerned”.

2. When satisfying the following conditions, SIM reports to the host.
   - SIM which is defined as “Yes” in the “Host Report” column in Table 2.1 and 2.2
   - SVP is in “View Mode”, and not in the “Complete” status.
   - The condition is basically that one hour elapses after device IMPL and 16K I/O is received after IMPL, but there is a SIM-RC which exceptionally reports regardless of IMPL time and the number of I/O (the target SIM-RC is noted in Table 2.1 and 2.2).

3. The access opportunities to perform the host report are as shown below:
   - Device SIM (Byte 28 = x‘fe’) reports as statistic information basically at the time of accessing the device of the RAID Group concerned.
   - SIM other than the device SIM reports even if it accesses any device of the storage system.
   - However, there is the one such as “DKC system (common) SIM” in the device SIM, and it performs the host report even if it accesses any device of the storage system (the target SIM-RC is noted in Table 2.1 and 2.2).

4. You can refer to SIM LOG in the Information window of SVP from immediately after SIM is created. Timing of the automatic report is performed at this time.

5. When the automatic report is completed, a SIM to be automatically completed exists (The target SIM-RC is noted in Table 2.1 and 2.2).

6. If it does not become “Complete” status even after eight hours have passed from the first host report, a re-host report (repeat host report) is performed. The re-host report is up to twice, which means the report is performed three times maximum including the first host report.

7. SIM which is shown as “No” in the “Host Report” column is not reported to SNMP and not displayed in Storage Navigator. The following SIMs are exceptions.
   SIM-RC: 47fx, 4821, ac90
   SIM which is shown as “Yes” in the “Host Report” column is reported to SNMP and displayed in Storage Navigator if it is reported to SVP.

8. SIM which is reported to SVP is reported to T.S.D.

## 2.1 SIM Reference Codes Detected by the Processor

For the storage system with Automatic Log Dump Collection enabled, dumps are automatically collected when a SIM that meets both the following conditions is reported.

- The error level is Moderate, Serious, or Acute.
- The SIM is reported to maintenance personnel. (The reference codes with "No service report" in Remarks in the list are not targeted for the automatic dump collection.)

You can include or exclude specified SIMs from the targets for the automatic dump collection (see "Setting Automatic Log Dump Collection" (SVP02-26-10)).

NOTE : • When "x:" is shown in the Remarks column and a 2-digit number is shown on the reference page, read only the last digit.
• When "xx" or "xy" is shown in the Remarks column, read two digits shown in each format on the reference page.

Table 2-1 SIM Reference Codes Detected by the Processor

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Port error | Channel port blocking | 2120xx | f1 | Moderate | Yes | xx: Port# (8) (45) |
| | AL_PA value conflict | 2190xx | f1 | Service | No | xx: CHB# + Port# in CHB (8) |
| | Link failure1 (31) | 2193xx | f1 | Serious | Yes | xx: CHB# + Port# in CHB (8) |
| | Link failure2 (30) | 2194xx | f1 | Serious | Yes | xx: CHB# + Port# in CHB (8) |
| | HTP hard error | 21bxyy | f1 | Moderate | Yes | x: CTL# (3)<br>yy: Port Path# (9) |
| | HTP blocking | 21a3xx | f1 | Moderate | Yes | xx: CHB# + Port# in CHB (8) |
| | SFP wrong type | 21a8xx | f1 | Moderate | No | xx: CHB# + Port# in CHB (8) |
| | SFP TxFault | 21aaxx | f1 | Moderate | No | xx: CHB# + Port# in CHB (8) |
| | External storage system connection path blocking (29) | 21d0xx | f1 | Moderate | Yes | xx: CHB# + Port# in CHB (8) |
| | External storage system connection path restore (29) | 21d1xx | f1 | Service | No | xx: CHB# + Port# in CHB (8) |
| | Threshold over by external storage system connection path response time-out (29) | 21d2xx | f1 | Service | Yes | xx: CHB# + Port# in CHB (8) |

(To be continued)

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| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Processor error | CHK1A threshold over | 3070xy | f1 | Service | No | xy: MP# (5) |
| | CHK1B threshold over | 3071xy | f1 | Service | No | xy: MP# (5) |
| | CHK3 threshold over | 3072xy | f1 | Service | No | xy: MP# (5) |
| | Processor blocking | 3073xy | f1 | Moderate | Yes | xy: MP# (5) |
| | CFM blocking | 3075xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | Incorrect SUM value of CFM | 3076xy | f1 | Service | No | xy: CTL# + CFM# in CTL (75) |
| | Processor memory temporary error | 3077xy | f1 | Service (*a) | No | xy: MP# (5) |
| | BFM error | 3078xx | f1 | Serious | Yes | xx: CTL# (3) |
| | WCHK1 Dump Received | 3080xy | f1 | Moderate | No | xy: MP# (5) |
| | PS OFF impossible | 388f00 | f1 | Moderate | No | |
| | PS OFF impossible (Device reserved) | 389f00 | f1 | Moderate | No | |
| | Undefined Package is mounted | 3990xy | f1 | Moderate | No | xy: MP# (5) |
| | V-R or serial number is inconsistent | 3991xy | f1 | Moderate | No | xy: MP# (5) |
| | Replace failed | 3993xy | f1 | Moderate | No | xy: MP# (5) |
| | MP patrol check error | 39b0xy | f1 | Service | No | xy: MP# (5) |
| | Backup/restore SM Information failed | 6100xx | f1 | Moderate | No | xx = 00: Backup failed (LAN error)<br>01: Backup failed (Micro factor)<br>02: Recovery failed (TRBL03-25-10) |
| | LDEV Blockade (Effect of micro-program error) | 3a0xyy | f1 | Moderate | Yes | x: CU# (13)<br>yy: LDEV# |

*a: This SIM is automatically completed after automatic report completion.

(To be continued)

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| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| CHB/DKB/ HIE/ISW/ X-path error | CHB blocking | 2130xx | f1 | Moderate | Yes | xx: CHB# (6) |
| | DKB blocking | 2140xx | f1 | Moderate | Yes | xx: DKB# (7) |
| | HIE blocking | 2160xx | f1 | Moderate | Yes | xx: HIE# (60) |
| | ISW blocking | 2161xx | f1 | Moderate | Yes | xx: ISW# (54) |
| | X-path blocking | 2162xx | f1 | Moderate | Yes | xx: X-path# (61) |
| | HIE warning | 2163xx | f1 | Moderate | Yes | xx: HIE# (60) |
| | X-path warning | 2164xx | f1 | Moderate | Yes | xx: X-path# (61) |
| | CHB/DKB/HIE Type disagreement | 3c9500 | f1 | Moderate | No | See (TRBL03-22-10) |
| | No CHB mounted | 3c9600 | f1 | Moderate | No | |
| | iSCSI micro-program exchange warning | 3c97xx | f1 | Moderate | Yes | xx: CHB# (6) See (TRBL05-1390). |
| | Encryption key setting abnormality | 6620xx | f1 | Serious | Yes | xx: DKB# (7) (64) |
| | SAS CTL blocking | cf10xx | f1 | Moderate | Yes | xx: SAS CTL# (10) |
| | SAS PORT (WideLink) is partially blocked (44) | cf11xx | f1 | Service | No | xx: SAS Port# (10) |
| | SAS PORT blocked (44) | cf12xx | f1 | Moderate | Yes | xx: SAS Port# (10) |
| | SAS CTL Error Detection | cf13xx | f1 | Serious | Yes | xx: SAS CTL# (10) |
| | PSW blockade | cf20xx | f1 | Moderate | Yes | xx: PSW# (10) |
| | NVMe port blockade | cf22xx | f1 | Moderate | Yes | xx: NVMe Port# (10) |
| | CTL blocking | cf88xx | f1 | Moderate | Yes | xx: CTL# (3) |

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| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Cache error | Pinned slot | ff4xyy | f2 | Moderate | No | x: CU# (13)<br>yy: LDEV# |
| | Cache Package Blockade Processing end | ffc30x | f2 | Service | Yes | x: CTL# (3) |
| | CM/CMA patrol check error | ffcc0x | f2 | Service | No | x: CTL# (3) |
| | Area is volatilized | ffcd0x | f2 | Service | No | x: Cluster# (1) |
| | Package is volatilized | ffce0x | f2 | Service | No | x: CTL# (3) |
| | Module group is volatilized | ffcfyx | f2 | Service | No | x: CTL# (3)<br>y: CMG# (12) |
| | Cache correctable error | fff0xy | f2 | Service | No | x: CTL# (3)<br>y: Failed Part# (4) |
| | Cache uncorrectable error | fffbxy | f2 | Moderate | Yes | x: CTL# (3)<br>y: Failed Part# (4) |
| | Package blocking | fff30x | f2 | Moderate | Yes | x: CTL# (3) |
| | Area blocking | fff40x | f2 | Serious | Yes | See (TRBL03-18-10) |
| | Both area failed | fff50x | f2 | Moderate | No | x: CTL# (3) |
| | Replace failed | fff90x | f2 | Serious | No | x: 0 = Side A, 1 = Side B |
| | No CHB mounted | fe04xx | f2 | Serious | Yes | |
| | Definition/Installation mismatch | ffe800 | f1 | Serious | No | See (TRBL03-15-10) |
| | Cache battery is being charged | fe0000 | f2 | Serious | Yes | |
| | End of Cache Write Through | fe0100 | f2 | Service | No | |
| | Start of Cache Write Through | fe0200 | f2 | Moderate | Yes | |
| | CFM mounting capacity shortage | fe03xx | f2 | Serious | No | x: CTL# (3)<br>See (TRBL03-55-10) |

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| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Shared memory error | Replace failed | ffe40x | f1 | Serious | No | x: CTL# |
| | Configuration information compare error (19) | ffe600 | f1 | Acute | No | |
| | Rebooted with volatilization after an instantaneous down | ffe700 | f1 | Serious | Yes | |
| | Recovery of area blocked temporarily was completed | ffea0x | f1 | Service | Yes | x: Cluster# (1) |
| | Area temporary blocking (18) | ffee0x | f1 | Service | Yes | x: Cluster# (1) |
| | Rebooted without volatilization after an instantaneous down | ffef00 | f1 | Service | No | |

(To be continued)

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| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Drive error (normal R/W) | Collection Copy/Copyback disabled(drive replace) (63) | 468xxx<br>469xxx | fe | Moderate | No | xxx: DB#/RDEV# (11) |
| | Drive Copy/Correction Copy delay (76) | 46axxx<br>46bxxx | fe | Moderate | Yes | xxx: DB#/RDEV# (11) |
| | Drive port temporary error (Drive path: Boundary 0) | db0xxx<br>db1xxx | fe | Service (17) | No | xxx: DB#/RDEV# (11) |
| | Drive port temporary error (Drive path: Boundary 1) | db2xxx<br>db3xxx | fe | Service (17) | No | xxx: DB#/RDEV# (11) |
| | Drive temporary error (56) | efaxxx<br>efbxxx | fe | Service (17) | No | xxx: DB#/RDEV# (11) |
| | Drive media error (56) | 434xxx<br>435xxx | ff | Service (17) | No | xxx: DB#/RDEV# (11) |
| | Drive port blockade (Drive path: Boundary 0) | db4xxx<br>db5xxx | fe | Moderate (17) | Yes | xxx: DB#/RDEV# (11) |
| | Drive port blockade (Drive path: Boundary 1) | db6xxx<br>db7xxx | fe | Moderate (17) | Yes | xxx: DB#/RDEV# (11) |
| | LDEV blockade (Drive path: Boundary 0/Effect of Drive port blockade) (16) | db8xxx<br>db9xxx | fe | Serious | Yes (*b) | xxx: DB#/RDEV# (11) |
| | LDEV blockade (Drive path: Boundary 1/Effect of Drive port blockade) (16) | dbaxxx<br>dbbxxx | fe | Serious | Yes (*b) | xxx: DB#/RDEV# (11) |
| | Drive Link Rate Abnormality (Drive path: Boundary 0) | dbcxxx<br>dbdxxx | fe | Service | Yes | xxx: DB#/RDEV# (11) |
| | Drive Link Rate Abnormality (Drive path: Boundary 1) | dbexxx<br>dbfxxx | fe | Service | Yes | xxx: DB#/RDEV# (11) |
| | Response late Drive | dfexxx<br>dffxxx | fe | Service | No | xxx: DB#/RDEV# (11) |
| | Drive blockade (drive) (with redundancy) | eb0xxx<br>eb1xxx | fe | Serious | Yes | xxx: DB#/RDEV# (11) |
| | Drive blockade (drive) (without redundancy) | eb2xxx<br>eb3xxx | fe | Serious | Yes | xxx: DB#/RDEV# (11) |
| | Drive blockade (Effect of Dynamic sparing normal end) | eb4xxx<br>eb5xxx | fe | Service | Yes (*b) | xxx: DB#/RDEV# (11) |
| | LDEV blockade (Effect of drive blockade) (16) | ef8xxx<br>ef9xxx | fe | Serious | Yes (*b) | xxx: DB#/RDEV# (11) |
| | Correction access occurred | eb6xxx<br>eb7xxx | fe | Serious | Yes | xxx: DB#/RDEV# (11) |

*b: This device SIM performs the host report at the opportunities to access the DKC system (common) SIM and the optional device.

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Drive error (normal R/W) | Reboot stopped due to much write pending data | eb8xxx<br>eb9xxx | fe | Service | No | xxx: DB#/RDEV# (11) |
| | Drive blockade (media) (with redundancy) | 43axxx<br>43bxxx | ff | Serious | Yes | xxx: DB#/RDEV# (11) |
| | Drive blockade (media) (without redundancy) | 43cxxx<br>43dxxx | ff | Serious | Yes | xxx: DB#/RDEV# (11) |
| | Correction copy start (20) | 4b6xxx<br>4b7xxx | fe | Service | Yes (*b) | xxx: DB#/RDEV# (11) |
| | Correction copy normal end (20) | 4b8xxx<br>4b9xxx | fe | Service | Yes (*a) (*b) | xxx: DB#/RDEV# (11) (Source side drive) |
| | Correction copy abnormal end (20) | 4baxxx<br>4bbxxx | fe | Serious | Yes (*b) | xxx: DB#/RDEV# (11) (Source side drive) |
| | Correction copy discontinued (20) | 4bcxxx<br>4bdxxx | fe | Service | No | xxx: DB#/RDEV# (11) (Source side drive) |
| | Correction copy warning end (20) (With blockade LDEV or some error) | 4bexxx<br>4bfxxx | fe | Service | Yes (*b) | xxx: DB#/RDEV# (11) (Source side drive) |
| | Dynamic sparing start (20) (Drive copy) | 4c6xxx<br>4c7xxx | fe | Service | Yes | xxx: DB#/RDEV# (11) (Source side drive) |
| | Dynamic sparing normal end (Drive copy) (20) | 4c8xxx<br>4c9xxx | fe | Service | Yes (*a) | xxx: DB#/RDEV# (11) (Source side drive) |
| | Dynamic sparing abnormal end (Drive copy) (20) | 4caxxx<br>4cbxxx | fe | Moderate | Yes | xxx: DB#/RDEV# (11) (Source side drive) |
| | Dynamic sparing discontinued (Drive copy) (20) | 4ccxxx<br>4cdxxx | fe | Service | No | xxx: DB#/RDEV# (11) (Source side drive) |
| | Dynamic sparing warning end (With blockade LDEV or some error) (Drive copy) (20) | 4cexxx<br>4cfxxx | fe | Service | Yes | xxx: DB#/RDEV# (11) (Source side drive) |
| | Pinned slot (72) | ef4xyy | fe | Moderate | No | x: CU# (13)<br>yy: LDEV# |
| | Flash module drive initialization failed (58) | 4c4xxx<br>4c5xxx | fe | Moderate | Yes | xxx: DB#/RDEV# (11) |

*a: This SIM is automatically completed after automatic report completion.

*b: This device SIM performs the host report at the opportunities to access the DKC system (common) SIM and the optional device.

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Drive error (ORM) | Drive temporary error (56) | 500xxx<br>501xxx | fe | Service | No | xxx: DB#/RDEV# (11)<br>(Source side drive) |
| | Drive media error | 502xxx<br>503xxx | ff | Service | No | xxx: DB#/RDEV# (11)<br>(Source side drive) |
| Flash drive replacement recommend-ation | Flash drive End of life (48) | 50axxx<br>50bxxx | fe | Service | Yes | xxx: DB#/RDEV# (11) |
| Flash module drive replacement recommend-ation | Flash module drive End of life (48) | 50cxxx | fe | Service | Yes | xxx: DB#/RDEV# (11) |
| Flash module drive error | Flash module drive battery warning | 50dxxx | fe | Service | Yes | xxx: DB#/RDEV# (11) |
| PDEV Erase | PDEV Erase Start | 4d6xxx<br>4d7xxx | fe | Service | No (*a) | xxx: DB#/RDEV# (11) |
| | PDEV Erase Normal End | 4d8xxx<br>4d9xxx | fe | Service | No (*a) | xxx: DB#/RDEV# (11) |
| | PDEV Erase Abnormal End (57) | 4daxxx<br>4dbxxx | fe | Service | No (*a) | xxx: DB#/RDEV# (11) |
| External device error | External storage system connection device blockade (29) | efd000 | fe | Serious | Yes | |
| | Abnormal end of Write processing in External storage system (73) | ef5xyy | fe | Moderate | No | x: CU# (13)<br>yy: LDEV# |
| | Abnormal end of Read processing in External storage system | ff5xyy | fe | Moderate | No | x: CU# (13)<br>yy: LDEV# |
| Cache Condition | Cache Write Pending ratio is over 65% | 491000 | f1 | Service | No | (15) |
| Format | Format complete | 4100xx | f1 | Service | No (*a) | xx =<br>00: Normal end (36)<br>01: Abnormal end<br>02: Partial abnormal end |
| | Quick Format finish | 410100 | f1 | Service | No (*a) | |

*a: This SIM is automatically completed after automatic report completion.

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| SVP interface error | Ethernet error for SVP | 1400x0 | f1 | Moderate | Yes (*e) | x: CTL# (3) |
| | SIM transfer failure to SVP | 1401x0 | f1 | Serious | Yes (*e) | x: CTL# (3) |
| Audit Log | Audit Log lost | 180000 | f1 | Moderate | Yes | |
| Power error | DB Power off | ac50xx | f1 | Moderate | Yes | xx: DB# (49) |
| | DB power recovered | ac51xx | f1 | Service | Yes | xx: DB# (49) |
| | DKC was set to power error mode | ac6000 | f1 | Moderate | No (*f) | |
| | DKC was released from power error mode | ac6100 | f1 | Service | No (*f) | |
| | When DKC was set to power error mode, Urgent Destaging start succeeded | ac6200 | f1 | Service | No (*f) | |
| | When DKC was set to power error mode, Urgent Destaging start failed. | ac6300 | f1 | Moderate | No (*f) | |
| Expander Micro Exchange | Expander Micro Exchange failed | 4a80xx | f1 | Moderate | No | xx: DB# (49) |
| CUDG error | CUDG detected error | 760000 | f1 | Moderate | No | See SSB Code “3306”<br>NOTE: When the SVP version is less than 90-02-01/00, see (DIAG04-10) to identify failed parts related to the SSB code “3306”. |
| License key failure | License key has expired | 7ff7xx | f1 | Moderate | Yes | (62)<br>See (TRBL03-41-10) |
| | Allowed capacity was exceeded | 7ff8xx | f1 | Moderate | Yes | (62)<br>See (TRBL03-42-10) |
| | Program Product was invalidated due to expiration of premise Program Product | 7ff9xx | f1 | Moderate | Yes | (62)<br>See (TRBL03-43-10) |

*e: This SIM is not reported to SVP.

*f: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

Table 2-2 SIM Reference Codes Detected by the Processor for TrueCopy for Mainframe/ TrueCopy

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | SIM LOG display (SVP) (*b) | Remarks |
|---|---|---|---|---|---|---|---|
| Pair volume status error | TCMF/TC started the initial copy or out of sync for this volume | d00xyy | fe | Service | Yes (24) (*a) | No | x: CU# (13)<br>yy: LDEV# |
| | TCMF/TC completed the initial copy for this volume | d01xyy | fe | Service | Yes (24) (*a) | No | x: CU# (13)<br>yy: LDEV# |
| | TCMF/TC for this volume was deleted (Operation from an SVP/ Web Console or a host processor) | d02xyy | fe | Service | Yes (24) (*a) | No | x: CU# (13)<br>yy: LDEV# |
| | TCMF completed the Create pair (No copy suspend) | d06xyy | fe | Service | Yes (24) | No | x: CU# (13)<br>yy: LDEV# |
| | Remote Copy pair status change (MCU Command) | d1zxyy | fe | Service | Yes (24) (*a) | No | x: CU# (13)<br>yy: LDEV#<br>z: (22) |
| | TCMF/TC for this volume was suspended (Due to an unrecoverable failure on the remote copy connections) | d40xyy | fe | Serious | Yes (24) (*a) (*c) | Yes | x: CU# (13)<br>yy: LDEV# |

*a: This SIM performs the host report even though it is less than one hour after IMPL or the number of I/O is less than 16,000 I/O.

*b: In the case of "Yes", SIM LOG will be displayed in the SVP.
In the case of "No", SIM LOG will not be displayed in the SVP and reported to T.S.D. But, when SIM LOG failed in a host report, it will be displayed in the SVP and Storage Navigator, reported to T.S.D. and SNMP.

*c: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | SIM LOG display (SVP) (*b) | Remarks |
|---|---|---|---|---|---|---|---|
| Pair volume status error | TCMF/TC for this volume was suspended (Due to an unrecoverable failure on the P-VOL or the remote copy connections) | d41xyy | fe | Serious | Yes (24) (*a) (*c) | Yes | x: CU# (13)<br>yy: LDEV# |
| | TCMF/TC for this volume was suspended (Due to an unrecoverable failure on the S-VOL) | d42xyy | fe | Serious | Yes (24) (*a) (*c) | Yes | x: CU# (13)<br>yy: LDEV# |
| | TCMF for this volume was suspended (Caused by DFW to the S-VOL was prohibited) | d43xyy | fe | Serious | Yes (24) | Yes | x: CU# (13)<br>yy: LDEV# |
| | TCMF/TC for this volume was suspended (Due to an internal error condition detected by the RCU) | d44xyy | fe | Serious | Yes (24) (*a) (*c) | Yes | x: CU# (13)<br>yy: LDEV# |
| | TCMF/TC for this volume was suspended (Caused by Delete pair operation was issued to the S-VOL) | d45xyy | fe | Serious | Yes (24) (*a) (*c) | Yes | x: CU# (13)<br>yy: LDEV# |
| | The S-VOL has suspended (Due to an unrecoverable failure on the remote copy connections) | d46xyy | fe | Serious | Yes (24) (*a) (*c) | Yes | x: CU# (13)<br>yy: LDEV# |
| | The S-VOL has suspended (Due to an unrecoverable failure on the S-VOL) | d47xyy | fe | Serious | Yes (24) (*a) | Yes | x: CU# (13)<br>yy: LDEV# |
| | Status of the P-VOL was not consistent with the S-VOL | d4fxyy | fe | Serious | Yes (24) (*a) (*c) | Yes | x: CU# (13)<br>yy: LDEV# |

*a: This SIM performs the host report even though it is less than one hour after IMPL or the number of I/O is less than 16,000 I/O.

*b: In the case of yes, SIM LOG will be displayed in the SVP.

*c: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

Table 2-3 SIM Reference Codes Detected by the Processor for Business Continuity Manager

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | SIM LOG display (SVP) (*b) | Remarks |
|---|---|---|---|---|---|---|---|
| Command device operation | Command device operation execution of command device in state of ONLINE | d57xyy | fe | Service | No | Yes | x: CU# (13)<br>yy: LDEV# |

*b: In the case of yes, SIM LOG will be displayed in the SVP.

Table 2-4 SIM Reference Codes Detected by the Processor for TrueCopy for Mainframe/ TrueCopy/UR/global-active device

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | SIM LOG display (SVP) (*b) | Remarks |
|---|---|---|---|---|---|---|---|
| Remote copy path error | Logical path(s) on the remote copy connections was logically blocked (Due to an error conditions) (27) | 2180xx | f1 | Moderate | Yes (34) (*a) (*c) | Yes | xx: CHB# + Port# in CHB (8) |
| | The logical path has been recovered from blocked condition on the remote copy conditions | 2181xx | f1 | Service | No | No | xx: CHB# + Port# in CHB (8) |

*a: This SIM performs the host report even though it is less than one hour after IMPL or the number of I/O is less than 16,000 I/O.
*b: In the case of yes, SIM LOG will be displayed in the SVP.
*c: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

Table 2-5 SIM Reference Codes Detected by the Processor for TrueCopy for Mainframe/ TrueCopy/URMF/UR/GAD/ShadowImage for Mainframe/ShadowImage/VM

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | SIM LOG display (SVP) (*b) | Remarks |
|---|---|---|---|---|---|---|---|
| Differential area error | Differential area blocking (*c) | 4d1xyy | fe | Serious | Yes (*a) | Yes | x: CU# (13) yy: LDEV# |

*a: This SIM performs the host report even though it is less than one hour after IMPL or the number of I/O is less than 16,000 I/O.
*b: In the case of yes, SIM LOG will be displayed in the SVP.
*c: When resynchronizing the pair next time, all the data of the primary volume is copied to the secondary volume by the track.

Table 2-6 SIM Reference Codes Detected by the Processor for ShadowImage for Mainframe/ ShadowImage/FlashCopy (R) V2/FlashCopy (R) SE/Volume Migration/XRC/TI

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| SIMF error/ SI error/ FlashCopy (R) error | SIMF/SI Copy abnormal end (38) | 47dxyy | fe | Moderate | Yes (39) | x: CU# (13)<br>yy: LDEV#<br>(target volume) |
| | FlashCopy (R) Option abnormal end | 4b2xyy | fe | Moderate | Yes | x: CU# (13)<br>yy: LDEV#<br>(T-VOL) |
| | FlashCopy (R) Hierarchical Memory Access Error | 4b4xyy | fe | Moderate | Yes | x: CU# (13)<br>yy: LDEV#<br>(VOL which access error occurred) |
| | All FlashCopy (R) Option abnormal end by SM volatile (VOL which access error occurred) | 47e500 | f1 | Moderate | Yes | |
| | Forcible suspend by SM volatile (SIMF/SI) (38) | 47e700 | fe | Moderate | Yes | |
| Volume Migration error | Volume Migration abnormal end | 47fxyy | fe | Moderate | No (*b) | x: CU# (13)<br>yy: LDEV#<br>(destination volume) |
| XRC error | Sidefile 'sleep wait' threshold over | 490xyy | fe | Service | Yes (*a) | x: CU# (13)<br>yy: LDEV#<br>SVP MODE 118 ON: Generate SIM |
| Thin Image error | Forcible suspend by SM volatile | 47ec00 | f1 | Moderate | Yes | (*c) |
| | Thin Image Option abnormal end | 4b3xyy | fe | Moderate | Yes | x: CU# (13)<br>yy: LDEV# |
| | Warning before depletion of cache management devices | 670000 | fe | Moderate | Yes | No service report |
| Pair Failure SIM Reduce | SIMF/SI (38) | 7ff102 | f1 | Service | No | No service report |
| | Thin Image | 7ff104 | f1 | Service | No | No service report |
| | FlashCopy (R) PAIR | 7ff105 | f1 | Service | No | |
| | Volume Migration | 7ff106 | f1 | Service | No | No service report |

*a: This SIM is not reported to SVP.

*b: The Host report of this SIM is "No", but reported to SNMP and displayed in Storage Navigator.

*c: When either of the following pools exists, this SIM might be reported regardless of whether there are Thin Image pairs before the SM volatilization.
- Thin Image pool
- Dynamic Provisioning pool

Table 2-7 SIM Reference Codes Detected by the Processor for Thin Image Pool

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Corresponding to complete from Web Console | Remarks |
|---|---|---|---|---|---|---|---|
| Thin Image Pool error | Pool blocking | 602xxx | f1 | Moderate | Yes | Yes | xxx: Pool#<br>xxx: ffe:<br>Pools blocking by SM volatile<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report (*a) |
| | SM Space Warning | 603000 | f1 | Moderate | Yes | Yes | Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report (*a) |
| | Exceeded Threshold of pool use rate | 604xxx | f1 | Moderate | Yes (*b) | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report (*a) |
| | Pool use rate reaches upper limit | 605xxx | f1 | Moderate | Yes (*b) | Yes | xxx: Pool# |
| | Exceeded Fixed outage Threshold of pool use rate | 606xxx | f1 | Moderate | Yes (*b) | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report (*a) |
| | SM Full | 624000 | f1 | Moderate | Yes | Yes | For Thin Image |

*a: When System Option Mode 471 is set to turning on, there is service report.

*b: This SIM is output if a Thin Image pool contains an LDEV belonging to a parity group for which the accelerated compression setting is enabled, or if "Automatically manage compressed space of FMD parity group" is enabled for the pool. (See "Provisioning Guide for Open Systems" or "Provisioning Guide for Mainframe Systems")

Table 2-8 SIM Reference Codes Detected by the Processor for Dynamic Provisioning

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Corresponding to complete from Web Console | Remarks |
|---|---|---|---|---|---|---|---|
| Dynamic Provisioning Pool error | The DP Pool error is detected | 623xxx | f1 | Moderate | Yes | No | xxx: Pool#<br>xxx: ffe:<br>DP Pools blocking by SM volatile |
| | SM Full | 624000 | f1 | Moderate | Yes | Yes | |
| | The DP Pool LDEV blockade | 627xxx | f1 | Serious | Yes | No | xxx: Pool# |

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Corresponding to complete from Web Console | Remarks |
|---|---|---|---|---|---|---|---|
| Dynamic Provisioning Pool error | DP Protect attribute setting of Data Retention Utility | 628000 | f1 | Serious | Yes | No | |
| | Exceeded Warning Threshold of DP Pool use rate | 629xxx | f1 | Moderate | Yes (*d) | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report |
| | DP Pool use rate reaches upper limit | 62axxx | f1 | Moderate | Yes (*d) | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report |
| | Threshold of DP Pool use rate remains exceeded (*c) | 62b000 | f1 | Moderate | Yes (*b) (*d) | Yes | Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report (*a) |
| | Exceeded Depletion Threshold of DP Pool use rate | 62cxxx | f1 | Moderate | Yes (*d) | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report |

*a: When System Option Mode 741 is set to turning on, there is service report.

*b: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

*c: When System Option Mode 734 is set to ON, this SIM is output if the DP pool use rate remains above the threshold for eight hours.

*d: This SIM is output if a Dynamic Provisioning pool contains an LDEV belonging to a parity group for which the accelerated compression setting is enabled, or if "Automatically manage compressed space of FMD parity group" is enabled for the pool. (See "Provisioning Guide for Open Systems" or "Provisioning Guide for Mainframe Systems")

(To be continued)

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| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Corresponding to complete from Web Console | Remarks |
|---|---|---|---|---|---|---|---|
| Dynamic Provisioning Pool error | Exceeded Fixed outage Threshold of DPPool use rate | 62dxxx | f1 | Moderate | Yes (*a) | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report |
| | TI pair DP pool exceeded depletion threshold | 62exxx | f1 | Moderate | Yes | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report |
| | Auto pool expansion failed due to system error | 631xxx | f1 | Moderate | Yes | Yes | xxx: Error cause code (59)<br>Due to expectation of user's maintenance operation<br>• No service report |
| | Auto pool expansion failed due to pool error | 632xxx | f1 | Moderate | Yes | No | xxx: Pool# (77) |
| | Failed to create, expand, or delete pools | 633xxx | f1 | Moderate | Yes | No | See (TRBL13-270) |
| | Auto pool expansion failed due to no more LDEV IDs | 634xxx | f1 | Moderate | Yes | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No service report |

*a: This SIM is output if a Dynamic Provisioning pool contains an LDEV belonging to a parity group for which the accelerated compression setting is enabled, or if "Automatically manage compressed space of FMD parity group" is enabled for the pool. (See "Provisioning Guide for Open Systems" or "Provisioning Guide for Mainframe Systems")

Table 2-9 SIM Reference Codes Detected by the Processor for dedupe and compression

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Corresponding to complete from Web Console | Remarks |
|---|---|---|---|---|---|---|---|
| dedupe and compression error | dedupe and compression operation error detection | 6800xx | f1 | Moderate | Yes | No | xx: Error code<br>01: dedupe and compression operation error<br>02: deleting DP-VOLs with capacity saving enabled (without blocking or formatting operation) error detection |
| | dedupe System Volume delection abnormal end | 681xxx | f1 | Moderate | Yes | No | xxx:Pool# |
| | dedupe System Volume delection suspended | 682000 | f1 | Moderate | Yes | No | |

Table 2-10 SIM Reference Codes Detected by the Processor for Dynamic Tiering

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Corresponding to complete from Web Console | Remarks |
|---|---|---|---|---|---|---|---|
| Dynamic Tiering Pool error | Pool administrative information failed | 640xxx | f1 | Moderate | No | No | xxx: Pool#<br>xxx:ffe:Pools blocking by SM volatile |
| | Tier relocation incomplete | 641xxx | f1 | Service | Yes | Yes | xxx: Pool#<br>Due to expectation of user's maintenance operation<br>• No LED light on<br>• No service report (*a) |

*a: Report SIM only if "Notify an alert when tier relocation is suspended by system" is enabled in the Edit Advanced System Settings window on Storage Navigator.

Table 2-11 SIM Reference Codes Detected by the Processor for DCR

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| DCR Status | PreStaging abnormal end | 4821xx | fe | Service | No (*b) | xx: Reason code (21) |

*b: The Host report of this SIM is “No”, but reported to SNMP and displayed in Storage Navigator.

Table 2-12 SIM Reference Codes Detected by the Processor for Mainframe Fibre Data Migration

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Mainframe Fibre Data Migration | Blocking the Data Migration path | 21d4xx | f1 | Moderate | No | xx: CHB# + Port# in CHB (8) |
| | Data Migration Path Recovery (*c) | 21d5xx | f1 | Service | No | xx: CHB# + Port# in CHB (8) |
| | Blocking the Data Migration source device | efd400 | fe | Moderate | No | (37) |

*c: The SIM will be output intermittently for more than several minutes when there are a lot of data migration source devices.

Table 2-13 SIM Reference Codes Detected by the Processor for Encryption License Key

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Encryption | No free encryption key | 660100 | f1 | Moderate | Yes | See (TRBL17-30) |
| | Remaining free encryption key warning | 660200 | f1 | Service | Yes | See (TRBL17-30) |
| | Acquisition of encryption key from KMS failed (*d) | 6610xx | f1 | Moderate | Yes | xx = 00: Key Encryption Key<br>01: Encryption Key<br>See (TRBL17-10) |

*d: KMS: Key Management Server

Table 2-14 List of Reference Codes of SIMs Detected by UR Processor

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Pair volume failure | A volume to be used by the URMF/UR was defined | d80xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The volume being used by the URMF/UR began a copying | d81xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The volume being used by the URMF/UR completed a copying | d82xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The volume being used by the URMF/UR received a request for suspension | d83xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The volume being used by the URMF/UR completed a suspension transaction | d84xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The volume being used by the URMF/UR received a request for deletion | d85xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The volume being used by the URMF/UR completed the deletion | d86xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The volume being used by the URMF/UR was defined (placed in the PSUS status immediately) | d87xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A Delta volume to be used by the URMF/UR was defined | d88xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |

*a: This SIM performs the host report even though it is less than one hour after IMPL or the number of I/O is less than 16,000 I/O.

*b: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Pair volume failure | A Delta volume to be used by the URMF/UR was redefine | d89xyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A change to an S-VOL was received from the MCU | d9zxyy | fe | Service | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV#<br>z: (32) |
| | A change to an S-VOL was received from the RCU | dazxyy | fe | Service | No (*b) | x: CU# (13)<br>yy: LDEV#<br>z: (33) |
| | A volume being used by a P-VOL was suspended (Path recovery was impossible) | dc0xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by a P-VOL was suspended (A failure on the MCU side was detected) | dc1xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by a P-VOL was suspended (Suspension of an S-VOL failure was detected) | dc2xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by a P-VOL was suspended (Suspension of an S-VOL was detected) | dc4xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by a P-VOL was suspended (Deletion of an S-VOL pair was detected) | dc5xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by an S-VOL was suspended (Path recovery was impossible) | dc6xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |

*a: This SIM performs the host report even though it is less than one hour after IMPL or the number of I/O is less than 16,000 I/O.

*b: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Pair volume failure | A volume being used by an S-VOL was suspended (A failure on the RCU side was detected) | dc7xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by an S-VOL was suspended (PS OFF on the MCU side was detected) | dc8xyy | fe | Service | No | x: CU# (13)<br>yy: LDEV# |
| | A Delta volume being used by a P-VOL was suspended | dc9xyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | Pair suspend (Spread by error of another Affiliate) | dcaxyy | fe | Serious | Yes (35) (*a) (*b) | x: CU# (13)<br>yy: LDEV# |
| | The URMF/UR Read JNL was interrupted for one minute (A failure on the MCU side was detected) | dcf0xx | fe | Moderate | | xx: JNLG# |
| | The URMF/UR Read JNL was interrupted for five minutes (A failure on the MCU side was detected) | dcf1xx | fe | Serious | | xx: JNLG# |
| | The URMF/UR Read JNL was interrupted for one minute (A failure on the RCU side was detected) | dcf2xx | fe | Moderate | | xx: JNLG# |
| | The URMF/UR Read JNL was interrupted for five minutes (A failure on the RCU side was detected) | dcf3xx | fe | Serious | | xx: JNLG# |

*a: This SIM performs the host report even though it is less than one hour after IMPL or the number of I/O is less than 16,000 I/O.

*b: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Journal volume failure | URMF/UR M-JNL Meta overflow warning | dce0xx | fe | Moderate | Yes (47) (*c) | xx: JNLG# |
| | URMF/UR M-JNL Data overflow warning | dce1xx | fe | Moderate | Yes (47) (*c) | xx: JNLG# |
| | URMF/UR R-JNL Meta overflow warning | dce2xx | fe | Moderate | Yes (47) (*c) | xx: JNLG# |
| | URMF/UR R-JNL Data overflow warning | dce3xx | fe | Moderate | Yes (47) (*c) | xx: JNLG# |
| | URMF/UR M-JNL Meta overflow warning in URMFxURMF/URxUR Multi-target configuration | dcf4xx | fe | Moderate | No (*b) | xx: JNLG# (46) |
| | URMF/UR M-JNL Data overflow warning in URMFxURMF/URxUR Multi-target configuration | dcf5xx | fe | Moderate | No (*b) | xx: JNLG# (46) |

*b: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

*c: Even if non-complete SIM of the same REF CODE is left, this SIM is created.
(only in the case of System Option Mode 598 = Off)

Table 2-15 List of Reference Codes of SIMs Detected by GAD Processor

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | SIM log display (SVP) | Remarks |
|---|---|---|---|---|---|---|---|
| Pair volume failure | A volume being used by a GAD was suspended (Due to an unrecoverable failure on the remote copy connections) | dd0xyy | fe | Serious | Yes | Yes | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by a GAD was suspended (volume failure) | dd1xyy | fe | Serious | Yes | Yes | x: CU# (13)<br>yy: LDEV# |
| | A volume being used by a GAD was suspended (Internal error failure) | dd2xyy | fe | Serious | Yes | Yes | x: CU# (13)<br>yy: LDEV# |
| | In GAD, the P-VOL status was not consistent with the S-VOL status | dd3xyy | fe | Serious | Yes | Yes | x: CU# (13)<br>yy: LDEV# |

Table 2-16 List of Reference Codes of SIMs Detected by Quorum Processor

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | SIM log display (SVP) | Remarks |
|---|---|---|---|---|---|---|---|
| Quorum Disk failure | Quorum Disk recovery | dee0xx | fe | Service | Yes | Yes | xx: Quorum Disk ID |
| | Quorum Disk blockade | def0xx | fe | Serious | Yes | Yes | xx: Quorum Disk ID |

Table 2-17 List of Reference Codes of SIMs Detected by Environment monitor

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Environ-mental error | Injustice DC voltage control | 399dx0 | f1 | Moderate | No | x: CTL# (3) |
| | Injustice CEMODE | 399ex0 | f1 | Moderate | No | x: CTL# (3) |
| | Injustice CEDT | 399fx0 | f1 | Moderate | No | x: CTL# (3) |
| | Injustice JP Warning | af00xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | MP Temperature abnormality warning | af10xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | External temperature warning | af11xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | External temperature alarm | af12xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | Thermal monitor warning | af13xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | DKCPS warning | af20xx | f1 | Moderate | Yes | xx: DKCPS# (50) |
| | DKCPS input voltage abnormality | af21xx | f1 | Moderate | Yes | xx: DKCPS# (50) |
| | Environmental microcontroller warning | af30xx | f1 | moderate | Yes | xx: CTL# (3) |
| | Device movement mode warning | af31xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | Environmental micro-program exchange warning | af32xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | Voltage change setting warning | af33xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | BKMF warning | af40xx | f1 | Moderate | Yes | xx: BKMF# (52) |
| | Battery replacement should be scheduled | af41xx | f1 | Moderate | Yes | xx: Battery# (51) |
| | Panel switch warning | af4dxx | f1 | Moderate | Yes | xx: CTL# (3) |
| | Invalid PS ON warning | af4exx | f1 | Moderate | Yes | xx: CTL# (3) |
| | UPS warning | aff0xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | GUM warning | aff1xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | CFM error | aff2xx | f1 | Moderate | Yes | xx: CFM# (53) |
| | FAN warning | aff3xx | f1 | Moderate | Yes | xx: FAN# (52) |
| | Life expiry warning for DKC air filter | aff400 | f1 | Service | Yes | |
| | Life expiry warning for DB air filter | afe4xx | f1 | Service | Yes | xx: DB# (49) |
| | GUM blocking | fff7xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | CTL patrol check error | ffcbxx | f1 | Service | No | xx: CTL# (3) |

(To be continued)

(Continued from preceding sheet)

| Error | | REF CODE 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Environ-mental error | PCIe cable connection error | effcxx | f1 | Moderate | Yes | xx: PECB# |
| | Expander failure | effdxx | f1 | Serious | Yes | xx: SAS Port#/NVMe Port# (10) |
| | Chassis connection error (55) | effexx | f1 | Moderate | Yes | xx: SAS Port#/NVMe Port# (10) |
| | Constitution definition error | ffd400 | f1 | Moderate | No | |
| | Battery warning | fffaxx | f2 | Moderate | No | xx: Battery# (51) |
| | Warning for forcible volatile mode | fffexx | f2 | Moderate | No | xx: CTL# (3) |
| | LANB blocking | ff21xx | f1 | Moderate | Yes | xx: CTL# (3) |
| | DBPS-1 warning | af51xx | f1 | Moderate | No | xx: DB# (49) |
| | DBPS-2 warning | af52xx | f1 | Moderate | No | xx: DB# (49) |
| | DBPS-1 input voltage abnormality | af61xx | f1 | Moderate | Yes | xx: DB# (49) |
| | DBPS-2 input voltage abnormality | af62xx | f1 | Moderate | Yes | xx: DB# (49) |
| | ENC-1 warning | af81xx | f1 | Moderate | Yes | xx: DB# (49) |
| | ENC-2 warning | af82xx | f1 | Moderate | Yes | xx: DB# (49) |
| | DB External temperature Warning | af7000 | f1 | Moderate | Yes | — |
| | DB External temperature Alarm | af7100 | f1 | Moderate | Yes | — |
| | HSNBX ambient temperature warning | afb0xx | f1 | Moderate | Yes | xx: HSNBX# (54) |
| | ISW PS warning | afb1xx | f1 | Moderate | Yes | xx: ISWPS# (54) |
| | ISW FAN warning | afb2xx | f1 | Moderate | Yes | xx: ISWFAN# (54) |
| | ISW PS input voltage abnormality | afb3xx | f1 | Moderate | Yes | xx: ISWPS# (54) |
| | ISW warning | afb4xx | f1 | Moderate | Yes | xx: ISW# (54) |
| | HSNBX thermal monitor warning | afb5xx | f1 | Moderate | Yes | xx: HSNBX# (54) |
| | HSNBX PANEL JP setting abnormality | afb6xx | f1 | Moderate | Yes | xx: HSNBX# (54) |
| | HSNBX PANEL JP setting warning | afb7xx | f1 | Moderate | Yes | xx: HSNBX# (54) |
| | HSNBX PSONOFF I/F inconsistent | afb8xx | f1 | Moderate | Yes | xx: HSNBX# (54) |

## 2.2 SIM Reference Codes Detected by the SVP

For the storage system with Automatic Log Dump Collection enabled, dumps are automatically collected when a SIM that meets both the following conditions is reported.

- The error level is Moderate, Serious, or Acute.
- The SIM is reported to maintenance personnel. (The reference codes with "No service report" in Remarks in the list are not targeted for the automatic dump collection.)

You can include or exclude specified SIMs from the targets for the automatic dump collection (see "Setting Automatic Log Dump Collection" (SVP02-26-10)).

NOTE : • When "x:" is shown in the Remarks column and a 2-digit number is shown on the reference page, read only the last digit.
• When "xx" or "xy" is shown in the Remarks column, read two digits shown in each format on the reference page.

Table 2-18 SIM Reference Codes Detected by the SVP

| Error | | | REF code 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|---|
| Environmental error | SVP RAS Switch#1 remains (SVP PS ON/OFF INH SW) | SVP-BASIC | bf85a3 | f1 | Moderate | Yes | |
| | | SVP-OPTION | bf86a3 | f1 | Moderate | Yes | |
| | HSNPANEL error | | bfbxyy | f1 | Moderate | No | x: (70)<br>yy: (71) |
| | Duplex SVP Setup fail | | bfe3a2 | f1 | Moderate | Yes | |
| | SVP FAN0 Error | | bfe400 | f1 | Moderate | No | |
| | SVP disk error (SMART) | | bfe404 | f1 | Moderate | No | |
| | USB interface error | | bfe407 | f1 | Moderate | No | |
| SVP failure | Logical inconsistency | | 70xx00 | f1 | Moderate | No | (65) |
| | HEAP error | | 71xx00 | f1 | Moderate | No | (65) |
| | File error | | 72xx00 | f1 | Moderate | No | (65) |
| | LAN error | | 73xx00 | f1 | Moderate | No | (65) |
| | SSVP error | | 74xxxx | f1 | Moderate | Yes | (66) |
| | Windows error | | 75xx00 | f1 | Moderate | No | (65) |
| | ISDN Router failure | | 7b0003 | f1 | Moderate | Yes | |
| | Invalid SIM data detection | | 7c0500 | f1 | Service | No | |
| Reboot Stop | SVP reboot is impossible (Removable media inserted) | | 7c0000 | f1 | Moderate | No | |
| Audit Log output failure | Host instruction configuration change | | 7c0200 | f1 | Moderate | No | |
| Audit Log | Audit Log FTP Transfer failed | | 7c0300 | f1 | Moderate | Yes | |
| Dump Tool | Dump Tool failed | | 7c0400 | f1 | Service | Yes | |

(To be continued)

(Continued from preceding sheet)

| Error | | REF code 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| Log Dump | Dump collection start | 7c0800 (*a) | f1 | Service | No | |
| | Dump collection ends normally | 7c0900 (*a) | f1 | Service | No | |
| | Dump collection ends abnormally | 7c0a00 | f1 | Service | No | |
| | Cancellation of the dump collection completed | 7c0b00 | f1 | Service | No | |
| MONITORING INFORMATION (*c) | MP Operating Ratio Error | 7e12xy | f1 | Moderate | No (*b) | (5) |
| | Loss Of Signal Count (Fibre) Excess | 7e20xy | f1 | Moderate | No | (8) |
| | Bad Received Character Count (Fibre) Excess | 7e21xy | f1 | Moderate | No | (8) |
| | Loss Of Synchronization Count (Fibre) Excess | 7e22xy | f1 | Moderate | No | (8) |
| | Link Failure Count (Fibre) Excess | 7e23xy | f1 | Moderate | No | (8) |
| | Received EOFa Count (Fibre) Excess | 7e24xy | f1 | Moderate | No | (8) |
| | Discarded Frame Count (Fibre) Excess | 7e25xy | f1 | Moderate | No | (8) |
| | Bad CRC Count (Fibre) Excess | 7e26xy | f1 | Moderate | No | (8) |
| | Protocol Error Count (Fibre) Excess | 7e27xy | f1 | Moderate | No | (8) |
| | Expired Frame Count (Fibre) Excess | 7e28xy | f1 | Moderate | No | (8) |
| | HTP/FNP multiplicity excess | 7e29xy | f1 | Moderate | No | (8) |
| | FEC Un-correctable Count(Fibre) threshold exceeded | 7e2axy | f1 | Moderate | No | (8) |
| | HTP/FNP read data transfer ratio error | 7e2cxy | f1 | Moderate | No | (8) |
| | HTP/FNP write data transfer ratio error | 7e2dxy | f1 | Moderate | No | (8) |
| | HTP/FNP operating ratio error | 7e2exy | f1 | Moderate | No | (8) |
| | Read Hit Ratio Excess | 7e3000 | fe | Moderate | No | |
| | MAC CRC Error Count(iSCSI) threshold exceeded | 7e50xy | f1 | Moderate | No | (8) |
| | IP Error Packet Count(iSCSI) threshold exceeded | 7e51xy | f1 | Moderate | No | (8) |
| | IPv6 Error Packet Count(iSCSI) threshold exceeded | 7e52xy | f1 | Moderate | No | (8) |

*a: This SIM is automatically completed after automatic report completion.

*b: When System Option Mode 967 is set to turning on, there is host report.

*c: A monitoring information SIM is reported if a value of the target processing information for the processing information monitoring function (see “Processing Information Monitoring Function” (SVP02-04-130)) continuously exceeds a set threshold for a set term.
If you replace an SVP, you need to set the thresholds again after the replacement.

(To be continued)

(Continued from preceding sheet)

| Error | | REF code 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| MONITORING INFORMATION (*b) | TCP Retransmit Timer Expired Count(iSCSI) exceeded | 7e53xy | f1 | Moderate | No | (8) |
| | iSCSI Header Digest Error Count(iSCSI) exceeded | 7e54xy | f1 | Moderate | No | (8) |
| | iSCSI Data Digest Error Count(iSCSI) exceeded | 7e55xy | f1 | Moderate | No | (8) |
| | Cache Use Ratio Error | 7eaxyy | f2 | Moderate | No | x: MPU Location (68)<br>yy: CLPR ID |
| | Cache Write Pending Ratio Error | 7ebxyy | f2 | Moderate | No | x: MPU Location (68)<br>yy: CLPR ID |
| | Cache MCU Side File Use Ratio Error | 7ecxyy | f2 | Moderate | No | x: MPU Location (68)<br>yy: CLPR ID |
| Pair Failure SIM Reduce | TCMF/TC | 7ff100 | f1 | Service | No | |
| | SIMF/SI | 7ff102 | f1 | Service | No | |
| | URMF/UR | 7ff103 | f1 | Service | No | |
| | TI | 7ff104 | f1 | Service | No | |
| Dual SVP | Standby SVP fail | 7ff2xx | f1 | Moderate | No | (67) |
| | SVP fail over | 7ff3xx | f1 | Moderate | No | (67) |
| Synchroniza-tion time | Synchronization time failure | 7ffa0x | f1 | Service | Yes (*c) | (69) |
| Processor error | DKC Blockade | 30a100 | f1 | Acute | Yes | |

*b: A monitoring information SIM is reported if a value of the target processing information for the processing information monitoring function (see “Processing Information Monitoring Function” (SVP02-04-130)) continuously exceeds a set threshold for a set term.
If you replace an SVP, you need to set the thresholds again after the replacement.

*c: Even if non-complete SIM of the same REF CODE is left, this SIM is created.

## 2.3 SIM Reference Codes Detected by the GUM

For the storage system with Automatic Log Dump Collection enabled, dumps are automatically collected when a SIM that meets both the following conditions is reported.

- The error level is Moderate, Serious, or Acute.
- The SIM is reported to maintenance personnel. (The reference codes with "No service report" in Remarks in the list are not targeted for the automatic dump collection.)

You can include or exclude specified SIMs from the targets for the automatic dump collection (see "Setting Automatic Log Dump Collection" (SVP02-26-10)).

NOTE : • When "x:" is shown in the Remarks column and a 2-digit number is shown on the reference page, read only the last digit.
• When "xx" or "xy" is shown in the Remarks column, read two digits shown in each format on the reference page.

Table 2-19 SIM Reference Codes Detected by the GUM

| Error | | REF code 22,23,13 | SIM 28 | Level of error | Host report | Remarks |
|---|---|---|---|---|---|---|
| GUM detection error | GUM error | 7d00xy | f1 | Moderate | No | xy: CTL# (74) |
| | LAN error (Internal Network) | 7d01xy | f1 | Moderate | Yes | xy: CTL# (74) (*a) (*b) |
| | LAN error (CTL1-CTL2) | 7d02xy | f1 | Moderate | Yes | xy: CTL# (74) (*a) (*b) |
| | GUM AuditLog lost | 7d03xy | f1 | Moderate | Yes | xy: CTL# (74) |
| | GUM AuditLog Warning Threshold was exceeded | 7d04xy | f1 | Moderate | Yes | xy: CTL# (74) |
| | MP error | 7d06xx | f1 | Moderate | Yes | xx: MP# (5) (*a) |
| | GUM security error detected | 7d07xy | f1 | Moderate | Yes | xy: CTL# (74) |
| | Failed to recover GUM configuration information | 7d08xy | f1 | Moderate | Yes | xy: CTL# (74) |
| | DKC warning | 7d090x | f1 | Serious | Yes | x: DKC# (2) (*a) |
| | GUM version warning | 7d0axy | f1 | Moderate | Yes | xy: CTL# (74) |
| Time Synchronization | Time Synchronization error | 7ffa0x | f1 | Service | Yes | |

*a: Output of the SIM is suppressed during the maintenance work including the micro-program exchange.

*b: If the failure is detected several times between 13:00 and 12:59 on the next day, the SIM is output only when the failure is detected for the first time. (Output of the SIM is suppressed until 13:00 on the next day.)

(1) x: Cluster#

| Device | Cluster# (x) |
|---|---|
| Cluster-1 | 0 |
| Cluster-2 | 1 |

(2) x: DKC#

| DKC | DKC# (x) |
|---|---|
| DKC-0 | 0 |
| DKC-1 | 1 |
| DKC-2 | 2 |
| DKC-3 | 3 |
| DKC-4 | 4 |
| DKC-5 | 5 |

(3) CTL#:

When a single “x” (one digit) is shown in a reference code, read the last digit of CTL#.

| CBX Pair | DKC | CTL Location | CTL# (xx, x) |
|---|---|---|---|
| CBX Pair 0 | DKC-0 | CTL01 | 00 |
| | | CTL02 | 01 |
| | DKC-1 | CTL11 | 02 |
| | | CTL12 | 03 |
| CBX Pair 1 | DKC-2 | CTL21 | 04 |
| | | CTL22 | 05 |
| | DKC-3 | CTL31 | 06 |
| | | CTL32 | 07 |
| CBX Pair 2 | DKC-4 | CTL41 | 08 |
| | | CTL42 | 09 |
| | DKC-5 | CTL51 | 0a |
| | | CTL52 | 0b |

(4) y: Failed Part#

| Failed Part | Failed Part# (y) |
|---|---|
| DIMM00 | 0 |
| DIMM01 | 1 |
| DIMM02 | 2 |
| DIMM03 | 3 |
| DIMM10 | 4 |
| DIMM11 | 5 |
| DIMM12 | 6 |
| DIMM13 | 7 |
| CTL | f |

(5) MP#:

xy: Reference codes of "processor error" and "monitoring information"

xx: Reference codes of "GUM detection error"

| CBX Pair | DKC | CTL Location | MP Unit Location | MP Location | MP# (xy, xx) |
|---|---|---|---|---|---|
| CBX Pair 0 | DKC-0 | CTL01 | MPU-010 | MP010-00 | 00 |
| | | | | MP010-01 | 01 |
| | | | | MP010-02 | 02 |
| | | | | MP010-03 | 03 |
| | | | | MP010-04 | 04 |
| | | | | MP010-05 | 05 |
| | | | | MP010-06 | 06 |
| | | | | MP010-07 | 07 |
| | | | | MP010-08 | 08 |
| | | | | MP010-09 | 09 |
| | | | | MP010-0A | 0a |
| | | | | MP010-0B | 0b |
| | | | | MP010-0C | 0c |
| | | | | MP010-0D | 0d |
| | | | | MP010-0E | 0e |
| | | | | MP010-0F | 0f |
| | | | | MP010-10 | 10 |
| | | | | MP010-11 | 11 |
| | | | | MP010-12 | 12 |
| | | | | MP010-13 | 13 |
| | | CTL02 | MPU-020 | MP020-00 | 14 |
| | | | | MP020-01 | 15 |
| | | | | MP020-02 | 16 |
| | | | | MP020-03 | 17 |
| | | | | MP020-04 | 18 |
| | | | | MP020-05 | 19 |
| | | | | MP020-06 | 1a |
| | | | | MP020-07 | 1b |
| | | | | MP020-08 | 1c |
| | | | | MP020-09 | 1d |
| | | | | MP020-0A | 1e |
| | | | | MP020-0B | 1f |
| | | | | MP020-0C | 20 |
| | | | | MP020-0D | 21 |
| | | | | MP020-0E | 22 |
| | | | | MP020-0F | 23 |
| | | | | MP020-10 | 24 |
| | | | | MP020-11 | 25 |
| | | | | MP020-12 | 26 |
| | | | | MP020-13 | 27 |

(To be continued)

(Continued from preceding sheet)

| CBX Pair | DKC | CTL Location | MP Unit Location | MP Location | MP# (xy, xx) |
|---|---|---|---|---|---|
| CBX Pair 0 | DKC-1 | CTL11 | MPU-110 | MP110-00 | 28 |
| | | | | MP110-01 | 29 |
| | | | | MP110-02 | 2a |
| | | | | MP110-03 | 2b |
| | | | | MP110-04 | 2c |
| | | | | MP110-05 | 2d |
| | | | | MP110-06 | 2e |
| | | | | MP110-07 | 2f |
| | | | | MP110-08 | 30 |
| | | | | MP110-09 | 31 |
| | | | | MP110-0A | 32 |
| | | | | MP110-0B | 33 |
| | | | | MP110-0C | 34 |
| | | | | MP110-0D | 35 |
| | | | | MP110-0E | 36 |
| | | | | MP110-0F | 37 |
| | | | | MP110-10 | 38 |
| | | | | MP110-11 | 39 |
| | | | | MP110-12 | 3a |
| | | | | MP110-13 | 3b |
| | | CTL12 | MPU-120 | MP120-00 | 3c |
| | | | | MP120-01 | 3d |
| | | | | MP120-02 | 3e |
| | | | | MP120-03 | 3f |
| | | | | MP120-04 | 40 |
| | | | | MP120-05 | 41 |
| | | | | MP120-06 | 42 |
| | | | | MP120-07 | 43 |
| | | | | MP120-08 | 44 |
| | | | | MP120-09 | 45 |
| | | | | MP120-0A | 46 |
| | | | | MP120-0B | 47 |
| | | | | MP120-0C | 48 |
| | | | | MP120-0D | 49 |
| | | | | MP120-0E | 4a |
| | | | | MP120-0F | 4b |
| | | | | MP120-10 | 4c |
| | | | | MP120-11 | 4d |
| | | | | MP120-12 | 4e |
| | | | | MP120-13 | 4f |

(To be continued)

(Continued from preceding sheet)

| CBX Pair | DKC | CTL Location | MP Unit Location | MP Location | MP# (xy, xx) |
|---|---|---|---|---|---|
| CBX Pair 1 | DKC-2 | CTL21 | MPU-210 | MP210-00 | 50 |
| | | | | MP210-01 | 51 |
| | | | | MP210-02 | 52 |
| | | | | MP210-03 | 53 |
| | | | | MP210-04 | 54 |
| | | | | MP210-05 | 55 |
| | | | | MP210-06 | 56 |
| | | | | MP210-07 | 57 |
| | | | | MP210-08 | 58 |
| | | | | MP210-09 | 59 |
| | | | | MP210-0A | 5a |
| | | | | MP210-0B | 5b |
| | | | | MP210-0C | 5c |
| | | | | MP210-0D | 5d |
| | | | | MP210-0E | 5e |
| | | | | MP210-0F | 5f |
| | | | | MP210-10 | 60 |
| | | | | MP210-11 | 61 |
| | | | | MP210-12 | 62 |
| | | | | MP210-13 | 63 |
| | | CTL22 | MPU-220 | MP220-00 | 64 |
| | | | | MP220-01 | 65 |
| | | | | MP220-02 | 66 |
| | | | | MP220-03 | 67 |
| | | | | MP220-04 | 68 |
| | | | | MP220-05 | 69 |
| | | | | MP220-06 | 6a |
| | | | | MP220-07 | 6b |
| | | | | MP220-08 | 6c |
| | | | | MP220-09 | 6d |
| | | | | MP220-0A | 6e |
| | | | | MP220-0B | 6f |
| | | | | MP220-0C | 70 |
| | | | | MP220-0D | 71 |
| | | | | MP220-0E | 72 |
| | | | | MP220-0F | 73 |
| | | | | MP220-10 | 74 |
| | | | | MP220-11 | 75 |
| | | | | MP220-12 | 76 |
| | | | | MP220-13 | 77 |

(To be continued)

(Continued from preceding sheet)

| CBX Pair | DKC | CTL Location | MP Unit Location | MP Location | MP# (xy, xx) |
|---|---|---|---|---|---|
| CBX Pair 1 | DKC-3 | CTL31 | MPU-310 | MP310-00 | 78 |
| | | | | MP310-01 | 79 |
| | | | | MP310-02 | 7a |
| | | | | MP310-03 | 7b |
| | | | | MP310-04 | 7c |
| | | | | MP310-05 | 7d |
| | | | | MP310-06 | 7e |
| | | | | MP310-07 | 7f |
| | | | | MP310-08 | 80 |
| | | | | MP310-09 | 81 |
| | | | | MP310-0A | 82 |
| | | | | MP310-0B | 83 |
| | | | | MP310-0C | 84 |
| | | | | MP310-0D | 85 |
| | | | | MP310-0E | 86 |
| | | | | MP310-0F | 87 |
| | | | | MP310-10 | 88 |
| | | | | MP310-11 | 89 |
| | | | | MP310-12 | 8a |
| | | | | MP310-13 | 8b |
| | | CTL32 | MPU-320 | MP320-00 | 8c |
| | | | | MP320-01 | 8d |
| | | | | MP320-02 | 8e |
| | | | | MP320-03 | 8f |
| | | | | MP320-04 | 90 |
| | | | | MP320-05 | 91 |
| | | | | MP320-06 | 92 |
| | | | | MP320-07 | 93 |
| | | | | MP320-08 | 94 |
| | | | | MP320-09 | 95 |
| | | | | MP320-0A | 96 |
| | | | | MP320-0B | 97 |
| | | | | MP320-0C | 98 |
| | | | | MP320-0D | 99 |
| | | | | MP320-0E | 9a |
| | | | | MP320-0F | 9b |
| | | | | MP320-10 | 9c |
| | | | | MP320-11 | 9d |
| | | | | MP320-12 | 9e |
| | | | | MP320-13 | 9f |

(To be continued)

(Continued from preceding sheet)

| CBX Pair | DKC | CTL Location | MP Unit Location | MP Location | MP# (xy, xx) |
|---|---|---|---|---|---|
| CBX Pair 2 | DKC-4 | CTL41 | MPU-410 | MP410-00 | a0 |
| | | | | MP410-01 | a1 |
| | | | | MP410-02 | a2 |
| | | | | MP410-03 | a3 |
| | | | | MP410-04 | a4 |
| | | | | MP410-05 | a5 |
| | | | | MP410-06 | a6 |
| | | | | MP410-07 | a7 |
| | | | | MP410-08 | a8 |
| | | | | MP410-09 | a9 |
| | | | | MP410-0A | aa |
| | | | | MP410-0B | ab |
| | | | | MP410-0C | ac |
| | | | | MP410-0D | ad |
| | | | | MP410-0E | ae |
| | | | | MP410-0F | af |
| | | | | MP410-10 | b0 |
| | | | | MP410-11 | b1 |
| | | | | MP410-12 | b2 |
| | | | | MP410-13 | b3 |
| | | CTL42 | MPU-420 | MP420-00 | b4 |
| | | | | MP420-01 | b5 |
| | | | | MP420-02 | b6 |
| | | | | MP420-03 | b7 |
| | | | | MP420-04 | b8 |
| | | | | MP420-05 | b9 |
| | | | | MP420-06 | ba |
| | | | | MP420-07 | bb |
| | | | | MP420-08 | bc |
| | | | | MP420-09 | bd |
| | | | | MP420-0A | be |
| | | | | MP420-0B | bf |
| | | | | MP420-0C | c0 |
| | | | | MP420-0D | c1 |
| | | | | MP420-0E | c2 |
| | | | | MP420-0F | c3 |
| | | | | MP420-10 | c4 |
| | | | | MP420-11 | c5 |
| | | | | MP420-12 | c6 |
| | | | | MP420-13 | c7 |

(To be continued)

(Continued from preceding sheet)

| CBX Pair | DKC | CTL Location | MP Unit Location | MP Location | MP# (xy, xx) |
|---|---|---|---|---|---|
| CBX Pair 2 | DKC-5 | CTL51 | MPU-510 | MP510-00 | c8 |
| | | | | MP510-01 | c9 |
| | | | | MP510-02 | ca |
| | | | | MP510-03 | cb |
| | | | | MP510-04 | cc |
| | | | | MP510-05 | cd |
| | | | | MP510-06 | ce |
| | | | | MP510-07 | cf |
| | | | | MP510-08 | d0 |
| | | | | MP510-09 | d1 |
| | | | | MP510-0A | d2 |
| | | | | MP510-0B | d3 |
| | | | | MP510-0C | d4 |
| | | | | MP510-0D | d5 |
| | | | | MP510-0E | d6 |
| | | | | MP510-0F | d7 |
| | | | | MP510-10 | d8 |
| | | | | MP510-11 | d9 |
| | | | | MP510-12 | da |
| | | | | MP510-13 | db |
| | | CTL52 | MPU-520 | MP520-00 | dc |
| | | | | MP520-01 | dd |
| | | | | MP520-02 | de |
| | | | | MP520-03 | df |
| | | | | MP520-04 | e0 |
| | | | | MP520-05 | e1 |
| | | | | MP520-06 | e2 |
| | | | | MP520-07 | e3 |
| | | | | MP520-08 | e4 |
| | | | | MP520-09 | e5 |
| | | | | MP520-0A | e6 |
| | | | | MP520-0B | e7 |
| | | | | MP520-0C | e8 |
| | | | | MP520-0D | e9 |
| | | | | MP520-0E | ea |
| | | | | MP520-0F | eb |
| | | | | MP520-10 | ec |
| | | | | MP520-11 | ed |
| | | | | MP520-12 | ee |
| | | | | MP520-13 | ef |

(To be continued)

(6) xx: CHB#

CHB consecutive numbers in the device. See the table below show relations with the CHB Location.

| CBX Pair | DKC | CHB Location | CHB# (xx) |
|---|---|---|---|
| CBX Pair 0 | DKC-0 | CHB-01A | 00 |
| | | CHB-01B | 01 |
| | | CHB-01E | 02 |
| | | CHB-01F | 03 |
| | | CHB-02A | 04 |
| | | CHB-02B | 05 |
| | | CHB-02E | 06 |
| | | CHB-02F | 07 |
| | DKC-1 | CHB-11A | 08 |
| | | CHB-11B | 09 |
| | | CHB-11E | 0a |
| | | CHB-11F | 0b |
| | | CHB-12A | 0c |
| | | CHB-12B | 0d |
| | | CHB-12E | 0e |
| | | CHB-12F | 0f |
| CBX Pair 1 | DKC-2 | CHB-21A | 10 |
| | | CHB-21B | 11 |
| | | CHB-21E | 12 |
| | | CHB-21F | 13 |
| | | CHB-22A | 14 |
| | | CHB-22B | 15 |
| | | CHB-22E | 16 |
| | | CHB-22F | 17 |
| | DKC-3 | CHB-31A | 18 |
| | | CHB-31B | 19 |
| | | CHB-31E | 1a |
| | | CHB-31F | 1b |
| | | CHB-32A | 1c |
| | | CHB-32B | 1d |
| | | CHB-32E | 1e |
| | | CHB-32F | 1f |
| CBX Pair 2 | DKC-4 | CHB-41A | 20 |
| | | CHB-41B | 21 |
| | | CHB-41E | 22 |
| | | CHB-41F | 23 |
| | | CHB-42A | 24 |
| | | CHB-42B | 25 |
| | | CHB-42E | 26 |
| | | CHB-42F | 27 |
| | DKC-5 | CHB-51A | 28 |
| | | CHB-51B | 29 |
| | | CHB-51E | 2a |
| | | CHB-51F | 2b |
| | | CHB-52A | 2c |
| | | CHB-52B | 2d |
| | | CHB-52E | 2e |
| | | CHB-52F | 2f |

(7) xx: DKB#

DKB consecutive numbers in the device. See the table below show relations with the DKB Location.

| CBX Pair | DKC | DKB Location | DKB#(xx) |
|---|---|---|---|
| CBX Pair 0 | DKC-0 | DKB-01D | 01 |
| | | DKB-01H | 00 |
| | | DKB-02D | 03 |
| | | DKB-02H | 02 |
| | DKC-1 | DKB-11D | 05 |
| | | DKB-11H | 04 |
| | | DKB-12D | 07 |
| | | DKB-12H | 06 |
| CBX Pair 1 | DKC-2 | DKB-21D | 09 |
| | | DKB-21H | 08 |
| | | DKB-22D | 0b |
| | | DKB-22H | 0a |
| | DKC-3 | DKB-31D | 0d |
| | | DKB-31H | 0c |
| | | DKB-32D | 0f |
| | | DKB-32H | 0e |
| CBX Pair 2 | DKC-4 | DKB-41D | 11 |
| | | DKB-41H | 10 |
| | | DKB-42D | 13 |
| | | DKB-42H | 12 |
| | DKC-5 | DKB-51D | 15 |
| | | DKB-51H | 14 |
| | | DKB-52D | 17 |
| | | DKB-52H | 16 |

(8) xx, xy: Port#

Channel port consecutive numbers in the device. Port of 8 at the maximum is implemented in each CHB. See the table below show relations with the CHB Location.

| CBX Pair | DKC | CHB Location | Port# (xx, xy) |
|---|---|---|---|
| CBX Pair 0 | DKC-0 | CHB-01A | 00 ～ 03 |
| | | CHB-01B | 04 ～ 07 |
| | | CHB-01E | 08 ～ 0b |
| | | CHB-01F | 0c ～ 0f |
| | | CHB-02A | 10 ～ 13 |
| | | CHB-02B | 14 ～ 17 |
| | | CHB-02E | 18 ～ 1b |
| | | CHB-02F | 1c ～ 1f |
| | DKC-1 | CHB-11A | 20 ～ 23 |
| | | CHB-11B | 24 ～ 27 |
| | | CHB-11E | 28 ～ 2b |
| | | CHB-11F | 2c ～ 2f |
| | | CHB-12A | 30 ～ 33 |
| | | CHB-12B | 34 ～ 37 |
| | | CHB-12E | 38 ～ 3b |
| | | CHB-12F | 3c ～ 3f |
| CBX Pair 1 | DKC-2 | CHB-21A | 40 ～ 43 |
| | | CHB-21B | 44 ～ 47 |
| | | CHB-21E | 48 ～ 4b |
| | | CHB-21F | 4c ～ 4f |
| | | CHB-22A | 50 ～ 53 |
| | | CHB-22B | 54 ～ 57 |
| | | CHB-22E | 58 ～ 5b |
| | | CHB-22F | 5c ～ 5f |
| | DKC-3 | CHB-31A | 60 ～ 63 |
| | | CHB-31B | 64 ～ 67 |
| | | CHB-31E | 68 ～ 6b |
| | | CHB-31F | 6c ～ 6f |
| | | CHB-32A | 70 ～ 73 |
| | | CHB-32B | 74 ～ 77 |
| | | CHB-32E | 78 ～ 7b |
| | | CHB-32F | 7c ～ 7f |
| CBX Pair 2 | DKC-4 | CHB-41A | 80 ～ 83 |
| | | CHB-41B | 84 ～ 87 |
| | | CHB-41E | 88 ～ 8b |
| | | CHB-41F | 8c ～ 8f |
| | | CHB-42A | 90 ～ 93 |
| | | CHB-42B | 94 ～ 97 |
| | | CHB-42E | 98 ～ 9b |
| | | CHB-42F | 9c ～ 9f |
| | DKC-5 | CHB-51A | a0 ～ a3 |
| | | CHB-51B | a4 ～ a7 |
| | | CHB-51E | a8 ～ ab |
| | | CHB-51F | ac ～ af |
| | | CHB-52A | b0 ～ b3 |
| | | CHB-52B | b4 ～ b7 |
| | | CHB-52E | b8 ～ bb |
| | | CHB-52F | bc ～ bf |

(9) xy, yy: Port Path#

Channel port consecutive numbers in the device. Port of 8 at the maximum is implemented in each CHB.

| CHB Location | Port | Port Path# (xy, yy) | Port | Port Path# (xy, yy) | CHB Location | Port | Port Path# (xy, yy) | Port | Port Path# (xy, yy) |
|---|---|---|---|---|---|---|---|---|---|
| CHB-01A | 1A/3A | 00/01 | 5A/7A | 02/03 | CHB-31A | 2J/4J | 60/61 | 6J/8J | 62/63 |
| CHB-01B | 1C/3C | 04/05 | 5C/7C | 06/07 | CHB-31B | 2L/4L | 64/65 | 6L/8L | 66/67 |
| CHB-01E | 1E/3E | 08/09 | 5E/7E | 0a/0b | CHB-31E | 2N/4N | 68/69 | 6N/8N | 6a/6b |
| CHB-01F | 1G/3G | 0c/0d | 5G/7G | 0e/0f | CHB-31F | 2Q/4Q | 6c/6d | 6Q/8Q | 6e/6f |
| CHB-02A | 1B/3B | 10/11 | 5B/7B | 12/13 | CHB-32A | 2K/4K | 70/71 | 6K/8K | 72/73 |
| CHB-02B | 1D/3D | 14/15 | 5D/7D | 16/17 | CHB-32B | 2M/4M | 74/75 | 6M/8M | 76/77 |
| CHB-02E | 1F/3F | 18/19 | 5F/7F | 1a/1b | CHB-32E | 2P/4P | 78/79 | 6P/8P | 7a/7b |
| CHB-02F | 1H/3H | 1c/1d | 5H/7H | 1e/1f | CHB-32F | 2R/4R | 7c/7d | 6R/8R | 7e/7f |
| CHB-11A | 2A/4A | 20/21 | 6A/8A | 22/23 | CHB-41A | 9A/BA | 80/81 | DA/FA | 82/83 |
| CHB-11B | 2C/4C | 24/25 | 6C/8C | 26/27 | CHB-41B | 9C/BC | 84/85 | DC/FC | 86/87 |
| CHB-11E | 2E/4E | 28/29 | 6E/8E | 2a/2b | CHB-41E | 9E/BE | 88/89 | DE/FE | 8a/8b |
| CHB-11F | 2G/4G | 2c/2d | 6G/8G | 2e/2f | CHB-41F | 9G/BG | 8c/8d | DG/FG | 8e/8f |
| CHB-12A | 2B/4B | 30/31 | 6B/8B | 32/33 | CHB-42A | 9B/BB | 90/91 | DB/FB | 92/93 |
| CHB-12B | 2D/4D | 34/35 | 6D/8D | 36/37 | CHB-42B | 9D/BD | 94/95 | DD/FD | 96/97 |
| CHB-12E | 2F/4F | 38/39 | 6F/8F | 3a/3b | CHB-42E | 9F/BF | 98/99 | DF/FF | 9a/9b |
| CHB-12F | 2H/4H | 3c/3d | 6H/8H | 3e/3f | CHB-42F | 9H/BH | 9c/9d | DH/FH | 9e/9f |
| CHB-21A | 1J/3J | 40/41 | 5J/7J | 42/43 | CHB-51A | AA/CA | a0/a1 | EA/GA | a2/a3 |
| CHB-21B | 1L/3L | 44/45 | 5L/7L | 46/47 | CHB-51B | AC/CC | a4/a5 | EC/GC | a6/a7 |
| CHB-21E | 1N/3N | 48/49 | 5N/7N | 4a/4b | CHB-51E | AE/CE | a8/a9 | EE/GE | aa/ab |
| CHB-21F | 1Q/3Q | 4c/4d | 5Q/7Q | 4e/4f | CHB-51F | AG/CG | ac/ad | EG/GG | ae/af |
| CHB-22A | 1K/3K | 50/51 | 5K/7K | 52/53 | CHB-52A | AB/CB | b0/b1 | EB/GB | b2/b3 |
| CHB-22B | 1M/3M | 54/55 | 5M/7M | 56/57 | CHB-52B | AD/CD | b4/b5 | ED/GD | b6/b7 |
| CHB-22E | 1P/3P | 58/59 | 5P/7P | 5a/5b | CHB-52E | AF/CF | b8/b9 | EF/GF | ba/bb |
| CHB-22F | 1R/3R | 5c/5d | 5R/7R | 5e/5f | CHB-52F | AH/CH | bc/bd | EH/GH | be/bf |

(10) SAS CLT#: SAS CTL consecutive numbers.
SAS Port#: SAS Port consecutive numbers.
PSW#: PSW consecutive numbers.
NVMe Port#: NVMe Port consecutive numbers.
CDEV#: CDEV Port consecutive numbers.
See the table below show relations with the DKB Location.

| CBX Pair | DKC | DKB Location | SAS CTL#/ PSW# (xx) | SAS Port#/NVMe Port# (xx) |
|---|---|---|---|---|
| CBX Pair 0 | DKC-0 | DKB-01D | 01 | 02 / 03 / 12 / 13 |
| | | DKB-01H | 00 | 00 / 01 / 10 / 11 |
| | | DKB-02D | 03 | 06 / 07 / 16 / 17 |
| | | DKB-02H | 02 | 04 / 05 / 14 / 15 |
| | DKC-1 | DKB-11D | 05 | 0a / b0 / 1a / 1b |
| | | DKB-11H | 04 | 08 / 09 / 18 / 19 |
| | | DKB-12D | 07 | 0e / 0f / 1e / 1f |
| | | DKB-12H | 06 | 0c / 0d / 1c / 1d |
| CBX Pair 1 | DKC-2 | DKB-21D | 09 | 22 / 23 / 32 / 33 |
| | | DKB-21H | 08 | 20 / 21 / 30 / 31 |
| | | DKB-22D | 0b | 26 / 27 / 36 / 37 |
| | | DKB-22H | 0a | 24 / 25 / 34 / 35 |
| | DKC-3 | DKB-31D | 0d | 2a / 2b / 3a / 3b |
| | | DKB-31H | 0c | 28 / 29 / 38 / 39 |
| | | DKB-32D | 0f | 2e / 2f / 3e / 3f |
| | | DKB-32H | 0e | 2c / 2d / 3c / 3d |
| CBX Pair 2 | DKC-4 | DKB-41D | 11 | 42 / 43 / 52 / 53 |
| | | DKB-41H | 10 | 40 / 41 / 50 / 51 |
| | | DKB-42D | 13 | 46 / 47 / 56 / 57 |
| | | DKB-42H | 12 | 44 / 45 / 54 / 55 |
| | DKC-5 | DKB-51D | 15 | 4a / 4b / 5a / 5b |
| | | DKB-51H | 14 | 48 / 49 / 58 / 59 |
| | | DKB-52D | 17 | 4e / 4f / 5e / 5f |
| | | DKB-52H | 16 | 4c / 4d / 5c / 5d |

(11) DB#/RDEV# See the table below.
In addition, about “DB#/RDEV# (C#/R#)” and “Disk Drive Number”, it is referred to THEORY OF OPERATION SECTION [ATTACHMENT] “Appendixes C: DB Number - C/R Number Matrix” (THEORYATT00-00).

(12) y: CMG#
CMG numbers in the controller board. See the table below show relations with the DIMM Location.

| DIMM Location | CMG# (y) |
|---|---|
| CM00 & CM01 & CM02 & CM03 | 0 |
| CM10 & CM11 & CM12 & CM13 | 1 |

(13) CU number (x) is detected only lower figure in SIM-RC (x‘0’ - x‘f’).
For additional information, see [Error Location] of [Content SIM] in “SIM Log” (SVP02-02-70).

(14) When SIM to show as follows was reported at the same time, have priority over this SIM.
If Maintenance Utility (Sub Panel) status return to “normal” after those recovery action, complete this SIM together.
SIM-RC = 3073xx
SIM-RC = cf88xx
SIM-RC = fff3xx
SIM-RC = fff4xx

(15) Contact T.S.D. with dump collected by Auto Dump in type “Detail”.

(16) Recover LDEVs according to the procedure shown in (TRBL03-17-10).

(17) In the case that there are no redundancy of drive the level of error is “Serious”.

(18) This temporary blocking is to recover the logical table on SM and be automatically recovered.

(19) The LDEV is blocked because of an error (inconsistency between data on the A and B sides) of configuration information stored in the SM. Recover the error following the instruction of the Technical Support Division.

(20) Recover the error according to the procedure shown in (TRBL03-28-10).

(21) xx: Reason Code
- x‘e1’, x‘10’: No DCR P.P.
- x‘e2’, x‘20’: Storage system busy
- x‘e4’, x‘40’: Staging time over
- x‘e5’, x‘50’: Cache or SM blockade
- x‘e6’, x‘60’: LDEV Warning
- x‘e7’, x‘70’: Staging failure
- x‘e8’, x‘80’: PS OFF
- x‘e9’, x‘90’: PreStaging canceled
- x‘ea’, x‘a0’: Cache over loaded
- x‘eb’, x‘b0’: Some MP’s blockade

(22) z: Numbers of pair status changes
- x‘0’: From Simplex to Pending
- x‘1’: From Simplex to Duplex
- x‘2’: From Pending to Duplex
- x‘3’: From Pending to Suspend
- x‘4’: From Duplex to Suspend
- x‘5’: From Duplex to Simplex
- x‘6’: From Pending to Simplex
- x‘7’: From Suspend to Simplex
- x‘8’: From Suspend to Pending
- x‘9’: From Pending to Suspend (continue)
- x‘a’: From Pending to Suspend (complete)
- x‘b’: From Suspend (continue) to Suspend

(23) Numbers of pair status changes
- x‘0’: A request for suspension was received.
- x‘1’: An instruction to delete a pair was received in the Suspend status.
- x‘2’: An instruction to delete a pair was received in the Duplex status.
- x‘3’: An instruction to delete a pair was received in the Pending status.
- x‘4’: A suspension transaction was completed.
- x‘5’: A pair deletion was completed.

(24) You can suppress reporting the TrueCopy for Mainframe Service SIM to the HOST by RCU Option operation (PPRC support by HOST and Service SIM of TCMF).

- Service level SIM

| PPRC support by HOST | Service SIM or TCMF | Level of error | TCMF |
|---|---|---|---|
| Yes | Report | DKC_SIM | Host Report |
| | | DEV_SIM | Not Host Report |
| | Not Report | DKC_SIM | Not Host Report |
| | | DEV_SIM | Not Host Report |
| No | Report | DKC_SIM | Host Report |
| | | DEV_SIM | Host Report |
| | Not Report | DKC_SIM | Not Host Report |
| | | DEV_SIM | Not Host Report |

- Moderate or Serious level SIM

| PPRC support by HOST | Level of error | TCMF |
|---|---|---|
| Yes | DKC_SIM | Host Report |
| | DEV_SIM | Not Host Report |
| No | DKC_SIM | Host Report |
| | DEV_SIM | Host Report |

(25) When SIM-RC = 3073xx, cf88xx, fff3xx were reported at the same time, give priority to ACC of these SIM.

(26) In case of TrueCopy for Mainframe, SIMs reported from RCU are reported to the host by MCU.

| Severity Level | RC of reported SIM for TCMF |
|---|---|
| Acute or Serious | No modification |
| Moderate | No modification |
| Service (Not TCMF SIM) | No modification |
| Service (TCMF SIM) | Not reported |

(27) In the fibre channel connection of the TrueCopy, this SIM may be issued on the MCU side when the microprogram of the RCU is replaced.

(28) The following information of SIM = ac90 is valid.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| byte 40 | Port number<br>(Eg. CL1-A=0, CL3-A=1) | | | | | | | |
| byte 41 | | | | | | | | |
| byte 42 | HDEV number | | | | | | | |
| byte 43 | | | | | | | | |
| byte 44 | | | | | | | | |
| byte 45 | | | | | | | | |
| byte 46 | LDEV number of executing command processing | | | | | | | |
| byte 47 | | | | | | | | |
| byte 48 | | | | | | | | |
| byte 49 | | | | | | | | |
| byte 50 | Starting LBA address in CDB | | | | | | | |
| byte 51 | | | | | | | | |
| byte 52 | | | | | | | | |
| byte 53 | | | | | | | | |
| byte 54 | | | | | | | | |
| byte 55 | | | | | | | | |
| byte 56 | | | | | | | | |
| byte 57 | | | | | | | | |
| byte 58 | Transfer Length in CDB | | | | | | | |
| byte 59 | | | | | | | | |
| byte 60 | | | | | | | | |
| byte 61 | | | | | | | | |
| byte 62 | World Wide Name (WWN) of the host which issued the write request | | | | | | | |
| byte 63 | | | | | | | | |
| byte 64 | | | | | | | | |
| byte 65 | | | | | | | | |
| byte 66 | | | | | | | | |
| byte 67 | | | | | | | | |
| byte 68 | | | | | | | | |
| byte 69 | | | | | | | | |
| byte 70 | Detected error item(s). Bit-OR of the left items.<br>Check kind:<br>0x01:Check-F1<br>0x02:Check-L<br>0x04:Check-F2<br>0x08:Check-F3 | | | | | | | |
| byte 71 | | | | | | | | |
| ~ | | | | | | | | |
| byte 7F | | | | | | | | |

(29) The following information of SIM = 21d0, 21d1, 21d2, efd0 is valid.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| byte 40<br>byte 41 | Port number<br>(Eg. CL1-A=0, CL3-A=1) | | | | | | | |
| byte 42<br>byte 43 | LDEV number (lower 2 bytes) | | | | | | | |
| byte 44<br>~<br>byte 47 | VDEV number | | | | | | | |
| byte 48<br>~<br>byte 4F | Forehand WWN of External Storage connection | | | | | | | |
| byte 50<br>~<br>byte 59 | Product Number of External Storage | | | | | | | |
| byte 5A<br>~<br>byte 61 | Vendor Name | | | | | | | |
| byte 62<br>~<br>byte 71 | Model name of External Storage | | | | | | | |
| byte 72<br>byte 73 | External LUN# | | | | | | | |
| byte 74 | Bit determining whether info identifying Binary/ Bit determining whether info identifying | Info identifying Binary/ ASCII for the connected storage system serial number | Not used | | | | | |
| byte 75<br>~<br>byte 78 | LDEV number | | | | | | | |
| byte 71<br>~<br>byte 7F | Not used | | | | | | | |

byte 0x74 bit0: Bit determining whether the information identifying Binary/ASCII for the connected storage system serial number is valid

| Bit | Description |
|---|---|
| ON (1b) | Information identifying whether the connected storage system serial number is in the Binary/ASCII format is “Valid”. |
| OFF (0b) | Information identifying whether the connected storage system serial number is in the Binary/ASCII format is “Invalid”. |

byte 0x74 bit1: Information identifying Binary/ASCII for the connected storage system serial number

| Bit | Description |
|---|---|
| ON (1b) | The serial number of the connected storage system is in the Binary format. |
| OFF (0b) | The serial number of the connected storage system is in the ASCII format. |

Serial number is not acquired from external storage, NULL (0) is set in the Serial number of the connected storage system.
Moreover, Serial number of the connected storage system is stored by left justify in the case of Binary and stored by right justify in the case of ASCII.

SIM RC = 21d1 occurs when at least one of the external paths recovers.
To confirm that all the paths have recovered at the completion of the maintenance, check the path status not only with the output of SIM RC = 21d1 but with the following procedure:

(a) Check the status displayed in the [Status] field of the [External Storage] window that is displayed when selecting [External Storage] from the [Storage System] tree in the Storage Navigator window.
(b) Confirm that the status displayed in the [Status] field is “Normal”.

NOTE: If the status displayed in the [Status] field is other than “Normal”, it indicates that at least one or more external paths are in the maintenance status or in the blocked status.

When external storage in the following matrix becomes the target of SIM, information of Model name of External Storage in the SIM is different from that of actual product name. When the external storage in the following matrix is connected and SIM is reported, check Model name of External Storage in the SIM against the actual product name to identify target external storage of the SIM.

| SIM/ASSIST | | | Actual product | | |
|---|---|---|---|---|---|
| Vendor Name | Model Name of External Storage | Product Number of External Storage (NOTE) | Vendor | Product Name | Display in console |
| HITACHI | 9500V | D600xxxx | HITACHI | 9570V | 9500V |
| HITACHI | 9500V | D60Jxxxx | HITACHI | 9530V | 9500V |
| HITACHI | 9500V | D60Hxxxx | HITACHI | 9580V/9585V | 9500V |
| HITACHI | 9500V | 71xxxxxx | HITACHI | WMS100 | WMS |
| HITACHI | 9500V | 73xxxxxx | HITACHI | AMS200 | AMS |
| HITACHI | 9500V | 75xxxxxx | HITACHI | AMS500 | AMS |
| HITACHI | 9500V | 77xxxxxx | HITACHI | AMS1000 | AMS |
| HITACHI | AMS | 83xxxxxx | HITACHI | AMS2100 | AMS |
| HITACHI | AMS | 85xxxxxx | HITACHI | AMS2300 | AMS |
| HITACHI | AMS | 87xxxxxx | HITACHI | AMS2500 | AMS |
| HITACHI | HUS | 91xxxxxx | HITACHI | HUS110 | HUS |
| HITACHI | HUS | 93xxxxxx | HITACHI | HUS130 | HUS |
| HITACHI | HUS | 95xxxxxx | HITACHI | HUS150 | HUS |

NOTE: “xxxx” at Product Number of External Storage means arbitrary number or character. When target product is 9500V series, “xxxx” means the last 4 digits of the serial number.

As for external storage other than those above, information of Model name of External Storage in SIM and that of actual product name is the same. Refer to FRS for detail.

(30) SIM RC = 2194 is valid

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| byte 40 ~ byte 43 | 0x0000B6AF (Related SSB Code) | | | | | | | |
| byte 44 ~ byte 47 | SIM type + Port# | | | | | | | |
| byte 48 ~ byte 4B | Starting supervise at time | | | | | | | |
| byte 4C ~ byte 4F | Starting supervise at MIC_H timer | | | | | | | |
| byte 50 ~ byte 53 | SSB reported count (Comprehensive value) | | | | | | | |
| byte 54 ~ byte 57 | Link Failure supervised timer SVP timer | | | | | | | |
| byte 58 ~ byte 5B | Link Failure supervised timer (0.96 $\mu$ sec/count) | | | | | | | |
| byte 5C ~ byte 5F | SSB: B65A reported count | | | | | | | |
| byte 60 ~ byte 63 | SSB: B65C reported count | | | | | | | |
| byte 64 ~ byte 67 | SSB: B65D reported count | | | | | | | |
| byte 68 ~ byte 6B | SSB: B65E reported count | | | | | | | |
| byte 6C ~ byte 6F | SSB: B660 reported count | | | | | | | |
| byte 70 ~ byte 73 | SSB: B661 reported count | | | | | | | |
| byte 74 ~ byte 77 | SSB: B668 reported count | | | | | | | |
| byte 78 ~ byte 7B | SSB: B66A reported count | | | | | | | |
| byte 7C ~ byte 7F | SSB: DDA1 reported count | | | | | | | |

(31) SIM RC = 2193 is valid

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| byte 40 ~ byte 43 | 0x0000B6AF (Related SSB Code) | | | | | | | |
| byte 44 ~ byte 47 | SIM type + Port# | | | | | | | |
| byte 48 ~ byte 4B | Loss of Signal Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 4C ~ byte 4F | Bad Received Character Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 50 ~ byte 53 | Loss of Sync Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 54 ~ byte 57 | Link Failure Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 58 ~ byte 5B | Discarded Frame Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 5C ~ byte 5F | Received _EOFa Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 60 ~ byte 63 | BAD_CRC Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 64 ~ byte 67 | OLS/NOS Received Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 68 ~ byte 6B | LIPf Received Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 6C ~ byte 6F | Bad_ALPA Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 70 ~ byte 73 | Link Down detected Counter (Cumulative value for 30 min to before the reporting SIM) | | | | | | | |
| byte 74 ~ byte 77 | none | | | | | | | |
| byte 78 ~ byte 7B | none | | | | | | | |
| byte 7C ~ byte 7F | none | | | | | | | |

(32) z: Numbers of pair status changes
- x'0': From Simplex to Pending
- x'1': From Simplex to Duplex
- x'2': From Pending to Duplex
- x'3': From Pending to Suspend
- x'4': From Duplex to Suspend
- x'5': From Duplex to Simplex
- x'6': From Pending to Simplex
- x'7': From Suspend to Simplex
- x'8': From Suspend to Pending
- x'9': From Hold to Duplex
- x'a': From Hold to Pending
- x'b': From Hold to Simplex
- x'c': From Simplex to Suspend
- x'd': From Simplex to Hold
- x'e': From Suspend to Hold
- x'f': From Duplex to Pending

(33) z: Numbers of pair status changes
- x'0': A request for suspension was received.
- x'1': A suspension transaction was completed.
- x'2': An instruction to delete a pair was received in the Suspend status.
- x'3': An instruction to delete a pair was received in the Pending status.
- x'4': An instruction to delete a pair was received in the Duplex status.
- x'5': A pair deletion was completed.
- x'6': An instruction to delete a pair was received in the Hold status.

(34) The DKC emulation type determines whether the SIM will be reported to the host, as explained below;
- DKC emulation type is 2107
  You can select the SIM report to the HOST by SYSTEM OPTION.
  MODE308 = OFF (Default) : Not Report to the HOST
  MODE308 = ON : Report to the HOST
  (However, (24) is higher priority than (34))
- Others
  It is decided by setting (24).

(35) You can suppress reporting the SIM to the optional operation. Default is "not report"
(When it is chosen optional operation once, it is not changed till the setting sets it again).
To set the SIM report to the host, see the section related to the necessity of the SIM report in "Universal Replicator for Mainframe User Guide".

(36) Refer to (TRBL02-04-150) except a normal end.

(37) The following information of SIM RC = 21d4, 21d5, efd4 is valid.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| byte 40<br>byte 41 | Port number<br>(ex. CL1-A=0, CL1-B=1) | | | | | | | |
| byte 42<br>byte 43 | LDEV number (lower 2 bytes) | | | | | | | |
| byte 44<br>~<br>byte 47 | VDEV number | | | | | | | |
| byte 48<br>~<br>byte 4F | Forehand WWN of External Storage connection | | | | | | | |
| byte 50<br>~<br>byte 5B | Product Number of External Storage | | | | | | | |
| byte 5C<br>~<br>byte 5E | Vendor Name | | | | | | | |
| byte 5F | Not used | | | | | | | |
| byte 60<br>~<br>byte 63 | Path number on the management of VDEV | | | | | | | |
| byte 64 | Not used | | | | | | | |
| byte 65<br>~<br>byte 67 | LINK ADR (Tool input value) | | | | | | | |
| byte 68<br>~<br>byte 6B | LDEV number | | | | | | | |
| byte 70<br>~<br>byte 7F | Not used | | | | | | | |

(38) Mainframe Fibre DM is contained

(39) In the case of Mainframe Fibre DM, host report is not performed.

(40) (Blank)

Blank Sheet

(41) (Blank)

(42) (Blank)

(43) After SIM is reported, the DKC recovers from DKU BOX that the number is small to order turn. Time of the recovery for each DKU BOX is about 2 minutes. It takes about 12 minutes by the recovery at 6 DKU BOX configuration.

(44) The SIM-RCs might be reported for multiple locations at the same time depending on the cause of failure. For SAS port connections, see “Alternate path (back end)” (THEORY01-05-30). If multiple ENC ACCs exist, replace ENCs one by one in descending order of ENC location number.

(45) If SSB code “BD1D” was detected with the same port number as the blockaded channel port around the same time, please collect the dump by Auto Dump in type “Normal” and make contact with T.S.D.

(46) This SIM is output in the URxUR Multi-target configuration when two or more mirrors in the primary site are Active, and the metadata utilization and the journal data utilization are 60% to 79%.

(47) You can select the SIM report to the HOST by SYSTEM OPTION.
MODE598 = OFF (Default) : Not Report to the HOST
MODE598 = ON : Report to the HOST

(48) For Flash Module Drive battery capacity shortage, refer to (TRBL03-32-10).

(49) DB#:

DB consecutive numbers in the device. See the table below show relations with the PCB Location.

• Case of UBX

| Chassis# | Location (xx) | Chassis# | Location (xx) | Chassis# | Location (xx) | Chassis# | Location (xx) | Chassis# | Location (xx) |
|---|---|---|---|---|---|---|---|---|---|
| DB-000 | 00 | DB-041 | 29 | DB-082 | 52 | DB-123 | 7b | DB-164 | a4 |
| DB-001 | 01 | DB-042 | 2a | DB-083 | 53 | DB-124 | 7c | DB-165 | a5 |
| DB-002 | 02 | DB-043 | 2b | DB-084 | 54 | DB-125 | 7d | DB-166 | a6 |
| DB-003 | 03 | DB-044 | 2c | DB-085 | 55 | DB-126 | 7e | DB-167 | a7 |
| DB-004 | 04 | DB-045 | 2d | DB-086 | 56 | DB-127 | 7f | DB-168 | a8 |
| DB-005 | 05 | DB-046 | 2e | DB-087 | 57 | DB-128 | 80 | DB-169 | a9 |
| DB-006 | 06 | DB-047 | 2f | DB-088 | 58 | DB-129 | 81 | DB-170 | aa |
| DB-007 | 07 | DB-048 | 30 | DB-089 | 59 | DB-130 | 82 | DB-171 | ab |
| DB-008 | 08 | DB-049 | 31 | DB-090 | 5a | DB-131 | 83 | DB-172 | ac |
| DB-009 | 09 | DB-050 | 32 | DB-091 | 5b | DB-132 | 84 | DB-173 | ad |
| DB-010 | 0a | DB-051 | 33 | DB-092 | 5c | DB-133 | 85 | DB-174 | ae |
| DB-011 | 0b | DB-052 | 34 | DB-093 | 5d | DB-134 | 86 | DB-175 | af |
| DB-012 | 0c | DB-053 | 35 | DB-094 | 5e | DB-135 | 87 | DB-176 | b0 |
| DB-013 | 0d | DB-054 | 36 | DB-095 | 5f | DB-136 | 88 | DB-177 | b1 |
| DB-014 | 0e | DB-055 | 37 | DB-096 | 60 | DB-137 | 89 | DB-178 | b2 |
| DB-015 | 0f | DB-056 | 38 | DB-097 | 61 | DB-138 | 8a | DB-179 | b3 |
| DB-016 | 10 | DB-057 | 39 | DB-098 | 62 | DB-139 | 8b | DB-180 | b4 |
| DB-017 | 11 | DB-058 | 3a | DB-099 | 63 | DB-140 | 8c | DB-181 | b5 |
| DB-018 | 12 | DB-059 | 3b | DB-100 | 64 | DB-141 | 8d | DB-182 | b6 |
| DB-019 | 13 | DB-060 | 3c | DB-101 | 65 | DB-142 | 8e | DB-183 | b7 |
| DB-020 | 14 | DB-061 | 3d | DB-102 | 66 | DB-143 | 8f | DB-184 | b8 |
| DB-021 | 15 | DB-062 | 3e | DB-103 | 67 | DB-144 | 90 | DB-185 | b9 |
| DB-022 | 16 | DB-063 | 3f | DB-104 | 68 | DB-145 | 91 | DB-186 | ba |
| DB-023 | 17 | DB-064 | 40 | DB-105 | 69 | DB-146 | 92 | DB-187 | bb |
| DB-024 | 18 | DB-065 | 41 | DB-106 | 6a | DB-147 | 93 | DB-188 | bc |
| DB-025 | 19 | DB-066 | 42 | DB-107 | 6b | DB-148 | 94 | DB-189 | bd |
| DB-026 | 1a | DB-067 | 43 | DB-108 | 6c | DB-149 | 95 | DB-190 | be |
| DB-027 | 1b | DB-068 | 44 | DB-109 | 6d | DB-150 | 96 | DB-191 | bf |
| DB-028 | 1c | DB-069 | 45 | DB-110 | 6e | DB-151 | 97 | | |
| DB-029 | 1d | DB-070 | 46 | DB-111 | 6f | DB-152 | 98 | | |
| DB-030 | 1e | DB-071 | 47 | DB-112 | 70 | DB-153 | 99 | | |
| DB-031 | 1f | DB-072 | 48 | DB-113 | 71 | DB-154 | 9a | | |
| DB-032 | 20 | DB-073 | 49 | DB-114 | 72 | DB-155 | 9b | | |
| DB-033 | 21 | DB-074 | 4a | DB-115 | 73 | DB-156 | 9c | | |
| DB-034 | 22 | DB-075 | 4b | DB-116 | 74 | DB-157 | 9d | | |
| DB-035 | 23 | DB-076 | 4c | DB-117 | 75 | DB-158 | 9e | | |
| DB-036 | 24 | DB-077 | 4d | DB-118 | 76 | DB-159 | 9f | | |
| DB-037 | 25 | DB-078 | 4e | DB-119 | 77 | DB-160 | a0 | | |
| DB-038 | 26 | DB-079 | 4f | DB-120 | 78 | DB-161 | a1 | | |
| DB-039 | 27 | DB-080 | 50 | DB-121 | 79 | DB-162 | a2 | | |
| DB-040 | 28 | DB-081 | 51 | DB-122 | 7a | DB-163 | a3 | | |

(To be continued)

(Continued from preceding sheet)

- Case of SBX / FBX / NBX

| Chassis# | Location (xx) | Chassis# | Location (xx) | Chassis# | Location (xx) |
|---|---|---|---|---|---|
| DB-000 / 001 | 00 / 01 | DB-064 / 065 | 40 / 41 | DB-128 / 129 | 80 / 81 |
| DB-002 / 003 | 02 / 03 | DB-066 / 067 | 42 / 43 | DB-130 / 131 | 82 / 83 |
| DB-004 / 005 | 04 / 05 | DB-068 / 069 | 44 / 45 | DB-132 / 133 | 84 / 85 |
| DB-006 / 007 | 06 / 07 | DB-070 / 071 | 46 / 47 | DB-134 / 135 | 86 / 87 |
| DB-008 / 009 | 08 / 09 | DB-072 / 073 | 48 / 49 | DB-136 / 137 | 88 / 89 |
| DB-010 / 011 | 0a / 0b | DB-074 / 075 | 4a / 4b | DB-138 / 139 | 8a / 8b |
| DB-012 / 013 | 0c / 0d | DB-076 / 077 | 4c / 4d | DB-140 / 141 | 8c / 8d |
| DB-014 / 015 | 0e / 0f | DB-078 / 079 | 4e / 4f | DB-142 / 143 | 8e / 8f |
| DB-016 / 017 | 10 / 11 | DB-080 / 081 | 50 / 51 | DB-144 / 145 | 90 / 91 |
| DB-018 / 019 | 12 / 13 | DB-082 / 083 | 52 / 53 | DB-146 / 147 | 92 / 93 |
| DB-020 / 021 | 14 / 15 | DB-084 / 085 | 54 / 55 | DB-148 / 149 | 94 / 95 |
| DB-022 / 023 | 16 / 17 | DB-086 / 087 | 56 / 57 | DB-150 / 151 | 96 / 97 |
| DB-024 / 025 | 18 / 19 | DB-088 / 089 | 58 / 59 | DB-152 / 153 | 98 / 99 |
| DB-026 / 027 | 1a / 1b | DB-090 / 091 | 5a / 5b | DB-154 / 155 | 9a / 9b |
| DB-028 / 029 | 1c / 1d | DB-092 / 093 | 5c / 5d | DB-156 / 157 | 9c / 9d |
| DB-030 / 031 | 1e / 1f | DB-094 / 095 | 5e / 5f | DB-158 / 159 | 9e / 9f |
| DB-032 / 033 | 20 / 21 | DB-096 / 097 | 60 / 61 | DB-160 / 161 | a0 / a1 |
| DB-034 / 035 | 22 / 23 | DB-098 / 099 | 62 / 63 | DB-162 / 163 | a2 / a3 |
| DB-036 / 037 | 24 / 25 | DB-100 / 101 | 64 / 65 | DB-164 / 165 | a4 / a5 |
| DB-038 / 039 | 26 / 27 | DB-102 / 103 | 66 / 67 | DB-166 / 167 | a6 / a7 |
| DB-040 / 041 | 28 / 29 | DB-104 / 105 | 68 / 69 | DB-168 / 169 | a8 / a9 |
| DB-042 / 043 | 2a / 2b | DB-106 / 107 | 6a / 6b | DB-170 / 171 | aa / ab |
| DB-044 / 045 | 2c / 2d | DB-108 / 109 | 6c / 6d | DB-172 / 173 | ac / ad |
| DB-046 / 047 | 2e / 2f | DB-110 / 111 | 6e / 6f | DB-174 / 175 | ae / af |
| DB-048 / 049 | 30 / 31 | DB-112 / 113 | 70 / 71 | DB-176 / 177 | b0 / b1 |
| DB-050 / 051 | 32 / 33 | DB-114 / 115 | 72 / 73 | DB-178 / 179 | b2 / b3 |
| DB-052 / 053 | 34 / 35 | DB-116 / 117 | 74 / 75 | DB-180 / 181 | b4 / b5 |
| DB-054 / 055 | 36 / 37 | DB-118 / 119 | 76 / 77 | DB-182 / 183 | b6 / b7 |
| DB-056 / 057 | 38 / 39 | DB-120 / 121 | 78 / 79 | DB-184 / 185 | b8 / b9 |
| DB-058 / 059 | 3a / 3b | DB-122 / 123 | 7a / 7b | DB-186 / 187 | ba / bb |
| DB-060 / 061 | 3c / 3d | DB-124 / 125 | 7c / 7d | DB-188 / 189 | bc / bd |
| DB-062 / 063 | 3e / 3f | DB-126 / 127 | 7e / 7f | DB-190 / 191 | be / bf |

(50) xx: DKCPS#

| CBX Pair | DKC | CTL Location | DKCPS# (xx) |
|---|---|---|---|
| CBX Pair 0 | DKC-0 | DKCPS01 | 00 |
| | | DKCPS02 | 01 |
| | DKC-1 | DKCPS11 | 02 |
| | | DKCPS12 | 03 |
| CBX Pair 1 | DKC-2 | DKCPS21 | 04 |
| | | DKCPS22 | 05 |
| | DKC-3 | DKCPS31 | 06 |
| | | DKCPS32 | 07 |
| CBX Pair 2 | DKC-4 | DKCPS41 | 08 |
| | | DKCPS42 | 09 |
| | DKC-5 | DKCPS51 | 0a |
| | | DKCPS52 | 0b |

(51) xx: Battery#

| CBX Pair | DKC | BKMF Location | Battery# (xx) |
|---|---|---|---|
| CBX Pair 0 | DKC-0 | BAT-B011 | 01 |
| | | BAT-B013 | 05 |
| | | BAT-B021 | 08 |
| | | BAT-B023 | 0c |
| | DKC-1 | BAT-B111 | 0f |
| | | BAT-B113 | 13 |
| | | BAT-B121 | 16 |
| | | BAT-B123 | 1a |
| CBX Pair 1 | DKC-2 | BAT-B211 | 1d |
| | | BAT-B213 | 21 |
| | | BAT-B221 | 24 |
| | | BAT-B223 | 28 |
| | DKC-3 | BAT-B311 | 2b |
| | | BAT-B313 | 2f |
| | | BAT-B321 | 32 |
| | | BAT-B323 | 36 |
| CBX Pair 2 | DKC-4 | BAT-B411 | 39 |
| | | BAT-B413 | 3d |
| | | BAT-B421 | 40 |
| | | BAT-B423 | 44 |
| | DKC-5 | BAT-B511 | 47 |
| | | BAT-B513 | 4b |
| | | BAT-B521 | 4e |
| | | BAT-B523 | 52 |

(52) xx: BKMF#/FAN#

| CBX Pair | DKC | BKMF Location | FAN Location | BKMF#/FAN# (xx) |
|---|---|---|---|---|
| CBX Pair 0 | DKC-0 | BKMF-010 | FAN-010 | 00 |
| | | BKMF-011 | FAN-011 | 01 |
| | | BKMF-012 | FAN-012 | 02 |
| | | BKMF-013 | FAN-013 | 03 |
| | | BKMF-020 | FAN-020 | 04 |
| | | BKMF-021 | FAN-021 | 05 |
| | | BKMF-022 | FAN-022 | 06 |
| | | BKMF-023 | FAN-023 | 07 |
| | DKC-1 | BKMF-110 | FAN-110 | 08 |
| | | BKMF-111 | FAN-111 | 09 |
| | | BKMF-112 | FAN-112 | 0a |
| | | BKMF-113 | FAN-113 | 0b |
| | | BKMF-120 | FAN-120 | 0c |
| | | BKMF-121 | FAN-121 | 0d |
| | | BKMF-122 | FAN-122 | 0e |
| | | BKMF-123 | FAN-123 | 0f |
| CBX Pair 1 | DKC-2 | BKMF-210 | FAN-210 | 10 |
| | | BKMF-211 | FAN-211 | 11 |
| | | BKMF-212 | FAN-212 | 12 |
| | | BKMF-213 | FAN-213 | 13 |
| | | BKMF-220 | FAN-220 | 14 |
| | | BKMF-221 | FAN-221 | 15 |
| | | BKMF-222 | FAN-222 | 16 |
| | | BKMF-223 | FAN-223 | 17 |
| | DKC-3 | BKMF-310 | FAN-310 | 18 |
| | | BKMF-311 | FAN-311 | 19 |
| | | BKMF-312 | FAN-312 | 1a |
| | | BKMF-313 | FAN-313 | 1b |
| | | BKMF-320 | FAN-320 | 1c |
| | | BKMF-321 | FAN-321 | 1d |
| | | BKMF-322 | FAN-322 | 1e |
| | | BKMF-323 | FAN-323 | 1f |
| CBX Pair 2 | DKC-4 | BKMF-410 | FAN-410 | 20 |
| | | BKMF-411 | FAN-411 | 21 |
| | | BKMF-412 | FAN-412 | 22 |
| | | BKMF-413 | FAN-413 | 23 |
| | | BKMF-420 | FAN-420 | 24 |
| | | BKMF-421 | FAN-421 | 25 |
| | | BKMF-422 | FAN-422 | 26 |
| | | BKMF-423 | FAN-423 | 27 |
| | DKC-5 | BKMF-510 | FAN-510 | 28 |
| | | BKMF-511 | FAN-511 | 29 |
| | | BKMF-512 | FAN-512 | 2a |
| | | BKMF-513 | FAN-513 | 2b |
| | | BKMF-520 | FAN-520 | 2c |
| | | BKMF-521 | FAN-521 | 2d |
| | | BKMF-522 | FAN-522 | 2e |
| | | BKMF-523 | FAN-523 | 2f |

(53) xx: CFM#:

| CBX Pair | DKC | CFM Location | xx |
|---|---|---|---|
| CBX Pair 0 | DKC-0 | CFM-010 | 00 |
| | | CFM-011 | 01 |
| | | CFM-020 | 02 |
| | | CFM-021 | 03 |
| | DKC-1 | CFM-110 | 04 |
| | | CFM-111 | 05 |
| | | CFM-120 | 06 |
| | | CFM-121 | 07 |
| CBX Pair 1 | DKC-2 | CFM-210 | 08 |
| | | CFM-211 | 09 |
| | | CFM-220 | 0a |
| | | CFM-211 | 0b |
| | DKC-3 | CFM-310 | 0c |
| | | CFM-311 | 0d |
| | | CFM-320 | 0e |
| | | CFM-321 | 0f |
| CBX Pair 2 | DKC-4 | CFM-410 | 10 |
| | | CFM-411 | 11 |
| | | CFM-420 | 12 |
| | | CFM-421 | 13 |
| | DKC-5 | CFM-510 | 14 |
| | | CFM-511 | 15 |
| | | CFM-520 | 16 |
| | | CFM-521 | 17 |

(54) HSNBX#, ISW#, ISWFAN#, and ISWPS# are shown together in the table below.
("xx" in a reported reference code indicates HSNBX#, ISW#, ISWFAN#, or ISWPS#.)

| HSNBX Location | HSNBX# (xx) | ISW Location | ISW# (xx) | ISWFAN# Location | ISWFAN# (xx) | Cluster | ISWPS Location | ISWPS# (xx) |
|---|---|---|---|---|---|---|---|---|
| HSNBX-0 | 00 | ISW01 | 00 | ISWFAN010 | 00 | CL-1 | ISWPS01 | 00 |
| | | | | ISWFAN011 | 01 | | | |
| | | ISW02 | 01 | ISWFAN020 | 02 | CL-2 | ISWPS02 | 01 |
| | | | | ISWFAN021 | 03 | | | |
| HSNBX-1 | 01 | ISW11 | 02 | ISWFAN110 | 04 | CL-1 | ISWPS11 | 02 |
| | | | | ISWFAN111 | 05 | | | |
| | | ISW12 | 03 | ISWFAN120 | 06 | CL-2 | ISWPS12 | 03 |
| | | | | ISWFAN121 | 07 | | | |

(55) There is the case that plural PDEV(s) on the SAS port/NVMe port concerned blockade when this SIM occurs at the time of a boot, but PDEV(s) blockade recovers in a procedure of (TRBL03-34-10).

(56) When this SIM occurs, the Dynamic Sparing will be started to the spare drive, unless drive copy function (i.e. drive copy, copy back or collection copy) is already started in the same RAID group which the drive reported with SIM belongs to.

(57) Self replacement of PDEV will be failed. Please replace it to new one.

(58) For Flash module drive initialization failed, refer to (TRBL03-65-10).

(59) The last three digits of the reported SIM (error cause code) indicate the cause of error occurrence as shown in the following table.
Recovery actions for the following SIMs need to be performed by users.

| xxx: Error cause code | Output timing | Cause of error occurrence | | Description |
|---|---|---|---|---|
| | | Category of cause | Detailed cause | |
| 001 (631001) | When the automatic pool capacity expansion is in operation | System error | Cache management device shortage | The maximum of cache management device in the system is already created. Therefore, pool volumes cannot be created. |
| 002 (631002) | | | Unobtainable system lock | The system lock cannot be obtained due to maintenance operations. |
| 003 (631003) | | | Shredding operation in progress | Volumes that are being shredded exist in the system. Therefore, pool volumes cannot be created. |

(60) xx: HIE#

| CTL Location | HIE Location | HIE# (xx) |
|---|---|---|
| CTL01 | HIE-01G | 00 |
| | HIE-01C | 01 |
| CTL02 | HIE-02G | 02 |
| | HIE-02C | 03 |
| CTL11 | HIE-11G | 04 |
| | HIE-11C | 05 |
| CTL12 | HIE-12G | 06 |
| | HIE-12C | 07 |
| CTL21 | HIE-21G | 08 |
| | HIE-21C | 09 |
| CTL22 | HIE-22G | 0a |
| | HIE-22C | 0b |
| CTL31 | HIE-31G | 0c |
| | HIE-31C | 0d |
| CTL32 | HIE-32G | 0e |
| | HIE-32C | 0f |
| CTL41 | HIE-41G | 10 |
| | HIE-41C | 11 |
| CTL42 | HIE-42G | 12 |
| | HIE-42C | 13 |
| CTL51 | HIE-51G | 14 |
| | HIE-51C | 15 |
| CTL52 | HIE-52G | 16 |
| | HIE-52C | 17 |

(61) xx: X-path#

| HIE Location | ISW Location | X-path Location | X-path# (xx) |
|---|---|---|---|
| HIE-01G | ISW01 | ISW01-0 - HIE-01G-0 | 00 |
| | ISW02 | ISW02-0 - HIE-01G-1 | 01 |
| HIE-01C | ISW11 | ISW11-0 - HIE-01C-0 | 02 |
| | ISW12 | ISW12-0 - HIE-01C-1 | 03 |
| HIE-02G | ISW01 | ISW01-1 - HIE-02G-0 | 04 |
| | ISW02 | ISW02-1 - HIE-02G-1 | 05 |
| HIE-02C | ISW11 | ISW11-1 - HIE-02C-0 | 06 |
| | ISW12 | ISW12-1 - HIE-02C-1 | 07 |
| HIE-11G | ISW01 | ISW01-2 - HIE-11G-0 | 08 |
| | ISW02 | ISW02-2 - HIE-11G-1 | 09 |

(To be continued)

(Continued from preceding sheet)

| HIE Location | ISW Location | X-path Location | X-path# (xx) |
|---|---|---|---|
| HIE-11C | ISW11 | ISW11-2 - HIE-11C-0 | 0a |
| | ISW12 | ISW12-2 - HIE-11C-1 | 0b |
| HIE-12G | ISW01 | ISW01-3 - HIE-12G-0 | 0c |
| | ISW02 | ISW02-3 - HIE-12G-1 | 0d |
| HIE-12C | ISW11 | ISW11-3 - HIE-12C-0 | 0e |
| | ISW12 | ISW12-3 - HIE-12C-1 | 0f |
| HIE-21G | ISW01 | ISW01-4 - HIE-21G-0 | 10 |
| | ISW02 | ISW02-4 - HIE-21G-1 | 11 |
| HIE-21C | ISW11 | ISW11-4 - HIE-21C-0 | 12 |
| | ISW12 | ISW12-4 - HIE-21C-1 | 13 |
| HIE-22G | ISW01 | ISW01-5 - HIE-22G-0 | 14 |
| | ISW02 | ISW02-5 - HIE-22G-1 | 15 |
| HIE-22C | ISW11 | ISW11-5 - HIE-22C-0 | 16 |
| | ISW12 | ISW12-5 - HIE-22C-1 | 17 |
| HIE-31G | ISW01 | ISW01-6 - HIE-31G-0 | 18 |
| | ISW02 | ISW02-6 - HIE-31G-1 | 19 |
| HIE-31C | ISW11 | ISW11-6 - HIE-31C-0 | 1a |
| | ISW12 | ISW12-6 - HIE-31C-1 | 1b |
| HIE-32G | ISW01 | ISW01-7 - HIE-32G-0 | 1c |
| | ISW02 | ISW02-7 - HIE-32G-1 | 1d |
| HIE-32C | ISW11 | ISW11-7 - HIE-32C-0 | 1e |
| | ISW12 | ISW12-7 - HIE-32C-1 | 1f |
| HIE-41G | ISW01 | ISW01-8 - HIE-41G-0 | 20 |
| | ISW02 | ISW02-8 - HIE-41G-1 | 21 |
| HIE-41C | ISW11 | ISW11-8 - HIE-41C-0 | 22 |
| | ISW12 | ISW12-8 - HIE-41C-1 | 23 |
| HIE-42G | ISW01 | ISW01-9 - HIE-42G-0 | 24 |
| | ISW02 | ISW02-9 - HIE-42G-1 | 25 |
| HIE-42C | ISW11 | ISW11-9 - HIE-42C-0 | 26 |
| | ISW12 | ISW12-9 - HIE-42C-1 | 27 |
| HIE-51G | ISW01 | ISW01-A - HIE-51G-0 | 28 |
| | ISW02 | ISW02-A - HIE-51G-1 | 29 |
| HIE-51C | ISW11 | ISW11-A - HIE-51C-0 | 2a |
| | ISW12 | ISW12-A - HIE-51C-1 | 2b |
| HIE-52G | ISW01 | ISW01-B - HIE-52G-0 | 2c |
| | ISW02 | ISW02-B - HIE-52G-1 | 2d |
| HIE-52C | ISW11 | ISW11-B - HIE-52C-0 | 2e |
| | ISW12 | ISW12-B - HIE-52C-1 | 2f |

(62) The details of "xx" in the reference codes of "license key failure" are shown in the table below. Confirm the Program Product Installation status (capacity and period) at the [Administration menu] - [License Key] of Web Console window.

| xx | P.P. name (Hitachi Vantara) | P.P. name (HPE) |
|---|---|---|
| 00 | TrueCopy for Mainframe | Continuous Access Synchronous for Mainframe |
| 02 | Compatible XRC | Compatible XRC |
| 03 | TrueCopy | Continuous Access Synchronous |
| 05 | ShadowImage for Mainframe | Business Copy for Mainframe |
| 07 | Compatible FlashCopy (R) V2 | Compatible FlashCopy |
| 08 | ShadowImage | Business Copy |
| 09 | Universal Replicator for Mainframe | Continuous Access Journal for Mainframe |
| 0a | Universal Replicator | Continuous Access Journal |
| 0b | Universal Volume Manager | External Storage |
| 0d | Virtual LVI | — |
| 0e | Open Volume Management | System Array Management |
| 11 | Volume Retention Manager | — |
| 12 | Data Retention Utility | — |
| 13 | LUN Manager | Open Array Management |
| 16 | Performance Monitor | Performance Monitor |
| 17 | Volume Migration | Auto LUN |
| 18 | Server Priority Manager | Performance Control |
| 19 | Compatible PAV | Parallel Access Volumes |
| 1b | HDvM/Storage Navigator | Remote Web Console |
| 1c | SNMP Agent | SNMP Agent |
| 1d | JAVA API | JAVA API |
| 21 | Virtual Partition Manager | — |
| 22 | Volume Shredder | — |
| 23 | Volume Migration V2 | Auto LUN V2 |
| 26 | Dynamic Provisioning | Thin Provisioning |
| 27 | Remote Replication Extended | Cont Access Journal 3DC & 4x4 for Open and MF |
| 28 | Compatible Hyper PAV | Hyper Parallel Access Volumes |
| 29 | FICON (R) Data Migration | FICON (R) Data Migration |
| 2a | Encryption License Key | DKB Encryption |
| 2d | Compatible High Performance Connectivity for FICON (R) | Compatible High Performance FICON (R) Connectivity |
| 2e | Dynamic Tiering | Smart Tiers |
| 2f | SMI-S Provider | SMI-S Provider |

(To be continued)

(Continued from preceding sheet)

| xx | P.P. name (Hitachi Vantara) | P.P. name (HPE) |
|---|---|---|
| 30 | Dynamic Provisioning for Mainframe | Thin Provisioning for Mainframe |
| 31 | Resource Partition Manager | Resource Partition |
| 32 | Compatible Software for IBM (R) FlashCopy (R) SE | Compatible FlashCopy SE |
| 33 | Dynamic Tiering for Mainframe | Smart Tiers for Mainframe |
| 35 | Thin Image | Fast Snap |
| 38 | nondisruptive migration | Online Migration |
| 39 | global-active device | High Availability |
| 3d | active flash | Real Time Smart Tier |
| 3e | active flash for mainframe | Real Time Smart Tier for Mainframe |
| 41 | dedupe and compression | Compression Deduplication |
| 49 | Hybrid mode activation license | — |
| 4a | VSP 5500 model activation license | — |

(63) Restore the failure according to “Restoring replacement parts by Maintenance Utility” of REPLACE SECTION “DRIVE REPLACEMENT PROCESSING - RDK1”. (REP(RDK1)02-60)

(64) Collect “Normal” type dumps, and then contact the Technical Support Division.

(65) Contents of "xx" in the reference codes when a logical error, a HEEP error, a file error, a LAN error or Windows error occurred.

| xx | Content |
|---|---|
| 00 | Dump task |
| 01 | DKU inline |
| 02 | Micro-program exchange (online) |
| 03 | Information |
| 04 | LOGOUT |
| 05 | PATH inline |
| 06 | Back Ground |
| 07 | DIAG |
| 08 | Install |
| 09 | Online |
| 0a | Micro-program exchange (offline) |
| 0b | Special PCB maintenance |
| 0c | Common communication function |
| ff | Other AP |

(66) The details of "xxxx" in the reference codes of "SSVP failure" are shown in the table below.

| xxxx | Content |
|---|---|
| 0100 | Watchdog Timer timeout is detected. (Basic) |
| 0101 | Watchdog Timer timeout is detected. (Option) |
| 0200 | Micro-program version inconsistency is detected. (Basic) |
| 0201 | Micro-program version inconsistency is detected. (Option) |
| 0300 | SSVP is not responding. (Basic) |
| 0301 | SSVP is not responding. (Option) |
| 10fe | SSVP error detected by SVP (Option) |
| 10ff | SSVP error detected by SVP (Basic) |

(67) xx: SVP Location
00 : SVP-BASIC
01 : SVP-OPTION

(68) x: MPU Location

| x | CTL Location | MPU Location |
|---|---|---|
| 0 | CTL01 | MPU-010 |
| 1 | CTL02 | MPU-020 |
| 2 | CTL11 | MPU-110 |
| 3 | CTL12 | MPU-120 |
| 4 | CTL21 | MPU-210 |
| 5 | CTL22 | MPU-220 |
| 6 | CTL31 | MPU-310 |
| 7 | CTL32 | MPU-320 |
| 8 | CTL41 | MPU-410 |
| 9 | CTL42 | MPU-420 |
| a | CTL51 | MPU-510 |
| b | CTL52 | MPU-520 |

(69) x : Set server priority in which time synchronization fails

| x | SNTP server priority of Synchronization Information setting |
|---|---|
| 0 | Priority one |
| 1 | Priority two |
| 2 | Priority three |
| 3 | Priority four |
| 4 | Priority five |

(70) x: HSNPANEL error detail

| x | Error detail |
|---|---|
| 8 | HSNBX ID change is detected. |
| 9 | HSNBX ID inconsistency is detected. |
| a | Remote/local SW value inconsistency is detected. |

(71) yy: HSNPANEL location

| yy | Location |
|---|---|
| 00 | HSNPANEL0 |
| 01 | HSNPANEL1 |

(72) Host I/O is not affected because data remains in cache (data can be accessed from a host in the same way as in normal state). If a pinned track occurs in the copy source drive during a drive copy, the pinned track is automatically resolved after completion of the drive copy.

(73) Host I/O is not affected because data remains in cache (data can be accessed from a host in the same way as in normal state).

(74) xy: DKC#/CTL#
A conbination number of in the device DKC and CTL. See the table below show relations with the CTL Location.

| CBX Pair | DKC | CTL Location | xy |
|---|---|---|---|
| CBX Pair 1 | DKC-0 | CTL01 | 00 |
| | | CTL02 | 01 |
| | DKC-1 | CTL11 | 10 |
| | | CTL12 | 11 |
| CBX Pair 2 | DKC-2 | CTL21 | 20 |
| | | CTL22 | 21 |
| | DKC-3 | CTL31 | 30 |
| | | CTL32 | 31 |
| CBX Pair 3 | DKC-4 | CTL41 | 40 |
| | | CTL42 | 41 |
| | DKC-5 | CTL51 | 50 |
| | | CTL52 | 51 |

(75) xy: CTL# + CFM# in CTL

| CBX Pair | DKC | CTL Location | CFM Location | xy |
|---|---|---|---|---|
| CBX Pair 1 | DKC-0 | CTL01 | CFM-010 | 00 |
| | | | CFM-011 | 01 |
| | | CTL02 | CFM-020 | 10 |
| | | | CFM-021 | 11 |
| | DKC-1 | CTL11 | CFM-110 | 20 |
| | | | CFM-111 | 21 |
| | | CTL12 | CFM-120 | 30 |
| | | | CFM-121 | 31 |
| CBX Pair 2 | DKC-2 | CTL21 | CFM-210 | 40 |
| | | | CFM-211 | 41 |
| | | CTL22 | CFM-220 | 50 |
| | | | CFM-221 | 51 |
| | DKC-3 | CTL31 | CFM-310 | 60 |
| | | | CFM-311 | 61 |
| | | CTL32 | CFM-320 | 70 |
| | | | CFM-321 | 71 |
| CBX Paor 3 | DKC-4 | CTL41 | CFM-410 | 80 |
| | | | CFM-411 | 81 |
| | | CTL42 | CFM-420 | 90 |
| | | | CFM-421 | 91 |
| | DKC-5 | CTL51 | CFM-510 | a0 |
| | | | CFM-511 | a1 |
| | | CTL52 | CFM-520 | b0 |
| | | | CFM-521 | b1 |

(76) Collect “Normal” type dumps, and then contact the Technical Support Division.
The following information of SIM RC = 46axxx, 46bxxx is valid.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| byte 40 | Copy source CDEV# | | | | | | | |
| byte 41 | Copy source RDEV# | | | | | | | |
| byte 42 | Copy destination CDEV# | | | | | | | |
| byte 43 | Copy destination RDEV# | | | | | | | |
| byte 44 ~ byte 45 | Copy progress rate ( ÷ 10) % | | | | | | | |
| byte 46 ~ byte 47 | Not used | | | | | | | |
| byte 48 ~ byte 4F | Copy pointer (Drive LBA) | | | | | | | |
| byte 50 ~ byte 7F | Not used | | | | | | | |

After completion of drive copy/correction copy of the drive, complete the SIM and delete the log (see (SVP02-03-10) and (SVP02-08-10)).

(77) For the procedure to recover from an automatic pool capacity expansion failure, see (TRBL13-360).

# 3. SIM Format

SIM Format (DKC SIM SSB28 = x‘f1’)

| Byte \ Bit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | x‘00’ | | | | | | | |
| 1 | Permanent Error | ‘0’ | | ‘1’ | x‘0’ | | | |
| 2 | ‘000’ | | | ‘1’ | x‘0’ | | | |
| 3 | x‘0000’ | | | | | | | |
| 4 | | | | | | | | |
| 5 | Device Type (ORB CODE) | | | | | | | |
| 6 | Serial # valid | Device address valid | Track address valid | ‘0’ | Format (x‘f’) | | | |
| 7 | SIM sense record ID (x‘e0’) | | | | | | | |
| 8 | Range subject to the error (1) | | | | Range affected by repair (2) | | | |
| 9 | Level of error (3) | | Number of faulty SPs (4) | Number of SPs in SSID (5) | Number of faulty SSIDs (6) | Number of affected SSIDs (7) | Status (8) | ‘0’ |
| 10 | Resend SIM (9) | (‘0000000’) | | | | | | |
| 11 | Hardware level (10) | | | | | | | |
| 12 | Hardware level (10) | | | | | | | |
| 13 | Isolation code (11) | | | | | | | |
| 14 | SSB ID (12) | SIM sequence number (SIM log record #) | | | | | | SVP ID (13) |
| 15 | Serial number (Manufacturer identifier + Manufacturing facility identifier + DKC sequence number) | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | SSID of self storage system | | | | | | | |
| 21 | | | | | | | | |
| 22 | Symptom code (14) | | | | | | | |
| 23 | | | | | | | | |
| 24 | Logging and Message Control (15) | | | | | | | |
| 25 | Program action code (x‘10’) | | | | | | | |
| 26 | Dual Frame | EDCC Mode | ‘00’ | | Asynchro-nous operation | Serial Channel | Report output (1) | ‘0’ |
| 27 | ‘000000’ | | | | | | Extension path configu-ration | Fenced storage path |
| 28 | x‘f1’ | | | | | | | |
| 29 | Affected SSID | | | | | | | |
| 30 | | | | | | | | |
| 31 | x‘00’ | | | | | | | |

## SIM Format (CACHE SIM SSB28 = x‘f2’)

| Byte \ Bit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | x‘00’ | | | | | | | |
| 1 | Permanent Error | ‘0’ | | ‘1’ | x‘0’ | | | |
| 2 | ‘000’ | | | ‘1’ | x‘0’ | | | |
| 3 | x‘0000’ | | | | | | | |
| 4 | | | | | | | | |
| 5 | Device Type (ORB CODE) | | | | | | | |
| 6 | Serial # valid | Device address valid | Track address valid | ‘0’ | Format (x‘f’) | | | |
| 7 | SIM sense record ID (x‘e0’) | | | | | | | |
| 8 | Range subject to the error (1) | | | | Range affected by repair (2) | | | |
| 9 | Level of error (3) | | Number of faulty SPs (4) | Number of SPs in SSID (5) | Number of faulty SSIDs (6) | Number of affected SSIDs (7) | Status (8) | ‘0’ |
| 10 | Resend SIM (9) | (‘0000000’) | | | | | | |
| 11 | Hardware level (10) | | | | | | | |
| 12 | Hardware level (10) | | | | | | | |
| 13 | Isolation code (11) | | | | | | | |
| 14 | SSB ID (12) | SIM sequence number (SIM log record #) | | | | | | SVP ID (13) |
| 15 | Serial number (Manufacturer identifier + Manufacturing facility identifier + DKC sequence number) | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | SSID of self storage system | | | | | | | |
| 21 | | | | | | | | |
| 22 | Symptom code (14) | | | | | | | |
| 23 | | | | | | | | |
| 24 | Logging and Message Control (15) | | | | | | | |
| 25 | Program action code (x‘10’) | | | | | | | |
| 26 | Dual Frame | EDCC Mode | ‘00’ | | Asynchro-nous operation | Serial Channel | Report output (1) | ‘0’ |
| 27 | ‘00000’ | | | | | Extension path configu-ration | Fenced storage path | |
| 28 | x‘f2’ | | | | | | | |
| 29 | Affected SSID | | | | | | | |
| 30 | | | | | | | | |
| 31 | x‘00’ | | | | | | | |

## SIM Format (DEVICE SIM SSB28 = x‘fe’)

| Byte \ Bit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | x‘0000’ | | | | | | | |
| 1 | | | | | | | | |
| 2 | Storage Control Type (x‘06’) | | | | | | | |
| 3 | x‘00’ | | | | | | | |
| 4 | Affected SP | | Device Address | | | | | |
| 5 | Device Type | | | | | | | |
| 6 | Serial # valid | Device address valid | Track address valid | ‘0’ | Format (x‘f’) | | | |
| 7 | SSB ID (12) | SIM Sequence ID | | | | | | SVP ID (13) |
| 8 | Device Exception (x‘1’) | | | | Service Message (16) | | | |
| 9 | Level of error (3) | | ‘000000’ | | | | | |
| 10 | Resend SIM (9) | (‘0000000’) | | | | | | |
| 11 | Exception Class FRU List Code (x‘80’) | | | | | | | |
| 12 | Hardware and Micro-program Corequisite Indicator (x‘01’) | | | | | | | |
| 13 | Device Address (See reference code) | | | | | | | |
| 14 | Action Flag (x‘05’) | | | | | | | |
| 15 | Serial number (Manufacturer identifier + Manufacturing facility identifier + DKU sequence number) | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | SSID of self storage system | | | | | | | |
| 21 | | | | | | | | |
| 22 | Symptom code (14) | | | | | | | |
| 23 | | | | | | | | |
| 24 | Logging and Message Control (15) | | | | | | | |
| 25 | Program action code (x‘10’) | | | | | | | |
| 26 | Dual Frame | EDCC Mode | ‘00’ | | Asynchro-nous operation | Serial Channel | ‘1’ | ‘0’ |
| 27 | ‘00000’ | | | | | Extension path configu-ration | Storage path | |
| 28 | x‘fe’ | | | | | | | |
| 29 | x‘000000’ | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |

## SIM Format (MEDIA SIM SSB28 = x'ff')

| Byte \ Bit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 0 | x'0000' | | | | | | | |
| 1 | | | | | | | | |
| 2 | Storage Control Type (x'06') | | | | | | | |
| 3 | x'00' | | | | | | | |
| 4 | Affected SP | | Device Address | | | | | |
| 5 | Device Type | | | | | | | |
| 6 | Serial # valid | Device address valid | Track address valid | '0' | Format (x'f') | | | |
| 7 | SSB ID (12) | SIM Sequence ID | | | | | | SVP ID (13) |
| 8 | Device Exception (x'1') | | | | Service Message (x'1') | | | |
| 9 | Level of error (3) | Media Maintenance Procedure Number (correctable: x'07', uncorrectable: x'05') | | | | | | |
| 10 | Resend SIM (9) | ('0000000') | | | | | | |
| 11 | Exception Class FRU List Code (x'80') | | | | | | | |
| 12 | Hardware and Micro-program Corequisite Indicator (x'01') | | | | | | | |
| 13 | Device Address (See reference code) | | | | | | | |
| 14 | Correctable: x'87', uncorrectable: x'85' | | | | | | | |
| 15 | Serial number (Manufacturer identifier + Manufacturing facility identifier + DKU sequence number) | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | SSID of self storage system | | | | | | | |
| 21 | | | | | | | | |
| 22 | Symptom code (14) | | | | | | | |
| 23 | | | | | | | | |
| 24 | Logging and Message Control (15) | | | | | | | |
| 25 | Program action code (x'10') | | | | | | | |
| 26 | Dual Frame | EDCC Mode | '00' | | Asynchro-nous operation | Serial Channel | '1' | '0' |
| 27 | '00000' | | | | | Extension path configu-ration | Storage path | |
| 28 | x'ff' | | | | | | | |
| 29 | Cylinder Address High | | | | | | | |
| 30 | Cylinder Address Low | | | | | | | |
| 31 | Head Address | | | | | | | |

(1) Range subject to the error

① When Byte 28 is x'f1' (DKC SIM)
- x'0': Not used
- x'1': Error range not known
- x'2': SP error
- x'3': CHL-I error
- x'4': Not affect performance
- x'5' to x'f': Not used

② When Byte 28 is x'f2' (CACHE SIM)
- x'0': Not used
- x'1': Error range not known
- x'2': Error between SP and CACHE
- x'3': CACHE error
- x'4': DC/FW error
- x'5': FW error
- x'6' to x'f': Not used

(2) Range affected by repair

① When Byte 28 is x'f1'(DKC SIM)
- x'0': Not used
- x'1': Repair range not known
- x'2': Repair does not affect performance
- x'3': SP disabled during repair
- x'4': SSID disabled during repair
- x'5' to x'f': Not used

② When Byte 28 is x'f2' (CACHE SIM)
- x'0': Not used
- x'1': Repair range not known
- x'2': Repair does not affect performance
- x'3': CACHE error
- x'4': DC/FW error
- x'5': FW error
- x'6' to x'f': Not used

(3) Level of error
- B'00': Service SIM
- B'01': Moderate SIM
- B'10': Serious SIM
- B'11': Acute SIM

(4) Number of faulty SPs
- B'0': 1 SP
- B'1': 2 SPs

(5) Number of SPs in SSID
- B'0': 2 SPs
- B'1': 4 SPs

(6) Number of faulty SSIDs
- B'0': 1
- B'1': 2

(7) Number of affected SSIDs
B‘0’: 1
B‘1’: 2

(8) Status
B‘0’: Degeneration
B‘1’: Stop

(9) Resend SIM
B‘0’: Not resent SIM
B‘1’: Resent SIM

(10) Hardware level
Bit 0: ESCON hardware level

[When bit 0 is 0]
Bit 1: Not used
Bits 2-3: Report storage path
Bits 4-5: Number of channels per cluster
B‘00’ = 4
B‘01’ = 8
B‘10’ = Not used
B‘11’ = Not used
Bit 6: NVS
B‘0’ = No NVS
B‘1’ = NVS provided
Bit 7: Not used
Bits 8-10: Cache size
000: Non cache
001: 256MB
010: 512MB
011: 768MB
100: 1024MB
101: 1280MB
110: 1536MB
111: Over 1536MB
Bits 11-13: Cluster hardware level
Bits 14-15: Cache/NVS hardware level

[When bit 0 is 1]
Bit 1: Not used
Bits 2-3: Error storage path
Bits 4-7: Number of channels per cluster
0000: Metal = 4, ESCON = 0
0001: Metal = 8, ESCON = 0
0010: Metal = 4, ESCON = 2
0100: Metal = 4, ESCON = 4
0110: Metal = 0, ESCON = 2
1000: Metal = 0, ESCON = 4
1010: Metal = 0, ESCON = 8
1100: Metal = 0, ESCON = 6
Bit 8: Dual frame
0: Dual frame
1: Modular power
Bits 9-11: Cache size
000: Non cache
001: 256MB
010: 512MB
011: 768MB
100: 1024MB
101: 1280MB
110: 1536MB
111: Over 1536MB
Bits 12-13: Cluster hardware level
Bits 14-15: Cache/NVS hardware level

(11) Isolation code
Byte 13 ≠ x‘00’ Bytes 22 and 23 are a symptom code.
Byte 13 = x‘00’ Bytes 22 and 23 are an isolation code. This byte is byte 2 of the association code.

(12) SSB ID
B‘0’ = SVP
B‘1’ = SP

(13) SVP ID
B‘0’ = SVP1
B‘1’ = SVP2

(14) Symptom code
See Bytes 22 and 23 of the reference codes listed in Sections 2.1 and 2.2.

(15) Logging and Message control
Bit 0 - 3: Not used
Bit 4 - 5: Logging
B‘00’: Do not log
B‘01’: Unconditional log
B‘10’: Log only once
B‘11’: Log only if persistent
Bit 6 - 7: Operator message
B‘00’: No message
B‘01’: Unconditional message
B‘10’: Send only once
B‘11’: Send only if persistent

(16) Service Message
x‘1’: Action
x‘c’: No action