Documentation updates

OA51707-HDZ2210/HDZ2220, OA53539-HDZ2230
OA52934-HDZ2210/HDZ2220, OA53540-HDZ2230
OA54111-HDZ2210/HDZ2220, OA54113-HDZ2230

Changes to the z/OS MVS System Messages, Volume 1(ABA-AOM) manual
(SA38-0668)

New Messages

ANTT0053I   *cmdname* **COMMAND PARSE ERROR.** *keyword* **VALUE IS** *error_description*.

Explanation: The *cmdname* command failed due to a command parse error. The *keyword* specified had an error described by *error_description*.

Source: Extended remote copy (XRC).

System action: Command is rejected.

System programmer response: Re-issue the command using the proper value.

ANTX5017I   **XRC SESSION**(*sessionid*) **HAS** *number* **VOLUMES WITH SERIAL NUMBER** *volser*

Explanation: An action has been requested involving volume *volser* for XRC session *sessionid*. However, there are *number* volumes in the XRC session with the same volume serial.

System action: The command is rejected.

System programmer response: Issue the command again using a device number rather than a volume serial.

Source: Extended remote copy (XRC).

ANTA5018W   **QUICKCOPY IS NOT AVAILABLE BECAUSE DEVICE**(*device_nbr*) **IS OFFLINE**

Explanation: An XADDPAIR command for primary device *device_nbr* has been issued with the QUICKCOPY parameter. Because the device is offline, XRC is unable to determine which tracks need to be copied in order for the volume pair to become synchronized.

System action: XADDPAIR is executed using the FULLCOPY option.

System programmer response: A FULLCOPY has been executed instead of the QUICKCOPY. If QUICKCOPY is desired for future XADDPAIRs, vary the device online before issuing the command.

Source: Extended Remote Copy (XRC).

ANTX5019I   **XRC SESSION**(*sessionid*) **HAS** *number* **VOLUMES WITH DEVICE NUMBER** *devn*

Explanation: An action has been requested involving a volume with four-digit device number *devn* for XRC session *sessionid*. However, there are *number* volumes in the XRC session with the same four-digit device number.

System Action: Command is rejected.

System Programmer Response: Re-issue the command using a five-digit device number.

Source: Extended remote copy (XRC).

ANTX5146E **XSET** *parameter*(*value*) **SSID**(*ssid*) **SCSESSION**(*session*) **SCID**(*scid*) **FAILED FOR SESSION**(*session_id*)**, RC=***return_code***, REAS=***reason_code*

Explanation: An XSET command with the specified *parameter* (TIMEOUT or SUSLBUSY with SSID, SCSESSION, and SCID values) has failed for session *session_id*. See the specified return code and reason code for additional information.

System action: XRC functions are active.

System programmer response: As a result of the error, the function requested by the XSET command is not performed. The most likely cause is that an invalid value has been specified for the option. Correct the error and reissue the command.

Source: Extended Remote Copy (XRC).

ANTX5175W **ENHANCED READER UTILITY DEVICE** *device_number* **IN SESSION** *session_id* **OFFLINE STATE DETECTED**

Explanation: An XRC utility device with device number *device_number* was originally added online. XRC has detected that the volume has been varied offline.

System Action: The volume is placed in F-SYS state.

System Programmer Response:
If the customer wants to vary the device back online, one of two things must happen:
a)   XDEL the device, vary online, then XADD back into the session.
b)   XSUSPEND TIMEOUT, vary the device back online, then issue XSTART.

Source: Extended remote copy (XRC).

ANTX8994E **MODIFY OPERATION**(*operation*) **ERROR, RC=***rc* **REAS=***reas*

Explanation: The specified modify command has failed.

System Action: Command is rejected.

System Programmer Response: Resolve the issue and re-issue the command. Researching the return code, *rc*, and reason code, *reas*, in the system data mover return codes (table 6) gives more information on the problem and solution.

Source: Extended remote copy (XRC).

Modified Messages with Hard-Coded VOLSER/DEVNUM (not affected by MessageVolumeFormat)

It is possible to get an asterisk (*) as the first digit of the device numbers shown in the following messages. The asterisk may be displayed if an XADDPAIR, XDELPAIR, XSET, or XSUSPEND command is issued using a 4-digit device number and the device isn't in the configuration or cannot be found in the XRC control blocks.

ANTX5101E   **XRC SESSION**(*session_id*) **ENCOUNTERED AN ERROR PROCESSING** *cmdname* (*option*) **FOR VOLUME PAIR**(*primary_volume*,*secondary_volume*)**, RC=**return_code* **REAS=**reason_code*

Explanation: XRC has encountered an error while attempting to process the command specified by *cmdname* using option *option* for volume pair *primary_volume* (*volume-serial/device-number*) and *secondary_volume* (*volume-serial/device-number*) in session *session_id*. The command processing ended with return code *return_code* and reason code *reason_code*. The status of the volume pair is unknown.

System action: XRC functions are active.

System programmer response: See "SDM and XRC return codes" for an explanation of the return and reason codes. Correct the error and reenter the command. If an XRC error is indicated in the system log, search problem reporting databases for a fix for the problem. If no fix exists, provide pertinent SYS1.LOGREC information to the IBM Support Center. Based on the return and reason codes, the processing of this volume can have not completed normally. Though the volume is no longer being copied, it can not be possible to add this volume to the XRC session in the future without first suspending the active session and restarting the session.

Source: Extended remote copy (XRC).

ANTA5107E   **XADDPAIR FAILED FOR VOLUME PAIR**(*primary_volume*,*secondary_volume*) **FOR SESSION**(*session_id*)**, RC=**return_code* **REAS=**reason_code*

Explanation: The XADDPAIR command for the volume pair indicated by *primary_volume*,*secondary_volume* (where the volume is indicated by *volume-serial/device-number*) in session *session_id* failed with return code *return_code* and reason code *reason_code*. If *secondary_volume* is XRCUTL/UTIL, this was an attempt to add a utility volume. Otherwise, it was an attempt to add a data volume pair.

System action: If this was an attempt to add a new data volume pair to the session, the volume pair has not been added. If this was an attempt to re-add an existing data volume pair to the session, the volume pair remained in the state it was in before the XADDPAIR attempt. XRC activity continues on other volume pairs in the session.

If this was an attempt to add a new utility volume to the session, the volume has not been added. If this was an attempt to re-add an existing utility volume to the session, the state of the volume and its associated storage control sessions might vary, so further investigation is required, as described in the "System programmer response" below.

System programmer response: See "SDM and XRC return codes" for an explanation of the return and reason codes. Also look for any preceding error messages that might provide additional diagnostic information.

For failures involving data volume pairs, or Utility volumes for Standard Single Readers, correct the error and re-issue the XADDPAIR command.

For failures involving utility volumes for Enhanced Multiple Readers: Before re-issuing the XADDPAIR command, use the XQUERY command with the STO DETAIL keywords to determine the state of the storage control sessions in the Enhanced Reader group. If some of the sessions in the group are active, use the F ANTAS000,SUSSESS command to suspend these active sessions, and then re-issue the XADDPAIR command. In addition, if an attempt to change auxiliary session configuration failed, also use the F ANTAS000,LISTSESS ALL command to determine whether extraneous storage control sessions need to be cleaned up.

If errors persist after these actions, search the problem reporting databases for a solution. If no solution exists,

contact the IBM Support Center for additional problem determination assistance.

Source: Extended Remote Copy (XRC).

ANTX5126E   **XSET DVCBLOCK**(*setting*) **VOLUME**(*volume*) **ENCOUNTERED AN ERROR FOR SESSION**(*session_name*)**, RC=***return_code***, REAS=***reason_code*

Explanation: The XSET command was issued for *volume* (*volume-serial/device-number*) specifying the DVCBLOCK parameter setting of *setting*. The indicated device blocking setting was not applied to the specified volume in session *session_name* because an error was encountered processing the request. The return code *return_code* and reason code *reason_code* indicate the error that occurred.

System action: XRC functions are active.

System programmer response: See "SDM and XRC return codes" in this document for an explanation of the error that was encountered. Correct the error and reenter the command.

Source: Extended remote copy (XRC).

Modified Messages Affected by MessageVolumeFormat

ANTX5011E **XRC SESSION**(*session_id*) **ENCOUNTERED AN ERROR WHILE PROCESSING** *voltype* **VOLUME**(*volume*)**, RC=***return_code* **REAS=***reason_code*

Explanation: XRC has encountered an error while processing volume *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) for the volume type specified with *voltype*, in session *session_id*. *voltype* can be PRIMARY, SECONDARY, or RECOVERY. The processing ends with return code *return_code* and reason code *reason_code*.

System action: XRC functions are active. If the *voltype* is RECOVERY, the recovery function ends. If the *voltype* is PRIMARY or SECONDARY, the volume remains suspended. The session remains active.

System programmer response: XRC can issue this message during a session restart or recovery process if the volume is offline. Based on the error, search the problem reporting databases for a solution. If no solution exists, contact the IBM Support Center. Provide the system log and SVC dumps of the ANTAS000 and any ANTAS*nnn* address spaces that are active. To determine which address spaces are active, enter the console command DISPLAY A,ANTAS*. If an XRC error is indicated in the system log, also provide pertinent SYS1.LOGREC information.

Source: Extended remote copy (XRC).

ANTI5013E **XRC SESSION**(*session_id*) **ENCOUNTERED VOLUME INITIALIZATION ERROR FOR VOLUME**(*volume*)**, RC=***return_code* **REAS=***reason_code*

Explanation: XRC has encountered an error during volume synchronization or resynchronization. The error was encountered for volume *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) in session *session_id*. The volume synchronization or resynchronization function ends with return code *return_code* and reason code *reason_code*. The pair associated with volume *volser* is suspended from session *session_id*.

System action: The volume pair is suspended because of the error. Activity continues on other volume pairs.

System programmer response: See "SDM and XRC return codes" for an explanation of the return and reason codes. Correct the error, and add the volume pair again to continue synchronization or resynchronization. Provide the system log and SVC dumps of the ANTAS000 and any ANTAS*nnn* address spaces that are active. To determine which address spaces are active, enter the console command DISPLAY A,ANTAS*. If an XRC error is indicated in the system log, also provide pertinent SYS1.LOGREC information.

Source: Extended remote copy (XRC).

ANTR5028E **XRECOVER SESSION**(*session_name*) **VOLUME**(*volume*) **FOUND THE SECONDARY DEVICE AT SSID**(*ssid*) **CCA**(*cca*)**, DIFFERENT DEVICE REQUIRED**

Explanation: The XRECOVER command was issued with the TERTIARY parameter for the specified *session_name*; however the secondary *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) was found at the specified *ssid* and *cca*, which is the same device as the secondary in effect when XRC suspended or ended.

System action: XRECOVER processing stops.

System programmer response: If a tertiary device is requested, vary the secondary device offline, and vary online a different device with the same volser and different SSID and CCA. If a tertiary device is not requested, remove the TERTIARY parameter from the XRECOVER command.

Source: Extended remote copy (XRC).

ANTX5104E   **XRC SESSION**(*session_id*) **ENCOUNTERED AN ERROR PROCESSING VOLUME**(*error_volume*) **IN VOLUME PAIR** (*primary_volume,secondary_volume*)**, RC=***return_code* **REAS=***reason_code*

Explanation: XRC has encountered an error for volume *error_volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) while processing the volume pair *primary_volume,secondary_volume* (volume serials, device numbers, or both, depending on the parmlib setting) in session *session_id*. The processing for the volume pair ended with return code *return_code* and reason code *reason_code*. The volume pair is suspended from the session.

System action: XRC functions are active.

System programmer response: See "SDM and XRC return codes" for an explanation of the return and reason codes. Correct the error. If an XRC error is indicated in the system log, search problem reporting databases for a fix for the problem. If no fix exists, provide pertinent SYS1.LOGREC information to the IBM Support Center.

Based on the return and reason codes, the processing of this volume pair can have not completed normally. You can add back the suspended volume pair into the XRC session after you have corrected the error. If this is not possible, you can be forced to suspend the active session or cancel the ANTAS*nnn* address space and restart the session before you add the volume. Based on the error, the volume pair can require a full synchronization.

Source: Extended remote copy (XRC).

ANTV5111E   **XRC ERROR SUSPENDING VOLUME PAIR**(*primary_volume,secondary_volume*) **FOR SESSION**(*session_id*)**, RC=***return_code* **REAS=***reason_code*

Explanation: The suspension of the volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) in session *session_id* failed with return code *return_code* and reason code *reason_code*.

System action: XRC functions are active.

System programmer response: See "SDM and XRC return codes" for an explanation of the return and reason codes. Correct the error. Search problem reporting databases for a fix for the problem. If no fix exists, provide pertinent SYS1.LOGREC information to the IBM Support Center if an XRC error is indicated in the system log.

Based on the return and reason codes, the suspension of this volume pair can not have completed normally. Though the volume pair is no longer being copied, it can not be possible to add this volume pair to the XRC session in the future without first suspending the ANTAS*nnn* address space and restarting the session.

Source: Extended remote copy (XRC).

ANTX5113W   **PENDING ACTION FOR** *cmdname*(*option*) **CANCELED FOR VOLUME PAIR**(*primary_volume,secondary_volume*) **FOR SESSION**(*session_id*)

Explanation: The pending action for *cmdname* option *option* has been canceled for the volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) in session *session_id*. This message is issued when an error occurs that causes XRC not to be able to process the command at the specified time.

System action: XRC functions are active.

System programmer response: See the previous XRC message to determine the reason the pending action has been canceled. To re-enable XRC functions for the volume pair, correct the error and issue an XADDPAIR command to resynchronize the volume pair in the session.

Source: Extended remote copy (XRC).

ANTX5117E   **XRC VOLUME INITIALIZATION ENCOUNTERED A PHYSICAL VOLUME ERROR ON VOLUME(***volume***) at CCCCCCCH OF** *cccCCCCH*

Explanation: The XRC volume synchronization or resynchronization function has encountered a physical I/O error while initializing volume *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) at the CCHH specified by *cchh*.

System action: XRC functions are active.

System programmer response: Run the ICKDSF utility program to analyze the error at the specified CCHH on the volume experiencing the error. You might need to issue an XDELPAIR command to remove the volume from the session before running ICKDSF. Correct the error and issue the XADDPAIR command to add the volume pair to the session.

Source: Extended remote copy (XRC).

ANTX5129E   **XRC SESSION(***session_id***) ERROR ASSOCIATING SWAP VOLUME(***swapdev***) SCSESSION(***sid***) WITH PRIMARY VOLUME(***volume***) SCSESSION(***sid***) RC=***rc* **REAS=***reas*

Explanation: The primary volume, *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib), cannot be associated with swap device number, *swapdev*, because the scid of the primary is not available for the *swapdev*.

System action: Determine which SCID is required using XQUERY VOLUME(*volser*) SWAP, and then use this in the command F ANTAS000, LISTDVCS *swapdev* scid to determine if you can terminate that session. If not, you will need to delete the volume and re-add so that SDM will register an unused SCID from the primary to the *swapdev*.

Source: Extended remote copy (XRC).

ANTX5130W   **XRC SESSION(***session_id***) XDELPAIR ERROR REMOVING XRC SESSION FROM SWAP VOLUME(***swapdev***) SCID(***sid***) ASSOCIATED WITH PRIMARY VOLUME(***volume***) RC=***rc* **REAS=***reas*

Explanation: XRC was unable to remove the indicated swap volume associated with primary volume *volume* (volume-serial, device-number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) from the indicated physical storage controller session ID. This may cause impact to applications or prevent the volume from being used for XRC or other copy services, depending on the status of the volume. The swapdev is specified by a string with the following format:

nnn
> where *nnn* is the device number of the volume.

An *rc* value of 4086 indicates the primary volume is either not connected or not in the configuration.

A *reas* value of 4086 indicates the swap volume is either not connected or not in the configuration.

System action: XRC functions are active. The XDELPAIR command succeeds and the primary and secondary volume pair is removed from the XRC session, but the swap XRC session(s) remains activated for the swap volume.

System programmer response: Since the swap sessions will not be cleaned up automatically, the F ANTAS000,TERMSESS command(s) will need to be issued for each of the affected sessions. In addition, if this warning was issued as a result of an XEND after an unsuccessful transition from mode normal to mode HYPER-PPRC, all of the sessions in an ER group (as observed with an F ANTAS000,LISTSESS command) may need to be

manually terminated on the swap device even though only a subset of swap utilities were added.

Source: Extended remote copy (XRC).

ANTX5132W   **XRC SESSION**(*session_id*) **ENCOUNTERED AN ERROR REPLICATING A BITMAP OPERATION FROM PRIMARY VOLUME**(*volume*) **TO SWAP VOLUME**(*swapdev*) **RC=***rc* **REAS=***reas*

Explanation: A bitmap operation, which is triggered by reaching the threshold specified by the ChangedTracks or DelayTime parameter, was unable to be mirrored from primary volume *volume* (volume-serial, device-number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) to the swap volume.

System action: XRC functions are active. If a HyperSwap operation occurred, one or more volumes require full resynchronization from the swap volume to the remote volume.

System programmer response: Using information pertaining to the reported return code, determine and perform the actions necessary to restore the ability to mirror bitmap operations. If incremental resynchronization is required by local operations, refrain from using the HyperSwap function if possible until the problem is corrected.

Source: Extended remote copy (XRC).

ANTX5134E   **XSWAP** *operation* **OPERATION ON XRC SESSION**(*session_id*) **DETECTED ERROR FOR primary, secondary, or swap VOLUME**(*volume*)**, RC=***rc* **REAS=***reas*

Explanation: A GDPS function resulted in this operation being performed. The XSWAP operation detected an error. Refer to the return code description and for more information about the GDPS, see *GDPS/XRC VvRr Installation and Customization Guide*, order number ZG24-6704. The volume *volume* is indicated by volume-serial, device-number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib.

System action: GDPS operation reports an error.

System programmer response: For more information about the GDPS, see *GDPS/XRC VvRr Installation and Customization Guide*, order number ZG24-6704.

Source: Extended remote copy (XRC).

ANTA8004I   **XADDPAIR COMPLETE, VOLUME PAIR**(*primary_volume*,*secondary_volume*) **ADDED TO SESSION**(*session_id*)**, SCSESSION**(*storage_control_session*)

Explanation: The XADDPAIR command has completed successfully. The volume pair *primary_volume*,*secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) is added to session *session_id* with the primary storage control session of *storage_control_session*. If an SCSESSION value was not specified, the default *storage_control_session* value of "--" is assigned. Use the XQUERY command to determine the status of the volume pair.

System action: XRC functions are active.

System programmer response: If the command has been accepted, and this message has not been displayed at either the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

ANTI8023I   *function* **INITIALIZATION STARTED FOR XRC VOLUME PAIR(***primary_volume,secondary_volume***)**

Explanation: Volume synchronization or resynchronization of volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) has started. XRC attempts to vary the secondary volume serial number given by *secondary_volser* offline from the system that the XRC data mover is running on. Do not access the secondary volume during the copy process.

The secondary volume is varied online after volume synchronization or resynchronization has completed. *function* identifies the type of initialization that will be performed. The functions are described below:

FULL   Indicates that the entire volume will be initialized.

RESYNC

     Indicates that only tracks changed on the primary volume since the pair became suspended will be initialized. All tracks which were not copied will be copied to the secondary volume if the volume pair did not reach the duplex state when the volume pair was suspended.

QUICK

     Indicates that only tracks on the primary volume that are allocated at the time the initialization starts will be initialized. See *z/OS DFSMS Advanced Copy Services* for additional information about this value.

Note: The XRC initialization function can end abnormally as a result of the secondary volume not being online. In this case, the secondary volume needs to be varied online before issuing the XADDPAIR command specifying the secondary volume serial number.

System action: XRC functions are active.

System programmer response: XRC controls the rate at which the volume initialization progresses, based on application activity. Some volume initializations take longer than others.

Source: Extended remote copy (XRC).

ANTI8024I   **XRC VOLUME PAIR(***primary_volume,secondary_volume***) IN DUPLEX STATUS AT TIME OF** *data_mover_host_time*

Explanation: The XRC volume synchronization or resynchronization function has completed for the specified *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) at the data mover host system time of *data_mover_host_time*. The volume status has changed from copy pending state to duplex state.

System action: XRC functions are active.

System programmer response: None.

Source: Extended remote copy (XRC).

ANTD8025I   **XDELPAIR COMPLETE FOR VOLUME PAIR (***primary_volume,secondary_volume***) FOR SESSION(***session_id***), WITH CONSISTENCY_GROUP TIME(***timestamp***) AND STATUS OF** *status*

Explanation: The volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) is successfully removed from session *session_id*. The volume is consistent up to the reported time *timestamp*. The current XRC volume pair status is indicated by *status*.

System action: XRC functions are active.

System programmer response: If the XDELPAIR has not been explicitly entered by a user, this message can result from an error reported by a previous message. View the system log for message ANTX0511E to determine why the

volume pair has been deleted, correct the error, and enter an XADDPAIR for the deleted volume pair to place the volume back into the XRC session. If the command is accepted and this message has not been issued at the system console log or at the user ID at the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

Routing code: 2, 11

Descriptor code: 4, 6

ANTI8026I   FULLCOPY SELECTED FOR VOLUME INITIALIZATION OF XRC VOLUME PAIR(*volume_pair***), FUNC=***function* **REAS=***reason_code*

Explanation: An XADDPAIR command for the volume pair *volume_pair* (which is in the format of *source_volume,target_volume*, where the values are volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) was issued with the QUICKCOPY option. The volume initialization of the pair is being done using the FULLCOPY option because an error occurred attempting to use the QUICKCOPY option. The following indicates the *function* that encountered the error and its associated *reason_code* which indicates the particular error that occurred for the function:

function **= 1**

> The attempt to reserve the *source_volume* of the volume pair encountered an error. The *reason_code* indicates either the return code from the RESERVE macro (in the format of 000000*xx* where xx is the return code), or indicates the abnormal termination code from the RESERVE macro (in the format of *xxxx*0000 where xxxx is the abend code).

function **= 2**

> Attempting to determine the unallocated space on the *source_volume* of the volume pair, the CVAFDSM service encountered an error. The *reason_code* indicates the CVAFDSM request error (in the format of *yyyy*00*xx* where xx is the return code from CVAFDSM and yyyy is the value from field CVSTAT).

function **= 3**

> The attempt to release the *source_volume* of the volume pair encountered an error. The *reason_code* indicates either the return code from the DEQ macro (in the format of 000000xx where xx is the return code), or indicates the abnormal termination code from the DEQ macro (in the format of *xxxx*0000 where xxxx is the abend code).

System action: XRC functions are active.

System programmer response: The volume initialization of the pair is performed using the FULLCOPY option. No action is required.

Source: Extended remote copy (XRC).

ANTX8030W   XRC ENCOUNTERED USER DATA WITH NO TIMESTAMP ON VOLUME(*volume***) AT CCCCCCCH OF ***cccCCCCH***. THE NUMBER OF TRACKS WITH NO TIMESTAMP = ***tracks*

Explanation: User data updates without timestamps have been made to the primary XRC volume *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib). The CCHH being updated is *cchh*. The number of tracks updated is *tracks*. XRC places the non-timestamped updates on the secondary volume. Be aware that, without a timestamp on the record, applications that do dependent record updates on multiple volumes attached to different storage controls can experience temporary data out-of-synchronization situations.

This message is first issued when X'101'(decimal 257) non-timestamped updates are processed for a volume. Subsequent occurrences of the message are controlled by the value of XRC PARMLIB setting NoTimeStampCount. For information on NoTimeStampCount, see the section on administering your extended remote copy environment

in *z/OS DFSMS Advanced Copy Services*.

System action: XRC functions are active.

System programmer response: This message is issued periodically if a significant number of non-timestamped updates are made. The message can be issued if:

- Application systems making updates to XRC-managed volumes do not provide timestamp support. Timestamp support can be missing from non-MVS systems.
- Application programs making updates to XRC-managed volumes bypass the standard MVS IOS interfaces to perform their I/O operation. In this case, change the application programs to provide timestamp support.
- A system paging volume is being managed by the XRC data mover. The paging subsystem uses certain functions that bypass normal I/O timestamping, which then causes the ANTX8030W message to be issued for volumes containing system paging data sets. All data has been properly applied to the secondary volumes, and this message can be ignored.
- Concurrent Copy processing for the volume or data sets on the volume starts or stops at the same time an update is being recorded by XRC. This would be most likely to occur when many data sets on a volume are processed by Concurrent Copy.
- SUPPRESSTIMESTAMP parameter in ANTXIN00 parmlib member is defined as YES.
- Updates are made to XRC-managed volumes during IPL, before the ANTAS000 address space has completed initialization. Updates made during IPL are normally not timestamped to protect the system from incorrect timestamp values that may be present before Server Time Protocol (STP) synchronization, and do not normally represent an error or indicate inconsistent data.

If SUPPRESSTIMESTAMP parameter in ANTXIN00 parmlib member is not defined as YES and all data updates are correctly timestamped and the problem persists, search problem reporting databases for a solution. If no solution exists, contact the IBM Support Center. Provide the system log and a GTF trace of related system and XRC activity to the volume or volumes that encounter the error.

Source: Extended remote copy (XRC).

ANTA8101I   **XADDPAIR COMPLETE FOR VOLUME PAIR**(*primary_volume*,*secondary_volume*) **FOR SESSION**(*session_id*) **WITH ERRORLEVEL**(*error_level*)**, SCSESSION**(*storage_control_session*)

Explanation: The XADDPAIR command has completed successfully. The volume pair *primary_volume*,*secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) is added to session *session_id* with the ERRORLEVEL indicated by *error_level* and primary storage control session of *storage_control_session*. If an SCSESSION value was not specified, the default *storage_control_session* value of "--" is assigned. Use the XQUERY command to determine the status of the volume pair.

  System action: XRC functions are active.

System programmer response: If the command has been accepted and this message has not been displayed either at the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I.

  Source: Extended remote copy (XRC).

ANTD8103I   **XDELPAIR**(*option*) **COMPLETE FOR VOLUME PAIR**(*primary_volume*,*secondary_volume*) **FOR SESSION**(*session_id*) **AT CONSISTENCY_GROUP TIME**(*timestamp*) **AND STATUS** *status*

Explanation: An XDELPAIR command was issued with the option *option*. The volume pair *primary_volume*,*secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) is successfully removed from session *session_id*. The volume is consistent up to the reported time *timestamp*. The status of the volume pair is

given by *status* at the time the pair was removed from the session. If the volume pair never reached duplex state or the primary volume is a utility volume, the consistency time is reported as "NO_TIME_AVAILABLE". The status is the same as reported by an XQUERY report.

System action: XRC functions are active.

System programmer response: This message reports the completion of the XDELPAIR requested by the user. Any error that occurred while deleting the volume pair was reported by a previous error message. After a volume pair has been deleted it can be placed back into the XRC session by a subsequent XADDPAIR command. If the command is accepted and this message has not been issued at the system console log or at the user ID at the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

Routing code: 2, 11

Descriptor code: 4, 6

ANTX8104I   *cmdname*(*option*) **ACCEPTED FOR VOLUME PAIR**(*primary_volume*,*secondary_volume*) **FOR SESSION**(*session_id*) **AT TARGET CONSISTENCY_GROUP TIME**(*timestamp*)

Explanation: The command *cmdname* with option *option* has been accepted for the volume pair *primary_volume*,*secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) in session *session_id*. The command completes the processing of updates to the XRC secondary volumes through the target consistency time of *timestamp*. Successful completion of the command is reported by either message ANTD8103I or ANTV8109I.

System action: XRC functions are active.

System programmer response: If the command has been accepted, and this message has not been displayed at either the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

ANTV8107I   **SUSPEND COMPLETE FOR VOLUME PAIR**(*primary_volume*,*secondary_volume*) **FOR SESSION**(*session_id*) **AT CONSISTENCY_GROUP TIME**(*timestamp*)

Explanation: The XRC volume pair indicated by *primary_volume*,*secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) has been suspended from the XRC session indicated by *session_id*. The secondary volume is consistent up to the time indicated by *timestamp*. Data is no longer being copied for this pair.

System action: XRC functions are active.

System programmer response: See the previous XRC message to determine why the volume pair was suspended. To re-enable XRC functions for the volume pair, correct the error and issue an XADDPAIR command to resynchronize the volume pair in the session.

This message will also be issued if an error is encountered for a volume pair during XADVANCE or XRECOVER processing even though the volume pair was in a suspended state when the XADVANCE function started.

Source: Extended remote copy (XRC).

Routing code: 2, 11

Descriptor code: 4, 6

ANTV8109I   **XSUSPEND**(*option*) **COMPLETE FOR VOLUME PAIR**(*primary_volume*,*secondary_volume*)

FOR SESSION(*session_id*) **AT CONSISTENCY_GROUP TIME**(*timestamp*) **AND STATUS** *status*

Explanation: The volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) is suspended for session *session_id* with option *option*. All data on the secondary volume is consistent up to the consistency time *timestamp* reported. The status of the volume pair is given by *status* at the time the pair was suspended.

System action: XRC functions are active.

System programmer response: If the XSUSPEND command has not been explicitly entered by a user, this message can result from an error reported by a previous message. View the system log for previous error messages to determine why the volume pair has been suspended, correct the error, and enter the XADDPAIR command for the suspended volume pair to place the volume pair back into the XRC session. If the command is accepted and this message has not been displayed at either the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

ANTX8111I   **PENDING** *cmdname*(*option*) **CANCELED FOR VOLUME PAIR**(*primary_volume,secondary_volume*) **FOR SESSION**(*session_id*)

Explanation: A CANCEL request was specified for the pending command *cmdname* and option *option*. The pending command for volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) in session *session_id* has been canceled.

System action: XRC functions are active.

System programmer response: If the command has been accepted, and this message has not been displayed at either the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

ANTD8116I   **XDELPAIR**(*option*) **COMPLETE FOR UTILITY VOLUME**(*primary_volume*) **FOR SESSION**(*session_id*)

Explanation: An XDELPAIR command was issued with the option *option*. The utility volume *primary_volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) is successfully removed from session *session_id*.

System action: XRC functions are active.

System programmer response: This message reports the completion of the XDELPAIR command requested by the user. Any errors that occurred while deleting the volume were reported by a previous error message. You can place a deleted volume back into the XRC session with a subsequent XADDPAIR command. If the command is accepted and this message has not been displayed at either the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

Routing code: 2, 11

Descriptor code: 4, 6

ANTI8121I   **VOLUME INITIALIZATION RESTARTED FOR XRC VOLUME PAIR**

(*primary_volume,secondary_volume*)

Explanation: Volume synchronization or resynchronization of volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) has been automatically restarted. This message follows a suspension of the volume pair because of a recoverable error.

System action: XRC functions are active.

System programmer response: None.

Source: Extended remote copy (XRC).

ANTA8122W   **VOLUME PAIR**(*primary_volume,secondary_volume*) **WILL NOT BE ASSOCIATED WITH SCSESSION**(*storage_control_session*)

Explanation: The XADDPAIR command specified an SCSESSION value that is not the one currently assigned to the volume pair *primary_volume,secondary_volume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib). The data mover will perform the resynchronization of the volume pair using the assigned SCSESSION value. See the ANTA8101I or ANTA8004I message for this volume pair for the currently assigned SCSESSION value.

System action: XRC functions are active.

System programmer response: None required. If you want to change the SCSESSION value currently assigned to the volume pair, you must issue an XDELPAIR command to remove the volume pair from its current SCSESSION, then issue an XADDPAIR command to assign it the desired SCSESSION value.

Source: Extended remote copy (XRC).

ANTX8132I   **XSET DVCBLOCK**(*setting*) **VOLUME**(*volume*) **ACCEPTED FOR SESSION**(*session_name*)

Explanation: The XSET command was issued specifying the DVCBLOCK parameter setting of *setting*. The indicated device blocking setting will be applied to the specified volume *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) in the specified XRC logical session *session_name*. If the volume is suspended or in pending state, the indicated device blocking setting will be applied to the specified volume *volume* when the volume is re-added to the XRC logical session *session_name*.

System action: XRC functions are active.

System programmer response: If you issued the command and this message has not been displayed at either the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I. Also, this message will not be issued for all XRC utility volumes (XRCUTL).

Source: Extended remote copy (XRC).

ANTX8134I   **XSET DVCBLOCK**(*setting*) **VOLUME**(*volume*) **NOT CAPABLE FOR SESSION**(*session_name*)

Explanation: The XSET command was issued specifying the DVCBLOCK parameter. The indicated setting was not applied to the specified volume (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) because it resides on a storage control that does not have the required capability.

System action: XRC processing continues, but the DVCBLOCK *setting* remains what it was previously.

System programmer response: For DVCBLOCK(ON), ensure that the device blocking function has been installed on the storage subsystem. For DVCBLOCK(WPx), ensure that the Write Pacing function has been installed on the

storage subsystem, then issue an XSET command with the REFRESHP parameter and retry the XSET DVCBLOCK command.

Source: Extended remote copy (XRC).

ANTX8137W   WRITE PACING REQUESTED BUT INACTIVE FOR VOL(*volume***)**

Explanation: DVCBLOCK(WPx) was specified on either an XADDPAIR or an XSET command, but the XRC PARMLIB value of WrtPacingResidualCnt is zero.

System action: XRC processing continues, but no write pacing will occur on volume.

System programmer response: If write pacing is desired for the *volume* (indicated by volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib), change PARMLIB WrtPacingResidualCnt to a non-zero value then issue XSET DVCBLOCK(WPx) for the volume.

Source: Extended remote copy (XRC).

ANTX8142E   XSET REFRESHS FAILED FOR PAIR(*primary_volume***,** *secondary_volume***) IN SESSION(***session_id***), RC=***return_code*** REAS=***reason_code***

Explanation: The *secondary_volume* was not updated for the *primary_volume,secondary_volume* pair (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) pair in session *session_id*. The *return_code* and *reason_code* indicate the reason for the failure.

System action: XRC functions are active.

System programmer response: See "SDM and XRC return codes" for an explanation of the return and reason codes. Correct the error and reenter the command.

Source: Extended remote copy (XRC).

ANTX8147I   XRC SESSION(*session_id***) VOLUME(***volume***) MODE(***mode***) IS ASSOCIATED WITH SWAP VOLUME(***swapdev***)**

Explanation: The volume identified by *volume* (volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) in XRC session *session_id* using mode *mode* is associated with the swap volume identified by *swapdev*. For MODE(HYPER-PPRC), the swap volume is a PPRC secondary device associated with the XRC primary device.

System action: XRC functions are active.

System programmer response: No action required if this is the correct correspondence between the specified volume and swap volume. If the correspondence is incorrect, refer to the description of MODE in *GDPS/XRC VvRr Installation and Customization Guide*, order number ZG24-6704 for corrective action.

Source: Extended remote copy (XRC).

ANTX8149I   XSWAP OPERATION ON XRC SESSION(*session_id***) MAY REQUIRE FULL RESYNCHRONIZATION OF VOLUME PAIR(***pvolume***,***svolume***) RC=***rc*** REAS=***reas***

Explanation: If a HyperSwap (TM) was performed, the volume pair indicated by *pvolume,svolume* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) might require full resynchronization.

System action: XRC functions are active.

System programmer response: Check the return code associated with this message to determine what might be done to fix this. Determine if the HyperSwap operation should proceed despite the effects of having to fully resynchronize some volumes. This action might be predetermined and embedded in the Geographically Dispersed Parallel Sysplex™ (GDPS) setup. For more information about the GDPS, see GDPS/XRC VvRr Installation and Customization Guide, order number ZG24-6704.

Source: Extended remote copy (XRC).

ANTX8150I   XRC SESSION(*session_id***) VERIFICATION STARTING, REASON=***xxxxxxxx***

Explanation: A mirror status verification will be started for one of the following reasons:

- SCHEDULE - XRC PARMLIB VerifyInterval has expired.
- FAILBACK - Primary storage subsystem cluster failback is detected.
- REVERIFY - Trying verification again because of timeout while obtaining device information on prior verification.
- Volume serial, device number, or both (depending on the setting of the MessageVolumeFormat parameter in the ANTXI000 member of parmlib) of the duplex primary storage subsystem showing evidence that mirroring might have been interrupted.

System action: Mirror status verification continues.

System programmer response: Look for subsequent ANTX8151I, ANTX8152W, or ANTX8153W messages.

Source: Extended remote copy (XRC).

ANTA8162I   XRC SSID(*ssid***) SCID(***scid***) CREATED IN *mode* MODE FOR SESSION(***session***), SCSESSION(***scsn***) USING VOLUME (***volume***)**

Explanation: The identified SCID was created using the reader mode indicated by *scsnmode*. The specified volume is indicated by volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib.

The *scsnmode* can be one of the following values:

SINGLE
> Indicates the enhanced multiple reader function is not being used. This mode is selected when AllowEnhancedReader(NO) is specified in the PARMLIB, or when the storage control does not support the enhanced multiple reader function.

ENHANCED
> Indicates the enhanced multiple reader function is being used. This mode is selected when AllowEnhancedReader(YES) is specified in PARMLIB, and the storage control session supports the enhanced multiple reader function.

System action: XRC reads updates from the indicated SSID using the indicated SCID.

System programmer response:
- If the selected mode is as expected, no action is required.
- If the selected mode is not as expected because of incorrect PARMLIB settings, update the settings and apply the change.

Source: Extended remote copy (XRC).

ANTA8163I   XRC SSID(*ssid***) AUXILIARY SCID(***scid***) CREATED FOR SESSION(***session***),**

SCSESSION(*scsn*) **USING VOLUME**(*volume*)

Explanation: The identified auxiliary SCID was created. The specified volume is indicated by volume serial, device number, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib.

System action: XRC reads updates from the indicated SSID using the indicated SCID.

System programmer response: If an auxiliary session is as expected, no action is required.

Source: Extended remote copy (XRC).

ANTR8178W   **SESSION**(*session_id*) **VOLUME PAIR**(*privol,secvol*) **NOT DUPLEXED. DATA MAY BE INCOMPLETE.**

Explanation: XRECOVER or XADVANCE for the specified *session_id* has encountered a volume pair *(privol,secvol)* (indicated by volume serials, device numbers, or both, depending on the setting of the MessageVolumeFormat parameter in the ANTXIN00 member of parmlib) that was in CPY or PND status at the time when mirroring was interrupted.

System action: Processing continues, but the data on the specified secondary volume may be incomplete and/or inconsistent with other secondary volumes. Also, for XRECOVER, the secondary's volume serial number will not be clipped.

System programmer response: If it's unexpected for the session to contain a non-duplex volume at the time when mirroring is interrupted to produce a tertiary copy, you might need to recreate the copy at a time when all volumes are in duplex.

Source: Extended remote copy (XRC).

Miscellaneous Message Updates

ANTX8123I   **XSET** *parameter*(*value*) **SSID**(*ssid*) **SCSESSION**(*session*) **ACCEPTED FOR SESSION**(*session_id*)

Explanation: The XSET command has been accepted for session *session_id*. The command was specified with the associated parameter *parameter*, which is either **TIMEOUT**, or **SUSLBUSY** with **SSID**, **SCSESSION**, and **SCID** values.

System action: XRC functions are active.

System programmer response: The function requested by the XSET command has been accepted by the system. If you issued the command and this message has not been displayed at either the system console log or at the user ID specified by the MSGROUTEID parameter, see message ANTT0099I.

Source: Extended remote copy (XRC).

XQUERY Messages Updates

ANTQ8281I   ---------PRIMARY----------- ------SECONDARY------

- A dash is added after primary and before secondary to account for the changes to message 8282.

ANTQ8282I   SSID SN ID DVCN CCA VOLSER   SSID DVCN CCA VOLSER

- Space added before each DVCN to account for 5-digit device numbers.

ANTQ8283I   *pssid pscsn pscid **pdvcn** pcca pvolser sssid **sdvcn** scca svolser*

- pdvcn and sdvcn will be 5-digit device numbers

ANTQ8286I   ----------PRIMARY----------- ---SWAP---

- A dash is added before primary to account for the changes to message ANTQ8287I.

ANTQ8287I   SSID SN ID   DVCN CCA VOLSER SSID DVCN STA   SWP%   AGE

- Space added before the first DVCN to account for 5-digit device numbers.

ANTQ8288I   *pssid psn psid **pdvcn** pcca volser sssid **sdvcn** volstatus swap% age*

- pdvcn and sdvcn will be 5-digit device numbers

Sample XQUERY Output

```
ANTQ8200I XQUERY STARTED FOR SESSION(SESSION1) ASNAME(ANTAS001)
ANTQ8202I XQUERY CONFIGURATION REPORT - 004
ANTQ8281I ---------PRIMARY---------- ------SECONDARY------
ANTQ8284I       SC SC
ANTQ8282I SSID SN ID  DVCN CCA VOLSER  SSID  DVCN CCA VOLSER
ANTQ8203I -----------------------------------------------------------
ANTQ8283I A760 AA 04 00F40 04  PRIM01  A764 00F50 03  SECD01
ANTQ8283I A760 AA 04 00F41 08  PRIM02  A764 00F51 0E  SECD02
ANTQ8283I 1010 AA 01 00F60 02  PRIM03  A764 00F52 01  SECD03
ANTQ8238I TOTAL=3  DUP=3  CPY=0  PND=0  SUS=0  SEQ=0  UTL=0
ANTQ8260I PAV=0
ANTQ8231I DATA CONSISTENT(2004.018 16:41:15.390719)   IDLE(00:40:06.3)
ANTQ8240I DATA EXPOSURE(00:00:00.00)
ANTQ8201I XQUERY CONFIGURATION REPORT COMPLETE FOR SESSION(SESSION1)
```

```
ANTL8800I XQUERY S5 SWAP
ANTQ8200I XQUERY STARTED FOR SESSION(S5) ASNAME(ANTAS001) 502
ANTQ8202I XQUERY SWAP REPORT - 002
ANTQ8286I ---------PRIMARY----------  ---SWAP---
ANTQ8284I       SC SC
ANTQ8287I SSID SN ID  DVCN CCA VOLSER  SSID  DVCN STA  SWP%   AGE
ANTQ8203I -----------------------------------------------------------
ANTQ8288I 79DC AA 01p 0D00C  3B MYD00C  7DDC 0D00E UTL
ANTQ8288I 79DC AA 04a 0D00C  3B MYD00C  7DDC 0D00E PAV
ANTQ8288I 79DC AA 03a 0D00D  3C MYD00D  7DDC 0D00F UTL
ANTQ8288I 79DC AA 05a 0D00D  3C MYD00D  7DDC 0D00F PAV
ANTQ8288I 79DC AA 01  01F41  24 MY1F41  7DDC 02F41 DUP   0  00:00:00
ANTQ8288I 79DC AA 01  01F43  26 MY1F43  7DDC 02F43 DUP   0  00:00:00
ANTQ8288I 79DC AA 01  01F44  27 MY1F44  7DDC 02F44 DUP   0  00:00:00
ANTQ8238I TOTAL=5  DUP=3  CPY=0  PND=0  SUS=0  SEQ=0  UTL=2
ANTQ8260I PAV=2
ANTQ8231I DATA CONSISTENT(NO_TIME_AVAILABLE)   IDLE(00:11:40.8)
ANTQ8240I DATA EXPOSURE(NO_TIME_AVAILABLE)
ANTQ8290I XRC OPERATING MODE(HYPER-PPRC)
ANTQ8201I XQUERY SWAP REPORT COMPLETE FOR SESSION(S5)
```

Miscellaneous 5-digit Device Number Message Updates

The following messages will now show 5-digit device numbers where highlighted if associated with XRC (some messages are also used by other functions and will stay as is for those functions).

ANTX5000E *device_number*, *serial_number*, *failing_CCW_command_code*, *failing_CCW_position*, *CCW_data_area*, *full_error_description*

ANTX5001E *device_number*, *abbreviated_error_ description*, *failing_CCW_command_code*, *failing_CCW_position*, *IOS_completion_code*, *subchannel_status*, *sense_data*, *serial_number*, *full_error_description*

ANTX5002E *device_number*, *serial_number*, *SERVRETC_from_AOM*, *SERVREAS_from_AOM*, *SERVFRC_from_AOM*, *SERVABCO_from_AOM*

ANTX5020E ERROR DETECTED FOR DEVICE *device_number* UNDER CONTROLLER SESSION *session_number* FOR XRC SESSION(*session_id*), REAS=*reason_code*

ANTX5118E ERROR DETECTED FOR DEVICE *device_number* UNDER STORAGE CONTROL SESSION *session_number* FOR XRC SESSION(*session_id*), REAS=*reason_code*

ANTX5123W I/O REQUEST FOR DEVICE *device_number* HAS TIMED OUT, FUNC= *function_code*

ANTX5124W I/O REQUEST FOR DEVICE *device_number* STORAGE CONTROL *ssid* SESSION *session_number* HAS TIMED OUT, FUNC= *function_code*

ANTX5129E XRC SESSION(*session_id*) ERROR ASSOCIATING SWAP VOLUME(*swapdev*) SCSESSION(*sid*) WITH PRIMARY VOLUME(*volume*) SCSESSION(*sid*) RC=*rc* REAS=*reas*

ANTX5130W XRC SESSION(*session_id*) XDELPAIR ERROR REMOVING XRC SESSION FROM SWAP VOLUME(*swapdev*) SCSESSION(*sid*) ASSOCIATED WITH PRIMARY VOLUME(*volume*) SCSESSION(*sid*) RC=*rc* REAS=*reas*

ANTX5132W XRC SESSION(*session_id*) ENCOUNTERED AN ERROR REPLICATING A BITMAP OPERATION FROM PRIMARY VOLUME(*volume*) TO SWAP VOLUME(*swapdev*) RC=*rc* REAS=*reas*

ANTX5136E *cmdname* KEYWORD *keyword* ON XRC SESSION(*session_id*) DETECTED ERROR FOR DEVN(*devnum*), RC=*rc* REAS=*reas*

ANTX5141E XRC SESSION(*sessname*) CANNOT ASSOCIATE SWAP DEVICE(*swapdev*) WITH PRIMARY DEVICE(*pdevnum*) DUE TO SCIDS(*scid_list*)

ANTX5142E XRC SESS(*sessname*) CANNOT ASSOCIATE PDEVNUM(*pdevnum*) SSID(*primssid*) WITH SWAPDEV(*swapdev*) SSID(*swapssid*)

ANTX5173W XRC SSID(*ssid*) SCSESSION(*sid*) IN SESSION(*session_id*) USING VOLUME(*volser/dvcnbr*) NOT WORKLOAD BASED WRITE PACING CAPABLE

ANTX5174W XRC VOLUME(*volser/dvcnbr*) IN SESSION(*session_id*) CONVERTED FROM DVCBLOCK(*setting*) TO DVCBLOCK(*setting*)

ANTA5500E *command* FAILED FOR PAIR(*pvolser*/***pdevnum***,*svolser*/***sdevnum***) FOR SESSION(*session1*), DEVICE(*bad_volser*/***bad_device***) IS A *device_type* IN SESSION(*session2*)

ANTA5501E *command* FAILED FOR TRIPLET(*pvolser*/***pdevnum***,*svolser*/***sdevnum***,*swapvol*/***swapdev***) FOR SESSION(*session1*), DEVICE(*bad_volser*/***bad_device***) IS A *device_type* IN SESSION(*session2*)

ANTI8027I PRIMARY VOLSER *volser1* HAS CHANGED TO *volser2* ON DEVICE ***dddd***

ANTX8035I ***device_number*** STORAGE CONTROL STATE SAVE REQUESTED

ANTI8047I PRIMARY DEVICE ***dddd1*** HAS MOVED TO ***dddd2*** FOR VOLSER *volser* SSID *ssid* ON *cu_serial_no:lss:cca*

ANTX8062W DEVICE(*bad_volser*/***bad_device***) IS ALREADY A *device_type* IN SESSION(*session1*)

ANTX8119W XRC UNABLE TO TERMINATE STORAGE CONTROL SESSION *session_number* USING DEVICE ***dddd*** ON STORAGE CONTROL *cccc*

ANTX8147I XRC SESSION(*session_id*) VOLUME(*volume*) MODE(*mode*) IS ASSOCIATED WITH SWAP VOLUME(***swapdev***)

ANTX8913I ***session_report***

ANTX8914I ***device_number*** NO SYSTEM DATA MOVER STORAGE CONTROL SESSIONS

ANTX8915I ***device_number*** STORAGE CONTROL SESSION *session_number* TERMINATED

ANTX8915I ***device_number*** STORAGE CONTROL SESSION *session_number* RECOVERED

ANTX8917I ***device_number*** REQUEST NOT SUPPORTED BY STORAGE CONTROL

ANTX8918I ***device_number*** STORAGE CONTROL SESSION *session_number* NOT FOUND

ANTX8922I ***device_number*** STORAGE CONTROL SESSION *session_number i...i s...s*

ANTX8925A ***device_number*** TERMINATE STORAGE CONTROL SESSION *session_number*? REPLY 'Y' OR 'N'

ANTX8926A ***device_number*** RECOVER STORAGE CONTROL SESSION *session_number*? REPLY 'Y' OR 'N'

ANTX8927I *requested_device* – *tass* – ***device_number***

ANTX8928I ***device_number*** NO DEVICES FOR STORAGE CONTROL SESSION *session_number*

ANTX8929I ***device_number*** NO PATHS AVAILABLE

ANTX8932I ***device_number*** IS NOT ASSOCIATED WITH STORAGE CONTROL SESSION *session_number*

ANTX8933I   *device_number* - W A R N I N G - STORAGE CONTROL SESSION
              session_number status BELONG TO THIS SYSTEM

ANTX8936I   *device_number* - SESSION=*tass* RESIDUAL=*rrrr* NEXTDEV=***nnnn***
              MAXSIZE=*mmmm* SFILESZ=*sidefile* SFILE60=*cache* TIME(*timestamp*)
              TIMEOUT(*timeout*)

ANTX8938I   *device_number* - UNABLE TO LIST DEVICES FOR SESSION NUMBER
              session_number

ANTX8941I   *device_number* REMOVED FROM STORAGE CONTROL SESSION *session_number*

ANTX8942A   REMOVE *device_number* FROM STORAGE CONTROL SESSION *session_number*?
              REPLY 'Y' OR 'N'

ANTX8949I   *device_number* IS ONLY DEVICE IN STORAGE CONTROL SESSION
              session_number

ANTX8964I   *dvcn* - W A R N I N G - STORAGE CONTROL SESSION *scid* DOES NOT
              BELONG TO THIS SYSTEM, FORCE REQUIRED

ANTX8965I   *session_report*

ANTX8966I   *device_number* NO SYSTEM DATA MOVER STORAGE CONTROL SESSIONS

ANTX8970I   *device_number* *channel_extender_status*

ANTX8972A   SUSPEND *device_number* IN STORAGE CONTROL SESSION *session_number*?
              REPLY 'Y' OR 'N'

ANTX8973A   *device_number* SUSPEND STORAGE CONTROL SESSION *session_number*?
              REPLY 'Y' OR 'N'

ANTX8975I   *device_number* STORAGE CONTROL SESSION *session_number suspend_type*

ANTX8976I   *device_number* NO OTHER DEVICES FOR STORAGE CONTROL SESSION
              session_number

ANTX8977I   *device_number* - CPID=*channel_path_id* PGID=*path_group_id*

ANTX8991I   *device_number* IS A FIXED UTILITY DEVICE

New and Modified Return Codes

Return Code	Description and Suggested Recovery Action
418	The volume specified in an XADDPAIR or XDELPAIR command, or a volume required by the XRECOVER, XADVANCE, XSTART, or REFRESHS command is not found.
	For an XADDPAIR or XDELPAIR command, ensure that the volume has been specified properly. For an initial XADDPAIR where the volume serial numbers are specified, ensure that the volumes are online to the data mover system. After correcting the problem, reissue the XADDPAIR or XDELPAIR command. If volume is intentionally offline, issue the XADDPAIR using volume device numbers.
	For an XRECOVER or XADVANCE command, ensure that the volume is online to the data mover system. After correcting the problem, reissue the command.
	For an XSTART command (when restarting a session), ensure that the volume is in the data mover system configuration. The storage control report associated with the restarted XRC session indicates that the storage control session is in a quiesced or suspended state. Ensure that all volumes for the storage control are in the configuration, then issue an XADDPAIR command to add this volume and other volumes in the quiesced or suspended storage control into the XRC session. If you are unable to put the volume in the data mover system configuration, you must issue a MODIFY ANTAS000,TERMSESS command for the storage control session(s) to free up resources associated with this volume and other volumes on the storage control from an LPAR which has connectivity to that device. If you do this, ALL VOLUMES on the storage control will then require a full initialization.
	If you want to restore the session but do not want to resynchronize the volume pairs at this time, you can vary the volumes online, and then issue an XSUSPEND command to suspend the session followed by an XSTART command the restart the session.
	If the return code appears with message ANTR5102E, verify that the volume to be recovered is online to the recovery system before issuing the XRECOVER or XADVANCE command.
	When associated with the REFRESHS command error message ANTX8142E, this indicates that the secondary volser is not online to the SDM system. REFRESHS requires an online secondary volume to determine the location of the relocated volume.
432	The volume is attached to a storage control that is not XRC-capable. Ensure that the primary volume is attached to an XRC-capable storage control.
	When contacting IBM for assistance, provide a list and allocation attributes of the SYS1.XCOPY data sets cataloged on both the data mover and recovery systems, in addition to the data requested in the beginning of this section. You can issue a DEVSERV QDASD command to dump the UCB.
447	An XADDPAIR command was issued which specifies the same volume serial number or device number for both the primary and secondary volumes. You cannot use XRC to copy a volume to itself. Reissue the XADDPAIR command specifying unique volumes for the primary and secondary volumes.
464	The primary volume specified in an XADDPAIR command was determined to be invalid. Ensure that the primary volume is a valid volume, and then reissue the command.
489	The XADDPAIR command function has determined that the primary volume listed in message ANTA5107E is currently in an active XRC session. Use the XQUERY command to determine which volumes are already part of an XRC session, then reissue the XADDPAIR command with the correct primary volume serial number, primary volume device number, or SCSESSION

identifier.

| 1017 | An XRC volume was not found. If the return code was received as a result of issuing a command, the volume serial number or volume device number specified for the command can have been specified incorrectly. The volume is not in the XRC session. In this case, reissue the command. If this return code was issued with message ANTX5101E, the XDELPAIR command can have been issued using the current volume serial number of a relabeled volume or with the volume device number. Reissue the XDELPAIR command with the initial volume serial number of the relabeled volume.

This error can occur for an ESS storage subsystem if the volume channel connection address is greater than 255, which is the maximum supported. In this case, ensure that the address is between 0 and 255. For a non-ESS storage subsystem, the channel connection address cannot be greater than 127. In this case, ensure that the address is between 0 and 127. If the volume serial number was specified correctly, issue a DEVSERV QDASD command for the failing volume and obtain the UCB information for the volume. Use the MODIFY command to dump the ANTAS*nnn* address space, search problem reporting databases for a fix for the problem. If no fix exists, contact the IBM Support Center. You might need to cancel ANTAS*nnn* and restart the XRC session. The cancel will cleanup the XRC control structures and suspend all volume pairs. |
|---|---|
| 4127 | This is an internal error. |
| 4128 | Unable to locate a volume using the supplied volume serial number. Re-issue the command using a device number. |
| 4139 | This is an internal error. |
| 4140 | Unable to locate a volume using the supplied four-digit device number. Re-issue the command using a five-digit device number. |
| 4147 | The offline utility device has not been prepared properly. |
| 4163 | Invalid swap utility volume specified. |
| 4574 | An XADDPAIR command was issued which specifies the same device number for both the primary and swap volumes. Reissue the XADDPAIR command specifying unique volumes for the primary and swap volumes. |
| 4575 | An XADDPAIR command was issued which specifies the same device number for both the secondary and swap volumes. Reissue the XADDPAIR command specifying unique volumes for the secondary and swap volumes. |
| 7090 | The value specified for the first digit of a five-digit device number is not a valid subchannel set number. |
| 7091 | The value specified for the DEVNUM field is not an EBCDIC equivalent of hex digits indicating the device number. |
| 7092 | The value specified in the SSID parameter is invalid. If the third byte in the field is not binary zeros (that is, it is not a left-justified two-byte hexadecimal value). |
| 7568 | The SCSESSION parameter requires either PDEVNUM or DEVN parameter. Specify a device number that belongs to the storage control session. |
| 7569 | The DEVN parameter requires the SCSESSION parameter. Specify a storage control session that the device belongs to. |
| 7570 | XSUSPEND parameters PVOLSER, VOLLIST, TIMEOUT, SCSESSION, DEVN, and PDEVNUM are mutually exclusive with the exception that either DEVN or PDEVNUM can be used with SCSESSION. Remove the unwanted parameter and resubmit the request. |
| 7571 | XSUSPEND requires TIMEOUT, VOLLIST, PVOLSER, PDEVNUM, SCSESSION and/or DEVN. Add the desired parameter and resubmit the request. |

Changes to the z/OS DFSMS Advanced Copy Services manual
(SC23-6847)

Chapter 3 changes:

Section "XRC operational considerations", the sixth bulleted item:

- When using Enhanced Readers, XADDPAIRed primary and utility volumes can remain offline when you issue the XSTART command or the XADDPAIR command. Secondary volumes must be online when you issue the XADDPAIR command.

  Note: Even though XRC primary and utility volumes can be offline and referred to by device number, XRC still requires that these volumes have volume serial numbers. Utility volumes in the offline state at XADDPAIR or put into the offline state after being added to XRC will automatically be put in an "in-use by a system component" state (F-SYS) while part of an active XRC session (this does not occur when in a GDPS/XRC environment). In this state, VARY commands for the device are rejected with message IEE329I (IEE329I *device_number* IN USE BY A SYSTEM COMPONENT).
- The system applications must have a common time reference.

Section "Choosing an XRC configuration":

Recommendation: When using Enhanced Readers, XADDPAIRed primary and utility volumes can remain offline when you issue the XSTART command or the XADDPAIR command. Secondary volumes must be online when you issue the XADDPAIR command.

Note: Even though XRC primary and utility volumes can be offline and referred to by device number, XRC still requires that these volumes have volume serial numbers. Utility volumes in the offline state at XADDPAIR or put into the offline state after being added to XRC will automatically be put in an "in-use by a system component" state (F-SYS) while part of an active XRC session (this does not occur when in a GDPS/XRC environment). In this state, VARY commands for the device are rejected with message IEE329I (IEE329I *device_number* IN USE BY A SYSTEM COMPONENT).

Section "XRC enhanced multiple reader function":

The XRC enhanced multiple reader function provides the SDM enhancements to XRC for the function of reading updates from the storage control side file. It addresses a disparity between application write and SDM read rates by increasing the maximum number of simultaneous reads from cache from 1 to 16. The function also reduces the impact of high volume small record size updates.

XRC enhanced multiple reader function is activated by specifying AllowEnhancedReader(YES) in parmlib. Parameter NumberReaderTasks may be used to refine the function.

Many XRC enhancements require AllowEnhancedReader(YES) in parmlib, so it is recommended to transition even if you intend to only use one reader.

Configuration recommendations
There are two recommended configurations for optimizing the capability of the XRC enhanced multiple reader function:

- Use one base XRCUTL device with parallel access volume aliases per storage control session name (SCSN) and SSID combination. When using alias devices, the NumberReaderTasks value in the parmlib should represent the number of readers used for the storage control

session. The NumberReaderTasks value should not exceed the number of parallel access volume aliases plus the original XRCUTL device.
- Use multiple base XRCUTL devices without using parallel access volume aliases for each SCSN and SSID combination. When using multiple base XRCUTL devices, the NumberReaderTasks parameter can either be omitted or specified as follows:
    - NumberReaderTasks(*scsn*,0)
    - NumberReaderTasks(*scsn*,*n*), where *n* represents the number of base XRCUTL devices that will be added for this SCSN (one task per device)

While it is recommended that one of the configurations listed above is used, it is possible to enable the XRC enhanced multiple reader function while keeping only one base XRCUTL reader for each SCSN and SSID combination. Many XRC enhancements require AllowEnhancedReader(YES) in parmlib, so it is recommended to transition even if you intend to only use one reader.

Regardless of which configuration is used, each enhanced multiple reader session will have one primary physical session and 0 to 15 auxiliary physical sessions.

If your current configuration has multiple storage control session names for a given SSID, you can use either of the following methods when enabling the enhanced multiple reader support:

- Combine the multiple storage control sessions into an enhanced multiple reader session.
- Keep the distinct groups of volumes as primary physical sessions and add auxiliary physical sessions to each storage control session.

To convert the primary physical session in a SCSN to enhanced mode, issue an XADDPAIR command to the existing XRCUTL device. If you have already merged another SCSN into this SCSN, or have added an additional XRCUTL device, the primary physical session has already been converted into enhanced mode.

For the following enablement scenarios, set the PARMLIB value AllowEnhancedReader to Yes before you enable the XRC enhanced multiple reader function.

It is important when configuring an enhanced multiple reader session to choose the primary utility volume that will be used on a permanent basis. The primary utility volume is identified with a 'p' next to the SCID in the XQUERY STORAGECONTROL DETAIL report, and cannot be deleted using XDELPAIR without first deleting all other volumes (data and auxiliary utility) in the ER session group. When you create a new enhanced reader session (on an SSID that is not in the XRC session, or using a new SCSN) the first utility volume added with XADDPAIR becomes the primary utility volume. When you convert a storage control session name (SCSN) from a single reader to an enhanced reader, the first utility volume that is re-added with the XADDPAIR command becomes the primary utility. When you combine multiple SCSN's in an SSID, the first utility volume added becomes the primary and the subsequent volumes are merged into the ER group as auxiliary utilities.

Enabling the XRC enhanced multiple reader function
The function can be enabled while in one of the following states:

- The XRC session is active:
    - Issue XSUSPEND VOL(ALL)
    - Add or change the AllowEnhancedReader parameter in parmlib to have value YES
    - Issue an XSET PARMLIB to activate the new parameter
    - Follow the steps in the appropriate examples below to set up the enhanced sessions
- The XRC session is suspended and the address space is inactive:
    - Add or change the AllowEnhancedReader parameter in parmlib to have value YES
    - Issue an XSTART to activate the new parameter

- o Follow the steps in the appropriate examples below to set up the enhanced sessions

Note: The first utility that is converted or added to an enhanced session will be the session's primary session. Additional devices (or parallel access volume aliases) that are added to the SCSN will be added as auxiliary sessions. The primary sessions cannot be deleted before the auxiliaries. Take care in selecting which utility device will be the primary as changing this after the fact will require XDELPAIR of all associated data and auxiliary utility devices followed by XADDPAIRs.

If the NumberReaderTasks value for the SCID is greater than 0, then this many physical sessions will be associated with the first utility device that is added to the XRC session. Subsequent XADDPAIRs of utility devices will result in re-balancing of the physical sessions equally between utility devices. XADDPAIR will no longer issue message ANTA8171I to report these re-balances.

XADDPAIR of data volumes will be allowed even if there are not enough utility base and parallel access volume aliases available to account for the NumberReaderTasks value. Make sure that enough utility base and PAV aliases (or HyperPAV aliases) are added to the XRC session before issuing an XADDPAIR for data volumes.

Enabling XRC enhanced multiple readers through explicit XRCUTL devices
If explicit XRCUTL devices are used without parallel access volume aliases, enable the XRC enhanced multiple reader function by using the following methods:

- Issue an XADDPAIR command to the existing XRCUTL device for one of the storage control sessions on the SSID. (This storage control session becomes the primary enhanced session.)
- If there is only one storage control session name, issue an XADDPAIR command to add an additional XRCUTL volume.
- If there are multiple storage control session names, they can be combined by choosing one SCSN and issue XADDPAIR commands specifying this SCSN to the existing XRCUTL devices in other SCSNs.

If there is only one SCSN, refer to the following scenarios to enable the XRC enhanced readers: The following scenarios use AA as existing SCSN value.

If the session is suspended, there is no ANTASnnn address space, and there is only one SCSN in an LSS, use the following steps:

1. Issue an XSTART command.
2. Issue an XADDPAIR command for the XRCUTL AA. XRCUTL AA is converted to an enhanced primary session.
3. Issue an XADDPAIR command for the new XRCUTL volume with the existing SCSESSION id. Repeat this step for all new XRCUTL volumes.
4. Issue an XADDPAIR SUSPENDED command to resynchronize the remaining volumes.

If the XRC session is active, and there is only one SCSN, use the following step:

1. Issue an XADDPAIR command for the new XRCUTL volume with the existing SCSESSION id. Repeat this step for all new XRCUTL volumes.

If there are multiple SCSNs, use the following scenarios to enable the XRC enhanced readers:

The following scenarios use AA and BB as the existing SCSN values.

If the session is suspended, there is no ANTASnnn in the address space, and there are multiple SCSNs in an LSS, convert a set of storage control names to an enhanced multiple reader. To convert a set of storage control names, use the following steps:

1. Issue an XSTART command.
2. Issue an XADDPAIR command for the XRCUTL BB with the SCSESSION id, AA. Repeat the step for all the existing SCSN utility volumes.
3. Issue an XADDPAIR SUSPENDED command to resynchronize the remaining volumes.

If the XRC session is active, and there are multiple SCSNs, use the following steps:

1. Issue an XADDPAIR command for the XRCUTL AA. XRCUTL AA is converted to an enhanced primary session.
2. Issue an XADDPAIR command for the XRCUTL volume, BB, with the SCSESSION id, AA. Repeat the step for all the existing SCSN utility volumes.

Enabling the XRC enhanced multiple readers through the parmlib settings
Refer to the following scenarios to enable the XRC enhanced readers through the parmlib settings.

If there is only one SCSN for one SSID, specify the parameters for the XRC enhanced multiple reader in the parmlib. The SDM determines the conversion to enhanced multiple reader. There must be auxiliary storage control sessions for the SSID.

If there are multiple storage control session names for one SSID with XRCUTL volumes, enable the XRC enhanced readers according to the following steps:

1. Issue an XADDPAIR command for the XRCUTL volume for one of the SCSESSIONs. The session is converted to the enhanced primary mode.
2. Issue an XADDPAIR command for the new XRCUTL volume with the existing SCSESSION id.
3. Specify the PARMLIB setting to indicate how many storage control sessions are used.
4. Remove extraneous XRCUTL devices.

Here is an example for the multiple SCSNs scenario:

SCSESSION AA starts with UTC000, and BB starts with UTC001. To combine AA and BB with 4 read tasks:

1. XADDPAIR sessid V(UTC000, XRCUTL) SCSESSION(AA)
   o convert the first scsession to the enhanced primary
2. XADDPAIR sessid V(UTC001, XRCUTL) SCSESSION(AA)
   o merge the second scsession to the enhanced auxiliary
3. XADDPAIR two additional base XRCUTL devices to AA
4. Set NumberReaderTasks(AA,4) in parmlib
5. Issue XSET PARMLIB to activate the parameter

All the volumes in AA and BB on the LSS are now in a single storage control session, AA, using four reader tasks.

If you are transitioning from a session without at least one dedicated XRCUTL per SCSN (parameter UtilityDevice(FLOAT) or RequireUtility(NO) in parmlib):

1. Update the parameters to UtilityDevice(FIX) and RequireUtility(YES) in parmlib
2. Issue XSET PARMLIB to activate these parameters
3. XADD an XRCUTL device to each SCSN
4. Proceed with enabling AllowEnhancedReader and converting the sessions as previously described

If there are no volumes available to use as an XRCUTL volume:

1. Select a primary data volume to convert to a utility
2. Migrate data off it until it is empty
3. XDELPAIR the data pair
4. XADDPAIR the volume as an XRCUTL
5. Proceed with enabling AllowEnhancedReader and converting the sessions as previously described

Note: If any of the XRCUTL devices become extraneous because of merged SCSNs, the device can be XDELPAIRed and XADDPAIRed again as a data volume.

Disabling the XRC enhanced multiple reader functions

To disable the XRC enhanced multiple reader function, use the following steps:

1. Issue an XDELPAIR command to delete the enhanced volumes. If all volumes in the session are using the enhanced multiple reader function, you can issue an XEND command to delete all volumes.
2. Remove the parmlib setting for the NumberReaderTasks parameter.
3. Specify the AllowEnhancedReader parameter value to **No**.
4. Issue an XSTART command.
5. Issue an XADDPAIR command using the non-enhanced configuration. To avoid the delay of full initialization, stop all updates to the primary volumes during this procedure and use the NOCOPY option of XADDPAIR.

Note: If updates to the primary volumes are not stopped, the updates will not be mirrored to the secondary volumes and a full copy will be needed.

Increasing and decreasing the number of read tasks

The following guidelines direct how to increase the number of read tasks:

- If the storage control session has one or more base XRCUTL devices without parallel access volume aliases:

  1. XADDPAIR additional base XRCUTL devices until the number of utilities is equal to or greater than the desired number of read tasks.
  2. If the NumberReaderTasks(*scsn*,*n*), where *n* is a value greater than 0
     a) Change *n* to the desired number of read tasks in parmlib
     b) Issue XSET PARMLIB to activate the new task value

- If the storage control session has one base XRCUTL device with parallel access volume aliases:

  1. Change the *n* value in NumberReaderTasks(*scsn*,*n*) to the desired number of read tasks in parmlib
  2. Issue XSET PARMLIB to activate the new task value

  Note: ensure that there are at least *n-1* parallel access volume aliases available to account for the increase number of read tasks. An insufficient number of aliases may result in a delay indicated by message ANTX8117I with DELAY DETECTED AT ALIASES.

Decreasing the number of read tasks is only supported if all volumes in the session are suspended. To do this, issue XSUSPEND VOL(ALL) The following guidelines direct how to decrease the number of read tasks:

- If the storage control session has multiple base XRCUTL devices without parallel access volume aliases:

1. If the NumberReaderTasks(*scsn*,*n*), where *n* is a value greater than 0
   a) Change *n* to the desired number of read tasks in parmlib
   b) Issue XSET PARMLIB to activate the new task value
2. Issue the XDELPAIR command for each extra base XRCUTL above the desired number of read tasks
   Note: Auxiliary utility devices must be XDELPAIRed before the primary utility device

- If the storage control session has one base XRCUTL device with parallel access volume aliases:

  1. Change the *n* value in NumberReaderTasks(*scsn*,*n*) to the desired number of read tasks in parmlib
  2. Issue XSET PARMLIB to activate the new task value

Adjusting multiple utility volumes and alias addresses

This topic describes how to modify existing enhanced multiple reader configurations to use alias addresses instead of unique XRCUTL devices, or use XRCUTL devices instead of alias addresses. To use alias addresses, set the NumberReaderTasks parameter to be a nonzero value. The following scenarios direct how to modify the configurations. The NumberReaderTasks value is set to four in all the configurations.

- Configuration one: All independent base volumes, no aliases. The volumes are UTL001, UTL002, UTL003, UTL004.
- Configuration two: Two base volumes, each with one alias (or two shared HyperPAV aliases). The volumes are UTL001, UTL002.
- Configuration three: One base volume and three aliases. The volume is UTL001.

To modify configuration two and three to configuration one for using base volumes instead of utility volumes, do the following:

1. Issue an XADDPAIR command to add extra base utility volumes. XRC will use these new utility volumes instead of using alias devices.
2. Issue XSUSPEND VOLUME(ALL) to suspend all the volumes in the session.
3. Set the NumberReaderTasks value to zero to prevent the use of alias addresses when the base address is busy.
4. Issue XSET PARMLIB to activate the NumberReaderTasks value of zero. This automatically re-adds the base utility or utilities and deletes all of the alias utilities.
5. Issue XADDPAIR SUSPENDED to resume XRC mirroring.

To modify configuration one to configuration two or three for using alias addresses, do the following:

1. Configure alias addresses.
2. Set the NumberReaderTasks value to four.
3. Issue an XDELPAIR command to delete the extraneous utility volumes.

To modify configuration two to configuration three for continuing the use of alias addresses, do the following:

1. Ensure the UTL001 volume has at least three alias addresses.
2. Issue an XDELPAIR command to delete the UTL002 volume.

To change the configuration three to the configuration two for adding a base address, do the following:

1. Ensure UTL002 has at least one alias.

2. Issue an XADDPAIR command against UTL002.
3. Decrease the number of aliases for UTL001.

Chapter 5 changes:

Section "XADDPAIR command syntax":

PDEVNUM
Specifies the device number of the primary volume you want to add to an XRC session. The PDEVNUM parameter requires the SDEVNUM parameter and is mutually exclusive with the VOLUME, SUSPENDED and LOGPLUS parameters.

If a 5-digit device number is specified, the first digit represents the subchannel set number as defined in the Hardware Configuration Dialog (HCD). The valid values are determined by what is supported by the host system's processor and configured for the device.

If the device number is specified as four or fewer digits, the command is issued to the device that is logically in subchannel set 0. If a swap has occurred, this could be the device that was defined in an alternate subchannel set in the I/O configuration (IODF), with HCD.

SDEVNUM
Specifies the device number of the secondary volume you want to add to an XRC session. The SDEVNUM parameter requires the PDEVNUM parameter.

If a 5-digit device number is specified, the first digit represents the subchannel set number as defined in the Hardware Configuration Dialog (HCD). The valid values are determined by what is supported by the host system's processor and configured for the device. The specified device must be in logical subchannel set 0.

If the device number is specified as four or fewer digits, the command is issued to the device that is logically in subchannel set 0. If a swap has occurred, this could be the device that was defined in an alternate subchannel set in the I/O configuration (IODF), with HCD.

UTIL Specifies that the system data mover can use the primary volume as a utility volume for a storage control session. This means that a utility volume is not shadowed to a secondary volume when the secondary device number specified is UTIL.

QuickCopy is not supported for offline primary volumes.

XADDPAIR of offline primary volumes requires that RequireUtility(YES) and UtilityDevice(FIX) are specified in the ANTXIN00 member of parmlib.

Section "XDELPAIR command syntax":

VOLUME(primary_volser**)**
Specifies the volume serial numbers of the primary volumes to be deleted from an XRC session. To specify multiple volume serial numbers, separate the volume serial numbers with a blank or a comma. Do not specify the volume serial numbers of the secondary volumes. The XDELPAIR command automatically removes the associated secondary volumes from the session. You can specify up to 100 volumes.

See the IMMEDIATE, ATTIME, and DRAIN parameters for information that describes when volumes are deleted based on the value specified with the VOLUME parameter.

The VOLUME parameter is mutually exclusive with the PDEVNUM parameter.

PDEVNUM
>Specifies the device number of the primary volume you want to delete from an XRC session. Do not specify the device number of the secondary volume. The XDELPAIR command automatically removes the associated secondary volume from the session.
>
>See the IMMEDIATE, ATTIME, and DRAIN parameters for information about when volumes are deleted based on the value specified with the PDEVNUM parameter.
>
>The PDEVNUM parameter is mutually exclusive with the VOLUME parameter.

Section "XQUERY command syntax":

The following XQUERY types will now support the new DEVNUM keyword:
- XQUERY CONFIGURATION
- XQUERY SWAP
- XQUERY VOLUME/VOLUME DETAIL (specify DEVNUM instead of VOLUME)
- XQUERY PACE
- XQUERY ACTIVITY

DEVNUM
>Specifies that the report display only the volume that matches the specified device number, as well as any other specified report criteria.
>
>The DEVNUM parameter is mutually exclusive with the VOLUME parameter.

Section "XSET command syntax":

PDEVNUM
>Requests that the device with the specified number be processed according to the value specified in the DVCBLOCK parameter, as well as any other specified report criteria.
>
>The PDEVNUM parameter is mutually exclusive with the VOLUME parameter.

Section "XSUSPEND command syntax":

PDEVNUM
>Specifies the device number of the primary volume that XRC is to suspend from the session. When XRC suspends a volume, the SDM continues to read record updates from the primary storage control. The SDM does not apply updates to the secondary volume while the volume remains in a suspended state.
>
>You cannot suspend a utility volume. However, XRC can suspend a utility volume if all of the data volumes in the storage control session are suspended as a result of a command or an error. When Enhanced Multi-Reader is in effect, all utility volumes in the Enhanced Multi-Reader group for that storage control session are suspended.
>
>The PDEVNUM parameter is mutually exclusive with the VOLUME and TIMEOUT parameters.

Chapter 6 changes:

Category	Parameter	Values	Explanation

STARTUP	MessageVolumeFormat	VOLSER (default), DEVNUM, or BOTH	BOTH means that messages that display a volser will also display a device number in the format volser/devnum

MessageVolumeFormat

This parameter enables you to control how volumes are identified in messages.

VOLSER
> By volume serial

DEVNUM
> By device number

BOTH By both volume serial and device number, in this format:
> *volume-serial / device-number*

SecondaryDeviceRange

Specifies whether a secondary device range filter should be used and if so, the list of device ranges to use. The filter is applied to the secondary device in an XADDPAIR command. If the secondary device number is not within one of the specified ranges, the XADDPAIR command will fail.

Each range contains two four-digit hexadecimal numbers separated by a colon representing device numbers in logical subchannel set 0. The value to the left of each colon must be less than or equal to the value to the right of the respective colon. If both values in the range are the same, a filter will be created for the single specified device number. Values with less than four digits are right justified and padded with zeroes. The list of ranges may be separated by commas or blanks. There can be up to 256 ranges in the list.

If SecondaryDeviceRange (NONE) is issued, the list of secondary device ranges will be cleared. If any other device range values are listed along with value 'NONE', the command will fail. Here are a few examples:

- (0F50:0F5F, 0F70:0F7F) means to create secondary device range filters for ranges 0F50 to 0F5F and 0F70 to 0F7F.
- (F5F:F5F F86:F86) means to create secondary device range filters for device number 0F5F and device number 0F86.
- (NONE) means to not use any secondary device range filters.

Once a SecondaryDeviceRange value has been applied, the filter will be used for all subsequent XADDPAIR commands. The default value is 'NONE'. The default value means that no secondary device range filters will be used when processing an XADDPAIR command.

Appendix A changes:

LISTDVCS operation (XRC)

This operation lists all of the devices that are part of a specific storage control session. A storage control session is comprised of all of the devices, on a particular storage control, that contain volumes that belong to a unique XRC session. The first device listed is the one that was used to initially set up the session.

The command syntax is as follows:

```
F ANTAS000,LISTDVCS ddddd ss
```

The following definitions apply to the example above:

ddddd   The address of a device that is attached to the primary storage control you want to display. The storage control must have XRC-capable Licensed Internal Code (LIC) that supports this function. Devices defined

in an alternate subchannel set can be specified by coding a 5-digit device address, where the leading digit indicates the subchannel set in which the device is physically defined. If you specify fewer than 5 digits, the command is issued to the device that is currently logically in subchannel set 0. If a HyperSwap has occurred, this could be the device that was physically defined in an alternate subchannel set.

ss   The storage control session number (which you can obtain by issuing a F ANTAS000,LISTSESS *xxxx* command—see "LISTSESS Operation" on page 562 for more information).

Example: Issue the following command to list the devices owned by storage control session 04 of the storage control for device F40 in physical subchannel set 0:

```
F ANTAS000,LISTDVCS 00F40 04
```

Result: The following is a possible response to this command:

```
ANTX8927I 00F40 - XA04 - 25(00F40)  0F(.....)
```

This means that session 04 is an active storage control session that has two devices. Device 00F40 relates to device channel connection address 25. The device that relates to device channel connection address 0F is offline.

The operation output contains: the system data mover message number, ANTX8927I; the address of the device (which is 0F40); information about the session (see "LISTSESS Operation" for more information about the session status syntax); and multiple fields that provide information about each session for the specified device. The information for each session has a format of *cc(ddddd)s*, where the following apply:

cc   The channel connection address (CCA).
ddddd The device number. If the device is offline, the value is "|....".
s   An "s" indicates that the session is suspended. A blank indicates that the session is not suspended. This field is reported for ESS storage subsystems, only.

Results: The following are possible responses to the command:
- `ANTX8927I 00F40 - XA04 - 25(00F40)  0F(.....)` —This means that session 04 is an active storage control session that has two devices. Device 00F40 relates to device channel connection address 25. The device that relates to device channel connection address 0F is offline.
- `ANTX8928I 00F40 NO DEVICES FOR STORAGE CONTROL SESSION 04`—This means that storage control session 04 is not in the storage control.

LISTSESS Operation

This operation reports the storage control sessions that exist for a storage control. You can perform this operation regardless of whether XRC or concurrent copy is active on the system. You can only issue the MODIFY command with the LISTSESS operation from a system which has the ANTAS000 address space active.

Specify a device address for a device that is attached to the storage control for which you want session information. You can also specify the word ALL to obtain information about all the sessions in the system. The storage control LIC must at least support concurrent copy. Devices defined in an alternate subchannel set can be specified by coding a 5-digit device address, where the leading digit indicates the subchannel set in which the device is physically defined. If you specify fewer than 5 digits, the command is issued to the device that is currently logically in subchannel set 0. If a HyperSwap has occurred, this could be the device that was physically defined in an alternate subchannel set.

LISTSESS, LSTDVCS, DVCDATA, and SCDATA may now all display 'E' for the storage control session type, representing an XRC enhanced (multiple reader) session.

When using LISTSESS with a device address, you may also include the E parameter, to obtain a display of the XRC enhanced (multiple reader) session structure.

Example 1:

```
F ANTAS000,LISTSESS 0F76 E
```

Could produce this response:
```
ANTX8913I 00F76 - 01 - 03 -04
```

where 01 is the base storage control session, and 03 04 are auxiliary storage control sessions, in the enhanced (multiple reader) session group.

If there is no enhanced session group associated with the storage control for the specified device, the following message will be issued:
```
ANTX8914I 00F76 NO SYSTEM DATA MOVER STORAGE CONTROL SESSIONS
```

Note: There may still be non-enhanced sessions associated with the storage control. This can be displayed by reissuing the LISTSESS command without the E parameter.

When using TERMSESS to terminate the base storage control session in an enhanced (multiple reader) session group, you must first terminate all auxiliary storage control sessions. An attempt to terminate a base session that has an associated auxiliary session will fail with the following message:
```
ANTX8987I OUTSTANDING AUXILIARY SESSIONS
```

Example 2:
As an example, issue the following to list the existing sessions for the storage control that is attached to device F40 in physical and logical subchannel set 0:
```
F ANTAS004,LISTSESS F40
```

Result: The following is a possible response to this command:
```
ANTX8913I 00F40 XA01
```

The response means that storage control session 1 is an active XRC session.

You can also issue the following command to list all the sessions in the system:
```
F ANTAS000,LISTSESS ALL
```

Result: All the sessions that exist in the system are shown in ANTX8193l messages. Refer to *z/OS MVS System Messages, Vol 1 (ABA-AOM)* for details. Sessions for both online and offline devices are displayed. Offline devices are displayed even if they have never been online and/or are associated with sessions on another system.

The operation output contains multiple fields that provide information about each session on the specified device's storage control. The command returns the following information for each session:
- Type of storage control session
- Status of storage control session
- Storage control session number
- Host connection status

An individual session report has a format of *tsnnc*, where the following apply:
t   C = concurrent copy session, X = XRC session.
s   A = active session, S = suspended session, Q = quiesced session, T = timed-out session.
nn   The storage control session number.
c   The connection status of the storage control session, as known by the system that issued the command. If c is blank, this host processor owns the session. If c is "*", another processor owns the session. If c is "?", this host processor owns the session, but may or may not have access to the session.

Results: Other possible responses to this command are:

- ANTX8913I 00F40 CA02—This means that storage control session 2 is an active concurrent copy session.
- ANTX8913I 00F40 - CA03 XQ04—This means that there are two storage control sessions: Session 3 is an active concurrent copy session, and Session 4 is a quiesced XRC session.
- ANTX8914I 00F40 NO SYSTEM DATA MOVER STORAGE CONTROL SESSIONS—This means that there are no sessions for the storage control that is associated with device 00F40.
- ANTX8914I ALL NO SYSTEM DATA MOVER STORAGE CONTROL SESSIONS— This means that there are no sessions in the system.
- ANTX8980l FINISHED LISTSESS ALL PROCESSING — This means the LISTSESS ALL command has finished processing.

Note: If errors occur, this command might also issue I/O error messages.

PATHS operation

This operation reports the channel path and associated path group IDs for a device. You can perform this operation regardless of whether XRC or concurrent copy is active on the system. You can issue the MODIFY PATHS command from a system which has the ANTAS000 address space active or from any ANTAS*nnn* active address space.

Example: Issue the following command to activate the PATHS function:

```
F ANTAS000, PATHS ddddd
```

ddddd   indicates a device number. Devices defined in an alternate subchannel set can be specified by coding a 5-digit device address, where the leading digit indicates the subchannel set in which the device is physically defined. If you specify fewer than 5 digits, the command is issued to the device that is currently logically in subchannel set 0. If a HyperSwap has occurred, this could be the device that was physically defined in an alternate subchannel set.

Result: The following is an example output when you specify the F40 device number in physical and logical subchannel set 0:

```
F ANTAS001,PATHS F40

ANTX8977I 00F40 - CPID=** PGID=000006064C2064B8F76671
ANTX8977I 00F40 - CPID=52 PGID=000000000000000000000000
ANTX8977I 00F40 - CPID=53 PGID=000000000000000000000000
ANTX8977I 00F40 - CPID=7E PGID=000006064C2064B8F76671
ANTX8977I 00F40 - CPID=7F PGID=000006064C2064B8F76671
```

This output has the following meaning:
- 0F40 is the device number in physical subchannel set 0
- CPID is the channel path ID
- PGID is the path group ID
- The line with the CPID of '**' shows the initial PGID that z/OS sends to the storage control
- A PGID of all zeros indicates one of the following conditions:
  - The path group is physically unavailable
  - All the devices associated with the channel path were offline when the channel path was varied online

SCDATA operation (XRC, CC)

This operation reports the status of a session on a primary storage control. You may perform this operation regardless of whether XRC or concurrent copy is active on the system. You can only issue the MODIFY SCDATA command from a system which has the ANTAS000 address space active.

The following example is the command syntax:

```
F ANTAS002,SCDATA ddddd ss X
```

The following definitions apply to the syntax above:

ddddd   Specifies the address of a device that is attached to the primary storage control you want to display. The storage control must have XRC-capable Licensed Internal Code (LIC) that supports this function. Devices defined in an alternate subchannel set can be specified by coding a 5-digit device address, where the leading digit indicates the subchannel set in which the device is physically defined. If you specify fewer than 5 digits, the command is issued to the device that is currently logically in subchannel set 0. If a HyperSwap has occurred, this could be the device that was physically defined in an alternate subchannel set.

ss   Specifies the storage control session number (which you can obtain by issuing a F ANTAS000,LISTSESS *xxxxx* command, see "LISTSESS Operation" on page 562 for more information).

X   Specifies that the channel extender status for a device be provided by way of the ANTX8970I message.

Result: If you specify the *X* parameter, the following example message displays the channel extender status for the device:

```
ANTX8970I 00F40 CHANNEL EXTENDER TYPE=CNT LEVEL=01 ALLOC=4000
     BUFFER=000B0000
```

Result: If there is no channel extender, the following message appears:

```
ANTX8970I 00F40 NO CHANNEL EXTENDER
```

Without the *X* parameter, the command returns a system data mover message of number ANTX8936I.

Example: If you issue the following command to list the current status of session 01 on the primary storage control that is associated with device F40 in physical and logical subchannel set 0:

```
F ANTAS002,SCDATA 0F40 01
```

Result: An example of the output is:

```
ANTX8936I 00F40 - SESSION=XA01 RESIDUAL=0005 NEXTDEV=00F40 MAXSIZE=2048
                 TIME(1997.234 12:24:32.273568) TIMEOUT(00.05.00)
```

The following is a sample message produced by the SCDATA command:

```
ANTX8936I 00F60 - SESSION=XA09 RESIDUAL=0000 NEXT DEV=00F60* MAXSIZE=E000
TIME(*********************) TIMEOUT(00.05.00)
```

Note: For a description of the ANTX8936I message, refer to *z/OS MVS System Messages, Vol 1 (ABA-AOM)*.

SUSSESS operation (XRC)

The SUSSESS operation provides the ability to suspend an XRC scsession from any application host system. This provides an installation with the control to suspend a session even if the data mover system is unable to communicate to the primary storage controls. The SUSSESS operation allows you to place an XRC session in hardware bitmap mode. This means that when the XRC session resumes, only the changed tracks must be re-copied. This provides a significant reduction in resynchronization time, which helps maintain the Recover Point Objective time.

Use the SUSSESS operation to suspend an XRC scsession from any system that has access to the device.

Example: Issue the following command to initiate the SUSSESS function:

```
F ANTAS000,SUSSESS DEVICE_NUMBER SCSESSION_ID
```

The following definitions apply to the example above:

device_number
    Specifies the device that is part of the storage control session that you want to control.
scsession_id
    Specifies the ID of the storage control session that you want to suspend.

You can also perform the SUSSESS operation using the ANTRQST assembler macro. Use the DEVN and SCSESSION parameters with the XSUSPEND command to perform this request. The DEVN parameter provides the device number of the storage control session that you want to suspend. The SCSESSION parameter provides the scsession ID of the storage control session that you want to suspend. Complete documentation for these parameters is found at the front of the macro description for ANTRQTA in SYS1.MACLIB.

After the SUSSESS operation has been initiated, XRC returns either a return code 630 or return code 647 error. The error code depends on the timing of when the next read record set channel program is initiated.

If desired, the device_number and scsession_id may be replaced with the word **ALL**. This will cause all active XRC sessions in the system to be suspended. At least one device for each scsession must be online to the MVS system where the command is issued.

Example: Issue the following command to initiate the SUSSESS function using the ALL parameter:
```
F ANTAS000,SUSSESS ALL N
```

where *N* indicates that verification of the request is not to be issued.

TERMDVC operation (XRC)

This operation ends the relationship between a device and an active XRC session for a storage control.

Guidelines: Follow these guidelines to use the TERMDVC operation:
- You can only issue the operation from a system that has the XRC function installed and has the ANTAS000 address space active.
- You cannot issue this operation if the device is the last device that is associated with the XRC session—the operation will not complete.
- You must issue the operation from the processor where the XRC storage control session is active, or was last active. If you cannot issue the command from that processor, use the TERMSESS operation to end the XRC session (see "TERMSESS operation (XRC, CC)").

You must specify the following information with the TERMDVC operation:
- A device address. The LIC in the device's storage control must at least support XRC and the TERMDVC function. Devices defined in an alternate subchannel set can be specified by coding a 5-digit device address, where the leading digit indicates the subchannel set in which the device is physically defined. If you specify fewer than 5 digits, the command is issued to the device that is currently logically in subchannel set 0. If a HyperSwap has occurred, this could be the device that was physically defined in an alternate subchannel set. You can use LISTDVCS to show the devices that are associated with the XRC session. The device address must be associated with the XRC session (see "LISTDVCS operation (XRC)" on page 561 for more information).
- The session number that is associated with the volume whose relationship you want to end.

Example: Issue the following command to end the relationship between device F40 (in logical subchannel set 0) and storage control session 4:
```
F ANTAS004,TERMDVC F40 4
```

TERMSESS operation (XRC, CC)

The first row of Table 62 should be modified.

If you want . . .	Then . . .	Notes . . .
To end a single session	Specify: • A device address. Devices defined in an alternate subchannel set can be specified by coding a 5-digit device address, where the leading digit indicates the subchannel set in which the device is physically defined. If you specify fewer than 5 digits, the command is issued to the device that is currently logically in subchannel set 0. If a HyperSwap has occurred, this could be the device that was physically defined in an alternate subchannel set. For a session that is in either active status or timed-out status, you must issue the operation from the processor where the XRC session is active, or was last active. For a quiesced or suspended session, issue the operation from any processor. • The storage control session number of the session you want to end. **Example:** To end active storage control session number four, using device F40 in logical subchannel set 0, use: `F ANTAS005,TERMSESS F40 4`	The LIC in the device's storage control must at least support concurrent copy. The device address must belong to the session that you plan to end. You can use LISTDVCS to show the devices that belong to the session.

Appendix C changes:

Section "Subparameters for REQUEST=XADD":

,PDEVNUM=xpdevnum
Belongs to a set of mutually exclusive keys.

To code: Specify the RS-type name, or address in a register (2)-(12) (ASM only) of an optional 5-character input field that contains the device number of a primary device to be added. The value is left-justified and padded on the right with blanks. If a 5-digit device number is specified, the first digit represents the subchannel set number as defined in the Hardware Configuration Dialog (HCD). The valid values are determined by what is supported by the host system's processor and configured for the device.

When the device number is 4 or fewer digits, the command is issued to the device that is logically in subchannel set 0. If a swap has occurred, this could be the device that was defined in an alternate subchannel set in the I/O configuration (IODF), with HCD.

,SDEVNUM=xsdevnum
Belongs to a set of mutually exclusive keys.

To code: Specify the RS-type name, or address in a register (2)-(12) (ASM only) of a 5-character input field that contains the device number of a secondary device to be added. The value is left-justified and padded on the right with blanks. If a 5-digit device number is specified, the first digit represents the subchannel set number as defined in the Hardware Configuration Dialog (HCD). The valid values are determined by what is supported by the host system's processor and configured for the device.

When the device number is 4 or fewer digits, the command is issued to the device that is logically in subchannel set 0. If a swap has occurred, this could be the device that was defined in an alternate subchannel set in the I/O configuration (IODF), with HCD.

SDEVNUM is required if PDEVNUM is specified.

Adding offline primary volumes requires that RequireUtility(YES) and UtilityDevice(FIX) are specified in the ANTXIN00 member of parmlib.

Section "Subparameters for REQUEST=XDEL":

,PDEVNUM=xpdevnum
Belongs to a set of mutually exclusive keys.

PDEVNUM is mutually exclusive with VOLLIST and PVOLSER.

To code: Specify the RS-type name, or address in a register (2)-(12) (ASM only) of a 5-character input field that contains the device number of a primary device to be deleted. The value is left-justified and padded on the right with blanks. If a 5-digit device number is specified, the first digit represents the subchannel set number.

Section "Subparameters for REQUEST=XQUERY":

,DEVNUM=devnum
Belongs to a set of mutually exclusive keys.

DEVNUM is mutually exclusive with VOLLIST.

To code: Specify the RS-type name, or address in a register (2)-(12) (ASM only) of an optional 5-character input field that contains the device number of a device to be queried. The value is left-justified and padded on the right with blanks. If a 5-digit device number is specified, the first digit represents the subchannel set number.

Section "Subparameters for REQUEST=XSET":

,PDEVNUM=xpdevnum
Belongs to a set of mutually exclusive keys.

To code: Specify the RS-type name, or address in a register (2)-(12) (ASM only) of a 5-character input field that contains the device number of a primary device that is to have its DVCBLOCK attribute changed. The value is left-justified and padded on the right with blanks. If a 5-digit device number is specified, the first digit represents the subchannel set number.

Section "Subparameters for REQUEST=XSUSPEND":

,PDEVNUM=xpdevnum
Belongs to a set of mutually exclusive keys.

To code: Specify the RS-type name, or address in a register (2)-(12) (ASM only) of a 5-character input field that contains the device number of a primary device to be suspended. The value is left-justified

and padded on the right with blanks. If a 5-digit device number is specified, the first digit represents the subchannel set number.

ANTUXDVC - XRC Dynamic Volume Compare

Version 18180
APAR OA54111
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Support contact: IBM SDM Level 2 Support

Description:

> This program provides the capability to validate XRC integrity while mirroring is active. This is accomplished by reading tracks from primary and secondary, comparing them, and repeating the compare for any mismatches at a later time. If a match on all tracks is achieved at least once, mirroring for that volume is considered validated.

Execution environment:

> The program may be executed via JCL or started task. It must be run in the same LPAR as the system data mover for its associated XRC session. Minimum 32MB private region size is recommended. `WLM` service class may be used to control the resource demands of the job. Do not assign `SYSTEM` or `SYSSTC` service class.

JCL needed to run the program:

> One job is needed for each SSID in each data mover session. Several jobs may be run in parallel, but it is recommended to run no more than two jobs per data mover session at a time.

```
//S1 EXEC PGM=ANTUXDVC,PARM='parameter_string'
//STEPLIB  DD DSN=YOUR.LINKLIB,DISP=SHR
//ANTUXDVO DD DSN=YOUR.session_id.SSIDnnnn.OUTPUT,DISP=OLD
//ANTUXDVR DD DSN=YOUR.session_id.SSIDnnnn.RESTART,DISP=OLD
//ANTUXDVE DD DSN=YOUR.ANTUXDVC.EXCEPT,DISP=SHR
//ANTUXDVI DD DSN=YOUR.ANTUXDVC.INCLUDE,DISP=SHR
```

`parameter_string` contains process control options.

ANTUXDVO is a FB-115 data set that contains output messages from the program. Potential exists for the program to produce a large amount of output, so spool data sets are not recommended.

ANTUXDVR is a `DSORG=PS,RECFM=F,LRECL=30000,SPACE=(CYL,(1,1))` data set that is used to contain program restart information. A unique `ANTUXDVR` data set must be used for each `ANTUXDVC` job. Allocate an empty data set prior to the first run, and do not alter the contents of the data set thereafter.

ANTUXDVE is a FB-80 data set that contains up to 255 volsers and/or device numbers that are to be excluded from the compare. One volser or device number per line, starting in column 1, with a blank required in column 7. The remainder of the line can be used for free form comments.
- A volser prefix, ending in asterisk, may also be specified. Any volser beginning with this prefix will be excluded from the compare.
- A device number must be prefixed by '!' followed by a one-digit subchannel set number and a four-digit base device number. Any digit(s) of the full five-digit device number can be replaced with a percent sign to indicate a wildcard digit (ie: '!%0F%%').

ANTUXDVI is a FB-80 data set that contains up to 255 volsers and/or device numbers that are to be included in the compare. One volser or device number per line, starting in column 1, with a blank required in column 7. The remainder of the line can be used for free form comments.

- A volser prefix, ending in asterisk, may also be specified. Any volser beginning with this prefix will be included in the compare.
- A device number must be prefixed by '!' followed by a one-digit subchannel set number and a four-digit base device number. Any digit(s) of the full five-digit device number can be replaced with a percent sign to indicate a wildcard digit (ie: '!%0F%%').

If ANY statements are specified then ONLY volumes matching those statements are included. Both an Include and Exclude list can be specified. Volumes are first matched against the Include list. Any matching volumes are then compared to the Exclude list. This allows specifying a large volume range for Inclusion (e.g. PRI*) and then specific ranges within be excluded (e.g. PRI9*).

Parameter string syntax:

parameter_string consists of 7 tokens, each separated by one or more blanks. Here is a sample string:
PARM='AB CC DDD EE F GGGG HHHHHHHH'

```
A         S=START R=RESTART
          W=START WITHOUT WTOR, Q=RESTART WITHOUT WTOR
B         I=INCLUDE X=EXCLUDE record 0 data in compare
CC        Delay, in seconds, between session status checks
          Permissible value range is 10 to 60 seconds.
DDD       Number of compare iterations. Should be > 1.
          Length of token can be 1 to 3 digits.
EE        Delay in seconds between iterations, and prior to
          rechecking each noncompare cylinder on final iteration.
          Also used as max data mover delay that will cause
          dynamic volume compare to pause for 2 min.
          See message ANTU2233, below.
          Permissible value range is 1 to 60 seconds.
          Length of token can be 1 or 2 digits.
F         Scope of compare: D=device, L=LSS
GGGG      Primary SSID for LSS scope, primary device for D scope
          Primary device can be four or five digits in length.
          A four-digit device number will perform a comparison
          for any primary device with a matching four-digit base
          device number, regardless of subchannel set.
          A five-digit device number will perform a comparison
          for only the primary device matching both subchannel
          set and four-digit base device number, where the
          subchannel set is the first digit specified.
HHHHHHHH  Data mover session name.
          Length of token can be 1 to 8 characters.
```

Restart may be used when program has previously terminated with incomplete validation, including termination via user reply to WTOR. Note, restart will not recognize changes in the session volume list or in the ANTUXDVE dataset.

Program output:

The program writes messages to the ANTUXDVO data set, may write console messages, and sets a condition code on exit. Successful execution gives condition code 0.

```
04 = one or more unresolved mismatches exist
08 = No volumes found in session
12 = Invalid input parameters
16 = Unable to determine session status
20 = Authorization failure
24 = LSS has too many volumes
28 = RDC failed for device
32 = Unable to access ANTUXDVO
36 = Unable to access ANTUXDVR, or dataset empty
40 = ANTUXDVR SSID differs from that specified in parms
44 = Unable to find UCB for device
52 = ATTACH failed for ANTUXDVI
56 = Unable to read primary track
60 = Unable to read secondary track
64 = Unable to open ANTUXDVE dataset
68 = Invalid volser/device number in ANTUXDVE dataset
72 = More than 255 lines in ANTUXDVE dataset
76 = program ended by user response to WTOR
80 = Unable to open ANTUXDVI dataset
84 = Invalid volser/device number in ANTUXDVI dataset
88 = More than 255 lines in ANTUXDVI dataset
92 = Include list specified without LSS scope
```

Console messages:

Here are samples of messages that can be issued for an LSS scope compare. For a device scope compare, substitute DEVN for SSID in the messages. The device number displayed in the messages for a device scope compare will match the device number in length and value used as input (a four-digit device number input will display as four digits in the messages).

```
ANTU2230I SSID=8880 I=001
```
compare iteration 1 is starting for SSID 8880

```
ANTU2231I STARTCHECK UN0F24 UN0F25 I=001 8880 SDMA
```
volume compare iteration 1 is starting for primary volume UN0F24, secondary volume UN0F24, SSID 8880, session SDMA.

```
ANTU2232I VALIDATED  UN0F24 UN0F25 I=001 8880 SDMA
```
all tracks have been validated for primary volume UN0F24, secondary volume UN0F25, SSID 8880, session SDMA

```
ANTU2233I SSID=8880 SCAN PAUSED DUE TO SESSION DELAY
```
The delay in the XRC session processing SSID 8880 has exceeded the "delay between iterations" value specified in the parameter_string. The compare is paused for at least two minutes.

```
ANTU2234I SSID=8880 SCAN RESUMED
```
The compare had been previously paused due to session delay, but has been resumed since the delay is now below the "delay between iterations" value specified in the parameter_string

```
ANTU2235I 0000023/0002655 DIFF UN0F24 UN0F25 I=001 8880 SDMA
```
in compare iteration 1, 23 of 2655 cylinders had at least one track that did not match for primary volume UN0F24, secondary volume UN0F25, SSID 8880, session SDMA.

```
ANTU2236W MISMATCH   UN0F24 UN0F25 I=005 8880 SDMA
```

after 5 iterations, there were still some tracks that did not match for primary volume UN0F24, secondary volume UN0F25, SSID 8880, session SDMA. This indicates a potential mirror integrity problem. Look in ANTUXDVO for MISMATCH records, which give details about the compare results.

```
ANTU2237D REPLY E TO END, R TO RESUME 8880 SDMA
```
one paused, you may reply to this to end or resume the compare for SSID 8880, session SDMA.

```
ANTU2238D REPLY E TO END, P TO PAUSE 8880 SDMA
```
you may reply to this either end or temporarily pause the compare for SSID 8880, session SDMA. This message is suppressed if the PARM field 'A' option specifies it.

```
ANTU2239I RECHECK 0000001/0000023 UN0F24 UN0F25 8880 SDMA
```
The first of 23 noncompare cylinders is being checked for volatile data, as part of the final compare iteration for primary volume UN0F24, secondary volume UN0F24, SSID 8880, session SDMA.

```
ANTU2240D REPLY E TO END 8880 SDMA
```
You may reply to this to end the compare for SSID 8880, session SDMA, which has been paused due to session delay.

```
ANTU2241W REPORT LIMIT EXCEEDED; REMAINING OUTPUT SUPPRESSED FOR THIS
VOLUME
```
The limit on the number of lines of output that can be created for a single volume has been exceeded. Output will resume with the next volume. Error messages not included in the count, and will always be written if necessary.

Note: the program issues XQUERY commands, so you'll also see `ANTU2515I` console message from the System Data Mover. Queries are performed at the following checkpoints:
- When the program starts.
- When the program begins checking (or rechecking) a volume.
- After a certain number of tracks have been processed for a volume, as specified in the `parameter_string`.

`ANTUXDVO messages:`

Messages begin with a `yyyyddd hh:mm:ss` timestamp. For multi-line messages, only the first line has a timestamp.

The following is written when the program begins execution, and shows the program version (`vvvvv`) and execution mode.

```
ANTUXDVC vvvvv STARTED
ANTUXDVC vvvvv RESTARTED
```

The following is written if the `parameter_string` indicates that record 0 data is to be excluded from the compare.

```
RECORD 0 DATA COMPARE BYPASS IN EFFECT
```

The following is written at the start of the nth compare iteration.

```
ITERATION nnn BEGINS
```

The first iteration in `START` mode processes all tracks on all non-excluded volumes. The first iteration in `RESTART` mode processes only those volumes and tracks that had unresolved mismatches in the prior run. Subsequent iterations in both modes process only those volumes and tracks that had unresolved mismatches in the prior iteration.

Typically, there will be no other `ANTUXDVO` messages until the last iteration. However, should the program encounter an error while attempting to read the track data, one of the following messages will be written:

```
ERROR:    primary_id secondary_id CCCH=track_address
 PRI READ FAILED diagnostic_code
 SENSE=sense_data

ERROR:    primary_id secondary_id CCCH=track_address
 SEC READ FAILED diagnostic_code
 SENSE=sense_data

ERROR:    primary_id secondary_id CCCH=track_address
 ATTACH FAILED diagnostic_code
```

`primary_id` and `secondary_id` show volume serial and device number for the primary and secondary volumes, respectively.

`track_address` is displayed in the normalized EAV-compatible format `CCCCCCCH`.

Should you encounter a `READ FAILED` error, check for device connectivity problems. For an `ATTACH FAILED` error, ensure that sufficient region size is available to the job. For assistance in resolving other issues, contact IBM technical support.

Once the last iteration has begun, you may see messages that indicate the final compare status of tracks that did not previously have an exact match. In order to determine the final status, the program retrieves two sets of track data with a delay between each retrieval. It then performs a record by record compare of the old and new track data, assigning a compare status as follows:

```
STATIC   - Old secondary record matches old primary record
DYNAMIC  - New secondary record matches old primary record
VOLATILE - Secondary record has changed, match assumed
MISMATCH - Unchanged secondary record does not match primary
```

A representative record for the track is chosen, and its status is presented in a message like the following:

```
status:   primary_id secondary_id CCCH=track_address
```

`primary_id` and `secondary_id` show volume serial and device number for the primary and secondary volumes, respectively.

`track_address` is displayed in the normalized EAV-compatible format `CCCCCCCH`.

Depending on the status, additional message lines will be written, displaying details about the records involved, the offset of mismatch data within the record, and dumps of the data on the primary or secondary at and surrounding the mismatch offset.

To avoid problems when devices have many miscompares, a limit of 500 lines of output per volume is enforced. If the limit is exceeded the following message will appear:
```
ANTU2241W  REPORT LIMIT EXCEEDED; REMAINING OUTPUT SUPPRESSED FOR THIS
VOLUME
```

The count is reset at the start of each volume, and error messages are not included in the limiting and will always appear if encountered.

If there are no tracks with `MISMATCH` status at the end of the last iteration, the following message is written:

`SUCCESS: ALL VOLUMES MATCH`

If there are any tracks with MISMATCH status at the end of the last iteration, the following message is written:

`WARNING: UNRESOLVED VOLUME MISMATCH(ES)`

Should unresolved mismatches exist, the next step is to restart the compare at a different time of day, preferably during a known period of light XRC workload.

Unresolved mismatches that persist at the same location across multiple runs may indicate a mirror integrity problem and should be investigated with assistance from IBM technical support. Be sure to save the complete output from all runs of this program on the affected volumes

Note: One reason for miscompares are applications like Sort that use Cache Fast Write and Discard for temporary work files. It's good XRC practice to segregate these kind of work files in their own storage pool, on volumes that are not continuously mirrored.