



Lifecycle Director™

OAM Manager User Manual

Version 3.0

Fifth Edition

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Introduction

This manual provides all the information required for installation, implementation and operation of the OAM Manager component of the Lifecycle Director product, for the enabling of Lifecycle Director support for the storage and retrieval of data objects using IBM's Object Access Method (OAM). OAM Manager was known in earlier releases as NearOAM or ASM/OAM.

The manual assumes some familiarity with OAM concepts and its implementation, and also with storage management using the DFSMS constructs of storage group, storage class and management class. Information on these topics may be obtained from the appropriate IBM manuals where necessary.

Version 3.0 of the product will support all levels of OAM up to that distributed as part of DFSMS for z/OS 1.5. Page 13 lists all the pre-requisite software and hardware requirements for OAM Manager implementation.

Implementation of version 2.4 or 2.5 of Oracle's ASM for S/390 tape database management product, or version 2.6 or higher of the Archive Manager component of Lifecycle Director, is a pre-requisite for OAM Manager installation. Users should refer to the ASM for S/390 User Manual, or the Lifecycle Director Archive Manager User Manual for the version of ASM for S/390 or Archive Manager installed at their installation for information regarding that product. For ease of reference, ASM for S/390 will be referred to as "Archive Manager" throughout the remainder of this manual.

Any additional installation or release-dependent information not contained in this manual will be supplied to customers as part of the OAM Manager distribution package.

New in Version 3.0:

Product changes introduced with OAM Manager v3.0 include the following:

- Support has been introduced for implementation of OAM Manager in an OAM sysplex (OAMplex) configuration. New parameters are supplied in the ENVCNTL and STRGROUP members of the OAM Manager parameter library, to allow multiple OAM Manager control regions (executing in multiple MVS images, one control region per MVS system), to communicate as members of a sysplex group.
- Pre-fetch processing has been enhanced to allow migrated OAM objects to optionally be pre-fetched to Archive Manager disk ('K') copy files, instead of to an OAM DB2 table. The pre-fetch program interface has also been enhanced to allow pre-fetch processing to DB2 to be

suppressed if a disk copy of the object exists in the Archive Manager database. Both these enhancements will only function when the product is used with Archive Manager v2.6 or higher.

- A dynamic load balancing (DLB) facility has been implemented in the OAM Manager control region. When enabled, this will allow object retrievals to be performed from Archive Manager backup tape datasets, if a primary tape dataset is currently in use and the number of requests queued for that tape is at the maximum value (specified via the MAXQLEN control region initialization parameter).
- Multiple scheduler tasks may now be enabled in the OAM Manager control region. A new control region initialization parameter (MAXSCHED) is supplied to allow specification of the number of scheduler tasks which will be enabled at control region start-up. This parameter may be modified during control region operation via the operator interface. Implementation of multiple scheduler tasks in the control region is intended to improve performance and transaction throughput.
- The requirement that the started task or batch job used for execution of the OAM Manager control region be called 'NEAROAMC' has been removed with this release. Any valid started task or jobname may now be used.
- Product authorization processing is now no longer required for OAM Manager implementation. Authorization processing for all components of the Lifecycle Director product will be performed by the Archive Manager component.
- Staging of an object to DB2 during retrieval processing may now optionally be suppressed if a disk ('K') copy of the object exists in the Archive Manager database. A new sub-parameter (STAGETAPE) is supplied in the OBJCNTL and STRGROUP members of the OAM Manager parameter library to control operation of this feature.
- The status display issued by the control region processor in response to an operator DISPLAY request has been enhanced to include lock owner identification, the lengths of the global scheduler and held request queues, and current values of sysplex initialization parameters (when sysplex support is enabled).
- The maximum length of the HLQ initialization parameter (used to allow a high-level qualifier to be added to the standard dataset names used by the product) has been increased from 8 to 15 characters.

- REFRESH operator command processing has been enhanced to allow changes to the STRGROUP and/or OBJCNTL parameter library members and the OAM collection name identified and management class identified tables to be activated without requiring a restart of the control region.
- The Visual Info interface utility OTIMP080 has been withdrawn from the product. The source code for this program is now supplied in the sample library distributed with the product. This code may be used as required by any customer who has a requirement to implement the functionality supplied by this utility in earlier releases. A description of the supplied sample code is provided in appendix B of the User Guide.

PTF SZ22002 for OAM Manager v3.0 introduced the following further enhancement to object management processing:

- The object management procedure may now optionally be driven via entries in a sequential file, instead of via OAM directory processing under the control of the OBJCNTL parameter library member. This feature also allows object attributes to be modified during migration, including object name, collection name and management class. This implicitly allows objects to be moved from one storage group to another during migration processing.

PTF SZ22007 for OAM Manager v3.0 introduced the following enhancement to disk copy retention processing:

- The new utility program OTIMP040 shipped via this PTF is intended for use as part of an OAM Manager implementation to permit the retention of migrated disk copy objects in an OAM Archive Manager database (whether after initial object storage or object pre-fetch processing) using the number of days since the object's last reference date instead of the disk object creation or pre-fetch date (as is the case with native Archive Manager housekeeping processing).

PTF SZ22008 for OAM Manager v3.0 introduced the following enhancement to the control region operator interface:

- Two new operator commands ('STOP' and 'START') will enable an Archive Manager storage group database to be removed from control region processing. This will permit housekeeping or maintenance activities to be performed on the Archive Manager database without requiring the control region to be terminated, and without impacting access to other storage group databases.

New in Version 2.3:

Product changes introduced with ASM/OAM V2.3 consist of the following:

- The restriction on the maximum number of OAM storage groups which may be processed by the product (formerly 100) is removed. This removes restrictions on implementation of OAM Manager with DFSMSdfp 1.5 (which removed the 100 storage group restrictions in OAM itself).
- As a consequence of the above change, ASM/OAM now executes using a single DB2 plan. The ability to run ASM/OAM with separate plans for each component has been withdrawn.
- The format of the SMF record created by ASM/OAM during object retrieval processing has been modified slightly. The 2-byte storage group identifier field in the storage group section has been replaced by an 8-byte storage group database name field. This has increased the length of the storage group section from 48 bytes to 54 bytes. Refer to page 114 for a full description of the modified specification.
- New execution parameters ('LSRPOOL' and 'LEVEL') have been added to the object selection utility OTIMP100 to improve migration performance and allow direct storage of objects in any storage level in the ASM for S/390 database.

New in Version 2.2:

Product changes introduced with NearOAM V2.2 included the following:

- a new ENVCNTL parameter ('PLAN=') has been introduced to allow customers to specify a user-defined plan name to be used by NearOAM when connecting to DB2. This will optionally allow DBRMs shipped with the product to be bound as packages within the user-defined plan, rather than as individual plans as was required for previous releases.
- NearOAM now uses standard IBM-supplied DB2 views in order to access OAM storage group database tables, rather than accessing the tables directly by name.
- V2.2 now supports direct retrieval of an object from a NearOAM database by a calling application, without having to stage the recalled object to disk first. This option is controlled by a new set of parameters (STAGE|NOSTAGE) which have been supplied on the storage group definition in the STRGROUP parameter library member, and the MGMTCLAS parameter in the OBJCNTL parameter library member. Settings of these parameters will control whether an object is staged to disk or not during retrieval processing.

- Tape drive retention is now supported at storage level. The V2.1 RETAINTAPE facility has been extended to support specification at storage group level, in addition to global specification in the TAPECNTL parameter library member.
- SMF recording enhancements have been introduced. The number of timestamps, and range of information in an SMF record has been extended to enable more detailed analysis to be performed on NEAROAM object retrieval processing.
- An MVS MODIFY command may now optionally be used to communicate with the NearOAM control region, instead of the existing operator reply mechanism.
- A new TAPECNTL parameter ('TAPEWAIT=') is available to control processing when an object retrieval request cannot be satisfied immediately by the NearOAM control region, due to the unavailability of one or more system resources. Use of this parameter will allow retrieval requests to be queued internally by NearOAM (up to a specified maximum time limit) until sufficient resources are available to satisfy the request.
- CSA storage modifications. MVS common system area (CSA) storage used by NearOAM is now allocated above the 16 Mb line.
- Storage class transition support. NearOAM V2.2 will modify an object's storage class during migration processing. Two new ENVCNTL parameters ('TAPECLASS' and 'DISKCLASS') are now provided to support this process.
- Full year-2000 compliance is supplied by this release of OAM.Manager.
- Initialization of the control region will now wait if DB2 is unavailable during start-up processing. Initialization will automatically continue when DB2 becomes available. A normal shutdown of the control region will be performed automatically if DB2 is stopped while the NearOAM control region is still active.
- support for migration of optical- or tape-resident OAM objects to OAM.Manager. A new set of EXEC parameters for the object selection utility OTIMP100 (SELDISK, SELOPT and SELTAPE) has been introduced to support this enhancement.
- support for customer-specification of the high-level qualifier used for all NearOAM system datasets. The new 'HLQ' parameter in the ENVCNTL parameter library member is supplied to control this process.

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.Introduction

The OAM Manager component of Oracle's Lifecycle Director product is designed to implement Archive Manager support for storage of data objects using IBM's Object Access Method (OAM). Archive Manager archival database management component of Lifecycle Director, which primarily uses tape cartridge media for storage of archived objects. Archive Manager also optionally enables disk copies of objects in an Archive Manager database to be retained. The product supplies a range of facilities to optimize the storage and retrieval of objects in an archive database. OAM is a component of DFSMSdfp.

Installation of Archive Manager component on the host system is a prerequisite for OAM Manager implementation. Migrated objects are held on a standard Archive Manager database, each Archive Manager database consisting of a discrete set of tape cartridge volumes (plus optional disk copy datasets). OAM Manager uses a separate Archive Manager database for each OAM storage group.

OAM Manager enables applications designed to use OAM for storage of objects to store and retrieve objects from an Archive Manager database. No application modifications are required for implementation of this support. Version 3.0 of OAM Manager includes support for all versions of OAM up to and including that supplied with DFSMS for z/OS 1.5.

Existing or planned use of optical or tape devices in an OAM storage hierarchy is not affected by the introduction of Archive Manager support via implementation of OAM Manager. The section entitled "OAM Manager and OAM optical and tape storage" on page 154 of this manual discusses issues concerning co-existence of OAM and OAM Manager object management.

OAM objects are unformatted named strings of bytes. Usage and interpretation of the stored bytes is unknown to OAM. The access method is commonly used for storing document images, and is the access method employed by IBM's Content Manager document image processing product. OAM Manager will enable Content Manager document images to be stored and retrieved from an Archive Manager database, in addition to storage platforms supported by the base OAM software.

Implementation of the product requires no modifications to applications which invoke OAM functions via the OSREQ macro interface. This means that customer-developed or vendor-supplied OAM applications (including Content

Manager) will be able to store and retrieve data objects in Archive Manager without modification.

As is the case for all Archive Manager applications, usage of OAM Manager to access tape-resident objects in an online processing environment requires the implementation of an automated tape processing facility, using the Oracle 4400 ACS range of products.

There are no functional limitations in OAM Manager which would prevent its implementation in a manual tape-processing environment, using free-standing tape cartridge drives. However, the need for manual operator intervention in this environment would mean that OSREQ requests issued from an online processing system (such as Content Manager) which required access to a tape-resident object, would wait indefinitely for a response (depending on the time taken to manually satisfy the tape-handling request). A guaranteed level of service for processing these requests can only be supplied through the implementation of an automated tape handling strategy.

Note that OAM Manager interfaces only with the access method OAM. The implementation of Archive Manager support for OAM using OAM Manager requires no modifications to OAM itself. In particular, applications which use OAM via the standard IBM-supplied OSREQ interface to store and retrieve data will automatically be enabled for Archive Manager support of objects via OAM Manager. No modifications to these applications are required.

.Product Functions

The functions supplied by the OAM Manager product can be categorized into four main areas:

1. Object management.
2. Recall of migrated objects.
3. Deletion of migrated objects.
4. Object tape database maintenance.

These functions are discussed in the following sections.

Object management

OAM Manager provides an object management procedure which is used to migrate objects from OAM-owned disk, optical or tape storage to Archive Manager, to automatically delete expired objects, and to remove staged recalled objects from disk as required.

The object management procedure is a scheduled batch process. Each procedure will process all objects within one OAM storage group. Multiple

batch processes can be initiated concurrently to improve object management throughput.

OAM Manager uses the management class of an object, as assigned explicitly via user request, or automatically via DFSMS Automatic Class Selection (ACS) routines, to control the management of OAM objects. Parameter members on an OAM Manager parameter library (a partitioned dataset) are used to enable users to control the object management process, by identifying processing criteria for each active management class used in an installation for OAM object management. An alternative mechanism is also supplied which will allow entries in a sequential dataset to control migration processing.

The controls supplied via OAM Manager parameter settings will govern the following areas of processing:

- Migration of objects from OAM to Archive Manager, based on the number of days lapsed since date of object creation, number of days since management class transition, or number of days since last reference.
- Deletion of expired objects, based on the number of days lapsed since date of object creation, number of days since management class transition, or number of days since last reference.
- Deletion of staged recalled objects from disk, based on the number of days since the object's last reference.

The object management procedure should be run on a scheduled basis (eg overnight, weekly etc). The procedure consists of executing three supplied OAM Manager utilities in sequence. These utilities perform the following functions:

- OTIMP100 - the object selection utility. This utility processes all objects in a specified storage group, and uses OAM Manager parameters to select objects for migration, expiration or recall deletion, or controls migration via entries in a sequential file. Migrated objects are written to an Archive Manager database.
- OTIMP110 - the tape database backup control utility. This utility optionally creates backups of all primary tape datasets updated or created by Archive Manager processing in the object selection utility. Backup processing is performed via calls to the standard Archive Manager database backup utility.
- OTIMP120 - the database update utility. Having successfully read and copied the Archive Manager data created by the object selection utility, the changes identified by OTIMP100 are now committed by the database update utility (ie) the DB2 tables used by OAM are updated to implement the modifications

selected by OTIMP100. Migrated objects will now be accessed from Archive Manager.

OAM Manager supplies the job control language to execute this procedure for an identified storage group. Full reporting facilities are supplied by the OAM Manager utilities to enable the external control and verification of the object management procedure. OAM Manager also supplies automatic restart facilities which allow the object management procedure to be interrupted and restarted as often as required.

Recall of migrated objects

OAM Manager will automatically process all requests for access to Archive Manager-resident objects which are made via the standard OSREQ interface from a batch, TSO or CICS processing environment. No modifications to the OAM application are required.

An OAM Manager control region is started to enable Archive Manager support for OAM retrievals and deletions, via the OSREQ macro. The control region will dynamically interface to OAM during its initialization procedure; no amendment to OAM itself is required. Once initialized, all OSREQ requests for access to Archive Manager resident objects will be processed by the OAM Manager control region.

The OAM Manager control region will accept a range of operator commands to display information about the OAM Archive Manager processing configuration, and to allow control of that configuration. The control region may be terminated by operator command. After termination, Archive Manager support for OAM will be disabled.

Requests for retrieval of an Archive Manager resident object will be intercepted by OAM Manager. The control region will locate and retrieve the object from its Archive Manager database. A retrieved object may be returned directly to the calling application (non-staged), or may be re-inserted into the OAM DB2 database table for the object's storage group (staged). The staging of objects during retrieval is controlled by OAM Manager parameter library entries.

The Archive Manager copy of a staged recalled object is not deleted. The staged copy of the object will remain on disk until deleted via the OAM Manager object management procedure. Once deleted, the object will revert to being Archive Manager-resident, in its original location in the Archive Manager database. No re-migration of staged recalled objects is required before deletion.

The following factors will govern the length of time taken to access OAM objects stored on tape in an Archive Manager database:

- The time taken to mount a tape. This is dependent on the automatic library robot accessor utilization rate.

- The time taken to locate an object on a tape once mounted. This will depend on the amount of data held per Archive Manager tape volume (user-controlled via Archive Manager database initialization parameters).
- If objects are to be staged to disk during retrieval, the time taken to re-insert a retrieved object in an OAM DB2 database.
- Tape drive availability. Lack of tape drives will prevent immediate recall of objects from tape.

OAM Manager provides the following controls to optimize tape recall performance:

- Specification of the maximum number of tape drives to be used by OAM Manager for object retrieval. These controls are similar to those provided by the online recall component of Archive Manager (ie) drives required by OAM Manager for tape object retrieval will be dynamically allocated and released as required, up to the maximum specified in the OAM Manager drive control parameters.
- Parameterized controls are provided to allow users to limit the length of queues of retrieval requests for any one specific tape volume. All requests subsequent to the first for a mounted tape will be satisfied by repositioning the tape. However, it may take a little time to reposition a tape; in order to provide a control over the length of time taken to retrieve any one object, a limit may be placed on the number of requests queued for an active tape.

If insufficient resources are available to satisfy an object retrieval request, OAM Manager will reject the request with appropriate OSREQ return and reason codes, or may optionally queue the request internally until sufficient resources become available or until a customer-specified time interval has elapsed.

The above controls are specified using the OAM Manager parameter library, and are processed during control region initialization. They may be dynamically adjusted during OAM Manager operation via control region command processing.

OAM Manager also provides a batch pre-fetch facility for bulk recall of objects from tape in a batch processing environment. This feature does not use the OAM Manager control region for object recall. It is invoked via an application program interface and is intended to allow applications to identify multiple objects for pre-fetch processing (ie) retrieval prior to online access. Requests are batched by OAM Manager and executed under control of the calling application. Batches of retrieval requests are processed in the most efficient manner possible in order to minimize the amount of tape handling activity required to satisfy them. Objects pre-fetched in this manner may be staged back to DB2 disk, as described above, or optionally to Archive

Manager disk. When staging to DB2 disk, objects may also optionally be deleted from an Archive Manager database after recall in this manner.

Deletion of migrated objects

OAM Manager will allow tape-resident objects to be deleted via the following facilities:

- OSREQ DELETE calls. These will be intercepted and deletes for Archive Manager resident objects processed by the OAM Manager control region. Deletes for OAM-owned objects will be processed by OAM as normal.
- The object management procedure. Expiration controls, specified by management class via the OAM Manager parameter library, will allow OAM Manager to automatically delete OAM and Archive Manager-owned objects which are to be expired.
- Automatic deletion of objects after recall using the batch pre-fetch facility. This is an optional feature which is controlled by the application issuing the pre-fetch requests. Recalled objects which have been deleted from Archive Manager will be OAM-owned once again, and will be processed by the OAM Manager object management procedure in an identical manner to those objects which have never been migrated from OAM.

Archive Manager database maintenance

All OAM objects which have been migrated from OAM by OAM Manager are stored in standard Archive Manager databases, one database per OAM storage group. Each of these Archive Manager databases consists of one or more storage levels (each storage level containing multiple single-volume datasets, up to a maximum of 65535), and is indexed by a single VSAM KSDS dataset. OAM Manager does not use the Archive Manager secondary indexing facility.

As objects are deleted from an Archive Manager database, the space used for storing that object in the database becomes inactive, and its index entry is deleted.

The Archive Manager database maintenance utility must be executed to reclaim inactive space from within a tape cartridge volume. Refer to the Lifecycle Director Archive Manager User Manual for details of this procedure. The database maintenance procedure should be run on a periodic basis, and will reclaim inactive space from within a tape volume, by processing all tape datasets within the database whose level of active objects has fallen below a threshold which has been set by the user via the Archive Manager database administration procedure.

Active objects from within a tape dataset that is being recycled will be written forward to another dataset within the same Archive Manager database. The recycled dataset may then be released, and its tape volume may be returned to the appropriate scratch pool.

The Archive Manager database maintenance procedure makes it possible for tape cartridge volumes used for storage of OAM objects to be reused as often as required, and will minimize the cost of storage of migrated OAM objects on tape.

.Pre-requisites for OAM Manager implementation

In order to use OAM Manager V3.0 on a system for implementation of tape support for storage and retrieval of OAM objects, the following software pre-requisites are required:

- OS/390 V1.1 or higher; or z/OS v1.1 or higher
- DFSMSdfp V1.1 onwards
- DB2 V3 or higher
- A standard implementation of OAM using the above software
- CICS/ESA or CICS/TS (if implementation of the OAM Manager CICS interface is required)
- Archive Manager (formerly known as ASM for S/390) - V2.4 or higher
- Support for 3480/3490 device types.

The following hardware pre-requisites will be required:

- 3480/3490-compatible cartridge tape devices.
- A correctly sized STK 4400 ACS library configuration.

Sizing of the hardware requirements is dependent on a number of factors relating to the volume and usage of OAM objects which are to be migrated to tape. This may be a complex task, and should be performed in conjunction with the Oracle customer support representative for your installation.

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This section describes the activities required to install and implement OAM Manager for use in migrating and retrieving OAM objects using Lifecycle Director.

After all activities described in this section have been successfully completed, OAM Manager will be fully installed and Lifecycle Director support for OAM may then be enabled.

■ Archive Manager implementation

OAM Manager uses the Archive Manager component of Lifecycle Director to perform its object migration and retrieval operations. Installation of Archive Manager on the same host system is therefore a mandatory pre-requisite for OAM Manager implementation and use.

Prior to proceeding with OAM Manager implementation, customers should verify that installation and implementation of Archive Manager has been completed successfully. Refer to the Lifecycle Director Archive Manager User Manual for details on implementation of this product. The installation verification procedure (IVP) supplied with the product should be executed to verify that Archive Manager has been successfully installed on the system on which OAM Manager implementation is to be performed.

Note that OAM Manager does not use CICS support within Archive Manager. Archive Manager implementation and IVP activities relating to CICS need not be undertaken unless this support is needed for other (non-OAM) applications within the organization.

■ Initial OAM Manager implementation procedures

The following activities are required when installing OAM Manager for the first time. A full description of each activity is provided on the page indicated in brackets. If upgrading from a previous release of OAM Manager, skip this section and proceed with upgrade procedures on page 43.

- ___ 1. Install distribution libraries with SMP/E (page 16).
- ___ 2. Update OAM Manager parameter library (page 19).
- ___ 3. Perform MVS host system modifications (page 20).

- ___ 4. Perform DB2 system modifications (page 26).
- ___ 5. Enable sysplex operation (page 29)
- ___ 6. Perform CICS implementation activities (page 29).
- ___ 7. Define and initialize OAM Manager system datasets (page 36).
- ___ 8. Define Archive Manager storage group databases (page 37).

Install distribution libraries

OAM Manager v3.0 is distributed on CD or on a standard-labeled magnetic tape cartridge in SMP/E RELFILE format with a serial number of OTM300. Follow the installation instructions corresponding to the distribution media in use.

Installation from CD

The distribution CD will contain all distribution materials in compressed format plus a series of HTML documents for navigation through the install process. Perform the following steps to install OAM Manager from CD.

1. Insert the CD in the appropriate drive of a computer running Windows or Unix, which has connectivity to the mainframe on which the product is to be installed. An initial welcome screen will be displayed in your web browser. If this does not happen automatically, execute file 'autorun.bat' from the root directory on the CD. Click on 'Continue' on this screen to be guided through the installation process, which is summarized in the following paragraphs.
2. Create and mount a new hierarchical file system on the MVS host, and define two new directories – SMPNTS and SMPWKDIR – in this location. If required, create a symbolic link of “/tmp/OTM30.SMP” to the parent of these directories. Doing this will allow the sample installation JCL supplied with the product to be run without modification of path names.
3. Using an appropriate FTP product, transfer file “OTM30.pax” from the root directory on the CD to the SMPNTS directory created in the preceding step, using a binary transfer protocol. An example of the FTP commands is given in document “pax.html” in the “Documents” directory on the CD.
4. Using OMVS on the MVS host, unzip the “.pax” file transferred above, to create a TSO transmit file. An example of the commands required to do this is given in document “pax.html” in the “Documents” directory on the CD.
5. In native MVS, use the TSO RECEIVE command to create a PDS containing sample installation JCL, from the transmit file unpacked in the preceding step. An example of the commands to do this is given in document “pax.html” in the “Documents” directory on the CD.

6. Edit member SMPPEDEF from the sample JCL dataset created in the preceding step, as described within the dataset member itself. This job will define and initialize the SMP/E consolidated software inventory (CSI) dataset and create other SMP/E system datasets and the OAM Manager target and distribution libraries. If any of these datasets are already in existence, delete them prior to running this job or amend the job to remove dataset creation or initialization processing, as required.

After editing the member, submit it. Verify that all job steps complete with condition code 0, and that all datasets are created and cataloged successfully.

7. Edit JCL member I60RNTS, as described within the member itself. Note also that the Java directory in the PATH parameter of the SMPJHOME DD entry may need modification to correspond to your environment. This job performs SMP/E RECEIVE processing for the OAM Manager V3.0 function SYSMOD.

After editing the member, submit it. Verify that SMP/E processing has completed with condition code 0.

8. Edit JCL member SMPEAPP, as described within the member itself. This job performs SMP/E APPLY processing for the OAM Manager V3.0 function SYSMOD.

After editing the member, submit it. Verify that SMP/E processing has completed with condition code 0.

9. Optionally edit and submit JCL member SMPEACC. This job performs SMP/E ACCEPT processing for the OAM Manager V3.0 function SYSMOD. Processing of this job may be deferred until later. However, no service should be applied to the product until SMP/E ACCEPT processing has been performed successfully.

The OAM Manager product distribution libraries will have been successfully created on completion of the above steps. Continue with product installation processing below.

Installation from tape cartridge

OAM Manager V3.0 is distributed on a standard-labeled magnetic tape cartridge in SMP/E RELFILE format. The cartridge has a serial number of OTM300.

The distribution tape will contain the following datasets:

File	Dataset name	Contents
1	SMPMCS	SMP/E modification control statements for installation of

		the product.
2	STK.SOTM300.F1	SMP/E JCLIN file.
3	STK.SOTM300.F2	Partitioned dataset in IEBCOPY UNLOAD format containing JCL for use during product installation.
4	STK.SOTM300.F3	OAM Manager distribution load library, in SMP/E RELFILE format.
5	STK.SOTM300.F4	OAM Manager distribution LPA library, in SMP/E RELFILE format.
6	STK.SOTM300.F5	OAM Manager distribution DBRM library, in SMP/E RELFILE format.
7	STK.SOTM300.F6	OAM Manager sample library, in SMP/E RELFILE format.
8	STK.SOTM300.F7	OAM Manager sample parameter library, in SMP/E RELFILE format.

To install OAM Manager, perform the following steps:

- 1) Copy the installation JCL (file 3) from the distribution tape to disk. The following JCL may be used for this purpose:

```
//S1      EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//SYSIN   DD DUMMY
//SYSUT1  DD DISP=(OLD,KEEP),UNIT=unit-name,
//          VOL=(,RETAIN,SER=OTM300),
//          LABEL=(3,SL,EXPDT=98000),
//          DSN=STK.SOTM300.F2
//SYSUT2  DD DISP=(NEW,CATLG),
//          DSN=OAM.Manager.install.JCL.library,
//          SPACE=(TRK,(5,5,10)),UNIT=unit-name,
//          VOL=SER=volser
```

On completion of the above step a partitioned dataset containing JCL to be used during the remainder of the installation process will have been created.

- 2) Edit member SMPDEF from the installation JCL dataset unloaded in the preceding step, as described within the dataset member itself. This job will define and initialize the SMP/E consolidated software inventory (CSI)

dataset and create other SMP/E system datasets and the OAM Manager target and distribution libraries. If any of these datasets are already in existence, delete them prior to running this job or amend the job to remove dataset creation or initialization processing, as required.

After editing the member, submit it. Verify that all job steps complete with condition code 0, and that all datasets are created and cataloged successfully.

- 3) Edit JCL member SMPERCV, as described within the member itself. This job performs SMP/E RECEIVE processing for the OAM Manager V3.0 function SYSMOD.

After editing the member, submit it. Verify that SMP/E processing has completed with condition code 0.

- 4) Edit JCL member SMPEAPP, as described within the member itself. This job performs SMP/E APPLY processing for the OAM Manager V3.0 function SYSMOD.

After editing the member, submit it. Verify that SMP/E processing has completed with condition code 0.

- 5) Optionally edit and submit JCL member SMPEACC. This job performs SMP/E ACCEPT processing for the OAM Manager V3.0 function SYSMOD. Processing of this job may be deferred until later. However, no service can be applied to the product until SMP/E ACCEPT processing has been performed successfully.

The OAM Manager product distribution libraries will have been successfully created on completion of the above steps. Continue with product installation processing below.

Update OAM Manager parameter library

The OAM Manager parameter library unloaded in the previous step will contain sample parameters for the following four OAM Manager parameter library members:

ENVCNTL	parameters which inform OAM Manager of its operating environment.
OBJCNTL	parameters which control OAM Manager processing of objects for deletion and migration.
STRGROUP	parameters which inform OAM Manager of the OAM storage group configuration in use.

TAPECNTL parameters which control the OAM Manager control region configuration and environment.

After unloading the sample parameter library, review all parameter values, and amend as necessary to reflect the host system's operating environment, and your own requirements for OAM Manager migration and retrieval processing.

Refer to page 61 of this manual for a full description of the OAM Manager parameter library and the format of individual parameters.

Perform MVS host system modifications

The following MVS system changes will be required in order to implement OAM Manager:

a. APF-authorize OAM Manager and Archive Manager load libraries.

The OAM Manager load library (file 4 from the distribution tape) and the Archive Manager load library (created during the Archive Manager installation process) should both be APF-authorized (APF-authorization is optional for stand-alone Archive Manager operation). Refer to IBM system documentation for a description of how to perform this procedure on your system.

b. Create OAM Manager control region procedure.

The JCL member NEAROAMC from the distributed JCL library (file 3 on the distribution tape) should be copied to a system procedure library and amended as appropriate. Update the procedure with the names of the load and parameter libraries created during the distribution tape unload process. A listing of the distributed control region procedure is given in appendix A.

The control region procedure must be started in order to initiate OAM Manager control region processing. Note that the restriction requiring this procedure to be called NEAROAMC has been removed with version 3.0 - any name may now be assigned to this procedure, as required.

c. Assign OAM Manager user identification.

A unique system user identification (eg. NEAROAMC) should be assigned for OAM Manager use, using whatever system security product is installed on the host system.

This user id should be assigned to execution of the OAM Manager control region, and to all OAM Manager utility jobs.

The OAM Manager user id may be used to control access to protected system resources, as determined by the system security administrator. It will

also be used by DB2 in controlling access to OAM directory and storage tables (see page 26).

d. Update the system Program Properties Table (PPT).

The PPT should be updated in order to identify the OAM Manager control region program OTIMP200 as a non-swappable system task. Refer to IBM system documentation for a description of how to perform this procedure on your system.

The following is an example of how to specify the PPT entry in the appropriate SCHEDxx member of SYS1.PARMLIB:

```
PPT          PGMNAME(OTIMP200)
             NOSWAP
             SYST
```

e. Update FLPA or MLPA definitions.

To allow OAM Manager OSREQ intercept processing to be enabled, the IBM-supplied OSR interface module CBRINIT0, and its alias CBRINNC2, and the OAM Manager-supplied modules OTIMP300 and OTIMP310 from the distribution LPA library must be installed in the fixed link pack area (FLPA), or modified link pack area (MLPA), or added to the dynamic link pack area (DLPA) after IPL of the system.

There are no functional considerations for OAM Manager between installation of these modules in the FLPA or MLPA, and consequently the choice may be left to the system programmer responsible for the administration of the system on which the installation is being performed.

Using the FLPA will eliminate paging for execution of the modules identified above, but will reduce the total amount of real storage available for system use by about 650k bytes. This may consequently increase overall system paging rates. If the amount of real storage available is limited, allow the above modules to be paged as normal by installing them in the MLPA.

To install in the FLPA, perform the following tasks:

- Add the modules OTIMP300, OTIMP310, CBRINIT0 and CBRINNC2 to the member IEAFIXxx in SYS1.PARMLIB. OTIMP300 and OTIMP310 are on the distributed OAM Manager LPA library - this library should be specified in the INCLUDE parameter as the location of the required module, or the modules copied to another library which already has an entry in the SYS1.PARMLIB member. CBRINIT0 and its alias CBRINNC2 should be present in the system LPA library SYS1.LPALIB.
- Add the NOPROT option to the FIX parameter in the IEASYSxx member in SYS1.PARMLIB, as follows:

```
FIX = (xx,NOPROT)
```

To install in the MLPA, perform the following tasks:

- Add the modules OTIMP300, OTIMP310, CBRINIT0 and CBRINIC2 to the member IEALPAXx in SYS1.PARMLIB. OTIMP300 and OTIMP310 are on the distributed OAM Manager LPA library - this library should be specified in the INCLUDE parameter as the location of the required module, or the modules copied to another library which already has an entry in the SYS1.PARMLIB member. CBRINIT0 and its alias CBRINIC2 should be present in the system LPA library SYS1.LPALIB.
- Add the NOPROT option to the MLPA parameter in the IEASYSxx member in SYS1.PARMLIB, as follows:

```
MLPA = (xx,NOPROT)
```

As an alternative to installation of these modules in the MLPA or FLPA, they may be installed in the dynamic LPA (DLPA) at any time after IPL of the system, through the operator SETPROG LPA command or through an LPA statement within a PROGxx parameter library member referenced by the SET PROG=xx operator command. In either case, the PAGEPROTPAGE parameter must be used to prevent the entire module being page protected in virtual storage. The module may be fixed or pageable, as required.

f. Add OTIMP055 to the PLPA.

Module OTIMP055 from the distributed OAM Manager LPA library must be installed in the pageable link pack area (PLPA). To do this, copy the module from the distributed LPA library to a library in the system LPALST concatenation. Note that installation of OTIMP055 in the MLPA or FLPA is not enough to meet this requirement. Any attempt to use OAM Manager when OTIMP055 is resident outside the PLPA may cause an S047 abend to occur.

g. Allocate OAM Manager SMF record identifier.

The OAM Manager control region will optionally create SMF records during object retrieval processing. This option is controlled via the SMFRECID parameter in the ENVCNTL parameter library member.

If it is required that OAM Manager should create SMF records, a unique SMF user record identifier (in the range 128-255) should be assigned for OAM Manager use. The allocated value should then be identified to OAM Manager via the ENVCNTL SMFRECID parameter.

h. Perform tape management system changes.

Primary tape datasets created by OAM Manager will all have a high-level qualifier of

```
'hlq.G*'
```

where 'hlq' is the high-level qualifier defined for the Archive Manager database for the storage group containing the tape volume (see page 37).

Backup or duplex tape datasets (as created during object migration) will all have high-level qualifiers of

`'hlq.xn.G*'`.

where 'hlq' is the high-level qualifier defined for the Archive Manager database for the storage group containing the tape volume, 'x' is the copy identifier, and 'n' is the Archive Manager storage level ('0' to '7'). The copy identifier 'x' may take the following values:

- B - indicates the primary backup copy created by the database backup utility OTIMP110. This copy will not be created if 'BACKUP=NO' has been specified in the job EXEC parameters used during execution of the database backup utility.
- C - indicates the duplex copy created during the object migration process (by object selection utility OTIMP100). This copy will only be created if Archive Manager duplexing has been enabled for the storage group.
- D - indicates the duplex backup copy created by the database backup utility OTIMP110. This copy will only be created if Archive Manager backup duplexing has been enabled for the storage group.

Any tape management software present on the system should be amended as required to establish appropriate scratch pool and retention period controls. If required, the retention period or expiry date of tape volumes created in an Archive Manager database may be specified via the Archive Manager database administration procedure, in TSO/ISPF.

Where possible, a retention period of 'CATALOG' should be established for each OAM Manager scratch pool. When used with the Archive Manager 'AUTOUNCAT' facility, this will facilitate automatic return of tape volumes to the scratch pool after release by the Archive Manager database maintenance utility. Refer to the Lifecycle Director Archive Manager User Manual for further information about tape scratch pools and the tape database maintenance utility.

Primary or secondary OAM Manager tape datasets will be released under the following circumstances:

- The Archive Manager tape backup utility will automatically uncatlog backup datasets which are being recreated during the migration process (this will occur when objects are added to a partially-used volume during the migration process; the backup of the partially-used volume will be released).

- The Archive Manager tape database management utility will release volumes from within a storage group database which contain less than a user-supplied threshold of active objects. Released volumes will be automatically uncataloged by the utility if the AUTOUNCAT option has been specified for that storage group database via the Archive Manager database maintenance facility.

i. Perform STK Host Software Component (HSC) changes.

The relevant modifications should be made to the HSC software which controls operation of the Oracle library configuration and environment, in order to ensure that scratch tapes used during the OAM Manager object migration process are located within the library configuration. All Archive Manager tape datasets will have a high level qualifier as specified during the Archive Manager database definition procedure (see page 37).

It is essential for object retrieval processing that all primary volumes within an Archive Manager database can be mounted automatically in response to an object recall request. For this reason, all such cartridges should be located within a Oracle library configuration.

Appropriate controls should also be established to handle creation of backup and duplex tape datasets as required (eg) use scratch tapes from non-library drives with automatic cartridge loaders (for subsequent storage on library shelving), or use scratch tapes from within a remote library configuration (for automatic offsite storage).

Refer to the relevant Oracle manual, or contact your Oracle Software Support Representative (SSR) for details on how to implement the above controls.

j. Update automated reply software controls.

Occasionally, it may happen that there are no tape drives available to satisfy a request from OAM Manager for object retrieval from a non-mounted tape volume.

When this occurs, normal allocation recovery processing will be performed by the host system control program, resulting in the display of message IEF247I followed by the following message:

```
IEF238D jjj - REPLY DEVICE NAME, 'WAIT' OR CANCEL'
```

While this reply is outstanding, OAM Manager will be unable to service the request which caused allocation recovery to be entered.

To avoid any unnecessary and unpredictable delays due to this situation, any automated operator reply facility which is present on the host system should be configured to reply 'CANCEL' to the above message for any OAM Manager retrieval request (ie) a request for retrieval from an Archive Manager tape dataset.

OAM Manager will handle a reply of 'CANCEL' in the following manner:

1. For OSREQ RETRIEVE requests, which will be processed by the OAM Manager control region, an 'archiving busy' response will be raised by OAM Manager. Control will then be returned to the caller as OSREQ error return and reason codes (refer to page 323 of this manual for a description of these codes), or optionally the request will be held internally in OAM Manager until a tape drive becomes available or until a customer-specified time interval has elapsed (at which time the request will be rejected as above). For rejected requests, the calling application may be amended to handle this type of error in a special manner (eg) to display a retry message to the end user.
2. For retrievals requested via the OAM Manager batch pre-fetch utility, OAM Manager will retry the allocation at one-minute intervals, up to a retry limit of 30. If, after this limit has been reached, allocation has still not been successful, an 'archiving busy' response will be raised by OAM Manager and returned to the caller in the parameter interface area used by the utility.

k. Define DFSMS storage classes.

The storage class of objects which have been migrated from OAM to OAM Manager ownership will be modified to that specified (or defaulted) in the TAPECLASS parameter entry in the ENVCNTL parameter library member.

The storage class of migrated objects will not normally be modified following successful migration. An exception to this is when migrated objects are pre-fetched using the OAM Manager batch pre-fetch utility, and deleted from OAM Manager (pre-fetch request code '02'). During this process the storage class of these objects will be modified to that specified (or defaulted) in the DISKCLASS parameter entry in the ENVCNTL parameter library member.

This processing requires the following DFSMS storage classes to be specified:

- TAPECLASS.

The storage class specified in the TAPECLASS parameter entry of the ENVCNTL parameter library member (or the default value of NEARTAPE) must be defined via a dummy entry in ISMF. All performance objective fields in this entry should be left blank. All other fields should be set to 'N' (where appropriate) or left blank. OAM Manager does not use any of these values for performance or storage management purposes; these facilities are supplied by Archive Manager.

Note that the storage class specified here is for internal use by OAM Manager only. External applications should not reference this storage class directly; unpredictable results may occur otherwise.

- DISKCLASS.

The storage class specified in the DISKCLASS parameter entry of the ENVCNTL parameter library member (or the default value of DB2DASD) must be defined via an entry in ISMF. Fields in this entry should be set as required for standard OAM disk management functions.

I. Define new storage classes in OAM.

After defining new storage classes to DFSMS, as described in the preceding section, it is also necessary to define these storage classes to OAM. This will result in the addition of one new row in the OAMADMIN storage class identifier table for each new storage class. Note that this step is not required if no new storage class was defined in the preceding step.

This may be achieved by one of the following methods:

- a) Store a dummy object in any existing OAM object collection using the OSREQ TSO command processor, specifying the new storage class in the STORAGECLASS parameter (eg) the following OSREQ TSO command may be used to add a new entry for storage class NEARTAPE:

```
OSREQ STORE COLLNAME DUMMY.OBJECT MANAGEMENTCLASS(DISK) -
      STORAGECLASS(NEARTAPE) LENGTH(1024)
```

This will automatically create an entry for NEARTAPE in the OAMADMIN storage class identifier table, if one did not exist already. The dummy object may be deleted after completion of this operation.

- b) Use SPUFI to directly add a row to the OAMADMIN storage class identifier table (eg) the following SQL may be used via SPUFI to add an entry for storage class NEARTAPE:

```
INSERT INTO OAMADMIN.CBR_STO_CLASS_TBL
      (ODSCNUM, ODSCNAME) VALUES(n, 'NEARTAPE');
```

where 'n' is a numeric value specifying a unique storage class identifier to be associated with storage class NEARTAPE.

Perform DB2 system modifications

The DB2 system which is in use by OAM (for which OAM Manager is to supply tape support) must be updated with details of the views and plan(s) required by OAM Manager, and to grant appropriate authority for access to plans and tables. The following activities will need to be performed:

a. Create OAM database views.

V3.0 of OAM Manager uses the following standard views for accessing each OAM storage group database:

xxxxxxx.V_OSM_OBJ_DIR for accessing table xxxxxxxx.OSM_OBJ_DIR;

xxxxxxx.V_OSM_04K_OBJ_TBL for accessing table
xxxxxxx.OSM_04K_OBJ_TBL;

xxxxxxx.V_OSM_32K_OBJ_TBL for accessing table
xxxxxxx.OSM_32K_OBJ_TBL;

where 'xxxxxxx' is the DB2 database name qualifier assigned to a storage group ('GROUP00' etc.).

These views are created during initial OAM installation in the IBM-supplied job CBRISQL. Ensure that these views are correctly defined for all storage groups required for standard OAM use. Refer to IBM documentation on OAM installation for additional information on defining these views.

b. Create OAM Manager application plan.

OAM Manager requires a single DB2 plan for execution. The plan name is specified via the PLAN keyword parameter of the ENVCNTL parameter library member (see page 65). If omitted, a default plan name of 'OTIMPLAN' is used.

It should be noted in this context that DBRMs shipped with the base product or with service packages are created with the VERSION(AUTO) pre-compiler option. This will allow multiple copies of the same package to be bound to a single DB2 plan, to allow different versions of OAM Manager programs to execute using that plan. Alternatively, separate plans can be created and execution controlled via use of the PLAN keyword parameter in the ENVCNTL parameter library member.

Edit member OTIMPKG in the distributed OAM Manager JCL library (file 3 on the distribution tape). This contains JCL to create DB2 packages from DBRMs supplied with the product. The JCL in this member should be executed once for each OAM storage group to be accessed by OAM Manager. Instructions for editing the JCL are provided at the top of the file.

After executing member OTIMPKG for each OAM storage group to be accessed by OAM Manager, edit and submit member OTIMBIND in the distributed OAM Manager JCL library (file 3 on the distribution tape). This contains JCL to create the application plan to be used by OAM Manager. Again, instructions for editing the JCL are provided at the top of the file.

A copy of the supplied OTIMPKG and OTIMBIND jobs can be found in appendix A of this manual.

c. Grant authorities for OAM Manager plan access.

Member OTIMGRNT in the distributed OAM Manager JCL library supplies a job to grant authority for execution of the plan created in the previous step.

Edit this member in order to update:

- The name of the DB2 subsystem in the DSN statement.
- The name of the DB2 runtime load library in your installation in the RUN statement.
- The PLAN name in the RUN statement which matches your installed DB2 system.
- The name of the OAM Manager PLAN.

After updating this member, submit the job. A copy of the supplied OTIMGRNT job can be found in appendix A of this manual.

d. Grant authorities for OAM Manager access to OAM administration, directory and object storage databases.

During normal operation, OAM Manager will need to access and update certain DB2 tables owned by OAM. The following table identifies these database tables and the level of access required to each.

<i>Table name</i>	<i>Access required</i>
OAMADMIN.CBR_MGT_CLASS_TBL	SELECT
OAMADMIN.CBR_STO_CLASS_TBL	SELECT
OAMADMIN.CBR_COLLECTION_TBL	SELECT
xxxxxxx.OSM_OBJ_DIR	SELECT,DELETE, UPDATE
xxxxxxx.OSM_04K_OBJ_TBL	SELECT,DELETE, INSERT
xxxxxxx.OSM_32K_OBJ_TBL	SELECT,DELETE, INSERT

Each set of 'xxxxxxx' tables will occur once for each storage group which is active on the host system for storage of OAM-controlled objects, where 'xxxxxxx' is the DB2 database name qualifier assigned to each storage group ('GROUP00' etc.). Each of these sets will require authorization for the access levels identified above.

You should grant the above table access authorities to the user identifier assigned to OAM Manager during system installation.

In addition, the above access authorities will also need to be granted to all users who will be invoking the OAM Manager batch pre-fetch interface. See page 181 for a description of this facility.

Enable sysplex operation

If it is required that OAM Manager operate in an OAMplex environment, then sysplex support must be enabled in the product. OAM Manager requires the following pre-requisites for sysplex enablement:

- An OAMplex configuration must already be in place for the MVS images which are to be part of an OAM Manager sysplex group.
- A single DB2 data sharing configuration must be implemented for all MVS images in each OAM Manager sysplex group.
- Disk devices containing Archive Manager disk-resident system datasets must be shared between all MVS images in the sysplex group. If this is not possible, then these datasets must be mirrored between the MVS images in the sysplex group, and appropriate procedures put in place to ensure that mirrored datasets are synchronized after update. The datasets falling into this category consist of:
 - Database primary index files (one per storage group)
 - Database space management datasets (one per database storage level)

Use the INDEXID parameter in the STRGROUP parameter library entry for each storage group in order to allow an Archive Manager primary index dataset to be shared between all systems in the OAMplex. An identical value for the INDEXID parameter should be specified (or allowed to default) for the same storage group entry in each OAM Manager system in the OAMplex.

- Tape devices which are to be used for satisfying requests for retrieval of migrated OAM objects should be shareable between one or more MVS images in the OAM Manager sysplex. It is not required that all images in the OAM Manager sysplex have access to shared tape devices; however, at least one image in the sysplex needs to have access to such devices.
- An MVS image may not belong to more than one OAM Manager sysplex group.

Implementation of sysplex support in OAM Manager will allow requests for retrieval of tape-resident objects from an Archive Manager database to be shipped to a control region in another MVS image, where necessary. This

permits concurrent access to individual tape volumes in an Archive Manager database, and will remove system dependency for this type of request. This in turn will allow individual images (or OAM Manager control regions) within the sysplex configuration to be quiesced, without impacting the ability of the sysplex to service OAM requests for migrated objects. It also supports use of the sysplex for transaction load balancing requirements.

Note that retrieval of objects from disk-resident objects are always satisfied by the local OAM Manager (i.e. in the OAM Manager control region executing on the system image in which the OAM retrieval request was submitted).

If the above pre-requisites are in place, then execution of the batch object management procedure may take place in any MVS image in the sysplex. However, the existing restriction that only one batch procedure per storage group may be performed concurrently still applies.

The following steps are required for implementation of OAM Manager sysplex support :

a. Update OAM Manager parameter library.

Each OAM Manager member in the sysplex group requires a separate parameter library. Parameters in this library may be set as required for each instance of OAM Manager. However, to ensure consistency of processing of tape retrieval requests between all members in the sysplex group, the following parameters should have the same values in each member:

OBJCNTL member – STAGE|NOSTAGE|STAGETAPE should be coded identically for each MGMTCLAS parameter in this member.

STRGROUP member - STAGE|NOSTAGE|STAGETAPE should be coded identically for each storage group entry in this member.

The INDEXID parameter must be defined (or allowed to default) identically for each storage group, in order to allow the Archive Manager primary index dataset to be shared by all systems in the OAMplex.

Sysplex support is enabled by setting the following parameters in the ENVCNTL parameter library member:

XCFGROUP – used to define the OAM Manager sysplex group name. The value of this parameter must be identical for all members of the sysplex group.

XCFMEM – used to identify each member in the OAM Manager sysplex group. The value of this parameter must be unique for each member of the sysplex group.

XCFMAXDRIVE – used to control the maximum number of tape drives which may be allocated concurrently in all members of the OAM Manager sysplex group. The value of this parameter should be identical for all members of the sysplex group.

Refer to the section “ENVCNTL parameters” on page 62 for a full specification of the above parameters.

b. Define OAM Manager coupling facility list structure.

OAM Manager uses a coupling facility list structure in order to schedule work between the members of a sysplex group. This list structure must be defined in the CFRM policy prior to OAM Manager sysplex support being enabled, using the sysplex administrative data utility IXCMIAPU. Refer to IBM sysplex documentation for detailed information on how to use this utility to define and update a CFRM policy.

The list structure should be defined as follows:

```
STRUCTURE NAME (aaaaaaaa_OTMLIST)
           SIZE (bbbbbb)
           INITSIZE (ccccc)
           ALLOWAUTOALT (NO)
           FULLTHRESHOLD (80)
```

Where:

‘aaaaaaaa’ is the 1-8 character value specified for the XCFGROUP parameter in the ENVCNTL parameter list member used by each member of the OAM Manager sysplex group

‘bbbbbb’ is the maximum amount of storage in the coupling facility which is to be allocated to the list structure

‘ccccc’ is the initial amount of storage in the coupling facility which is to be allocated to the list structure

Values for other parameters which may be used to define a list structure should be set as required.

The following information should be used in determining the optimum values for the INITSIZE and SIZE parameters (the name in parentheses for each parameter refers to the field name in the Coupling Facility sizing formulae published by IBM):

- List structure type (LST) = keyed

- List element characteristic (LELX) = 0
- List count (LC) = 1
- Maximum number of elements for each list entry (MDLES) = 16
- There is no adjunct data associated with each list entry (LST)
- Target directory to data ratio for both entry and element portions (R_le and R_data) = 1
- Maximum number of event monitor controls (TMTESR) = 0
- Number of lock entries (LTEC) = 1
- Maximum list set entry count = sum of values of TAPECNTL member MAXDRIVE parameter in the parameter library used for each member of the OAM Manager sysplex group (MLSEC)
- Maximum number of data elements allowed in the structure = 16 * maximum list set entry count (MLSELC)
- Lock table entry characteristic (LTEX) = the number of OAM Managers participating in the XCF group

Refer to IBM sysplex documentation for details on how to use these values to calculate the size to be assigned to the list structure.

Perform CICS implementation activities

In order to allow OAM Manager to intercept all OSREQ requests made from CICS applications, the OAM Manager CICS interface needs to be initialized. The following CICS-related amendments will be required for this purpose:

a. CICS resource definitions.

The following comments should be read carefully before defining the required CICS resources:

- OAM Manager CICS modules are used to enable (OTIMP230) or disable (OTIMP240) OAM Manager interception of system-wide CICS OSREQ requests (ie) OSREQ requests issued from any CICS region running on that host system, not just the region from which the initialization request was issued.
- Careful consideration should therefore be given to the manner in which enabling and disabling this facility is performed in situations where multiple CICS regions within a single MVS host have been initialized for OAM access (a CICS region is initialized for OAM access via an entry for program CBRICONN in its startup program list table (PLTPI)).

- For ImagePlus users, the CICS region used by the Object Distribution Manager (ODM) component will have been initialized for OAM access. This region should therefore be included in the list of identified CICS regions within a host system which will be issuing OSREQ calls. If no other CICS region in the system has been initialized for OAM, then the ODM region should be used to enable and disable the OAM Manager CICS interface.

Use the following guide to determine which region should be used to perform OAM Manager CICS processing:

(i) Single CICS OAM system

If only one CICS region on an MVS host has been initialized for OAM access, then that region must also be used to enable and disable the OAM Manager CICS interface. All resource definitions identified below should be made in that CICS system.

(ii) Multiple CICS OAM systems

In situations where more than one CICS system on an MVS host has been initialized for OAM access, the OAM Manager CICS interface should be enabled in the region which is started first during normal operation (eg) at start-of-day processing. The program definition for OTIMP230 and transaction definition for OM23, and the PLTPI table entry for program OTIMP230 should be made in that CICS system.

Disabling the OAM Manager CICS interface should be performed in the region which is shutdown last during normal operation (eg) at end-of-day processing. The program definition for OTIMP240 and transaction definition for OM24, and the PLTSD table entry for program OTIMP240 should be made in that CICS system.

Note from the above, that in the case where multiple CICS systems have been initialized for OAM access, it is not necessary for all CICS resource definitions for the OAM Manager CICS interface to be solely contained within a single CICS system.

After determining the CICS region(s) to be used for enabling and/or disabling the OAM Manager CICS interface, the following CICS resources should be defined, using the CICS Resource Definition Online (RDO) facility, or via CICS table entries:

Programs (RDO):

```
DEFINE PROGRAM(OTIMP075)  
    LANGUAGE(ASSEMBLER)
```

```
DEFINE PROGRAM(OTIMP230)  
    LANGUAGE(ASSEMBLER)
```

```
DEFINE PROGRAM(OTIMP240)  
    LANGUAGE(ASSEMBLER)
```

Transactions (RDO):

```
DEFINE TRANSACTION(OM23)  
    PROGRAM(OTIMP230)  
    ISOLATE(NO)
```

```
DEFINE TRANSACTION(OM24)  
    PROGRAM(OTIMP240)  
    ISOLATE(NO)
```

Program List Table - post-initialization (PLTPI)

```
OTIMP230 DFHPLT TYPE=ENTRY, *  
          PROGRAM=OTIMP230
```

This entry must be included after the entry for the CICS OAM interface (program CBRICONN).

Program List Table - shut-down (PLTSD)

```
OTIMP240 DFHPLT TYPE=ENTRY, *  
          PROGRAM=OTIMP240
```

This entry should be made in the first phase of the PLTSD (ie) before the DFHDELIM entry.

Application programs issuing OSREQ requests

It is important that the CICS definition for any application program which issues an OSREQ request should be created with an EXECKEY parameter value of CICS. An EXECKEY value of USER will result in an S0C4 abend during access to an OAM object from a CICS program, whether the object has been migrated by OAM Manager or not.

b. CICS JCL changes (OAM Manager initialization region only).

The following CICS JCL change is required for the CICS region(s) in which the OAM Manager CICS interface will be enabled and/or disabled (ie) the region(s) in which OAM Manager CICS table entries have been added:

- Add the distributed OAM Manager load library (file 1 from the product distribution tape) to the CICS DFHRPL concatenation.

c. Resource definitions for the CICS pre-fetch utility.

If the CICS pre-fetch utility is in use, the following CICS resources should be defined (refer to page 178 for a description of the CICS pre-fetch utility and its utilization):

Transactions (RDO):

```
DEFINE TRANSACTION(OM26)
      PROGRAM(OTIMP260)
      TCLASS(n)
```

The TCLASS operand is only required if a limit is to be placed on the number of pre-fetch requests which are to be processed concurrently (see page 178). In this case, use a unique value (in the range 1-10) for this transaction definition.

The above definition should be added to the CICS system in which the background pre-fetch task (OM26) is to execute. If pre-fetch requests are to be issued by applications running in another region (using MRO or ISC facilities), then the following transaction definition should be added in that region:

```
DEFINE TRANSACTION(OM26)
      REMOTESYSTEM(xxxxx)
```

where 'xxxx' is the identifier of the CICS system in which the pre-fetch task is to be executed.

Programs (RDO):

```
DEFINE PROGRAM(OTIMP255)
      LANGUAGE(ASSEMBLER)
```

This program must be defined in all CICS systems from which applications will issue pre-fetch requests.

```
DEFINE PROGRAM(OTIMP260)
      LANGUAGE(ASSEMBLER)
```

This program must be defined in the CICS system(s) in which the background pre-fetch task OM26 will execute.

DB2 entries (RDO)

```
DEFINE DB2ENTRY(OM26)  
      TRANSID(OM26)  
      PLAN(CBRIDBS)
```

This entry must be made in the CICS system in which the background pre-fetch task OM26 will execute. Parameters not specified in the above entry may be set as required. The number of DB2 threads set for transaction OM26 should not be less than the value set for the maximum number of transactions of this class which may execute concurrently.

Define and initialize OAM Manager system datasets

OAM Manager requires a deletion control dataset for each storage group from which OAM objects are to be migrated to Archive Manager. Each deletion control dataset will have the following name:

```
hlq.xxxxxxxx.yyyyyyyy.DCNTL
```

where 'hlq' is the optional high-level qualifier specified in the HLQ sub-parameter for the storage group entry in the STRGROUP parameter library member, 'xxxxxxx' is the DB2 database name qualifier assigned to the OAM storage group ('GROUP00' etc.), and 'yyyyyyy' is the value of specified or defaulted for the INDEXID parameter in the STRGROUP parameter library definition for the storage group

The OAM Manager delete control dataset is a VSAM KSDS which is used to pass information between the steps which are executed during the OAM Manager migration procedure, and for restarting migration after job failure. It must be allocated via the AMS DEFINE command prior to first migrating objects from the associated storage group. This dataset is automatically deleted and redefined, using user-supplied AMS parameters, at successful completion of an OAM Manager object migration procedure.

Member GPXXDEF on the distributed JCL library provides a sample job for defining and initializing the deletion control dataset for storage group 'xxxxxxx'. Amend and submit this job once for each OAM storage group which is to be processed by OAM Manager. A copy of the supplied GPXXDEF job can be found in appendix A of this manual.

This member should be edited before submitting each job by updating all occurrences of the following character strings:

hlq: the name of the high-level qualifier to be prefixed for all OAM Manager system datasets, as specified in the ENVCNTL 'HLQ' parameter. If no HLQ parameter is specified, omit this value and the trailing period mark(.).

xxxxxxx: this should be set to the DB2 database name qualifier ('GROUPO0' etc.) assigned to the storage group for which OAM Manager is being initialized.

yyyyyyy: the value of the INDEXID parameter in the STRGROUP parameter library entry for the storage group. The default value for this parameter is 'OTM.dddd', where 'dddd' is the name of the DB2 subsystem used by OAM Manager for processing this storage group.

eeee and ffff: the primary and secondary allocation values for the OAM Manager deletion control dataset for this storage group. This dataset will contain one record for each object that has been selected for processing (ie. migration, expiration or deletion of a recalled object) during execution of the migration utility.

Ensure that these values are sufficient to contain the highest number of objects that are expected to be processed in any one execution of this utility for this storage group.

vvvvv: The serial number of the disk volume to be used for allocating the OAM Manager deletion control dataset for this storage group.

Define Archive Manager storage group databases

OAM Manager uses the Archive Manager component of Lifecycle Director for storage and retrieval of objects. Migrated OAM objects are held in one or more Archive Manager databases, one Archive Manager database being used per OAM storage group (ie) there is a one-for-one correspondence between OAM storage group databases and Archive Manager databases in the OAM Manager configuration.

Each Archive Manager database must be defined prior to first migrating objects within a single storage group to OAM Manager, via the OAM Manager object management procedure.

Definition of an Archive Manager database is performed using the standard Archive Manager database administration dialogs under TSO/ISPF. Refer to the Archive Manager User Manual for a full description of the Archive Manager database definition procedure.

This section summarizes the procedure for the definition of an OAM Manager storage group database.

1. Logon to the Archive Manager database administration dialog in TSO/ISPF. Consult the person(s) responsible for Archive Manager database administration in your installation if you are unsure of how to invoke this facility.

- From the main Archive Manager database administration menu, enter the following dataset name in the 'primary index name' field:

(hlq.)xxxxxxxx.yyyyyyy.INDEX

where 'hlq' is the optional high-level qualifier as specified on the HLQ sub-parameter for the storage group entry in the STRGROUP parameter library member, 'xxxxxxxx' is the DB2 database name qualifier ('GROUP00' etc.) assigned to the storage group whose Archive Manager database is being defined, and 'yyyyyyy' is the value of the INDEXID sub-parameter for the storage group entry in the STRGROUP parameter library member (default value 'OTM.dddd', where 'dddd' is the identifier of the DB2 subsystem used by OAM).

Select option 3 from this menu, and press ENTER. Panel OTSN4300 (the base database definition panel) will be displayed.

- Fields on panel OTSN4300 should be entered as follows (see Figure 1):

Length of primary key	Enter the value '48'.
Archive Manager user SVC no	Enter the user SVC number allocated for Near-Archive during the product installation procedure. This must be a numeric value in the range 200-255. Consult the persons(s) responsible for installing Archive Manager on your system if you are unsure of this value.
HLQ for this database	Enter any 1-30 character value to be used as the high-level qualifier when generating the names of system datasets in the Archive Manager database. Any valid dataset name may be chosen. In order to assist with data management processing, it is recommended that the value '(hlq.)xxxxxxxx.yyyyyyy' be used for this parameter (if space permits), where 'hlq', 'xxxxxxxx' and 'yyyyyyy' are identical to the corresponding entries in the database's primary index name (as displayed on the panel).
Data retention period	This entry should be allowed to default to a value of 0 years and 0 days (ie) no automatic expiry. Expiration of OAM Manager objects is controlled via the OAM Manager OBJCNTL parameter library member.

Online
processing
options

These fields should be left blank. Entries in these fields are only used by the CICS retrieval interface in Archive Manager. This interface is not used by OAM Manager.

```
OTSN4300                                Lifecycle Director                                Enter values
                                         Archive Manager V2.6
                                         Base Database Definition
-----
Primary index name ===> (hlq.)xxxxxxxx.yyyyyyyy.INDEX

Length of primary key ===> 48
User SVC no ===> sss
HLQ for this database ===> _____
Data retention period ===> __ yrs __ days
System dataset unitname ===>

Online processing options:

Retain tapes on drive for ===> _____ minutes
Age range of tapes to be retained on drive ===> _____ to _____ days old

Audit options:                          Retrieval logging options:

Audit trail on? ===> _                    SMF record id ===> _____
Journal archiving enabled? ===> _        Batch retrieval logging on? ===> _
                                         CICS retrieval logging on? ===> _
```

Figure 1 - base database definition panel OTSN4300

The 'audit options' fields are optional, and may be entered as required. Refer to the Archive Manager User Manual for a description of these fields and their usage.

After all required entries have been made, press 'ENTER'. When all entries have been accepted, the storage level definition panel OTSN4301 will be displayed to allow storage level 0 to be defined for the Archive Manager database.

```

OTSN4301                                Lifecycle Director                Enter values
                                       Archive Manager V2.6
                                       Storage Level Definition

COMMAND ==>

-----
      Primary index name ==> (hlq.)xxxxxxxx.yyyyyyyy.INDEX
      Storage level ==> 0
                                       More:      +

      Database blocksize ==> 32760
Maximum blockcount per volume ==> _____
Unit name for scratch allocn: A ==> uuuuuuuuu   B ==> _____
                              C ==> _____   D ==> _____

Tape usage options:
      ICRC ==> _____   Retention period ==> _____
      Dynamic load balancing ==> _____   or Expiry date ==> _____
      Volsafe enabled: A ==> _____   B ==> _____
                              C ==> _____   D ==> _____

D/b maintenance options:                Duplexing options:
      Recycle threshold ==> _____ %   Duplex during archival ==> _____
      AUTOUNCAT during recycle ==> _____   Duplex during backup ==> _____
      Disk compress threshold ==> _____ %

Disk copy options:
      Unit name ==> _____   Primary alloc ==> _____
      Initial retention ==> _____ days   Secondary alloc ==> _____
      Release unused space ==> _____   Dataset blocksize ==> _____
      Pre-fetch retention ==> _____ days   Maximum blockcount ==> _____

```

Figure 2 - storage level definition panel OTSN4301

4. Fields on panel OTSN4301 should be entered as follows (see Figure 2):

Database blocksize Enter the value '32760'.

Unit name for scratch allocation Enter the unit name(s) to be used by Archive Manager when dynamically allocating primary and backup copies of new tape datasets in storage level 0 in this Archive Manager database. These should be a 1 to 8-character alphanumeric identifier which identify a valid esoteric unit name or device address on the host system control program.

All other fields on this panel are optional. Refer to the Archive Manager User Manual for a description of these fields and their usage.

After all required entries have been made, press 'ENTER'. When all entries have been accepted, the primary index Access Method Services panel OTSN4302 will be displayed to enable customization of the primary index definition parameters for the Archive Manager database being defined.

5. After all database definition and initialization parameters have been accepted, one or more Access Method Services (AMS) control panels will be displayed to allow customization of AMS parameters used by Archive Manager when defining system datasets for the database being defined.

AMS control panels will be displayed in the following sequence:

1. **OTSN4302** - the primary index AMS control panel. This panel is always displayed. Values entered on this panel will be used when creating the primary index dataset (VSAM KSDS) for the database being defined.
2. **OTSN4303** - the journal dataset AMS control panel. This panel will only be displayed if the audit control option was enabled on panel OTSN4300. Values entered on this panel will be used during creation of the journal dataset (VSAM ESDS) for the database being defined.
3. **OTSN4304** - the journal archive database AMS control panel. This panel will only be displayed if both the audit control facility and journal archiving were enabled on panel OTSN4300. Values entered on this panel will be used during creation of the journal archive database primary index dataset (VSAM KSDS).

Panel OTSN4302 is illustrated in Figure 3. Each of the above panels will contain some or all of the following fields:

Volume serial number	Optional entry. Enter the serial number (1-6 alphanumeric, national or special characters) of the disk volume on which the dataset is to be created. This parameter may be omitted if the volume is to be automatically selected by the operating system.
Unit of allocation	For primary index definition (panel OTSN4302) enter a value of 'CYL'. For journal or journal archive definitions (panels OTSN4303 and panel OTSN4304), refer to the Archive Manager User Manual for a discussion of sizing of these datasets.

```

OTSN4302                                Lifecycle Director                                Enter values
                                           Archive Manager V2.6
                                           Access Method Services Control
COMMAND ===>
-----
Primary index name ===> (hlq.)xxxxxxxx.yyyyyyyy.INDEX

Primary index control:

Volume serial number ===> _____
Unit of allocation ===> _____
Primary allocation value ===> _____
Secondary allocation value ===> _____
Data CI size ===> _____
Index CI size ===> _____
Delete before define? ===> _ (Y/N)

Press ENTER after all details have been entered correctly.

After all database definition parameters have been accepted,
the primary index will be allocated and initialized.

```

Figure 3 - Access Method Services control panel OTSN4302

- Primary allocation value** For primary index definition (panel OTSN4302), enter the number of cylinders to be used for allocation of the primary data extent of the index dataset. Each migrated object will occupy approximately 68 bytes of index storage. Ensure that the primary index allocation value is sufficient to contain the highest number of objects that are expected to be held in the tape database for this storage group.

- For journal or journal archive definitions (panels OTSN4303 and panel OTSN4304), refer to the Archive Manager User Manual for a discussion of sizing of these datasets.

- Secondary allocation value** Enter the required secondary allocation value for the index or journal datasets, as appropriate.

- Data CI size** Enter the control interval (CI) size to be used for allocation of the data component of the dataset. This should be a valid VSAM control interval size.

If omitted, a control interval size of 16k is used for the data component.

Index CI size Optional entry. Enter the control interval size to be used for allocation of the index component of the dataset (KSDS only). This should be a valid VSAM control interval size. If omitted, a control interval size of 2k is used for the index component.

Delete before define? Optional entry. Enter the value 'Y' if Archive Manager should attempt to delete the dataset before it is defined. Enter 'N' if no deletion request should be issued.

Press 'ENTER' after all required entries have been made on each panel. After all AMS control panel entries have been accepted, the database will be defined and initialized.

The above Archive Manager database definition procedure should be executed for each OAM storage group which is to be processed by OAM Manager.

.Upgrade procedure

The following activities are required when upgrading OAM Manager from an earlier release. A description of each activity is provided in the section indicated in brackets.

- ___ 1. Unload distribution libraries (page 44).
- ___ 2. Update OAM Manager parameter library (page 44).
- ___ 3. Perform MVS host system modifications (page 45).
- ___ 4. Perform DB2 system modifications (page 48).
- ___ 5. Enable sysplex operation (page 51).
- ___ 6. Perform CICS system modifications (page 55).
- ___ 7. Update deletion control files (page 55)
- ___ 8. Migrate OAM storage group directories when upgrading from OAM Manager V2.1. (page 55).
- ___ 9. Application migration considerations. (page 57).

Install distribution libraries

OAM Manager v3.0 is distributed on CD or on a standard-labeled magnetic tape cartridge in SMP/E RELFILE format with a serial number of OTM300. Note that the format of the distribution tape has changed from earlier releases. MLPA-, FLPA- and PLPA-resident modules are now distributed in a separate LPA library (file 5 on the distribution tape).

Refer to the section starting on page 16 corresponding to the distribution media in use for details of installing the product using SMP/E. Care should be taken with dataset naming standards to ensure that target and distribution libraries for the existing installed release are not overwritten during the V3.0 install process.

Update OAM Manager parameter library

The OAM Manager parameter library unloaded in the previous step will contain sample parameters for the following four OAM Manager parameter library members:

ENVCNTL	parameters which inform OAM Manager of its operating environment.
OBJCNTL	parameters which control OAM Manager processing of objects for deletion and migration.
STRGROUP	parameters which inform OAM Manager of the OAM storage group configuration in use.
TAPECNTL	parameters which control the OAM Manager control region configuration and environment.

After unloading the sample parameter library, review all parameter values, and amend as necessary to reflect the host system's operating environment, and your own requirements for OAM Manager migration and retrieval processing.

Where necessary, values used for existing parameters may be retained for V3.0 operation. Note that the following new parameters have been introduced with this release of the product.

OBJCNTL member:	STAGETAPE
STRGROUP member:	STAGETAPE
ENVCNTL member:	XCFGROUP XCFMEM XCFMAXDRIVE

If upgrading from V2.1 of the product, the following new parameters introduced with V2.2 (or via service in V2.1) should be reviewed at this stage and set as required:

OBJCNTL member:	STAGE NOSTAGE
STRGROUP member:	RETAINTAPE BACKUP NOBACKUP STAGE NOSTAGE
TAPECNTL member:	TAPEWAIT COMMAND MAXDISK
ENVCNTL member:	PLAN DISKCLASS TAPECLASS

Refer to the section “OAM Manager Parameter Specification” starting at page 61 for a full description of the OAM Manager parameter library and the format of individual parameters.

Perform MVS host system modifications

The following MVS system changes will be required in order to implement OAM Manager:

a. APF-authorize the OAM Manager V3.0 load library.

The OAM Manager V3.0 load library (file 1 from the distribution tape) should be APF-authorized. Refer to IBM system documentation for a description of how to perform this procedure on your system.

b. Update OAM Manager control region procedure.

The JCL procedure used to execute the OAM Manager control region should be updated with the names of the V3.0 load and parameter libraries created during the distribution tape unload process. A sample JCL procedure is supplied in member NEAROAMC from the distributed JCL library (file 3 on the distribution tape). A listing of the distributed NEAROAMC procedure is given in appendix A.

The procedure must be started in order to initiate OAM Manager control region processing. Note that for this release, any valid name may be assigned to this procedure.

c. Verify OAM Manager user identification.

A unique system user identification (eg. NEAROAMC) should be assigned for OAM Manager use, using whatever system security product is installed on the host system. Verify that the definition created for the previous release of OAM Manager is valid for V3.0 use.

d. Verify the system Program Properties Table (PPT) entry.

Verify that the PPT has been updated in order to identify the OAM Manager control region program OTIMP200 as a non-swappable system task. Refer to IBM system documentation for a description of how to perform this procedure on your system.

The following is an example of how to specify the PPT entry in the appropriate SCHEDxx member of SYS1.PARMLIB:

```
PPT          PGMNAME(OTIMP200)
             NOSWAP
             SYST
```

e. Update FLPA or MLPA definitions.

OAM Manager requires that distributed modules OTIMP300 and OTIMP310 be installed in the fixed link pack area (FLPA), or modified link pack area (MLPA) or added to the dynamic link pack area (DLPA) after IPL of the system.

To install the V3.0 modules in the FLPA, perform the following task:

- Add the modules OTIMP300, OTIMP310, CBRINIT0 and CBRIINC2 to the member IEAFIXxx in SYS1.PARMLIB. OTIMP300 and OTIMP310 are on the distributed OAM Manager LPA library - this library should be specified in the INCLUDE parameter as the location of the required module, or the modules copied to another library which already has an entry in the SYS1.PARMLIB member. CBRINIT0 and its alias CBRIINC2 should be present in the system LPA library SYS1.LPALIB.

To install in the MLPA, perform the following tasks:

- Add the modules OTIMP300, OTIMP310, CBRINIT0 and CBRIINC2 to the member IEALPaxx in SYS1.PARMLIB. OTIMP300 and OTIMP310 are on the distributed OAM Manager LPA library - this library should be specified in the INCLUDE parameter as the location of the required module, or the modules copied to another library which already has an entry in the SYS1.PARMLIB member. CBRINIT0 and its alias CBRIINC2 should be present in the system LPA library SYS1.LPALIB.

Verify that all other FLPA or MLPA modifications made during initial installation of OAM Manager (as specified in section (e) of “Perform MVS host system modifications” on page 20) remain in effect for V3.0.

As an alternative to installation of these modules in the MLPA or FLPA, they may be installed in the dynamic LPA (DLPA) at any time after IPL of the system, through the operator SETPROG LPA command or through an LPA statement within a PROGxx parameter library member referenced by the SET PROG=xx operator command. In either case, the PAGEPROTPAGE parameter must be used to prevent the entire module being page protected in virtual storage. The module may be fixed or pageable, as required.

f. Add OTIMP055 to the PLPA.

Module OTIMP055 from the distributed OAM Manager LPA library must be installed in the pageable link pack area (PLPA). To do this, copy the module from the distributed LPA library to a library in the system LPA concatenation. Note that installation of OTIMP055 in the MLPA or FLPA is not enough to meet this requirement. Any attempt to use OAM Manager when OTIMP055 is resident outside the PLPA may cause an S047 abend to occur.

g. Define DFSMS storage classes.

The storage class of objects which have been migrated from OAM to OAM Manager ownership will be modified to that specified (or defaulted) in the TAPECLASS parameter entry in the ENVCNTL parameter library member.

The storage class of migrated objects will not normally be modified following successful migration. An exception to this is when migrated objects are pre-fetched using the OAM Manager batch pre-fetch utility, and deleted from OAM Manager (pre-fetch request code '02'). During this process the storage class of these objects will be modified to that specified (or defaulted) in the DISKCLASS parameter entry in the ENVCNTL parameter library member.

This processing requires the following DFSMS storage classes to be specified:

- TAPECLASS.

The storage class specified in the TAPECLASS parameter entry of the ENVCNTL parameter library member (or the default value of NEARTAPE) must be defined via a dummy entry in ISMF. All performance objective fields in this entry should be left blank. All other fields should be set to 'N' (where appropriate) or left blank. OAM Manager does not use any of these values for performance or storage management purposes; these facilities are supplied by Archive Manager.

Note that the storage class specified here is for internal use by OAM Manager only. External applications should not reference this storage class directly; unpredictable results may occur otherwise.

-

- DISKCLASS.

The storage class specified in the DISKCLASS parameter entry of the ENVCNTL parameter library member (or the default value of DB2DASD) must be defined via an entry in ISMF. Fields in this entry should be set as required for standard OAM disk management functions.

h. Define new storage classes in OAM.

After defining new storage classes to DFSMS, as described in the preceding section, it is also necessary to define these storage classes to OAM. This will result in the addition of one new row in the OAMADMIN storage class identifier table for each new storage class. Note that this step is not required if no new storage class was defined in the preceding step.

This may be achieved by one of the following methods:

- a) Store a dummy object in any existing OAM object collection using the OSREQ TSO command processor, specifying the new storage class in the STORAGECLASS parameter (eg) the following OSREQ TSO command may be used to add a new entry for storage class NEARTAPE:

```
OSREQ STORE COLLNAME DUMMY.OBJECT MANAGEMENTCLASS(DISK) -
      STORAGECLASS(NEARTAPE) LENGTH(1024)
```

This will automatically create an entry for NEARTAPE in the OAMADMIN storage class identifier table, if one did not exist already. The dummy object may be deleted after completion of this operation.

- b) Use SPUFI to directly add a row to the OAMADMIN storage class identifier table (eg) the following SQL may be used via SPUFI to add an entry for storage class NEARTAPE:

```
INSERT INTO OAMADMIN.CBR_STO_CLASS_TBL
      (ODSCNUM, ODSCNAME) VALUES(n, 'NEARTAPE');
```

where 'n' is a numeric value specifying a unique storage class identifier to be associated with storage class NEARTAPE.

Perform DB2 system modifications

The DB2 system which is in use by OAM (for which OAM Manager is to supply tape support) must be updated with details of the views and plan(s) required by OAM Manager, and to grant appropriate authority for access to plans and tables. The following activities will need to be performed:

a. Create OAM database views.

V3.0 of OAM Manager uses the following standard views for accessing each OAM storage group database:

xxxxxxx.V_OSM_OBJ_DIR for accessing table xxxxxxx.OSM_OBJ_DIR;

xxxxxxx.V_OSM_04K_OBJ_TBL for accessing table
xxxxxxx.OSM_04K_OBJ_TBL;

xxxxxxx.V_OSM_32K_OBJ_TBL for accessing table
xxxxxxx.OSM_32K_OBJ_TBL;

where 'xxxxxxx' is the DB2 database name qualifier assigned to an OAM storage group.

These views are created during initial OAM installation in the IBM-supplied job CBRISQL0. Ensure that these views are correctly defined for all storage groups required for standard OAM use. Refer to IBM documentation on OAM installation for additional information on defining these views.

b. Create OAM Manager application plan(s).

OAM Manager V3.0 now requires a single DB2 plan for execution. This is a change from earlier releases, where OAM Manager could be installed to use multiple plans for different components of the product (using default plan names). Support for this implementation is no longer available. All components of OAM Manager will now use the same DB2 plan. The plan name is specified via the PLAN keyword parameter of the ENVCNTL parameter library member (see page 65). If omitted, a default plan name of 'OTIMPLAN' is used.

It should be noted in this context that DBRMs shipped with the base product or with service packages are created with the VERSION(AUTO) pre-compiler option. This will allow multiple copies of the same package to be bound to a single DB2 plan, to allow different versions of OAM Manager programs to execute using that plan. Alternatively, separate plans can be created and execution controlled via use of the PLAN keyword parameter in the ENVCNTL parameter library member.

Edit member OTIMPKG in the distributed OAM Manager JCL library (file 3 on the distribution tape). This contains JCL to create DB2 packages from DBRMs supplied with the product. The JCL in this member should be executed once for each OAM storage group to be accessed by OAM Manager. Instructions for editing the JCL are provided at the top of the file.

After executing member OTIMPKG for each OAM storage group to be accessed by OAM Manager, edit and submit member OTIMBIND in the distributed OAM Manager JCL library (file 3 on the distribution tape). This contains JCL to create the application plan to be used by OAM Manager. Again, instructions for editing the JCL are provided at the top of the file.

A copy of the supplied OTIMPKG and OTIMBIND jobs can be found in appendix A of this manual.

c. Grant authorities for OAM Manager plan access.

Member OTIMGRNT in the distributed OAM Manager JCL library supplies a job to grant authority for execution of the plan(s) created in the previous step.

Edit this member in order to update:

- The name of the DB2 subsystem in the DSN statement.
- The name of the DB2 runtime load library in your installation in the RUN statement.
- The PLAN name in the RUN statement which matches your installed DB2 system.
- The name of the plan used for OAM Manager execution.

After updating this member, submit the job. A copy of the supplied OTIMGRNT job can be found in appendix A of this manual.

d. Grant authorities for OAM Manager access to OAM administration, directory and object storage databases.

During normal operation, OAM Manager will need to access and update certain DB2 tables owned by OAM. The following table identifies these database tables and the level of access required to each. Verify that the appropriate levels of access have been granted.

<i>Table name</i>	<i>Access required</i>
OAMADMIN.CBR_MGT_CLASS_TBL	SELECT
OAMADMIN.CBR_STO_CLASS_TBL	SELECT
OAMADMIN.CBR_COLLECTION_TBL	SELECT
xxxxxxx.OSM_OBJ_DIR	SELECT,DELETE,UPDATE
xxxxxxx.OSM_04K_OBJ_TBL	SELECT,DELETE,INSERT
xxxxxxx.OSM_32K_OBJ_TBL	SELECT,DELETE,INSERT

Note that access to the OAMADMIN storage class identifier table is now required by OAM Manager.

Each set of 'xxxxxxx' tables will occur once for each storage group which is active on the host system for storage of OAM-controlled objects, where 'xxxxxxx' is the DB2 database name qualifier assigned to the storage group. Each of these sets will require authorization for the access levels identified above.

You should grant the above table access authorities to the user identifier assigned to OAM Manager.

In addition, the above access authorities will also need to be granted to all users who will be invoking the OAM Manager batch pre-fetch interface. Refer to page 181 for a description of this facility.

Enable sysplex operation

If it is required that OAM Manager operate in an OAMplex environment, then sysplex support must be enabled in the product. OAM Manager requires the following pre-requisites for sysplex enablement:

- An OAMplex configuration must already be in place for the MVS images which are to be part of an OAM Manager sysplex group.
- A single DB2 data sharing configuration must be implemented for all MVS images in each OAM Manager sysplex group.
- Disk devices containing Archive Manager disk-resident system datasets must be shared between all MVS images in the sysplex group. If this is not possible, then these datasets must be mirrored between the MVS images in the sysplex group, and appropriate procedures put in place to ensure that mirrored datasets are synchronized after update. The datasets falling into this category consist of:
 - Database primary index files (one per storage group)
 - Database space management datasets (one per database storage level)

Use the INDEXID parameter in the STRGROUP parameter library entry for each storage group in order to allow an Archive Manager primary index dataset to be shared between all systems in the OAMplex. An identical value for the INDEXID parameter should be specified (or allowed to default) for the same storage group entry in each OAM Manager system in the OAMplex. For example, if an existing standalone OAM Manager system is using DB2 subsystem DSN1, the Archive Manager primary index for a storage group will have a dataset name of 'GROUPxx.OTM.DSN1.INDEX', where 'GROUPxx' is the storage group

database name from the STRGROUP member. Other OAM Manager systems in an OAMplex which require shared access to this primary index will need a STRGROUP entry containing the parameter 'INDEXID=OTM.DSN1'. This will override the use of the DB2 subsystem identifier(s) in other systems in the OAMplex for generation of the primary index dataset name.

- Tape devices which are to be used for satisfying requests for retrieval of migrated OAM objects should be shareable between one or more MVS images in the OAM Manager sysplex. It is not required that all images in the OAM Manager sysplex have access to shared tape devices; however, at least one image in the sysplex needs to have access to such devices.
- An MVS image may not belong to more than one OAM Manager sysplex group.

Implementation of sysplex support in OAM Manager will allow requests for retrieval of tape-resident objects from an Archive Manager database to be shipped to a control region in another MVS image, where necessary. This permits concurrent access to individual tape volumes in an Archive Manager database, and will remove system dependency for this type of request. This in turn will allow individual images (or OAM Manager control regions) within the sysplex configuration to be quiesced, without impacting the ability of the sysplex to service OAM requests for migrated objects. It also supports use of the sysplex for transaction load balancing requirements.

Note that retrieval of objects from disk-resident objects are always satisfied by the local OAM Manager (i.e. in the OAM Manager control region executing on the system image in which the OAM retrieval request was submitted).

If the above pre-requisites are in place, then execution of the batch object management procedure may take place in any MVS image in the sysplex. However, the existing restriction that only one batch procedure per storage group may be performed concurrently still applies.

The following steps are required for implementation of OAM Manager sysplex support :

a. Update OAM Manager parameter library.

Each OAM Manager member in the sysplex group requires a separate parameter library. Parameters in this library may be set as required for each instance of OAM Manager. However, to ensure consistency of processing of tape retrieval requests between all members in the sysplex group, the following parameters should have the same values in each member:

OBJCNTL member – STAGE|NOSTAGE|STAGETAPE should be coded identically for each MGMTCLAS parameter in this member.

STRGROUP member - STAGE|NOSTAGE|STAGETAPE should be coded identically for each storage group entry in this member.

The INDEXID parameter must be defined (or allowed to default) identically for each storage group, in order to allow the Archive Manager primary index dataset to be shared by all systems in the OAMplex.

Sysplex support is enabled by setting the following parameters in the ENVCNTL parameter library member:

XCFGROUP – used to define the OAM Manager sysplex group name. The value of this parameter must be identical for all members of the sysplex group.

XCFMEM – used to identify each member in the OAM Manager sysplex group. The value of this parameter must be unique for each member of the sysplex group.

XCFMAXDRIVE – used to control the maximum number of tape drives which may be allocated concurrently in all members of the OAM Manager sysplex group. The value of this parameter should be identical for all members of the sysplex group.

Refer to the section “ENVCNTL parameters” on page 62 for a full specification of the above parameters.

b. Define OAM Manager coupling facility list structure.

OAM Manager uses a coupling facility list structure in order to schedule work between the members of a sysplex group. This list structure must be defined in the CFRM policy prior to OAM Manager sysplex support being enabled, using the sysplex administrative data utility IXCMIAPU. Refer to IBM sysplex documentation for detailed information on how to use this utility to define and update a CFRM policy.

To allow system-managed structure rebuild processing to take place, the following parameter should be included when initializing the couple dataset:

```
ITEM NAME(SMREBLD) NUMBER(1)
```

All systems in the sysplex must be at CFLEVEL 8 or higher for the system-managed rebuild process to be enabled.

The list structure should be defined as follows:

```
STRUCTURE  NAME (aaaaaaaa_OTMLIST)
           SIZE (bbbbbb)
           INITSIZE (ccccc)
           ALLOWAUTOALT (NO)
           FULLTHRESHOLD (80)
```

Where:

'aaaaaaaa' is the 1-8 character value specified for the XCFGROUP parameter in the ENVCNTL parameter list member used by each member of the OAM Manager sysplex group

'bbbbbb' is the maximum amount of storage in the coupling facility which is to be allocated to the list structure

'ccccc' is the initial amount of storage in the coupling facility which is to be allocated to the list structure

Values for other parameters which may be used to define a list structure should be set as required.

The following information should be used in determining the optimum values for the INITSIZE and SIZE parameters:

- List structure type = keyed
- List element characteristic = 0
- List count = 1
- Maximum number of elements for each list entry = 16
- There is no adjunct data associated with each list entry
- Target directory to data ration for both entry and element portions = 1
- Maximum number of event monitor controls = 0
- Number of lock entries = 1
- Maximum list set entry count = sum of values of TAPECNTL member MAXDRIVE parameter in the parameter library used for each member of the OAM Manager sysplex group
- Maximum number of data elements allowed in the structure = 16 * maximum list set entry count

Refer to IBM sysplex documentation for details on how to use these values to calculate the size to be assigned to the list structure.

Perform CICS implementation activities

The following CICS JCL change is required for the CICS region(s) in which the OAM Manager CICS interface will be enabled and/or disabled (ie) the region(s) in which OAM Manager CICS table entries have been added:

- Replace the existing OAM Manager load library in the CICS DFHRPL concatenation with the distributed V3.0 OAM Manager load library (file 1 from the product distribution tape).

The following new CICS definition will be required when migrating to this release:

Programs (RDO):

```
DEFINE PROGRAM(OTIMP075)
        LANGUAGE (ASSEMBLER)
```

All other CICS definitions made during installation of the previous release should be retained for use with the new release.

Update OAM Manager deletion control files

The name of the deletion control dataset used by OAM Manager for each storage group from which OAM objects are to be migrated to Archive Manager has been modified in the new release of the product. Each deletion control dataset will now have the following name:

```
hlq.xxxxxxxx.yyyyyyyy.DCNTL
```

where 'hlq' is the optional high-level qualifier specified in the HLQ sub-parameter for the storage group entry in the STRGROUP parameter library member, 'xxxxxxx' is the DB2 database name qualifier assigned to the OAM storage group ('GROUP00' etc.), and 'yyyyyyy' is the value specified in the INDEXID sub-parameter for the storage group entry in the STRGROUP parameter library member (default value 'OTM.dddd', where 'dddd' is the name of the DB2 subsystem to be used by OAM Manager).

The existing deletion control dataset for each storage group (with name 'hlq.xxxxxxxx.OTM.dddd.DELETE.CONTROL') should be deleted, and the new delete control dataset allocated. Updated member GPXXDEF on the distributed JCL library provides a sample job for defining and initializing the new deletion control dataset for storage group 'xxxxxxx'. Amend and submit this job once for each OAM storage group which is processed by OAM Manager. A copy of the supplied GPXXDEF job can be found in appendix A of this manual.

This member should be edited before submitting each job by updating all occurrences of the following character strings:

- hlq: the name of the high-level qualifier to be prefixed for all OAM Manager system datasets, as specified in the optional 'HLQ' parameter in the STRGROUP parameter library member entry for the storage group. If no HLQ parameter is specified, omit this value and the trailing period mark(.).
- xxxxxxx: this should be set to the DB2 database name qualifier ('GROUP00' etc.) assigned to the storage group for which OAM Manager is being initialized.
- yyyyyyy: the value of the optional INDEXID parameter specified (or defaulted) in the STRGROUP parameter library entry for the storage group (default value 'OTM.dddd', where 'dddd' is the value of the SUBSYSTEM parameter in the ENVCNTL parameter library member).
- eeee and ffff: the primary and secondary allocation values for the OAM Manager deletion control dataset for this storage group. This dataset will contain one record for each object that has been selected for processing (ie. migration, expiration or deletion of a recalled object) during execution of the migration utility.

Ensure that these values are sufficient to contain the highest number of objects that are expected to be processed in any one execution of this utility for this storage group.
- vvvvv: The serial number of the disk volume to be used for allocating the OAM Manager deletion control dataset for this storage group.

Perform OAM storage group directory migration

The following actions are only required when migrating directly from NearOAM V2.1 to OAM Manager V3.0. If you are migrating from NearOAM V2.2 or V2.3 no further migration procedures are required. Continue the installation procedure at the next section entitled "SMF processing changes"

NearOAM V2.2 introduced a modification in the way in which OAM directory entries are updated for migrated objects. OAM directory entries for objects which have been migrated to NearOAM using V2.1 of the product must be migrated for use with V3.0 of the product.

The OAM Manager V3.0 directory migration utility OTIMP020 is supplied to perform this function. This utility should be executed against each OAM storage group database which contains objects which have been migrated to NearOAM with V2.1 of the product. Refer to page 161 manual for details regarding the execution of this utility.

OAM directories which have been migrated for use by OAM Manager V3.0 may be regressed for use with V2.1 of the product at any subsequent time via the OAM Manager directory regression utility OTIMP010. Details on execution of this utility may be found on page 158.

SMF processing changes

The contents of the SMF record created by OAM Manager have been modified for V3.0. A new field identifying the system on which the request originated is now present in the request section of the record.

If you are migrating from NearOAM V2.1 or V2.2, you should be aware that V2.3 also introduced modifications to the format of the SMF record created by OAM Manager. The 2-byte storage group identifier field in the storage group section was replaced by an 8-byte storage group database name field. This increased the length of the storage group section from 48 bytes to 54 bytes.

You should ensure that any SMF processing procedures at your installation are reviewed and modified if necessary to take account of the changes in the SMF structure. Refer to page 111 for a full description of the SMF record specification.

Application migration considerations

The application migration considerations described in this section are only relevant when migrating directly from NearOAM V2.1 to V3.0. If you are migrating from NearOAM V2.2 or V2.3, you may skip this section and continue the installation procedure at the section entitled “Verify OAM Manager installation” on page 59.

a) JCL modifications.

Customers should be aware of the following modifications which may be required to JCL used to execute program OTIMP100 (step 1) in the object management procedure:

- DD entries for OTIMIDCI and OTIMIDCO are required for this job step. Member GPXXMIG in the sample library (listed in appendix A) includes entries for these DD statements.
- Member DGROUPIX used in DD name OTIMIDCI should be replaced with the updated member distributed on the sample library. Edit this member as appropriate for each storage group, as described on page 139.

- Support for the EXEC parameter 'SELNONPEND' was introduced with NearOAM V2.1 in program OTIMP100, to control selection of objects for processing, based on pending action date. The default for this parameter is 'NO' (i.e.) do not consider objects for processing unless their pending action date is less than or equal to the current date. This is a change from the default action for V2.1 of NearOAM, where all objects were considered, irrespective of pending action date.

Usage of this parameter should be reviewed, and an entry of SELNONPEND=YES explicitly coded in the JCL if V2.1 processing is to be retained.

The following modifications will be required to JCL used to execute program OTIMP120 (step 3) in the object management procedure:

- Member DGROUPXX used in DD name OTIMIDCI should be replaced with the updated member distributed on the sample library. Edit this member as appropriate for each storage group. Edit this member as appropriate for each storage group, as described on page 148.

b) User exit processing.

Any NearOAM object management user exits in use with V2.1 of the product may need modification for execution under V3.0. The following considerations should be reviewed to evaluate whether modifications need to be made to any existing user exit module:

- The format of the parameter block passed by OAM Manager to the user exit module has been modified. The 44-byte spare field at the end of the V2.1 parameter block has been amended to contain a 4-byte field giving the number of days since the object's current management class was assigned, a 2-byte field giving the object's storage class identifier, and a 38-byte spare field. Note that the overall length of the parameter block has not changed. Refer to page 150 for a full description of the user exit parameter block.
- V3.0 of OAM Manager no longer uses the active volume serial number field in an object's directory entry to denote an object which has been migrated to OAM Manager. Consequently the volume serial number field at offset +142 in the parameter block will now contain spaces for objects which have been migrated - this field contained the value 'OTAS00' in V2.1.

Any user exit processing which relies on a non-blank value in this field to denote a migrated object should be modified to check instead for a value in the storage class identifier field which corresponds to the identifier of the storage class specified in the TAPECLASS parameter in the

ENVCNTL parameter library member. Refer to page 150 for further information on user exit processing.

c) SMF record modifications.

The following modifications have been made to the structure of the SMF record created by OAM Manager:

- the length of the request section has been increased to 72 bytes. The length and position of existing fields has not been modified, but new fields have been added from offset 22 onwards.

Refer to page 111 for a full description of the SMF record format. Applications which process this information may need to be modified or enhanced to read the new SMF record.

c) Pre-fetch processing modifications.

The format of DD entries used to identify the optional VSAM datasets to be used for pre-fetching of objects has been modified. Refer to page 186 for a description of the modified specification.

.Verify OAM Manager installation

After all OAM Manager installation and implementation activities, as specified in the preceding sections, have been successfully performed, product implementation may be verified by starting the OAM Manager control region.

Before doing this, check the following points:

- Ensure that all necessary parameters in the ENVCNTL, STRGROUP and TAPECNTL parameter library members have been coded correctly.
- Ensure that for each storage group present in the STRGROUP parameter library member, an OAM Manager deletion control dataset and an Archive Manager database has been defined.

The OAM Manager control region may be started by entering the command:

```
START procname
```

on the system console.

If 'COMMAND=REPLY' has been specified (or allowed to default) in the ENVCNTL parameter library member, the operator reply message:

```
OTM20000 Enter request:
```

will be displayed on the console after successful initialization of the control region. Operator commands may be entered by replying to the outstanding operator reply message.

If 'COMMAND=MODIFY' has been specified in the ENVCTL parameter library member, operator commands may be entered using the MVS MODIFY command structure.

Refer to the section "OAM Manager operator interface" on page 95 for details of the operator commands available to control and shutdown the OAM Manager control region.

If any error occurs during control region initialization processing, refer to the description of the displayed message for details of the initialization error. Perform the appropriate corrective action before restarting the OAM Manager control region.

OAM Manager uses its own parameter library to allow users to control the operation of the product. This parameter library is a partitioned dataset containing the following members:

- ENVCNTL - used to specify general parameters relating to the OAM Manager operating environment.
- OBJCNTL - used to control processing of OAM objects by OAM Manager during its object management procedure.
- STRGROUP - used to relate storage group names to storage group identifiers, and to control the OAM Manager tape database maintenance procedure.
- TAPECNTL - used to specify controls relating to object retrieval processing by the OAM Manager control region.

A sample parameter library containing all of the above members is distributed with the product on file 4 of the distribution tape. This file will provide a sample specification of each of the parameters used by OAM Manager. The sample parameter library may be used for OAM Manager operation at your installation after updating the library members as required.

Use ISPF EDIT, or any equivalent editing facility present on your system, to create and/or maintain these parameter library members.

OAM Manager parameters will be validated as required by each product component. Each component will output a parameter validation report, and any invalid parameter used by that component will be rejected and processing terminated. In this case, the parameter in error should be corrected on the parameter library, and the OAM Manager procedure restarted.

Note that it is possible that not all parameter members, and not all parameters within a member, will be validated for correct specification by any one OAM Manager component. It should not be assumed, therefore, that successful validation by one component necessarily indicates that parameter validation will be successful for all components.

.General parameter format

Each parameter library member will consist of a variable number of 80-byte records, each record containing one or more separate parameter entries. In general, each parameter entry must be completely contained within one

record (ie) continuation of any single parameter entry from one record to another is not permitted. A single record may contain multiple parameter entries.

The only exception to this is the entry for each storage group in the STRGROUP member, which may extend over multiple records – a continuation character of “-“ is used to indicate that a storage group entry is being continued on the next record.

A parameter entry has the general format:

keyword = value

Each keyword and its associated value are separated by an '=' sign, and optionally one or more spaces. Multiple keyword parameter entries may be specified in each parameter record, each 'keyword=value' string being separated by one or more spaces, and optionally a single comma (',').

The first keyword parameter in a record may begin in any character position from 1 onwards. Parameters may extend up to character position 80 of the record. Individual keyword parameters may not be continued over more than one record.

An asterisk (*) in character position 1 will indicate a comment record, which will be ignored for parameter validation processing.

Any departure from this general format will be indicated with individual parameter descriptions.

.ENVCNTL parameters

These parameters are used to pass information to OAM Manager about its operating environment, and to control certain aspects of OAM Manager operation which do not fall into the categories controlled by other parameter library members.

Parameters in this member have the general parameter format described on page 61.

ENVCNTL: P120COMMITFREQ

P120COMMITFREQ = nnnnn

Requirement: Optional

Default: 0

Validation: nnnnn = 1-5 digit numeric value in range 0 - 99999

Use: The P120COMMITFREQ parameter is used to specify the frequency at which DB2 COMMIT processing will be performed during execution of the OAM Manager database update utility OTIMP120. A value of 0 indicates that no commits will be performed. This is the default. A non-zero value indicates that updates will be committed after processing every 'nnnnn' objects.

Notes: See page 149 for a discussion of restart considerations for the database update utility.

ENVCNTL: P120DELETE

P120DELETE = YES NO

Requirement: Optional

Default: YES

Validation: Parameter value must be either 'YES' or 'NO'.

Use: The P120DELETE parameter is used to specify whether or not the OAM Manager database update utility OTIMP120 is to delete rows from the OAM object storage tables after migrating objects to Archive Manager. The default value is 'YES'.

Notes: A value of 'NO' should only be used if migrated objects are to be deleted from an OAM object storage table by some other independent means (eg) re-initializing a DB2 tablespace.

This parameter is supplied to enable implementation of a faster and more efficient data migration process by eliminating delete processing from the OTIMP120 step of the migration procedure. This will substantially reduce the amount of DB2 updates and logging activity that will be required during this process.

However, failure to delete these rows by some other means will cause inconsistencies to be detected during the OAM Manager object recall procedure and prevent migrated objects from being accessed. Great care should thus be taken when using this parameter, to ensure that no such inconsistencies are likely to occur.

ENVCNTL: SMFRECID

```
SMFRECID = 0|nnn
```

Requirement: Optional

Default: 0

Validation: 'nnn' = 3 numeric digits in the range 128-255.

Use: The SMFRECID parameter is used to control the creation of SMF records by OAM Manager for the recording of tape object retrieval activities.

A value of 0 indicates that no SMF recording is to be performed by OAM Manager.

A non-zero value (in the range 128-255) is used to specify the value of the identifier of the SMF records written by OAM Manager. The default value is 0 (ie) no SMF recording.

Notes: Refer to page 111 for a discussion of OAM Manager SMF usage, and for a description of the OAM Manager SMF record layout.

ENVCNTL: SVCNO

```
SVCNO = nnn
```

Requirement: Mandatory

Default: None

Validation: 'nnn' = 3-digit numeric value in the range 200-255.

Use: The SVCNO parameter is used to identify the user SVC number allocated on the system for Archive Manager use.

Notes: A user SVC number is allocated during the Archive Manager installation procedure. Contact the person responsible for installing or maintaining Archive Manager on your system to obtain this information.

Archive Manager is a pre-requisite for implementation of OAM Manager on a system.

ENVCNTL: SUBSYSTEM

```
SUBSYSTEM = xxxx
```

Requirement: Mandatory

Default: None

Validation: 'xxxx' = 4 alphanumeric characters.

Use: The SUBSYSTEM parameter is used to specify the name of the DB2 subsystem to be used by OAM Manager.

Notes: The subsystem name entered here must be identical to that used by the OAM system with which OAM Manager will interface.

ENVCNTL: PLAN

```
PLAN = xxxxxxxxx
```

Requirement: Optional

Default: OTIMPLAN.

Validation: 'xxxxxxx' = 1-8 alphanumeric characters.

Use: This is an optional parameter which is used to specify the single plan name to be used by all OAM Manager components when issuing a DB2 CAF OPEN request. 'xxxxxxx' must be a valid 1-8 alphanumeric identifier. If omitted, a default plan name of OTIMPLAN is used.

Each DBRM supplied with the product must be bound as a separate DB2 package for each OAM storage group in use by OAM Manager, and all packages bound to the plan specified in this parameter. Members OTIMPKG and OTIMPLAN in the distributed sample library supply jobs to perform these operations.

ENVCNTL: TAPECLASS

```
TAPECLASS = xxxx....xxxx
```

Requirement: Optional

Default: A default value of NEARTAPE is used for tape storage class if this parameter is not specified.

Validation: 'xxxx...xxxx' = 1-30 alphanumeric characters.

Use: This parameter is used to specify the name of the storage class to be assigned to all objects which have been migrated from OAM to OAM Manager. The storage class specified (or defaulted) in this parameter must be defined to DFSMS prior to first use of this release of the product.

ENVCNTL: DISKCLASS

```
DISKCLASS = xxxx...xxxx
```

Requirement: Optional

Default: A default value of DB2DASD is used for disk storage class if this parameter is not specified.

Validation: 'xxxx...xxxx' = 1-30 alphanumeric characters.

Use: This parameter is used to specify the name of the storage class to be assigned to all objects which have been retrieved to disk storage using the OAM Manager batch pre-fetch utility and have been deleted from Archive Manager after retrieval. These objects will then be OAM-owned and eligible for further migration to OAM Manager as controlled by the OBJCNTL parameter library member. The storage class specified (or defaulted) in this parameter must be defined to DFSMS prior to first use of this release of the product.

ENVCNTL: XCFGROUP

```
XCFGROUP = xxxxxxxx
```

Requirement: Optional

Default: Omission of this parameter will cause OAM Manager sysplex support to be disabled.

Validation: 'xxxxxxx' = 1-8 alphanumeric characters.

Use: This parameter is used to enable sysplex processing for the OAM Manager control region. 'xxxxxxx' is a 1-8 character alphanumeric identifier which specifies the sysplex group of which the OAM Manager control region is to be a member.

This parameter must have the same value in each control region which is to participate as a member of a single OAM Manager sysplex group.

ENVCNTL: XCFMEM

```
XCFMEM = xxxxxxxxxxxx
```

Requirement: Mandatory if XCFGROUP is also specified, otherwise must be omitted.

Default: There is no default value for this parameter.

Validation: 'xxxxxxxxxxx' = 1-12 alphanumeric characters.

Use: This parameter is used to specify the member name that the OAM Manager control region is to use when joining the sysplex group specified in the XCFGROUP parameter. 'xxxxxxxxxxx' is a 1-12 character alphanumeric identifier which specifies the sysplex member name.

This parameter must have a unique value in each control region which is to participate as a member of a single OAM Manager sysplex group.

ENVCNTL: XCFMAXDRIVE

```
XCFMAXDRIVE = nnn
```

Requirement: Optional if the XCFGROUP parameter is also specified, otherwise must be omitted

Default: 0 (no maximum value assigned).

Validation: 'nnn' = 1-3 numeric characters in the range 0-256.

Use: This parameter is used to specify the maximum number of tape drives which may be concurrently allocated by all the control regions participating in an OAM Manager sysplex group. The default value of 0 indicates that there is no maximum number of tape drives which may be allocated concurrently in the OAM Manager sysplex group. The effective maximum is then the sum of the individual MAXDRIVE values for each control region in the sysplex group.

This parameter should have the same value in each control region which is to participate as a member of a single OAM Manager sysplex group.

.OBJCNTL parameters

These parameters are used to control processing of objects during the OAM Manager object management procedure, when file OTIMS120 is not present in the JCL used to execute the first step in the procedure.

OAM Manager uses an object's current management class (as set via DFSMS) to control object management processing. An object is automatically assigned a management class when it is first created. This management class may subsequently be changed, either explicitly by user request from an OSREQ call, or automatically via a class-transition event.

Note that it is recommended that class-transition events should be eliminated for those management classes assigned for objects which are to be eligible for migration to Archive Manager by OAM Manager - see chapter 5 of this manual for a discussion of this consideration.

Parameters in the OBJCNTL member have the general format:

```
MGMTCLAS = management-class-name
           (MIGRATE = xaaaaa)
           (EXPIRE  = ybbbbbb)
           (DELETE  = ccccc)
           (BRECALL = new-mgmtclass-name)
           (ORECALL = new-mgmtclass-name)
           (STAGE | STAGETAPE | NOSTAGE)
```

A single management class parameter consists of the MGMTCLAS keyword and the sub-parameter keywords 'MIGRATE', 'EXPIRE', 'DELETE', 'BRECALL', 'ORECALL' and 'STAGE', 'NOSTAGE' or 'STAGETAPE'. For each MGMTCLAS keyword, a valid management class name must be present. Each of the sub-parameters is optional.

A single management class parameter may extend over multiple parameter records, but any 'keyword=value' component must be completely contained within one record.

In all other respects, OBJCNTL parameters adhere to the general parameter format.

OBJCNTL: MGMTCLAS

```
MGMTCLAS = management-class-name
```

Requirement: Mandatory for each active management class.

Default: None

Validation: 'management-class-name' consists of 1-30 alphanumeric characters, giving the name of a valid management class used for OAM objects, as defined via DFSMS.

Use: The MGMTCLAS parameter is used to specify selection criteria for the OAM Manager migration and expiration utility, for migration of objects from OAM to Archive Manager ('MIGRATE'), expiration of OAM and Archive Manager-owned objects ('EXPIRE') and deletion of objects recalled from Archive Manager to OAM ('DELETE').

BRECALL and ORECALL are optional parameters which specify the management class to which an object will be changed during batch ('BRECALL') pre-fetch recalls or online ('ORECALL') recalls by the OAM Manager control region.

Notes: One MGMTCLAS parameter should be present for each management class which is in use for OAM object storage.

Any management class which is not known to OAM will be rejected as invalid. Omission of a MGMTCLAS parameter for a valid management class will cause the OAM Manager object management procedure to fail.

OBJCNTL: MGMTCLAS - MIGRATE

```
MGMTCLAS = management-class-name
           MIGRATE = xaaaaa
```

Requirement: Optional

Default: C99999

Validation: 'x' is an optional alpha character which may take the following values:-

'C' - use object creation date to control migration of objects.

'M' - use management class transition date to control migration of objects.

'R' - use last reference date to control migration of objects.

If omitted a default value of 'C' will be used.

aaaaa = 1-5 numeric characters, in the range 0 to 99999.

Use: The MIGRATE sub-parameter of the MGMTCLAS parameter specifies the number of days after which objects with this management class will be migrated from OAM to Archive Manager. The object creation date ('C'), management class transition date ('M') or last reference date ('R') may be used to determine selection.

Notes: If this sub-parameter is not specified, the default value of 99999 days since object creation is used (ie) migrate objects from OAM to Archive Manager when they are more than 99,999 days old.

A value of 0 for this parameter indicates that all objects will be migrated from OAM to Archive Manager.

OBJCNTL: MGMTCLAS - EXPIRE

```
MGMTCLAS = management-class-name
           EXPIRE = ybbbbbb
```

Requirement: Optional

Validation: 'y' is an optional alpha character which may take the following values:-

'C' - use object creation date to control expiration of objects.

'M' - use management class transition date to control expiration of objects.

'R' - use last reference date to control migration of objects.

If omitted a default value of 'C' will be used.

bbbbbb = 1-5 numeric characters, in the range 0 to 99999.

Use: The EXPIRE sub-parameter of the MGMTCLAS parameter specifies the number of days after which objects with this management class will be expired. The object creation date ('C'), management class transition date ('M') or last reference date ('R') may be used to determine selection.

Default: C99999

Notes: If this sub-parameter is not specified, the default value of 99999 days since object creation is used (ie) expire objects when they are more than 99,999 days old.

Note that both OAM and Archive Manager-resident objects will be processed by OAM Manager for expiration using this sub-parameter.

A value of 0 for this parameter indicates that all objects will be expired.

OBJCNTL: MGMTCLAS - DELETE

```
MGMTCLAS = management-class-name
          DELETE = ccccc
```

Requirement: Optional

Default: 99999

Validation: ccccc = 1-5 numeric characters, in the range 0 to 99999.

Use: The DELETE sub-parameter of the MGMTCLAS parameter specifies the number of days since an object was last referenced, after which objects with this management class which have been recalled from Archive Manager to OAM will be deleted from disk.

Notes: If this sub-parameter is not specified, the default value of 99999 days is used (ie) delete recalled objects from disk to tape when they have not been referenced for more than 99,999 days.

Note that Archive Manager copies of objects are not deleted when those objects are recalled to disk. After deletion, recalled objects will become Archive Manager-resident once again, in their original location - there is no requirement to re-migrate these objects from disk prior to deletion. Subsequent access to these objects will be satisfied from the Archive Manager database.

A value of 0 for this parameter indicates that all recalled objects will be deleted from disk.

OBJCNTL: MGMTCLAS - BRECALL

```
MGMTCLAS = management-class-name  
BRECALL = new-management-class-name
```

Requirement: Optional

Default: Do not change management class on batch recall

Validation: 'new-management-class-name' must specify the name of a valid management class.

Use: The BRECALL sub-parameter of the MGMTCLAS parameter is used to change an object's management class after recall using the OAM Manager batch pre-fetch utility. If specified, the management class of all objects with the associated management class will be changed during batch recall.

Notes: If this sub-parameter is not specified, no transition of management class will occur during batch recall of objects with the associated management class.

OBJCNTL: MGMTCLAS - ORECALL

```
MGMTCLAS = management-class-name  
ORECALL = new-management-class-name
```

Requirement: Optional

Default: Do not change management class during online recall

Validation: 'new-management-class-name' must specify the name of a valid management class.

Use: The ORECALL sub-parameter of the MGMTCLAS parameter is used to change an object's management class after staged recall via OAM Manager control region processing (ie) via an 'OSREQ RETRIEVE' command. If specified, the management class of all objects with the associated management class will be changed during staged online recall.

Notes: If this sub-parameter is not specified, no transition of management class will occur during staged online recall of objects with the associated management class.

OBJCNTL: MGMTCLAS - STAGE|STAGETAPE|NOSTAGE

MGMTCLAS = management-class-name <u>STAGE</u> STAGETAPE NOSTAGE
--

Requirement: Optional

Default: STAGE

Validation: One of the keywords STAGE, NOSTAGE or STAGETAPE is accepted.

Use: STAGE|STAGETAPE|NOSTAGE is an optional parameter which is used to determine whether an object is to be staged to DB2 disk during retrieval processing. It is used in conjunction with the corresponding parameter in the object's storage group definition in the STRGROUP parameter library member. If both entries have matching values for this parameter, that value will take effect for retrieval of the object. If the entries are not matching, then the parameter with the higher priority value will take effect. For this purpose, values of this parameter are prioritized in the following order:

STAGE takes preference over
STAGETAPE which takes preference over
NOSTAGE

(e.g.) if an object's management class entry has NOSTAGE specified, and the object's storage group entry has STAGETAPE specified, STAGETAPE takes preference and will be effective during retrieval of that object.

If no staging parameter is specified for a management class entry, a default value of STAGE is used.

Using the above rules, if STAGE is in effect during object retrieval, the specified object will be staged to DB2 disk during recall.

If STAGETAPE is in effect the object will only be staged to DB2 disk if there is no disk-resident copy of the object in the Archive Manager database. Otherwise the object will not be staged to DB2 disk, but will be returned directly to the caller's buffer(s) as specified in the OSREQ RETRIEVE macro, as for NOSTAGE processing.

If NOSTAGE is in effect, then the object will not be staged to

DB2 disk, but will be returned directly to the caller's buffer(s) as specified in the OSREQ RETRIEVE macro.

Further retrieval requests for objects which have been staged back to DB2 during recall processing will be satisfied from OAM disk storage. Disk copies of these objects will subsequently be deleted from OAM disk storage by the OAM Manager object management procedure, as controlled by the DELETE parameter on the object's management class definition in the OAM Manager OBJCNTL parameter library member. These objects will then be retrieved from Archive Manager by OAM Manager, on next access.

Further retrieval requests for non-staged objects will always be satisfied by OAM Manager from Archive Manager storage.

.STRGROUP parameters

STRGROUP parameters are used to relate OAM storage group names, as specified via DFSMS, to OAM database names.

STRGROUP parameters have the general format:-

```
storage-group-name = aaaaaaaaa (BACKUP | NOBACKUP) -  
                        (HLQ=xxxxxxxxxxxxxxxxxxxx) -  
                        (RETAIN TAPE=nnnn) -  
                        (STAGE | STAGETAPE | NOSTAGE) -  
                        (INDEXID=xxxxxxxx)
```

The parameter entry for a single storage group may extend over multiple records. In this case, a continuation character of "-" is used to indicate that the parameter entry continues on the next record.

In all other respects, STRGROUP parameters adhere to the general parameter format.

STRGROUP: aaaaaaaaa

```
storage-group-name = aaaaaaaaa
```

Requirement: Mandatory for each OAM storage group.

Default: None

Validation: storage-group-name = 1-30 alphanumeric characters specifying a valid storage group name, as defined via DFSMS.

aaaaaaaa = 1-8 alphanumeric characters, beginning with an alpha character.

Use: Each storage group parameter is used to relate an OAM storage group with the name qualifier of the DB2 database used by OAM for storage of objects in that storage group (e.g 'GROUP00', GROUP01' etc.).

Notes: One storage group parameter should be present for each OAM storage group used for object storage.

Omission of an OAM storage group from this member will cause execution of any OAM Manager utility for that storage group to fail, and will also cause retrieval of migrated objects within that storage group to fail.

Note that a full set of OAM Manager storage group datasets must exist for each storage group in this parameter member.

STRGROUP: BACKUP|NOBACKUP

```
storage-group-name = aaaaaaaaa BACKUP | NOBACKUP
```

Requirement: Optional.

Default: NOBACKUP.

Validation: None.

Use: This parameter is used to control OAM Manager object backup processing (see page 196 for a description of object backup processing).

If 'BACKUP' is specified, then all unmigrated disk-resident OAM objects will be written to Archive Manager during execution of the object management procedure for this storage group. Objects will not be deleted from OAM disk storage during this process, so that all subsequent retrievals of those objects will be satisfied from disk as normal.

If 'NOBACKUP' is specified (or allowed to default), backup copies of objects will not be taken. Objects will only be written to Archive Manager if they are eligible for migration, using standard OAM Manager migration parameter controls.

Notes: The OAM disk copy of a backed-up object will not be deleted by the object management procedure until that object has become eligible for migration, under control of the OAM
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Manager 'MIGRATE' OBJCNTL parameter. At this time, the disk copy of the object will be eligible for deletion, as controlled by the OAM Manager 'DELETE' OBJCNTL parameter. Note that no physical migration of the object will take place at this time; the backup copy in Archive Manager will now be treated as the primary copy of the migrated object.

The object recovery utility OTIMP130 is used to recover backed-up objects from Archive Manager, after loss of OAM disk-resident copies of objects (see page 171 for a description of this utility).

STRGROUP: HLQ

```
storage-group-name = aaaaaaaaa HLQ=xxxxxxxxxxxxxxxxxxxx
```

Requirement: Optional.

Default: If the HLQ sub-parameter is omitted from a storage group definition, OAM Manager will use standard system dataset names (i.e. will not prefix system dataset names with an additional high-level qualifier).

Validation: 'xxxxxxx' must be a 1-15 character dataset name qualifier, beginning with an alphabetic character.

Use: This parameter is used to specify the high-level qualifier which is to be used by OAM Manager to prefix system dataset names generated internally by the product during dynamic allocation processing. System datasets in this category consist of:

- a) the Archive Manager primary index dataset for the storage group;
- b) the deletion control file for the storage group.

These datasets must be created before OAM Manager is used to process objects in a storage group. If the HLQ parameter has been specified for a storage group, care should be taken to ensure that the high-level qualifier specified in this parameter is used when defining the corresponding system datasets for that storage group.

STRGROUP: RETAINTAPE

```
storage-group-name = aaaaaaaaa RETAINTAPE=nnnn
```

Requirement: Optional.

Default: The global RETAINTAPE value from the TAPECNTL parameter library member is used if this parameter is omitted from the storage group definition.

Validation: 'nnnn' must be a 1-4 digit numeric value in the range 0-1440.

Use: RETAINTAPE is an optional STRGROUP parameter which is used to override the global tape drive retention setting from the TAPECNTL parameter library member. If present, 'nnnn' should specify a 1-4 digit numeric value in the range 0-1440.

A value of 0 indicates that tape volumes in this storage group are not to be retained on a drive after all outstanding requests have been completed. A non-zero value specifies the number of minutes for which a tape is to be retained on a drive after use. The tape volume will be automatically dismounted by OAM Manager when this time interval has elapsed. A dismount of a tape may be forced by OAM Manager prior to expiration of this time interval if no free tape drive is available for allocation of a new tape volume, and the tape is the least-recently referenced of all currently mounted tape volumes.

A value of 1440 indicates that tapes are held permanently on a drive until a dismount is forced when there are no free tape drives to satisfy a new request (as described above), or until termination of the OAM Manager control region.

If this parameter is omitted, the global RETAINTAPE value as specified or defaulted in the TAPECNTL parameter library member will be honored for all tape volumes in this storage group

STRGROUP: STAGE|STAGETAPE|NOSTAGE

```
storage-group-name = aaaaaaaaa STAGE | STAGETAPE | NOSTAGE
```

Requirement: Optional

Default: STAGE

Validation: One of the keywords STAGE, NOSTAGE or STAGETAPE is accepted.

Use: STAGE|STAGETAPE|NOSTAGE is an optional parameter which is used to determine whether an object is to be staged to DB2 disk during retrieval processing. It is used in conjunction with the corresponding parameter in the object's management class definition in the OBJCNTL parameter library member. If both entries have matching values for this parameter, that value will take effect for retrieval of the object. If the entries are not matching, then the parameter with the higher priority value will take effect. For this purpose, values of this parameter are prioritized in the following order:

STAGE takes preference over
STAGETAPE which takes preference over
NOSTAGE

(e.g.) if an object's management class entry has NOSTAGE specified, and the object's storage group entry has STAGETAPE specified, STAGETAPE takes preference and will be effective during retrieval of that object.

If no staging parameter is specified for a storage group entry, a default value of STAGE is used.

Using the above rules, if STAGE is in effect during object retrieval, the specified object will be staged to DB2 disk during recall.

If STAGETAPE is in effect the object will only be staged to DB2 disk if there is no disk-resident copy of the object in the Archive Manager database. Otherwise the object will not be staged to DB2 disk, but will be returned directly to the caller's buffer(s) as specified in the OSREQ RETRIEVE macro, as for NOSTAGE processing.

If NOSTAGE is in effect, then the object will not be staged to DB2 disk, but will be returned directly to the caller's buffer(s) as specified in the OSREQ RETRIEVE macro.

Further retrieval requests for objects which have been staged back to DB2 during recall processing will be satisfied from OAM disk storage. Disk copies of these objects will subsequently be deleted from OAM disk storage by the OAM
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Manager object management procedure, as controlled by the DELETE parameter on the object's management class definition in the OAM Manager OBJCNTL parameter library member. These objects will then be retrieved from Archive Manager by OAM Manager, on next access.

Further retrieval requests for non-staged objects will always be satisfied by OAM Manager from Archive Manager storage.

STRGROUP: INDEXID

```
storage-group-name = aaaaaaaaa INDEXID=xxxxxxxx
```

Requirement: Optional

Default: 'OTM.dddd', where 'dddd' is the value of the SUBSYSTEM parameter from the ENVCNTL member

Validation: 'xxxxxxxx' must be a 1-8 character alphanumeric identifier containing one or more valid dataset name qualifiers.

Use: The INDEXID parameter is used in order to override automatic generation by OAM Manager of the name of the Archive Manager primary index dataset used for storage of migrated objects in the OAM storage group.

This parameter will be required when sharing Archive Manager databases between multiple systems in an OAMplex, where systems are using different DB2 subsystem identifiers. The same INDEXID value should be specified (or allowed to default) for the same storage group in each OAM Manager system in the OAMplex.

This parameter may be omitted if the OAM Manager system is not participating in an OAMplex configuration, in which case the default value will be used.

.TAPECNTL parameters

These parameters are used to control operation of the OAM Manager control region.

Parameters in this member have the general parameter format described on page 61.

TAPECNTL: MAXDRIVE

```
MAXDRIVE = nnn
```

Requirement: Optional

Default: 4

Validation: nnn = 1-3 digit numeric value in range 0 - 256

Use: The MAXDRIVE parameter specifies the maximum number of tape drives which are to be simultaneously allocated by the OAM Manager control region for retrieval of tape-resident objects from Archive Manager.

Notes: Requests which cause this maximum to be exceeded will receive an 'OSR unavailable' condition from OAM Manager.

This setting may be varied during OAM Manager operation via the 'SET MAXDRIVE' operator command.

If this parameter is omitted, a default value of MAXDRIVE=4 will be used.

Note that specifying a value of 0 for this parameter will prevent any tape volumes being processed by the control region. A value of 0 should only be used when the control region is a member of an OAM Manager sysplex group (as controlled via parameters in the ENVCNTL library member), and when one or more other members of the group have non-zero values specified for MAXDRIVE.

TAPECNTL: MAXQLEN

```
MAXQLEN = nnn
```

Requirement: Optional

Default: 4

Validation: nnn = 1-3 digit numeric value in range 1 - 256

Use: The MAXQLEN parameter specifies the maximum number of retrieval requests which may be simultaneously queued for any one Archive Manager tape volume.

Notes: OAM Manager will queue requests for retrieval from an Archive Manager tape volume which is already being

processed, on a 'first-in first-out' basis, up to the maximum level specified in this parameter.

Requests which cause this maximum to be exceeded will receive an 'OSR unavailable' condition from OAM Manager.

This setting may be varied during OAM Manager operation via the 'SET MAXQLEN' operator command.

If this parameter is omitted, a default value of MAXQLEN=4 will be used.

TAPECNTL: RETAINTAPE

RETAINTAPE = nnnn

Requirement: Optional

Default: 0

Validation: nnnn = 1-4 digit numeric value in range 0 - 1440

Use: The RETAINTAPE parameter specifies the number of minutes for which a tape is to remain mounted after all outstanding retrieval requests from that tape have been processed by the OAM Manager control region.

The control region housekeeping task (which is invoked every minute) will automatically dismount a tape which has not been referenced for the specified interval. A dismount of a tape may be forced by OAM Manager prior to expiration of this time interval if no free tape drive is available for allocation of a new tape volume, and the tape is the least-recently referenced of all currently mounted tape volumes.

A value of 0 indicates that tapes will be dismounted immediately after the last outstanding request for retrieval from each tape has been processed.

A value of 1440 indicates that tapes are held permanently on a drive until a dismount is forced when there are no free tape drives to satisfy a new request (as described above), or until termination of the OAM Manager control region.

Notes: This setting may be varied during OAM Manager operation via the 'SET RETAINTAPE' operator command.

If this parameter is omitted, a default value of RETAINTAPE=0 will be used.

TAPECNTL: MAXDISK

```
MAXDISK = nnn
```

Requirement: Optional

Default: 4

Validation: nnn = 1-3 digit numeric value in range 0 - 256

Use: The MAXDISK parameter specifies the maximum number of disk reader tasks which are to be created in the OAM Manager control region for retrieval of Archive Manager objects which have a disk ('K') copy.

Notes: A request for the retrieval of an Archive Manager object which has a disk copy will be queued on a disk reader task. There is no limit to the length of a disk reader task's request queue (unlike a tape reader task).

OAM Manager will attempt to balance queue lengths across all disk reader tasks. Increasing the number of disk reader tasks will reduce average request queue lengths. The default value of 4 is probably sufficient for most operational environments.

This setting may be varied during OAM Manager operation via the 'SET MAXDISK' operator command.

If this parameter is omitted, a default value of MAXDISK=4 will be used.

TAPECNTL: TAPEWAIT

```
TAPEWAIT = nnnn
```

Requirement: Optional

Default: 0

Validation: nnnn = 1-4 digit numeric value in range 0 - 1440

Use: This is an optional parameter which is used to control whether retrieval requests for tape-resident Archive Manager objects which cannot be immediately satisfied are rejected (with a 'resource unavailable' reason code) or queued internally until a tape retrieval resource becomes unavailable, or until a

maximum wait limit has been exceeded. 'nnnn' must be a 1-4 digit numeric character string in the range 0-1440, which specifies the maximum number of minutes for which requests are to be queued internally.

If set to 0 (the default), no internal queuing of requests will take place in the above circumstances and the request will be rejected with a 'resource unavailable' reason code.

If the TAPEWAIT parameter value is in the range 1-1439, requests will be queued internally until processed or until the maximum queuing time in minutes (as specified in this parameter) has been exceeded. Requests will then be rejected with a 'resource unavailable' reason code (as above).

If the TAPEWAIT parameter value is 1440, then requests will be held indefinitely in the internal queue until the necessary resources to process the request become available.

Notes: This setting may be varied during OAM Manager operation via the 'SET TAPEWAIT' operator command.

If this parameter is omitted, a default value of TAPEWAIT=0 will be used.

TAPECNTL: COMMAND

```
COMMAND = REPLY | MODIFY
```

Requirement: Optional

Default: COMMAND=REPLY

Validation: The parameter values REPLY or MODIFY must be specified.

Use: This is an optional parameter which is used to control the method by which operator commands are passed to the OAM Manager control region. The default value of 'REPLY' will cause the control region to output the operator reply message OTM20000 when it is ready to receive an operator command.

If 'MODIFY' is specified, no operator reply message will be displayed. Operator commands must be entered via an MVS MODIFY command

(eg) F xxxxxxxxxx,SET MAXDRIVE=2

The value of this setting cannot be modified during control region operation

TAPECNTL: MAXSCHED

```
MAXSCHED = nnn
```

Requirement: Optional

Default: 4

Validation: nnn = 1-3 digit numeric value in range 1 - 256

Use: The MAXSCHED parameter specifies the maximum number of scheduler tasks which are to be created in the OAM Manager control region.

Notes: A scheduler task is used to schedule processing of an intercepted OSREQ request by another component of the control region. Creating multiple scheduler tasks is likely to improve request response times during periods of high activity, by reducing the average length of the global scheduler queue. However, over-allocating the number of scheduler tasks will create an unnecessary processing overhead in the control region. The length of this queue can be monitored via the DISPLAY operator command. Use these displays to choose an optimum value for the MAXSCHED parameter.

This setting may be varied during OAM Manager operation via the 'SET MAXSCHED' operator command.

If this parameter is omitted, a default value of MAXSCHED=4 will be used.

TAPECNTL: DLB

```
DLB = Y|N
```

Requirement: Optional

Default: N

Validation: A parameter value of 'Y' or 'N' must be specified.

Use: The DLB parameter is used to enable or disable dynamic load balancing (DLB) processing in the control region.

Notes: DLB processing is invoked when the number of requests queued for an individual tape dataset has reached the maximum value specified in the MAXQLen parameter. If DLB=Y is set, the control region will pass any new request for retrieval of an object from that tape dataset to another tape reader task, if available, which will attempt to retrieve the object from a backup tape volume.

It is important to note that DLB processing must also be enabled in the Archive Manager database for the storage group containing the migrated object. The database entry will identify the backup volume to be used to satisfy the DLB request. If DLB is not enabled in the Archive Manager database, the tape reader task will attempt to allocate the primary tape copy, causing the retrieval request to fail.

Any further request for retrieval of an object from the same tape dataset will be passed to the reader task (primary or DLB) with the shorter queue. When all queued requests have been processed by the DLB task, the backup tape volume will be immediately dismounted. RETAIN TAPE processing is not honored for reader tasks invoked via DLB processing.

A task invoked by DLB processing will be identified as such in the status display returned by the operator DISPLAY command. The value of this parameter setting may be varied during OAM Manager operation via the SET DLB operator command.

If this parameter is omitted, a default value of DLB=N will be used.

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In order to enable OAM Manager support for the retrieval and deletion of Archive Manager resident objects via the OSREQ interface, the following activities are required:

- the OAM Manager control region must be started
- the OAM Manager CICS interface must be enabled

This section discusses these requirements, and the enabling and disabling of support for Archive Manager resident OAM objects using OAM Manager.

The OAM Manager control region performs the following functions:

- Enables OAM Manager for Archive Manager database processing.
- Enables interception of all batch OSREQ requests on the system.
- Establishes the environment for object retrieval from Archive Manager.
- Joins an OAM Manager sysplex group, if the XCFGROUP parameter is present in the ENVCNTL parameter library member.
- Processes OSREQ DELETE requests for OAM Manager-owned objects.
- Processes OSREQ RETRIEVE requests for OAM Manager-owned objects.
- Performs SMF record creation to record OAM Manager object retrieval activity.
- Processes requests from the operator interface facility.

In order to enable interception of all OSREQ requests from command-level CICS applications within the host processing system, the OAM Manager CICS interface must be enabled subsequent to OAM Manager control region startup.

No other system activities are required in order to enable OAM Manager object retrieval and deletion processing. In particular, no modifications are required to existing application coding to allow Archive Manager-resident objects to be processed.

.Control region initialization

The OAM Manager control region is initiated as an MVS started task. The procedure used for this started task was created during the OAM Manager installation process. The name of the procedure may be assigned as required.

The following points should be noted regarding creation and maintenance of the control region procedure:

- The distributed OAM Manager and Archive Manager load libraries must be available to this task, either via the system linklist, or from the procedure's STEPLIB concatenation.
- The OAM Manager control region must run with APF-authorization. Both the OAM Manager and Archive Manager load libraries must therefore be APF-authorized. If these libraries are specified via the STEPLIB concatenation, failure to APF-authorize either of them will result in the loss of APF-authorization for the control region itself. This is likely to cause a system 047 abend during control region processing.
- The installed OAM Manager parameter library should be specified in the procedure's OTIMS100 DD card. Parameter settings should be reviewed and set as required prior to control region start-up (see section "OAM Manager Parameter Specification" on page 61).

To start OAM Manager control region initialization, enter the system operator command:

```
START xxxxxxxx
```

Where 'xxxxxxx' is the name assigned to the control region procedure.

The OAM Manager control region will display a number of informational messages during initialization processing. After successful initialization, if 'COMMAND=REPLY' was specified (or defaulted) in the TAPECNTL parameter library member the following operator reply message will be displayed:

```
OTM20000 Enter request:
```

If 'COMMAND=MODIFY' was specified, the following message will be displayed:

```
OTM20030 Initialization completed successfully
```

OAM Manager has now initialized successfully, and OAM support for Archive Manager resident objects has been enabled. All batch OSREQ requests made on the system will be intercepted and processed as normal.

Any errors encountered during the initialization process will be displayed on the system console, and OAM Manager initialization terminated. The appropriate message in section "Messages and codes" on page 205 should

be consulted to identify the cause of the error. Take the recommended action to rectify the problem then restart the control region.

If DB2 is not available during control region initialization processing, message OTM22016 will be displayed and control region initialization will be suspended. Initialization processing will resume automatically after DB2 has been started.

The control region will automatically enter shutdown processing if DB2 is terminated while the control region is still active. A normal OAM Manager shutdown will be performed if DB2 is terminated normally. An immediate OAM Manager shutdown will be performed if DB2 is terminated abnormally.

.The OAM Manager CICS interface

Enabling the CICS interface

Starting the OAM Manager control region will allow OAM Manager to intercept all batch OSREQ requests made on the system, and enable the processing of Archive Manager-resident objects via these requests.

In order to enable the OAM Manager processing of OSREQ requests from command-level CICS programs, the OAM Manager CICS interface must be initialized subsequent to OAM Manager control region initialization.

Initialization of the OAM Manager CICS interface is made by performing either of the following actions from a CICS system in which the CICS-OAM interface has already been enabled:

- a. Executing program OTIMP230 during CICS post-initialization processing via inclusion in the start-up program list table (PLTPI). The entry for OTIMP230 in this table must be made after the entry for the CICS-OAM interface module CBRICONN.

or

- b. Executing transaction 'OM23' after signing-on to any CICS system which has been enabled for OAM access.

OAM Manager CICS initialization will not succeed if the OAM Manager control region is not active. If the OAM Manager CICS interface is already enabled, then an initialization request will be ignored, and the requestor informed via a terminal or system console display message.

Note carefully that initializing the OAM Manager CICS interface will enable OAM Manager processing of all CICS OSREQ requests made on the system (ie) OSREQ requests made from all CICS regions which have been enabled for OAM access on the system, and not just the region from which the OAM Manager initialization request was made.

This means that for systems which have more than one CICS region initialized for OAM access, the OAM Manager CICS initialization request need only be made once. This should either be performed automatically (via the PLTPI) in the first region that is initialized during start-of-period processing, or manually via the OM23 transaction before any CICS OSREQ requests are issued on the system. See the section “Perform CICS implementation activities” on page 32 for a full discussion of this issue.

Disabling the CICS interface.

The OAM Manager CICS interface may be disabled by performing either of the following actions:

- a. Executing program OTIMP240 during CICS shutdown processing via inclusion in the shutdown program list table (PLTSD). The entry for OTIMP240 in this table should be in the first phase of the PLTSD (ie) before the DFHDELIM entry.

or

- b. Executing transaction 'OM24' after signing-on to any CICS system which has been enabled for OAM access.

Once the OAM Manager CICS interface is disabled, OSREQ requests issued from command-level CICS programs will no longer be intercepted. Processing of Archive Manager-resident objects via these calls will therefore no longer be possible.

As was the case with the OAM Manager CICS interface enabling procedure, disabling the interface need only be performed once for all CICS regions on the system. This should either be performed automatically (via the PLTSD) in the last region that is shutdown during end-of-period processing, or manually via the OM24 transaction when no more CICS OSREQ requests are going to be issued on the system. See the section “Perform CICS implementation activities” on page 32 for a full discussion of this issue.

.Processing OSREQ requests

Once OAM Manager control region initialization and CICS interface processing has been completed OSREQ requests issued from batch, TSO or command-level CICS programs on the system will be able to access Archive Manager resident objects.

OAM Manager implements OAM tape support for OSREQ RETRIEVE and DELETE requests.

RETRIEVE requests

Any OSREQ request for retrieval of an object will be intercepted by OAM Manager. If the requested object is resident in an Archive Manager database the OAM Manager control region will perform all the necessary access activities to retrieve the specified object. Control will not be returned to the caller until object retrieval processing has been completed.

If the STAGE parameter is specified (or defaulted) in the OBJCNTL parameter library member entry for the object's management class and in the STRGROUP parameter library member entry for the object's storage group, or these entries contain mismatching parameter values, then the recalled object will be inserted by OAM Manager in the OAM disk database for that storage group, and will now be available for retrieval by OAM from disk. All database changes will be committed at this point. OAM Manager will then pass control to OAM to perform the object retrieval as normal. All subsequent requests for retrieval of this object will be satisfied by OAM from disk.

Note that a staged retrieved object is not deleted from Archive Manager; consequently when the recalled object is deleted from disk by the OAM Manager object management procedure the object will once again be available for recall from its original location in Archive Manager. There is no requirement for re-migration of a staged recalled object.

If the NOSTAGE parameter is specified in the relevant OBJCNTL and STRGROUP entries (as detailed above), then the retrieved object will be stored directly in the calling application's data buffer and control returned to the caller. The object will not be staged back to disk, and no OAM database updates will be performed. All subsequent retrieval requests for that object will once again be satisfied from Archive Manager.

If the STAGETAPE parameter is specified in the relevant OBJCNTL and STRGROUP entries (as detailed above), the retrieved object will be staged back to DB2 disk if there is no disk copy of the object in the Archive Manager database. Otherwise the retrieval will be processed as for NOSTAGE processing, as described above.

For both staged and non-staged retrieval, the object's management class may be amended after retrieval via the 'ORECALL' parameter in the MGMTCLAS parameter library member.

Any errors encountered by OAM Manager during processing of a retrieval request for an Archive Manager object will be communicated to the caller via OSREQ return and reason codes. See the section "OSREQ return and reason codes" on page 323 for a list of all possible OSREQ return and reason codes which may be set by OAM Manager. Any OAM database changes made for that request, prior to the error, will be backed out. Figure 4 illustrates the processing flow for retrieval of an Archive Manager object via an OSREQ request.

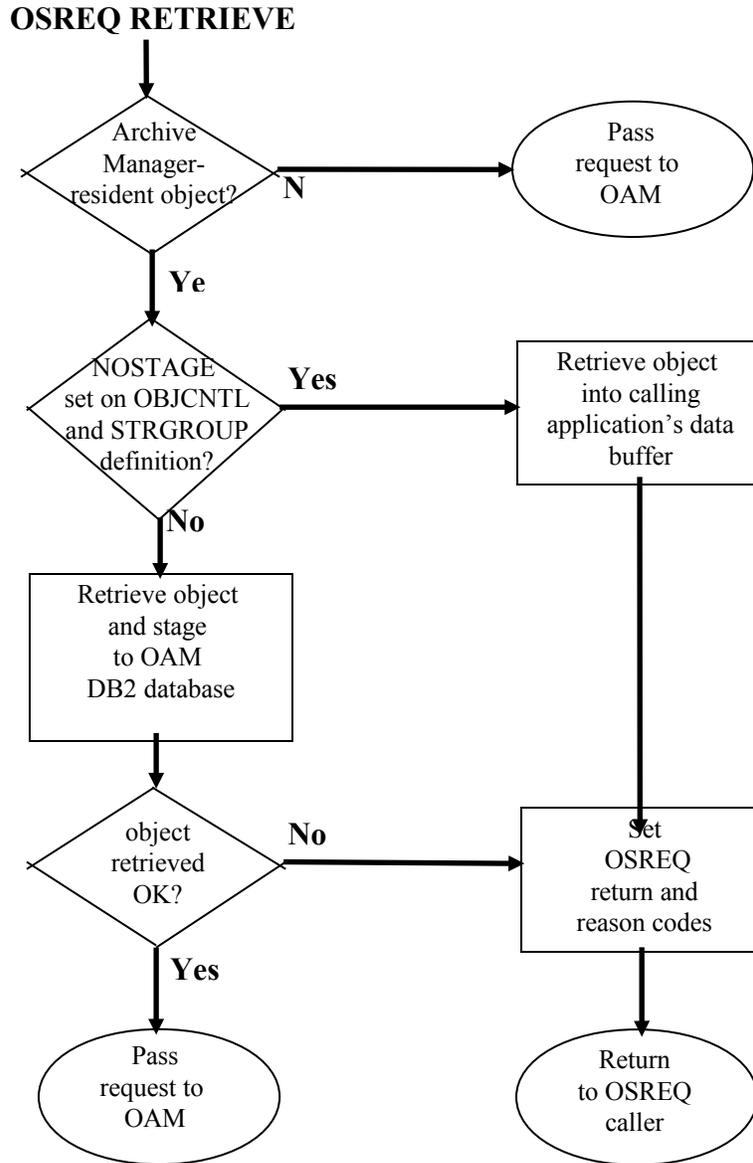


Figure 4 - OAM Manager Object Retrieval Processing

DELETE requests

Any OSREQ request for deletion of an Archive Manager resident object will be processed by the OAM Manager control region. Deletion of all OAM-owned objects (ie. objects on OAM disk, optical or tape storage) will be processed by OAM as normal.

OAM Manager will delete the object from the appropriate Archive Manager database and also delete the OAM directory entry for the specified object. The object will then no longer be known to OAM.

After processing the request, control will be returned to the OSREQ caller, with the standard OSREQ return and reason code fields being used to indicate its success. OSR (the object storage and retrieval component of OAM) will not be invoked for deletion of Archive Manager resident objects.

For successful deletion, all database changes will be committed before returning control to the caller. If any error occurs during the deletion process, return and reason codes will be set as appropriate prior to returning control to the OSREQ caller, and any database changes made prior to the error will be backed out.

Figure 5 illustrates the processing flow for deletion of an OAM Manager-owned object via an OSREQ request.

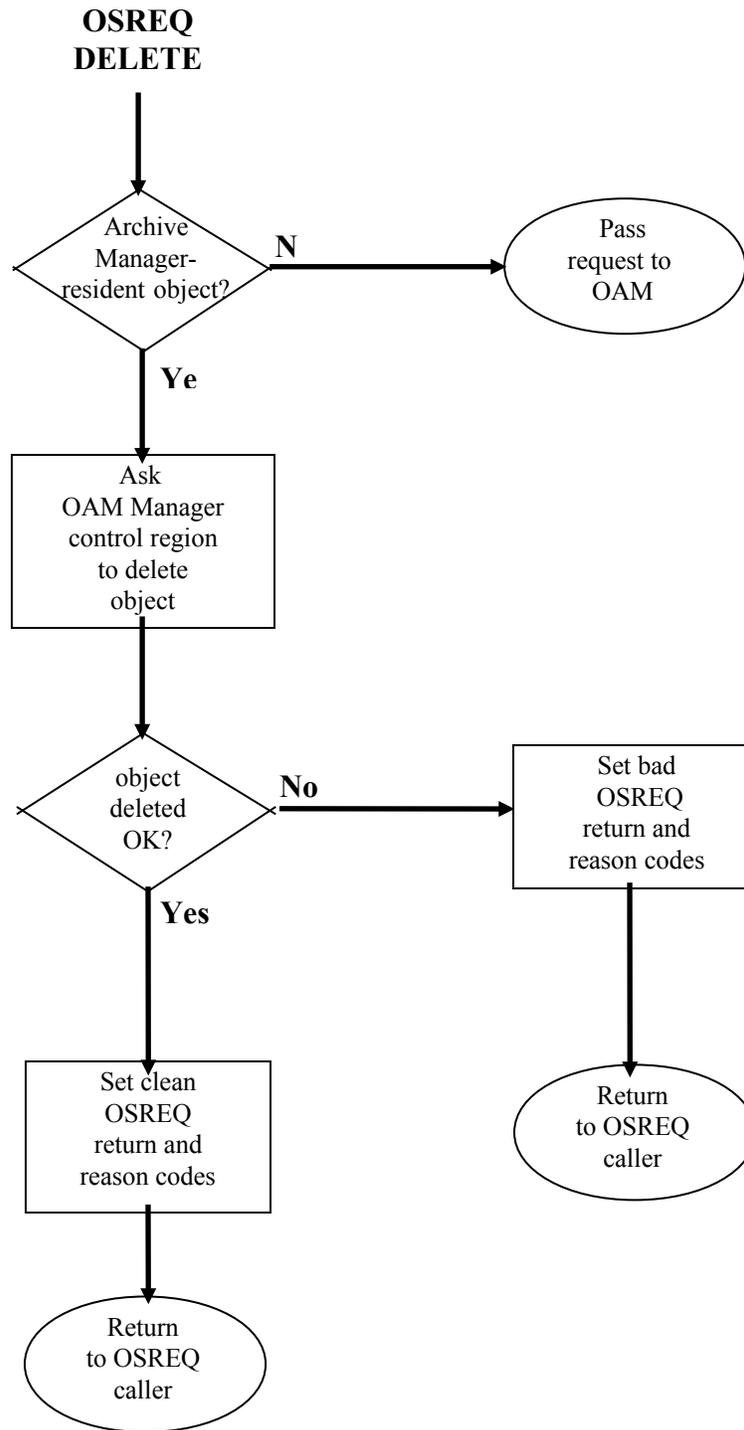


Figure 5 – OAM Manager Object Deletion Processing

OSREQ return and reason codes

On receiving control after issuing an OSREQ macro call, the calling program will be given return and reason codes from OAM Manager in an identical manner to those received from OAM (ie) return code in register 15 and RETCODE field, if specified, and reason code in register 0 and REACODE field, if specified.

Return and reason codes for RETRIEVE calls for Archive Manager objects may be generated by OAM Manager or by OAM. Codes for DELETE calls for Archive Manager objects are generated by OAM Manager only.

Refer to the section “OSREQ return and reason codes” on page 323 for a list of all possible return and reason codes generated by OAM Manager. Return or reason codes not specified here may be found in IBM documentation for OAM return and reason codes.

As a general guide, reason codes generated by OAM Manager will have the value X'80' as a source identifier in byte 1 of the code (ie. the second byte of the 4-byte field).

.OAM Manager operator interface

OAM Manager operator commands may be entered by replying to the OTM20000 message on the system console (if COMMAND=REPLY has been specified or defaulted in the TAPECNTL parameter library member), or via an MVS MODIFY command (if COMMAND=MODIFY has been specified in the TAPECNTL member). Only one command may be entered and processed at any one time. When OAM Manager has completed all processing for a command a message will be displayed on the console indicating the result of the request (and the OTM20000 message re-displayed if COMMAND=REPLY is in effect). Further commands may then be entered by the operator.

Commands are available to perform the following functions:

- Display detailed or summary status of OAM Manager tape and disk retrieval configuration.
- Alter the OAM Manager tape and disk retrieval configuration.
- Purge or force purge individual tape and disk retrieval tasks.
- Terminate the OAM Manager control region.

All messages issued by OAM Manager in response to an operator request are documented in the “Messages and codes” section on page 205. This section specifies operator request formats, and gives examples of OAM Manager responses to these requests.

Display summary status

```
D ( ISPLAY )
```

This request is used to produce a summary display of the status of the OAM Manager control region processing configuration.

The DISPLAY command may be abbreviated to the single character 'D'.

OAM Manager creates a number of tape, and disk reader tasks in the control region to perform retrieval of objects from Archive Manager. Each tape reader task is capable of processing one tape volume at any one time. The number of tape reader tasks created is initially equal to the value of the MAXDRIVE parameter at OAM Manager initialization. Increasing this value during OAM Manager operation will cause a similar increase in the number of tape reader tasks. OAM Manager will only be able to process as many tape volumes simultaneously as there are initialized tape reader tasks.

Disk reader tasks are only required if the version of Archive Manager used by OAM Manager includes support for disk ('K') copies of archived objects. If Archive Manager does not include this support, then disk reader tasks are not required. In this case, set the parameter 'MAXDISK=0' in the TAPECNTL parameter library member. When used, each disk reader task may process multiple Archive Manager disk ('K') copy datasets in one invocation (ie. the task's request queue may contain requests for retrieval of objects from different disk datasets). OAM Manager attempts to balance the length of the request queues for the disk reader tasks. Increasing the value of MAXDISK will reduce the average length of the disk reader task request queues. For most operational environments, the default MAXDISK value of 4 will be sufficient. Note that the MAXQLEN parameter is not used to control a disk reader task request queue length; there is no limit to the number of requests which may be queued for each disk reader task.

When using versions of Archive Manager which support disk storage of objects, if no disk reader tasks are available (MAXDISK=0), a retrieval request for a disk-resident object will be passed to an OAM Manager tape reader task, if one is available. This task will issue a standard Archive Manager object retrieval request, which will still be satisfied wherever possible by Archive Manager from an object's disk copy. Setting the value of MAXDISK to 0 in these circumstances is not recommended, as it may cause requests for retrieval of disk-resident objects to be rejected because there are no free tape reader tasks.

A summary status request will display in message OTM20062 the current values of the MAXDRIVE, MAXQLEN, RETAINTAPE, MAXDISK, TAPEWAIT, DLB and MAXSCHED parameters, the values of the XCFGROUP, XCFMEM and XCFMAXDRIVE parameters if sysplex support

is enabled for the control region, the status of the internal scheduler and reader queue locks, and the lengths of the global scheduler and held request queues.

Free scheduler or reader locks will be identified via the description “unlocked”. Locks which are currently owned will be identified via the description “lkd/Xnnn”, where “Xnnn” identifies the task owning the lock.

In addition, message OTM20063 will be displayed for each tape and disk reader and scheduler task in the system, giving the following details:

TYPE - this specifies the task type, and can take the following values:

NORM - a normal task. Its current status is displayed in the status field. If busy, a normal tape reader task will automatically de-allocate and dismount a tape volume after all outstanding retrievals for that volume have been completed.

SHUT - a task which is being shutdown. This setting indicates that the task is being terminated explicitly via operator request or implicitly via a reduction in the value of the MAXDRIVE, MAXDISK or MAXSCHED system parameters. The task will terminate when all outstanding requests in the task queue have been processed.

DLB - a tape reader task which has been invoked via dynamic load balancing processing, in order to process a retrieval request from a backup tape dataset, when the number of requests queued for the task processing the primary tape dataset has reached the value specified in the MAXQLEN parameter. RETAINTAPE processing is not honored for this type of tape reader task.

MNTD - a tape reader task which is processing a tape volume which is to be retained on the drive after use. This condition will occur when the active value of the global OAM Manager RETAINTAPE parameter or the RETAINTAPE parameter for the storage group being processed by the task is non-zero.

If the task is busy, the tape will not be de-allocated and dismounted after all outstanding requests have been completed.

If the task is waiting for work, the tape last accessed by this task has been retained on the

drive. This task will be used for any subsequent requests which require access to this tape volume.

The tape volume will be de-allocated and dismounted under the following conditions:

- a) when the number of minutes elapsed since the tape was last accessed exceeds the current value of the controlling RETAINTAPE parameter

or

- b) no drives are available to satisfy a request for access to another tape volume, and this volume is the least recently referenced volume with this status.

STATUS - this field indicates the current status of the identified task. It can take the following values:

NULL - the task has never been initialized. It is not available for object recall.

WAIT - the task is currently waiting for work. The task type will indicate whether the task currently retains allocation to a tape volume.

BUSY - the task is currently busy performing object retrieval. The task type will indicate whether the tape volume being processed will be retained on the drive after all outstanding requests have been completed, or whether the tape will be de-allocated and dismounted.

TERM - a terminated task. A task may be terminated either explicitly by operator command, or implicitly via a reduction in the system MAXDRIVE, MAXDISK or MAXSCHED settings. It may be restarted by increasing the value of MAXDRIVE, MAXDISK or MAXSCHED. A terminated task is not available for object recall.

QLEN - this gives the number of requests queued for processing by a tape or disk reader task. All requests will be for retrieval of objects from the tape or disk dataset currently being processed by this task. This field is not present for scheduler tasks.

The queue length will be non-zero for tasks with status = BUSY. For waiting tasks, this value will always be zero.

For tape reader tasks only, message OTM20063 may be accompanied by message OTM20064. This second message gives the following information:

DSN - this gives the identifier of the tape dataset currently being processed (status = BUSY), or tape dataset retained on drive after last use (type = MNTD and status = WAIT). Any subsequent request for retrieval of objects from this tape volume will be satisfied by this task without requiring a tape mount. Note that the identifier in this entry is generated internally to include the storage group identifier, DB2 subsystem identifier and volume sequence number. This identifier is not necessarily the same as the actual dataset name in the header label of the tape.

LASTUSE - for tasks with status = WAIT and type = MNTD, this gives the time (in format HH:MM:SS) that the last request for retrieval from this tape volume was completed. This timestamp is used by OAM Manager to determine which tape volume will be automatically dismounted to satisfy a request for retrieval from another tape volume, when there are no spare drives on the system. The mounted tape volume which was least recently referenced will be dismounted to allow the new request to be processed.

Example:

```
STC05021*20 OTM20000 Enter request:
.....
      R 20,D
STC05021 OTM20062 MAXDRIVE=004 MAXQLEN=012 RETAINTAPE=00001 MAXDISK=002
      TAPEWAIT=00100 DLB=N MAXSCHED=002
STC05021 OTM20062 XCFGROUP=OTIMV3R0 XCFMEM=OTIMZ800          XCFMAXDRIVE=000
STC05021 OTM20063 Task T001: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task T002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T003: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T004: Type=NORM Status=BUSY Qlen= 2
STC05021 OTM20064 Task T004: DSN=GROUP90.OTM.DB2I.G00026
      Lastuse=
STC05021 OTM20063 Task T005: Type=MNTD Status=WAIT Qlen= 0
STC05021 OTM20064 Task T005: DSN=GROUP92.OTM.DB2I.G00012
      Lastuse=15:10:36
STC05021 OTM20063 Task D001: Type=NORM Status=WAIT Qlen= 1
STC05021 OTM20063 Task D002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task S001: Type=NORM Status=WAIT
STC05021 OTM20063 Task S002: Type=NORM Status=WAIT
STC05021*21 OTM20000 Enter request:
```

Display detail status

```
D(DISPLAY) T(ASK) = (T|D)nnn
```

This request is used to produce a detailed display of the status of the OAM Manager control region tape or disk retrieval configuration. The DISPLAY command may be abbreviated to the single character 'D'. The TASK parameter may be abbreviated to the single character 'T'. 'nnn' is the numeric identifier of the task to be displayed (where 'nnn' consists of 1-3 numeric characters in the range 1-256). This should be preceded by the character 'T' for a tape reader task, and 'D' for a disk reader task. If omitted, a default entry of 'T' will be used. This entry must be a valid task number, as displayed via a summary status display request.

A detail status request will first of all display message OTM20063 for the identified reader task. For tape reader tasks, if the task type is BUSY message OTM20064 is displayed, giving the name of the tape dataset allocated for this task. See page 96 for a description of the fields in these messages.

For busy tasks with a non-zero queue length, a detail status request will display one set of OTM20066 and OTM20067 messages for each request in the queue. These messages will display the following fields:

REQUEST - the entry number of the request in the queue. The request currently being processed will have an entry number of 1.

Example:

```
STC05021*21 OTM20000 Enter request:
.....
          R 21,D T=4
STC05021 OTM20063 Task T004: Type=NORM Status=BUSY Qlen= 2
STC05021 OTM20064 Task T004: DSN=GROUP90.OTM.DB2I.OBJECTS.G00026
          Lastuse=
STC05021 OTM20066 Request 1: Collection=COLL.SG90.TEST.COLLECTN
STC05021 OTM20067 Request 1: Object=OBJECT.SG90.TEST.OBJECT.G12345
STC05021 OTM20066 Request 2: Collection=COLL.SG90.TEST.COLLECTN
STC05021 OTM20067 Request 2: Object=OBJECT.SG90.TEST.OBJECT.G12456
STC05021*22 OTM20000 Enter request:
```

Display sysplex status

```
D( ISPLAY) XCF
```

This request is used to produce a summary display of the status of all tape reader tasks in the XCF group to which the OAM Manager control region belongs, when sysplex processing has been enabled via entries in the ENVCNTL parameter library member.

The current values of the XCF initialization parameters will be displayed, followed by one entry for each tape reader task defined in all OAM Manager control regions belonging to the same sysplex group. Each entry will identify the XCF member name, task number, task type, task status and current request queue length (see page 96 for a description of these fields).

Example:

```
F OAMV3R0 ,D XCF
STC05021 OTM20062 XCFGROUP=OTIMV3R0 XCFMEM=OTIMZ800 XCFMAXDRIVE=004
STC05021 OTM20063 OTIMZ80X T001: Type=NORM Status=WAIT Qlen=000
STC05021 OTM20063 OTIMZ80X T002: Type=NORM Status=WAIT Qlen=000
STC05021 OTM20063 OTIMZ800 T001: Type=NORM Status=WAIT Qlen=000
STC05021 OTM20063 OTIMZ800 T002: Type=NORM Status=WAIT Qlen=000
STC05021 OTM20063 OTIMZ800 T003: Type=NORM Status=WAIT Qlen=000
STC05021 OTM20063 OTIMZ800 T004: Type=NORM Status=WAIT Qlen=000
STC05021 OTM20068 Display processing completed
```

Force purge reader or scheduler task

```
F(ORCE) T(ASK) = (T|D|S)nnn
```

The FORCE command is used to immediately terminate a tape or disk reader task or scheduler task in the OAM Manager control region. Force purging a task does not allow any outstanding requests in the task queue to be completed.

The command may be abbreviated to a single 'F'. The TASK parameter may be abbreviated to a single 'T'. The value 'nnn' must be numeric, and should be preceded by the character 'T' for tape reader tasks, 'D' for disk reader tasks and 'S' for scheduler tasks. If this character is omitted, a default value

of 'T' will be used. The task identifier entered here must correspond to a valid task number, as displayed by the status summary command.

Both waiting and busy tasks are immediately terminated. For busy tasks, the request currently being processed, and all subsequent requests in the task queue, are abnormally terminated with an 'OSR unavailable' condition. This will generate a return code of 12 and reason code of X'68800100' to the OSREQ caller.

When a tape or disk reader task or scheduler task is force purged, the current value of the MAXDRIVE, MAXDISK or MAXSCHED parameters is automatically decremented by 1. Once purged, a task will not be available for object recall processing. Its status will appear as 'TERM' in any subsequent status display.

For busy tape reader tasks, the current tape volume in use will be de-allocated. The tape will be rewound and dismounted, and the tape drive freed by OAM Manager.

Tasks may only be force purged if a normal purge request has already been queued for that task.

Example:

```
STC05021*20 OTM20000 Enter request:
.....
      R 20,D
STC05021 OTM20062 MAXDRIVE=004 MAXQLEN=012 RETAINTAPE=00001 MAXDISK=002
      TAPEWAIT=00100 DLB=N MAXSCHED=002
STC05021 OTM20062 XCFGROUP=OTIMV3R0 XCFMEM=OTIMZ800          XCFMAXDRIVE=000
STC05021 OTM20063 Task T001: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task T002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T003: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T004: Type=NORM Status=BUSY Qlen= 2
STC05021 OTM20064 Task T004: DSN=GROUP90.OTM.DB2I.OBJECTS.G00026
      Lastuse=
STC05021 OTM20063 Task T005: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D001: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task S001: Type=NORM Status=WAIT
STC05021 OTM20063 Task S002: Type=NORM Status=WAIT
STC05021*21 OTM20000 Enter request:
.....
      R 21,P T=4
STC05021 OTM20079 Task T004 purge request queued
STC05021*22 OTM20000 Enter request:
.....
      R 22,F T=4
STC05021 OTM20086 Task 004 forced successfully
STC05021*23 OTM20000 Enter request:
.....
      R 23,D
STC05021 OTM20062 MAXDRIVE=003 MAXQLEN=012 RETAINTAPE=00001 MAXDISK=002
      TAPEWAIT=00100 DLB=N MAXSCHED=002
```

```

STC05021 OTM20062 XCFGROUP=OTIMV3R0 XCFMEM=OTIMZ800 XCFMAXDRIVE=000
STC05021 OTM20063 Task T001: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task T002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T003: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T004: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task T005: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D001: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task S001: Type=NORM Status=WAIT
STC05021 OTM20063 Task S002: Type=NORM Status=WAIT
STC05021*24 OTM20000 Enter request:

```

Purge reader or scheduler task

```
P(PURGE) T(ASK) = (T|D|S)nnn
```

The PURGE command is used to terminate a tape or disk reader task or scheduler task in the OAM Manager control region. All outstanding requests in the task queue will be allowed to complete normally before task termination.

The command may be abbreviated to a single 'P'. The TASK parameter may be abbreviated to a single 'T'. The value 'nnn' must be numeric and should be preceded by the character 'T' for tape reader tasks, 'D' for disk reader tasks and 'S' for scheduler tasks. If this character is omitted, a default value of 'T' will be used. The task identifier entered here must correspond to a valid reader task number, as displayed by the status summary command.

For waiting tasks (status = WAIT), the purge request will be executed immediately. The identified task will be terminated, and will no longer be available for object recall processing. It will appear with a type of TERM in subsequent status display requests. Any tape allocation held by a purged tape reader task will be released - this will cause the allocated tape to be rewound and dismounted, and the tape drive to be freed by OAM Manager.

For busy tasks (status=BUSY), a shutdown request will be added to the task queue. This will allow retrieval requests which were outstanding at the time the purge command was entered to be completed as normal. The task will then be terminated, and will no longer be available for object recall processing. It will appear with a type of TERM in subsequent status display requests. For tape reader tasks, the tape being processed by the identified task will be released, whether it would have normally been retained on the tape drive after use or not.

Requests to purge a busy task for which a purge request has already been queued will be rejected.

When a tape or disk reader task or scheduler task is purged, the current value of the MAXDRIVE, MAXDISK or MAXSCHED parameters is automatically decremented by 1.

Example:

```

STC05021*20 OTM20000 Enter request:
.....
.....R 20,D
STC05021 OTM20062 MAXDRIVE=004 MAXQLEN=012 RETAINTAPE=00001 MAXDISK=002
TAPWAIT=00100 DLB=N MAXSCHED=002
STC05021 OTM20062 XCFGROUP=OTIMV3R0 XCFMEM=OTIMZ800 XCFMAXDRIVE=000
STC05021 OTM20063 Task T001: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task T002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T003: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T004: Type=NORM Status=BUSY Qlen= 2
STC05021 OTM20064 Task T004: DSN=GROUP90.OTM.DB2I.OBJECTS.G00026
Lastuse=
STC05021 OTM20063 Task T005: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D001: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D002: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task S001: Type=NORM Status=WAIT
STC05021 OTM20063 Task S002: Type=NORM Status=WAIT
STC05021*21 OTM20000 Enter request:
.....
R 21,P T=D2
STC05021 OTM25409 Disk rdr task 002 terminated
STC05021*22 OTM20000 Enter request:
.....
R 22,P T=4
STC05021 OTM20079 Task T004 purge request queued
STC05021*23 OTM20000 Enter request:
.....
R 23,D
STC05021 OTM20062 MAXDRIVE=004 MAXQLEN=012 RETAINTAPE=00001 MAXDISK=001
TAPWAIT=00100 DLB=N MAXSCHED=002
STC05021 OTM20062 XCFGROUP=OTIMV3R0 XCFMEM=OTIMZ800 XCFMAXDRIVE=000
STC05021 OTM20063 Task T001: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task T002: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task T003: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task T004: Type=SHUT Status=BUSY Qlen= 2
STC05021 OTM20064 Task T004: DSN=GROUP90.OTM.DB2I.OBJECTS.G00026
Lastuse=
STC05021 OTM20063 Task T005: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D001: Type=NORM Status=WAIT Qlen= 0
STC05021 OTM20063 Task D002: Type=NORM Status=TERM Qlen= 0
STC05021 OTM20063 Task S001: Type=NORM Status=WAIT
STC05021 OTM20063 Task S002: Type=NORM Status=WAIT
STC05021*24 OTM20000 Enter request:

```

Alter OAM Manager configuration

```
S(ET) { MAXDRIVE = nnn
        { MAXQLEN = nnn
        { MAXDISK = nnn
        { MAXSCHED = nnn
        { RETAINTAPE = nnnn
        { TAPEWAIT = nnnn
        { DLB = Y|N
        { XCFMAXDRIVE = nnn
```

The SET command is used to alter the current values of the OAM Manager MAXDRIVE, MAXQLEN, MAXDISK, MAXSCHED, RETAINTAPE, TAPEWAIT, DLB and XCFMAXDRIVE parameters. The command may be abbreviated to the single character 'S'. For the MAXSCHED, MAXQLEN and XCFMAXDRIVE parameters 'nnn' must consist of 1-3 numeric digits in the range 1-256. For the RETAINTAPE and TAPEWAIT parameters 'nnnn' must consist of 1-4 numeric digits in the range 0-1440. For the MAXDRIVE and MAXDISK parameters 'nnn' must consist of 1-3 numeric digits in the range 0-256.

The values of MAXDRIVE, MAXDISK, MAXSCHED, RETAINTAPE, TAPEWAIT, DLB and XCFMAXDRIVE are initially set during OAM Manager control region initialization from the corresponding parameters in the TAPECNTL and ENVCNTL members of the OAM Manager parameter library.

Valid parameters for the SET command are:

MAXDRIVE - OAM Manager will alter the current setting of the MAXDRIVE parameter to the value specified in the SET command.

If the value of MAXDRIVE is to be increased, OAM Manager will increase the number of initialized tape reader tasks, by restarting terminated tasks, and/or adding new tasks.

If the value of MAXDRIVE is to be decreased, OAM Manager will terminate a number of existing tasks equal to the decrease in the value of MAXDRIVE. These tasks will appear with the status TERM in any subsequent status display, and will not be available for object recall processing.

Note that processing of this command may take a little time for significant changes in the value of MAXDRIVE.

MAXDISK - OAM Manager will alter the current setting of the MAXDISK parameter to the value specified in the SET command.

If the value of MAXDISK is to be increased, OAM Manager will increase the number of initialized disk reader tasks, by restarting terminated tasks, and/or adding new tasks.

If the value of MAXDISK is to be decreased, OAM Manager will terminate a number of existing tasks equal to the decrease in the value of MAXDISK. These tasks will appear with the status TERM in any subsequent status display, and will not be available for object recall processing.

Note that processing of this command may take a little time for significant changes in the value of MAXDISK.

MAXSCHED - OAM Manager will alter the current setting of the MAXSCHED parameter to the value specified in the SET command.

If the value of MAXSCHED is to be increased, OAM Manager will increase the number of initialized scheduler tasks, by restarting terminated tasks, and/or adding new tasks.

If the value of MAXSCHED is to be decreased, OAM Manager will terminate a number of existing tasks equal to the decrease in the value of MAXSCHED. These tasks will appear with the status TERM in any subsequent status display, and will not be available for object processing.

Note that processing of this command may take a little time for significant changes in the value of MAXSCHED.

MAXQLEN - OAM Manager will alter the current setting of the MAXQLEN parameter to the value specified in the SET command.

RETAINTAPE - OAM Manager will alter the current setting of the RETAINTAPE parameter to the value specified in the SET command. This change will take immediate effect.

TAPEWAIT - OAM Manager will alter the current setting of the TAPEWAIT parameter to the value specified in the SET command. This change will take immediate effect.

DLB - OAM Manager will alter the current setting of the DLB parameter to the value specified in the SET command. This change will take immediate effect.

XCFMAXDRIVE - OAM Manager will alter the current setting of the XCFMAXDRIVE parameter to the value specified in the SET command. This change will take immediate effect.

Example:

```
F NEAROAMC,S MAXDRIVE=8
STC06166 OTM20052 Configuration altered successfully
.....
F NEAROAMC,S MAXQLEN=16
STC06166 OTM20052 Configuration altered successfully
.....
F NEAROAMC,S MAXDISK=0
STC06166 OTM20052 Configuration altered successfully
.....
F NEAROAMC,S TAPEWAIT=1440
STC06166 OTM20052 Configuration altered successfully
```

Refresh OAM Manager control region

```
REFRESH
```

The REFRESH command is used to refresh the following information held internally in the OAM Manager control region:

- OAM storage group configuration, from the STRGROUP parameter library member
- OAM management class configuration, from the OBJCNTL parameter library member
- OAM collection name identifier table, from the OAMADMIN database
- OAM management class identifier table, from the OAMADMIN database

Entry of the REFRESH command will cause the control region to process the STRGROUP and OBJCNTL members from the OAM Manager parameter library, and the OAM collection name identifier and management class identifier tables from the OAMADMIN database, and to replace information

from these sources created internally in the control region during initialization processing, or via a previous REFRESH command.

Any parameter error encountered during validation of the STRGROUP and OBJCNTL library members will be identified via a message to the system log. Refresh processing will not continue in these circumstances.

The REFRESH command is required when changes are made to the STRGROUP and/or OBJCNTL members while the control region is active, in order to activate the changes without restarting the control region. If a storage group has been removed from the STRGROUP member, all files belonging to that storage group's Archive Manager database will be de-allocated by the control region, allowing other jobs to obtain exclusive access to the database.

REFRESH processing will also be required when objects have been migrated to Archive Manager (via the OAM Manager object management procedure) after the OAM Manager control region has been started. OAM Manager will not be able to see these objects until the REFRESH command has been successfully issued, or until the control region has been stopped and restarted.

A REFRESH command should also be issued after updates have been made to the definition of one or more of the Archive Manager databases used for storage of migrated objects (e.g.) after enabling of disaster recovery for an Archive Manager database.

An OSREQ return code of 8 with reason code of X'2C800200' will be issued if an attempt is made to access an object which has been migrated to Archive Manager after the OAM Manager control region was started, if refresh processing has not been performed.

Example:

```
F xxxxxxxx,REFRESH
STC06166 OTM20006 STRGROUP parameters successfully processed
STC06166 OTM20006 OBJCNTL parameters successfully processed
STC06166 OTM20087 Refresh processing scheduled
.....
STC06166 OTM22019 Scheduler task 1 refreshed successfully
STC06166 OTM22019 Scheduler task 2 refreshed successfully
.....
```

Stop processing of an Archive Manager database

```
STOP storage_group_database_name
```

The STOP command is used to stop processing of an Archive Manager storage group database by the OAM Manager control region. 'storage_group_database_name' is the 1-8 character identifier specified for the DB2 database name in the appropriate OAM storage group entry in the STRGROUP member of the OAM Manager parameter library. This is also the name used to identify the Archive Manager storage group database which holds objects which have been migrated from OAM.

The primary index of the Archive Manager database will be closed by all control region components following entry of this command, and the file will be de-allocated from the control region on completion of all outstanding requests for that database. Any subsequent OAM requests received for access to migrated objects in the stopped database will be rejected with an OSREQ return code of 12 and reason code of x'B0800200'. Note that access to unmigrated OAM objects is not impacted by this command.

Any desired housekeeping or maintenance operation may be carried out while a database is in a stopped condition. The OAM Manager control region may remain active while such processes are in progress.

The START command should be used to restart a stopped database. Access to migrated objects in the database will then be permitted as normal. Note that entry of a REFRESH command while a database is in a stopped condition will implicitly start the database. A STOP command does not remain in effect across entry of a REFRESH command.

Example:

```
F xxxxxxxx,STOP GROUP00
STC06166 OTM22025 Storage group database GROUP00 has been stopped
,T=S002
STC06166 OTM22025 Storage group database GROUP00 has been stopped
,T=S001
STC06166 OTM22025 Storage group database GROUP00 has been stopped
,T=S003
```

Note that there will be one OTM22025 message issued for each scheduler task that is active in the control region at the time of entry of the STOP command. The identifier of the scheduler task issuing the message (Snnn) is given at the end of each message.

Restart processing of a stopped Archive Manager database

```
START storage_group_database_name
```

The START command is used to restart processing of an Archive Manager storage group database by the OAM Manager control region, after that database has been previously stopped via the STOP command.

'storage_group_database_name' is the 1-8 character identifier specified for the DB2 database name in the appropriate OAM storage group entry in the STRGROUP member of the OAM Manager parameter library. This is also the name used to identify the Archive Manager storage group database which holds objects which have been migrated from OAM.

The primary index of the Archive Manager database will be dynamically allocated by the control region on receipt of this command, and the index opened for processing by control region components. Normal access to migrated objects in that storage group will then be possible.

Example:

```
          F xxxxxxxx,START GROUP00
STC06166 OTM22025 Storage group database GROUP00 has been started
,T=S002
STC06166 OTM22025 Storage group database GROUP00 has been started
,T=S001
STC06166 OTM22025 Storage group database GROUP00 has been started
,T=S003
.....
```

Note that there will be one OTM22025 message issued for each scheduler task that is active in the control region at the time of entry of the START command. The identifier of the scheduler task issuing the message (Snnn) is given at the end of each message.

Terminate OAM Manager control region

```
SHUTDOWN (IMMED)
```

The SHUTDOWN command is used to terminate the OAM Manager control region. The optional IMMED parameter is used to control the shutdown procedure.

If IMMED is not specified, OAM Manager will allow all outstanding requests to be completed normally before terminating the control region. However, no new requests will be serviced by the control region after shutdown has been requested. Any OSREQ calls issued subsequent to entry of the shutdown request will be rejected with an 'OSR unavailable' condition (return code = 12 and reason code = X'68800100').

If IMMED is specified, OAM Manager will perform an immediate shutdown; all current and outstanding retrieval requests will be terminated with an 'OSR unavailable' condition, and the OAM Manager control region terminated.

Terminating the control region will disable support for retrieval of Archive Manager-resident objects via OAM Manager. The shutdown request should not therefore be performed without first verifying that no recalls of Archive Manager objects will be issued while the control region is inactive.

If COMMAND=REPLY has been specified (or defaulted) in the TAPECNTL parameter library member, OAM Manager will issue message OTM20092 on receiving the SHUTDOWN command:

```
OTM20092 Do you want to proceed with shutdown (Y/N)?
```

To continue with shutdown processing, reply 'Y'. Any other reply will abort shutdown processing. OAM Manager will redisplay the standard operator reply message OTM20000, and control region processing will continue as normal.

If COMMAND=MODIFY has been specified in the TAPECNTL member, OAM Manager will not issue a confirmation request. Shutdown processing will continue automatically.

Example:

```
STC05021*25 OTM20000 Enter request:
.....
      R 25,SHUTDOWN
STC05021*26 OTM20092 Do you want to proceed with shutdown (Y/N)?
      R 26,Y
STC05021 OTM20093 Shutdown in progress
.....
```

.SMF processing

OAM Manager provides an option to implement the recording of Archive Manager object retrieval statistics by the control region, using the IBM System Management Facility (SMF).

This option is invoked by users via the optional SMFRECID parameter of the ENVCNTL member of the OAM Manager parameter library.

Omitting this parameter, or specifying an SMFRECID of zero, will suppress creation of SMF records by OAM Manager.

Specifying a non-zero value, in the range 128 to 255, will cause OAM Manager to create SMF records with the specified numeric identifier.

If requested, OAM Manager will create SMF records at the following points:

- a. When all requests for retrieval of objects from a single tape cartridge volume have been completed by a tape reader task (ie) immediately before a busy task returns to wait status. The SMF record will contain one request section for each request processed during invocation of that reader task.
- b. When the limit of 100 request sections has been created by a tape reader task while processing a request queue. An SMF record will be written by the reader task before continuing to process the request queue. One or more additional SMF records will subsequently be written by the reader task, either when the limit of 100 request sections has again been reached, or after all requests in the queue have been processed.

Note that there is no direct relationship between the number of requests that may be processed during a single invocation of a tape reader task, and the setting of the MAXQLEN parameter. After processing a request, the queue length will be reduced by one; however, new requests may continue to arrive and be added to the queue while the driver task is busy. New requests will only be rejected if the number of outstanding requests has reached the value of MAXQLEN.

In this way, there is no limit to the number of requests which may be processed during a single invocation of a tape reader task, and consequently no limit to the number of SMF records which may be written during that invocation.

- c. When a request for retrieval of an object has been completed by a disk reader task (ie) immediately before a busy disk reader task processes the next request in its queue, or returns to wait status if there are no more requests in the queue. The SMF record created by a disk reader task will always contain one request section only.

Each request section in an SMF record will contain four timestamps relating to the OAM Manager retrieval request described by the record. These timestamps are issued at the following points:

10. When the OSREQ RETRIEVE request is intercepted by OAM Manager.
11. Start of request processing by the control region scheduler.
12. Start of request processing by the reader task in the control region.
13. Termination of request processing by the reader task in the control region.

Analysis of timestamp intervals will provide timings for the following activities:

- 4 - 1 : total time for OAM Manager to process the request.

- 2 - 1: time spent in control region scheduler queue.
- 3 - 2: time spent in reader task queue.
- 4 - 3: time taken to retrieve object from tape or disk and insert in OAM DB2 table (for staged retrievals) or populate caller's data buffer (for non-staged retrievals).

Careful analysis of this information will assist in identifying possible performance problems during object retrieval processing.

The following sections describe the individual components that constitute the OAM Manager SMF record.

SMF header section

Each SMF record will have a standard SMF header section of length 18 bytes.

Offset	Length	Format	Description
0	2	bin	Record length. This is the length of the entire SMF record, including this field.
2	2	bin	Segment descriptor - binary zeroes.
4	1	bin	System indicator (consult SMF documentation for a description of possible flag settings).
5	1	bin	Record type (equal to the value of the SMFRECID parameter from the ENVCNTL parameter library member).
6	4	bin	Time since midnight, in hundredths of a second, that the SMF record was written.
10	4	packed	Date record was written, in the format 0cyydddF, where F is the sign
14	4	char	System identification.

Record descriptor section

The SMF header section is immediately followed by the OAM Manager record descriptor section. It has a fixed length of 38 bytes.

Offset	Length	Format	Description
18	6	bin	Reserved.

Offset	Length	Format	Description
24	4	bin	Offset of storage group section. This is the offset from the start of the SMF record of the storage group section of the record.
28	2	bin	Length of storage group section. This is the length in bytes of a single storage group section.
30	2	bin	The number of storage group sections present in the record (always = 1).
32	4	bin	Offset of a request section. This is the offset from the start of the SMF record of the request section in the record.
36	2	bin	Length of request section. This is the length in bytes of a single section.
38	2	bin	The number of request sections present in the record (maximum of 100).
40	16	-	Reserved for future use.

Storage group section

The storage group section starts at the offset specified in the record descriptor section of the OAM Manager SMF record. It gives information about the storage group being processed during the invocation of a reader task. It has a fixed length of 54 bytes. Only one storage group section will be present per SMF record.

Offset	Length	Format	Description						
0	1	bin	Task Number.						
1	1	bin	Processing flag. This gives information about the reader task at the time of SMF record creation. <table border="0"> <thead> <tr> <th><u>Flag</u></th> <th><u>Meaning</u></th> </tr> </thead> <tbody> <tr> <td>X'80'</td> <td>A task purge request has been issued</td> </tr> <tr> <td>X'20'</td> <td>Tape to be retained on drive after all outstanding requests processed (tape reader tasks only).</td> </tr> </tbody> </table>	<u>Flag</u>	<u>Meaning</u>	X'80'	A task purge request has been issued	X'20'	Tape to be retained on drive after all outstanding requests processed (tape reader tasks only).
<u>Flag</u>	<u>Meaning</u>								
X'80'	A task purge request has been issued								
X'20'	Tape to be retained on drive after all outstanding requests processed (tape reader tasks only).								

Offset	Length	Format	Description
			X'40' Reader task invoked via dynamic load balancing (DLB) processing
			X'01' All requests in this SMF record were processed by a disk reader task.
2	8	char	DB2 database name. This is the name qualifier used for the DB2 database for the OAM storage group ('GROUP00', 'GROUP01' etc.)
10	44	char	Name of tape dataset being processed. This field will be set to spaces if the SMF record was created by a disk reader task (processing flag X'01' set in the storage group section).

Request section

The request section starts at the offset specified in the record descriptor section of the OAM Manager SMF record. It gives information about each of the individual requests processed during the invocation of a driver task. It has a fixed length of 128 bytes. A maximum of 100 request sections may be present per SMF record.

Offset	Length	Format	Description
0	8	bin	Reader start timestamp. This gives the date and time that processing for this request was started by the tape/disk reader task (ie) when the request was processed from the reader task queue. It has the format: bytes 0-3: time in hundredths of a second since midnight that request processing started. bytes 4-7: date that request processing started, in packed decimal format 0cyydddF, where F is the sign.
8	8	bin	Request end timestamp. This gives the date and time that processing for this

Offset	Length	Format	Description
			<p>request was completed by the reader task. It has the following format:</p> <p>bytes 0-3: time in hundredths of a second since midnight that request processing ended.</p> <p>bytes 4-7: date that request processing ended, in packed decimal format 0ccyydddF, where F is the sign.</p> <p>N.B. If the start and end timestamps for an entry are identical and the request return code = '00', then a duplicate request has been logged (ie. retrieval request received for object for which a request is already queued).</p>
16	4	packed	Object migration date. Date that object was first migrated from disk to tape, in packed decimal format 0yymmddF, where F is the sign.
20	2	char	Request return code. The internal code used by the reader task to inform other OAM Manager components of the outcome of the retrieval requests. This value will be '00' for a successful retrieval request when a retrieved object is being staged to disk, or '60' for a successful retrieval request when the object is not being staged to disk. Refer to section 8.17 for a description of other non-zero return codes.
22	8	bin	<p>Request start timestamp. This gives the date and time that the retrieval request was intercepted by OAM Manager. It has the format:</p> <p>bytes 0-3: time in hundredths of a second since midnight that the request was intercepted.</p> <p>bytes 4-7: date that the request was intercepted, in packed decimal format 0ccyydddF, where F is the sign.</p>

Offset	Length	Format	Description
30	8	bin	Scheduler start timestamp. This gives the date and time that the request was first processed by the control region scheduler task. It has the format: bytes 0-3: time in hundredths of a second since midnight that the request was first processed. bytes 4-7: date that the request was first processed, in packed format 0cyydddF, where F is the sign.
38	2	bin	Sequence number with Archive Manager database of tape or disk dataset from which object was retrieved.
40	4	bin	Identifier of tape block containing object (tape reader tasks only). This field will contain low-values for disk reader tasks.
44	8	char	Requesting application job name
52	8	char	Requesting application's user identifier (CICS requests only).
60	4	bin	Collection name identifier.
64	44	char	Object name.
108	4	char	Identifier of system on which request originated.
112	16	-	Reserved for future use.

.Operational considerations

This section discusses miscellaneous topics relating to the operation of the OAM Manager control region and its environment. This includes a discussion of performance considerations for retrieval of objects from tape using OAM Manager.

Use of the MAXDRIVE parameter

The MAXDRIVE parameter is used to limit the number of tape drives that OAM Manager will allocate concurrently for performing simultaneous access to multiple tape volumes in response to OSREQ retrieval requests. It is intended to enable users to prevent OAM Manager from depleting the

number of available cartridge drives on a system to the extent that other work will be unable to complete.

Once at the MAXDRIVE limit, OAM Manager will reject any other request which would require an extra tape drive in order for it to be satisfied, with an 'OSR unavailable' condition, or optionally queue the request internally if a non-zero value has been specified for the TAPEWAIT parameter in the TAPECNTL parameter library member. In this latter case OAM Manager will retry the request at 1-second intervals until a tape drive becomes available or until the TAPEWAIT interval is exceeded.

Rejection of a request due to the MAXDRIVE value having been reached or due to the TAPEWAIT interval having been exceeded will generate a return code of 12 and reason code of X'68800100' to the OSREQ caller. The value chosen for MAXDRIVE should ensure that occurrence of this condition is minimized, while still allowing other work on the system to continue without delay. If necessary, the value of MAXDRIVE may be varied during the day to correspond to variations in the system workload.

In a mixed operating environment which consists of both library and free-standing tape drives, the STK Host Software Component will ensure that all primary OAM Manager tapes will be located in a library storage module. The value of MAXDRIVE used in this environment should not exceed the total number of drives available in the library configuration, otherwise allocation requests for OAM Manager tapes may be made to free-standing drives. This will introduce unpredictable delays into the object retrieval process; this is obviously unacceptable in an online processing environment.

In any case, the value of MAXDRIVE should not exceed the overall total number of drives available, as this will cause a significant increase in the incidence of allocation recovery, and consequent rejection of retrieval requests.

Use of the MAXQLEN parameter

The MAXQLEN parameter places a limit on the number of outstanding requests that may exist for retrieval of objects from any one tape volume. It is intended to allow users to place a limit on the time that any single request will spend in a driver task request queue.

Requests are added to the task request queue as they arrive from other OAM Manager components (in response to user-generated OSREQ requests) and removed from the queue as they are completed. The request queue may thus be in a state of change while it is being processed. The MAXQLEN parameter places a limit on the number of outstanding requests in the queue, not the total number of requests which may be processed from the queue by the tape reader task.

If a tape needs to be mounted in response to the first request for that tape volume that is received by a reader task, the average time taken to mount and load a tape will be required to process that request. Subsequent requests in the same queue will take an average the time taken to re-locate halfway along the tape to process by the reader task (for data location and retrieval), and the maximum time to re-locate from one end of the tape to the other, if successive objects are located at opposite ends of a fully-populated tape volume.

If multiple requests for retrieval from the same tape volume arrive within a very short period of time, then the last request to arrive will have to wait for all preceding requests to be processed.

The above discussion may be used to select an appropriate value of the MAXQLEN parameter at your installation, in order to limit the length of time that a request must wait in the reader task queue when multiple simultaneous requests have been issued.

Once at the MAXQLEN limit, OAM Manager will reject any other request which would cause this limit to be exceeded, with an 'OSR unavailable' condition, or optionally queue the request internally (if a non-zero value has been specified for the TAPEWAIT parameter in the TAPECNTL parameter library member). In this latter case OAM Manager will retry the request at 1-second intervals until a tape drive becomes available or until the TAPEWAIT interval is exceeded. Alternatively, if DLB=Y is set in the control region, the request will be passed to another reader task for processing from a backup tape dataset. Refer to page 84 for a description of the DLB parameter and a discussion of its usage.

Rejection of a request due to the MAXDRIVE value having been reached or due to the TAPEWAIT interval having been exceeded will generate a return code of 12 and reason code of X'68800100' to the OSREQ caller.

Use of the MAXDISK parameter

The MAXDISK parameter is used to control the number of disk reader tasks which are active in the OAM Manager control region. A disk reader task is used to perform retrieval of an object from an Archive Manager database for which a disk ('K') copy exists (where the release of Archive Manager in use by OAM Manager supports disk object copies).

If the value of MAXDISK is greater than 1, OAM Manager will assign a new disk object retrieval request to the disk reader task with the shortest request queue. In this way, the length of the request queues will be balanced across the allocated disk reader tasks. Increasing the value of MAXDISK will decrease the average disk reader task request queue length. However, there will be a corresponding increase in the amount of virtual storage required by the OAM Manager control region. For most operational environments, the default MAXDISK value of 4 will be sufficient.

If the value of MAXDISK is 0, then all object retrieval requests, whether objects have a disk copy or not, will be processed by the tape reader tasks currently allocated in the control region. Each tape reader task will issue a standard Archive Manager object retrieval request; if a disk copy of an object exists then Archive Manager will satisfy the retrieval request from disk (ie. the object will still be retrieved from disk, even though it is being processed by a tape reader task). Setting the MAXDISK value to 0 is not recommended in these circumstances, as it may cause disk object retrievals to be rejected unnecessarily if there are no available tape reader tasks to process the request.

If an error occurs when Archive Manager attempts to retrieve the disk copy of an object, Archive Manager will automatically re-drive the retrieval attempt from tape. In these circumstances it is possible that a disk reader task will attempt to process a tape dataset. This may cause contention for tape drives, resulting in failure of the retrieval request, if all available drives are currently being processed by the tape reader tasks. Retrieval of the tape copy of an object by a disk reader task will not impact the ability of that task to continue accepting and processing further disk object retrieval requests.

If the version of Archive Manager which is in use for OAM Manager operation does not support disk object copies, then the value of the MAXDISK initialization parameter should be set to zero in the TAPECNTL parameter library member.

Allocation recovery

Allocation recovery occurs on MVS systems when there are no tape drives available to satisfy an allocation request. In this case, the following message will be output by the system:

```
IEF238D jjj - REPLY DEVICE NAME, 'WAIT' OR 'CANCEL'
```

Normal practice is for an operator (or automated operator facility) to reply WAIT to this request. The job requiring the allocation will then wait until a drive becomes available before being able to continue.

In the OAM Manager environment, lack of available tape drives will cause the OAM Manager control region to enter allocation recovery. Issuing a reply of WAIT will now mean that the OSREQ call which caused the tape allocation request will have to wait indefinitely for another job on the system to release a drive, before continuing.

In this case, the end-user response time would be unpredictable. For this reason, it is recommended that a reply of 'CANCEL' be made to the IEF238D message. This will be interpreted by OAM Manager as a 'drive unavailable' condition, and the retrieval request will be rejected with an 'OSR unavailable' condition or optionally queued internally (if a non-zero value has been specified for the TAPEWAIT parameter in the TAPECNTL parameter library

member). In this latter case OAM Manager will retry the request at 1-second intervals until a tape drive becomes available or until the TAPEWAIT interval is exceeded. .

It is recommended that the reply of 'CANCEL' be performed by an automated operator reply facility, if present on the system, rather than via manual operator entry. In this way, there will be no delay between OAM Manager receiving the retrieval request, and the rejection of the request with an 'OSR unavailable' condition. This will minimize delays to users in receiving notification of the unavailability of resources in performing the object access.

Sysplex considerations

Execution of OAM Manager in a sysplex configuration is controlled via the XCFGROUP parameter in the ENVCNTL parameter library member. This parameter is used to specify the sysplex group of which the OAM Manager control region is to be a member. This parameter value must be specified identically for each control region which is to participate in the same sysplex group.

If XCFGROUP is specified, then the XCFMEM parameter must also be specified. XCFMEM is used to specify the member name to be assigned to the OAM Manager control region in the sysplex group. Each control region in this sysplex group must have a unique member identification.

OAM Manager requires the following pre-requisites for implementation of sysplex support:

- An OAMplex configuration must already be in place for the MVS images which are to be part of an OAM Manager sysplex group.
- A single DB2 data sharing configuration must be implemented for all MVS images in each OAM Manager sysplex group.
- Disk devices containing Archive Manager disk-resident system datasets must be shared between all MVS images in the sysplex group. If this is not possible, then these datasets must be mirrored between the MVS images in the sysplex group, and appropriate procedures put in place to ensure that mirrored datasets are synchronized after update. The datasets falling into this category consist of:
 - Database primary index files (one per storage group)
 - Database space management datasets (one per database storage level)
- Tape devices which are to be used for satisfying requests for retrieval of migrated OAM objects should be shareable between one or more MVS images in the OAM Manager sysplex. It is not required that all images in

the OAM Manager sysplex have access to shared tape devices; however, at least one image in the sysplex needs to have access to such devices.

- An MVS image may not belong to more than one OAM Manager sysplex group.

Implementation of sysplex support in OAM Manager will allow requests for retrieval of tape-resident objects from an Archive Manager database to be shipped to a control region in another MVS image, where necessary. This permits concurrent access to individual tape volumes in an Archive Manager database, and will remove system dependency for this type of request. This in turn will allow individual images (or OAM Manager control regions) within the sysplex configuration to be quiesced, without impacting the ability of the sysplex to service OAM requests for migrated objects. It also supports use of the sysplex for transaction load balancing requirements.

It is not necessary that every control region in an OAM Manager sysplex group should have access to tape devices. Control regions which do not have access to tape devices should be initialized with a parameter setting of MAXDRIVE=0 in the TAPECNTL parameter library member. All requests received by that control region will then be shipped to the most appropriate tape-owning control region for execution.

The XCFMAXDRIVE parameter should be used to restrict the total number of tape devices which may be concurrently allocated across the entire sysplex group. The value specified for this parameter should be set identically for each control region in the sysplex group. If this parameter is omitted, no maximum is placed on the maximum number of drives which may be concurrently allocated across the sysplex group – the effective maximum is the sum of the individual MAXDRIVE values for each control region in the sysplex. Where required, this parameter should be set to the total number of devices to be made available for OAM Manager retrieval processing over the entire sysplex group. The MAXDRIVE parameter value for an individual control region should be set to the total number of devices to be made available for OAM Manager retrieval processing by that control region. When setting these parameter values, you should be aware that it is possible in some circumstances for a single control region to be processing all tape retrieval requests for the sysplex group at a specific time – bearing this in mind, it may be necessary to set identical values for the MAXDRIVE and XCFMAXDRIVE parameters in each control region.

Note that retrieval of objects from disk-resident objects is always satisfied by the local OAM Manager (i.e. in the OAM Manager control region executing on the system image in which the OAM retrieval request was submitted).

OAM Manager contains functionality to automatically re-configure the sysplex group tape retrieval configuration after the loss of an individual control region, or individual tape reader tasks within a control region. This will allow tape retrieval requests across the sysplex group to continue to be serviced

without interruption. An OAM Manager control region must be manually restarted after abnormal termination.

Shutdown processing

As an immediate shutdown does not allow outstanding OSREQ tape retrieval and deletion requests to complete, whenever possible the OAM Manager control region should be shutdown normally (ie) use the SHUTDOWN operator command without the IMMED parameter.

In this context, it is recommended that operators issue a summary status display command before issuing the OAM Manager shutdown request.

If there are any outstanding requests identified by the summary status display, these should be allowed to complete before issuing a normal OAM Manager shutdown request. If necessary, an immediate shutdown request may be issued in order to abnormally terminate outstanding requests, and perform OAM Manager shutdown processing.

Additionally, if either the scheduler or reader queue lock, as displayed from the summary status request, is constantly unavailable (ie. permanent locked status), then an immediate shutdown should be issued, as a normal shutdown attempts to acquire these locks before proceeding. This situation, if it occurs, indicates an internal OAM Manager error condition, and should be communicated to your OAM Manager product support representative.

In extreme cases, the OAM Manager control region may be cancelled if required. Canceling the control region has the following consequences:

- Any outstanding OSREQ requests will be left unsatisfied in a wait state (ie) control will never be returned to the calling application. These applications will have to be abnormally terminated by an external source.
- Extended CSA storage used by OAM Manager (approximately 212k in extended subpool 241) will not be released, and will be unavailable for use by other jobs in the system until the next IPL.
- The OAM Manager OSR intercept will be left in place. This will not prevent normal OAM activity from proceeding, as the intercept passes all OSREQ requests on to OAM if the control region is not active. However, retrieval or deletion requests for Archive Manager-resident objects will now be rejected by OAM, as is normally the case when the OAM Manager control region is not active.
- The intercept will be refreshed when the OAM Manager control region is next activated - no special action is required to recover after cancellation or abnormal termination of the control region.

'OSR unavailable' condition

OAM Manager will return an 'OSR unavailable' condition to an OSREQ request (OSREQ return code of 12 and reason code of X'68800100') in the following circumstances:

1. an object retrieval request requires a new tape cartridge volume to be mounted, but OAM Manager is unable to allocate a new drive because the MAXDRIVE limit has already been reached.
2. an object retrieval request requires access to a tape cartridge volume that is already being processed, but the number of requests already queued for that volume is at the limit specified by the MAXQLEN parameter.
3. allocation recovery has occurred due to lack of available tape cartridge drives, and a reply of 'CANCEL' was made to the IEF238D message.
4. a 'force purge' command was issued by the operator for the task currently processing the queue containing the tape retrieval request.
5. an immediate OAM Manager control region shutdown was issued by the operator while the object retrieval request was being processed, or while it was in a task request queue.
6. the OAM Manager control region is in the process of terminating when the OSREQ request was issued.

If necessary, applications which may issue OSREQ requests for access to Archive Manager-resident objects should be amended to interpret the 'OSR unavailable' condition as a 'OAM Manager resource unavailable' condition. In these circumstances, the recommended action is to issue an explanatory message to the end user, requesting that they retry the request at a later time.

Note that the TAPEWAIT parameter of the TAPECNTL parameter library member may be used to internally queue requests which have been rejected in circumstances 1 to 3 above. In this case a request will be retried at 1-second intervals until sufficient resources become available to satisfy it, or until the TAPEWAIT interval has been exceeded, at which time it will be rejected as above. Use of this facility may reduce the likelihood of 'OSR unavailable' conditions occurring.

.General description

OAM Manager provides functions to perform the migration of objects from OAM to Archive Manager storage and to automatically remove expired objects from the system.

These functions are provided by the OAM Manager object management procedure, which executes the following utilities:

- OTIMP100 - the OAM Manager object selection utility
- OTIMP110 - the OAM Manager database backup control utility
- OTIMP120 - the OAM Manager OAM database update utility.

The object management procedure is a batch process, and should be scheduled to run at regular intervals in order to migrate objects from disk, optical or OAM tape storage to an Archive Manager database, to remove expired objects from the system, and to delete staged recalled objects from disk.

The frequency of execution of this procedure will be controlled by operational factors, such as the amount of primary disk storage available for holding OAM objects, the rate of creation of new objects, the rate of retrieval of migrated objects etc.

Careful planning is required when implementing an object migration strategy, in order to optimize system performance by migrating objects at the appropriate stage of their existence. Migration should be performed so that primary disk storage requirements may be minimized without introducing performance problems through the creation of an Archive Manager tape recall activity rate which exceeds the performance capacity of the installed tape library configuration.

The object management procedure

Processing by each OAM Manager object management procedure is limited to a single OAM storage group (identified via EXEC parameters to the OAM Manager utilities).

Each storage group processed by the OAM Manager procedure uses a discrete set of data (DB2, VSAM and Archive Manager). This means that

multiple object management processes may be performed concurrently for separate storage groups. Running procedures in parallel in this manner will reduce the overall time required to process all objects within an OAM structure.

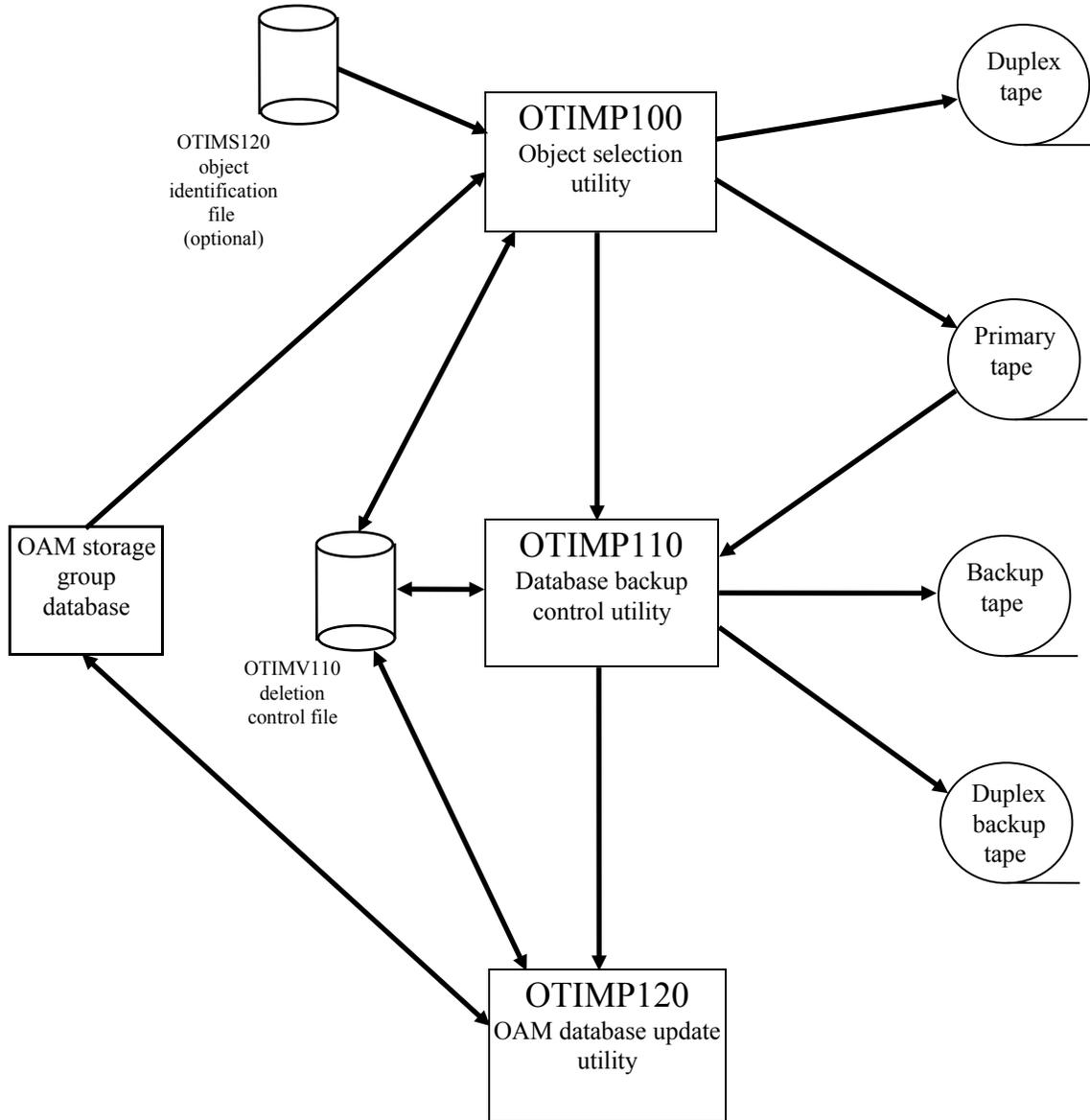


Figure 6 – The object management procedure

Figure 6 illustrates resources used during the object management procedure. While the procedure is in progress for a particular storage group, no Archive Manager -resident objects in that storage group may be processed. Execution of the procedure should therefore be scheduled to take place when no object access activity will be performed. However, it is not necessary to stop the OAM Manager control region while the object management procedure is being performed.

All three utilities identified above must be executed successfully in order to complete the object management process. OAM Manager provides automated restart and rerun facilities for restarting failed jobs (see section 149 for a description of the rerun procedure).

The object management utilities perform the following functions:

OTIMP100

This utility selects OAM objects from within the appropriate storage group for migration, OAM- and Archive Manager-owned objects for expiration and staged recalled objects for deletion of the staged disk copy. OAM objects selected for migration will be written to the Archive Manager database for that storage group.

OTIMP110

This utility optionally copies Archive Manager tape datasets created or updated by the previous OTIMP100 step. If 'BACKUP=YES' is specified on the EXEC parameter, a primary and backup copy of each volume in the Archive Manager database will exist on completion of this utility, and it will have been verified that each primary copy is readable. The changes identified in the OTIMP100 step may now be actioned.

'BACKUP=NO' may be specified if no backup processing is to be performed by OTIMP110 (eg. if duplex tape datasets were created during object migration by OTIMP100).

OTIMP120

This is the OAM database update utility. It will process all the objects selected in the OTIMP100 step as required. DB2 database updates are committed at user-specified intervals. Once updates are committed, the object management procedure has been completed for those objects. Any subsequent access to migrated objects will be satisfied from tape.

Automated controls are provided within OAM Manager to ensure that the above utilities are performed in the correct order, and that a utility is not executed until the preceding utility has completed successfully.

Controlling object migration and expiration

Selection of objects for processing by OTIMP100 is controlled either via the OBJCNTL member of the OAM Manager parameter library or via entries in the optional sequential file OTIMS120 which is input to the object selection utility. See page 68 for a full description of the OBJCNTL member and its parameters.

Selection via OBJCNTL member

If no OTIMS120 file is present in the JCL used to execute the object selection utility, selection of objects for processing by the utility will be done using entries in the OBJCNTL parameter library member. These parameters use the DFSMS-assigned management class of an object to establish controls for migration, expiration or deletion of a recalled object.

An object's management class is automatically assigned by the system when an object is created. The management class may subsequently change via:

- An explicit user request using the OSREQ CHANGE macro.
- An automatic change during an OSMC (the storage management component of OAM) cycle, via a class-transition event.

The management class used by OAM Manager for determining the processing of an object is the one in effect at the time of execution of the object management procedure.

For each valid object management class, the OBJCNTL member will identify three possible selection criteria:

- MIGRATE - this parameter specifies the number of days since object creation, management class transition or last reference after which objects with this management class are to be migrated from OAM disk, optical or tape storage to an Archive Manager database.
- EXPIRE - this parameter specifies the number of days since object creation, management class transition or last reference after which objects (both OAM- and OAM Manager-owned) are to be expired (ie) completely removed from the system.
- DELETE - this parameter specifies the number of days after the object was last referenced, after which the disk copy of an object which has been recalled from Archive Manager will be deleted. The object will then revert to being Archive Manager-resident.

The 'SELDISK', 'SELOPT' and 'SELTAPE' execution parameters may be used to control selection of OAM-owned objects by storage location (i.e. OAM disk, optical or tape storage).

figure 7 illustrates how these selection criteria are used by the object selection utility to identify the type of processing to be performed on an object.

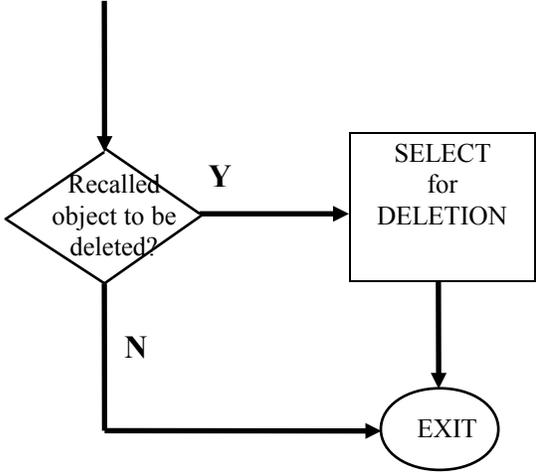


Figure 7 – OTIMP100 selection processing

Selection via file OTIMS120

Object selection processing using the OBJCNTL parameter library member may be disabled by including an entry for file OTIMS120 in the JCL used to execute the utility. This file should contain one record for each object which is to be migrated by OAM Manager, and must be created by a user process prior to execution of the OAM Manager object management procedure. Refer to page 136 for a description of this file structure.

On detecting the presence of file OTIMS120, OTIMP100 will open the file for input processing and read the file sequentially. For each record in the file, the following processing will be performed:

- The record will be validated for correct formatting, and to ensure that the target collection name specified in the object belongs to the storage group identified in the EXEC parameters. Any invalid record will cause an error message to be printed identifying the error, and a program condition code of 8 to be set. Processing will then continue with the next record in the file. If the source object identified in the record has already been migrated to Archive Manager, a warning message will be issued and processing will continue with the next record in the file.
- The source object identified in the record will be retrieved via standard OSREQ processing (similar to that currently performed when migrating objects from OAM optical or tape resident storage). The object will be stored in the Archive Manager database assigned to the storage group containing the object's target collection name (as identified in the EXEC parameters). The collection name and object name assigned to the object after migration will be those specified or defaulted in the target name fields in the OTIMS120 record.
- Details of the migration will be written to the OAM Manager deletion control file OTIMV110, for actioning of DB2 updates by program OTIMP120, the final step in the object management procedure. These details will include an indication whether the source object is to be deleted from OAM after migration.

Use of file OTIMS120 will allow the following object attributes to be modified during migration processing:

- Object name
- Collection name
- Management class name

Note that modification of collection name may cause the object to be moved from one OAM storage group to another. In these circumstances, the target storage group **MUST** be that specified in the execution parameters used to run the utility, otherwise the request will be rejected.

Executing the object management procedure

Member GPXXMIG on the supplied OAM Manager sample library provides a job for executing the OAM Manager object management procedure. This job may be amended as required and submitted in order to run the object management utilities for an individual storage group. A copy of the supplied GPXXMIG job can be found in appendix A of this manual. Prior to submitting this job, the lines marked '<===>' should be updated as follows:

EXEC parameters: replace the string

```
'storage-group-name'
```

with the name of the storage group to be processed. For steps STEP100 and STEP120, include the PRINT and RESTART keyword parameters as required (see the sections on OTIMP100 and OTIMP120 in this chapter for an explanation of the use of these parameters).

STEPLIB DD cards: replace the character strings:

```
'OAM.Manager.load.library'  
'Archive.Manager.load.library'  
'DB2.runtime.library'
```

with the names of the corresponding load libraries in use on your system.

OTIMS100 DD cards: replace the character string:

```
'OAM.Manager.parameter.library'
```

with the name of the OAM Manager parameter library on your system.

OTIMIDCI DD cards: replace the character string

```
'OAM.Manager.JCL.library(DGROUPXX)'
```

with the name of the PDS and member containing DELETE/DEFINE parameters for the OAM Manager deletion control dataset for the storage group being processed. See pages 139 and 148 for a discussion of this requirement.

If normal object selection processing using the OBJCNTL parameter library member is not be enabled, include an entry for file OTIMS120 in the JCL for the first step in the procedure (used to execute program OTIMP100), as follows:

```
//OTIMS120 DD DSN=object.selection.dataset,DISP=SHR
```

where 'object.selection.dataset' is the name of the file containing the object selection entries. This file must be created prior to execution of the procedure. Refer to page 136 for a description of this file.

OAM Manager will dynamically allocate all other disk and tape datasets that are required for execution of the job. Note that jobs to process different storage groups will only differ from each other in the storage group name in the EXEC parameters, and in the OTIMIDCI member name in STEP100 and STEP120.

.OTIMP100 - the object selection utility

The OAM Manager object selection utility (OTIMP100) is executed as the first step of the object management procedure.

Functions

This utility performs the following functions:

- Validates parameters in the OAM Manager parameter library members ENVCNTL, OBJCNTL and STRGROUP. A parameter validation report is written to the SYSPRINT dataset.
- If file OTIMS120 is not present in the JCL used to execute the utility, processes objects in the storage group identified on the EXEC parameter, and, based on parameter values in the OBJCNTL member of the OAM Manager parameter library, selects objects for:

Migration: OAM-owned disk, optical- or tape-resident objects which are to be migrated by OAM Manager. OTIMP100 writes these objects to the Archive Manager database for the storage group being processed. OAM Manager uses the standard Archive Manager batch application program interface for all its Archive Manager database access functions. Selection of objects for migration may be controlled by the number of days since creation (the default), the number of days since management class transition, or the number of days since last reference. Each object selected for migration will be recorded on the OAM Manager deletion control file for the storage group being processed.

Expiration: OAM- and OAM Manager-owned objects which are to be expired. Selection of objects for expiration may be controlled by either the number of days since creation (the default), the number of days since management class transition, or the number of days since last reference. Deletion of expired objects is not performed by this utility - objects selected for expiration are recorded on the OAM Manager deletion control file for subsequent action by the database update utility.

Deletion: Migrated objects which have been staged to disk during retrieval processing, and which are to be deleted from disk. These objects will revert to being Archive Manager-resident once again. Deletion of the staged copy of objects is not performed by this utility - recalled objects selected for deletion are recorded on the OAM Manager deletion control file for subsequent action by the database update utility.

- If file OTIMS120 is present in the JCL used to execute the utility, reads this file sequentially and selects objects for migration, based on entries in the file. Migrated objects will be processed as described above for OBJCNTL selection. Expiration and deletion of objects will not be performed with this mode of execution. Refer to page 136 for a description of file OTIMS120.
- If EXEC parameter 'PRINT=YES' is specified, an object selection report will be written to the SYSPRINT dataset. This will list all objects selected for processing in this run, and the type of processing to be performed for each object.
- An end-of-run control total report will be written to the SYSPRINT dataset. This gives the total number of objects selected for migration, expiration and deletion in this run.

EXEC parameters

OTIMP100 accepts the following EXEC parameters:

```

PARM=( ' storage-group-name , PRINT=YES | NO , RESTART=YES | NO ' ,
        ' TIME=nnnn , NEWTAPE=YES | NO ' ,
        ' SELDISK=YES | NO , SELOPT=YES | NO , SELTAPE=YES | NO ' ,
        ' SELNONPEND=YES | NO , LEVEL=n | 0 , LSRPOOL=nn | 1 ' ,
        ' DATE=YYYY/MM/DD | CREATE , COMMIT=nnnnn ' ,
        ' OAMCOPY=PRIMARY | BACKUP | BACKUP2 ' )

```

- 'storage-group-name' - this is a mandatory positional parameter, and must appear in the first parameter position. It is used to identify the 1-30 character name of the storage group to be processed by the utility during this run. This storage group name must be present in the OAM Manager STRGROUP parameter member.
- 'PRINT=YES|NO' - this is an optional keyword parameter and may appear in any position in the EXEC parameter list after storage-group-name. The default value is 'YES'. It is used to control the production of the object selection report on the SYSPRINT dataset.

'PRINT=YES' requests that the object selection report is to be printed (this is the default).

'PRINT=NO' requests that the object selection report is to be suppressed.

- c. 'RESTART=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'NO'. It is used to indicate whether the current execution of the utility is a normal or restart run.

'RESTART=NO' indicates a normal run (this is the default).

'RESTART=YES' indicates a restart run.

- d. 'TIME=nnnn' - this is an optional keyword parameter which restricts the length of time for which the utility is to execute. 'nnnn' is a 1-4 digit value in the range 0 to 1439 giving the elapsed number of minutes since the start of utility execution after which object selection processing is to be terminated.

When the time interval specified in this parameter has been exceeded, the utility will terminate normally with a condition code of 4. Execution of the object management procedure may then continue normally from the next step (database backup control processing).

A value of 0 for this parameter indicates that no execution time limit is to be implemented. This is the default value.

- e. 'NEWTAPE=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'NO'. It is used to control tape volume usage during object migration processing.

'NEWTAPE=NO' indicates that objects being migrated during execution of the utility are to be added to the end of the last existing tape volume in the Archive Manager database for the storage group being processed.

'NEWTAPE=YES' indicates that a new tape volume is to be used to hold objects migrated during execution of the utility.

- f. 'SELDISK=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'YES'. It is used to control whether disk-resident OAM-owned objects are eligible for selection by the object management utility for migration and expiration processing. The parameter may take the value 'YES' (select disk-resident OAM-owned objects) or 'NO' (ignore disk-resident OAM-owned objects).

- g. 'SELOPT=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'NO'. It is used to control whether optical-resident OAM-owned objects are eligible for selection by the object management utility for migration and expiration processing. The

parameter may take the value 'YES' (select optical-resident OAM-owned objects) or 'NO' (ignore optical-resident OAM-owned objects).

- h. 'SELTAPE=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'NO'. It is used to control whether tape-resident OAM-owned objects are eligible for selection by the object management utility for migration and expiration processing. The parameter may take the value 'YES' (select tape-resident OAM-owned objects) or 'NO' (ignore tape-resident OAM-owned objects).
- i. 'SELNONPEND=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'NO'. If set to 'YES', the object selection utility will consider all entries from the OAM directory table to be eligible for processing by the utility. If set to 'NO', the utility will only consider entries in the directory table whose 'pending action date' is less than or equal to the run date.

A SELNONPEND parameter value of 'NO' may improve performance of the object selection utility and reduce the amount of temporary DB2 disk space required for execution of the utility. However, care should be taken to ensure that pending action dates for objects which are to be processed by the utility are correctly set. This value is set to the current date when an object is first created, and may be updated thereafter in one of the following ways:

- a) by OSMC - controlled by the object's management class definition
 - b) by OAM Manager - controlled by the OBJCNTL parameter library definition for the object's management class
 - c) by OAM - set to current date on reading an object.
- j. 'LEVEL=n|0' – this is an optional keyword parameter which is used to set the storage level of the Archive Manager storage group database in which objects migrated by the utility are to be stored. The value 'n' must be a numeric digit in the range 0 to 7. If this parameter is omitted, a default value of 0 will be used, causing migrated objects to be stored in storage level 0 of the Archive Manager database. Note that this parameter is only effective for use with ASM for S/390 v2.5 or Archive Manager v2.6 or higher. Specification of this parameter with releases of NearArchive will have no effect - storage level 0 will always be used for storage of migrated objects with these earlier releases.
 - k. 'LSRPOOL=nn|1' – this is an optional keyword parameter which is used to establish the VSAM LSR pool to be used for processing of the deletion control file. The value 'nn' must be a 1- or 2-digit numeric value in the range 1-15. If omitted, a default value of 1 is used.

- l. DATE=YYYY/MM/DD | CREATE – this is an optional keyword parameter which is used to specify the archive date to be assigned to objects being written to the Archive Manager database. The parameter can take the value YYYY/MM/DD (where YYYY/MM/DD is a valid date), or the value 'CREATE'. If 'CREATE' is specified, the archive date will be the object creation date from the source object's OAM directory entry. If this parameter is omitted, the system run date will be used as the archive date assigned to migrated objects.
- m. COMMIT=nnnnn - this optional keyword parameter is used to specify the frequency at which Archive Manager commit processing is performed, where 'nnnnn' is a numeric value in the range 0-99999. This parameter is only valid if file OTIMS120 is present in the JCL – a warning message will be issued and a program condition code of 4 will be set if this parameter is specified when OTIMS120 is not present. Processing will then continue normally.

A value of 0 indicates that no commits will be performed. This is the default value, and is the value used if file OTIMS120 is not present in the JCL. A non-zero value indicates that updates will be committed after migrating every 'nnnnn' objects.

The following EXEC parameters should not be specified if file OTIMS120 is present in the JCL used to execute the utility:

SELDISK, SELTAPE, SELOPT, SELNONPEND

If any of these parameters is specified, a warning message will be issued, and a program condition code of 4 will be set. Processing will then continue normally.

- n. OAMCOPY=PRIMARY|BACKUP|BACKUP2 – this optional keyword parameter is used to determine which copy of an optical- or tape-resident object is used when migrating such objects to Archive Manager storage during execution of the utility. If omitted, a default value of 'PRIMARY' is used.

OTIMS120 file format

Sequential file OTIMS120 should be specified in the JCL used to execute the utility if objects to be migrated by the utility are to be explicitly identified, instead of being automatically selected by the utility using the OBJCNTL parameter library member. The file should contain one entry for each object to be migrated by the utility.

File OTIMS120 must be in fixed-blocked format. Each record will be 240 bytes in length, and will have the following format:

Offset	Length	Type	Description
0	2	Char	Request code: '01' – migrate object to Archive Manager storage and delete from source location '02' – migrate object to Archive Manager but do not delete source object
2	44	Char	Source collection name. Name of collection contain object to be migrated
46	44	Char	Source object name. Name of object to be migrated.
90	44	Char	Target collection name. Name of collection to contain object after migration. Blank if no change of collection name.
134	44	Char	Target object name. Name to be assigned to object after migration. Blank if no change of object name.
178	30	Char	Target management class. Name of management class to be assigned to object after migration. Blank if no change of management class.
208	32	-	Reserved for future use.

Condition codes

OTIMP100 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility. A warning message will have been written to the SYSPRINT dataset. The utility has been executed successfully.
- 8 - an error condition has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.
- 12 - a serious error has occurred establishing the runtime environment for the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.

Utility failure and restart considerations

If the utility fails to execute successfully (return code greater than 4), the cause of the error should be identified from the SYSPRINT error report and rectified. Refer to page 228 for a description of the message(s) appearing in the error report.

After correcting the error, the object management procedure should be rerun from the first step (program OTIMP100). The only restart requirement is that the RESTART EXEC parameter for OTIMP100 should be set to 'YES' (the OTIMP120 RESTART parameter should remain set to 'NO').

The utility will reject an attempt to perform a normal run ('RESTART=NO') following unsuccessful execution of the utility for the identified storage group.

Conversely, an attempt to perform a restart run when there has been no prior job failure will be rejected by the utility.

Execution of the utility for other storage groups is not affected by failure of the procedure for one particular storage group.

If file OTIMS120 was present in the JCL used for the failed utility execution, then it must also be present in the JCL used to rerun the utility. During restart processing the program will re-position itself in file OTIMS120 to the record processed prior to the last successful commit processing during the failed job. It will then continue processing sequentially from the next record in the file. This will prevent the need to re-process objects successfully committed during previous failed executions of the procedure.

If file OTIMS120 was not present in the JCL used for the failed utility execution, it must not be present in the JCL used for rerun of the utility. An error condition will be generated if any inconsistency in the specification of OTIMS120 between the failed run and the restart run is detected.

Operator commands

Execution of the utility may be terminated at any point by entering the following command through the system console:

```
(STO)P jobname
```

where 'jobname' is the name of the job used to execute the object management procedure.

The utility will acknowledge receipt of this command via message OTM10050, and perform normal termination processing. All database updates performed by the utility prior to termination will be committed, and the utility will terminate with a condition code of 4.

Execution of the object management procedure may continue normally from the next step (the database backup control step).

OTIMIDCI/OTIMIDCO DD entries

During restart processing OTIMP100 will automatically delete and redefine the deletion control dataset for the storage group being processed, prior to selection of objects from the OAM storage group directory.

To allow user control of this function, the AMS DELETE/DEFINE parameters used by OTIMP100 are supplied to the utility via file OTIMIDCI. This should be a sequential dataset, or a member of a partitioned dataset, with fixed-length 80 byte records. The member DGROUPIX supplied on the OAM Manager sample library may be used for this purpose after amendment. The DEFINE parameters specified here should be identical to those used for initial allocation of the deletion control dataset for the storage group during the OAM Manager product implementation procedure. Note that if the HLQ sub-parameter has been specified for the storage group entry in the STRGROUP parameter library member, then the high-level qualifier specified in this entry should be used to prefix the deletion control filename in the DGROUPIX member.

The AMS print report will be written to file OTIMIDCO. This may be a SYSOUT dataset (as supplied in the sample GPXXMIG job), or a sequential dataset with logical record length of 133 bytes and RECFM=FBA.

The OTIMIDCI and OTIMIDCO DD entries for program OTIMP100 should be identical to those supplied for program OTIMP120.

.OTIMP110 - the database backup control utility

The OAM Manager database backup control utility (OTIMP110) is executed as the second step of the object management procedure, after successful completion of the object selection utility (OTIMP100).

Functions

The database backup control utility performs the following functions:

- Validates parameters in the OAM Manager parameter library members ENVCNTL and STRGROUP. A parameter validation report is written to the SYSPRINT dataset.
- Ensures that backup processing is being performed in the correct sequence in the object management procedure.
- If 'BACKUP=YES' has been specified in the EXEC parameters, invokes the Archive Manager database backup utility OTASP110. This utility will perform the following functions:

- For each tape dataset marked for backup, the utility will construct the name(s) of the backup dataset(s) to be created. This is done by inserting the qualifier 'B0' (for primary backup copies) and 'D0'(for duplex backup copies) after the high level qualifier of the primary dataset name.
- Uncatalogs any existing backup copies of a primary tape dataset. This condition will occur when the last tape volume in an Archive Manager storage group database was partially filled at the end of the previous migration procedure. The next execution of the procedure will continue writing to the partially-used volume until the maximum block count (as specified by the user during database initialization) has been exceeded. This tape volume will be backed up in both executions of the procedure. The first of the backups will be superseded by the second, and will be uncataloged and may be returned to scratch status.
- Creates and catalogs a backup tape dataset, and optionally a duplex backup tape dataset for each primary tape dataset updated or created by the object selection utility OTIMP100.
- A processing report will be written to the SYSPRINT dataset, giving details of all backup tape datasets uncataloged or created during this run.
- If 'BACKUP=NO' has been specified in the EXEC parameters, no tape backup processing will be performed. This option will normally be selected if tape duplexing has been enabled for the Archive Manager database for the storage group being processed, or if additional facilities supplied by the Archive Manager backup utility (e.g. incremental backup) which are not supported by the OAM Manager backup control utility are required. If duplexing has been enabled for the storage group database, a duplex ('C') copy of each primary tape dataset will be automatically created by the object selection utility (OTIMP100) during object migration processing.

Refer to page 196 for a full discussion of OAM Manager database backup and recovery issues.

EXEC parameters

OTIMP110 accepts the following EXEC parameters:

```

PARAM=( 'storage-group-name' ,
        'BACKUP=YES|NO' ,
        'TYPE=FULL|INCREMENTAL|AUTO' ,
        'UNITPRI=xxxxxxxx' ,
        'UNITDUP=xxxxxxxx' ,
        'NODEVCHECK' )

```

- a. 'storage-group-name' is a mandatory positional parameter, and must appear in the first parameter position. It is used to identify the 1-30

character name of the storage group to be processed by the utility during this run. This storage group name must be present in the OAM Manager STRGROUP parameter member. The storage group name specified in this parameter must match that specified in the EXEC parameter for the object selection utility OTIMP100.

- b. 'BACKUP=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'YES'. It is used to indicate whether backup copies of the tape dataset(s) created or updated during object migration should be created.

'BACKUP=YES' indicates that a backup ('B') copy of the tape dataset(s) will be created. A duplex backup ('D') copy will also be created if duplex during backup has been specified during the definition of the Archive Manager database.

'BACKUP=NO' indicates that backup copies of the tape datasets will not be created. This option will normally be used if tape duplexing has been enabled for the Archive Manager database for the storage group being processed (refer to the Archive Manager User Manual for a description of the Archive Manager tape duplexing facility).

- c. TYPE=FULL|INCREMENTAL|AUTO - this is an optional keyword parameter which is used to control backup execution of the utility. The following operands may be specified:

FULL The utility is to execute in full-volume backup mode. Full-volume backups will be taken of all primary tape datasets selected for backup processing. This is the default value.

INCREMENTAL The utility is to execute in incremental backup mode. A primary and (optionally) duplex incremental backup dataset will be created for each primary tape dataset selected for backup processing.

AUTO The utility is to execute in automatic backup mode. Full-volume backups will be taken of all primary tape datasets selected for backup processing which have been filled to capacity. Incremental backups will be taken of selected primary tape datasets which have not yet been filled to capacity.

If no 'TYPE' parameter is specified, a default value of 'TYPE=FULL' is used.

- d. UNITPRI - this optional keyword parameter is used to identify the unit name to be used when allocating a new primary ('I') copy incremental backup dataset. The operand should be a valid 1-8 character device type or esoteric name, as defined to MVS. This parameter is only permitted when 'TYPE= INCREMENTAL' has also been specified.

If omitted, the 'B' copy unit name as specified in the Archive Manager database definition for the storage group being processed by the utility will be used for allocation of the primary copy incremental backup dataset. Refer to the Archive Manager User Guide for a description of this setting.

- e. UNITDUP - this optional keyword parameter is used to identify the unit name to be used when allocating a new duplex ('J') copy incremental backup dataset. The operand should be a valid 1-8 character device type or esoteric name, as defined to MVS. This parameter is only permitted when 'TYPE= INCREMENTAL' has also been specified.

If omitted, the 'D' copy unit name as specified in the Archive Manager database definition for the storage group being processed by the utility will be used for allocation of the primary copy incremental backup dataset. Refer to the Archive Manager User Guide for a description of this setting.

- f. NODEVCHECK - this is an optional keyword parameter which is used to control processing when a volume capacity mismatch has been detected between the primary tape volume and a backup tape volume, during full-volume backup processing.

If this parameter is present, the utility will issue a warning message and generate a condition code of 4, but will continue with backup processing.

If this parameter is omitted, standard capacity checking will be performed during full-volume backup processing. Any mismatch will cause the utility to terminate with condition code 12.

Condition codes

OTIMP110 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility. A warning message will have been written to the

SYSPRINT dataset. The utility has been executed successfully.

- 8 - an error condition has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.
- 12 - a serious error has occurred establishing the runtime environment for the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.

Utility failure and restart considerations

If the database backup utility fails to complete successfully (return code greater than 4), consult the error report in the SYSPRINT dataset to identify the cause of the problem. Refer to page 239 for a description of the message(s) appearing in the error report.

After correcting the error, the utility may be rerun. There are no special restart requirements. Any backup tape datasets created during the failing run will be automatically uncataloged by the utility and recreated during the rerun.

In general, the object selection utility (OTIMP100) will not need to be rerun - processing of the migration and execution procedure may therefore be restarted at the OTIMP110 step. However, if the failure was due to a media problem with the primary tape dataset, it may be necessary to rerun OTIMP100 in order to recreate the dataset using a different tape cartridge volume. In this case, the OAM Manager deletion control dataset for the storage group being processed must be deleted and re-defined, and the Archive Manager database primary index and space management datasets should be restored to their status prior to the start of the failed object management procedure (these datasets are called `hlq1.xxxxxxxx.yyyyyyy.INDEX` and `hlq2.SPACEML0`, where 'hlq1' and 'yyyyyy' are the values of the HLQ and INDEXID sub-parameters in the STRGROUP parameter library entry for the storage group, 'xxxxxxx' is the name qualifier for the DB2 storage group database, and hlq2 is the high-level qualifier specified in the definition of the Archive Manager database for the storage group.

The object management procedure may then be run normally. OTIMP100 will recreate the primary tape datasets (the previous copies will be automatically uncataloged by Archive Manager), and OTIMP110 may then be executed as normal in order to backup the new primary tape dataset volumes. Again there are no special requirements for rerunning OTIMP110 in this manner.

If a duplex tape ('C') copy was created during execution of OTIMP100, this may be used to re-create the primary tape dataset, using the Archive Manager database recovery utility OTASP130. Refer to the Archive Manager User Manual for information about this utility.

Once OTIMP110 has executed successfully, it will not be possible to rerun this step until after the next successful execution of the object selection utility OTIMP100.

In addition, it will not be possible to run OTIMP100 (normal or restart run) once the tape backup control utility has been run successfully, until after successful completion of the database update utility OTIMP120.

OAM Manager will reject any attempt to run either utility in this circumstance.

.OTIMP120 - the database update utility

The OAM Manager database update utility (OTIMP120) is executed as the final step in the object management procedure, after successful completion of the tape database backup control utility (OTIMP110).

Functions

After successfully running the tape database backup control utility (OTIMP110) to optionally create backup copies of all objects migrated to tape by the object selection utility (OTIMP100), OTIMP120 is executed as the final step in the object management procedure. It performs all the OAM database updates required to complete the migration, expiration and deletion processes.

OTIMP120 performs the following functions:

- Validates parameters in the OAM Manager parameter library members ENVCNTL and STRGROUP. A parameter validation report is written to the SYSPRINT dataset.
- Processes the deletion control file produced by OTIMP100. The three types of selection entries in this dataset are treated as follows:
 - MIGRATE - The OAM directory entry for the selected object is updated to indicate that the object has been migrated to Archive Manager. Object rows are deleted from the appropriate OAM object storage table if P120DELETE=YES has been specified in the ENVCNTL member of the OAM Manager parameter library.
 - EXPIRE - For disk objects, the object rows are deleted from the OAM object storage table, if P120DELETE=YES has been specified in the ENVCNTL member of the OAM Manager parameter library. For Archive Manager objects, the object

is deleted from the Archive Manager database. In both cases, the OAM directory entry for the object is deleted.

DELETE - The OAM directory entry for the selected object is updated to indicate that the object is once again resident in Archive Manager only. Object rows are deleted from the appropriate OAM object storage table if 'P120DELETE=YES' has been specified in the ENVCNTL member of the OAM Manager parameter library.

- If the collection name and/or object name of the migrated objects has been modified during migration (via the presence of file OTIMS120 in the first step in the object management procedure), a new entry will be created in the OAM storage group directory table for the object's storage group (as identified in the EXEC parameters). This directory entry will contain all the information from the source directory entry, with modifications to indicate that the object has been migrated to Archive Manager, and with optional changes to the following fields, if identified in the OTIMS120 record:
 - Collection name identifier
 - Object name
 - Management class identifier
- If EXEC parameter 'PRINT=YES' is specified, an object processing report will be written to the SYSPRINT dataset. This will list all objects processed in this run, and the type of processing performed for each object.
- An end-of-run control total report will be written to the SYSPRINT dataset. This gives the total number of objects processed for migration, expiration and deletion in this run. If the total number of objects processed in each category differs from the numbers selected by OTIMP100, an error message is issued and the utility will terminate with condition code 8.

EXEC parameters

OTIMP120 accepts the following EXEC parameters:

```
PARM= 'storage-group-name( , PRINT=YES | NO , RESTART=YES | NO ,  
      DELETEWARN=YES | NO ) '
```

- a. 'storage-group-name' - this is a mandatory positional parameter, and must appear in the first parameter position. It is used to identify the 1-30 character name of the storage group to be processed by the utility during this run. This storage group name must be present in the OAM Manager STRGROUP parameter member. The storage group name specified in this parameter must match that specified in the corresponding EXEC

parameters for the object selection utility OTIMP100 and the database backup control utility OTIMP110.

- b. 'PRINT=YES|NO' - this is an optional keyword parameter and may appear in any position in the EXEC parameter list after storage-group-name. The default value is 'YES'. It is used to control the production of the object processing report on the SYSPRINT dataset.

'PRINT=YES' requests that the object processing report is to be printed (this is the default).

'PRINT=NO' requests that the object processing report is to be suppressed.

- c. 'RESTART=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'NO'. It is used to indicate whether the current execution of the utility is a normal or restart run.

'RESTART=NO' indicates a normal run (this is the default).

'RESTART=YES' indicates a restart run.

- d. 'DELETEWARN=YES|NO' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'NO'. It is used to control processing of the utility when a 'not found' condition is received when attempting to delete a row from a DB2 table.

'DELETEWARN=NO'. This is the default value. If OTIMP120 gets a 'not found' condition when attempting to delete a row from a DB2 table, then an error condition will be generated, and the utility will terminate with a condition code 8.

'DELETEWARN=YES'. If OTIMP120 gets a 'not found' condition in the above circumstances, and 'RESTART=YES' is also specified, then a warning message will be issued to the utility report, but execution of the utility will continue normally. Warning processing will be disabled when the first successful delete has been performed. Any 'not found' conditions detected thereafter will generate an error condition, as for 'DELETEWARN=NO'. If 'RESTART=YES' is not specified for this execution of the utility, then processing will be performed as for 'DELETEWARN=NO' above. A condition code of 4 will be generated on completion of the utility if any warning messages have been issued in the above circumstances.

ENVCNTL parameters

OTIMP120 makes exclusive use of the following two parameters in the ENVCNTL member of the OAM Manager parameter library:

P120COMMITFREQ - this parameter specifies the frequency at which DB2 commit processing is performed during execution of the utility. The parameter value can be in the range 0-99999. A value of 0 indicates that no commit processing is to be performed. A non-zero value ('n') indicates that DB2 commit processing is to be performed after every 'n' objects have been processed.

The commit frequency is of relevance during job failure and restart processing. An infrequent level of commit processing (P120COMMITFREQ high) may mean that a substantial amount of backout processing will be required in the event of failure of the utility, and that a greater amount of processing will be required after restarting the utility. (OTIMP120 will automatically restart from the last commit point during restart processing).

Frequent commit processing (P120COMMIT- FREQ low) will reduce the amount of processing required for backout and restart after job failure, but will increase DB2 logging overhead.

P120DELETE - this parameter controls whether rows containing data for migrated, expired or recalled objects are to be deleted from the appropriate OAM object storage table. It is provided in order to improve utility performance by reducing DB2 logging activity.

The default value of 'YES' should be used in normal circumstances. A value of 'NO' should only be used if object rows are to be deleted by some other independent means (eg) reinitializing the tablespace which contains the object storage table.

Careful thought should be given before using a value of 'NO' for this parameter. Failure to delete object storage table rows after processing an object with this utility will cause errors when attempting to recall migrated objects.

OTIMIDCI/OTIMIDCO DD entries

After successful execution, OTIMP120 will automatically delete and redefine the OAM Manager deletion control dataset for the storage group being processed. At this point, all changes processed during execution of the object management procedure are committed, and no automated rerun processing will be allowed.

To allow user control of this function, the AMS DELETE/DEFINE parameters used by OTIMP120 are supplied to the utility via file OTIMIDCI. This should be a sequential dataset, or a member of a partitioned dataset, with fixed-length 80 byte records. The member DGROUXX supplied on the OAM Manager sample library may be used for this purpose after amendment. The DEFINE parameters specified here should be identical to those used for initial allocation of the deletion control dataset for the storage group during the OAM Manager product implementation procedure. Note that if the HLQ sub-parameter has been specified for the storage group entry in the STRGROUP parameter library member, then the high-level qualifier specified in this entry should be used to prefix the deletion control filename in the DGROUXX member.

The AMS print report will be written to file OTIMIDCO. This may be a SYSOUT dataset (as supplied in the sample GPXXMIG job), or a sequential dataset with logical record length of 133 bytes and RECFM=FBA.

The OTIMIDCI and OTIMIDCO DD entries for program OTIMP120 should be identical to those supplied for program OTIMP100.

Condition codes

OTIMP120 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility. A warning message will have been written to the SYSPRINT dataset. The utility has been executed successfully.
- 8 - an error condition has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.
- 12 - a serious error has occurred establishing the runtime environment for the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.

Utility failure and restart considerations

If the database update utility fails to complete successfully (return code greater than 4), consult the error report in the SYSPRINT dataset to identify the cause of the problem. Refer to page 244 for a description of the message(s) appearing in the error report.

After correcting the error, the utility may be rerun. The only restart requirement is that the 'RESTART' EXEC parameter for OTIMP120 should be set to 'YES'. There is no need to rerun the first two steps of the object management procedure (OTIMP100 and OTIMP110); OAM Manager will actually reject execution of these utilities in this circumstance.

OTIMP120 will automatically restart from the point where the last commit processing was performed during the failed run (as controlled by the ENVCTL parameter 'P120COMMITFREQ'). After failure of the utility, the object management procedure will have been completed for all objects processed up to the last commit point; migrated objects in this category will now be recalled from Archive Manager on next access (whether this is done before or after rerunning the utility). These objects will not be reprocessed during rerun of the utility.

The utility will reject an attempt to perform a normal run ('RESTART=NO') following unsuccessful execution of the utility for the identified storage group.

Conversely, an attempt to perform a restart run when there has been no prior job failure will be rejected by the utility.

In addition, OAM Manager will reject an attempt to run the utility if either of the preceding OTIMP100 or OTIMP110 steps has not completed successfully.

.Restart requirements summary

This section summarizes requirements for restarting the object management procedure, after failure of one of its constituent utilities.

If any step in the object management job should not complete successfully, the job should be restarted as follows, after correcting the error which caused the failure:

(a) OTIMP100 does not complete successfully.

Rerun the entire job, specifying the 'RESTART=YES' EXEC parameter for OTIMP100. All other EXEC parameters should remain unchanged. No other recovery action is required.

(b) OTIMP110 does not complete successfully.

If failure is due to the inability to read an Archive Manager tape volume created in the previous step, the job must be rerun from the first step.

Specify the 'RESTART=YES' EXEC parameter for OTIMP100. No other recovery action is required.

In the above circumstances, if tape duplexing has been enabled for the Archive Manager database being processed, then the primary ('A') copy dataset should be re-created from the duplex ('C') copy, using the standard Archive Manager database recovery utility OTASP130. Refer to the Archive Manager User Manual for details regarding execution of the Archive Manager database recovery procedure. After re-creating the primary copy, restart the job from the OTIMP110 job step.

For any other cause of failure, restart the job from the OTIMP110 job step. No other recovery action is required.

(c) OTIMP120 does not complete successfully.

Restart the job at the OTIMP120 job step, specifying the 'RESTART=YES' EXEC parameter for OTIMP120. No other recovery action is required. OTIMP120 will continue processing from the last commit point (as specified via the P120COMMITFREQ parameter in the ENVCNTL parameter library member).

If required, the object management process can be interrupted at any point (by canceling the job), and restarted using the above guidelines.

Note that there is little to gain by interrupting the procedure in the first step (OTIMP100), as this will require the entire job to be rerun.

However, interrupting the procedure in the second or third steps will only require the job to be restarted from the step which was in progress at the time of the interruption.

.User exits

OAM Manager provides exit points during the object management selection process (in utility OTIMP100) to allow users to override OAM Manager's selection of objects for migration, expiry or deletion from disk.

The following exits are provided:

Exit #01 - invoked immediately prior to selecting an object for migration from OAM to Archive Manager.

Exit #02 - invoked immediately prior to selecting an object (OAM or Archive Manager-resident) for expiry.

Exit #03 - invoked immediately prior to selecting a recalled object for deletion from disk.

Each exit will allow the user exit routine to specify that the identified object should be ignored for the type of processing selected by OAM Manager.

Enabling user exit processing

To enable any of the above user exits, user module OTIMUXnn must be available for loading by OAM Manager, via the job-pack, link-pack or system linklist concatenations (where 'nn' is the exit number as described above). Dummy modules for each of the user exits are supplied on the OAM Manager distribution load library. These should be replaced/renamed when a user exit routine is to be enabled.

User exit routines may be written in any language. A 192- byte parameter block is used to communicate between OAM Manager and the user exit routine. This is passed as a call parameter area, and may be accessed from the user exit routine using the standard call parameter linkage procedures appropriate to the language used to develop the exit routine.

A 2-byte return code field in the parameter block is set by the user exit routine prior to returning control to OAM Manager to identify the action that should be taken by OAM Manager for the selected object.

Parameter block specification

The parameter block used for communication between OAM Manager and a user exit routine is 192 bytes in length and has the following format:

Offset	Length	Type	Field
0	2	char	User exit number.
2	2	char	Return code. '00' - continue processing selected object as identified. '08' - ignore selected object for identified processing.
4	4	bin	Collection name identifier.
8	44	char	Collection name (with trailing spaces if necessary).
52	44	char	Object name (with trailing spaces if necessary).
96	2	bin	Management class identifier.
98	30	char	Management class name (with trailing spaces if necessary).
128	4	bin	Days since object was last referenced.

Offset	Length	Type	Field
132	4	bin	Days since object was created.
136	4	bin	Object size(bytes).
140	1	char	Object location flag: 'D' - disk copy ' ' - no disk copy Will contain spaces if file OTIMS120 is present in the JCL used to execute program OTIMP100.
141	1	-	Unused.
142	6	char	Active volume serial number for migrated object: blank - no migrated copy exists non blank - object has been migrated Will contain spaces if file OTIMS120 is present in the JCL used to execute program OTIMP100.
148	4	bin	Days since object's current management class was assigned. Low-values if file OTIMS120 is present in the JCL used to execute program OTIMP100.
152	2	bin	Storage class identifier.
154	4	-	Unused.
156	4	bin	Address of buffer containing the contents of the object selected for migration (low-values if file OTIMS120 is not present in the JCL used to execute program OTIMP100).
160	32	-	Unused.

The object location flag and storage class identifier fields in combination may be used to identify the status of the selected objects on entry to the exit routine, as follows:

<u>Loc Flag</u>	<u>Storage class id</u>	<u>Status</u>
blank	not = 'tapeclass'	Non-migrated object on OAM optical storage
blank	= 'tapeclass'	Migrated object in Archive Manager storage only.
D	not = 'tapeclass'	Non-migrated object on OAM disk storage
D	= 'tapeclass'	Migrated object with staged copy of retrieved object on disk.
T	not = 'tapeclass'	Non-migrated object on OAM tape storage
T	= 'tapeclass'	Invalid combination

'tapeclass' in the above table is used to represent the identifier of the storage class specified (or defaulted) in the TAPECLASS parameter of the ENVCTL parameter library member.

Result of user exit processing

On receiving control back from the user exit routine, OAM Manager will use the return code set in the exit parameter block to control processing. Return codes may be set as follows:

00 - Continue processing selected object as identified.

08 - Ignore selected object for identified processing.

Any other value - continue processing selected object as identified.

A user exit will receive control for each object which has been selected for the appropriate type of processing.

Note that suppressing selection of an object for a particular type of processing may cause that object to then be selected for another type of processing.

The following hierarchy of selection exists within OAM Manager for selecting an object for processing:

1. Select for expiration (Archive Manager or OAM resident)
if not selected
2. Select for migration from OAM (non-migrated object)
or
3. Select for deletion of staged object from disk (staged recalled object).

Suppression of object selection for criterion 1 (by user exit #02) may cause the same object to be selected for criterion 2 or 3. Users should therefore be aware that it is possible for one object to be processed by more than one user exit routine during execution of the OAM Manager object selection utility.

.OAM Manager and OAM optical and tape storage

Implementation of OAM Manager for migration and retrieval of OAM objects which have been migrated to Archive Manager will not prevent existing or planned access to objects which have been or will be migrated from disk to optical or tape storage using the OAM Storage Management Component (OSMC). OAM Manager will pass any OSREQ request for retrieval of an object from OAM optical or tape storage to OAM, in an identical manner to that used for disk-resident objects. Retrieval from optical or tape storage will then be performed by OSMC as normal.

OSMC will be unable to manage Archive Manager resident objects during its normal storage management cycle. If OSMC storage management cycles are used to manage OAM disk, optical or tape-resident objects, the following actions should be followed in order to prevent OSMC attempting to manage OAM Manager-owned objects:

- Assign dedicated management classes during creation of all objects which are designated for eventual migration to tape. These management classes should not be assigned to objects which are to be managed by OSMC.
- Define these management classes (via ISMF) such that there will be no class-transition or expiration controls for associated objects. OSMC will only attempt to change an object's status after such an event has occurred. Suppressing class-transition and expiration will prevent OSMC from attempting to manage an Archive Manager-resident object.
- Use OAM Manager to manage all objects with these dedicated management classes, via the OAM Manager object management procedure. Use the OBJCNTL member of the OAM Manager parameter library to control the object management process.
- Dedicated storage groups are not required for objects which are to be managed by OAM Manager.

From the above points, it can be seen that when implementing an Archive Manager storage strategy for OAM objects using OAM Manager, it is advisable to implement a new set of management classes for objects which are to be migrated to Archive Manager. This will prevent any conflict with management of OAM optical or tape-resident objects (existing or planned), which should be performed using OSMC as for a standard OAM implementation.

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A number of batch utility programs are supplied with OAM Manager, for provision of a range of facilities for supporting the OAM Manager operational environment, and for extending functional capabilities supplied with other components of the product.

These utilities consist of:

1. **OTIMP010** - the OAM directory regression utility.

This utility is used to convert an OAM directory which has been migrated for use with V3.0 of OAM Manager back into a format which is capable of being processed by V2.1 of OAM Manager.

2. **OTIMP020** - the OAM directory conversion utility.

This utility is required during the upgrade of a NearOAM V2.1 system to OAM Manager V3.0. It processes the OAM directory database for a storage group and converts directory entries to allow correct processing by OAM Manager V3.0.

3. **OTIMP130** - the OAM Manager object recovery utility.

The OAM Manager object recovery utility is used to recover unmigrated objects from backup copies which have been created in Archive Manager, after loss of one or more objects from a primary OAM storage location.

4. **OTIMP255** - the OAM Manager CICS pre-fetch utility.

The OAM Manager CICS pre-fetch utility is invoked from a CICS program in order to stage a migrated object back to OAM disk storage, prior to a retrieval request being issued for that object.

5. **OTIMP35x** - the OAM Manager batch pre-fetch utility.

The OAM Manager batch pre-fetch utility is invoked from a batch program in order to stage one or more migrated objects back to OAM disk storage. This is intended to eliminate tape access requirements for subsequent retrieval requests for these objects.

.OTIMP010 - the OAM directory regression utility

OTIMP010 is used to regress the DB2 directory table for an OAM storage group database which has been converted for use with OAM Manager V3.0. Regression of the directory table is required to enable NearOAM V2.1 to successfully access OAM objects which have been migrated to OAM Manager.

Note that no regression is required to enable NearOAM V2.2 or V2.3 to process a directory table which has been converted for use with OAM Manager V3.0.

Functions

The OAM directory regression utility performs the following functions:

- Accesses all rows in the DB2 directory table for an OAM storage group database which have a storage class identifier equal to that of the storage class specified (or defaulted) in the TAPECLASS parameter of the ENVCNTL parameter library member.
- Each row accessed above will be updated as follows:
- the storage class identifier will be modified to that of the storage class specified (or defaulted) in the DISKCLASS parameter of the ENVCNTL parameter library member.
- field ODLSLOC will be updated with the value 'OTAS00'.
- The utility will optionally commit all DB2 updates during execution, at a frequency set by the user via an EXEC parameter. Restart of the utility after a failure will be automatically performed from the last successful commit point.
- A processing report will be written to the SYSPRINT dataset, giving a detailed or summary report of directory entries updated during this run.

On successful completion of processing, the OAM storage group processed by the utility may now be accessed for processing by NearOAM V2.1.

EXEC parameters

OTIMP010 accepts the following EXEC parameters:

```
PARM=( 'storage-group-name' ,  
       'PRINT=SUMMARY|DETAIL, COMMIT=nnnnnnn' )
```

- a. 'storage-group-name' is a mandatory positional parameter, and must appear in the first parameter position. It is used to identify the 1-30 character name of the storage group to be processed by the utility during this run. This storage group name must be present in the OAM Manager STRGROUP parameter member.
- b. 'PRINT=SUMMARY|DETAIL' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'SUMMARY'. It is used to control production of the object processing report by the utility.

The object processing report identifies all object directory entries which have been updated during execution of the utility.

'PRINT=SUMMARY' indicates that the object processing report is not to be produced.

'PRINT=DETAIL' indicates that the object processing report is to be produced.

The utility will always produce the following additional reports, irrespective of the setting of the 'PRINT' parameter:

- a parameter validation and summary report.
- an end-of-run summary report.

- c. 'COMMIT=nnnnnnn' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 0. It is used to control the frequency of DB2 commit processing during execution of the utility, where 'nnnnnnn' is a 1-7 digit numeric value in the range 0 to 9999999.

The directory regression utility will automatically commit all DB2 updates after each 'nnnnnnn' selected rows have been processed. A value of 0 for this parameter indicates that no commit processing is to be performed during execution of the utility. All DB2 updates are automatically committed at successful end of processing, irrespective of the setting of this parameter.

Restart of the utility after abnormal termination will automatically start at the last successful commit point (or beginning of run if COMMIT=0 was specified or defaulted).

PARMLIB requirements

Prior to execution of the utility, the following ENVCNTL parameter library entries should be correctly specified:

TAPECLASS This parameter should be set (or defaulted) to the value of the storage class used when migrating objects to Archive Manager using OAM Manager V3.0. A default value of NEARTAPE is used for this parameter.

DISKCLASS This parameter should be set (or defaulted) to the storage class assigned to objects on initial storage on OAM disk. A default value of DB2DASD is used for this parameter.

JCL requirements

The following JCL may be used to execute the utility:

```
//*  
//STEP010 EXEC PGM=OTIMP010,REGION=4096K,  
//          PARM=('storage-group-name',  
//              'PRINT=DETAIL|SUMMARY',  
//              'COMMIT=nnnnnnn')  
//*  
//STEPLIB  DD DSN=OAM.Manager.load.library,DISP=SHR  
//          DD DSN=DB2.runtime.library,DISP=SHR  
//*  
//OTIMS100 DD DSN=OAM.Manager.parameter.library,DISP=SHR  
//SYSPRINT DD SYSOUT=*  
//*
```

DD entries should be specified as follows:

STEPLIB: Enter the names of the OAM Manager product load libraries and the DB2 runtime execution library.

OTIMS100: Enter the name of the OAM Manager parameter library.

SYSPRINT: This entry is used for all print reports created during utility execution.

Condition codes

OTIMP010 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility. A warning message will have been written to the

SYSPRINT dataset. The utility has been executed successfully.

- 8 - an error condition has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has continued.
- 12 - a serious error has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.

Utility failure and restart considerations

If the directory regression utility fails to complete successfully (return code greater than 8), consult the error report in the SYSPRINT dataset to identify the cause of the problem. Refer to page 205 for a description of the message(s) appearing in the error report.

After correcting the error, the utility may be rerun. There are no special restart requirements. The utility will automatically restart processing from the last successful commit point during the failed execution. If no explicit commit processing was performed during that execution (COMMIT=0) processing will restart from the beginning of the run.

.OTIMP020 - the OAM directory conversion utility

OTIMP020 is used to convert a DB2 directory table for an OAM storage group database which has been processed by NearOAM V2.1 into a format which may be processed by OAM Manager V3.0. Conversion of the directory table is required to enable V3.0 of the product to successfully access OAM objects which have been migrated to OAM Manager. This utility should be executed during product release upgrade processing (see page 57).

Note that no directory conversion needs to be performed when upgrading from NearOAM V2.2 or V2.3 to OAM Manager V3.0.

Functions

The OAM directory conversion utility performs the following functions:

- Accesses all rows in the DB2 directory table for an OAM storage group database which have field ODLLOC set to the value 'OTAS00'. This entry was used with NearOAM V2.1 to indicate an object which had been migrated to Archive Manager.

- Each row accessed above will be updated as follows:
 - * the storage class identifier will be modified to that of the storage class specified (or defaulted) in the TAPECLASS parameter of the ENVCNTL parameter library member.
 - * field ODLSLOC will be set to spaces.

- The utility will optionally commit all DB2 updates during execution, at a frequency set by the user via an EXEC parameter. Restart of the utility after a failure will be automatically performed from the last successful commit point.

- A processing report will be written to the SYSPRINT dataset, giving a detailed or summary report of directory entries updated during this run.

On successful completion of processing, the OAM storage group processed by the utility may now be accessed for processing by V3.0 of OAM Manager.

EXEC parameters

OTIMP020 accepts the following EXEC parameters:

```
PARM=( 'storage-group-name' ,
        'PRINT=SUMMARY|DETAIL, COMMIT=nnnnnnnn' )
```

- a. 'storage-group-name' is a mandatory positional parameter, and must appear in the first parameter position. It is used to identify the 1-30 character name of the storage group to be processed by the utility during this run. This storage group name must be present in the OAM Manager STRGROUP parameter member.
- b. 'PRINT=SUMMARY|DETAIL' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'SUMMARY'. It is used to control production of the object processing report by the utility.

The object processing report identifies all objects directory entries which have been updated during execution of the utility.

'PRINT=SUMMARY' indicates that the object processing report is not to be produced.

'PRINT=DETAIL' indicates that the object processing report is to be produced.

The utility will always produce the following additional reports, irrespective of the setting of the 'PRINT' parameter:

- a parameter validation and summary report.
- an end-of-run summary report.

- c. 'COMMIT=nnnnnnn' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 0. It is used to control the frequency of DB2 commit processing during execution of the utility, where 'nnnnnnn' is a 1-7 digit numeric value in the range 0 to 9999999.

The directory regression utility will automatically commit all DB2 updates after each 'nnnnnnn' selected rows have been processed. A value of 0 for this parameter indicates that no commit processing is to be performed during execution of the utility. All DB2 updates are automatically committed at successful end of processing, irrespective of the setting of this parameter.

Restart of the utility after abnormal termination will automatically start at the last successful commit point (or beginning of run if COMMIT=0 was specified or defaulted).

PARMLIB requirements

Prior to execution of the utility, the following ENVCNTL parameter library entries should be correctly specified:

TAPECLASS This parameter should be set (or defaulted) to the value of the storage class to be used when migrating objects to Archive Manager using OAM Manager V3.0. A default value of NEARTAPE is used for this parameter.

JCL requirements

The following JCL may be used to execute the utility:

```
//*
//STEP010 EXEC PGM=OTIMP020,REGION=4096K,
//          PARM=('storage-group-name',
//              'PRINT=DETAIL|SUMMARY',
//              'COMMIT=nnnnnnn')
//*
//STEPLIB DD DSN=OAM.Manager.load.library,DISP=SHR
//          DD DSN=DB2.runtime.library,DISP=SHR
//*
//OTIMS100 DD DSN=OAM.Manager.parameter.library,DISP=SHR
//SYSPRINT DD SYSOUT=*
//*
```

DD entries should be specified as follows:

STEPLIB: Enter the names of the OAM Manager product load libraries and the DB2 runtime execution library.

OTIMS100: Enter the name of the OAM Manager parameter library.

SYSPRINT: This entry is used for all print reports created during utility execution.

Condition codes

OTIMP020 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility. A warning message will have been written to the SYSPRINT dataset. The utility has been executed successfully.
- 8 - an error condition has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has continued.
- 12 - a serious error has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.

Utility failure and restart considerations

If the directory conversion utility fails to complete successfully (return code greater than 8), consult the error report in the SYSPRINT dataset to identify the cause of the problem. Refer to chapter 210 for a description of the message(s) appearing in the error report.

After correcting the error, the utility may be rerun. There are no special restart requirements. The utility will automatically restart processing from the last successful commit point during the failed execution. If no explicit commit processing was performed during that execution (COMMIT=0) processing will restart from the beginning of the run.

.OTIMP030 - the object conversion utility

The OAM Manager object conversion utility (OTIMP030) is used to convert objects from Lifecycle Director to native OAM storage (ie) remove migrated objects from Lifecycle Director storage and re-instate them in native OAM storage on DB2 disk. Execution of this utility will in effect “unmigrate” objects which had previously been migrated from OAM to Lifecycle Director. The utility may be used as part of a procedure to remove Lifecycle Director from the OAM object storage hierarchy.

Functions

The object recovery utility performs the following functions:

- Validates a series of EXEC parameters which control execution of the utility.
- Validates parameters in the OAM Manager parameter library members ENVCNTL and STRGROUP. A parameter validation report is written to the SYSPRINT dataset.
- Processes the DB2 directory table of the OAM storage group identified in the utility execution parameters, and automatically identifies all unmigrated objects which are eligible for conversion, based on the EXEC parameters which have been supplied or defaulted. A list of eligible objects will be written to a work file.
- The list of objects to be converted will be sorted into the most efficient order for conversion, by block id within tape sequence number within storage level. The sorted file will be processed sequentially and each selected object will be converted to OAM storage via a call to the OAM Manager pre-fetch utility (OTIMP350). This will cause the object to be retrieved from Lifecycle Director storage, inserted in the DB2 4k or 32k object storage table for the storage group being processed, and then deleted from Lifecycle Director storage.
- A processing report will be written to the SYSPRINT dataset, giving details of all objects converted to native OAM storage during the run.

EXEC parameters

OTIMP030 accepts the following EXEC parameters:

```
PARM=( 'storage-group-name, PRINT=SUMMARY | DETAIL ',  
        'LEVEL=n | 0, STARTSEQ=nnnnn | 1, ENDSEQ=nnnnn | 65535 ',  
        'BATCH=nnnnn | 10000, TIME=nnnn | 0 ' )
```

- a. 'storage-group-name' is a mandatory positional parameter, and must appear in the first parameter position. It is used to identify the 1-30 character name of the storage group to be processed by the utility during this run. This storage group name must be present in the OAM Manager STRGROUP parameter member.
- b. 'PRINT=SUMMARY|DETAIL' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'SUMMARY'. It is used to control production of the object processing report by the utility. The object processing report identifies all objects which have been converted during execution of the utility.

'PRINT=SUMMARY' indicates that the object processing report is not to be produced.

'PRINT=DETAIL' indicates that the object processing report is to be produced.

The utility will always produce the following additional reports, irrespective of the setting of the 'PRINT' parameter:

- a parameter validation and summary report.
 - an end-of-run summary report.
- c. 'LEVEL=n|0' – this is an optional keyword parameter which specifies the storage level in the Lifecycle Director database which contains the objects to be converted during execution of the utility. If omitted, a default value of 0 is used.
 - d. 'STARTSEQ=nnnnn|1' – this is an optional keyword parameter which specifies the sequence number (maximum 5 digits, in the range 1-65535) of the first tape dataset in the range of tapes containing the objects to be converted during execution of the utility. If omitted, a default value of 1 is used (representing the beginning of the storage level). This parameter is used in conjunction with the ENDSEQ parameter to control the range of tapes to be processed by the utility.
 - e. 'ENDSEQ=nnnnn|65535' – this is an optional keyword parameter which specifies the sequence number (maximum 5 digits, in the range 1-65535) of the last tape dataset in the range of tapes containing the objects to be converted during execution of the utility. If omitted, a default value of

65535 is used (representing the end of the storage level). This parameter is used in conjunction with the STARTSEQ parameter to control the range of tapes to be processed by the utility.

- f. 'BATCH=nnnnn|10000' - this is an optional keyword parameter which is used to control the number of objects which are processed in a single batch during execution of the utility, where 'nnnnn' is a 1-5 digit numeric value in the range 1 to 99999. If omitted, a default value of 10000 is used.

Objects to be converted will be batched in the size specified (or defaulted) in this parameter and each batch passed to the OAM Manager pre-fetch utility OTIMP350 for conversion from Lifecycle Director to OAM storage. All updates will be committed after successfully processing each batch. Restart of a failed run will start automatically from the last commit point. Varying the batch size will allow the frequency of commit processing to be modified, which will enable control of the amount of re-processing of objects required when restarting a failed run.

- g. 'TIME=nnnn|0' – this is an optional keyword parameter which specifies the maximum length of time (in minutes) for which the utility is to execute, where 'nnnn' is a 1-4 digit numeric value in the range 0 to 1439. When this time limit has been exceeded, the utility will commit all updates and terminate with a condition code 4. Restart of the utility will start processing from that point forward. The default value of 0 indicates that there is no time limit on utility execution.

JCL requirements

The following JCL may be used to execute the utility:

```

//*
//STEP030 EXEC PGM=OTIMP030,REGION=0M,
//          PARM=('storage-group-name',
//              'PRINT=DETAIL|SUMMARY',
//              'LEVEL=n|0',
//              'STARTSEQ=nnnnn|1',
//              'ENDSEQ=nnnnn|65535',
//              'BATCH=nnnnn|10000',
//              'TIME=nnnn|0')
//*
//STEPLIB DD DSN=OAM.Manager.load.library,DISP=SHR
//          DD DSN=Archive.Manager.load.library,DISP=SHR
//          DD DSN=DB2.runtime.library,DISP=SHR
//*
//OTIMS100 DD DSN=OAM.Manager.parameter.library,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//OTIMIDCI DD DSN=OTIMV030.IDCAMS.parameters,DISP=SHR
//OTIMIDCO DD SYSOUT=*
//*
```

DD entries should be specified as follows:

- STEPLIB:** Enter the names of the OAM Manager and Archive Manager product load libraries, and the DB2 runtime execution library.
- OTIMS100:** Enter the name of the OAM Manager parameter library.
- SYSPRINT:** This entry is used for all print reports created during utility execution.
- SYSOUT:** This entry is used to hold output from the internal sort performed by the utility.
- OTIMIDCI:** This specifies the name of a dataset (or member of a partitioned dataset) containing the IDCAMS parameters used to delete and define the work file OTIMV030 used during program execution. See the section 'OTIMIDCI/OTIMIDCO DD entries' below for information on the content of this file.
- OTIMIDCO:** This entry holds output from the IDCAMS invocation used to reset the work file OTIMV030.

Condition codes

OTIMP030 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility. A warning message will have been written to the SYSPRINT dataset. The utility has been executed successfully.
- 8 - an error condition has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has continued.
- 12 - a serious error has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.

Operator commands

Execution of the utility may be terminated at any point by entering the following command through the system console:

```
(STO)P jobname
```

where 'jobname' is the name of the job used to execute the object conversion procedure.

The utility will acknowledge receipt of this command via message OTM03050, and perform normal termination processing. All database updates performed by the utility prior to termination will be committed, and the utility will terminate with a condition code of 4.

The utility may be restarted at any subsequent time in order to continue execution of the conversion process from the last commit point recorded during the terminated run.

OTIMIDCI/OTIMIDCO DD entries

OTIMP030 uses a VSAM ESDS work dataset to store processing information during the execution of a job. This information is used to control conversion processing and for restart requirements. This dataset is deleted and redefined by the utility at the start of normal (that is, not restart) processing.

To allow user control of this function, the AMS DELETE/DEFINE parameters used by OTIMP030 are supplied to the utility via file OTIMIDCI. This should be a sequential dataset, or a member of a partitioned dataset, with fixed-length 80 byte records. The dataset should contain the following AMS parameters:

```
DELETE hlq.xxxxxxxxx.yyyyyyyy.V030
SET MAXCC = 0
DEFINE CLUSTER -
    (NAME (hlq.xxxxxxxxx.yyyyyyyy.V030) -
    SHR(2 3) -
    REC(a b)
    RECSZ(98 98) -
    NUMBERED -
    REUSE -
    VOL(vvvvvv))
```

where:

'hlq' is the value of the HLQ parameter for the storage group being processed, as specified in the STRGROUP parameter library member. The high-level qualifier should be omitted completely from the dataset name if no HLQ parameter has been specified.

'xxxxxxxx' is the 1-8 character name of the storage group database being processed by the utility.

'yyyyyyy' is the value of the INDEXID parameter for the storage group being processed, as specified in the STRGROUP parameter library member. If no INDEXID parameter has been specified, the value 'OTM.dddd' should be used, where 'dddd' is the value of

the SUBSYSTEM parameter in the ENVCNTL parameter library member.

- 'a' & 'b' are the primary and secondary dataset allocation values, in number of records. For sizing purposes, the dataset will require one record for each object which is selected for processing, plus a single control record. Choose values appropriate for the largest number of objects likely to be processed in a single execution of the utility.
- 'vvvvv' is the serial number of the disk volume on which the dataset is to be allocated.

The AMS print report will be written to file OTIMIDCO. This may be a SYSOUT dataset or a sequential dataset with logical record length of 133 bytes and RECFM=FBA.

Utility failure and restart considerations

If the object recovery utility fails to complete successfully (return code greater than 8), consult the error report in the SYSPRINT dataset to identify the cause of the problem. After correcting the error, the utility may be rerun. There are no special restart requirements. Processing will automatically restart from the last successful commit point during the failed run.

Early termination of processing due to an operator STOP command being entered will cause immediate termination of the utility with condition code 4. There are no special requirements for restart of the utility, which may be performed at any subsequent time. Processing will restart from the last successful commit point recorded prior to receipt of the STOP command during the terminated run.

If the TIME parameter is exceeded, the utility will commit all updates and terminate processing with condition code 4 when the current batch has been processed. Again, there are no special requirements for restart of the utility, which may be performed at any subsequent time. Processing will restart from the last commit point created during the terminated run.

In all cases, when restarting an incomplete job, the LEVEL, STARTSEQ and ENDSEQ parameters must not be modified between jobs.

Other runtime considerations

The BRCALL sub-parameter in the OBJCNTL parameter library member may be used to change an object's management class after it has been converted from Lifecycle Director to OAM storage. Refer to page 72 for information about this parameter.

.OTIMP040 - the pre-fetch retention update utility

OTIMP040 is used to modify the disk copy pre-fetch date recorded for an object in its Archive Manager index entry, by setting the value to the last reference date of the object, as recorded by SMF. Refer to “Retention of disk ('K') copy objects in an Archive Manager database” on page 204 for a description of this procedure.

Functions

The pre-fetch retention update utility performs the following functions:

- It will process and validate the OAM Manager parameter library, extracting information required for execution of the utility.
- It will process a sequential file containing a dump of SMF records, and identify all SMF records created by OAM Manager to log a disk retrieval operation.
- For each matching SMF record, the utility will update the Archive Manager primary index entry for the retrieved object, by setting the object's disk pre-fetch date with the retrieval date recorded in the SMF record and the record re-written.

The impact of this processing is that the index will now record the object's last reference date as the pre-fetch date for the object. This will allow standard Archive Manager object management processing to be used to delete the disk copy of migrated objects based on last reference date, rather than pre-fetch date.

JCL requirements

The following JCL may be used to execute the utility:

```
//*  
//STEP1      EXEC PGM=OTIMP040,REGION=4M  
//*  
//STEPLIB   DD  DSN=OAM.Manager.program.library,DISP=SHR  
//*  
//SYSPRINT  DD  SYSOUT=*  
//OTIMPARM  DD  DSN=OAM.Manager.parmlib,DISP=SHR  
//OTIMSMF   DD  DSN=SMF.dumpfile,DISP=SHR  
//*
```

Dataset names should be set as follows for each DD entry:

STEPLIB : The name of the OAM program library.

SYSPRINT: The destination of the utility report file. If required, the report may be written to a sequential dataset, with record format = FBA, and a logical record length of 133 bytes.

OTIMPARM: The name of the OAM parameter library. Refer to the OAM Manager User Guide for a description of this library and its contents.

The ENVCNTL member of this library should contain correctly specified SUBSYSTEM and SMFRECID parameters. The value of the SMFRECID parameter is used by the utility to locate SMF records in file OTIMSMF which have been created by OAM Manager.

The STRGROUP member should contain an entry for each storage group for which object retrieval requests have been recorded in file OTIMSMF.

OTIMSMF: File OTIMSMF is used for allocation of the dataset containing dumped SMF records. This must be a sequential file in variable-blocked format. The file should contain copies of records from the SMF dataset(s) used during OAM Manager execution.

Condition codes

OTIMP040 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility but execution of the utility continued. A warning message will have been written to the SYSPRINT dataset.
- 8 - an error condition has been encountered during processing of the utility but execution of the utility continued. An error message will have been written to the SYSPRINT dataset.
- 12 - a serious error has occurred during processing of the utility. Execution of the utility has been terminated. An error message will have been written to the SYSPRINT dataset.

Running the utility

The utility requires exclusive update access to the Archive Manager storage group databases being processed during utility execution and can therefore not run concurrently with any other update operation for those Archive Manager databases.

One Archive Manager storage group database will be used for each separate OAM storage group referenced in the SMF records.

Utility processing reports

The following reports will be written by the utility to the SYSPRINT dataset:

1. Parameter validation and error report. This will summarize the parameters specified in the ENVCNTL and STRGROUP members of the OAM Manager parameter library, and report on any validation errors encountered.
2. Error report. Error or warning messages generated during execution of the utility will be written to the SYSPRINT file. All messages will have the message identifier 'OTM040xx', where 'xx' is a numeric value in the range 00-99. Refer to page 224 for a description of all messages issued by the utility.
3. Processing summary report. At completion of processing a report will be issued by the utility giving the following details:
 - Number of records read from file OTIMSMF
 - Number of OAM Manager SMF records read
 - Number of disk retrieval SMF records read
 - Number of disk retrieval requests read
 - Number of object updates performed
 - Number of error conditions encountered

This will be followed by a message giving the highest condition code encountered during program execution.

Utility failure and restart considerations

There are no special requirements for restarting the program after failure. The job may be re-submitted without modification, following rectification of the condition which caused the error. The entire SMF dump dataset will be processed again during rerun processing. There are no facilities in the utility for restarting from a point of previous failure.

.OTIMP130 - the object recovery utility

The OAM Manager object recovery utility (OTIMP130) is used to recover disk copies of unmigrated objects which have been previously backed up using the OAM Manager object backup facility (as discussed on page 196). This

utility should be executed after the disk copy of one or more unmigrated objects in an OAM storage group has been lost (due to hardware/media failure etc.).

Functions.

The object recovery utility performs the following functions:

- Validates parameters in the OAM Manager parameter library members ENVCNTL and STRGROUP. A parameter validation report is written to the SYSPRINT dataset.
- Processes the directory of the OAM storage group identified in the utility execution parameters, and automatically identifies all unmigrated objects which have been previously backed up and which are eligible for recovery.
- The utility will perform object recovery in one of the following two modes (as controlled by the 'TYPE' execution parameter):

- Full recovery mode ('Type=FULL'). When executing in this mode, the utility will restore all unmigrated objects which have been previously backed up by OAM Manager, by copying these objects from Archive Manager to OAM disk storage during utility execution. Processing of the utility is optimized to reduce tape handling requirements to a minimum.

Restoring objects from Archive Manager to OAM disk will mean that execution of the recovery utility may take some time. However, subsequent access to recovered objects will be satisfied from OAM disk; this will eliminate the delays which will occur at this stage after execution of the utility in speed recovery mode.

- Speed recovery mode ('Type=SPEED'). In this mode, all directory entries for unmigrated objects which have been previously backed up by OAM Manager will be modified to mark these objects as being Archive Manager-resident only. The next retrieval request for any one of these objects will then be satisfied from Archive Manager. An object may be staged back to OAM disk during this process.
- With this mode of recovery, the restore of OAM disk-resident objects is only performed when an object is retrieved for viewing purposes. Execution of the recovery utility itself will not require any tape access, and will complete in the fastest possible time. However, subsequent access to a recovered object may experience some delay while the object is restored from Archive Manager tape to OAM disk storage.

- A processing report will be written to the SYSPRINT dataset, giving details of all backup tape datasets uncataloged or created during this run.

EXEC parameters

OTIMP130 accepts up to 4 EXEC parameters, as follows:

```
PARM= 'storage-group-name( ,Type=FULL|SPEED) ,
      (PRINT=SUMMARY|DETAIL)( , BATCH=nnnnnnn) '
```

- 'storage-group-name' is a mandatory positional parameter, and must appear in the first parameter position. It is used to identify the 1-30 character name of the storage group to be processed by the utility during this run. This storage group name must be present in the OAM Manager STRGROUP parameter member.
- 'Type=FULL|SPEED' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'FULL'. It is used to indicate the type of recovery to be performed by the utility.

'Type=FULL' indicates that the utility is to execute in full recovery mode. When executing in this mode, the utility will restore all unmigrated objects which have been previously backed up by OAM Manager, by copying these objects from Archive Manager to OAM disk during utility execution.

'Type=SPEED' indicates that the utility is to execute in speed recovery mode. In this mode, all directory entries for unmigrated objects which have been previously backed up by OAM Manager will be modified to mark these objects as being Archive Manager-resident. No physical recovery of objects from Archive Manager to OAM disk will be performed when executing in speed recovery mode.

- 'PRINT=SUMMARY|DETAIL' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 'SUMMARY'. It is used to control production of the object processing report by the utility. The object processing report identifies all objects which have been recovered during execution of the utility.

'PRINT=SUMMARY' indicates that the object processing report is not to be produced.

'PRINT=DETAIL' indicates that the object processing report is to be produced.

The utility will always produce the following additional reports, irrespective of the setting of the 'PRINT' parameter:

- a parameter validation and summary report.
 - an end-of-run summary report.
- d. 'BATCH=nnnnnnn' - this is an optional keyword parameter which may appear in any position in the EXEC parameter list after the storage group name parameter. The default value is 0. It is used to control the number of objects which are processed in each recovery batch during execution of the utility, where 'nnnnnnn' is a 1-7 digit numeric value in the range 0 to 9999999. This parameter is only valid if 'Type=FULL' is also specified.

Objects to be recovered when executing in full recovery mode may be processed in one or more 'recovery batches', as controlled by this parameter. All objects in each recovery batch are sorted to improve efficiency of processing when recovery objects from Archive Manager. In addition, all DB2 updates relating to recovered objects are committed after successfully processing each recovery batch.

Increasing the number of recovery batches (by reducing the size of the BATCH parameter) may increase the overall number of Archive Manager tape mounts required to recover all objects (as a tape volume may need to be mounted more than once if objects from different batches are to be retrieved from that volume), but will reduce the amount of processing required when rerunning the utility after failure of an earlier execution (see page 177).

If a value of 0 is specified (or defaulted) for this parameter, then all selected objects from the storage group being processed will be recovered in a single batch.

JCL requirements

The following JCL may be used to execute the utility:

```
//*  
//STEP130 EXEC PGM=OTIMP130,REGION=4096K,  
//          PARM=('storage-group-name',  
//              'Type=FULL|SPEED',  
//              'PRINT=DETAIL|SUMMARY',  
//              'BATCH=nnnnnnn')  
//*  
//STEPLIB DD DSN=OAM.Manager.load.library,DISP=SHR  
//          DD DSN=Archive.Manager.load.library,DISP=SHR
```

```

//          DD  DSN=DB2.runtime.library,DISP=SHR
// *
//OTIMS100 DD  DSN=OAM.Manager.parameter.library,DISP=SHR
//SYSPRINT DD  SYSOUT=*
// *

```

DD entries should be specified as follows:

STEPLIB: Enter the names of the OAM Manager and Archive Manager product load libraries, and the DB2 runtime execution library.

OTIMS100: Enter the name of the OAM Manager parameter library.

SYSPRINT: This entry is used for all print reports created during utility execution.

Condition codes

OTIMP130 will set a condition code on completion. This code may take the following values:

- 0 - the utility has been executed successfully.
- 4 - a warning condition has been encountered during processing of the utility. A warning message will have been written to the SYSPRINT dataset. The utility has been executed successfully.
- 8 - an error condition has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has continued.
- 12 - a serious error has been encountered during processing of the utility. An error message will have been written to the SYSPRINT dataset. Execution of the utility has been terminated.

Utility failure and restart considerations

If the object recovery utility fails to complete successfully (return code greater than 8), consult the error report in the SYSPRINT dataset to identify the cause of the problem. Refer to page 255 for a description of the message(s) appearing in the error report.

After correcting the error, the utility may be rerun. There are no special restart requirements.

If the failure occurred when running in speed recovery mode, all OAM directory updates made prior to the failure will be backed out; no objects will have been recovered during utility execution. Rerun of the utility will re-process all objects.

If the failure occurred when running in full recovery mode, all objects in each recovery batch which had been fully processed prior to the failure will have been successfully recovered, and all DB2 updates committed. Rerun of the utility will automatically restart object recovery from the beginning of the recovery batch being processed when the error occurred.

Control of recovery batch processing is performed via the 'BATCH' execution parameter. This parameter limits the number of objects which are placed in each recovery batch. If a value of zero is specified for this parameter (or allowed to default), there is no limit to the size of the recovery batch (ie. only one batch will be created during execution of the utility).

A low (or zero) value for the 'BATCH' parameter may mean that a substantial amount of re-processing will be required during rerun of the utility after a prior failure. However, increasing the size of the 'BATCH' parameter may also increase the total number of tape mounts required to recover all objects during successful execution of the utility (as a tape volume may be mounted once per batch).

.OTIMP255 - the CICS pre-fetch utility

Description.

The OAM Manager CICS pre-fetch utility OTIMP255 enables CICS applications to issue requests to OAM Manager to pre-fetch identified objects from Archive Manager to OAM disk storage. This facility is invoked from a CICS application program (via a CICS 'LINK' command to program OTIMP255) in order to pre-fetch objects for subsequent display processing.

Pre-fetching of objects is performed asynchronously via one or more background CICS tasks (transaction OM26), executing in the same CICS region as the application which issued the request, or in any other CICS region which is connected via CICS MRO or ISC facilities. The OAM Manager control region is invoked to perform object retrieval processing. No delay is experienced by the foreground applications task which issues the pre-fetch retrieval request.

Multiple objects may be pre-fetched via a single request to the OAM Manager CICS pre-fetch utility. Each object to be processed is identified (by OAM collection and object names) in a CICS temporary storage queue entry (TSQ) whose identifier is passed to OTIMP255 on invocation of the pre-fetch request. This TSQ may contain up to 32767 entries. Note that a unique temporary storage queue identifier should be generated by the calling application program, in order to avoid contention with any other CICS task which may be performing OAM Manager pre-fetch processing concurrently.

OTIMP255 will start one background CICS task (via transaction identifier OM26) for each entry in the TSQ. When all TSQ entries have been

processed, the temporary storage queue will be deleted by OTIMP255, and control returned to the calling program. At this stage, the calling program may continue with other processing, while the identified objects are being pre-fetched from Archive Manager to OAM disk by the OAM Manager background CICS tasks.

Each background task will fetch the object identified in the associated TSQ entry from Archive Manager to OAM disk. Any errors encountered during this processing will be logged via an OAM Manager error message to the CICS transient data queue 'CSMT'. The background task will cater for 'retrieval busy' conditions (when all OAM Manager retrieval resources are currently in use), and re-try the pre-fetch request at 15-second intervals. Alternatively, the 'TAPEWAIT' entry in the 'TAPECNTL' parameter library member may be used to internally queue requests when there are insufficient OAM Manager resources available to retrieve an object.

A unique CICS transaction class may be associated with transaction OM26, and a limit placed on the number of transactions of this class which may be active at any one time. This mechanism may be used to prevent an excessive number of background retrieval requests being dispatched concurrently by CICS. If this limit is set lower than the current value of the OAM Manager 'MAXDRIVE' parameter, then it will be possible to ensure that all OAM Manager retrieval resources are not used satisfying background pre-fetch requests, at the expense of foreground object display requests.

(eg) if a transaction class of '9' has been assigned to transaction OM26. and a maximum active task value of 3 set for class '9', then a maximum of 3 objects will be pre-fetched concurrently. This means that the maximum number of drives used for pre-fetching objects from CICS will be 3. If the current value of the OAM Manager 'MAXDRIVE' parameter is 4, then there will be at least one tape drive always available for satisfying foreground retrieval requests. Implementation in this manner will help prevent the occurrence of situations when foreground retrieval requests are waiting for background pre-fetch retrieval to complete.

The background pre-fetch task (OM26) must run in a CICS region which has been initialized for OAM access (via an entry for program CBRICONN in the CICS PLTPI table). If CICS MRO or ISC facilities are available, then this need not necessarily be the same region from which the pre-fetch request was issued.

In addition, OAM Manager CICS processing must have been enabled for the host system prior to an application issuing a pre-fetch request (see pages 32 and 55).

Note that the setting of the STAGE|NOSTAGE|STAGETAPE parameter in the STRGROUP and OBJCNTL parameter library members has no effect on operation of the CICS pre-fetch utility. All objects identified for recall by the utility will be staged to OAM disk storage, regardless of the STRGROUP or OBJCNTL parameter library entries.

Application program interface

The OAM Manager CICS pre-fetch function is invoked from an application program via a CICS 'LINK' command to program OTIMP255 (eg)

```
EXEC CICS LINK PROGRAM(OTIMP255)
      COMMAREA(P255COMM)
      LENGTH(16)
      END-EXEC.
```

The parameter area passed to the pre-fetch module in the communication area must have the following format:

<u>Offset</u>	<u>Length</u>	<u>Type</u>	<u>Description</u>
0	2	char	Request code: '01' - perform pre-fetch processing. This is the only request code currently allowed.
2	2	char	Return code. Indicates the result of the request. '00' - pre-fetch requests queued successfully. '98' - CICS abend or error condition intercepted. Refer to the CICS CSMT TD queue for more information regarding the error. '99' - invalid request code.
4	2	bin	Supplementary code 1. This field may contain additional information for an invalid request.
6	2	bin	Supplementary code 2. This field may contain additional information for an invalid request.
8	8	char	TSQ name. This field gives the name of the temporary storage queue which identifies the objects to be pre-fetched.

The temporary storage queue identified in the CICS communication area should contain one item for each object to be pre-fetched. Each item must be 88 bytes in length, and should have the following format:

<u>Offset</u>	<u>Length</u>	<u>Type</u>	<u>Description</u>
0	44	char	Name of OAM collection containing object to be pre-fetched.

44 44 char Name of OAM object to be pre-fetched.

The collection and object names specified in the above TSQ entry should be as specified in the OAM directory entry for the object to be pre-fetched.

The temporary storage queue identified in the caller's communication area must be created prior to the pre-fetch request being issued by the application. This queue will be automatically deleted by OAM Manager before control is returned to the calling application program. A maximum of 32767 entries may be present in any one temporary storage queue.

CICS resource definitions

The following CICS resources must be defined prior to invocation of the OAM Manager CICS pre-fetch utility:

- Programs OTIMP255 and OTIMP260
- Transaction OM26
- DB2entry for OM26.

Refer to page 32 or 55 for a full description of the CICS resource definitions required for execution of the CICS pre-fetch utility.

.OTIMP35x - the batch pre-fetch utility

OAM Manager provides facilities for batch and CICS programs to issue requests to pre-fetch objects from Archive Manager to OAM disk storage. These requests are issued via the appropriate application program interface.

Pre-fetching objects to OAM disk will ensure that those objects are available for immediate access when required, without the possible delays experienced when accessing objects directly from Archive Manager tape. Note that pre-fetch processing may not be required when executing with a version of Archive Manager which supports storage of objects on disk.

Pre-fetch processing is always performed asynchronously (ie) there will be no operation waiting for completion of the pre-fetch process before being able to continue.

The OAM Manager batch pre-fetch utility enables Archive Manager-resident objects to be staged back on OAM disk storage via a batch application program interface. This utility accepts calls from a user application to add recall requests to a batch, and to process the batched requests.

The utility does not use the OSREQ interface, and consequently does not invoke the OAM Manager control region processing to recall objects; it is not

necessary for the control region to be active in order to recall objects using the batch pre-fetch utility.

The user application passes the following information for each item to be batched:

- collection name of object to be recalled.
- object name of object to be recalled.
- whether or not the object is to be deleted from Archive Manager after recall.

The pre-fetch utility is invoked via a standard program CALL interface. Information is passed with each call via a call parameter block.

Other features of the utility include:

- Sorting of batch entries prior to processing in order to optimize the Archive Manager access requirements needed for recall of all batched objects.
- The ability to stage objects directly in the OAM databases from which they were migrated, or to one or more VSAM KSDS files which may be used for subsequent loading of the OAM databases.
- The ability to pre-fetch migrated objects to Archive Manager disk storage, instead of to DB2 disk storage.
- The ability to suppress pre-fetch to DB2 storage, if a disk copy of the migrated objects exists in the Archive Manager database.
- Dynamic allocation of datasets required by the pre-fetch utility (apart from the OAM Manager parameter library).
- Formatted OAM Manager parameter validation report.
- Reporting of all error/warning conditions encountered during retrieval processing.
- No intervention required for restart/rerun of calling application after failure. The pre-fetch utility will automatically commit all changes after each individual Archive Manager tape volume has been processed. Re-running the retrieval job will then automatically restart recall activity from the tape volume being processed at the time of failure.
- Optional update of an object's management class after recall. This facility is controlled via the 'BRECALL' parameter in the object's management class entry in the OAM Manager 'OBJCNTL' parameter library member. Refer to page 72 for a description of the 'BRECALL' parameter.
- Note that the setting of the STAGE|NOSTAGE|STAGETAPE parameter in the STRGROUP and OBJCNTL parameter library members has no effect on operation of the batch pre-fetch utility. All objects identified for recall

by the utility will be staged to OAM disk storage, regardless of the STRGROUP or OBJCNTL parameter library entries.

CALL interface requirements

The batch pre-fetch utility is invoked from an application program via a call to module 'OTIMP350' or 'OTIMP355'. The module to be called is determined as follows:

- Applications which do not issue their own SQL commands (ie. non-DB2 applications) must call module **OTIMP350**.
- Applications which **do** issue their own SQL commands must call module **OTIMP355**.

(eg) for COBOL use the following statement:

```
CALL 'OTIMP350' USING OTIM-PARAMETER-BLOCK.
```

or:

```
CALL 'OTIMP355' USING OTIM-PARAMETER-BLOCK.
```

OTIMP350 and OTIMP355 are OAM Manager interface stubs which will be linked into the calling program. Their function is to invoke the appropriate OAM Manager utility modules corresponding to the type of call issued by the invoking application program.

The calling program must pass a 96-byte parameter block to OAM Manager with each call. This parameter block is identical for both OTIMP350 and OTIMP355, and has the following format:

<u>Offset</u>	<u>Length</u>	<u>Type</u>	<u>Field</u>
0	2	char	Request code: '01' - add object to batch (do not delete from Archive Manager after recall) '02' - add object to batch (delete from Archive Manager after recall – do not honor management class transition for unmigrated objects) '03' - add object to batch (delete from Archive Manager after recall – honor management class transition for unmigrated objects) '04' - add request to batch for pre-fetching of object to Archive Manager disk ('K') copy storage

<u>Offset</u>	<u>Length</u>	<u>Type</u>	<u>Field</u>
			'10' - process batch '20' - end processing.
2	2	char	Return code
4	2	bin	Supplementary code 1. Used on entry for request codes '01', '02' and '03' to indicate whether a request is to be honored if an Archive Manager disk ('K') copy of the object already exists, as follows: 0 – honor request even if Archive Manager disk copy exists 1 – do not honor request if Archive Manager copy exists May contain additional information on return to calling application, for non-zero return codes.
6	2	bin	Supplementary code 2. Not used on entry. May contain additional information on return to calling application, for non-zero return codes.
8	44	char	Collection name
52	44	char	Object name

Fields in the parameter block are used as follows:

Request code: This field consists of two numeric digits which specify the function to be performed. The request code can take the following values:

- 01 - add an object to the batch to be processed. The migrated object is not to be deleted from Archive Manager after recall.
- 02 - add an object to the batch to be processed. Delete the migrated object from the Archive Manager database after recall. If the object identified in the request is unmigrated, a return code of '04' with reason code 1 value of 3 will be returned to the caller. Any management class transition request (specified via the

BRECALL parameter on the object's management class entry in the OAM Manager OBJCNTL parameter library member) will **not** be processed. Request code '03' should be used if management class transition processing is to be honored for unmigrated objects.

- 03 - add an object to the batch to be processed. Delete the migrated object from the Archive Manager database after recall. If the object identified in the request is unmigrated, a return code of '04' with reason code 1 value of 3 will be returned to the caller. Any management class transition request (specified via the BRECALL parameter on the object's management class entry in the OAM Manager OBJCNTL parameter library member) will be processed.
- 04 - add a request to the batch to pre-fetch a migrated object to Archive Manager disk ('K') copy storage. If an Archive Manager disk copy of the object identified in the request already exists, a return code of '04' with reason code 1 value of 4 will be returned to the caller.
- 10 - process all entries in the current batch.
- 20 - end of job.

Return code: This is a 2-digit numeric code set by OAM Manager prior to returning control to the calling application. It is used to indicate the result of the request.

Reason codes: These are two 2-byte binary fields, which may contain further information when a non-zero return code is received.

Collection name: A 44-character field which identifies the name of the collection to which the object be recalled belongs. It must contain trailing spaces if necessary.

Object name: A 44-character field which identifies the name of the object to be recalled. It must also contain trailing spaces if necessary.

The normal sequence of calls issued by the program will be a series of type '01', '02', '03' and/or type '04' calls to add objects to the batch to be processed, followed by a single type '10' call. The type '10' call will cause OAM Manager to sort the batched requests into the most efficient order for tape retrieval, and to recall the identified objects.

The '01'/'02'/'03'/'04' and '10' sequence may be repeated as often as required. However, object retrieval from Archive Manager will be most efficient if the number of batches is kept to a minimum (optimally 1). There is a limit of 1,029,200 to the number of entries per batch.

Note that any combination of type '01', '02', '03' and '04' calls may be present in the same batch of requests.

After all objects have been processed, a type '20' call should be issued to perform all dataset close and cleanup operations.

JCL requirements

The following JCL entries will be required for any job invoking the OAM Manager batch pre-fetch utility. These JCL entries are in addition to any which are required for running of the calling application program itself.

Mandatory JCL requirements.

(a) STEPLIB/JOBLIB changes.

Add the following datasets to the STEPLIB or JOBLIB concatenations for the calling application program or ensure that these libraries are available from the system linklist concatenation.

- OAM Manager distribution library
- Archive Manager distribution library
- DB2 runtime library

(b) OTIMS100.

A DD card for file OTIMS100 is required in order to allocate the OAM Manager parameter library. Code the card as follows:

```
//OTIMS100 DD DSN=OAM.Manager.parameter.libname,DISP=SHR
```

Valid STRGROUP and ENVCNTL members must be present in this library. The utility will give an error condition if either of these members is missing or invalid.

Optional JCL requirements

(a) OTIMS350.

This is the dataset which is used by the utility for the parameter validation report, and for reporting any error or warning conditions encountered during execution of the utility. If not present, a SYSOUT dataset with the default class will be dynamically allocated.

If it is required to retain this information for subsequent access, a DD card may be placed in the JCL to override the default allocation. If a non-

SYSOUT dataset is specified in this DD card, it should have the following attributes:

```
DCB=(RECFM=FBA,LRECL=133,BLKSIZE=n)
```

where 'n' is set as determined by the user.

(b) OT04nnnn/OT32nnnn.

These entries are used when it is required to write recalled objects to a VSAM dataset, rather than staging them directly in an OAM database.

These DD names should be used as follows:

- Specify DD name 'OT32nnnn' if all objects belonging to a storage group which are larger than 3980 bytes in size, are to be written to a VSAM KSDS instead of being staged in the OAM object storage table for that storage group.

The storage group to be processed is identified via the name of the VSAM dataset in the DD entry. This name should have the following format:

```
(hlq).xxxxxxxx.VSAM.OBJ32K
```

where:

'hlq' is the optional high-level qualifier to be used for the storage group (as specified in the HLQ keyword parameter in the STRGROUP parameter library member)

'xxxxxxxx' is the name qualifier of the DB2 database for the storage group (eg. 'GROUP00', 'GROUP01' etc.)

One 'OT32nnnn' DD entry should be present for each storage group for which objects larger than 3980 bytes in size are to be written to a VSAM file, instead of being staged directly to an OAM database. 'nnnn' should be a unique alphanumeric character string of 1-4 characters in length. This character string can take any unique value, and is used to allow multiple DD entries to be present in the JCL when pre-fetching to VSAM is to be performed for more than one OAM storage group.

- Specify DD name 'OT04nnnn' if all objects belonging to a storage group which are less than or equal to 3980 bytes in size, are to be written to a VSAM KSDS instead of being staged in the OAM object storage table for that storage group.

The storage group to be processed is identified via the name of the VSAM dataset in the DD entry. This name should have the following format:

(hlq) .xxxxxxxx.VSAM.OBJ04K

where:

'hlq' is the optional high-level qualifier to be used for the storage group (as specified in the HLQ keyword parameter in the STRGROUP parameter library member)

'xxxxxxxx' is the name qualifier of the DB2 database for the storage group (eg. 'GROUP00', 'GROUP01' etc.)

One 'OT04nnnn' DD entry should be present for each storage group for which objects less than or equal to 3980 bytes in size are to be written to a VSAM file, instead of being staged directly to an OAM database. 'nnnn' should be a unique alphanumeric character string of 1-4 characters in length. This character string can take any unique value, and is used to allow multiple DD entries to be present in the JCL when pre-fetching to VSAM is to be performed for more than one OAM storage group.

For example, specifying the following JCL cards:

```
//OT320001 DD DSN=GROUP90.VSAM.OBJ32K,DISP=SHR
//OT040002 DD DSN=GROUP90.VSAM.OBJ04K,DISP=SHR
//OT320003 DD DSN=GROUP93.VSAM.OBJ32K,DISP=SHR
```

will cause the utility to write to the identified VSAM datasets all recalled objects for storage group 90, and all objects > 3980 bytes for storage group 93. All other objects will be staged in the OAM DB2 database(s) for the appropriate storage group.

Note that update of OAM object directory entries will not be affected by these DD cards (ie) directory entries will be updated identically to indicate that an object has been staged from Archive Manager to OAM disk (and deleted from Archive Manager where appropriate), irrespective of whether they have been recalled to VSAM or DB2.

To receive recalled objects, each VSAM KSDS dataset should be defined as below. To receive objects less than or equal to 3980 bytes, use the following AMS parameters:

```
DEFINE CLUSTER -
  (NAME (xxxxxxxx) -
    SHR(2 3) -
    REC(aaaaa bbbbbb) -
    RECSZ(2016 4032) -
    INDEXED -
    KEYS(50 0) -
    FPSC(5 5) -
    VOL(vvvvvvv)) -
  DATA -
  (NAME (xxxxxxxx.data.name) -
```

```

CISZ(4096)) -
INDEX -
(NAME(xxxxxxxx.index.name) -
CISZ(2048))

```

To receive objects greater than 3980 bytes, use the following AMS parameters:

```

DEFINE CLUSTER -
(NAME(xxxxxxxx) -
SHR(2 3) -
REC(aaaaa bbbbb) -
RECSZ(16380 32760) -
INDEXED -
KEYS(50 0) -
FPSC(5 5) -
VOL(vvvvvv)) -
DATA -
(NAME(xxxxxxxx.data.name) -
CISZ(32768)) -
INDEX -
(NAME(xxxxxxxx.index.name) -
CISZ(8192))

```

where:

- 'xxxxxxxx' is the name of the VSAM cluster to be defined
- 'aaaaa' and 'bbbb' are primary and secondary allocation values (one record will be created for each object segment being retrieved).
- 'vvvvv' is the volume on which the dataset is to be defined.

Each record in these datasets will have the following format:

Offset	Length	Type	Field	
0	4	bin	Collection name identifier	} record key
4	44	char	Object name	
48	2	bin	Segment number	
50	1	char	Data format version	
51	1	-	not used	
52	2	bin	Object length (= n)	
54	n	bin	Object data segment	

Records will be sequenced by segment number within object name within collection name identifier.

(c) SORTWKnn.

One or more SORTWKnn cards may be included in the JCL. They are used to identify auxiliary work files to be used during the internal sort process. If no SORTWKnn cards are present, virtual storage from within the job address space will be used by the sort procedure. Refer to documentation accompanying the sort product used at the host installation for details on specifying these cards.

(d) SYSOUT.

This is the dataset used by the internal sort procedure for producing the sort report. If not present in the JCL, the OAM Manager batch pre-fetch utility will dynamically allocate a SYSOUT dataset with a default class specification.

(di) SORTIN/SORTOUT.

PTF SZ22035 shipped a modification to batch pre-fetch utility processing to enable the allocation of the SORTIN and SORTOUT files used internally by the procedure to be overridden by an external DD specification in the JCL used to execute the utility.

The following DD entries may be specified in the JCL to override internal allocation of either or both of these files using temporary disk datasets:

```
//SORTIN DD DSN=&&SORTIN,DISP=NEW,  
           SPACE=(CYL|TRK,(prim,sec))  
//SORTOUT DD DSN=&&SORTOUT,DISP=NEW,  
           SPACE=(CYL|TRK,(prim,sec))
```

Set the space parameter to the desired primary and secondary allocation values. Note that the datasets will be allocated with a fixed-block record format and logical record length of 90 bytes. Each object selected for processing by the utility will require a single 90-byte record in each of these datasets.

If using permanent datasets for these files, these should be created with RECFM=FB and LRECL=90.

DB2 plan creation

The DB2 plan for execution of the pre-fetch application must be created prior to initial use. The plan creation process is dependent on the OAM Manager module invoked for batch pre-fetch processing, as follows:

a. OTIMP350

OTIMP350 is called for invocation of OAM Manager batch pre-fetch processing by applications which do not issue their own SQL commands.

When executing in this mode, the standard OAM Manager plan (as identified or defaulted via the PLAN keyword parameter of the ENVCNTL parameter library member) needs to be bound prior to use. This plan is automatically bound via execution of jobs OTIMPKG and OTIMBIND during OAM Manager installation processing (see pages 32 and 48). No other DB2 plan creation activities are required for this mode of invocation.

b. OTIMP355

Calling applications which issue their own SQL commands must issue a call to module OTIMP355 to invoke the OAM Manager batch pre-fetch facility.

For this mode of invocation, a single plan must be bound from the DBRM created by the calling application's DB2 pre-processing procedure, and from DBRM OTIML365 on the distributed OAM Manager DBRM library (file 2 on the product distribution tape). The identifier of this plan should be specified in the 'PLAN' operand of the DB2 'RUN' statement used to execute the pre-fetch application.

The following 'BIND' statement may be used to create this plan:

```
BIND PLAN(XXXXXXXX) -
      MEMBER(YYYYYYYY,OTIML365) -
      ACTION(REPLACE) -
      RETAIN -
      VALIDATE(BIND) -
      ISOLATION(CS) -
      FLAG(E) -
      ACQUIRE(USE) -
      LIB('DBRM.library.name') -
      RELEASE(COMMIT) -
      EXPLAIN(NO)
```

where 'XXXXXXXX' is the name of the generated plan, and 'YYYYYYYY' is the name of the DBRM generated during DB2 pre-processing of the calling application program code.

Return codes

The following return codes will be set by the utility on returning control to the calling application. Note that on receipt of any return code greater than 8, a calling application should terminate processing to allow the serious error condition to be resolved before rerunning the job.

Code Description

00 Request processed successfully.

- 04 Request processed but a warning condition has been encountered. For request codes 01 and 02, reason codes 1 and 2 will be set to identify the warning condition, as follows:

RC1 RC2 Error

- 1 - The identified object has already been staged to disk. No action has been taken.
- 2 - The identified object has been migrated to OAM optical or tape storage. No action has been taken.
- 3 - The identified object has not been migrated from OAM disk to OAM Manager tape storage. For request codes '01' and '02', no action has been taken. For request code '03', any management class transition request (specified via the BRECALL parameter on the object's management class entry in the OAM Manager OBJCNTL parameter library member) will be honored.
- 4 - An Archive Manager disk ('K') copy of the identified object already exists for request code '04', or for request codes '01', '02' or '03' when supplementary code 1 is set to 1. No action has been taken.

For request code 10, a warning message will have been written to the OTIMS350 dataset. Batch processing continues normally.

- 08 Request processed but an error condition has been encountered.

For request codes 01 and 02, reason codes 1 and 2 will be set to identify the error condition, as follows:

RC1 RC2 Error

- 1 - The identified collection was not found in the OAM collection name table. No action was taken.
- 2 - The identified object did not exist in the specified collection. No action was taken.
- 3 - The identified object has been migrated to Archive Manager, but OAM Manager was unable to locate the data in the appropriate Archive Manager database. No further action was taken.

This is an error condition - check that there is no inconsistency between the Archive Manager database index and tape datasets for the identified storage group.

For request code 10, an error message will have been written to the OTIMS350 dataset. Batch processing continues normally.

- 12 Request not processed due to serious error condition. An error message will have been written to the OTIMS350 dataset. For request code '10', processing of the batch will have been terminated at the point of the error.
- 16 Processing terminated due to failure when allocating or opening the OTIMS350 message dataset. Reason codes 1 and 2 are set to high-values if an open error was received. For an allocation error, reason codes 1 and 2 give the error and information codes returned from the dynamic allocation SVC (SVC99).

Rerun after job failure

Should a return code greater than 08 be returned from the OAM Manager utility, then the calling application should terminate processing so that the cause of the serious error may be investigated.

After rectifying the problem which caused the initial error, the calling application job may be rerun. There are no restore or recovery activities required prior to rerunning the job.

The batch pre-fetch utility automatically commits all DB2 and VSAM changes made during the object recall process (ie. OAM directory and object storage table updates and Archive Manager object deletions) when processing has been completed for each Archive Manager tape volume (ie. after retrieving all objects from a volume). If an error occurs during the processing of a tape volume, all prior changes made while processing that volume will be backed out.

On rerun, the OAM Manager pre-fetch utility will now identify objects which were recalled and committed during the initial failed job as having being staged to disk. These will not therefore be batched for subsequent retrieval. Retrieval will thus begin with the first object from the Archive Manager tape volume in use when the original failure occurred.

Note that when retrieving objects to a VSAM dataset instead of to DB2, the VSAM dataset should not be amended in any way prior to rerunning. OAM Manager will automatically identify that a rerun is in progress and ensure that data integrity is maintained across reruns. Any amendment to this dataset prior to rerun may mean that objects will be lost.

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Storage and retrieval of migrated OAM objects by OAM Manager is performed using the Archive Manager component of the Lifecycle Director. Migrated objects are stored in standard Archive Manager databases. This chapter provides information on using OAM Manager and Archive Manager for management of data prior to migration from OAM and after objects have been migrated to Archive Manager.

OAM Manager uses one Archive Manager database per OAM storage group. Each is a standard Archive Manager database, consisting of multiple single-volume datasets (up to a maximum of 65535 per storage group). During migration, objects are written sequentially to a tape volume until the amount of data held on the volume exceeds the limit specified during the Archive Manager database initialization procedure for that storage group, or until the volume is full if no limit has been specified (see the description of maximum blockcount processing in the Archive Manager User Manual and on page 37 onwards of this manual).

Over a period of time, space within an Archive Manager database will be freed due to:

- expiration of migrated objects by the OAM Manager object management procedure.
- deletion of migrated objects via OSREQ DELETE requests.
- deletion of migrated objects after recall using the batch pre-fetch utility.

Archive Manager provides a database maintenance utility which allows users to reclaim space from within an Archive Manager database that has been freed due to object deletion or expiration.

In addition, the OAM Manager object management procedure incorporates an Archive Manager database backup process which produces one or more backup copies of every primary tape volume in an Archive Manager database. These backup copies may be used to recover data lost from a database due to media failure (loss of individual volume(s)) or loss of a data center (loss of entire database).

Full details on the Archive Manager database maintenance utility and on standard Archive Manager backup and recovery procedures may be obtained from the Archive Manager User Manual.

OAM objects may also be backed up by OAM Manager prior to migration, through use of the BACKUP|NOBACKUP parameter in the STRGROUP

parameter library member. Refer to page 75 for a description of this parameter and its usage.

.Backup and recovery of disk-resident objects using OAM Manager

OAM Manager may be used to take tape backups of unmigrated disk-resident OAM objects (prior to standard migration from OAM to Archive Manager). The following functionality is available for this purpose:

- Backup of all OAM disk-resident objects (prior to their selection for normal migration from OAM to Archive Manager) may be invoked at the OAM storage group level, via the OAM Manager STRGRP sub-parameter 'BACKUP|NOBACKUP'.
- When the BACKUP option has been set for a storage group, the OAM Manager object management procedure will copy all OAM disk-resident objects from OAM to Archive Manager storage, whether they have become eligible for migration or not (via the MIGRATE sub-parameter of the OAM Manager OBJCNTL parameter library member). The OAM disk copy of objects which have not yet become eligible for migration will be retained, and the objects marked by OAM Manager as 'staged recalled'. Subsequent retrieval requests for any such object will be satisfied from the OAM disk copy.
- The OAM disk copy of these objects will be ultimately deleted by standard OAM Manager object management processing, using the DELETE sub-parameter of the OBJCNTL parameter library member (based on days since last reference). However, OAM disk copies of backed-up objects will not be available for deletion until those objects have become eligible for migration from OAM to Archive Manager.

The overall effect of the above processing is that all objects will be 'migrated' from OAM to Archive Manager after initial storage on the OAM storage group database. OAM disk copies of these objects will not be deleted until the objects have become eligible for migration by OAM Manager (as controlled by the object's management class definition in the OAM Manager parameter library). At this time, the OAM disk copy will be deleted if the number of days since last reference exceeds that specified in the DELETE sub-parameter of the appropriate OAM Manager MGMTCLAS parameter.

Note carefully that backup procedures for migrated objects, as discussed earlier in this chapter, are not affected by backup requirements for OAM disk-resident (ie. unmigrated) objects, as discussed in this section.

OAM disk-resident object backup procedure

The following procedure should be implemented for backup of OAM disk-resident (unmigrated) objects:

- The directory table of each OAM storage group database should be backed up on a regular basis, using standard DB2 image copy processing. Note that the object storage tables for the OAM database do not need to be backed up using this option. The directory table should be backed up at the same frequency as execution of the OAM Manager object management procedure.
- DB2 logs will need to be retained for at least as long as the frequency of execution of the OAM Manager object management procedure for each storage group, so that all updates to an OAM database since the last execution of the object management procedure may be recovered by rolling-forward from the logs. DB2 log files should be archived to tape when filled.
- The BACKUP parameter should be set for each storage group in the OAM Manager STRGROUP parameter library member. This will cause OAM Manager to copy all OAM disk-resident (ie. unmigrated) objects from OAM to Archive Manager during the next execution of the OAM Manager object management procedure. This means that all objects newly created since the last execution of the object management procedure for a storage group will be copied from OAM to Archive Manager. Note that OAM disk copies of objects will not be deleted at this time.
- Standard Archive Manager backup processing should be implemented so that at least two copies of an object will exist in the Archive Manager database, in addition to the disk copy in the OAM DB2 database.
- The OAM Manager OBJCNTL parameter library member should be coded as normal, irrespective of whether BACKUP or NOBACKUP has been set in the STRGROUP parameter library member. The DELETE sub-parameter of the OAM Manager MGMTCLAS parameter will then take control, and delete the OAM disk copy of an object when it has been unreferenced for longer than the value specified in the DELETE sub-parameter. This deletion will not take place until the object would have been eligible for migration processing in the standard way (via the OAM Manager MIGRATE sub-parameter).

OAM disk-resident object recovery procedure

To recover objects after the loss of one or more OAM storage group databases, the following actions will be required:

- Redefine and initialize all tables in the lost OAM storage group database.
- Restore the directory table of the OAM database, from the last image-copy.
- Roll forward all subsequent updates to the database from the DB2 logs. This will include all updates to the directory table, and all insertions and updates to the object storage tables.
- Execute the OAM Manager recovery utility OTIMP130. This utility can be run in either of the following modes:
 1. Speed recovery mode. In this mode, the utility will modify the OAM object directory for the storage group being recovered, but will not recover any objects from tape to disk. Recovery of a disk-resident object will be automatically performed when that object is next retrieved in response to a user access request (using standard OAM Manager processing).
 2. Full recovery mode. This will process the restored OAM directory, and restore the disk copies of lost objects from the migrated/backed-up copies on tape. This recovery process will take longer to execute than that for speed recovery, but will reduce the amount of tape activity created due to subsequent retrieval of objects via user access requests.

Refer to page 171 for a full description of the OAM Manager object recovery utility OTIMP130.

.Archive Manager database backup and recovery

Archive Manager database backup procedure

Standard Archive Manager archival and backup processing enables the creation of up to 4 copies of each tape volume in an Archive Manager database. The copies are identified as follows:

- 'A' copy - this is the primary copy created when writing objects to an Archive Manager tape database. The primary copy will always exist.
- 'B' copy - this is a backup copy of the primary ('A') volume, created via execution of the Archive Manager backup utility (OTASP110).
- 'C' copy - this is a duplex copy of the primary ('A') volume. The 'C' copy is automatically created when writing objects to an Archive Manager database, for which the duplexing facility has been enabled via the Archive Manager database administration facility. The duplex copy is created at the same time as the primary copy (ie) two tape drives will be allocated concurrently by Archive Manager.

'D' copy - this is a duplex copy of the backup ('B') volume. The 'D' copy is automatically created by the Archive Manager backup utility, when backing up a database for which the 'duplex during backup' facility has been enabled via the Archive Manager database administration facility. The backup duplex copy is created at the same time as the backup copy.

Each copy will contain a single standard-labeled dataset. The contents of each copy will be identical. The following dataset naming standards are used by Archive Manager to identify each copy in an OAM Manager tape database:

'A' copy: 'hlq.Gnnnnn'

'B' copy: 'hlq.Bs.Gnnnnn'

'C' copy: 'hlq.Cs.Gnnnnn'

'D' copy: 'hlq.Ds.Gnnnnn'

where 'hlq' is the high-level qualifier specified in the Archive Manager database definition for the storage group

's' is the storage level (0-9)

and 'nnnnn' is the sequence number of the dataset within the Archive Manager database.

Objects are always written to storage level 0 when first migrated to tape. They may subsequently be moved to other storage levels via execution of the Archive Manager object management utility.

Archive Manager also provides a facility (via its database administration process) to automatically control the tape cartridge devices to be used to create each copy during the object migration or backup process

(eg) 'A' copy to primary library location. This copy of the database will be used for normal production access.

'B' copy to offsite location. This copy of the database will be used for disaster recovery purposes.

'C' copy to alternate onsite location. This copy of the database will be used for recovery after loss of an individual volume. This location may be in another library storage module, for automated recovery access, or on a free-standing device for eventual shelf storage.

Refer to the Archive Manager User Manual for a fuller description of the standard Archive Manager database backup procedure.

OAM Manager provides a database backup control utility which is executed as part of the object management procedure. This utility will control backup

of all tape datasets created or updated by the object selection utility. The object management procedure will not be allowed to proceed until the backup control utility has successfully executed.

Execution of the OAM Manager backup control utility is a mandatory step in the object management procedure. However, actual backup of tape datasets via this utility is optional. This option is controlled by the utility's 'BACKUP' EXEC parameter, as follows:

'BACKUP=YES' - the OAM Manager backup control utility will create backups of all tape volumes updated during the preceding object selection step. The standard Archive Manager backup utility OTASP110 is invoked from OTIMP110 to perform all backup processing.

The backup process will always create a primary backup ('B') copy. If duplexing during backup has been enabled for this storage group database via the Archive Manager database administration procedure, a duplex backup ('D') copy will also be created.

The Archive Manager backup utility will issue its standard backup processing report to the SYSPRINT file specified in the OAM Manager JCL.

'BACKUP=NO' - the OAM Manager backup control utility will perform its standard control functions to enable the object management procedure to continue normally, but will not perform any backup processing.

This option may be used, for example, if a duplex ('C') copy was created during the preceding object migration processing by the object selection utility, and no additional backup copies are required.

Use of this option enables suppression of tape backup processing, and will allow object management processing to continue normally.

Archive Manager database recovery

Archive Manager database recovery may be required in the following circumstances:

1. loss of an individual tape volume from with an OAM Manager tape database (eg) due to media failure
2. loss of an entire Archive Manager database (eg) due to loss of data center.

In both the above cases, standard Archive Manager database recovery procedures should be followed. A full description of these procedures may be found in the 'Recovery Control Processing' section in the Archive Manager User Manual.

The procedure in each case is summarized below:

1. Loss of individual tape volume(s)

Identify the dataset sequence number(s) of the tape volume(s) which have become unavailable. A tape volume's dataset sequence number may be obtained from the name of the dataset contained on that volume. Refer to page 198 for a description of OAM Manager dataset naming standards.

Set each sequence number (or range of sequence numbers) in recovery status, using the standard Archive Manager database administration dialog for the database containing the unavailable volumes. The copy to be used for recovery ('B', 'C' or 'D') is established during this process. Archive Manager will automatically access the appropriate backup copy when retrieving objects from all volumes which have been placed in recovery status. Note that a control region REFRESH command must be issued if any volume is placed into recovery status while the control region is active.

The primary copy of all volumes which are in recovery status should be re-created at a subsequent time using the Archive Manager database recovery utility OTASP130. This utility will automatically remove a volume from recovery status after its primary copy has been re-created. Volumes may be manually removed from recovery status at any time via the Archive Manager database administration dialog.

2. Loss of entire database

If an entire database has been lost (due to hardware malfunction or loss of data center), the database must be placed in 'disaster recovery' status via the standard Archive Manager database administration dialog. The copy to be used for disaster recovery ('B', 'C' or 'D') is specified during this procedure. Note that a control region REFRESH command must be issued if disaster recovery is enabled for a database while the control region is active.

When a database is in disaster recovery status, all retrievals by Archive Manager from that database will be performed from the appropriate backup copy. In order to guarantee the continuance of established service levels for OAM applications, all volumes in that copy of the database should be available for automated processing.

If disaster recovery is being performed on another processor, all disk

datasets used by OAM Manager and Archive Manager, and all user catalog entries from the primary facility, must be restored for use on the disaster recovery facility. There is no requirement for physical recovery of any tape dataset prior to disaster recovery usage.

If necessary, the primary copy of the database may be re-created using the standard Archive Manager database recovery utility (OTASP130). After a primary volume has been re-created, it will be removed from recovery status, and will be used thereafter to satisfy accesses to objects on that volume, as normal.

.The Archive Manager database maintenance procedure

Maintenance of an Archive Manager database is performed via the Archive Manager database maintenance procedure, using the database maintenance utility OTASP030. Refer to the Archive Manager User Manual for a full description of this utility and of its use in the Archive Manager database maintenance procedure.

The database maintenance procedure should be performed at regular intervals for each storage group, in order to recover unused space from within an Archive Manager database which has been freed due to object deletion. The frequency at which the procedure needs to be performed will depend on the rate of object deletion, and the level of requirement for reclaiming tapes from the database in order to replenish scratch pools.

Control of the database maintenance process for any storage group is via the 'recycle threshold' entry set during the Archive Manager database definition process (see page 37). This process must be executed for each storage group to be processed by OAM Manager.

The recycle threshold specifies a numeric value in the range 00-99, which represents a percentage of active objects for any volume in the database. A tape volume becomes eligible for recycling by the Archive Manager database maintenance utility if the level of active objects on that volume falls below this threshold. If this entry is omitted during the database definition process, a default value of '0' is used; this indicates that no recycling is to be performed on this database.

When a tape volume becomes eligible for recycling, the Archive Manager database maintenance utility will write all active objects contained within it to a new tape volume at the end of the database. The recycled volume will then be released from the database and may be returned to the appropriate scratch pool.

If the 'autouncat during recycle' entry has been set during the database definition process, released volumes will be automatically uncataloged after being released from the database. This facility may be used in conjunction

with an installed tape management system to automatically return uncataloged volumes to the correct scratch pool.

The Archive Manager database maintenance utility processes a single database (ie. single storage group) for each execution. Any tape volume being used by the database maintenance utility will be unavailable for allocation for object recall or migration processing. It is recommended therefore that database maintenance for a storage group be scheduled for execution when there is no object recall or migration activity for that storage group. It is not necessary to terminate the OAM Manager control region while Archive Manager database maintenance is being performed.

An Archive Manager database's recycle threshold may be altered at any time, via the supplied Archive Manager database administration dialogs. Note also that where multiple storage levels are in use for an Archive Manager database, a different recycle threshold may be supplied for each storage level.

As Archive Manager uses a discrete set of tape cartridge volumes and disk datasets for each database (ie. each storage group), it is possible to perform the Archive Manager database maintenance procedure on multiple OAM Manager storage group databases concurrently. Each procedure will require a minimum of two tape cartridge drives.

The following sample JCL may be used to execute the Archive Manager database maintenance procedure for storage group 'xx':

```
//STEP1      EXEC PGM=OTASP030,REGION=4M
//*
//STEPLIB    DD DSN=Archive.Manager.load.library,DISP=SHR
//*
//OTASV100   DD DSN=(hlq.)xxxxxxxx.yyyyyyyy.INDEX,DISP=SHR
//SYSPRINT   DD SYSOUT=*
```

DD entries should be set as follows:

STEPLIB: Enter the name of the Archive Manager load library.

OTASV100: Enter the name of the Archive Manager database index for the storage group to be processed. This will have the format shown, where 'hlq' is the optional high-level qualifier used for system datasets (as specified in the storage group's HLQ parameter in the STRGROUP parameter library member), 'xxxxxxxx' is the name qualifier of the DB2 storage group database (eg. 'GROUP00', 'GROUP01' etc.), and 'yyyyyyy' is the value specified or defaulted for the INDEXID sub-parameter in the STRGROUP parameter library member (default value 'OTM.dddd' where 'dddd' is the DB2 subsystem identifier).

Refer to the Archive Manager User Manual for a complete description of the Archive Manager database maintenance utility and procedure.

Retention of disk ('K') copy objects in an Archive Manager database

If disk ('K') copy processing is enabled for a storage level in an Archive Manager database, disk copies of migrated objects will be created during object migration processing, or via object pre-fetch processing (using the OAM Manager pre-fetch utility OTIMP355). Retention of the disk copies of migrated objects is controlled via the Archive Manager database administration process – disk copies of objects are retained for a user-specified number of days since creation (when created during migration processing) or since pre-fetch (when created by the pre-fetch utility). The Archive Manager object management utility OTASP040 is used to delete disk copies of objects, based on these retention periods.

If required, retention of the disk copies of objects may be controlled using the number of days since an object was last referenced. OAM Manager utility OTIMP040 is available to implement disk copy retention in this manner. The following procedure should be used to implement this processing:

- OAM Manager SMF recording should be enabled, by setting the SMFRECID parameter in the ENVCNTL parameter library member to a unique value in the range 128-255.
- SMF records created during OAM Manager execution should be dumped and copied to a sequential dataset. If necessary, only the SMF record type created by OAM Manager need be copied.
- This file should then be processed by the new OAM Manager utility program OTIMP040. Refer to “OTIMP040 - the pre-fetch retention update utility” on page 171 for detailed information about this utility.
- The number of days that disk copy objects are to be retained after pre-fetching should be defined in the Archive Manager database for the storage group(s) to be processed in this manner as required. This value may be entered in the storage level definition or update panel in the Archive Manager database maintenance dialog (via TSO), or may be set using the Archive Manager database maintenance utility (OTASP000).
- The Archive Manager object management utility OTASP040 should be executed to delete disk copy objects which have exceeded this retention period. This utility will automatically delete disk copy datasets which no longer contain any active objects.

This procedure should be executed on a regular basis as required. Frequent execution of the procedure will allow disk space to be managed and reclaimed more aggressively.

OAM Manager components communicate with the user through informational, warning and error messages. All OAM Manager messages begin with the characters 'OTM', followed by a 5-character numeric identifier. OAM Manager messages may be displayed on the system log, in an OAM Manager print report or on a CICS display terminal.

OAM Manager OSREQ interface processing (for retrieval and deletion of migrated objects) sets return and reason codes, using the standard OSREQ return and reason code mechanism, before passing control back to the OSREQ caller.

This chapter documents all messages, categorized by OAM Manager component, and all OSREQ return and reason codes issued by OAM Manager.

.OAM directory regression utility messages

Messages from the OAM directory regression utility will be written to the SYSPRINT dataset.

OTM01000 Directory Regression Utility terminated with condition code xx

Explanation: This message is issued at termination of utility processing. 'xx' identifies the highest condition code encountered during utility execution.

Action: No action.

OTM01001 Error opening xxxxxxxx dataset

Explanation: An error occurred attempting to open the sequential file 'xxxxxxx'. Processing has been terminated abnormally.

Action: Examine other system messages to discover the reason for the error. Take the appropriate corrective action and restart the job.

OTM01002 Insufficient storage for workareas

Explanation: A virtual storage request has been rejected by the operating system. Processing has been terminated abnormally.

Action: Allocate more virtual storage to the job via the SIZE parameter on the JOB or EXEC JCL entries. Restart the job.

OTM01003 No objects selected for regression for storage group = nnnn....nnnn

Explanation: The OAM directory regression utility has processed the directory for the identified storage group, but selected no objects for regression to NearOAM V2.1 format.

Action: None. This is an informational message.

OTM01004 Unidentified EXEC parameter(s)

Explanation: An invalid keyword has been encountered during EXEC parameter validation. Processing of the utility is terminated.

Action: Correct the invalid EXEC parameter and restart the job.

OTM01006 Invalid value for 'PRINT' EXEC parameter

Explanation: The operand of the 'PRINT' keyword EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 159 for a description of EXEC parameters for the OAM directory regression utility. Correct the invalid operand and restart the job.

OTM01007 Storage class specified in 'TAPECLASS|DISKCLASS' parameter in 'ENVCNTL' member does not exist in OAM storage class identifier table

Explanation: The storage class specified in the identified parameter in the ENVCNTL parameter library member has not been defined via DFSMS. Processing of the utility is terminated.

Action: Verify that the TAPECLASS or DISKCLASS parameter in the ENVCNTL parameter library member has been correctly specified. If it has, ensure that the storage class identified in this parameter is defined to the system via DFSMS. Rerun the job after making the appropriate corrections.

OTM01010 No EXEC parameter(s) specified

Explanation: The mandatory storage-name parameter was missing or invalid in the JCL EXEC parameters. Processing has been terminated.

Action: Enter a valid JCL EXEC parameter and restart the job.

OTM01011 Duplicate EXEC parameter specified

Explanation: An EXEC keyword parameter has been specified more than once. Processing of the utility has been terminated.

Action: Remove the duplicate keyword from the EXEC parameters and restart the job.

OTM01012 Invalid specification of storage group name positional EXEC parameter

Explanation: The storage group name positional EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 159 for a description of EXEC parameters for the OAM directory regression utility. Correct the invalid parameter and restart the job.

OTM01013 Invalid specification of 'COMMIT' EXEC parameter

Explanation: The operand of the 'COMMIT' keyword EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 159 for a description of EXEC parameters for the OAM directory regression utility. Correct the invalid operand and restart the job.

OTM01018 SQL error -nnn received during commit processing

Explanation: The SQL error -nnn was received issuing an SQL COMMIT request to commit updates to the OAM object directory table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM01019 CAF open/close error xxxxxxxx

Explanation: An error has been encountered opening or closing a DB2 plan using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM01020 Member xxxxxxxx not found in parameter library

Explanation: The member 'xxxxxxx' was not present on the OAM Manager parameter library. Processing of the utility is terminated.

Action: Add the missing member to the OAM Manager parameter library and rerun the job. Refer to page 61 for a description of parameter library setup.

OTM01021 Error xxxx locating member XXXXXXXX in parameter library

Explanation: Error code 'xxxx' has been received attempting to locate member XXXXXXXX in the OAM Manager parameter library. Processing of the utility is terminated.

Action: Refer to IBM documentation of the LOCATE macro for a description of the error code. Take the appropriate corrective action and rerun the job.

OTM01022 Error(s) processing parameter library

Explanation: Errors were detected during validation of parameters from the OAM Manager parameter library. Processing was terminated abnormally.

Action: Consult the parameter validation report written by the utility to the SYSPRINT file for a description of the individual parameter errors. Correct the invalid parameter(s) and restart the job.

OTM01023 Storage group specific in EXEC parameters does not exist in 'STRGROUP' parameter library member

Explanation: The storage group name specified as the first positional EXEC parameter has not been defined in the STRGROUP member of the OAM Manager parameter library. Processing of the utility is terminated.

Action: Verify that the correct storage group name has been specified in the EXEC parameters. If it has, ensure that an entry for this storage group is present in the STRGROUP member of the OAM Manager parameter library. Make the appropriate correction and rerun the job.

OTM01024 Error loading CAF interface module

Explanation: An error has occurred dynamically loading the DB2 Call Attach Facility (CAF) interface module. Processing of the utility is terminated.

Action: Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM01025 Error loading program XXXXXXXX

Explanation: An error has occurred dynamically loading the program identified in the message.

Action: Ensure that the program identified in the message is available to be loaded from the steplib, joblib or linklist concatenation. Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM01028 Mandatory xxxxxxxx parameter missing

Explanation: The mandatory parameter identified in the message was not found in the OAM Manager parameter library. Processing of the utility was terminated abnormally.

Action: Add the missing parameter to the parameter library then rerun the job.

OTM01032 CAF connect/disconnect error xxxxxxxx

Explanation: An error has been encountered connecting or disconnecting to DB2 using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM01039 SQL error -nnn accessing OAM directory table

Explanation: SQL error -nnn was received accessing the OAM object directory table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM01042 SQL error -nnn accessing storage class identifier table

Explanation: SQL error -nnn was received accessing the OAM administration database storage class identifier table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM01044 Object xxxx in collection id nnnnnnn not found during update of OAM directory

Explanation: An entry for an object which has been selected for regression processing was not found in the OAM directory during object update processing. Processing of the utility is terminated.

Action: This message is likely to indicate an internal OAM Manager processing error. Report the error to your OAM Manager product support representative.

OTM01045 SQL error -nnn updating OAM directory entry for object xxxx; collection id = nnnnnnn

Explanation: SQL error -nnn was received updating the OAM object directory table entry for the identified object. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM01051 Unable to open SYSPRINT dataset

Explanation: The utility was unable to successfully open the SYSPRINT dataset, as assigned in the JCL. Processing of the utility is terminated.

Action: Ensure that a SYSPRINT DD card is present in the JCL. If it is, consult other available system messages for additional information concerning the error. Take the appropriate corrective action and restart the job.

.OAM directory conversion utility messages

Messages from the OAM directory conversion utility will be written to the SYSPRINT dataset.

OTM02000 Directory Conversion Utility terminated with condition code xx

Explanation: This message is issued at termination of utility processing. 'xx' identifies the highest condition code encountered during utility execution.

Action: No action.

OTM02001 Error opening xxxxxxxx dataset

Explanation: An error occurred attempting to open the sequential file 'xxxxxxx'. Processing has been terminated abnormally.

Action: Examine other system messages to discover the reason for the error. Take the appropriate corrective action and restart the job.

OTM02002 Insufficient storage for workareas

Explanation: A virtual storage request has been rejected by the operating system. Processing has been terminated abnormally.

Action: Allocate more virtual storage to the job via the SIZE parameter on the JOB or EXEC JCL entries. Restart the job.

**OTM02003 No objects selected for conversion for storage group =
nnnn.....nnnn**

Explanation: The OAM directory conversion utility has processed the directory for the identified storage group, but selected no objects for conversion from OAM Manager V2.1 format.

Action: None. This is an informational message.

OTM02004 Unidentified EXEC parameter

Explanation: An invalid keyword has been encountered during EXEC parameter validation. Processing of the utility is terminated.

Action: Correct the invalid EXEC parameter and restart the job.

OTM02006 Invalid value for 'PRINT' EXEC parameter

Explanation: The operand of the 'PRINT' keyword EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to 162 for a description of EXEC parameters for the OAM directory conversion utility. Correct the invalid operand and restart the job.

**OTM02007 Storage class specified in 'TAPECLASS|DISKCLASS' parameter in
'ENVCNTL' member does not exist in OAM storage class identifier
table**

Explanation: The storage class specified in the identified parameter in the ENVCNTL parameter library member has not been defined via DFSMS. Processing of the utility is terminated.

Action: Verify that the TAPECLASS or DISKCLASS parameter in the ENVCNTL parameter library member has been correctly specified. If it has, ensure that the storage class identified in this parameter is defined to the system via DFSMS. Rerun the job after making the appropriate corrections.

OTM02010 No EXEC parameter(s) specified

Explanation: The mandatory storage-name parameter was missing or invalid in the JCL EXEC parameters. Processing has been terminated.

Action: Enter a valid JCL EXEC parameter and restart the job.

OTM02011 Duplicate EXEC parameter specified

Explanation: An EXEC keyword parameter has been specified more than once. Processing of the utility has been terminated.

Action: Remove the duplicate keyword from the EXEC parameters and restart the job.

OTM02012 Invalid specification of storage group name positional EXEC parameter

Explanation: The storage group name positional EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 162 for a description of EXEC parameters for the OAM directory conversion utility. Correct the invalid parameter and restart the job.

OTM02013 Invalid specification of 'COMMIT' EXEC parameter

Explanation: The operand of the 'COMMIT' keyword EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 162 for a description of EXEC parameters for the OAM directory conversion utility. Correct the invalid operand and restart the job.

OTM02018 SQL error -nnn received during commit processing

Explanation: The SQL error -nnn was received issuing an SQL COMMIT request to commit updates to the OAM object directory table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM02019 CAF open/close error xxxxxxxx

Explanation: An error has been encountered opening or closing a DB2 plan using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM02020 Member xxxxxxxx not found in parameter library

Explanation: The member 'xxxxxxx' was not present on the OAM Manager parameter library. Processing of the utility is terminated.

Action: Add the missing member to the OAM Manager parameter library and rerun the job. Refer to chapter 2 for a description of parameter library setup.

OTM02021 Error xxxx locating member in parameter library

Explanation: Error code 'xxxx' has been received attempting to locate a member on the OAM Manager parameter library. Processing of the utility is terminated.

Action: Refer to IBM documentation of the LOCATE macro for a description of the error code. Take the appropriate corrective action and rerun the job.

OTM02022 Error(s) processing parameter library

Explanation: Errors were detected during validation of parameters from the OAM Manager parameter library. Processing was terminated abnormally.

Action: Consult the parameter validation report written by the utility to the SYSPRINT file for a description of the individual parameter errors. Correct the invalid parameter(s) and restart the job.

OTM02023 Storage group specified in EXEC parameters does not exist in 'STRGROUP' parameter library member

Explanation: The storage group name specified as the first positional EXEC parameter has not been defined in the STRGROUP member of the OAM Manager parameter library. Processing of the utility is terminated.

Action: Verify that the correct storage group name has been specified in the EXEC parameters. If it has, ensure that an entry for this storage group is present in the STRGROUP member of the OAM Manager parameter library. Make the appropriate correction and rerun the job.

OTM02024 Error loading CAF interface module

Explanation: An error has occurred dynamically loading the DB2 Call Attach Facility (CAF) interface module. Processing of the utility is terminated.

Action: Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM02025 Error loading program XXXXXXXX

Explanation: An error has occurred dynamically loading the program identified in the message.

Action: Ensure that the program identified in the message is available to be loaded from the steplib, joblib or linklist concatenation. Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM02028 Mandatory xxxxxxxx parameter missing

Explanation: The mandatory parameter identified in the message was not found in the OAM Manager parameter library. Processing of the utility was terminated abnormally.

Action: Add the missing parameter to the parameter library then rerun the job.

OTM02032 CAF connect/disconnect error xxxxxxxx

Explanation: An error has been encountered connecting or disconnecting to DB2 using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM02039 SQL error -nnn accessing OAM directory table

Explanation: SQL error -nnn was received accessing the OAM object directory table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM02042 SQL error -nnn accessing storage class identifier table

Explanation: SQL error -nnn was received accessing the OAM administration database storage class identifier table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM02044 Object xxxx in collection id nnnnnnn not found during update of OAM directory

Explanation: An entry for an object which has been selected for regression processing was not found in the OAM directory during object update processing. Processing of the utility is terminated.

Action: This message is likely to indicate an internal OAM Manager processing error. Report the error to your OAM Manager product support representative.

OTM02045 SQL error -nnn updating OAM directory entry for object xxxx; collection id = nnnnnnn

Explanation: SQL error -nnn was received updating the OAM object directory table entry for the identified object. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM02051 Unable to open SYSPRINT dataset

Explanation: The utility was unable to successfully open the SYSPRINT dataset, as assigned in the JCL. Processing of the utility is terminated.

Action: Ensure that a SYSPRINT DD card is present in the JCL. If it is, consult other available system messages for additional information concerning the error. Take the appropriate corrective action and restart the job.

.OAM migrated object conversion utility messages

Messages from the OAM migrated object conversion utility will be written to the SYSPRINT dataset.

OTM03000 Migrated Object Conversion Utility terminated with condition code xx

Explanation: This message is issued at termination of utility processing. 'xx' identifies the highest condition code encountered during utility execution.

Action: No action.

OTM03001 Error opening xxxxxxxx dataset

Explanation: An error occurred attempting to open the sequential file 'xxxxxxx'. Processing has been terminated abnormally.

Action: Examine other system messages to discover the reason for the error. Take the appropriate corrective action and restart the job.

OTM03002 Insufficient storage for workareas

Explanation: A virtual storage request has been rejected by the operating system. Processing has been terminated abnormally.

Action: Allocate more virtual storage to the job via the SIZE parameter on the JOB or EXEC JCL entries. Restart the job.

OTM03003 No objects selected for conversion for storage group = nnnn.....nnnn

Explanation: The OAM migrated object conversion utility has processed the directory for the identified storage group, but selected no objects for conversion from LCD to OAM storage.

Action: None. This is an informational message.

OTM03004 Unidentified EXEC parameter

Explanation: An invalid keyword has been encountered during EXEC parameter validation. Processing of the utility is terminated.

Action: Correct the invalid EXEC parameter and restart the job.

OTM03006 Invalid value for EXEC parameter xxxxxxxx

Explanation: The EXEC parameter identified in the message contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 166 for a description of EXEC parameters for the OAM migrated object conversion utility. Correct the invalid operand and restart the job.

OTM03007 TAPECLASS storage class not found in OAM storage class identifier table – xxxx....xxxx

Explanation: The storage class specified in the TAPECLASS parameter in the ENVCNTL parameter library member has not been defined via DFSMS – xxxx....xxxx identifies this storage class. Processing of the utility is terminated.

Action: Verify that the TAPECLASS parameter in the ENVCNTL parameter library member has been correctly specified. If it has, ensure that the storage class identified in this parameter is defined to the system via DFSMS. Rerun the job after making the appropriate corrections.

OTM03008 STARTSEQ value higher than ENDSEQ

Explanation: The value assigned to the STARTSEQ EXEC parameter is greater than that assigned to the ENDSEQ parameter. This is an invalid condition. Processing has been terminated.

Action: Enter a valid JCL EXEC parameter and restart the job.

OTM03009 SORT error – see SYSOUT report for details

Explanation: An error has occurred sorting the workfile OTIMV030 containing a list of objects to be converted by the utility. Processing has been terminated.

Action: Refer to the output report written by the sort utility to the SYSOUT dataset. Take the appropriate corrective action and restart the job.

OTM03010 No EXEC parameter(s) specified

Explanation: The mandatory storage-name parameter was missing or invalid in the JCL EXEC parameters. Processing has been terminated.

Action: Enter a valid JCL EXEC parameter and restart the job.

OTM03011 Duplicate EXEC parameter specified

Explanation: An EXEC keyword parameter has been specified more than once. Processing of the utility has been terminated.

Action: Remove the duplicate keyword from the EXEC parameters and restart the job.

OTM03012 Invalid specification of storage group name positional EXEC parameter

Explanation: The storage group name positional EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 166 for a description of EXEC parameters for the OAM migrated object conversion utility. Correct the invalid parameter and restart the job.

**OTM03013 Error X'aabb' reading|updating|creating|writing|locating xxxxxxxx
yyyy....yyyy**

Explanation: An error has occurred processing a VSAM file. The message will identify the type of processing being performed. 'xxxxxxx' gives the DD name of the file being processed, and 'yyyy....yyyy' identifies the type of record being processed. 'aa' and 'bb' give the hexadecimal values of the return and reason codes received from the VSAM request.

Action: Refer to IBM documentation on VSAM processing for a description of the return and reason codes displayed in the message. Take the appropriate corrective action and restart the job.

OTM03014 Invalid restart indicator in file OTIMV030

Explanation: This message indicates that an invalid condition has been detected in the workfile OTIMV030. Processing of the utility is terminated.

Action: This error can occur if a file has been restored incorrectly or has been corrupted for some other reason. To overcome the error, delete the

dataset allocated to file OTIMV030 and rerun the utility. If the error persists, contact your product support representative.

OTM03015 Incomplete job in progress but EXEC parms have been modified from old values of STARTSEQ = xxxxx, ENDSEQ = yyyyy and LEVEL = z

Explanation: The previous execution of the utility on the selected storage group ended abnormally, but the EXEC parameters for that run have been changed in the restarted job. 'xxxxx', 'yyyyy' and 'z' identify the values of the STARTSEQ, ENDSEQ and LEVEL parameters from the failed run. Processing of the utility is terminated.

Action: These parameters may not be modified following abnormal termination of a job. Correct the EXEC parameters and restart the job.

OTM03016 Return code xx reason codes X'yyyyyyyy' received from type zz call to batch pre-fetch utility.

Explanation: An unexpected return code has been received from an internal call to the batch pre-fetch utility. 'xx' gives the return code and 'yyyyyyyy' the hexadecimal reason codes received from the call. 'zz' identifies the request code used on the call.

Action: Refer to page 181 for a description of the codes displayed in this message. Take any appropriate corrective action in order to prevent a re-occurrence of this condition.

OTM03017 IDCAMS processing failed, check OTIMIDCO dataset

Explanation: An internal call by the utility to IDCAMS for deletion and re-definition of the workfile OTIMV130 has failed. Processing of the utility is terminated.

Action: Refer to the AMS output report in the dataset allocated to file OTIMIDCO in the JCL for information on the error. Take the appropriate corrective action and rerun the job.

OTM03018 SQL error -nnn received during commit processing

Explanation: The SQL error -nnn was received issuing an SQL COMMIT request to commit updates to the OAM object directory table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM03019 CAF open/close error xxxxxxxx

Explanation: An error has been encountered opening or closing a DB2 plan using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM03020 Member xxxxxxxx not found in parameter library

Explanation: The member 'xxxxxxx' was not present on the OAM Manager parameter library. Processing of the utility is terminated.

Action: Add the missing member to the OAM Manager parameter library and rerun the job. Refer to chapter 2 for a description of parameter library setup.

OTM03021 Error xxxx locating member yyyyyyyy in parameter library

Explanation: Error code 'xxxx' has been received attempting to locate a member on the OAM Manager parameter library. 'yyyyyyy' gives the member name. Processing of the utility is terminated.

Action: Refer to IBM documentation of the LOCATE macro for a description of the error code. Take the appropriate corrective action and rerun the job.

OTM03022 Error(s) processing parameter library

Explanation: Errors were detected during validation of parameters from the OAM Manager parameter library. Processing was terminated abnormally.

Action: Consult the parameter validation report written by the utility to the SYSPRINT file for a description of the individual parameter errors. Correct the invalid parameter(s) and restart the job.

OTM03023 Storage group specified in EXEC parameters does not exist in 'STRGROUP' parameter library member

Explanation: The storage group name specified as the first positional EXEC parameter has not been defined in the STRGROUP member of the OAM Manager parameter library. Processing of the utility is terminated.

Action: Verify that the correct storage group name has been specified in the EXEC parameters. If it has, ensure that an entry for this storage group is present in the STRGROUP member of the OAM Manager parameter library. Make the appropriate correction and rerun the job.

OTM03024 Error loading CAF interface module

Explanation: An error has occurred dynamically loading the DB2 Call Attach Facility (CAF) interface module. Processing of the utility is terminated.

Action: Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM03025 Error loading program XXXXXXXX

Explanation: An error has occurred dynamically loading the program identified in the message.

Action: Ensure that the program identified in the message is available to be loaded from the steplib, joblib or linklist concatenation. Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

**OTM03026 Dynamic allocation error xxxxyyyy (de)allocating aaaaaaaa
bbbb....bbbb**

Explanation: An error has occurred dynamically allocating or de-allocating a dataset. 'xxxx' and 'yyyy' give the hexadecimal error and info codes returned from the SVC99 dynamic allocation processor. 'aaaaaaa' and 'bbbb....bbbb' give the file and dataset names. Processing of the utility is terminated.

Action: Refer to IBM documentation on dynamic allocation processing for a description of the error and info codes. Take the appropriate corrective action and rerun the job.

OTM03029 Error X'aabb' received opening file xxxxxxxx dataset yyyy....yyyy

Explanation: An error has occurred opening a VSAM file. 'xxxxxxx' gives the DD name of the file being processed, and 'yyyy....yyyy' gives the associated dataset name. 'aa' and 'bb' give the hexadecimal values of the return and reason codes received from the VSAM request.

Action: Refer to IBM documentation on VSAM processing for a description of the return and reason codes displayed in the message. Take the appropriate corrective action and restart the job.

OTM03031 Return code aa supp codes X'bbbbcccc' received accessing LCD archive database – RQC = xx

Explanation: An error has been returned from an internal call to the Archive Manager component of Lifecycle Director with request code 'xx'. 'aa' gives the return code and 'bbbb' and 'cccc' the hexadecimal values of supp codes 1 & 2 received from the call.

Action: Refer to the Lifecycle Director Archive Manager user guide for an explanation of the codes displayed in the message. Take the appropriate corrective action and restart the job.

OTM03032 CAF connect/disconnect error xxxxxxxx

Explanation: An error has been encountered connecting or disconnecting to DB2 using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM03033 Collection name id not in OAM table

Explanation: An object has been selected for conversion processing, but the collection name containing the object does not appear in the collection name identifier table in the OAM administration database. Processing of the utility continues, but a return code of 8 will be generated on completion of the utility.

Action: This message indicates there is an inconsistency between the OAM director table for the storage group being processed and the OAM collection name identifier table. This may indicate an operational problem. The inconsistency should be investigated and resolved before rerunning the utility.

OTM03034 TIME parameter value exceeded – job terminating

Explanation: The job has been executing for a length of time which exceeds the number of minutes specified in the TIME execution parameter. Processing of the utility will terminate with condition code 4 on completion of the current batch of requests.

Action: None. This is an informational message. Migrated object conversion processing may be restarted at any subsequent time. There are no special restart conditions.

OTM03042 SQL error -nnn accessing storage class identifier table|collection name identifier table|OAM directory table

Explanation: SQL error -nnn was received accessing the DB2 table identified in the message. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM03046 Error xx received validating parameter library member yyyyyyyy

Explanation: An internal error has occurred during validation of the parameter library member displayed in the message. Processing of the utility is terminated.

Action: Retain all job logs and report the error to your local product support representative.

OTM03050 Object conversion processing terminating in response to operator request

Explanation: Processing of the is terminating due to entry of an operator STOP command for the job. Processing of will terminate immediately with condition code 4.

Action: None. This is an informational message. Migrated object conversion processing may be restarted at any subsequent time. There are no special restart conditions.

OTM03051 Unable to open SYSPRINT dataset

Explanation: The utility was unable to successfully open the SYSPRINT dataset, as assigned in the JCL. Processing of the utility is terminated.

Action: Ensure that a SYSPRINT DD card is present in the JCL. If it is, consult other available system messages for additional information concerning the error. Take the appropriate corrective action and restart the job.

Pre-fetch retention update utility messages

Messages from the pre-fetch retention update utility will be written to the SYSPRINT dataset.

OTM04000 OAM Manager Pre-Fetch Retention Update Utility completed with condition code xx

Explanation: This informational message is issued when the pre-fetch retention update utility has completed processing. 'xx' is the highest condition code encountered during this execution.

Action: No action necessary.

OTM04001 Error loading program xxxxxxxx

Explanation: An error has occurred loading the program identified in the message. Processing of the utility is terminated with condition code 12.

Action: Refer to other available system messages to discover the cause of the load failure. In particular, ensure that the OAM Manager product library is available via the system linklist, or via the JOBLIB or STEPLIB library concatenations. Correct the error and resubmit the job.

OTM04002 Error opening xxxxxxxx dataset

Explanation: An error has occurred opening the non-VSAM file identified in the message.

Action: Refer to other available system messages to discover the cause of the open failure. Correct the error and resubmit the job.

OTM04003 Insufficient storage for workareas

Explanation: A request by the utility for main storage allocation has failed. Processing of the utility will be terminated with condition code 12.

Action: Increase the REGION size specified for the job and resubmit.

OTM04004 Error nn locating member xxxxxxxx in parameter library

Explanation: An attempt to locate the specified member in the OAM Manager parameter library has failed. 'nn' gives the return code from the FIND macro. Processing of the utility is terminated with condition code 12.

Action: Ensure that the correct library has been specified in the DD entry for file OTIMPARM in the JCL used to execute the job, and that this library contains the member specified in the message.

OTM04005 DB2 database xxxxxxxx is not defined in the STRGROUP parameter member

Explanation: An entry for the DB2 database identified in the message, used for storage of unmigrated objects in an OAM storage group, does not appear in the STRGROUP member in the OAM parameter library. A condition code of 8 is generated by the utility, and processing continues.

Action: Ensure that there is a STRGROUP entry for each OAM storage group referenced in the SMF records in file OTIMSMF. Correct the STRGROUP member as necessary, and rerun the job.

OTM04006 Dynamic allocation error aaaabbbb dynamically allocating | deallocating xxxxxxxx yyyy....yyyy

Explanation: An error has been encountered dynamically allocating or de-allocating dataset 'yyyy....yyyy' for file 'xxxxxxx' identified in the message. 'aaaa' and 'bbbb' give the hexadecimal error and information codes received from the dynamic allocation request. A condition code of 8 is generated by the utility, and processing continues.

Action: Consult IBM documentation on dynamic allocation processing for a description of the error and information codes displayed in the message. Take the appropriate corrective action and rerun the job. If no apparent cause for the error condition can be identified, contact your Oracle customer support representative.

OTM04007 Return code xx received during execution of GENCB macro

Explanation: An error has been encountered generating a VSAM control block. 'xx' gives the return code from the GENCB macro. A condition code of 8 is generated by the utility, and processing continues.

Action: Refer to IBM documentation on the GENCB macro processing for details of the return code. Take the appropriate corrective action and rerun the job.

OTM04008 Error X'xxyy' opening dataset aaaa....aaaa

Explanation: A VSAM open error has occurred when opening the identified dataset. 'xx' and 'yy' are the hexadecimal error and reason codes returned from the VSAM OPEN macro. 'aaaa....aaaa' is the name of the VSAM dataset. A condition code of 8 is generated by the utility, and processing continues.

Action: Refer to IBM documentation on VSAM macro processing for details of the return and reason codes. Take the appropriate corrective action and rerun the job.

OTM04009 Internal error received at location xxxxxxxx

Explanation: An unexpected error has occurred during processing of the utility. 'xxxxxxx' gives an internal location identifier where the error occurred. A condition code of 12 is set and processing of the utility is terminated.

Action: Collect all job output and system log messages belonging to the failed job, and report the error to your Oracle customer support representative.

OTM04010 VSAM error X'xyy' reading | updating zzzz....zzzz in aaaa....aaaa

Explanation: A VSAM error has occurred when reading or updating an index record in the identified dataset. 'zzzz....zzzz' gives the primary key of the record. 'xx' and 'yy' are the hexadecimal error and reason codes returned from the VSAM GET or PUT macro, and 'aaaa....aaaa' contains the first 41 characters of the dataset name. A condition code of 8 is generated by the utility, and processing continues.

Action: Refer to IBM documentation on VSAM macro processing for details of the return and reason codes. Take the appropriate corrective action and rerun the job.

OTM04098 Unable to open SYSPRINT dataset

Explanation: An error has occurred opening the SYSPRINT dataset.

Action: Refer to other available system messages to discover the cause of the open failure. Correct the error and resubmit the job.

.CICS intercept messages

Messages from CICS intercept processing will be displayed on the system console.

OTM05500 OAM CICS intercept established

Explanation: OAM Manager CICS initialization processing has successfully established the OSREQ intercept.

Action: None.

OTM05501 OTIMP310 not in Link Pack Area

Explanation: OAM Manager module OTIMP310 was not found in either the fixed link pack area (FLPA) or modified link pack area (MLPA) during CICS initialization processing

Action: Ensure that OTIMP310 is available in the FLPA or MLPA. Refer to page 20 or 45 for details on implementing this requirement.

OTM05503 Bad intercept already in place after previousabend

Explanation: During CICS initialization processing, OAM Manager has detected an invalid intercept in existence from a previous OAM Manager CICS initialization request.

Action: Verify that no unauthorized FLPA or MLPA updates to the OAM Manager module OTIMP310, or the OSR interface module CBRINIT0 have been executed since the previous initialization of the OAM Manager CICS interface.

If this is the case, a re-IPL will be required to reset the FLPA or MLPA.

If this is not the case, contact your OAM Manager product support representative.

OTM05504 OAM intercept already established – information updated

Explanation: An existing intercept was already in place during CICS initialization processing. The information in this intercept has been updated, and CICS initialization will continue as normal.

Action: None.

OTM05506 Invalid request code received by OTIMP055

Explanation: The CICS intercept module OTIMP055 has received an invalid request from another OAM Manager component.

Action: This is an internal error condition, and should be communicated to your OAM Manager product support representative.

OTM05507 Insufficient storage available for workareas

Explanation: A request for main storage above the 16Mb line has been denied by the operating system.

Action: Increase the size of the CICS region in which OAM Manager initialization is being performed, or increase the value of the OSCOR parameter in that region.

OTM05508 Error xx performing PAGEFIX

Explanation: An error has occurred during page fix processing while establishing the CICS intercept. 'xx' gives the decimal error code returned in register 15 from the PGSER macro.

Action: Consult IBM documentation on the PGSER macro for an explanation of the error code. If there is no apparent cause for the error, consult your OAM Manager product support representative.

OTM05509 Null OMCT entry in OTIMP310 workarea

Explanation: Although the OAM Manager control region is active, an internal workarea has not been initialized correctly.

Action: This is an internal error. Contact your OAM Manager product support representative.

OTM05510 Error nn performing OKSWAP|NOSWAP

Explanation: An error has occurred when the OSREQ intercept module attempted to make the calling application region swappable (OKSWAP) or non-swappable (NOSWAP). 'nn' gives the error code returned from the SYSEVENT macro.

Action: Refer to IBM documentation on the SYSEVENT macro for a description of the error codes, and take the appropriate corrective action. Contact your OAM Manager product support representative if the cause of the error is not apparent.

OTM05511 Abend intercepted during request processing

Explanation: The OAM Manager intercept module has trapped a system abend condition during initialization or normal OSREQ intercept processing. Processing will be terminated.

Action: Examine other system messages for extra information on the system abend condition.

In particular, if an S047 abend has been detected, ensure that the CICS intercept module OTIMP055 has been moved from the OAM Manager distribution load library, and is only available from the PLPA (see paragraph (f) of section "Perform MVS host system modifications" on page 20 for a discussion of this issue).

For any other abend code, contact your OAM Manager product support representative.

.Object selection utility messages

Messages from the object selection utility will be written to the SYSPRINT dataset.

OTM10001 – Storage group name not found in EXEC parameter

Explanation: The name of the storage group to be processed in an execution of the object selection utility was not present as the first positional

parameter in the JCL EXEC parameters. Processing of the utility was terminated.

Action: Correct the EXEC parameters in the JCL used to execute the object selection utility, by entering a valid storage group name as the first positional parameter.

OTM10002 – Open failed for file XXXXXXXX

Explanation: An error occurred attempting to open sequential file 'xxxxxxx'. Processing of the utility was terminated.

Action: Consult other system messages for extra information on the cause of the open error. Correct the error and restart the job.

OTM10003 - Member xxxxxxxx not found in parameter library

Explanation: Member 'xxxxxxx' was not found in the OAM Manager parameter library during parameter validation processing. The utility has been terminated abnormally.

Action: Add the missing member to the OAM Manager parameter library and restart the job.

OTM10004 - DB2 subsystem name not found in ENVCNTL member

Explanation: The mandatory SUBSYSTEM parameter was not found in the ENVCNTL member of the OAM Manager parameter library. Processing of the utility was terminated abnormally.

Action: Edit the ENVCNTL member to enter a valid SUBSYSTEM parameter then restart the job.

OTM10005 – Open failed for database, return code = xx, supp codes = X'yyyyzzzz'

Explanation: An error occurred attempting to open the Archive Manager database for output during object migration processing. The utility has been terminated abnormally.

Action: Consult the batch archival section of the Archive Manager User Manual for a description of the return and reason codes displayed in the message.

Take the appropriate corrective action and restart the job.

OTM10006 - DB2 error, table name = xxxx SQLCODE = -yyy

Explanation: An SQL error has been detected while accessing the identified DB2 table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the associated SQL error code.

Take the appropriate corrective action and restart the job.

OTM10007 - Write failed for tape database, return code = xx, supp codes = X'yyyyzzzz'

Explanation: An error has occurred attempting to write an object to the Archive Manager database. Processing of the utility has been abandoned.

Action: Consult the batch archival section of the Archive Manager User Manual for a description of the return and reason codes displayed in the message.

Take the appropriate corrective action and restart the job.

OTM10008 – Normal run requested but restart required

Explanation: A 'RESTART=NO' parameter was specified in the JCL EXEC parameters for this step, or was used by default, but the previous execution of the utility did not complete successfully.

Action: Enter the 'RESTART=YES' parameter on the EXEC card in the JCL and resubmit the job.

OTM10009 – Restart requested but normal run required

Explanation: A 'RESTART=YES' parameter was specified in the JCL EXEC parameters for this step, but the previous execution of the utility completed successfully.

Action: Change the EXEC parameter to 'RESTART=NO' or allow this value to default, and resubmit the job.

OTM10010 – Allocate failed for dataset xxxx Error = X'yyyyzzzz'

Explanation: An attempt to dynamically allocate file 'xxxx' failed with reason code 'yyyy' and information code 'zzzz'. Processing of the utility has been abandoned.

Action: Consult IBM documentation on SVC99 processing for a description of the reason and information codes displayed.

Take the appropriate corrective action and restart the job.

OTM10011 - Close failed for database, return code = xx, supp codes = X'yyyyzzzz'

Explanation: An error occurred attempting to close the Archive Manager database during object migration processing. The utility has been terminated abnormally.

Action: Consult the batch archival section of the Archive Manager User Manual for a description of the return and reason codes displayed in the message.

Take the appropriate corrective action and restart the job.

OTM10012 - Connect to DB2 subsystem dddd failed, return code = xxx, reason code = X'yyyyyyyy'

Explanation: An attempt to connect the job to the DB2 subsystem 'dddd' using the Call Attach Facility has failed. Processing of the utility has been terminated.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes.

Take the appropriate corrective action and restart the job.

OTM10013 - Open of DB2 plan name aaaaaaaa failed, return code = xxx, reason code = X'yyyyyyyy'

Explanation: An attempt to open plan 'aaaaaaa' using the DB2 Call Attach Facility has failed. Processing of the utility has been abandoned.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes.

Take the appropriate corrective action and restart the job.

OTM10014 - Close of DB2 plan name aaaaaaaa failed, return code = xxx, reason code = X'yyyyyyyy'

Explanation: A failure occurred closing plan 'aaaaaaa' using the DB2 Call Attach Facility. Processing of the utility has been abandoned.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes.

Take the appropriate corrective action and restart the job.

**OTM10015 - Disconnect from DB2 subsystem dddd failed, return code = xxx,
reason code = X'yyyyyyyy'**

Explanation: An attempt to disconnect the job from DB2 subsystem 'dddd' using the Call Attach Facility has failed. Processing of the utility has been terminated.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes.

Take the appropriate corrective action and restart the job.

OTM10016 - I/O failed, file = aaaaaaaa key = bbbb return/reason codes = xxxxyyyy'

Explanation: An I/O operation to the identified record on VSAM file 'aaaaaaa' has failed. 'xxxx' gives the hexadecimal return and reason code bytes from the RPL feedback area. Execution of the utility has been terminated.

Action: Consult IBM VSAM macro documentation for a description of the displayed return and reason codes.

Take appropriate corrective action and restart the job.

OTM10017 – Open failed for file xxxxxxxx, reason code = X'yyyyyyyy'

Explanation: An error has been detected attempting to open VSAM file 'xxxxxxx'. Execution of the utility has been abandoned.

Action: Consult IBM VSAM macro documentation for a description of the displayed hexadecimal reason code.

Take appropriate corrective action and restart the job.

OTM10018 - No storage group in STRGROUP member to match EXEC parameter

Explanation: The storage group name specified in the JCL EXEC parameter does not have a corresponding entry in the STRGROUP member of the OAM Manager parameter library. Processing of the utility has been terminated.

Action: Ensure that there are corresponding entries for the storage group to be processed in this execution of the utility in the JCL EXEC parameter, and the OAM Manager STRGROUP member. Restart the job.

OTM10019 - Object Selection Utility completed successfully

Explanation: The object selection utility has completed its processing successfully.

Action: No action is required. The object management procedure may continue with execution of the tape backup utility.

OTM10020 - Invalid EXEC parameter, please refer to the User Manual for valid specifications

Explanation: An invalid keyword has been found on the JCL EXEC parameter for execution of the utility. Processing of the utility has been abandoned.

Action: Check the JCL EXEC parameters to identify the invalid keyword. Correct the parameters and restart the job.

OTM10021 – Storage group name in EXEC parameter is too long

Explanation: The first positional parameter in the JCL EXEC parameter exceeds 30 characters in length. Processing of the utility has been abandoned.

Action: Update the JCL EXEC parameter with a valid storage group name and restart the job.

OTM10022 – Load failed for DSNALI

Explanation: Loading of the DB2 module DSNALI failed during Call Attach Facility processing. Execution of the utility has been terminated abnormally.

Action: Ensure that the DB2 runtime library is available to the object management procedure via the system linklist or STEPLIB/JOBLIB concatenation, then restart the job.

OTM10023 – Load failed for DSNHLI2

Explanation: Loading of the DB2 module DSNHLI2 failed during Call Attach Facility processing. Execution of the utility has been terminated abnormally.

Action: Ensure that the DB2 runtime library is available to the object management procedure via the system linklist or STEPLIB/JOBLIB concatenation, then restart the job.

OTM10024 – Parameter processing failed

Explanation: The utility has detected one or more errors on the OAM Manager parameter library during parameter validation processing. Execution of the utility has been terminated abnormally.

Action: Consult the parameter validation report in the SYSPRINT dataset for details of the parameter validation errors. Correct the invalid parameters, and restart the job.

OTM10025 – Insufficient storage for workareas

Explanation: A request for virtual storage has been rejected by the operating system. Processing of the utility has been terminated.

Action: Allocate more virtual storage to the object management job, via the SIZE parameter of the JOB or EXEC card then restart the job.

OTM10026 - Object selection parameters for this run are as follows -

Explanation: This is an informational message which precedes a summary report of the migration and expiration parameters active for this execution of the utility.

Action: No action.

OTM10028 – Internal error, storage not free

Explanation: An attempt to free virtual storage has been rejected by the operating system. This message is for informational purposes, and the utility will continue processing normally; a return code of 4 will be set on completion of utility processing.

Action: No action. If this message appears consistently during successive executions of the utility, inform your OAM Manager product support representative.

OTM10029 - Collection name id xxxx does not exist in collection name table

Explanation: An object with collection name identifier 'xxxx' has been encountered in the OAM directory for the storage group being processed, but the identifier does not exist in the OAM collection name identifier table. Processing of the utility has been terminated.

Action: This error indicates an inconsistency of information held within the OAM tables for the storage group being processed. Inform the person responsible for OAM implementation and maintenance at your installation of this error. After correcting the condition which caused the error, restart the job.

OTM10030 - Object selection utility ended with completion code xxx

Explanation: This is an informational message which is displayed at the end of utility processing. The utility has ended with completion code 'xxx'.

Action: No action

OTM10031 - Object management utility has been run successfully; rerun of OTIMP100 rejected

Explanation: Execution of the object selection utility has been attempted, but the utility has already been executed successfully as part of a currently incomplete object management procedure for this storage group.

Action: Restart of the object selection utility is not permitted after successful execution. The object selection utility will not be allowed to execute (normal or restart run) until the database update utility OTIMP120 has been run successfully. Ensure that utilities are submitted in the correct sequence.

OTM10032 – Data for object xxxx not found on table yyyy

Explanation: A disk-resident OAM object has been selected from the OAM directory for migration to Archive Manager, but rows for the object did not exist in the corresponding OAM object storage table. The object is ignored and processing of the utility will continue with the next object. A condition code of 8 will be generated on completion of utility execution.

Action: This error indicates an inconsistency of information held within the OAM tables for the storage group being processed. Inform the person responsible for OAM implementation and maintenance at your installation of this error.

OTM10033 – No valid SVCNO parameter found in ENVCNTL parameter

Explanation: The mandatory SVCNO parameter was not found in the ENVCNTL member of the OAM Manager parameter library. Processing of the utility was terminated abnormally.

Action: Edit the ENVCNTL member to enter a valid SVCNO parameter then restart the job.

OTM10038 – Management class xxxx for object yyyy not in OBJCNTL

Explanation: The identified object is being processed from the OAM directory, but its management class ('xxxx') has not been defined in the OAM Manager 'OBJCNTL' parameter library member.

Action: Add an entry for the identified management class to the OAM Manager 'OBJCNTL' parameter library member, and rerun the job.

OTM10039 - IDCAMS processing failed, check OTIMIDCO dataset

Explanation: The automatic DELETE/DEFINE of the OAM Manager deletion control dataset during restart processing has failed. Processing has been terminated.

Action: Check the Access Method Services print report in the OTIMIDCO file for information on the failure. Take the appropriate corrective action and restart the job.

OTM10040 – Internal error, location - xxxxxxxx

Explanation: An internal error has occurred during execution of the object selection utility. Processing has been terminated abnormally.

Action: Report the problem to your OAM Manager product support representative.

OTM10041 - Execution terminated early because time limit has been exceeded

Explanation: Execution of the utility has been terminated because the elapsed run time (in minutes) exceeds the value specified in the 'TIME' execution parameter.

Action: None. Execution of the object management procedure may continue normally from the next job step. All objects successfully processed prior to termination of the utility will have been selected for object management processing.

OTM10042 - Execution terminated early via operator request

Explanation: Execution of the utility has been terminated after receipt of an operator 'STOP' command.

Action: None. Execution of the object management procedure may continue normally from the next job step. All objects successfully processed prior to termination of the utility will have been selected for object management processing.

OTM10043 – De-allocate failed for file aaaaaaaa Return code = xx error = yyyy info = zzzz

Explanation: Dynamic de-allocation of the identified file has failed. 'xx', 'yyyy' and 'zzzz' are the return, error and information codes from the de-allocation request. Processing has been terminated abnormally.

Action: Refer to IBM documentation on SVC99 for a description of the codes. Take the appropriate corrective action and restart the job.

OTM10044 Error X'nn' received attaching/detaching subtask OTIMP105

Explanation: An error has been received attaching or detaching an MVS subtask for issuing OAM OSREQ retrieval requests. 'nn' gives the hexadecimal return code from the MVS ATTACH macro. Processing has been terminated abnormally.

Action: Refer to IBM documentation on ATTACH macro processing for a description of the code. Take the appropriate corrective action and restart the job.

OTM10045 - Return code xx supp codes X'yyyyyyyy' received during subtask processing

Explanation: An error has been occurred during OSREQ retrieval subtask processing. 'xx' gives the return code and 'yyyyyyyy' the supplementary error codes from the subtask. Processing has been terminated abnormally.

Action: This message indicates an internal error has occurred during subtask processing. Report the error to your Oracle product support representative.

OTM10046 - Invalid location flag 'x' for object yyyy....yyyy

Explanation: Field ODLSLOC in the OAM directory table entry for object 'yyyy....yyyy' contains a value of 'x'. This is not a valid entry. An error condition code 8 is generated, but processing continues.

Action: Check the directory entry for the identified object, and make any appropriate corrections. The object has not been selected for processing during the current execution of the utility, but will be eligible for selection during the next execution.

OTM10047 - OSREQ ACCESS error: return code = xx, reason code = X'yyyyyyyy'

Explanation: An error has occurred establishing a connection to OAM. 'xx' gives the return code and 'yyyyyyy' the reason code issued by the OSREQ ACCESS call. Processing has been terminated abnormally.

Action: Consult IBM documentation on OSREQ macro processing for a description of the error. Make the appropriate corrections and rerun the job.

OTM10048 - OSREQ RETRIEVE error: return code = xx, reason code = X'yyyyyyy' for object zzzz....zzzz

Explanation: An error has occurred retrieving an optical or tape-resident OAM object for migration to Archive Manager. 'xx' gives the return code and 'yyyyyyy' the reason code issued by the OSREQ RETRIEVE call. 'zzzz....zzzz' identifies the object for which the error occurred. Processing has been terminated abnormally.

Action: Consult IBM documentation on OSREQ macro processing for a description of the error. Make the appropriate corrections and rerun the job.

OTM10049 – BLDVRP|DLVRP Error: return code = X'nn'

Explanation: An error has occurred building or deleting the VSAM LSR pool buffers. 'xx' gives the hexadecimal error code.

Action: Refer to IBM VSAM macro documentation for a description of the error. Take the appropriate corrective action and rerun the job.

OTM10050 – Object selection processing terminating in response to operator request

Explanation: An operator 'STOP' command has been entered to terminate object selection utility processing.

Action: None. This is an informational message.

OTM10051 Error loading program XXXXXXXX

Explanation: An error has occurred dynamically loading the program identified in the message.

Action: Ensure that the program identified in the message is available to be loaded from the steplib, joblib or linklist concatenation. Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM10052 EXEC parameter XXXXXXXX is not valid when dataset OTIMS120 has been specified

Explanation: The keyword parameter identified in the message is present in the EXEC parameters, when file OTIMS120 has been specified in the JCL used to run program OTIMP100. This is not permitted. The parameter will be ignored and a condition code of 4 generated for utility execution.

Action: Remove the specified EXEC parameter when file OTIMS120 is present in the JCL, to avoid production of this warning message for future runs.

OTM10053 EXEC parameter XXXXXXXX is only valid when dataset OTIMS120 has been specified

Explanation: The keyword parameter identified in the message is present in the EXEC parameters, but file OTIMS120 has not been specified in the JCL used to run program OTIMP100. The parameter may only be specified if OTIMS120 is present. The parameter will be ignored and a condition code of 4 generated for utility execution.

Action: Remove the specified EXEC parameter if file OTIMS120 is not present in the JCL, to avoid production of this warning message for future runs.

OTM10054 Restart error: Inconsistent specification of dataset OTIMS120 between the restart run and the failed run

Explanation: Execution of the object selection utility is being restarted after an earlier failure, but either file OTIMS120 was specified in the failed run and is not present in the rerun, or vice versa. Execution of the utility will be terminated with condition code 12.

Action: Ensure that specification of OTIMS120 in the rerun job is consistent with that during the failed job. Correct the JCL and rerun the job.

OTM10055 Restart error: Cannot reposition to last uncommitted object in the OTIMS120 dataset

Explanation: Execution of the object selection utility is being restarted after an earlier failure, but an entry for the object processed after the last commit point in the failed run cannot be found in file OTIMS120. Execution of the utility will be terminated with condition code 12.

Action: Ensure that the contents of file OTIMS120 in the rerun job are identical to those during the failed job, and rerun the job.

OTM10056 OTIMS120 record error: xxxx....xxxx
OTM10056 Source coll name: aaaa....aaaa Object name: bbbb....bbbb

Explanation: A validation error has been detected when processing a record from file OTIMS120. 'aaaa....aaaa' and 'bbbb....bbbb' specify the collection and object names for the invalid entry.

One of the following validation errors may occur:

Invalid request code specified in record
Source and/or target names are invalid
Source collection name is not found
Target collection name is not found
Target stg group is not being processed
Target management class is not found
Object has already been migrated
Object has not been found
Source stg group not defined in STRGROUP
Target stg group not defined in STRGROUP
Source and target names cannot be equal

The entry will be ignored and a program condition code of 4 generated. Processing will continue with the next entry in file OTIMS120.

Action: Locate the invalid entry in file OTIMS120. If necessary, correct the error and include the corrected entry in a version of file OTIMS120 used for another execution of the utility.

.Database backup control utility messages

Messages from the database backup control utility will be written to the SYSPRINT dataset.

OTM11000 – Database Backup Control Utility successfully completed

Explanation: The OAM Manager database backup control utility has completed processing successfully.

Action: No action.

OTM11001 – Processing completed – return code = xxx

Explanation: The OAM Manager database backup control utility has completed processing with completion code 'xxx'.

Action: For non-zero return code value, examine other messages for an explanation of the reason for the non-zero value.

OTM11002 – Unable to open xxxxxxxx dataset

Explanation: An error occurred attempting to open the sequential file 'xxxxxxx'. Processing has been terminated abnormally.

Action: Examine other system messages to discover the reason for the error. Take the appropriate corrective action and restart the job.

OTM11003 - Error X'xxxx' opening OTIMV110 dataset

Explanation: An error occurred opening the OAM Manager deletion control file for the storage group being processed. 'xxxx' is the hexadecimal code returned by the VSAM OPEN macro. Processing is abandoned.

Action: Consult IBM VSAM macro documentation for a description of the error code. Take the appropriate corrective action and restart the job.

OTM11004 - Error X'xyy' reading OTIMV110 control record

Explanation: An error occurred reading the control record from the OAM Manager deletion control file for the storage group being processed. 'xx' and 'yy' are the VSAM return and reason codes. Processing of the utility has been terminated abnormally.

Action: Consult IBM VSAM macro documentation for a description of the return and reason codes. Take the appropriate corrective action and restart the job.

OTM11005 - OTIMV110 status indicates backup processing out of sequence

Explanation: OAM Manager has detected that the database backup control utility is not being run immediately after successful execution of the object selection utility. Processing is abandoned.

Action: Ensure that utilities in the object management procedure are executed in the correct sequence. If the preceding object selection utility has not run successfully, restart the procedure after taking the appropriate corrective action.

OTM11010 - Error X'xyy' rewriting OTIMV110 control record

Explanation: An error has occurred updating the control record on the OAM Manager deletion control file for the storage group being processed. 'xx' and 'yy' are the return and reason codes from the VSAM update request.

Action: Refer to IBM VSAM macro documentation for a description of the error and reason codes. Take the appropriate corrective action and restart the job.

OTM11015 – Insufficient storage for data buffers

Explanation: A virtual storage request has been rejected by the operating system. Processing has been terminated abnormally.

Action: Allocate more virtual storage to the job via the SIZE parameter on the JOB or EXEC JCL entries. Restart the job.

OTM11016 - Error X'xxxxyyyy' during dynamic delete of OTASBKUP dataset

Explanation: An attempt to delete the OTASBKUP dataset which was created by the object selection utility has failed. 'xxxx' and 'yyyy' give the hexadecimal error and information codes returned from the delete request. Processing of the utility continues. A condition code of 4 will be generated.

Action: Refer to IBM SVC99 documentation for a description of the error and information codes. Take any corrective action necessary to ensure that the error does not re-occur.

The OTASBKUP dataset will be automatically re-used by the object selection utility when next executed.

OTM11017 - Missing/invalid EXEC parameters

Explanation: The mandatory storage-name parameter was missing or invalid in the JCL EXEC parameters. Processing has been terminated.

Action: Enter a valid JCL EXEC parameter and restart the job.

OTM11018 - xxxxxxxx member not found on OTIMS100 parameter library

Explanation: The member 'xxxxxxx' was not found on the OAM Manager parameterlibrary. Processing has been abandoned.

Action: Edit the parameter library to create a valid 'xxxxxxx' member.
Restart the job.

OTM11019 - Error X'xxxx' locating yyyyyyyy member on parameter library

Explanation: Hexadecimal error code 'xxxx' was returned from the FIND request for the identified member on the OAM Manager parameter library. Processing has been abandoned.

Action: Consult IBM documentation for the FIND macro for a description of the error code. Take the appropriate corrective action and restart the job.

OTM11020 - Error X'xxxxyyyy' allocating zzzzzzzz dataset

Explanation: Dynamic allocation of file 'zzzzzzzz' has failed with hexadecimal error code 'xxxx' and information code 'yyyy'. Processing has been terminated abnormally.

Action: Refer to IBM documentation on SVC99 processing for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM11021 - Storage group from EXEC parms not in STRGROUP parameters

Explanation: The storage group identified in the JCL EXEC parameters for execution of the utility was not found in the STRGROUP member on the OAM Manager parameter library. Processing has been abandoned.

Action: Ensure that the storage group specified in the EXEC parameters has a matching entry in the STRGROUP member on the OAM Manager parameter library. Restart the job.

OTM11022 - Parameter errors processing parameter library

Explanation: Errors were detected during validation of parameters from the OAM Manager parameter library. Processing was terminated abnormally.

Action: Consult the parameter validation report written by the utility to the SYSPRINT file for a description of the individual parameter errors. Correct the invalid parameter(s) and restart the job.

OTM11023 - OTIMP100 has not yet run successfully; processing terminated

Explanation: OAM Manager has detected that the database backup utility is being executed following an unsuccessful execution of the object selection utility. Processing is abandoned.

Action: Ensure that the object selection utility has run successfully before executing the tape backup utility.

OTM11024 - SUBSYSTEM not present in ENVCNTL parameters

Explanation: The mandatory SUBSYSTEM parameter was not found in the ENVCNTL member of the OAM Manager parameter library. Processing of the utility was terminated abnormally.

Action: Edit the ENVCNTL member to enter a valid SUBSYSTEM parameter then restart the job.

OTM11101 I/O error X'xxxx' processing XXXXXXXX parameter member

Explanation: An I/O error has occurred processing member 'XXXXXXX' in the OAM Manager parameter library. The hexadecimal code 'xxxx' gives the first two bytes of the error code returned from the I/O request.

Action: Consult documentation for the appropriate device for a description of the displayed error code.

Take appropriate corrective action and restart the job.

.Database update utility messages

Messages from the database update utility are written to the SYSPRINT dataset.

OTM12001 - Allocate failed for dataset aaaa Error = X'xxxx' Info =X'yyyy'

Explanation: A dynamic allocation for the identified dataset failed with hexadecimal error code 'xxxx' and information code 'yyyy'. Processing of the utility is terminated abnormally.

Action: Refer to IBM documentation on SVC99 processing for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM12002 – Open failed for file xxxxxxxx

Explanation: An OPEN request for sequential file 'xxxxxxx' has failed. Utility processing is terminated abnormally.

Action: Consult other available system messages for more information on the reason for the open error. Take the appropriate corrective action and restart the job.

OTM12003 - Control record not found for deletion control dataset

Explanation: The control record was not present on the OAM Manager deletion control file at the start of utility processing. This indicates that the utility is not being run after a valid object selection process.
Processing of the utility is terminated.

Action: Ensure that each step in the object management procedure is run in the correct sequence, and resubmit the job.

OTM12004 – Missing object xxxx....xxxx in DB2 table yyyy

Explanation: An entry for the selected object did not exist in the identified table during database maintenance processing for a migrated or expired object. Processing of the utility is terminated.

Action: This condition indicates an inconsistency between OAM directory and object storage entries for the identified object. Refer the problem to your DB2 administrator for resolution. Restart the job after taking the appropriate corrective action.

If no inconsistency can be found with DB2 entries, contact your OAM Manager product support representative.

OTM12006 - Missing object xxxx in database during restart run

Explanation: An attempt has been made by the utility to delete an expired object from the Archive Manager database for the storage group being processed. The object was not found in the database. Processing continues normally.

Action: This is an informational message and can be ignored. This condition may occur when restarting the utility after a failure. All expired Archive Manager-resident objects which were deleted after the last commit point in the failed run will not exist during rerun processing, but the utility will reprocess all objects from the last commit point onwards, giving rise to this condition.

A condition code of 4 will be set by the utility at end of processing.

OTM12007 - Missing object xxxx in database during normal run

Explanation: An attempt has been made by the utility to delete an expired object from the Archive Manager database for the storage group being processed, but the object did not exist in the database. Processing is terminated abnormally.

Action: This condition indicates an inconsistency between the OAM directory entry for the object and the Archive Manager database for the storage group.

Check that the correct version of the OAM directory entry and Archive Manager database index are in use, and that no unauthorized update of either has occurred.

If no reason can be found for the inconsistency, contact your OAM Manager product support representative.

OTM12008 - Member xxxxxxxx not found in parameter library

Explanation: Member 'xxxxxxx' was not found in the OAM Manager parameter library during parameter validation processing. The utility has been terminated abnormally.

Action: Add the missing member to the OAM Manager parameter library and restart the job.

OTM12009 - Connect to DB2 subsystem failed, return code = xxx, reason code = X'yyyyyyyy'

Explanation: An attempt to connect the job to the DB2 subsystem 'dddd' using the Call Attach Facility has failed. Processing of the utility has been terminated.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes. Take the appropriate corrective action and restart the job.

OTM12010 – Open of DB2 plan name aaaaaaaa failed, return code = xxx, reason code = X'yyyyyyyy'

Explanation: An attempt to open plan 'aaaaaaa' using the DB2 Call Attach Facility has failed. Processing of the utility has been abandoned.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes. Take the appropriate corrective action and restart the job.

OTM12011 - Close of DB2 plan name aaaaaaaa failed, return code = xxx, reason code = X'yyyyyyyy'

Explanation: A failure occurred closing plan 'aaaaaaa' using the DB2 Call Attach Facility. Processing of the utility has been abandoned.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes. Take the appropriate corrective action and restart the job.

OTM12012 - Disconnect from DB2 subsystem dddd failed, return code = xxx, reason code = X'yyyyyyyy'

Explanation: An attempt to disconnect the job from DB2 subsystem 'dddd' using the Call Attach Facility has failed. Processing of the utility has been terminated.

Action: Consult IBM documentation on the DB2 Call Attach Facility for a description of the displayed return and reason codes. Take the appropriate corrective action and restart the job.

OTM12013 – Invalid EXEC parameter, valid values are RESTART=YES/NO, PRINT=YES/NO or DELETEWARN=YES/NO

Explanation: An invalid keyword has been found on the JCL EXEC parameter for execution of the utility. Processing of the utility has been abandoned.

Action: Check the JCL EXEC parameters to identify the invalid keyword.
Correct the parameters and restart the job.

OTM12014 – Database update utility parameters for this run are as follows -

Explanation: This is an informational message which precedes a summary report of the parameters active for this execution of the database update facility.

Action: No action.

OTM12015 - Parameter processing failed

Explanation: The utility has detected one or more errors on the OAM Manager parameter library during parameter validation processing. Execution of the utility has been terminated abnormally.

Action: Consult the parameter validation report in the SYSPRINT dataset for details of the parameter validation errors. Correct the invalid parameters, and restart the job.

OTM12016 - Insufficient storage for workareas

Explanation: A request for virtual storage has been rejected by the operating system. Processing of the utility has been terminated.

Action: Allocate more virtual storage to the object management job, via the SIZE parameter of the JOB or EXEC card then restart the job.

OTM12017 – Open failed for file xxxxxxxx, reason code = X'yyyyyyyy'

Explanation: An error has been detected attempting to open VSAM file 'xxxxxxx'. Execution of the utility has been abandoned.

Action: Consult IBM VSAM macro documentation for a description of the displayed hexadecimal reason code. Take appropriate corrective action and restart the job.

OTM12018 - No storage group in STRGROUP member to match EXEC parameter

Explanation: The storage group name specified in the JCL EXEC parameter does not have a corresponding entry in the STRGROUP member of the OAM Manager parameter library. Processing of the utility has been terminated.

Action: Ensure that there are corresponding entries for the storage group to be processed in this execution of the utility in the JCL EXEC parameter, and the OAM Manager STRGROUP member. Restart the job.

OTM12019 – Database update utility successfully completed

Explanation: The database update utility has completed its processing successfully.

Action: No action is required. The object management procedure for the selected storage group has now been completed.

OTM12020 – Storage group name not found in EXEC parameter

Explanation: The name of the storage group to be processed in an execution of the database update utility was not present as the first positional parameter in the JCL EXEC parameters. Processing of the utility was terminated.

Action: Correct the EXEC parameters in the JCL used to execute the object selection utility, by entering a valid storage group name as the first positional parameter.

OTM12021 – Storage group name in EXEC parameter is too long

Explanation: The first positional parameter in the JCL EXEC parameter exceeds 30 characters in length. Processing of the utility has been abandoned.

Action: Update the JCL EXEC parameter with a valid storage group name and restart the job.

OTM12022 – Load failed for DSNALI

Explanation: Loading of the DB2 module DSNALI failed during Call Attach Facility processing. Execution of the utility has been terminated abnormally.

Action: Ensure that the DB2 runtime library is available to the object management procedure via the system linklist or STEPLIB/JOBLIB concatenation, then restart the job.

OTM12023 – Load failed for DSNHLI2

Explanation: Loading of the DB2 module DSNHLI2 failed during Call Attach Facility processing. Execution of the utility has been terminated abnormally.

Action: Ensure that the DB2 runtime library is available to the object management procedure via the system linklist or STEPLIB/JOBLIB concatenation, then restart the job.

OTM12024 – I/O failed, file= aaaaaaaa key = bbbb return/reason codes = 'xxxxyyyy'

Explanation: An I/O operation to the identified record on VSAM file 'aaaaaaa' has failed. 'xxxx' gives the hexadecimal return and reason code bytes from the RPL feedback area. Execution of the utility has been terminated.

Action: Consult IBM VSAM macro documentation for a description of the displayed return and reason codes. Take appropriate corrective action and restart the job.

OTM12025 - DB2 error, table name = xxxx SQLCODE = -yyy

Explanation: An SQL error has been detected while accessing the identified DB2 table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the associated SQL error code. Take the appropriate corrective action and restart the job.

OTM12027 - I/O failed on sequential get, file = xxxxxxxx, return/reason codes = X'yyyy'

Explanation: An attempt to read a record sequentially from the identified VSAM file has failed. 'yyyy' gives the return and reason codes from the RPL feedback area. Processing has been terminated abnormally.

Action: Refer to IBM VSAM macro documentation for a description of the error. Take the appropriate corrective action and restart the job.

If no apparent cause for the error can be identified, contact your OAM Manager product support representative.

OTM12028 - SQL error processing commit

Explanation: An error has occurred during DB2 COMMIT processing. Execution of the utility has been terminated.

Action: Check DB2 messages for more information concerning the error. Take the appropriate corrective action and restart the job.

OTM12029 – Normal run requested but restart run required

Explanation: A 'RESTART=NO' parameter was specified in the JCL EXEC parameters for this step, or was used by default, but the previous execution of the utility did not complete successfully.

Action: Enter the 'RESTART=YES' parameter on the EXEC card in the and resubmit the job.

OTM12030 – Restart run requested but normal run required

Explanation: A 'RESTART=YES' parameter was specified in the JCL EXEC parameters for this step, but no previous unsuccessful execution of the utility has been recorded during the current object management procedure.

Action: Change the EXEC parameter to 'RESTART=NO' or allow this value to default, and resubmit the job.

OTM12031 – Collection name id xxxxxxxx does not exist in collection name table

Explanation: An object with collection name identifier 'xxxxxxx' has been encountered in the OAM directory for the storage group being processed, but the identifier does not exist in the OAM collection name identifier table. Processing of the utility has been terminated.

Action: This error indicates an inconsistency of information held within the OAM tables for the storage group being processed. Inform the person responsible for OAM implementation and maintenance at your installation of this error. After correcting the condition which caused the error, restart the job.

OTM12032 – Migrate, Expire, Delete totals do not match those from previous OTIMP100 run

Explanation: Object totals in the three selection categories that were processed by the database update utility do not exactly match the totals selected by the object selection utility during the same object management procedure. Processing is terminated.

Action: Check that the object management procedure has been run correctly, including all restart processing. In particular, check that the OAM Manager deletion control file for the storage group being processed was not updated or amended in any way between execution of the object selection utility and the database update utility.

If none of the above conditions can be identified, contact your OAM Manager product support representative.

In any case, the object management procedure should be completely rerun. Prior to rerunning the job, the OAM directory and object storage databases and the OAM Manager deletion control dataset for the storage group being processed should be restored to their condition prior to the failed object management procedure.

OTM12033 – IDCAMS processing failed, check OTIMIDCO dataset

Explanation: The automatic DELETE/DEFINE of the OAM Manager deletion control dataset for the storage group being processed has failed. Processing has been terminated.

Action: Check the Access Method Services print report in the OTIMIDCO file for information on the failure. Take the appropriate corrective action and restart the job.

OTM12034 – De-allocated failed for file aaaaaaaa return code = xx error = yyyy info = zzzz

Explanation: Dynamic de-allocation of the identified file has failed. 'xx', 'yyyy' and 'zzzz' are the return, error and information codes from the de-allocation request. Processing has been terminated abnormally.

Action: Refer to IBM documentation on SVC99 for a description of the codes. Take the appropriate corrective action and restart the job.

OTM12035 – Tape dataset backup has not completed successfully

Explanation: An attempt has been made to execute the database update utility, but the database backup control utility (OTIMP110) has not yet been successfully run in this object management procedure. Processing is abandoned.

Action: Ensure that the database backup control utility has completed successfully before running the database update utility.

OTM12036 – Object Selection Utility (OTIMP100) has not completed successfully

Explanation: An attempt has been made to execute the database update utility, but the object selection utility has not yet been successfully run in this object management procedure. Processing is abandoned.

Action: Ensure that the object selection and tape database backup utilities have completed successfully before running the database update utility.

OTM12037 – Database Update Utility ended with completion code xxx

Explanation: This is an informational message which is displayed at the end of utility processing. The utility has ended with completion code 'xxx'.

Action: No action necessary.

OTM12038 – Return code xx supp codes X'yyyyyyyy' received opening database for storage group aaaaaaaa

Explanation: An error has occurred when opening the Archive Manager database for the OAM storage group with DB2 name qualifier 'aaaaaaa'. 'xx' contains the Archive Manager return code. The supp code fields contain additional information on the error. Processing of the utility has been terminated.

Action: Refer to the Archive Manager documentation for a description of the return and supplementary codes. Take the appropriate corrective action and restart the job.

OTM12039 – Ret code xx supp codes X'yyyyyyy' received deleting object bbbb

Explanation: An error has occurred when deleting the identified object from the Archive Manager database. 'xx' contains the Archive Manager return code, The supplementary codes contain additional information on the error. Processing of the utility has been terminated.

Action: Refer to Archive Manager documentation for a description of the return and supplementary codes. Take the appropriate corrective action and restart the job.

OTM12040 – Internal error, location xxxxxxxx

Explanation: An internal error has occurred during execution of the database update utility. Processing has been terminated abnormally.

Action: Report the problem to your OAM Manager product support representative.

OTM12041 – Return code xx supp codes X'yyyyyyy' received issuing commit request

Explanation: An error has occurred while performing an Archive Manager 'commit' request. 'xx' contains the Archive Manager return code. The supplementary codes contain additional information on the error. Processing of the utility has been terminated.

Action: Refer to Archive Manager documentation for a description of the return and supplementary codes. Take the appropriate corrective action and restart the job.

OTM12042 Error loading program XXXXXXXX

Explanation: An error has occurred dynamically loading the program identified in the message.

Action: Ensure that the program identified in the message is available to be loaded from the steplib, joblib or linklist concatenation. Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM12043 Source | Target stg group xxxx.....xxxx is not defined in STRGROUP. aaaa....aaaa

Explanation: The source or target storage group 'xxxx....xxxx' specified in a migration request from file OTIMS120 is not defined in the STRGROUP parameter library member. 'aaaa....aaaa' gives the

collection name identifier and name of the object being migrated. The object will not be migrated and processing continues with the next entry in the OTIMS120 file. A program condition code of 8 will be set.

Action: Ensure that the OTIMS120 entry in error is correctly specified, and/or that the STRGROUP parameter library member contains all storage groups to be processed during execution of the utility. If necessary, correct the error and include the object entry in a version of file OTIMS120 used for another execution of the utility.

**OTM12044 Target storage group xxxx.....xxxx is not being processed.
aaaa....aaaa**

Explanation: The target storage group 'xxxx....xxxx' specified in a migration request from file OTIMS120 is not the same as the storage group specified in the EXEC parameters for program OTIMP120. 'aaaa....aaaa' gives the collection name identifier and name of the object being migrated. The object will not be migrated and processing continues with the next entry in the OTIMS120 file. A program condition code of 8 will be set.

Action: Ensure that the target storage group in the OTIMS120 entry in error is correctly specified, and/or that the correct storage group is specified in the EXEC parameters. If necessary, correct the OTIMS120 error and include the object entry in a version of file OTIMS120 used for another execution of the utility, or correct the EXEC parameters and rerun the object management procedure.

**OTM12045 Object already exists in the target storage group.
aaaa....aaaa**

Explanation: An entry in file OTIMS120 has specified that an object is to be moved to a different storage group, but a directory entry for that object already exists in the target storage group. 'aaaa....aaaa' gives the collection name identifier and name of the object being migrated. The object will not be migrated and processing continues with the next entry in the OTIMS120 file. A program condition code of 8 will be set.

Action: Ensure that the OTIMS120 entry in error is correctly specified. If necessary, correct the error and include the object entry in a version of file OTIMS120 used for another execution of the utility.

.Object recovery utility messages

Messages from the object recovery utility will be written to the SYSPRINT dataset.

OTM13000 Object Recovery Utility terminated with condition code xx

Explanation: This message is issued at termination of utility processing. 'xx' identifies the highest condition code encountered during utility execution.

Action: No action.

OTM13001 Error opening xxxxxxxx dataset

Explanation: An error occurred attempting to open the sequential file 'xxxxxxx'. Processing has been terminated abnormally.

Action: Examine other system messages to discover the reason for the error. Take the appropriate corrective action and restart the job.

OTM13002 Insufficient storage for workareas

Explanation: A virtual storage request has been rejected by the operating system. Processing has been terminated abnormally.

Action: Allocate more virtual storage to the job via the SIZE parameter on the JOB or EXEC JCL entries. Restart the job.

OTM13003 No objects eligible for recovery for storage group = xx

Explanation: The object recovery utility has processed the OAM directory for the identified storage group, but found no disk-resident objects which required recovery from Archive Manager.

Action: None. This is an informational message.

OTM13004 Unidentified EXEC parameter

Explanation: An invalid keyword has been encountered during EXEC parameter validation. Processing of the utility is terminated.

Action: Correct the invalid EXEC parameter and restart the job.

OTM13006 Invalid value for 'PRINT' parameter

Explanation: The operand of the 'PRINT' keyword EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 175 for a description of EXEC parameters for the object recovery utility. Correct the invalid operand and restart the job.

OTM13009 Invalid parameter combination of 'TYPE=SPEED' and 'BATCH'

Explanation: The 'BATCH' execution parameter may only be specified if 'TYPE=FULL' is also specified. Processing of the utility is terminated.

Action: Refer to page 175 for a description of EXEC parameters for the object recovery utility. Correct the invalid operand and restart the job.

OTM13010 No EXEC parameter(s) specified

Explanation: The mandatory storage-name parameter was missing or invalid in the JCL EXEC parameters. Processing has been terminated.

Action: Enter a valid JCL EXEC parameter and restart the job.

OTM13011 Duplicate EXEC parameter specified

Explanation: An EXEC keyword parameter has been specified more than once. Processing of the utility has been terminated.

Action: Remove the duplicate keyword from the EXEC parameters and restart the job.

OTM13012 Invalid specification of storage group name EXEC parameter

Explanation: The storage group name positional EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 175 for a description of EXEC parameters for the object recovery utility. Correct the invalid operand and restart the job.

OTM13013 Invalid specification of 'BATCH' EXEC parameter

Explanation: The operand of the 'BATCH' keyword EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 175 for a description of EXEC parameters for the object recovery utility. Correct the invalid operand and restart the job.

OTM13014 Invalid specification of 'TYPE' EXEC parameter

Explanation: The operand of the 'TYPE' keyword EXEC parameter contained an invalid value. Processing of the utility is terminated.

Action: Refer to page 175 for a description of EXEC parameters for the object recovery utility. Correct the invalid operand and restart the job.

OTM13016 Return code xx reason codes X'yyyyyyyy' received from type nn call to batch pre-fetch utility

Explanation: The object recovery utility has issued a request to the OAM Manager batch pre-fetch utility to perform object recovery, but the request failed with return code 'xx' and hexadecimal reason codes 'yyyyyyyy'. Processing of the utility has been terminated.

Action: Refer to page 183 for a description of batch pre-fetch request, return and reason codes. Take the appropriate corrective action and rerun the job.

OTM13018 SQL error -nnn received during commit processing

Explanation: The SQL error -nnn was received issuing an SQL COMMIT request to commit updates to the OAM object directory table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM13019 CAF open/close error xxxxxxxx

Explanation: An error has been encountered opening or closing a DB2 plan using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM13020 Member xxxxxxxx not found in parameter library

Explanation: The member 'xxxxxxx' was not present on the OAM Manager parameter library. Processing of the utility is terminated.

Action: Add the missing member to the OAM Manager parameter library and rerun the job. Refer to page 19 for a description of parameter library setup.

OTM13021 Error xxxx locating member yyyyyyyy in parameter library

Explanation: Error code 'xxxx' has been received attempting to locate the identified member from the OAM Manager parameter library. Processing of the utility is terminated.

Action: Refer to IBM documentation of the LOCATE macro for a description of the error code. Take the appropriate corrective action and rerun the job.

OTM13022 Error(s) processing parameter library

Explanation: Errors were detected during validation of parameters from the OAM Manager parameter library. Processing was terminated abnormally.

Action: Consult the parameter validation report written by the utility to the SYSPRINT file for a description of the individual parameter errors. Correct the invalid parameter(s) and restart the job.

OTM13023 Storage group specified in EXEC parameters does not exist in 'STRGROUP' parameter library member

Explanation: The storage group name specified as the first positional EXEC parameter has not been defined in the STRGROUP member of the OAM Manager parameter library. Processing of the utility is terminated.

Action: Verify that the correct storage group name has been specified in the EXEC parameters. If it has, ensure that an entry for this storage group is present in the STRGROUP member of the OAM Manager parameter library. Make the appropriate correction and rerun the job.

OTM13024 Error loading CAF interface module

Explanation: An error has occurred dynamically loading the DB2 Call Attach Facility (CAF) interface module. Processing of the utility is terminated.

Action: Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

OTM13028 Mandatory xxxxxxxx parameter missing

Explanation: The mandatory parameter identified in the message was not found in the OAM Manager parameter library. Processing of the utility was terminated abnormally.

Action: Add the missing parameter to the parameter library then rerun the job.

OTM13032 CAF connect/disconnect error xxxxxxxx

Explanation: An error has been encountered connecting or disconnecting to DB2 using the DB2 Call Attach Facility (CAF). Processing of the utility is terminated.

Action: Refer to IBM documentation on the Call Attach Facility for a description of the error and information codes. Take the appropriate corrective action and restart the job.

OTM13038 Collection name id nnnnnnn not found in OAMADMIN database for object xxxx

Explanation: An object in a collection with identifier 'nnnnnnn' has been selected for recovery processing by the utility, but the specified collection name identifier does not exist in the OAMADMIN database collection name identifier table. Processing of the utility is terminated.

Action: This condition indicates an inconsistency in the contents of the OAM database for the storage group being processed by the utility, and the OAM administration database. Refer this problem to your DB2 database administrator. If no reason can be found for the inconsistency, contact your OAM Manager product support representative.

OTM13039 SQL error -nnn accessing OAM directory table

Explanation: SQL error -nnn was received accessing the OAM object directory table. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM13041 SQL error -nnn table name = xxxx....xxxx

Explanation: SQL error -nnn was received accessing the DB2 table identified in the message. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM13044 Object xxxx in collection id nnnnnnn not found during update of OAM directory

Explanation: An entry for an object which has been selected for recovery processing was not found in the OAM directory during object update processing. Processing of the utility is terminated.

Action: This message is likely to indicate an internal OAM Manager processing error. Report the error to your OAM Manager product support representative.

OTM13045 SQL error -nnn updating OAM directory entry for object xxxx; collection id = nnnnnnn

Explanation: SQL error -nnn was received updating the OAM object directory table entry for the identified object. Processing of the utility has been terminated.

Action: Consult IBM documentation for a description of the SQL error condition. Take the appropriate corrective action and restart the job.

OTM13051 Unable to open SYSPRINT dataset

Explanation: The utility was unable to successfully open the SYSPRINT dataset, as assigned in the JCL. Processing of the utility is terminated.

Action: Ensure that a SYSPRINT DD card is present in the JCL. If it is, consult other available system messages for additional information concerning the error. Take the appropriate corrective action and restart the job.

Control region messages

Messages from the OAM Manager control region master task will be displayed on the system console.

OTM20000 Enter request:

Explanation: This is the operator reply message displayed by the control region after successful initialization.

Action: All OAM Manager operator commands are entered as responses to this message. After processing a command, the control region will redisplay this message.

OTM20001 Error opening parameter file

Explanation: An error has occurred opening the OAM Manager parameter library during initialization processing. Initialization is terminated.

Action: None. This is an informational message.

OTM20008 OMCT GETMAIN failure X'xx'

Explanation: A request for virtual storage in subpool 241 of the MVS CSA has been denied by the operating system with return code 'xx'. Initialization of the control region is aborted.

Action: Refer to IBM documentation on the GETMAIN macro for an explanation of the return code. Take the appropriate corrective action and restart the control region.

OTM20009 Communications table initialized

Explanation: The OAM Manager communications table has been successfully initialized during control region initialization. Processing continues.

Action: None. This is an informational message.

OTM20010 xxxxxxxx member not found in parameter file

Explanation: The member 'xxxxxxx' was not present on the OAM Manager parameter library during control region initialization. Processing is aborted.

Action: Add the missing member to the OAM Manager parameter library. Refer to page 19 for a description of parameter library setup.

OTM20011 Error X'xx' during scheduler initialization

Explanation: Error code 'xx' was returned by the scheduler task during OAM Manager initialization processing. Control region initialization has been aborted.

Action: Consult other messages displayed during control region initialization for a description of the scheduler error (scheduler messages will have the format OTM220nn). Take the action specified for the error message, and restart the control region.

If the cause of the error is not apparent from any displayed message, contact your OAM Manager product support representative.

OTM20012 Scheduler task initialized successfully

Explanation: The scheduler task has been successfully initialized during control region initialization processing.

Action: None. This is an informational message.

OTM20013 Error X'xx' received attaching scheduler task

Explanation: Hexadecimal error code 'xx' was received from the ATTACH macro that was used to initiate the scheduler task during OAM Manager control region initialization processing. The control region is terminated.

Action: Refer to IBM documentation on the ATTACH macro for a description of the error code. Take the appropriate corrective action and restart the control region.

If no apparent cause for the failure can be identified, contact your OAM Manager product support representative.

OTM20014 GETMAIN failure X'xx' allocating OMRH | OMSH | working storage

Explanation: A request for virtual storage in the OAM Manager control region has been rejected by the operating system. Control region initialization processing is aborted.

Action: Refer to IBM documentation on the GETMAIN macro for a description of hexadecimal error code 'xx'. Take the appropriate corrective action and restart the control region. If there was insufficient storage in the region to satisfy the request, increase the virtual storage available by changing the SIZE parameter of the OAM Manager procedure. Restart the control region.

OTM20015 Error X'xx' received attaching tape reader | disk reader | scheduler task nn

Explanation: Hexadecimal error code 'xx' was received from the ATTACH macro that was used to initiate the specified tape or disk reader or scheduler task during OAM Manager control region initialization processing. The control region is terminated.

Action: Refer to IBM documentation on the ATTACH macro for a description of the error code. Take the appropriate corrective action and restart the control region.

If no apparent cause for the failure can be identified, contact your OAM Manager product support representative.

OTM20016 nnn tape reader | disk reader | scheduler tasks initialized successfully

Explanation: A total of 'nnn' tape reader, disk reader or scheduler tasks have been successfully initialized during control region initialization processing. The value of 'nnn' should be equal to the value of the MAXDRIVE parameter (for tape reader tasks), MAXDISK parameter (for disk reader tasks) or MAXSCHED (for scheduler tasks) in the TAPECNTL member of the OAM Manager parameter library.

Action: None. This is an informational message.

OTM20017 OAM intercept already established – information updated

Explanation: A previous intercept was already in place during establishment of the OAM Manager OSREQ intercept during initialization processing. Processing continues normally.

Action: Information in the intercept is updated to reflect the current operating environment of the OAM Manager control region.

If an intercept is already in place, it is probable that the previous execution of the OAM Manager control region terminated abnormally (eg) due to operator cancellation.

If this is not the case, report the message to your OAM Manager product support representative.

OTM20018 Retcode X'xx' Reascode X'yyyyyyy' received from OAM ACCESS request

Explanation: Return code 'xx' and reason code 'yyyyyyy' were received from an OSREQ ACCESS request during control region initialization processing. The control region is terminated.

Action: Refer to IBM documentation on the OSREQ macro for a description of the return and reason codes. Take the appropriate corrective action and restart the control region.

OTM20019 OTIMP300 not in Link Pack Area

Explanation: The OAM Manager intercept module OTIMP300 was not found in the FLPA or MLPA during control region initialization processing. The control region is terminated.

Action: Ensure that module OTIMP300 is installed in the FLPA or MLPA before restarting the control region.

OTM20020 Bad intercept already in place after previous abend

Explanation: An intercept was already in place during OAM Manager control region initialization processing, but the information contained in it does not match the existing LPA configuration. The control region is terminated.

Action: Ensure that no changes have been made to the FLPA or MLPA since the last execution of the OAM Manager control region. If no changes have taken place, contact your OAM Manager product support representative.

In any case, a re-IPL of the system will be required to reset the FLPA or MLPA before the OAM Manager control region will be able to be initialized successfully.

OTM20021 OAM intercept successfully established

Explanation: The OAM Manager OSREQ intercept has been successfully established during control region initialization processing.

Action: None. This is an informational message.

OTM20022 Stall condition detected in control region

Explanation: A timeout condition has been detected during control region initialization processing, or during processing of an operator command. Processing is terminated.

Action: Investigate other system messages which may have been displayed at the time of the error, to try and determine the cause of the timeout. If the stall condition was detected during processing of an operator command, issue an operator DISPLAY command to identify the condition of tasks and locks in the control region, to assist in identifying the cause of the timeout.

OTM20023 Insufficient storage available for workareas

Explanation: A request for virtual storage in the OAM Manager control region has been rejected by the operating system. Control region initialization processing is aborted.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the NEAROAMC procedure. Restart the control region.

OTM20024 Error X'xxxx' locating member on OTIMS100

Explanation: Hexadecimal error code 'xxxx' has been received attempting to locate a member on the OAM Manager parameter library. Control region initialization processing is aborted.

Action: Refer to IBM documentation of the LOCATE macro for a description of the error code. Take the appropriate corrective action and restart the control region.

OTM20025 I/O error X'xxxx' processing yyyyyyyy parameter member

Explanation: An I/O error has occurred processing member 'yyyyyyyy' from the OAM Manager parameter library during control region initialization processing. 'xxxx' gives the first two sense bytes from the IOB at the time of the error. Control region initialization is aborted.

Action: Refer to IBM documentation for a description of the error code. Take the appropriate corrective action and restart the control region.

If no apparent cause for the error can be detected, contact your OAM Manager product support representative.

OTM20026 Error locating control region ASCB

Explanation: An error has been encountered attempting to access the Address Space Control Block (ASCB) for the OAM Manager control region. Control region initialization is aborted.

Action: This problem should be reported to your OAM Manager product support representative before attempting to restart the control region.

OTM20027 Error xx performing PAGEFIX

Explanation: Error code 'xx' was received from a page fix request during OAM Manager initialization processing. The control region is terminated.

Action: Refer to IBM documentation on the PGSER macro for a description of the error. Take the appropriate corrective action and restart the control region.

If no apparent cause for the error can be identified, contact your OAM Manager product support representative.

OTM20028 OAM Manager V3.0 initialization starting

Explanation: This is a version identifier message which is displayed at start of control region initialization processing.

Action: None. This is an informational message.

OTM20029 Mandatory xxxxxxxxxxxx parameter missing or invalid

Explanation: The identified parameter is mandatory but did not have a valid entry in the OAM Manager parameter library. Normal parameter error processing will be undertaken by the control region.

Action: Edit the relevant member of the parameter library to ensure that a valid parameter is present. Then restart the control region.

OTM20030 Initialization completed successfully

Explanation: All control region initialization processing has been performed successfully.

Action: None. This is an informational message. It will be accompanied by message OTM20000.

OTM20031 Control region initialization waiting for DB2 subsystem xxxx to start

Explanation: The OAM Manager control region has been started but DB2 subsystem 'xxxx' has not yet initialized. Control region initialization is suspended until DB2 subsystem 'xxxx' is available.

Action: Start DB2 subsystem processing, or wait for DB2 initialization to complete. The OAM Manager control region will resume normal initialization processing when the DB2 subsystem is available.

OTM20032 - CAF aaaaaaaa error: return code xx reason code yyyyyyyy

Explanation: A DB2 Call Attach Facility error has occurred performing operation 'aaaaaaa'. 'xx' and 'yyyyyyy' are the error and reason codes return from CAF. Control region initialization is terminated.

Action: Refer to IBM document for the DB2 Call Attach Facility for a description of the displayed error and reason codes. Take the appropriate corrective action and restart the control region.

OTM20035 Error X'xx' during housekeeping initialization

Explanation: Error code 'xx' was returned by the housekeeping task during OAM Manager initialization processing. Control region initialization has been aborted.

Action: Consult other messages displayed during control region initialization for a description of the housekeeping error. Take the action specified for the error message, and restart the control region.

If the cause of the error is not apparent from any displayed message, contact your OAM Manager product support representative.

OTM20036 Housekeeping task initialized successfully

Explanation: The housekeeping task has been successfully initialized during control region initialization processing.

Action: None. This is an informational message.

OTM20037 Error X'xx' received attaching housekeeping task

Explanation: Hexadecimal error code 'xx' was received from the ATTACH macro that was used to initiate the housekeeping task during OAM Manager control region initialization processing. The control region is terminated.

Action: Refer to IBM documentation on the ATTACH macro for a description of the error code. Take the appropriate corrective action and restart the control region.

If no apparent cause for the failure can be identified, contact your OAM Manager product support representative.

OTM20038 OAM Manager control region already initialized in this OAM environment

Explanation: An attempt has been made to start the OAM Manager control region, but a control region is already active in the same OAM configuration. Initialization of the second control region is terminated.

Action: Ensure that any existing control region execution is terminated before attempting to start the control region.

OTM20039 DB2 subsystem xxxx terminating – abnormal | normal shutdown initiated

Explanation: The DB2 subsystem 'xxxx' which is used by the OAM Manager control region is terminating normally or abnormally. Automatic shutdown of the OAM Manager control region has been initiated. A normal OAM Manager shutdown is initiated when DB2 is being terminated normally; an immediate OAM Manager shutdown is initiated when DB2 is being terminated abnormally.

Action: Restart the OAM Manager control region when the DB2 subsystem has been restarted.

OTM20040 System abend 'xxx' intercepted – control region will attempt to recover

Explanation: A system abend has been intercepted during control region operation. The system abend code is 'xxx'. Control region processing will continue.

Action: A system abend has been trapped during processing of an operator request. If possible, OAM Manager will recover from the abend and re-display the OTM20000 message. Operator requests may continue to be entered as normal.

If it is not possible for OAM Manager to recover from the abend, control region processing will be terminated abnormally.

The problem should be reported to your OAM Manager product support representative.

OTM20041 Unable to continue after abend – job terminating

Explanation: The OAM Manager control region was unable to recover after trapping an abend condition. The control region will be terminated abnormally.

Action: Report the problem to your OAM Manager product support representative. Preserve all diagnostic information and system dumps for further analysis.

OTM20042 Recursive abends intercepted – job terminating

Explanation: A recursive abend has occurred after the OAM Manager control region trapped a system abend condition. The control region will be terminated abnormally.

Action: Report the problem to your OAM Manager product support representative. Preserve all diagnostic information and system dumps for further analysis.

OTM20043 Cntl regn received error posting requestor ECB

Explanation: An error occurred posting an outstanding OSREQ request from another application. The OAM Manager control region will attempt to recover from this error condition and continue processing.

Action: Consult other available system messages for additional information regarding the error. If no apparent cause for the failure can be determined, report the problem to your OAM Manager product support representative. Preserve all diagnostic information and system dumps for further analysis.

OTM20044 Command rejected – enter request via 'MODIFY' command

Explanation: 'COMMAND=MODIFY' is set in the OAM Manager TAPECNTL parameter library member, but an MVS command other than 'MODIFY' has been issued to the OAM Manager control region.

Action: Re-enter the OAM Manager command using the standard MVS MODIFY command structure. Refer to page 95 for more information on entering OAM Manager control region commands.

OTM20045 Retcode X'aaaaaaa' rsn X'bbbbbbb' received from XXXXXXX

Explanation: An error has been encountered issuing the XCF macro identified in the message. 'aaaaaaa' and 'bbbbbbb' give the hexadecimal return and reason codes received from the request.

Action: Refer to IBM macro documentation for a description of the codes in the message. Take the appropriate corrective action and repeat the request. If no apparent cause for the failure can be identified, contact your Oracle support representative.

OTM20046 Error X'xx' received loading program XXXXXXX

Explanation: An error has occurred dynamically loading the program identified in the message. 'xx' gives the hexadecimal error record received from the LOAD request.

Action: Refer to IBM macro documentation for a description of the error code in the message. Ensure that the program identified in the message is available to be loaded from the steplib, joblib or linklist concatenation. Consult other available system messages for additional information on the load error. Take the appropriate corrective action and restart the control region.

**OTM20047 Storage group database xxxxxxx { has been released
 { is already started
 { is already stopped
 { is not found**

Explanation: Message OTM20047 is issued in response to the entry of an operator REFRESH, START or STOP command. The variable text entry in the message can have the following values:

- has been released:** the database specified in the message has been de-allocated from the control region following processing of a REFRESH command which removed a storage group from the STRGROUP parameter library member.
- is already started:** the database specified in a START command is not currently in a stopped condition.
- is already stopped:** the database specified in a STOP command is already in a stopped condition.
- is not found:** the database specified in a STOP or START command is not defined in the STRGROUP parameter library member.

Action: **has been released}**: None. This is an informational message.

is already started}:
is already stopped}:
is not stopped}: Ensure that the correct database name has been specified in the command. If not, re-enter the command using the correct database name.

OTM20048 Storage group database xxxxxxxx will be released when all queued requests have been completed

Explanation: An operator REFRESH command has been issued which removed a storage group from the STRGROUP parameter library member, or an operator STOP command for a database has been issued, but the Archive Manager database for that storage group cannot be removed until all outstanding requests for retrieval of objects from that storage group have been completed.

Action: None. This is an informational message. Message OTM25016 or OTM25416 will be issued when the storage group database has been released by the control region.

OTM20049 Sysplex support initialized successfully

Explanation: The control region has successfully initialized sysplex support to implement data sharing with OAM Manager control regions running on other systems in an MVS sysplex configuration.

Action: None. This is an information message only.

OTM20050 Request not recognized

Explanation: An invalid operator command has been entered in response to the OAM Manager OTM20000 message. The OTM20000 message will be redisplayed.

Action: Re-enter the correct operator command in response to the OTM20000 message.

OTM20051 Invalid SET operand(s) – request ignored

Explanation: An invalid operand has been entered with the SET operator command.

Action: Ensure that the SET command is specified correctly and re-enter the command. Refer to page 105 for details on the operator SET command.

OTM20052 Configuration altered successfully

Explanation: The operator SET command has been processed successfully to alter the current MAXDRIVE, MAXQLEN, MAXDISK, RETAINTAPE, TAPEWAIT or XCFMAXDRIVE values.

Action: The OTM20000 operator reply message will be redisplayed.

OTM20053 Unable to reduce value of MAXDRIVE | MAXDISK | MAXSCHED as requested

Explanation: All available tasks have been examined but the control region has been unable to reduce the value of the identified initialization parameter to that requested.

Action: This is an OAM Manager error condition. Report the message to your OAM Manager product support representative. Obtain as much information as you can about the status of the OAM Manager control region at the time of the message display.

OTM20054 Inconsistent MAXDRIVE and XCFMAXDRIVE specifications

Explanation: A non-zero value for XCFMAXDRIVE has been specified, but it is less than the current MAXDRIVE value, or a new MAXDRIVE value has been specified which is greater than the current XCFMAXDRIVE value. This is not permitted.

Action: Re-enter the command with a valid XCFMAXDRIVE or XCFMAXDRIVE value, as appropriate.

OTM20055 Dynamic Load Balancing is already disabled – request ignored

Explanation: A SET DLB operator command has been issued to disable the dynamic load balancing facility, but it is already disabled.

Action: Verify that the correct operator command has been entered. Re-enter the corrected command if necessary.

OTM20056 Dynamic Load Balancing is already enabled – request ignored

Explanation: A SET DLB operator command has been issued to enable the dynamic load balancing facility, but it is already enabled.

Action: Verify that the correct operator command has been entered. Re-enter the corrected command if necessary.

OTM20058 Missing/invalid operand – request rejected

Explanation: A mandatory operand is missing from an OAM Manager operator command.

Action: Re-enter the command with the correct syntax. Refer to page 95 for a description of operator command formats.

OTM20059 Error altering configuration – check system status

Explanation: Errors have been detected attempting to alter the current OAM Manager configuration using the operator SET command. Other messages will give details of the error encountered.

Action: Check the system status via the operator DISPLAY command to verify that the system configuration has not been altered erroneously.

OTM20061 Invalid DISPLAY operand(s) – request ignored

Explanation: An invalid operand has been entered with the DISPLAY operator command.

Action: Ensure that the DISPLAY command is specified correctly and re-enter the command. Refer to page 95 for details on operator command formats.

OTM20062 MAXDRIVE=aaa MAXQLEN=bbb RETAINTAPE=ccccc MAXDISK=ddd TAPEWAIT=eeee DLB=f MAXSCHED=ggg

OTM20062 Scheduler queue is unlocked | lkd/Xnnn ; reader queue is unlocked | lkd/Xnnn; global scheduler qlen=jjj; held request qlen=kkk

OTM20062 XCFGROUP=xxxxxxx XCFMEM=xxxxxxxxxxxxx XCFMAXDRIVE=nnn

Explanation: This pair of messages is displayed in response to an operator DISPLAY command. 'aaa', 'bbb', 'cccc', 'ddd' and 'eeee' are the current settings of the system MAXDRIVE, MAXQLEN, RETAINTAPE, MAXDISK, TAPEWAIT, DLB and MAXSCHED parameters. XCF parameters will only be displayed if XCF processing has been enabled in the control region. Ownership of locked ('lkd') queues will be identified by task type ('T' for tape reader, 'D' for disk reader and 'S' for scheduler) and task number ('nnn').

Action: This is an information message only.

OTM20063 Task Tnnn|Dnnn: Type=aaaa Status=bbbb Qlen=ccc

Explanation: This message is displayed in response to an operator DISPLAY command. Refer to page 96 of this manual for a description of the display field content.

Action: This is an information message only.

OTM20064 Task Tnnn DSN=xxxx....xxxx Lastuse=hh:mm:ss

Explanation: This message is displayed in response to an operator DISPLAY command. Refer to page 96 of this manual for a description of the display field contents.

Action: This is an information message only.

OTM20065 Specified reader task not found

Explanation: The reader task number specified in an operator command does not exist. The request is ignored.

Action: Issue the operator DISPLAY command to identify the correct task number. Then re-enter the command.

OTM20066 Request nnn: Collection=xxxx

Explanation: This message is displayed in response to an operator DISPLAY TASK command. Refer to page 100 of this manual for a description of the display field contents.

Action: This is an information message only.

OTM20067 Request nnn: Object=xxxx

Explanation: This message is displayed in response to an operator DISPLAY TASK command. Refer to page 100 of this manual for a description of the display field contents.

Action: This is an information message only.

OTM20068 Display processing completed

Explanation: All messages issued in response to an operator DISPLAY command have been issued.

Action: The operator reply message OTM20000 will be redisplayed.

OTM20069 Unable to obtain lock during FORCE | STOP processing

Explanation: The command processor failed to acquire the reader or scheduler lock within an interval of 30 seconds. Force purge or database stop processing will continue without the lock.

Action: Issue an operator DISPLAY command to determine which task is currently holding the lock. For FORCE commands, if this is not the task being force purged, investigate the status of this task and purge or force purge the task if necessary, in order to release the lock.

OTM20070 Sysplex support is not enabled

Explanation: A DISPLAY XCF command has been issued, but XCF processing is not enabled in the control region.

Action: The request is ignored.

OTM20071 Invalid PURGE operand(s) – request ignored

Explanation: An invalid operand has been entered with the PURGE operator command.

Action: Ensure that the PURGE command is specified correctly and re-enter the command. Refer to page 103 for details on operator command formats.

OTM20072 Specified task does not exist – request ignored

Explanation: The task number specified in the PURGE command does not exist.

Action: Issue the operator DISPLAY command to identify the correct task number. Then re-enter the command.

OTM20073 Task Tnnn | Dnnn | Snnn not active – request ignored

Explanation: A PURGE request has been entered for tape reader task 'Tnnn', disk reader task 'Dnnn' or scheduler task 'Snnn', but the task is already terminated. Only active tasks (status= WAIT or BUSY) are eligible for purge processing. The request is ignored.

Action: Ensure that the correct task number has been specified on the operator command.

OTM20074 Task Tnnn | Dnnn | Snnn already being purged – request ignored

Explanation: A second PURGE request has been entered for the busy tape reader task 'Tnnn', disk reader task 'Dnnn' or scheduler task 'Snnn' before the first PURGE request has been processed. The request is ignored.

Action: Wait for the queued PURGE command to be processed after all outstanding retrieval requests have been completed. To immediately terminate the reader task, enter the FORCE command.

OTM20075 TASK Tnnn | Dnnn | Snnn purge failed – response code xx

Explanation: An operator request to purge the identified task has failed with error code 'xx'.

Action: This is an OAM Manager error condition. Report the message to your OAM Manager product support representative. Obtain as much information as you can about the status of the OAM Manager control region at the time of the message display.

OTM20076 Unable to obtain lock during PURGE processing

Explanation: The command processor failed to acquire the reader or scheduler lock within an interval of 30 seconds. Purge processing will continue without the lock.

Action: Issue an operator DISPLAY command to determine which task is currently holding the lock. If this is not the task being purged, investigate the status of this task and purge or force purge the task if necessary, in order to release the lock.

OTM20078 Task Tnnn | Dnnn | Snnn forced successfully

Explanation: A FORCE command for tape reader task 'Tnnn', disk reader task 'Dnnn' or scheduler task 'Snnn' has been processed successfully.

Action: This is an information message only.

OTM20079 Task Tnnn | Dnnn | Snnn PURGE request queued

Explanation: The PURGE request for tape reader task 'Tnnn', disk reader task 'Dnnn' or scheduler task 'Snnn' has been accepted and queued.

Action: The task will be purged when all retrieval requests that were outstanding for that task when the PURGE command was entered have been completed.

OTM20080 Unable to obtain lock during normal shutdown processing - immediate shutdown initiated

Explanation: The command processor has been unable to obtain the reader or scheduler lock within an interval of 30 seconds during normal shutdown processing. Shutdown processing will continue in immediate shutdown mode.

Action: None. This is an informational message.

OTM20081 Invalid FORCE | START | STOP operand(s) – request ignored

Explanation: An invalid operand has been entered with the FORCE, START or STOP operator commands.

Action: Ensure that the command is specified correctly and re-enter it.

OTM20082 Specified task does not exist – request ignored

Explanation: The task number specified in the force command does not exist.

Action: Issue the operator DISPLAY command to identify the correct task number. Then re-enter the command.

OTM20083 Task Tnnn | Dnnn | Snnn not active – request ignored

Explanation: A FORCE request has been entered for tape reader task 'Tnnn', disk reader task 'Dnnn' or scheduler task 'Snnn', but the task is already terminated. Only active tasks (status = WAIT or BUSY) are eligible for force processing. The request is ignored.

Action: Ensure that the correct task number has been specified on the operator command.

OTM20084 Task Tnnn | Dnnn | Snnn not being purged – request ignored

Explanation: A FORCE request has been entered for the busy tape reader task 'Tnnn', disk reader task 'Dnnn' or scheduler task 'Snnn' but no prior PURGE request has been entered. A PURGE request must already have been entered for a task before a FORCE request is accepted. The request is ignored.

Action: Enter a PURGE request for the task. All outstanding retrieval requests will be completed before the specified task is terminated.

OTM20085 Task Tnnn | Dnnn | Snnn force failed – error X'xx'

Explanation: A request to DETACH the identified reader or scheduler task has failed, with return code 'xx'.

Action: Refer to IBM documentation for the DETACH macro for a description of the displayed error code. Take the appropriate action to resolve the problem.

If the cause of the problem is not apparent, contact your OAM Manager product support representative.

OTM20086 Task nnn forced successfully

Explanation: An operator FORCE request for the identified task has been processed successfully.

Action: The operator reply message OTM20000 will be redisplayed.

OTM20087 Refresh processing scheduled

Explanation: An operator REFRESH request has been scheduled successfully for processing.

Action: The operator reply message OTM20000 will be redisplayed.

OTM20088 Refresh failed – examine log for details

Explanation: An operator REFRESH request has failed to complete successfully.

Action: Refer to other messages displayed by OAM Manager for the reasons for the processing failure. Take the corrective action recommended for the failure and repeat the REFRESH request.

OTM20089 START | STOP | Refresh not possible due to resource saturation

Explanation: An operator START, STOP or REFRESH request has not been actioned because the number of simultaneous OAM Manager requests currently being processed is at its limit of 1024.

Action: Retry the request at a later time.

OTM20090 Housekeeping task shutdown successfully

Explanation: The OAM Manager control region housekeeping task has been successfully stopped during shutdown processing. Processing continues.

Action: This is an informational message only.

OTM20091 Invalid shutdown operand(s)

Explanation: An invalid operand has been entered with the operator SHUTDOWN commands.

Action: Re-enter the command, specifying a valid operand. Refer to page 95 for details of operator command formats.

OTM20092 Do you want to proceed with shutdown(Y/N)?

Explanation: An operator SHUTDOWN request has been entered on the console via the operator reply facility. This message is displayed to ask for confirmation of the shutdown request.

Action: To proceed with OAM Manager control region shutdown processing, enter 'Y'.

To abort the shutdown request, enter 'N'. The operator reply message OTM20000 will then be redisplayed.

OTM20093 Shutdown in progress

Explanation: The operator has replied 'Y' to the shutdown confirmation message OTM20092. Shutdown processing will proceed.

Action: This is an informational message only.

OTM20094 Error X'xxxx' releasing | stopping storage group database nnnnnnnn

Explanation: An error has occurred dynamically de-allocating the primary index of the Archive Manager storage group database identified in the message, following entry of an operator REFRESH or STOP command. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and re-enter the command. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM20096 Error freeing communications table storage

Explanation: The storage area allocated in subpool 241 in the MVS CSA during control region initialization processing for the OAM Manager communications table was not freed successfully during control region shutdown. Termination processing continues.

Action: Refer to other available system messages for more information regarding the error. When the cause has been identified, take the appropriate corrective action to ensure that the error does not re-occur during future shutdown of the control region.

If no apparent cause of the error can be identified, contact your OAM Manager product support representative.

The CSA storage used for the OAM Manager communications table in this invocation of the control region will be unavailable for allocation until after the next IPL of the system. Approximately 210k bytes of storage are used for the communications table in extended CSA storage.

OTM20097 Communications table storage area freed

Explanation: The storage area obtained from subpool 241 in extended CSA during control region initialization processing has been successfully released during control region shutdown. Processing continues.

Action: This is an informational message only.

OTM20098 Task shutdown not possible due to resource saturation

Explanation: A request to purge a tape driver task has not been actioned because the number of simultaneous OAM Manager requests currently being processed is at its limit of 1024.

Action: Retry the request at a later time.

OTM20099 Shutdown processing complete

Explanation: OAM Manager shutdown processing has been completed successfully.

Action: The control region will terminate normally.

.Control region scheduler task messages

Messages from the OAM Manager control region scheduler task will be displayed on the system console.

OTM22001 Error X'xxxx' allocating index for D/B zzzzzzzz

Explanation: Dynamic allocation of the Archive Manager database index for the OAM storage group with DB2 name qualifier 'zzzzzzzz' has failed with hexadecimal error code 'xxxx'. OAM Manager initialization processing is aborted.

Action: Refer to IBM documentation for SVC99 processing for a description of the error code. Take the appropriate corrective action to ensure that the Archive Manager database index for the storage group is available, and restart the control region.

OTM22002 Error X'xxxx' opening index for D/B zzzzzzzz

Explanation: Opening of the Archive Manager database index for the OAM storage group with DB2 name qualifier 'zzzzzzzz' has failed with hexadecimal error code 'xxxx'. OAM Manager initialization processing is aborted.

Action: Refer to IBM documentation for VSAM macro processing for a description of the error code. Take the appropriate corrective action to ensure that the Archive Manager database index for the storage group is available, and restart the control region.

OTM22003 Error X'xyy' reading index for D/B zzzzzzzz

Explanation: An error has occurred during object retrieval processing, when reading an object entry from the primary index file for the Archive Manager database for the OAM storage group with DB2 name qualifier 'zzzzzzzz'. 'xx' gives the error code, and 'yy' the reason code (both in hexadecimal) returned from the VSAM GET request. This message is followed by an accompanying message identifying the object being retrieved.

Action: Refer to IBM documentation for VSAM macro processing for a description of the error and reason codes. Take the appropriate corrective action to allow the index entry to be read, and resubmit the object retrieval request.

OTM22004 Insufficient storage available for workareas

Explanation: A request for virtual storage in the OAM Manager control region has been rejected by the operating system. Control region initialization processing is aborted.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the control region procedure. Restart the control region.

OTM22005 Scheduler unable to load CAF interface

Explanation: The module DB2 modules DSNALI and/or DSNHLI2 were unavailable to the control region during initialization processing. The control region is terminated.

Action: Make sure that the DB2 runtime library at your installation is available to the OAM Manager procedure via the system linklist or STEPLIB concatenations. Restart the control region.

OTM22006 - CAF aaaaaaaa error xxxx reason yyyyyyyy

Explanation: A DB2 Call Attach Facility error has occurred performing operation 'aaaaaaa'. 'xxxx' and 'yyyyyyy' are the error and reason codes return from CAF. Control region initialization is terminated.

Action: Refer to IBM document for the DB2 Call Attach Facility for a description of the displayed error and reason codes. Take the appropriate corrective action and restart the control region.

OTM22007 – Scheduler processing empty queue

Explanation: The control region scheduler has been invoked, but there are no entries in its request queue. The scheduler task will return to a wait status.

Action: This is an internal error condition and should be reported to your OAM Manager product support representative.

OTM22008 Error X'xxxx' generating ACB for D/B zzzzzzzz

Explanation: An error has occurred during OAM Manager control region initialization processing generating an ACB for accessing the Archive Manager database primary index file for the OAM storage group with DB2 name qualifier 'zzzzzzz'. 'xxxx' gives the hexadecimal error code. OAM Manager initialization processing is aborted.

Action: Refer to IBM documentation for VSAM macro processing for a description of the error code. Take the appropriate corrective action and restart the control region.

OTM22009 Scheduler received error -xxx accessing collection name table

Explanation: SQL returned error '-xxx' when OAM Manager attempted to access the OAM collection name table during control region initialization processing. The control region is terminated.

Action: Refer to IBM DB2 documentation for a description of the SQL error. Take the appropriate corrective action and restart the control region. If no apparent cause of the error can be identified, contact your OAM Manager product support representative.

OTM22010 Scheduler received error posting requestor ECB

Explanation: An error occurred posting an outstanding OSREQ request from another application. The OAM Manager control region will attempt to recover from this error condition and continue processing.

Action: Consult other available system messages for additional information regarding the error. If no apparent cause for the failure can be determined, report the problem to your OAM Manager product support representative. Preserve all diagnostic information and system dumps for further analysis.

OTM22011 Scheduler task nnn terminated

Explanation: The scheduler task identified in the message has terminated normally in response to an operator SET command, or during control region shutdown processing.

Action: None. This is an informational message.

OTM22012 Scheduler received error -xxx accessing mgmt class name table

Explanation: SQL returned error '-xxx' when OAM Manager attempted to access the OAM management class identifier table during control region initialization processing. The control region is terminated.

Action: Refer to IBM DB2 documentation for a description of the SQL error. Take the appropriate corrective action and restart the control region. If no apparent cause of the error can be identified, contact your OAM Manager product support representative.

OTM22013 Following mgmt class from OBJCNTL member not found in mgmt class id table:

OTM22013 xxxxxxxx

Explanation: This pair of messages is issued when a management class whose name has been specified in the OBJCNTL member of the OAM Manager parameter library is not present in the OAM management class identifier table. The second message in the pair identifies the invalid management class name.

Action: Correct the invalid management class name entry in the OAM Manager OBJCNTL parameter library member, and restart the control region.

**OTM22014 Return code xx supp codes X'yyyyyyyy' received reading D/B
zzzzzzzz**

Explanation: An error has occurred attempting to open an Archive Manager database during OAM object retrieval or deletion processing. 'xx' and 'yyyyyyyy' identify the return code and hexadecimal supplementary codes received from Archive Manager, and 'zzzzzzzz' is the DB2 name qualifier of the OAM storage group database.

Action: Refer to Archive Manager documentation for a description of the return and supplementary codes. Take the appropriate corrective action and repeat the OAM retrieval/deletion request. The OAM Manager control region may need to be stopped and restarted in order to rectify the error condition.

OTM22015 SQL error -nnn received during object deletion processing

OTM22015 xxxx....xxxx

Explanation: An SQL error condition has been encountered by the OAM Manager control region during object deletion processing. '-nnn' gives the SQL error code. This initial message is always accompanied by a second message giving the variable identifiers from the SQL error message associated with this error code. The OSREQ DELETE request will be rejected with a return code of 12, and a reason code of X'7480xxxx'.

Action: Refer to IBM SQL error message documentation for a description of the error code. Take the appropriate corrective action and repeat the OAM deletion request.

OTM22017 Scheduler received error -nnn accessing strg class name table

OTM22017 xxxx....xxxx

Explanation: An SQL error condition has been encountered by the OAM Manager control region accessing the OAMADMIN storage class identifier table. This initial message is always accompanied by a second message giving the variable identifiers from the SQL error message associated with this error code. Control region initialization is terminated.

Action: Refer to IBM SQL error message documentation for a description of the error code. Take the appropriate corrective action and restart the control region.

OTM22018 Following strg class from ENVCNTL MEMBER not found in strg class id table

OTM22018 xxxx....xxxx

Explanation: The storage class identified in the second message has been specified in the TAPECLASS or DISKCLASS parameter in the OAM Manager parameter library member 'TAPECNTL', but does not exist in the OAMADMIN storage class identifier table. Control region initialization processing is terminated.

Action: Check that the correct values for the TAPECLASS and DISKCLASS parameters have been specified in the TAPECNTL member of the OAM Manager parameter library. If they have, or have been omitted, ensure that the specified or defaulted storage class names have been defined via DFSMS.

Restart the control region after making the appropriate changes.

OTM22019 Scheduler task nnn refreshed successfully

Explanation: Processing of an operator REFRESH command has been successfully completed by the identified scheduler task.

Action: None. This is an informational message.

OTM22020 GETMAIN failure X'xx' allocating LSTA | LSTB | MSGA

Explanation: A failure has occurred allocating virtual storage for a program workarea. The message identifies the workarea, as follows:

'LSTA' – storage area for XCF read list answer area
'LSTB' – storage area for coupling facility list resource entries
'MSGA' – storage area for XCF message area

'xx' gives the hexadecimal return code received from the STORAGE OBTAIN macro.

Action: Refer to IBM documentation for a description of the macro return code displayed in the message. If necessary, allocate more virtual storage to the control region started task, and restart the control region before retrying the failed request.

OTM22021 Retcode X'aaaaaaaa' rsn X'bbbbbbbb' received from XXXXXXXX

Explanation: An error has been encountered issuing the XCF macro identified in the message. 'aaaaaaaa' and 'bbbbbbbb' give the hexadecimal return and reason codes received from the request.

Action: Refer to IBM macro documentation for a description of the codes in the message. Take the appropriate corrective action and repeat the request. If no apparent cause for the failure can be identified, contact your Oracle support representative.

OTM22022 FREEMAIN failure X'xx' releasing LSTA | LSTB | MSGA

Explanation: A failure has occurred releasing virtual storage for a program workarea. The message identifies the workarea, as follows:

'LSTA' – storage area for XCF read list answer area
'LSTB' – storage area for coupling facility list resource entries
'MSGA' – storage area for XCF message area

'xx' gives the hexadecimal return code received from the STORAGE OBTAIN macro.

Action: Refer to IBM documentation for a description of the macro return code displayed in the message. If necessary, take the appropriate corrective action to prevent repeated occurrences of this error.

OTM22023 nnn list entries deleted during XCF clean-up processing

Explanation: The scheduler task has deleted 'nnn' entries from the coupling facility list resource used to support sysplex processing of the product, in response to the unexpected termination of one or more tasks in another control region in the OAM Manager sysplex configuration.

Action: None. This is an information message only. Processing of the remaining control regions in the sysplex configuration will continue normally.

OTM22024 Scheduler task nnn refresh processing abandoned

Explanation: Processing of an operator REFRESH command by scheduler task nnn has terminated because an error condition has been detected. Refer to the preceding prior OTM220xx message for details of the error condition.

Action: Take the appropriate actions to resolve the error condition and re-enter the REFRESH command.

OTM22025 Storage group database xxxxxxxx { has been started
{ has been stopped
{ is already started
{ is already stopped
{ is not found

Explanation: Message OTM22025 is issued in response to the entry of an operator START or STOP command. The variable text entry in the message can have the following values:

has been started: the stopped database specified in a START command has been started successfully.

has been stopped: the database specified in a STOP command has been stopped successfully.

is already started: the database specified in a START command is not currently in a stopped condition.

is already stopped: the database specified in a STOP command is already in a stopped condition.

is not found: the database specified in a STOP or START command is not defined in the STRGROUP parameter library member.

Action: **has been started}:**
has been stopped}: None. This is an informational message.

is already started}:
is already stopped}:
is not stopped}: Ensure that the correct database name has been specified in the command. If not, re-enter the command using the correct database name.

OTM22040 System abend 'xxx' intercepted – control region will attempt to recover

Explanation: A system abend condition has occurred during scheduler operation, and has been intercepted by the program. The scheduler will attempt to recover from this condition and continue processing normally.

Action: Refer to IBM documentation for an explanation of the system abend code displayed in the message. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

.Control region housekeeping task messages

Messages from the OAM Manager control region housekeeping task will be displayed on the system console.

OTM22501 Insufficient storage available for workareas

Explanation: A request for virtual storage in the OAM Manager control region has been rejected by the operating system. Control region initialization processing is aborted.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the control region procedure. Restart the control region.

OTM22502 No free request element available

Explanation: The housekeeping task has tried to schedule an internal processing request in the control region, but the number of outstanding requests is at its maximum value of 1024. The current housekeeping processing cycle will be terminated. The next housekeeping processing cycle will run normally, after an interval of 5 seconds (if a non-zero value exists for the TAPEWAIT parameter) or 1 minute (if TAPEWAIT=0).

Action: If this condition keeps recurring, use the operator DISPLAY command to determine whether there are a large number of outstanding requests in the system. If there are, take the appropriate action to relieve the condition which is causing requests to be held in the system, or else terminate the requests by purging the task(s) for which the requests are queued. If no explanation for the condition

can be identified, contact your Oracle customer support representative.

OTM22503 Unable to obtain scheduler lock

Explanation: The housekeeping task failed to acquire the scheduler lock within an interval of 30 seconds. Housekeeping processing will continue without the lock.

Action: Issue an operator DISPLAY command to determine which task is currently holding the lock. Investigate the status of this task and purge or force purge the task if necessary, in order to release the lock.

OTM22504 Unable to obtain reader lock

Explanation: The housekeeping task failed to acquire the reader lock within an interval of 30 seconds. Housekeeping processing will continue without the lock.

Action: Issue an operator DISPLAY command to determine which task is currently holding the lock. Investigate the status of this task and purge or force purge the task if necessary, in order to release the lock.

OTM22505 Error X'xx' received attaching XCF structure rebuild task

Explanation: An error has been received starting task OTIMP270 during user-managed XCF structure rebuild processing. 'xx' gives the hexadecimal return code received from the ATTACH macro. Structure rebuild processing is stopped.

Action: Refer to IBM documentation on ATTACH macro processing for a description of the error code. Take the appropriate corrective action and repeat the structure rebuild request.

OTM22506 Retcode X'aaaaaaaa' rsn X'bbbbbbbb' received from XXXXXXXX

Explanation: An error has been encountered issuing the XCF macro identified in the message during user-managed structure rebuild processing. 'aaaaaaaa' and 'bbbbbbbb' give the hexadecimal return and reason codes received from the request.

Action: Refer to IBM macro documentation for a description of the codes in the message. Take the appropriate corrective action and repeat the structure rebuild request. If no apparent cause for the failure can be identified, contact your Oracle support representative.

OTM22507 Timeout waiting for xxxxxxxx request on structure ssss....sss

Explanation: A timeout has occurred waiting for notification of the next procedure in a user-managed XCF structure rebuild request. 'xxxxxxx' identifies the next request expected in the process, and ssss....sss identifies the XCF structure being rebuilt. Structure rebuild processing is stopped.

Action: Search for other system messages or information which may identify the cause of the timeout. If no apparent reason for the timeout cannot be found, contact your Oracle support representative.

.CICS initialization messages

Messages produced while enabling the OAM Manager CICS interface will be written to the system transient data queue 'CSMT', and will also be displayed on the requester's display terminal, if the function was explicitly invoked via transaction 'OM23'.

OTM23000 CICS interface initialized

Explanation: The OAM Manager CICS interface has been successfully established. OAM Manager is now enabled for processing of CICS OSREQ calls.

Action: This is an information message.

OTM23001 CICS initialization failed

Explanation: An error has occurred during initialization of the OAM Manager CICS interface. An accompanying message will give details of the error condition.

Action: Refer to the accompanying message for a description of the failure.

OTM23002 Control region is not active

Explanation: An attempt to initialize the OAM Manager CICS interface has been made, but the OAM Manager control region is not active. The request is rejected.

Action: Start the OAM Manager control region before resubmitting the CICS initialization request.

OTM23004 Error establishing OAM intercept – see console log for details

Explanation: An error has been encountered during CICS initialization processing while attempting to establish the OAM Manager OSREQ interface. The initialization request is terminated unsuccessfully.

Action: Refer to the message(s) from the OAM Manager CICS intercept module on the console log for details of the error condition. These will have the format OTM055nn. Take the appropriate corrective action and resubmit the initialization request.

OTM23005 EIBRESP 'nnn' received for function X'xxxx'

Explanation: A CICS error condition has been intercepted during initialization of the OAM Manager CICS interface. The initialization request is rejected. 'nnn' gives the value of the EIBRESP field from the Execute Interface Block, and 'xxxx' gives the CICS function code which caused the error.

Action: Refer to IBM CICS documentation for an explanation of the codes. If no apparent reason for the error can be identified, contact your OAM Manager product support representative.

OTM23006 Error attaching sub-task

Explanation: An error has been encountered invoking CICS intercept processing. The CICS initialization request is terminated.

Action: Refer to other available system messages for more information about the error. If no apparent cause for the error can be identified, contact your OAM Manager product support representative.

OTM23007 Error X'xx' reason X'yyyyyyy' issuing OAM ACCESS request

Explanation: An error has been returned from an OSREQ ACCESS request. 'xx' and 'yyyyyyy' give the return and reason codes received from OAM. The CICS initialization request is terminated.

Action: Refer to IBM documentation on the OSREQ macro for a description of the displayed return and reason codes. Take the appropriate corrective action and resubmit the request.

OTM23008 Null entry for OMCT address in OTIMP310

Explanation: An error was found in an internal storage area during initialization of the OAM Manager CICS interface. The initialization request is rejected.

Action: This is an internal error condition. Report the problem to your OAM Manager product support representative.

.CICS quiesce messages

Messages produced while disabling the OAM Manager CICS interface will be written to the system transient data queue 'CSMT', and will also be displayed on the requester's display terminal, if the function was explicitly invoked via transaction 'OM24'.

OTM24000 CICS interface quiesced

Explanation: The request to disable the OAM Manager CICS interface has been successfully processed.

Action: This is an informational message.

OTM24001 CICS quiesce request failed

Explanation: An error has occurred during quiesce of the OAM Manager CICS interface. An accompanying message will give details of the error condition.

Action: Refer to the accompanying message for a description of the failure.

OTM24003 Error removing OAM intercept – see console log for details

Explanation: An error has been encountered during CICS quiesce processing while attempting to remove the OAM Manager OSREQ interface. The quiesce request is terminated unsuccessfully.

Action: Refer to the message(s) from the OAM Manager CICS intercept module on the console log for details of the error condition. These will have the format OTM055nn. Take the appropriate corrective action and resubmit the initialization request.

OTM24004 CICS interface not active

Explanation: A request to disable the OAM Manager CICS interface has been submitted, but the interface is not currently active.

Action: The request is ignored.

OTM24005 EIBRESP 'nnn' received for function X'xxxx'

Explanation: A CICS error condition has been intercepted during quiescing of the OAM Manager CICS interface. The quiesce request is rejected. 'nnn' gives the value of the EIBRESP field from the Execute Interface

Block, and 'xxxx' gives the CICS function code which caused the error.

Action: Refer to IBM CICS documentation for an explanation of the codes. If no apparent reason for the error can be identified, contact your OAM Manager product support representative.

OTM24006 Error attaching sub-task

Explanation: An error has been encountered invoking CICS intercept processing. The CICS quiesce request is terminated.

Action: Refer to other available system messages for more information about the error. If no apparent cause for the error can be identified, contact your OAM Manager product support representative.

OTM24007 Error X'xx' reason X'yyyyyyy' issuing OAM ACCESS request

Explanation: An error has been returned from an OSREQ ACCESS request. 'xx' and 'yyyyyyy' give the return and reason codes received from OAM. The CICS quiesce request is terminated.

Action: Refer to IBM documentation on the OSREQ macro for a description of the displayed return and reason codes. Take the appropriate corrective action and resubmit the request.

.Control region reader task messages

Messages issued by tape and disk reader tasks in the OAM Manager control region are displayed on the system console.

OTM25001 Unable to load CAF interface module

Explanation: A tape reader task was unable to load the DB2 Call Attach Facility modules DSNALI or DSNHLI2. Tape reader task initialization processing has been terminated.

Action: Ensure that the DB2 runtime library at your installation is available to the OAM Manager control region procedure via the system linklist or STEPLIB concatenations. Restart the control region.

OTM25002 CAF CONNECT error xxx reason yyyyyyy

Explanation: Return code 'xxx' and reason code 'yyyyyyy' have been received from a DB2 Call Attach Facility CONNECT request. Tape reader task initialization processing has been terminated.

Action: Refer to IBM CAF documentation for a description of the return and reason codes. Take the appropriate corrective action and restart the control region.

OTM25003 Null request pointer received on posting

Explanation: A tape reader task was invoked by the OAM Manager scheduler, but its request queue was empty. The tape reader task will return to a wait status.

Action: This is an internal OAM Manager error. Report the problem to your OAM Manager product support representative.

OTM25004 Insufficient storage for workareas

Explanation: A request for virtual storage in the OAM Manager control region by a tape reader task has been denied by the operating system. The task is terminated.

Action: Increase the amount of storage available for allocation in the OAM Manager control region by increasing the value of the SIZE parameter in the NEAROAMC procedure. Restart the control region.

OTM25005 Tape rdr task nnn initialization failed

Explanation: An error has occurred during initialization of tape reader task 'nnn'. An accompanying message will give details of the error condition.

Action: Refer to the accompanying message for a description of the error which gave rise to the initialization failure. Take the action identified for this message, and restart the control region.

OTM25006 Tape rdr task nnn database close error xx

Explanation: Error 'xx' was returned from Archive Manager from a close database request from tape reader task 'nnn'. The reader task will continue to process the request queue. If all requests have been processed, the task will return to a wait status, but the last tape processed will remain allocated.

Action: Refer to the batch retrieval section of the Archive Manager User Manual for a description of the error code. Take the appropriate action to correct the error. The reader task may need to be force purged in order to recover from the error.

OTM25007 CAF DISCONN error xxx reason yyyyyyyy

Explanation: Return code 'xxx' and reason code 'yyyyyyy' have been received from a DB2 Call Attach Facility DISCONNECT request. Tape reader task termination processing continues.

Action: Refer to IBM CAF documentation for a description of the return and reason codes. Take the appropriate corrective action prior to restarting the control region.

OTM25008 Tape rdr task nnn termination error

Explanation: An error was encountered during tape reader task termination processing. An accompanying message will give details of the error.

Action: Refer to the accompanying message for a description of the termination error condition. Take the specified action to avoid a re-occurrence of the problem.

OTM25009 Tape rdr task nnn purged successfully

Explanation: Tape reader task 'nnn' has terminated successfully, in response to a PURGE, SHUTDOWN or SET MAXDRIVE operator command.

Action: This is an informational message only.

OTM25010 Tape rdr task received error posting requestor ECB

Explanation: An error occurred posting an outstanding OSREQ request from another application. The OAM Manager control region will attempt to recover from this error condition and continue processing.

Action: Consult other available system messages for additional information regarding the error. If no apparent cause for the failure can be determined, report the problem to your OAM Manager product support representative. Preserve all diagnostic information and system dumps for further analysis.

OTM25011 Return code xx supp codes X'yyyyyyy' received OPENING|READING D/B zzzzzzzz

OTM25011 COLLECTION NAME ID = aaaaaaaaa OBJECT NAME = bbbb....bbbb

Explanation: An error has occurred opening an Archive Manager database or retrieving an object from an Archive Manager database during OAM object retrieval processing by a tape reader task. 'xx' and 'yyyyyyy' identify the return code and hexadecimal supplementary codes received from Archive Manager, and 'zzzzzzzz' identifies the DB2 name qualifier of the OAM storage group. The second message in

the pair identifies the object for which the error occurred. 'aaaaaaa' is the collection name identifier and 'bbbb....bbbb' the object name.

Action: Refer to Archive Manager documentation for a description of the return and supplementary codes. Take the appropriate corrective action and repeat the OAM retrieval request. The OAM Manager control region may need to be stopped and restarted in order to rectify the error condition.

**OTM25012 SQL error -nnn received during object retrieval processing for D/B
zzzzzzzz**

OTM25012 xxxx....xxxx

Explanation: An SQL error condition has been encountered by a tape reader task during object retrieval processing. '-nnn' gives the SQL error code, and 'zzzzzzzz' gives the DB2 name qualifier of the OAM storage group. This initial message is always accompanied by a second message giving the variable identifiers from the SQL error message associated with this error code. The OSREQ RETRIEVE request will be rejected with a return code of 12, and a reason code of X'7480xxxx'.

Action: Refer to IBM SQL error message documentation for a description of the error code. Take the appropriate corrective action and repeat the OAM retrieval request.

OTM25013 Unrecoverable error condition – tape reader task xxx terminating

Explanation: A serious error condition has occurred during tape reader task operation, and the task is unable to recover. The task will automatically terminate, and the current MAXDRIVE value decremented by 1.

Action: Refer to other OAM Manager and/or system messages for information about the original error condition(s), and take the appropriate corrective action. The tape reader task may be manually restarted by increasing the value of MAXDRIVE by 1 (via the SET MAXDRIVE operator command).

OTM25015 Error X'xxxx' releasing storage group database nnnnnnnn

Explanation: An error has occurred dynamically de-allocating the primary index of the Archive Manager storage group database identified in the message, following entry of an operator REFRESH command. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and re-enter the command. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM25016 Storage group database nnnnnnnn has been released

Explanation: The Archive Manager storage group database identified in the message is no longer being processed by the control region, following processing of an operator REFRESH command which removed a storage group from the STRGROUP parameter library member.

Action: None. This is an informational message. The Archive Manager database is now available for exclusive access by another job.

OTM25017 Error X'xxxx' deallocating index for SG database nnnnnnnn

Explanation: An error has occurred dynamically de-allocating the primary index of the Archive Manager storage group database identified in the message, during processing of an object retrieval request. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and repeat the request. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM25018 Error X'xxxx' querying allocation for SG database nnnnnnnn

Explanation: An error has occurred querying an existing allocation of the primary index of the Archive Manager storage group database identified in the message, during processing of an object retrieval request. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and repeat the request. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM25019 Error X'xxxx' allocating index for SG database nnnnnnnn

Explanation: An error has occurred allocating the primary index of the Archive Manager storage group database identified in the message, during processing of an object retrieval request. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and repeat the request. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM25020 GETMAIN failure X'xx' allocating data buffer | MSGA | MSGB | LSTB

Explanation: A failure has occurred allocating virtual storage for a program workarea. The message identifies the workarea, as follows:

'data buffer' – storage area for data read from tape dataset
'MSGA' – storage area for XCF message answer area
'MSGB' – storage area for XCF message prefix area
'LSTB' – storage area for coupling facility list resource entries

'xx' gives the hexadecimal return code received from the STORAGE OBTAIN macro.

Action: Refer to IBM documentation for a description of the macro return code displayed in the message. If necessary, allocate more virtual storage to the control region started task, and restart the control region before retrying the failed request.

OTM25021 Retcode X'aaaaaaa' rsn X'bbbbbbb' received from XXXXXXXX

Explanation: An error has been encountered issuing the XCF macro identified in the message. 'aaaaaaa' and 'bbbbbbb' give the hexadecimal return and reason codes received from the request.

Action: Refer to IBM macro documentation for a description of the codes in the message. Take the appropriate corrective action and repeat the request. If no apparent cause for the failure can be identified, contact your Oracle support representative.

OTM25022 FREEMAIN failure X'xx' releasing data buffer | MSGA | MSGB | LSTB

Explanation: A failure has occurred releasing virtual storage for a program workarea. The message identifies the workarea, as follows:

'data buffer' – storage area for data read from tape dataset
'MSGA' – storage area for XCF message answer area
'MSGB' – storage area for XCF message prefix area
'LSTB' – storage area for coupling facility list resource entries

'xx' gives the hexadecimal return code received from the STORAGE OBTAIN macro.

Action: Refer to IBM documentation for a description of the macro return code displayed in the message. If necessary, take the appropriate corrective action to prevent repeated occurrences of this error.

OTM25023 Transmit of object via XCF timed out

Explanation: The tape reader task has attempted to transmit a retrieved object to another OAM Manager control region in the sysplex configuration, but the transmission has timed out. The object retrieval task has failed.

Action: Locate any other system messages which may give information regarding the cause of the delay in transmitting the object. If no apparent cause for the failure can be identified, contact your Oracle customer support representative.

OTM25024 Object size mismatch during retrieval

Coll name id: X'nnnnnnnn'

Object: xxxx....xxxx

Explanation: A migrated object being retrieved from the Lifecycle Director database is shorter than the length specified for the object in its OAM directory entry. The OSREQ RETRIEVE request will be failed with a return code 8 and reason code x'24800D02'.

Action: Investigate the reason for the size discrepancy, paying particular attention to the job which migrated the object. This error can occur if the migrating job failed and had to be restarted, and there was an appreciable time interval between successful completion of the OTIMP100 and OTIMP120 steps, which may have allowed the object to have been deleted and recreated between migration to Lifecycle Director and deletion from DB2. If no apparent cause for the failure can be identified, contact your Oracle customer support representative.

OTM25040 System abend 'xxx' intercepted – control region will attempt to recover

Explanation: A system abend condition has occurred during tape reader task operation, and has been intercepted by the program. The tape reader task will attempt to recover from this condition and continue processing normally.

Action: Refer to IBM documentation for an explanation of the system abend code displayed in the message. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

OTM25401 Unable to load CAF interface module

Explanation: A disk reader task was unable to load the DB2 Call Attach Facility modules DSNALI or DSNHLI2. Disk reader task initialization processing has been terminated.

Action: Ensure that the DB2 runtime library at your installation is available to the OAM Manager control region procedure via the system linklist or STEPLIB concatenations. Restart the control region.

OTM25402 CAF CONNECT error xxx reason yyyyyyyy

Explanation: Return code 'xxx' and reason code 'yyyyyyy' have been received from a DB2 Call Attach Facility CONNECT request. Disk reader task initialization processing has been terminated.

Action: Refer to IBM CAF documentation for a description of the return and reason codes. Take the appropriate corrective action and restart the control region.

OTM25403 Null request pointer received on posting

Explanation: A disk reader task was invoked by the OAM Manager scheduler, but its request queue was empty. The disk reader task will return to a wait status.

Action: This is an internal OAM Manager error. Report the problem to your OAM Manager product support representative.

OTM25404 Insufficient storage for workareas

Explanation: A request for virtual storage in the OAM Manager control region by a disk reader task has been denied by the operating system. The task is terminated.

Action: Increase the amount of storage available for allocation in the OAM Manager control region by increasing the value of the SIZE parameter in the NEAROAMC procedure. Restart the control region.

OTM25405 Disk rdr task nnn initialization failed

Explanation: An error has occurred during initialization of disk reader task 'nnn'. An accompanying message will give details of the error condition.

Action: Refer to the accompanying message for a description of the error which gave rise to the initialization failure. Take the action identified for this message, and restart the control region.

OTM25406 Disk rdr task nnn database close error xx

Explanation: Error 'xx' was returned from Archive Manager from a close database request from disk reader task 'nnn'. The reader task will continue to process the request queue. If all requests have been processed, the task will return to a wait status.

Action: Refer to the batch retrieval section of the Archive Manager User Manual for a description the error code. Take the appropriate action to correct the error. The reader task may need to be force purged in order to recover from the error.

OTM25407 CAF DISCONN error xxx reason yyyyyyyy

Explanation: Return code 'xxx' and reason code 'yyyyyyy' have been received from a DB2 Call Attach Facility DISCONNECT request. Disk reader task termination processing continues.

Action: Refer to IBM CAF documentation for a description of the return and reason codes. Take the appropriate corrective action prior to restarting the control region.

OTM25408 Disk rdr task nnn termination error

Explanation: An error was encountered during disk reader task termination processing. An accompanying message will gives details of the error.

Action: Refer to the accompanying message for a description of the termination error condition. Take the specified action to avoid a re-occurrence of the problem.

OTM25409 Disk rdr task nnn terminated

Explanation: Disk reader task 'nnn' has terminated successfully, in response to a PURGE, SHUTDOWN or SET MAXDISK operator command.

Action: This is an informational message only.

OTM25410 Disk rdr task received error posting requestor ECB

Explanation: An error occurred posting an outstanding OSREQ request from another application. The OAM Manager control region will attempt to recover from this error condition and continue processing.

Action: Consult other available system messages for additional information regarding the error. If no apparent cause for the failure can be determined, report the problem to your OAM Manager product support representative. Preserve all diagnostic information and system dumps for further analysis.

OTM25411 Return code xx supp codes X'yyyyyyy' received opening | reading D/B zzzzzzzz

OTM25411 Collection name id = aaaaaaaa Object name = bbbb....bbbb

Explanation: An error has occurred opening an Archive Manager database or retrieving an object from an Archive Manager database during OAM object retrieval processing by a disk reader task. 'xx' and 'yyyyyyy' identify the return code and hexadecimal supplementary codes received from Archive Manager, and 'zz' identifies the DB2 name qualifier of the storage group database. The second message in the pair identifies the object for which the error occurred. 'aaaaaaa' is the collection name identifier and 'bbbb....bbbb' the object name.

Action: Refer to Archive Manager documentation for a description of the return and supplementary codes. Take the appropriate corrective action and repeat the OAM retrieval request. The OAM Manager control region may need to be stopped and restarted in order to rectify the error condition.

OTM25412 SQL error -nnn received during object retrieval processing for D/B zzzzzzzz

OTM25412 xxxx....xxxx

Explanation: An SQL error condition has been encountered by a disk reader task during object retrieval processing. '-nnn' gives the SQL error code and 'zzzzzzz' gives the DB2 name qualifier of the OAM storage group database. This initial message is always accompanied by a second message giving the variable identifiers from the SQL error message associated with this error code. The OSREQ RETRIEVE request will be rejected with a return code of 12, and a reason code of X'7480xxxx'.

Action: Refer to IBM SQL error message documentation for a description of the error code. Take the appropriate corrective action and repeat the OAM retrieval request.

OTM25413 Unrecoverable error condition – disk reader task xxx terminating

Explanation: A serious error condition has occurred during disk reader task operation, and the task is unable to recover. The task will

automatically terminate, and the current MAXDISK value decremented by 1.

Action: Refer to other OAM Manager and/or system messages for information about the original error condition(s), and take the appropriate corrective action. The disk reader task may be manually restarted by increasing the value of MAXDISK by 1 (via the SET MAXDISK operator command).

OTM25415 Error X'xxxx' releasing storage group database nnnnnnnn

Explanation: An error has occurred dynamically de-allocating the primary index of the Archive Manager storage group database identified in the message, following entry of an operator REFRESH command. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and re-enter the command. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM25416 Storage group database nnnnnnnn has been released

Explanation: The Archive Manager storage group database identified in the message is no longer being processed by the control region, following processing of an operator REFRESH command which removed a storage group from the STRGROUP parameter library member.

Action: None. This is an informational message. The Archive Manager database is now available for exclusive access by another job.

OTM25417 Error X'xxxx' deallocating index for SG database nnnnnnnn

Explanation: An error has occurred dynamically de-allocating the primary index of the Archive Manager storage group database identified in the message, during processing of an object retrieval request. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and repeat the request. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM25418 Error X'xxxx' querying allocation for SG database nnnnnnnn

Explanation: An error has occurred querying an existing allocation of the primary index of the Archive Manager storage group database identified in the message, during processing of an object retrieval request. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and repeat the request. If no apparent cause for the error can be identified, contact your STK software support representative.

OTM25419 Error X'xxxx' allocating index for SG database nnnnnnnn

Explanation: An error has occurred allocating the primary index of the Archive Manager storage group database identified in the message, during processing of an object retrieval request. 'xxxx' gives the hexadecimal error code returned by the SVC99 de-allocation request.

Action: Refer to IBM documentation on SVC99 processing for a description of the error code. Take the appropriate corrective action and repeat the request. If no apparent cause for the error can be identified, contact your STK software support representative.

**OTM25420 Object size mismatch during retrieval
Coll name id: X'nnnnnnnn'
Object: xxxx....xxxx**

Explanation: A migrated object being retrieved from the Lifecycle Director database is shorter than the length specified for the object in its OAM directory entry. The OSREQ RETRIEVE request will be failed with a return code 8 and reason code x'24800D02'.

Action: Investigate the reason for the size discrepancy, paying particular attention to the job which migrated the object. This error can occur if the migrating job failed and had to be restarted, and there was an appreciable time interval between successful completion of the OTIMP100 and OTIMP120 steps, which may have allowed the object to have been deleted and recreated between migration to Lifecycle Director and deletion from DB2. If no apparent cause for the failure can be identified, contact your Oracle customer support representative.

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.CICS pre-fetch utility messages

Messages issued by the CICS pre-fetch utility are written to the 'CSMT' transient data queue in the CICS region in which the error occurred.

OTM25502 EIBRESP 'xxx' received for function X'yyy'

Explanation: A CICS command failure occurred in a foreground application task during CICS pre-fetch processing. The response 'xxx' and function codes 'yyy' are as specified in the Exec Interface Block (EIB).

Action: Refer to CICS documentation for details of the function and response codes. Take the appropriate corrective action. Contact your OAM Manager support representative if there is no apparent reason for the error.

OTM25503 Abend xxxx received during CICS pre-fetch processing

Explanation: An abend with code 'xxxx' has occurred in a foreground application task during CICS pre-fetch processing.

Action: Refer to CICS documentation for details of the abend code and the corrective action. Contact your OAM Manager support representative if there is no apparent reason for the error.

OTM26001 OAM return code xxx reason code yyyyyyyy received pre-fetching:

OTM26001 Coll name: aa

OTM26001 Obj name: bbb

Explanation: An error has been returned by OAM during pre-fetch retrieval processing for an object. Two supplementary OTM26001 messages will always accompany the first message to identify the object by collection and object name.

Action: Refer to OAM documentation for details of the return and reason codes. If the identified codes do not appear in standard OAM documentation, refer to page 323 for details of supplementary codes issued by OAM Manager. Take the appropriate corrective action. Contact your OAM Manager support representative if there is no apparent reason for the error.

OTM26002 EIBRESP 'xxx' received for function X'yyy'

Explanation: A CICS command failure occurred in background task (OM26) execution during CICS pre-fetch processing. The response 'xxx' and function codes 'yyy' are as specified in the Exec Interface Block (EIB).

Action: Refer to CICS documentation for details of the function and response codes. Take the appropriate corrective action. Contact your OAM Manager support representative if there is no apparent reason for the error.

OTM26003 Abend xxxx received during CICS pre-fetch processing

Explanation: An abend with code 'xxxx' has occurred in background task (OM26) execution during CICS pre-fetch processing.

Action: Refer to CICS documentation for details of the abend code and the corrective action. Contact your OAM Manager support representative if there is no apparent reason for the error.

.XCF structure rebuild task messages

Messages from the OAM Manager XCF structure rebuild task will be displayed on the system console.

OTM27001 Insufficient storage available for workareas

Explanation: A request for virtual storage in the OAM Manager control region has been rejected by the operating system. Structure rebuild processing is stopped.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the control region procedure. Restart the control region.

OTM27002 Invalid invocation of structure rebuild processor

Explanation: The XCF structure rebuild processor task has been invoked, but the correct environment for structure rebuild processing has not been created. Processing of the task is terminated.

Action: This message possibly indicates an internal error in OAM Manager control region processing. Report the error to your local Oracle support representative.

OTM27003 Rebuild xxxxxxxx in progress for structure ssss....sss

Explanation: This message is issued to identify the stage of processing of user-managed structure rebuild on structure ssss....sss. The identifier 'xxxxxxx' can have the following values:

quiesce
connect
cleanup

Action: None – this is an informational message.

OTM27004 Rebuild complete on structure ssss....sss

Explanation: This message is issued to indicate that user-managed structure rebuild processing on structure ssss....sss has been completed.

Action: None – this is an informational message.

OTM27006 Rtncd X'aaaaaaa' rsn X'bbbbbbb' received from XXXXXXXX

Explanation: An error has been encountered issuing the XCF macro identified in the message during user-managed structure rebuild processing. 'aaaaaaa' and 'bbbbbbb' give the hexadecimal return and reason codes received from the request. Structure rebuild processing has been stopped.

Action: Refer to IBM macro documentation for a description of the codes in the message. Take the appropriate corrective action and repeat the structure rebuild request. If no apparent cause for the failure can be identified, contact your Oracle support representative.

OTM27007 Timeout waiting for xxxxxxxx request on structure ssss....sss

Explanation: A timeout has occurred waiting for notification of the next procedure in a user-managed XCF structure rebuild request. 'xxxxxxx' identifies the next request expected in the process, and ssss....sss identifies the XCF structure being rebuilt. Structure rebuild processing is stopped.

Action: Search for other system messages or information which may identify the cause of the timeout. If no apparent reason for the timeout cannot be found, contact your Oracle support representative.

OTM27008 Null EEPL pointer in OMCT during structure rebuild

Explanation: The XCF structure rebuild processor task has been invoked, but the correct environment for structure rebuild processing has not been created. Processing of the task is terminated.

Explanation: An error has been encountered in the XCF message user exit issuing the XCF macro identified in the message. 'aaaaaaaa' and 'bbbbbbbb' give the hexadecimal return and reason codes received from the request.

Action: Refer to IBM macro documentation for a description of the codes in the message. Take the appropriate corrective action and restart the control region. If no apparent cause for the failure can be identified, contact your Oracle support representative.

OTM29002 Insufficient storage for workareas

Explanation: A request by the XCF message user exit processor for virtual storage in the OAM Manager control region has been rejected by the operating system. Processing of the XCF message is terminated, which may result in the failure of a row retrieval request.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the OAM Manager procedure. Restart the control region.

OTM29003 Error releasing virtual storage

Explanation: A request by the XCF message user exit processor to release a virtual storage area has been rejected by the operating system. Processing continues normally.

Action: Examine other available system messages for additional information regarding the error. If no apparent cause for the error can be identified, contact your STK support representative.

OTM29004 Zero-length XCF message received

Explanation: A message received by the XCF message user exit processor has a length of zero. Processing of the message is terminated, which may result in the failure of a row retrieval request.

Action: Examine other available system messages for additional information regarding the error. If no apparent cause for the error can be identified, contact your STK support representative.

OTM29005 Invalid XCF request code received

Explanation: A message received by the XCF message user exit processor has an invalid request code. Processing of the message is terminated, which may result in the failure of a row retrieval request.

Action: This message indicates that an internal error has occurred in OAM Manager processing. Report the error to your STK support representative.

OTM29006 No free request element available

Explanation: The XCF message user exit processor has been unable to obtain a OAM Manager request element for processing of a row retrieval request, as there is no free request element available. Processing of the message is terminated, which may result in the failure of the row retrieval request. This message indicates that the maximum number of 1024 concurrent requests which may be processed by the DB2 control region has been reached.

Action: Repeat the request at a later time when the number of requests in the system has reduced. If this is a permanent condition, it may indicate that a stall condition has occurred in the OAM Manager control region which prevents any requests being processed. In this case, perform an immediate shutdown of the control region and restart it.

OTM29008 Error X'xx' creating|deleting ALET

Explanation: Error X'xx' has occurred during execution of the XCF message user exit processor when attempting to create or delete an ALET during cross-memory processing.

Action: Refer to IBM documentation on the ALESERV macro for an explanation of the error code in the message. Take the appropriate corrective action to avoid re-occurrence of the problem. If no apparent cause for the error can be identified, contact your STK product support representative.

OTM29009 Abend received in XCF message user routine

Explanation: An abend has been intercepted during execution of the XCF message user exit processor. Processing of the message will be terminated, resulting in possible failure of a row retrieval request. This message will be followed by a summary dump containing the abend code, program offset, PSW and contents of the general-purpose registers, if available.

Action: This indicates an internal error in OAM Manager processing. Report the problem to your STK product support representative.

OTM29010 XCF message handler received error posting requestor ECB

Explanation: An error occurred when the XCF message user exit processor attempted to post an event control block. Processing of a row retrieval request is terminated.

Action: Examine the system log for other abnormal messages issued by the OAM Manager control region. If there is no apparent reason for the failure, contact your STK product support representative.

OTM29101 Rtncd X'aaaaaaaa' rsn X'bbbbbbbb' received from XXXXXXXX

Explanation: An error has been encountered in the XCF event exit issuing the XCF macro identified in the message. 'aaaaaaaa' and 'bbbbbbbb' give the hexadecimal return and reason codes received from the request.

Action: Refer to IBM macro documentation for a description of the codes in the message. Take the appropriate corrective action and restart the control region. If no apparent cause for the failure can be identified, contact your Oracle support representative.

OTM29102 Insufficient storage for workareas

Explanation: A request by the XCF event exit processor for virtual storage in the OAM Manager control region has been rejected by the operating system. Processing of the event is terminated.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the OAM Manager procedure. Restart the control region.

OTM29103 Error releasing virtual storage

Explanation: A request by the XCF event exit processor to release a virtual storage area has been rejected by the operating system. Processing continues normally.

Action: Examine other available system messages for additional information regarding the error. If no apparent cause for the error can be identified, contact your STK support representative.

OTM29106 No free request element available

Explanation: The XCF event exit processor has been unable to obtain a OAM Manager request element for processing of a clean-up request following abnormal termination of another control region in the sysplex configuration. There is no free request element available. This message indicates that the maximum number of 1024

concurrent requests which may be processed by the DB2 control region has been reached.

Action: This message may indicate that a stall condition has occurred in the OAM Manager control region which prevents any requests being processed. In this case, perform an immediate shutdown of the control region and restart it.

OTM29107 XCF event exit unable to acquire scheduler lock

Explanation: The XCF event exit processor has been unable to gain exclusive control of the scheduler lock within 1 minute. Processing continues, but request queue integrity in the OAM Manager control region may have been compromised.

Action: Examine the system log for other abnormal messages issued by the OAM Manager control region. If there is no apparent reason for the failure, contact your STK product support representative.

OTM29109 Abend received in XCF event exit routine

Explanation: An abend has been intercepted during execution of the XCF event exit processor. This message will be followed by a summary dump containing the abend code, program offset, PSW and contents of the general-purpose registers, if available.

Action: This indicates an internal error in OAM Manager processing. Report the problem to your STK product support representative.

OTM29110 Rebuild request received for structure ssss....sss

Explanation: This message indicates that the OAM Manager control region has been notified that a user-managed structure rebuild process has been initiated on structure ssss....sss.

Action: None – this is an informational message.

OTM29202 Insufficient storage for workareas

Explanation: A request by the XCF notify exit processor for virtual storage in the OAM Manager control region has been rejected by the operating system. Processing of the notification event is terminated.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the OAM Manager procedure. Restart the control region.

OTM29203 Error releasing virtual storage

Explanation: A request by the XCF notify exit processor to release a virtual storage area has been rejected by the operating system. Processing continues normally.

Action: Examine other available system messages for additional information regarding the error. If no apparent cause for the error can be identified, contact your STK support representative.

OTM29209 Abend received in XCF notify exit routine

Explanation: An abend has been intercepted during execution of the XCF notify exit processor. This message will be followed by a summary dump containing the abend code, program offset, PSW and contents of the general-purpose registers, if available.

Action: This indicates an internal error in OAM Manager processing. Report the problem to your STK product support representative.

OTM29302 Insufficient storage for workareas

Explanation: A request by the XCF completion exit processor for virtual storage in the OAM Manager control region has been rejected by the operating system. Processing of the event is terminated.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the OAM Manager procedure. Restart the control region.

OTM29303 Error releasing virtual storage

Explanation: A request by the XCF completion exit processor to release a virtual storage area has been rejected by the operating system. Processing continues normally.

Action: Examine other available system messages for additional information regarding the error. If no apparent cause for the error can be identified, contact your STK support representative.

OTM29309 Abend received in XCF completion exit routine

Explanation: An abend has been intercepted during execution of the XCF completion exit processor. This message will be followed by a summary dump containing the abend code, program offset, PSW and contents of the general-purpose registers, if available.

Action: This indicates an internal error in OAM Manager processing. Report the problem to your STK product support representative.

OTM29402 Insufficient storage for workareas

Explanation: A request by the XCF message notify user exit processor for virtual storage in the OAM Manager control region has been rejected by the operating system. Processing of the event is terminated.

Action: Allocate more virtual storage to the control region, by increasing the value of the SIZE parameter in the OAM Manager procedure. Restart the control region.

OTM29403 Error releasing virtual storage

Explanation: A request by the XCF message notify user exit processor to release a virtual storage area has been rejected by the operating system. Processing continues normally.

Action: Examine other available system messages for additional information regarding the error. If no apparent cause for the error can be identified, contact your STK support representative.

OTM29409 Abend received in XCF message notify user exit routine

Explanation: An abend has been intercepted during execution of the XCF message notify user exit processor. This message will be followed by a summary dump containing the abend code, program offset, PSW and contents of the general-purpose registers, if available.

Action: This indicates an internal error in OAM Manager processing. Report the problem to your STK product support representative.

.OSREQ intercept processor messages

Messages from the OSREQ intercept processor are displayed in the system log.

OTM30002 Timeout trying to acquire scheduler lock

Explanation: The OSREQ batch intercept processor failed to acquire the scheduler lock within an interval of 30 seconds. OSREQ request processing will continue without the lock.

Action: Issue an operator DISPLAY command to determine which task is currently holding the lock. Investigate the status of this task and purge or force purge the task if necessary, in order to release the lock.

OTM30004 System abend received during OAM intercept processing

Explanation: A system abend condition has occurred during OSREQ batch intercept processing, and has been trapped by the intercept processor. The OSREQ request being processed will be terminated unsuccessfully.

Action: Refer to other available system messages for additional information about the abend. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

OTM31004 Abend XXXX received during OAM intercept processing

Explanation: A CICS abend condition has occurred during OSREQ CICS intercept processing. 'XXXX' gives the CICS abend code. The OSREQ request being processed will be terminated unsuccessfully.

Action: Refer to other available system messages for additional information about the abend. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

OTM31005 Error encountered locating ASCB

Explanation: An error has occurred locating the address space control block (ASCB) for the CICS region from which an OSREQ request has been submitted. Processing of the request will terminate with an error.

Action: Refer to other available system messages for additional information about the error condition. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

OTM31006 Error encountered extracting ALET

Explanation: An error has occurred when the OSREQ CICS intercept processor has attempted to communicate with the OAM Manager control region. Processing of the request will terminate with an error.

Action: Refer to other available system messages for additional information about the error condition. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

OTM31007 Timeout trying to acquire scheduler lock

Explanation: The OSREQ CICS intercept processor failed to acquire the scheduler lock within an interval of 30 seconds. OSREQ request processing will continue without the lock.

Action: Issue an operator DISPLAY command to determine which task is currently holding the lock. Investigate the status of this task and purge or force purge the task if necessary, in order to release the lock.

.Batch pre-fetch utility messages

Messages from the batch pre-fetch utility are written to the OTIMS350 dataset. This dataset may be pre-allocated by the job which issues calls to the utility, or else will be dynamically allocated by the utility to a SYSOUT spool dataset.

OTM36001 Error opening xxxxxxxx dataset

Explanation: An error was detected opening sequential dataset 'xxxxxxx'.

Action: Refer to other available IBM system messages for more information on the open error. Take the appropriate corrective action and resubmit the job.

OTM36002 SQL error -nnn accessing table xxxxxxxx

Explanation: SQL error '-nnn' was received accessing DB2 table 'xxxxxxx'.

Action: Refer to DB2 message and code documentation for an explanation of the error. Take the appropriate corrective action and resubmit the job.

OTM36004 No batched entries received prior to process batch request

Explanation: A request type '10' was received but there are no entries in the batch to be processed. This may be because of an error in program logic, or because all prior batch entry requests have been rejected. A return code '04' is set in the OAM Manager parameter area.

Action: Determine which of the above conditions is true. For a program logic error, correct the program before the job is next submitted.

OTM36005 Error nnnnnnnn closing file xxxxxxxx

Explanation: An error has occurred closing VSAM file 'xxxxxxx'. 'nnnnnnnn' gives the hexadecimal contents of register 15 after failure of the close request.

Action: Refer to IBM VSAM documentation for a description of the error code. Take the appropriate corrective action before the job is next run.

OTM36006 SORT error – see SYSOUT report for details

Explanation: A non-zero return code was returned from the internal sort procedure.

Action: Refer to the SYSOUT dataset (allocated dynamically if not in the JCL) for details of the error. Take the appropriate corrective action and resubmit the job.

OTM36007 SQL error -nnn received during commit processing

Explanation: SQL error '-nnn' was received during the automatic commit processing performed after completing retrieval from each Archive Manager tape volume.

Action: Refer to DB2 message and code documentation for an explanation of the error. Take the appropriate corrective action and resubmit the job.

OTM36009 Error nn received closing archive database

Explanation: An error was received after issuing a Archive Manager close database request.

Action: Refer to the batch retrieval documentation in the Archive Manager User Manual for an explanation of the error code 'nn'. Take the appropriate corrective action and resubmit the job.

OTM36010 Error mmmnnnn received allocating xxxxxxxx

Explanation: An error was encountered dynamically allocating file 'xxxxxxx'. 'mmmm' and 'nnnn' are the hexadecimal error and information codes returned from SVC99 processing.

Action: Refer to IBM documentation on the dynamic allocation SVC for an explanation of these codes. Take the appropriate corrective action and resubmit the job.

OTM36011 Error nnnnnnnn received opening DDNAME xxxxxxxx

Explanation: An error was encountered opening VSAM dataset 'xxxxxxx'. 'nnnnnnnn' gives the hexadecimal reason code associated with the error.

Action: Refer to VSAM documentation for an explanation of this code. Take the appropriate corrective action and resubmit the job.

**OTM36014 Error mm supp codes X'nnnnnnnn' received retrieving object
xxxx....xxxx**

Explanation: An error was received after issuing an Archive Manager data retrieval request for object 'xxxx....xxxx'.

Action: Refer to the Archive Manager User Manual for an explanation of the return code 'mm', and the hexadecimal supplementary code 'nnnnnnnn'. Take the appropriate corrective action and resubmit the job.

**OTM36015 Error mmmmnnnn received writing object xxxx....xxxx to file
yyyyyyyy**

Explanation: An error was encountered attempting to add object 'xxxx....xxxx' to VSAM dataset 'yyyyyyyy' after retrieval from Archive Manager. 'mmmm' and 'nnnn' are the hexadecimal return and reason codes from the RPL feedback area.

Action: Refer to VSAM documentation for a description of these codes. Take the appropriate corrective action and resubmit the job.

OTM36016 SQL error -nnn inserting object xxxx....xxxx in table yyyy....yyyy

Explanation: SQL error '-nnn' was received inserting object 'xxxx....xxxx' in DB2 table 'yyyy....yyyy' after recall from Archive Manager.

Action: Refer to DB2 message and code documentation for an explanation of the error. Take the appropriate corrective action and resubmit the job.

OTM36017 SQL error -nnn updating object xxxx....xxxx in table yyyy....yyyy

Explanation: SQL error '-nnn' was received updating object entry 'xxxx....xxxx' in OAM directory table 'yyyy....yyyy'.

Action: Refer to DB2 message and code documentation for an explanation of the error. Take the appropriate corrective action and resubmit the job.

OTM36018 Insufficient storage for workareas

Explanation: Insufficient virtual storage was available for allocation of OAM Manager workareas.

Action: Increase the step or job region size and rerun the job.

OTM36019 CAF OPEN error nnnnnnnn

Explanation: Hexadecimal error 'nnnnnnnn' has been encountered when issuing a DB2 Call Attachment Facility open request.

Action: Refer to IBM CAF documentation for an explanation of the code. Take the appropriate corrective action and resubmit the job.

OTM36020 Member xxxxxxxx not found in parameter library

Explanation: Mandatory member 'xxxxxxx' was not present on the OAM Manager parameter library OTIMS100 during OAM Manager initialization processing.

Action: Ensure that the parameter library is correctly set up before rerunning the job.

OTM36021 Error nnnnnnnn locating member xxxxxxxx in parameter library

Explanation: An error has been encountered attempting to locate member 'xxxxxxx' on the OAM Manager parameter library. 'nnnnnnnn' gives the hexadecimal contents of register 15 on return from the FIND macro.

Action: Refer to IBM DFP documentation for an explanation of this code.

OTM36022 Error(s) processing parameter library

Explanation: Validation errors have been detected processing the OAM Manager parameter library file OTIMS100.

Action: Refer to the parameter validation report in file OTIMS350 for details of the errors. Correct the invalid parameters and resubmit the job.

OTM36023 Error in HLQ and/or DB2 database name for DDNAME xxxxxxxx – Storage group cannot be identified

Explanation: The dataset name supplied in a DD entry for a VSAM file to be used for storage of pre-fetched objects does not contain a valid high-level qualifier and/or DB2 database name. Utility processing is terminated with a condition code 12.

Action: Check the JCL used to execute the utility for correct specification of the dataset name in the OT04nnnn or OT32nnnn DD entries, and re-

run the utility. Refer to page 186 for information about specification of DD entries for execution of the batch pre-fetch utility.

OTM36024 Error loading CAF interface module

Explanation: A failure occurred attempting to load CAF interface module DSNALI or DSNHLI2.

Action: Ensure that the library containing these modules is available to the job via the JOBLIB or STEPLIB concatenation, or from the system linklist.

OTM36025 CAF CONNECT error nnnnnnnn

Explanation: Hexadecimal error 'nnnnnnnn' has been encountered when issuing a DB2 Call Attachment Facility CONNECT request.

Action: Refer to IBM CAF documentation for an explanation of the code. Take the appropriate corrective action and resubmit the job.

OTM36026 Storage group xxxxxxxx not in STRGROUP parameter member

Explanation: A retrieval request has been received for an object in storage group 'xxxxxxx' but this storage group was not present in member STRGROUP on the OAM Manager parameter library.

Action: Correct the STRGROUP parameter specification and rerun the job.

OTM36027 I/O error nnnnnnnn received processing file xxxxxxxx

Explanation: An I/O error has been encountered accessing file 'xxxxxxx'. 'nnnnnnnn' gives the hexadecimal value of the first 4 bytes of the IOB after the error.

Action: Refer to IBM system documentation for an explanation of this value. Take the appropriate corrective action and resubmit the job.

OTM36028 Mandatory xxxxxxxx parameter missing

Explanation: Mandatory parameter 'xxxxxxx' was not present in an OAM Manager parameter library member.

Action: Add the missing parameter to the OAM Manager parameter library member and rerun the job.

OTM36029 Error mmmnnnn received allocating SORT printfile

Explanation: An error was encountered dynamically allocating file SYSOUT for the internal sort. 'mmmm' and 'nnnn' are the hexadecimal error and information codes returned from SVC99 processing.

Action: Refer to IBM documentation on the dynamic allocation SVC for an explanation of these codes. Take the appropriate corrective action and resubmit the job.

OTM36030 Error nnnnnnnn received modifying xxxxxxxx RPL

Explanation: A modification request for VSAM RPL 'xxxxxxx' has failed with hexadecimal error 'nnnnnnnn'.

Action: This is an internal programming error and should be reported to your OAM Manager product support representative.

OTM36031 Return code xx supp codes X'yyyyyyy' received accessing archive database zzzzzzzz

Explanation: An error has occurred while attempting to access the Archive Manager database for the OAM storage group with DB2 name qualifier 'zzzzzzz' for input/output processing. The utility has been terminated abnormally.

Action: Consult the Archive Manager User Manual for a description of the return and supplementary codes displayed in the message.

Take the appropriate corrective action and restart the job.

OTM36032 Ret code xx supp codes X'yyyyyyy' received deleting bbbb....bbbb in d/b zzzzzzzz

Explanation: An error has occurred while attempting to delete the identified object from the Archive Manager database for the OAM storage group with DB2 name qualifier 'zzzzzzz'. The utility has been terminated abnormally.

Action: Consult the Archive Manager User Manual for a description of the return and supplementary codes displayed in the message.

Take the appropriate corrective action and restart the job.

OTM36033 Invalid mgmt class specified in OBJCNTL : bbbb....bbbb

Explanation: An invalid management class has been specified in the OBJCNTL member of the OAM Manager parameter library. 'bbbb....bbbb'

identifies the invalid management class name. Processing of the utility has been abandoned.

Action: Correct the invalid entry in the OBJCNTL parameter library member, and rerun the job.

OTM36034 Class 'xxxx....xxxx' is not in storage class table

Explanation: Storage class 'xxxx....xxxx' has been specified in the TAPECLASS or DISKCLASS parameter of the ENVCNTL parameter library member, but the specified class name does not exist in the OAMADMIN storage class identifier table. A return code of 12 is passed back to the calling application.

Action: Check that the correct class name has been specified in the TAPECLASS and/or disk class parameter of the ENVCNTL parameter library member, and that the specified (or defaulted) classes for these parameters have been defined to DFSMS.

OTM36035 Return code xx supp codes X'yyyyyyyy' received submitting request to process pre-fetch batch

Explanation: An error has been detected by Archive Manager while processing a batch of request for pre-fetch of objects to disk ('K') copy storage. The request has been terminated abnormally.

Action: Consult the Archive Manager User Manual for a description of the return and supplementary codes displayed in the message.

Take the appropriate corrective action and rerun the job.

OTM36036 Error loading program XXXXXXXX

Explanation: An error has occurred dynamically loading the program identified in the message.

Action: Ensure that the program identified in the message is available to be loaded from the steplib, joblib or linklist concatenation. Consult other available system messages for additional information on the load error. Take the appropriate corrective action and rerun the job.

.OSREQ return and reason codes

Any error condition encountered by OAM Manager during processing of an OSREQ request will be communicated to the caller via OSREQ return and reason codes in the standard manner. In general, reason codes generated by OAM Manager will have the value X'80' as a source identifier in byte 1 (the second byte of the code).

This section lists OSREQ return and reason codes generated by OAM Manager only. All other OSREQ codes may be found in the appropriate IBM documentation.

Return code	Reason code	
8	X'24800801'	<p>Description: No buffer address supplied in the OSREQ parameter list for a non-staged object retrieval request.</p> <p>Action: Check the appropriate OSREQ macro in the failing program to ensure that a correct buffer address has been supplied in the call parameters.</p>
8	X'24800802'	<p>Description: A buffer count of zero was supplied in the OSREQ parameter list for a non-staged object retrieval request.</p> <p>Action: Check the appropriate OSREQ macro in the failing program to ensure that a correct buffer count has been supplied in the call parameters.</p>
8	X'24800804'	<p>Description: A total buffer length of zero bytes was supplied in the OSREQ parameters for a non-staged object retrieval request.</p> <p>Action: Check the appropriate OSREQ macro in the failing program to ensure that a correct buffer length has been supplied in the call parameters.</p>

Return code	Reason code	
8	X'24800808'	<p>Description: The buffer supplied in the OSREQ parameters for a non-staged object retrieval request was not large enough to hold the retrieved object.</p> <p>Action: Modify the appropriate OSREQ macro in the failing program to ensure that a sufficient large buffer length has been supplied in the call parameters.</p>
8	X'24800C02'	<p>Description: The 'offset' value supplied in the OSREQ parameter list for a non-staged object retrieval request was greater than the total object length.</p> <p>Action: Modify the appropriate OSREQ macro in the failing program to ensure that a correct value for the 'offset' parameter has been supplied.</p>
8	X'24800C03'	<p>Description: An invalid 'offset' value was supplied in the OSREQ parameter list for a non-staged object retrieval request.</p> <p>Action: Check the appropriate OSREQ macro in the failing program to ensure that a correct value for the 'offset' parameter has been supplied.</p>
8	X'24800D02'	<p>Description: The sum of the 'offset' and 'length' values supplied in the OSREQ parameter list for a non-staged object retrieval request exceeded the total length of the object or the object being retrieved from the Lifecycle Director database is shorter than the length specified in the object's OAM directory entry. In this case message OTM25024 or OTM25420 will be displayed in the system log.</p>

Return code	Reason code
--------------------	--------------------

Action: For the first type of error, modify the appropriate OSREQ macro in the failing program to ensure that correct values for the 'offset' and 'length' parameters have been supplied.

For the second type of error Investigate the reason for the size discrepancy, paying particular attention to the job which migrated the object. This error can occur if the migrating job failed and had to be restarted, and there was an appreciable time interval between successful completion of the OTIMP100 and OTIMP120 steps, which may have allowed the object to have been deleted and recreated between migration to Lifecycle Director and deletion from DB2.

8	X'24800D03'
---	-------------

Description: An invalid 'length' value was supplied in the OSREQ parameter list for a non-staged object retrieval request.

Action: Check the appropriate OSREQ macro in the failing program to ensure that a correct value for the 'length' parameter has been supplied.

8	X'2C800200'
---	-------------

Description: An object was not present in an Archive Manager database.

Action: Issue an operator REFRESH command in the OAM Manager control region, to close and re-open all Archive Manager primary index files and repeat the request.

If the error still occurs, ensure consistency between the OAM directory and the Archive Manager database index for the storage group being processed. If no inconsistency can be found, contact your OAM Manager product support representative.

Return code	Reason code	
8	X'34xxxxxx'	<p>Description: A program abend has been intercepted during OAM Manager processing of the request. 'xxx' gives the system abend code.</p> <p>Action: Refer to IBM documentation for a description of the abend code. If the reason for the failure is not apparent, contact your OAM Manager product support representative.</p>
12	X'68800100'	<p>Description: Object processing cannot be performed due to the unavailability of one or more OAM Manager resources.</p> <p>Action: Retry the request at a later time.</p>
12	X'6C030800'	<p>Description: OAM Manager OSREQ intercept processing has not been enabled.</p> <p>Action: Ensure that the OAM Manager control region is active. If the error has been received during execution of a CICS program, ensure that the OAM Manager CICS interface has also been enabled successfully (see page 89 for a discussion of this requirement).</p>
12	X'7480xxxx'	<p>Description: An SQL error occurred trying to access a DB2 table. 'xxxx' gives the hexadecimal value of the SQL code.</p> <p>Action: Refer to DB2 documentation for a description of the error. Take the appropriate corrective action to ensure that the problem does not re- occur.</p>

Return code	Reason code	
12	X'B0800200'	<p>Description: The storage group database containing the migrated object is currently stopped.</p> <p>Action: Retry the request after the database has been re-started.</p>
12	X'B0800300'	<p>Description: The storage group containing the object collection was not in the OAM Manager parameter library STRGROUP member.</p> <p>Action: Add the storage group containing the object collection to the STRGROUP member.</p>
12	X'B0800400'	<p>Description: The Archive Manager database containing the migrated object is not currently connected to the control region.</p> <p>Action: Issue the operator STOP command for the storage group database followed by a START command, and retry the request. If this does not resolve the problem, contact your Oracle technical support representative.</p>
12	X'B4800100'	<p>Description: Object collection name is not in the OAM collection name table</p> <p>Action: Ensure consistency of OAM DB2 table information. If no inconsistency can be found, contact your OAM Manager product support representative.</p>
16	X'CA800000'	<p>Description: A system abend has been intercepted by the batch OSREQ intercept processor, during processing of an OAM request.</p>

Return code **Reason code**

Action: Refer to other available system messages for additional information about the abend. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

16 X'CA800100'

Description: A system abend has been intercepted by the CICS OSREQ intercept processor, during processing of an OAM request.

Action: Refer to other available system messages for additional information about the abend. If no apparent cause for the problem can be identified, report the error to your Oracle customer support representative.

16 X'CC80xxyy'

Description: An error has been returned by Archive Manager during object retrieval or deletion processing. 'xx' is the two-character code returned from the Archive Manager batch retrieval function. 'yy' is the second byte of the reason code 1 field returned by Archive Manager.

Action: Refer to the batch retrieval section of the Archive Manager User Manual for a description of the two-character return code and the reason code.

Take the appropriate action to ensure the problem does not re-occur.

If the reason for the failure is not apparent, contact your Archive Manager product support representative.

16 X'D080xxyy'

Description: A program abend has been intercepted during OAM Manager processing of the request. 'xxx' gives the system abend code.

Return code	Reason code
-------------	-------------

Action: Refer to IBM documentation for a description of the abend code. If the reason for the failure is not apparent, contact your OAM Manager product support representative.

16	X'D081xxxx'
----	-------------

Description: An error has occurred retrieving an address space token using the ALESERV macro. 'xxxx' gives the hexadecimal error code returned from the macro call.

Action: Refer to IBM documentation on the ALESERV macro for a description of the error code. Take the appropriate corrective action before retrying the request. If no apparent cause for the failure can be detected, contact your Oracle product support representative.

16	X'DCxxxxxx'
----	-------------

Description: A Call Attach Facility error was encountered during processing of the request. 'xxxxxx' gives the last 3 bytes of the reason code generated by CAF.

Action: Refer to CAF documentation for a description of the reason code. Take the appropriate action to ensure the problem does not re-occur.

.Reader task return codes

On completion of an object retrieval request, the OAM Manager tape or disk reader task issues a two-character internal return code to other OAM Manager components, indicating the result of the request. Unsuccessful return codes will result in bad return and/or reason codes being issued to the OSREQ caller by OAM Manager.

The internal reader task return code is included in the corresponding entry in the request section of the SMF record created during object retrieval processing. The value of the return code may be used by the customer's own SMF record processing for an analysis of successful and unsuccessful OAM Manager retrieval requests.

A return code value of '00' indicates successful retrieval of an object from Archive Manager. Non-zero return codes indicate that an abnormal condition was encountered

during retrieval processing. This section lists all possible non-zero values of the reader task return code.

RC Description

- 02 Storage group containing object to be retrieved has not been defined in the OAM Manager STRGROUP parameter library member
- 04 Logical record length exceeds the maximum set by the calling program.
- 13 Error occurred retrieving the identifier of a data block from the Archive Manager tape or disk dataset.
- 16 Error occurred locating a block on an Archive Manager tape or disk dataset.
- 30 Last logical record in Archive Manager object already retrieved.
- 31 Identified object is not on Archive Manager database.
- 44 An XCF error has been encountered processing a sysplex request
- 50 DB2 Call Attach Facility open error.
- 51 SQL error reading OAM directory entry.
- 52 SQL error received updating OAM data storage database.
- 53 OAM Manager program abend intercepted.
- 60 Non-staged object retrieval requested completed successfully.
- 61 Supplied OSREQ buffer not large enough to hold retrieved object.
- 62 'Offset' parameter in OSREQ retrieval request greater than object size.
- 63 Sum of 'offset' and 'length' parameters in OSREQ retrieval request greater than object size.
- 64 Error from ALESERV macro during retrieval processing.
- 80 Error reading Archive Manager index file
- 86 Internal Archive Manager index error - object not in block identified.
- 87 Archive Manager database has not been opened prior to access.
- 88 Archive Manager database has already been opened.
- 89 Archive Manager system file has not been opened for input-output processing.
- 90 A error has occurred while dynamically allocating an Archive Manager system dataset.
- 91 Archive Manager database not correctly initialized.
- 92 Failure trying to acquire virtual storage.
- 93 Fatal error already received - Archive Manager cannot continue processing.

RC Description

- 94 Error accessing Archive Manager system dataset.
- 95 Archive Manager product not authorized.
- 96 Archive Manager load module not found.
- 97 Open error on Archive Manager system file.
- 98 Internal Archive Manager processing error.
- 99 Invalid Archive Manager request code.

Appendices

.Appendix A: Sample JCL members

Appendix A gives listings of members on the distributed OAM Manager sample JCL library.

GPXXDEF

Member GPXXDEF defines and initializes the deletion control dataset used by OAM Manager for migration and storage of OAM objects from storage group XX.

```
//GPXXDEF JOB
//*
//* OAM Manager delete control dataset creation job
//*
//* Change history:
//*   GW 09/07/93 V1.1 created
//*   GW 19/01/95 V2.1 NearArchive database creation
//*                   and initialization steps removed
//*   GW 24/10/97 V2.2 'hlq' qualifier added
//*   GW 20/07/00 V2.3 GROUPxx qualifier modified to xxxxxxxx
//*   GW 28/01/04 V3.0 Comments updated for new product name
//*   GW 06/09/04      Delete control dataset name modified
//*   GW 21/10/04      INDEXID added to dataset name
//*
//* This job creates the OAM Manager delete control dataset
//* for an OAM Manager storage group
//*
//* Before submitting the job, alter the lines marked
//* "/* <== */" as follows:
//*
//*   xxxxxxxx: should be set to the name of the DB2 database
//*             qualifier assigned to the storage group
//*             (e.g. GROUP00, GROUP01 etc.)
//*
//*   yyyyyyyy: should be set to the value of the INDEXID
//*             parameter in the STRGROUP parameter library
//*             entry for the storage group. The default
//*             value for this parameter is OTM.dddd, where
//*             dddd is the name of the DB2 subsystem used by
//*             OAM Manager for processing this storage
//*             group.
//*
//*   eeee and ffff: the primary and secondary allocation
//*                 values for the OAM Manager delete control
//*                 dataset. This dataset will contain one
//*                 record for each object that has been
//*                 selected for processing during execution
```

```

/**          of the migration utility.  Ensure that
/**          these values are sufficient to contain
/**          the highest number of objects that are
/**          expected to be processed in any one
/**          execution of this utility for this
/**          storage group.
/**
/**          vvvvvv: the serial number of the disk volume to
/**          be used for allocating OAM Manager
/**          datasets for this storage group.
/**
/**          hlq: the value of the HLQ parameter from the STRGROUP
/**          parameter library member.  If no HLQ parameter
/**          has been specified, remove the 'hlq' qualifier
/**          from the data set name.
/**
//STEP100 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
DELETE hlq.xxxxxxxxx.yyyyyyyy.DCNTL /* <=== */
DEFINE CLUSTER -
      (NAME(hlq.xxxxxxxxx.yyyyyyyy.DCNTL) /* <=== */ -
      SHR(2 3) -
      REC(eeee ffff) /* <=== */ -
      RECSZ(52 132) -
      INDEXED -
      KEYS(48 0) -
      FSPC(20 10) -
      BUFFERSPACE(737280) -
      VOL(vvvvvv) /* <=== */ -
DATA -
      (NAME(hlq.xxxxxxxxx.yyyyyyyy.DCNTL.DATA) /* <=== */ -
      CISZ(16384)) -
INDEX -
      (NAME(hlq.xxxxxxxxx.yyyyyyyy.DCNTL.IX) /* <=== */ -
      CISZ(4096))
/*

```

GPXXMIG

Member GPXXMIG executes the OAM Manager object management procedure for storage group XX.

```

//GPXXMIG JOB
/**
/** OAM Manager object management job
/**
/** Change history:
/** GW 09/07/93 V1.1 created
/** GW 19/01/95 V2.1 STEP110 EXEC parm description updated
/** GW 09/08/95 REGION parameter added to STEP110
/** GW 13/03/96 OM210011 - NearArchive load libraries added to
/** STEPLIB concatenations in STEP110 and STEP120
/** GW 24/10/97 V2.2 OTIMIDCI and OTIMIDCO DD cards added to

```

```

/**          STEP100
/**  GW  20/07/00 V2.3 No modifications required
/**  GW  28/01/04 V3.0 Comments updates for new product names
/**
/** This job migrates and expires objects
/** for storage group 'storage-group-name' (identifier XX)
/**
/** Before submitting the job, alter the lines marked <===
/** as follows:
/**
/** EXEC PARM: replace the string 'storage-group-name' with
/** the name of the storage group to be
/** processed. For steps STEP100 and STEP120
/** add the PRINT and RESTART keyword parameters
/** where necessary (see chapter 5 of the
/** OAM Manager user manual for an explanation of
/** these parameters).
/**
/** OAM.Manager.load.library: replace this string with the
/** name of the OAM Manager product
/** load library on your system.
/**
/** Archive.Manager.load.library: replace this string with the
/** name of the Archive Manager product
/** load library on your system.
/**
/** DB2.runtime.library: replace this string with the
/** name of the DB2 runtime library
/** on your system.
/**
/** OAM.Manager.parameter.library: replace this string with
/** the name of the OAM Manager
/** parameter library on your
/** system.
/**
/** OAM.Manager.JCL.library: replace this string with the
/** name of the PDS holding the
/** member DGROUXXX which contains
/** the delete/define parameters
/** for the OAM Manager deletion
/** control dataset for this storage
/** group. Change the member name
/** DGROUXXX to the name of the
/** member to be used.
/**
/**STEP100 EXEC PGM=OTIMP100,REGION=4096K,
/**          PARM='storage-group-name' <===
/**          PARM='storage-group-name,RESTART=YES' <===
/**STEPLIB DD DSN=OAM.Manager.load.library,DISP=SHR <===
/**          DD DSN=Archive.Manager.load.library,DISP=SHR <===
/**          DD DSN=DB2.runtime.library,DISP=SHR <===
/**OTIMS100 DD DSN=OAM.Manager.parameter.library,DISP=SHR <===
/**OTIMIDCI DD DSN=OAM.Manager.JCL.library(DGROUXXX), <===
/**          DISP=SHR
/**OTIMIDCO DD SYSOUT=*
/**SYSPRINT DD SYSOUT=*
/**

```

```

//STEP110 EXEC PGM=OTIMP110,REGION=4096K,
//          PARM='storage-group-name, BACKUP=YES|NO'           <===
//STEPLIB DD DSN=OAM.Manager.load.library,DISP=SHR           <===
//          DD DSN=Archive.Manager.load.library,DISP=SHR     <===
//OTIMS100 DD DSN=OAM.Manager.parameter.library,DISP=SHR     <===
//SYSPRINT DD SYSOUT=*
//*
//STEP120 EXEC PGM=OTIMP120,REGION=4096K,
//          PARM='storage-group-name'                         <===
//*          PARM='storage-group-name, RESTART=YES'           <===
//STEPLIB DD DSN=OAM.Manager.load.library,DISP=SHR           <===
//          DD DSN=Archive.Manager.load.library,DISP=SHR     <===
//          DD DSN=DB2.runtime.library,DISP=SHR              <===
//OTIMS100 DD DSN=OAM.Manager.parameter.library,DISP=SHR     <===
//SYSPRINT DD SYSOUT=*
//OTIMIDCI DD DSN=OAM.Manager.JCL.library(DGROUPXX),         <===
//          DISP=SHR
//OTIMIDCO DD SYSOUT=*
//*

```

NEAROAMC

Member NEAROAMC is a sample procedure for execution of the OAM Manager control region started task.

```

//*
//* OAM Manager started task procedure.
//*
//* Change history:
//* GW 09/07/93 V1.1 created
//* GW 19/01/95 V2.1 procedure name amended to NEAROAMC
//* GW 24/10/97 V2.2 no modifications
//* GW 20/07/00 V2.3 No modifications required
//* GW 28/01/04 V3.0 Comments updated for new product names
//*
//* Edit each of the lines marked "<===" to update:
//*
//* 1. Procedure and step names.
//*
//* 2. Name of installed OAM Manager load library.
//*
//* 3. Name of installed Archive Manager load library.
//*
//* 4. Name of DB2 runtime load library.
//*
//* 5. Name of OAM Manager parameter library.
//*
//* If any of the above load libraries are present in the
//* system linklist, they may be omitted from the STEPLIB
//* concatenation in this procedure.
//*
//xxxxxxx PROC SIZE=6192K                                     <===
//*
//xxxxxxx EXEC PGM=OTIMP200,REGION=&SIZE                     <===
//STEPLIB DD DSN=OAM.Manager.load.library,DISP=SHR           <===
//          DD DSN=Archive.Manager.load.library,DISP=SHR     <===
//          DD DSN=DB2.runtime.load.library,DISP=SHR         <===

```

```
//OTIMS100 DD DSN=OAM.Manager.parameter.library, <===
//          DISP=SHR
//*
```

OTIMBIND

Member OTIMBIND creates the DB2 application plan required for execution of OAM Manager.

```
//OTIMBIND JOB
//*
//* OAM Manager DB2 plan creation job.
//*
//* Change history:
//* GW 09/07/93 V1.1 created
//* GW 19/01/95 V2.1 no changes
//* GW 28/03/96 OM210005: OTIML130 BIND parameters added
//* GW 11/04/97 OM210034: OTIML254 BIND parameters added
//* GW 24/10/97 V2.2 OTIML010 and OTIML020 added
//*          VALIDATE(RUN) changed to VALIDATE(BIND)
//* GW 20/07/00 V2.3 changed to bind from package list
//* GW 28/01/04 V3.0 Comments updated for new product names
//*
//* This job creates the DB2 application plan
//* required for OAM Manager implementation.
//*
//* Amend the job as follows before submitting:
//*
//* 1. Alter the STEPLIB DD card to specify name of the
//*    DB2 runtime load library on the host system.
//*
//* 2. Change the dataset name on the DBRMLIB DD card
//*    to specify the name of the OAM Manager DBRM library
//*    unloaded from file 2 of the distribution tape.
//*
//* 3. Change the name of the DB2 subsystem (DB2) in
//*    the DSN statement to match the subsystem name
//*    in use on the host system.
//*
//* 4. Replace the character string 'pppppppp' with
//*    the name of the DB2 plan to be generated.
//*
//* 5. Replace the character strings 'aaaaaaaa', 'bbbbbbbb'
//*    etc. in the PKLIST parameter with the DB2 database name
//*    qualifiers of each OAM storage group to be accessed by
//*    OAM Manager ('GROUP00', 'GROUP01' etc.). There should be
//*    one entry in the PKLIST parameter for each OAM storage
//*    group.
//*
//BIND      EXEC PGM=IKJEFT01,DYNAMNBR=20
//STEPLIB   DD DSN=DB2.runtime.library,DISP=SHR
//DBRMLIB   DD DSN=OAM.Manager.DBRM.library,DISP=SHR
//SYSTSPRT  DD SYSOUT=*
//SYSPRINT  DD SYSOUT=*
//SYSUDUMP  DD SYSOUT=*
```

```
//SYSTSIN DD *

DSN SYSTEM(DB2)

BIND PLAN(pppppppp) -
      PKLIST(aaaaaaaa.*, -
            bbbbbbbb.*, -
            cccccccc.*) -
ACTION(REPLACE) -
RETAIN -
VALIDATE(BIND) -
ISOLATION(CS) -
FLAG(E) -
ACQUIRE(USE) -
RELEASE(COMMIT) -
EXPLAIN(NO)

/*
```

OTIMGRNT

Member OTIMGRNT grants DB2 authorities for OAM Manager plan access.

```
//OTIMGRNT JOB
/*
/* OAM Manager OAM table authorization job.
/*
/* Change history:
/* GW 09/07/93 V1.1 created
/* GW 19/01/95 V2.1 no changes
/* GW 28/03/96 OM210005: OTIML130 PLAN ADDED
/* GW 11/04/97 OM210034: OTIML254 PLAN ADDED
/* GW 24/10/97 V2.2 OTIML010 and OTIML020 added
/* GW 20/07/00 V2.3 no changes
/* GW 28/01/04 V3.0 Comments updated for new product names
/*
/* This job grants DB2 authorities for
/* OAM Manager plan access.
/*
/* Amend the job as follows before submitting:
/*
/* 1. Change the name of the DB2 subsystem (DB2) in
/* the DSN statement to match the subsystem name
/* in use on the host system.
/*
/* 2. Change the dataset name on the LIB keyword of
/* the RUN statement to specify the name of the
/* DB2 run time library in use on the host system.
/*
/* 3. Change the plan name in the RUN statement (DSNTIA21)
/* to match the version of DB2 in use on the host
/* system.
/*
/* 4. Change the plan name in the GRANT command (pppppppp)
/* to match the name of the plan to be used for OAM Manager
/* execution.
/*
```



```

//SYSTSIN DD *
  DSN SYSTEM(DB2)
  BIND PACKAGE (xxxxxxxx) -
    QUALIFIER (xxxxxxxx) -
    MEMBER (OTIML010) -
    ACTION (REPLACE) -
    VALIDATE (BIND) -
    ISOLATION (CS) -
    FLAG (E) -
    SQLERROR (CONTINUE) -
    RELEASE (COMMIT) -
    EXPLAIN (NO)
  BIND PACKAGE (xxxxxxxx) -
    QUALIFIER (xxxxxxxx) -
    MEMBER (OTIML020) -
    ACTION (REPLACE) -
    VALIDATE (BIND) -
    ISOLATION (CS) -
    FLAG (E) -
    SQLERROR (CONTINUE) -
    RELEASE (COMMIT) -
    EXPLAIN (NO)
  BIND PACKAGE (xxxxxxxx) -
    QUALIFIER (xxxxxxxx) -
    MEMBER (OTIML100) -
    ACTION (REPLACE) -
    VALIDATE (BIND) -
    ISOLATION (CS) -
    FLAG (E) -
    SQLERROR (CONTINUE) -
    RELEASE (COMMIT) -
    EXPLAIN (NO)
  BIND PACKAGE (xxxxxxxx) -
    QUALIFIER (xxxxxxxx) -
    MEMBER (OTIML120) -
    ACTION (REPLACE) -
    VALIDATE (BIND) -
    ISOLATION (CS) -
    FLAG (E) -
    SQLERROR (CONTINUE) -
    RELEASE (COMMIT) -
    EXPLAIN (NO)
  BIND PACKAGE (xxxxxxxx) -
    QUALIFIER (xxxxxxxx) -
    MEMBER (OTIML130) -
    ACTION (REPLACE) -
    VALIDATE (BIND) -
    ISOLATION (CS) -
    FLAG (E) -
    SQLERROR (CONTINUE) -
    RELEASE (COMMIT) -
    EXPLAIN (NO)
  BIND PACKAGE (xxxxxxxx) -
    QUALIFIER (xxxxxxxx) -
    MEMBER (OTIML220) -
    ACTION (REPLACE) -
    VALIDATE (BIND) -

```

```

ISOLATION (CS) -
FLAG (E) -
SQLERROR (CONTINUE) -
RELEASE (COMMIT) -
EXPLAIN (NO) -
BIND PACKAGE (xxxxxxxx) -
QUALIFIER (xxxxxxxx) -
MEMBER (OTIML250) -
ACTION (REPLACE) -
VALIDATE (BIND) -
ISOLATION (CS) -
FLAG (E) -
SQLERROR (CONTINUE) -
RELEASE (COMMIT) -
EXPLAIN (NO) -
BIND PACKAGE (xxxxxxxx) -
QUALIFIER (xxxxxxxx) -
MEMBER (OTIML254) -
ACTION (REPLACE) -
VALIDATE (BIND) -
ISOLATION (CS) -
FLAG (E) -
SQLERROR (CONTINUE) -
RELEASE (COMMIT) -
EXPLAIN (NO) -
BIND PACKAGE (xxxxxxxx) -
QUALIFIER (xxxxxxxx) -
MEMBER (OTIML360) -
ACTION (REPLACE) -
VALIDATE (BIND) -
ISOLATION (CS) -
FLAG (E) -
SQLERROR (CONTINUE) -
RELEASE (COMMIT) -
EXPLAIN (NO) -
BIND PACKAGE (xxxxxxxx) -
QUALIFIER (xxxxxxxx) -
MEMBER (OTIML368) -
ACTION (REPLACE) -
VALIDATE (BIND) -
ISOLATION (CS) -
FLAG (E) -
SQLERROR (CONTINUE) -
RELEASE (COMMIT) -
EXPLAIN (NO) -

```

/*

.Appendix B: Sample source code

Appendix B describes sample source code members supplied in the OAM Manager sample library.

NB: Source code in this library is supplied by Oracle without any guarantee of correct functionality. Implementation and usage of the supplied sample code may be undertaken as required by the customer, with or without modification. However, Oracle accepts no responsibility for its correct functioning in any circumstance. If used, the responsibility for modification and maintenance of the code is entirely that of the customer.

OTIMP080 - the Visual Info object clustering sample code

Introduction

The Visual Info object clustering program is intended for use by customers who have implemented IBM's Visual Info document management product in MVS. It may be used to 'tag' OAM objects, which are used in MVS for storage of Visual Info documents, with Visual Info folder identifiers prior to OAM Manager migration processing. Once tagged, all objects within a single folder will then be processed sequentially for migration to Archive Manager, and held in a contiguous area of storage in the Archive Manager database. This will greatly improve efficiency of operation and performance for retrieval from Archive Manager (in particular from tape storage) of all documents within a single Visual Info folder.

Once assembled and link-edited, the program is executed as an additional step prior to the first step in the standard OAM Manager object management procedure. The program as supplied uses a parameter-driven process to allow customer control of the folder identification and tagging process (as described below). This uses the standard Visual Info document storage structure to tag OAM objects with folder identifiers. The folder tagging process can be modified at any time.

Customers who wish to implement such a solution should review the supplied sample code to determine its applicability. Code may be modified as required to work with different releases of Visual Info. If necessary, more extensive modifications may be made to allow it to function with other types of databases.

Prior to use, the code should be processed by the DB2 pre-compiler, assembled and link-edited, and the DBRM created by the pre-compiler used to bind a plan or package for program execution. The plan name is supplied as a parameter in the SYSIN file (as described below).

Overview of sample code processing

The supplied sample code will tag each object in the OAM directory for the storage group being processed by the utility with the identifier of the Visual Info folder to which the document stored in the OAM object belongs. The folder id is a fullword binary value, and is stored in the ODBKSEC column in the OAM directory entry for a migrated row.

The supplied sample code performs the following processing:

- The directory entries for all objects within the storage group being processed which have not yet been tagged (ie. ODBKSEC = 0) will be accessed sequentially. The program as supplied will attempt to assign each such object to a single Visual Info folder, using the following logic:
 - * The Visual Info item identifier will be built from the first two qualifiers in the OAM object name.
 - * All rows which contain this item id as the 'ChildItemId' in the Visual Info SBTLINKS table will be processed. For each such row, the 'ParentItemId' will be extracted.
 - * The Visual Info SBTITEMS table row for the parent item id will be retrieved, and the index class code for that item extracted. This code will identify the parent folder type.
- The program will compare this code against a code which has been entered as an execution parameter to the program. If the codes match, the document is tagged with the parent folder id, by moving this id to the ODBKSEC field and updating the row. If the codes do not match, the program will continue to process the next row (if any) for the document from the SBTLINKS table. If there are no more rows, then the document will not be tagged with a folder id (ie. it will not be clustered by folder when stored on tape).

Tagging a row in this way will ensure that all rows tagged with the same folder id will be processed contiguously by OAM Manager during object migration processing in utility program OTIMP100. This will preserve physical clustering in the Archive Manager database of logically-related objects during migration processing.

Installation and implementation

In order to prepare the Visual Info object clustering utility for execution, one or more DB2 plans will need to be created, as follows:

- If Visual Info is implemented to use the same DB2 subsystem as OAM, a single plan will need to be created in that DB2 subsystem.
- If Visual Info is implemented to use a different DB2 subsystem from that used by OAM, a DB2 plan will need to be created in each of those DB2 subsystems. The plan name must be identical for each DB2 subsystem.

For either of the above cases, the supplied program will use the plan name specified (or defaulted) in the PLAN parameter in the SYSIN file (see below). The DBRM created during pre-processing of the source should be bound as a package for each storage group to be used by the program. The list of packages may then be bound to the required DB2 plan.

The following sample control statements may be used to bind this DBRM as a DB2 package:

```

BIND PACKAGE(xxxxxxxx) -
      QUALIFIER(xxxxxxxx) -
      MEMBER(yyyyyyyy) -
      ACTION(REPLACE) -
      VALIDATE(BIND) -
      ISOLATION(CS) -
      FLAG(E) -
      RELEASE(COMMIT) -
      SQLERROR(CONTINUE) -
      EXPLAIN(NO)

```

where 'xxxxxxxx' is the name qualifier of the DB2 database for the storage group, and 'yyyyyyyy' is the name of the DBRM created by the DB2 pre-processor. One package should be bound for each storage group to be used by the program

Following successful plan creation, the following SQL Data Definition Language (DDL) statements should be executed to create the folder identification table required for execution of the program:

```

CREATE DATABASE      xxxxxxxxx;
COMMIT;
CREATE TABLESPACE  yyyyyyyyy
      IN            xxxxxxxxx
      USING         VCAT dddddddd
      LOCKSIZE     ANY
      CLOSE        NO
      BUFFERPOOL   BP0;
COMMIT;
CREATE TABLE      zzzzzzzz
      (
      FDITEM      CHAR(16)      NOT NULL,
      FDNAME      VARCHAR(50)  NOT NULL,
      FDITEM      INTEGER      NOT NULL
      )
      IN xxxxxxxxx.yyyyyyyy;
CREATE UNIQUE INDEX wwwwwwww
      ON zzzzzzzz
      (
      FDITEM      ASC
      )
      USING         VCAT dddddddd
      CLOSE        NO

```

```

SUBPAGES      1
BUFFERPOOL    BP1
PCTFREE       10;

```

where 'xxxxxxx', 'yyyyyyy' and 'zzzzzzz' are the folder identification database, tablespace and table names, 'wwwwwww' is the index name, and 'ddddddd' is the catalog identifier. All these values may be assigned as required by the customer.

Create a synonym for 'OTIMFOLD', using the following DDL:

```

CREATE SYNONYM OTIMFOLD
FOR xxxxxxxx.zzzzzzzz

```

where 'xxxxxxx.zzzzzzzz' is the fully-qualified name of the database table created in the previous step. The sample OTIMP080 program uses the synonym OTIMFOLD to access this table.

JCL requirements

To execute the sample Visual Info object clustering utility, an additional step should be performed prior to the existing first step (program OTIMP100) in the standard OAM Manager object management procedure. The following JCL may be used to execute this step:

```

//RUNP080 EXEC PGM=OTIMP080,REGION=4M
//SYSIN DD DSN=parameter.file,DISP=SHR
//OTIMWK01 DD DSN=&OTIM,DISP=(NEW,DELETE),UNIT=SYSDA
//OTIMWK02 DD DSN=&OTIM,DISP=(NEW,DELETE),UNIT=SYSDA
//SYSPRINT DD SYSOUT=*

```

DD entries should be specified as follows:

SYSIN Enter the name of a sequential file which will be used to contains parameters controlling execution of the program. This should be a fixed-blocked sequential file, with a logical record length of 80 bytes.

**OTIMWK01
& OTIMWK02** These are temporary disk files, which may be entered as specified above.

SYSIN parameters

The SYSIN file is used to specify parameters used to control execution of the supplied sample code. Each parameter should be coded on a separate record in the file. Each record will be 80 bytes in length. Parameter specifications may appear in character positions 1-71.

The program as supplied will accept the following parameters from the SYSIN file:

- a. DBNAME=xxxxxxx - this is a mandatory parameter, and is used to identify the 1-8 character name of the storage group database to be processed by the utility during this run (eg GROUP00, GROUP01 etc.)
- b. PLAN=xxxxxxx – this is an optional parameter which is used to specify the name of the DB2 plan to be used for execution of the program. If omitted a default value of OTIML080 is used.
- c. SUBSYSTEM=xxxx – this is a mandatory parameter which specifies the DB2 subsystem name used by OAM.
- d. d. INDEX=(aaaaa,bbbb,cccc,dddd,eeee) - this is a mandatory parameter. (aaaaa,bbbb,cccc,dddd,eeee) specifies from 1 to 5 numeric Visual Info index class codes (each consisting of 1 to 5 numeric characters) associated with the folder identifier by which documents are to be tagged by the utility. At least one index class code must be specified; the maximum number which may be specified is 5. If only one index class code is present, the start and end bracket may be omitted. Each index class code contains from 1 to 5 numeric digits.

These codes are used to control the folder by which a document is tagged, in cases where a document may belong to more than one folder. The program will always attempt to tag a document using the first index class code specified in this parameter (ie. it will tag a document with the identifier of the first folder holding this document which has a matching index class code). If the document is not contained in a folder with this code, the program will then attempt to tag a document using the second index class code specified here. Processing will continue in this manner until a document has been successfully tagged, or until all specified index class codes have been processed. In this latter case, a warning message is issued to the SYSPRINT report file, indicating that a document has not been tagged.

- e. VISUBSYS - this is an optional parameter which identifies the DB2 subsystem containing the Visual Info library server database. If this parameter is omitted the DB2 subsystem id specified in the PLAN parameter will be used for this value.
- f. 'PRINT=DETAIL|SUMMARY' - this is an optional parameter used to control the production of the object processing report on the SYSPRINT dataset. 'PRINT=SUMMARY' requests that printing of the object processing report be suppressed. (this is the default). 'PRINT=DETAIL' requests that the object processing report is to be printed. The default value is 'SUMMARY'.
- g. 'MAXREC=nnnnnn' - this is an optional keyword parameter which controls the maximum number of OAM objects to be processed during this execution of the utility. 'nnnnnn' must be a 1-6 digit numeric value in the range 0-999999. When this number of objects has been processed by the utility, execution will end normally. If a value of 0 is specified, no

limit is placed on the number of objects to be processed during program execution. If this parameter is omitted, a default value of 0 is used.

- h. 'COMMITFREQ=nnnnn' - this is an optional keyword parameter which controls how frequently the utility commits all updates to the OAM object directory table. 'nnnnn' is a 1-5 digit numeric value in the range 0-99999, which indicates the number of OAM directory table entries which should be processed between commit requests. If a value of 0 is specified, no explicit commit processing will be performed by the program. If this parameter is omitted, a default value of 0 is used.

Condition codes

The following condition codes will be set by the program prior to termination:

- 0 the program has executed successfully. There were no warning or error conditions.
- 4 the program has completed successfully, but one or more warning conditions were encountered. These conditions will be identified in the SYSPRINT report file.
- 8 the program has completed successfully, but one or more error conditions were encountered. These conditions will be identified in the SYSPRINT report file.
- 12 a serious error has occurred. Execution of the program is terminated, and the cause of the error identified in the SYSPRINT report file.

Restart requirements

There are no special requirements for restart of the program after abnormal termination of the procedure. After correcting the error, the Visual Info object clustering procedure should be rerun as normal.

The COMMITFREQ EXEC parameter will control the frequency of DB2 COMMIT processing when tagging objects. Any objects which have been successfully tagged and committed will not require processing during rerun of a failed procedure. Tagged objects which have not been committed will be processed as normal during rerun processing. An appropriate value for the COMMITFREQ parameter (eg. COMMITFREQ=1000) should be used to reduce the amount of processing required when rerunning a failed procedure.

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