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EOSDIS Core System Project

Release 5B.06 Storage Management and Data Distribution Subsystems Database Design and Database Schema Specifications for the ECS Project

December 2000

Raytheon Company
Upper Marlboro, Maryland

Release 5B.06 Storage Management and Data Distribution Subsystem Database Design and Database Schema Specifications for the ECS Project

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Preface

This document describes the database design and database schema specifications for the Storage Management (STMGT) Subsystem. It is one of nine documents comprising the detailed database design and database schema specifications for the as-delivered ECS subsystems. A complete list of the eight documents follows:

311-CD-520-002	Release 5B.06 Data Management (DM) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-521-002	Release 5B.06 Ingest Subsystem (INS) Database Design and Database Schema Specifications for the ECS Project
311-CD-522-002	Release 5B.06 Interoperability Subsystem (IOS) Database Design and Database Schema Specifications for the ECS Project
311-CD-523-002	Release 5B.06 Planning and Data Processing Subsystem (PDPS) Database Design and Database Schema Specifications for the ECS Project
311-CD-524-002	Release 5B.06 Science Data Server (SDSRV) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-525-002	Release 5B.06 Storage Management (STMGT) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-526-002	Release 5B.06 Subscription Server (SUBSRV) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-527-002	Release 5B.06 Management Support Subsystem (MSS) Database Design and Database Schema Specifications for the ECS Project
311-CD-528-002	Release 5B.06 Registry Database Design and Database Schema Specifications for the ECS Project

This submittal meets the milestone specified in the Contract Data Requirements List (CDRL) of NASA Contract NAS5-60000. This document is a contract deliverable with an approval code 2. As such, it does not require formal Government acceptance. Contractor approved changes to this document are handled in accordance with change control requirements described in the EOS Configuration Management Plan. Changes to this document will be made by document change notice (DCN) or by complete revision.

Entity relationship diagrams (ERDs) presented in this document have been exported directly from software tools and in some cases contain too much detail to be easily readable within hard copy page constraints. The reader is encouraged to view these diagrams in portable document format (PDF) on the ECS Data Handling System (EDHS) world wide web (WWW) site. The universal resource locator (URL) is: http://edhs1.gsfc.nasa.gov.

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Abstract

This document outlines the Release 5B.06 "as-built" database design and database schema specifications for the combined Storage Management (STMGT) and Data Distribution (DDIST) Subsystems. It includes the entity-relationship diagram (ERD), physical database table definitions, and database software which includes listings of triggers and procedures. The ERD describes data entities and the association between these entities used within the STMGT Subsystem. Other information is also included to support database installation and life-cycle maintenance.

Keywords: data**,** database, design, specifications, configuration, installation, parameters, scripts, security, data model, replication, performance tuning, SQL server, Sybase, database security, triggers, procedures, scripts.

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Appendix A. Storage Management Entity Relationship Diagrams

Abbreviations and Acronyms

1. Introduction

1.1 Identification

This Storage Management (STMGT) Subsystem Database Design and Database Schema Specifications document, Contract Data Requirement List (CDRL) Item Number 050, whose requirements are specified in Data Item Description (DID) 311/DV2, is a required deliverable under the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS), Contract NAS5-60000.

1.2 Scope

The *STMGT Subsystem Database Design and Database Schema Specifications* document describes the database that supports data requirements for the STMGT and DDIST Subsystems, Release 5B.06.

1.3 Purpose

The purpose of the *STMGT Subsystem Database Design and Database Schema Specifications* document is to support the administrators of the combined STMGT/DDIST Subsystem database throughout its life cycle. Also, this document communicates the database specifications in sufficient detail to support other ongoing installation and operational activities (e.g., configuration management, data administration, system installation and maintenance).

1.4 Audience

The *STMGT Subsystem Database Design and Database Schema Specifications* document is intended to be used and maintained by ECS maintenance and operations staff. The document is organized as follows:

Section 1 provides information regarding the identification, scope, purpose and audience.

Section 2 provides a listing of related documents used to develop this document.

Section 3 contains a design overview of the database design including the entity relationship diagram (ERD) representing the physical data model, the database tables and columns, flat file usage and fields, triggers, and stored procedures.

Section 4 provides a description of performance and tuning features, i.e., indexes, caches for the STMGT Subsystem database implementation.

Section 5 provides the database security high level description of the preliminary security infrastructure including listings of anticipated users, groups, and permissions expected for preliminary operational use.

Section 6 provides listings of the scripts used for database installation, de-installation, backup and recovery, and other miscellaneous administration functions.

2. Related Documents

2.1 Applicable Documents

The following documents, including Internet links, are referenced in this document, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this volume.

305-CD-510	Rel 5B Segment Design Specification for the ECS Project
920-TDG-009	DAAC Hardware Database Mapping/GSFC
920-TDN-009	DAAC Hardware Database Mapping/NSIDC
920-TDE-009	DAAC Hardware Database Mapping/EDC
920-TDL-009	DAAC Hardware Database Mapping/LARC
920-TDS-009	DAAC Hardware Database Mapping/SMC
920-TDG-010	DAAC Database Configuration/GSFC
920-TDN-010	DAAC Database Configuration/NSIDC
920-TDE-010	DAAC Database Configuration/EDC
920-TDL-010	DAAC Database Configuration/LARC
920-TDS-010	DAAC Database Configuration/SMC
920-TDG-011	DAAC Sybase Log Mapping/GSFC
920-TDN-011	DAAC Sybase Log Mapping/NSIDC
920-TDE-011	DAAC Sybase Log Mapping/EDC
920-TDL-011	DAAC Sybase Log Mapping/LARC
920-TDS-011	DAAC Sybase Log Mapping/SMC
922-TDG-013	Disk Partitions/GSFC
922-TDN-013	Disk Partitions/NSIDC
922-TDE-013	Disk Partitions/EDC
922-TDL-013	Disk Partitions/LARC
922-TDS-013	Disk Partitions/SMC

These documents are maintained as part of the ECS baseline and available on the world-wide web at the URL: http://cmdm.east.hitc.com/baseline. Please note that this is a partial mirror site

in that some items are not available (they are identified) since this is OPEN to all. This site may also be reached through the EDHS homepage. Scroll page to the connections line and click on the ECS Baseline Information System link.

2.2 Information Documents

The following documents, although not directly applicable, amplify or clarify the information presented in this document. These documents are not binding on this document.

313-CD-510	Release 5B Internal ICD for the ECS Project
609-CD-510	Release 5B Operations Tools Manual for the ECS Project
611-CD-510	Release 5B Mission Operation Procedures for the ECS Project

These documents are accessible via the EDHS homepage.

3. Database Design

3.1 Design Overview

The combined STMGT/DDIST Subsystem database implements a majority of the persistent data requirements for the STMGT and DDIST Subsystems. Other data requirements, as used for system support, are implemented in flat files, see Section 3.2 for descriptions of these flat files. The database is designed to satisfy business rules while maintaining data integrity, consistency, and performance. Database tables are implemented using the Sybase Relational Database Management System (RDBMS) Version. All components of the combined STMGT/DDIST Subsystem database are described in the following sections; information is presented in sufficient detail to support operational needs.

3.1.1 Physical Data Model Entity Relationship Diagram

An entity relationship diagram (ERD) was developed for use as a "roadmap" to the combined STMGT/DDIST Subsystem database. An ERD is a schematic of the physical data structure that illustrates the dependencies and relationships between database entities, i.e., tables. On ERDs, database entities are represented by rectangles and arrows as shown by the key in Figure 3-1 represent relationships. Details on the syntax used by the *Power Designor Data Architect* Computer Aided Software Engineering (CASE) tool may be found in the *Powersoft: Power Designor for PowerBuilder* Reference Guide. The ERD presented in Appendix A for the STMGT Subsystem database was produced using the *Power Designor* tool.

The ECS Conceptual Model for the Science Data Processing Segment (SDPS) was developed using an Object Oriented (OO) CASE tool. However; since Sybase implements a RDBMS with an Object wrapper, the syntax (model notation) is converted from OO to relational and the terminology changes-the "attribute" becomes "column" and "class" becomes "table." Since the specifications of some entities in this document are transferred from the OO Conceptual Model repository, there are many cases where the OO terminology is retained—as, for example, in the table and column names and definitions.

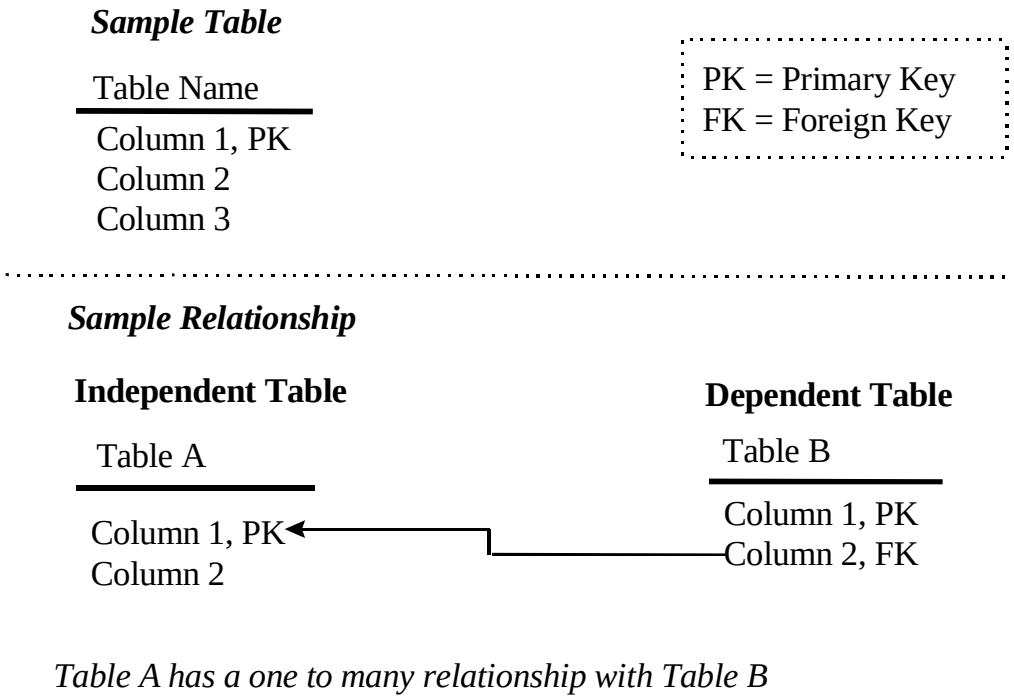

Figure 3-1. ERD Key

3.1.2 Database Table Specifications

Table 3-1 contains a listing of all the database tables within the combined STMGT /DDIST Subsystem database. This list is presented in alphabetical order corresponding to the database tables illustrated in the ERD (reference Figure 3-2). The database tables listed immediately following Table 3-1 are presented in the same order as the table.

Table 3-1. Database Tables

Table Name	Logical Grouping
DsDdFile	Data Distribution
DsDdGranule	Data Distribution
DsDdParameterList	Data Distribution
DsDdPriorityThread	Data Distribution
DsDdRequest	Data Distribution
DsDdServerGeneric	Data Distribution
DsStArchiveRequest	Storage Management
DsStBackup	Storage Management
DsStBackupHistory	Storage Management
DsStCache	Storage Management

Table 3-2. Database Tables

Table Name	Logical Grouping
DsStCacheDirectory	Storage Management
DsStCacheFile	Storage Management
DsStConfigParameter	Storage Management
DsStDeleteLogCacheFile	Storage Management
DsStDevice	Storage Management
DsStDeviceTape	Storage Management
DsStDistributedFile	Storage Management
DsStErrorAttribute	Storage Management
DsStErrorText	Storage Management
DsStEventLog	Storage Management
DsStFile	Storage Management
DsStFileLocation	Storage Management
DsStFtpRequest	Storage Management
DsStNextId	Storage Management
DsStOffsite	Storage Management
DsStRequestTape	Storage Management
DsStRestore	Storage Management
DsStRestoreHistory	Storage Management
DsStSchedule	Storage Management
DsStServerOperations	Storage Management
DsStServerStats	Storage Management
DsStServerType	Storage Management
DsStSlot	Storage Management
DsStStacker	Storage Management
DsStStackerGroup	Storage Management
DsStStagingDisk	Storage Management
DsStStgMonRequest	Storage Management
DsStTape	Storage Management
DsStTapeGroup	Storage Management
DsStTapeGroupSet	Storage Management
DsStVolumeGroup	Storage Management
EcDbDatabaseVersions	Database Versioning

The following report is produced by the Power Designor CASE tool and edited for format consistency. The report provides specifications on the STMGT Subsystem database tables. The report is sorted in alphabetical order by table name. Specifications include the table name, a brief description of the table, and the columns comprising the table. The column information includes the column name and the column attributes, i.e., type (format of the data stored within the database), primary key indicator(s), and a mandatory indicator for determining if the column

must contain data when the row exists. In some cases the content of the column specification "Type" will reference a domain value (refer to Section 3.1.4 for more information on the domain values).

Table 3-2 holds the distribution files currently being maintained and processed by the EcDsDistributionServer. Table abbreviation is "F" to be used as standard naming convention for stored procedures.

Table 3-2. DsDdFile

Name	Code	Type	P	M
ArchiveId	ARCHIVEID	path	No	No
BackupId	BACKUPID	path	No	No
CheckSum	CHECKSUM	checksum	No	No
CompressedSize	COMPRESSEDSIZE	sizeddist	No	Yes
DistName	DISTNAME	file	No	No
EstFileSize	ESTFILESIZE	sizeddist	No	No
FileSize	FILESIZE	sizeddist	No	No
GranuleId	GRANULEID	granuleid	Yes	Yes
OffsiteId	OFFSITEID	path	No	No
RequestId	REQUESTID	requestid	Yes	Yes
SourceName	SOURCENAME	source	Yes	Yes
SourcePath	SOURCEPATH	path	No	No
StageDiskSize	STAGEDISKSIZE	sizeddist	No	No

Table 3-3 holds the distribution granules currently being maintained and processed by the EcDsDistributionServer. The table abbreviation is "G" to be used as standard naming convention for stored procedures.

Table 3-3. DsDdGranule

Name	Code	Type	P	M
Compressability	COMPRESSABILITY	compression		
EsdtType	ESDTTYPE	esdttype	No	No
EstGranuleSize	ESTGRANULESIZE	sizeddist	No	No
GranuleId	GRANULEID	granuleid	Yes	Yes
GranuleSize	GRANULESIZE	sizeddist	No	No
NrGranFiles	NRGRANFILES	largecount	No	No
RequestId	REQUESTID	requestid	Yes	Yes
StageDiskSize	STAGEDISKSIZE	sizeddist	No	No

Table 3-4 holds the GLParameter list for each request currently being maintained and processed by the EcDsDistributionServer. This data is provided from external metadata (MCF) by SDSRV.

Request information is initiated here first. The table's abbreviation is "PL" to be used as standard naming convention for stored procedures.

Table 3-4. DsDdParameterList

Name	Code	Type	P	M
CompressionType	CompressionType	compressiontype	No	Yes
FtpHost	FtpHost	nvarchar(255)	No	No
FtpPassword	FtpPassword	nvarchar(50)	No	No
FtpPushDest	FtpPushDest	nvarchar(255)	No	No
FtpUser	FtpUser	nvarchar(50)	No	No
MediaFormat	MediaFormat	nvarchar(50)	No	Yes
MediaType	MediaType	nvarchar(50)	No	Yes
Notify	Notify	nvarchar(50)	No	No
NotifyType	NotifyType	nvarchar(50)	No	No
RequestId	RequestId	nvarchar(50)	Yes	Yes
Site	Site	nvarchar(50)	No	No
UserProfile	UserProfile	nvarchar(50)	No	No
UserString	UserString	nvarchar(50)	No	No
VersionId	VersionId	Int	No	Yes

Table 3-5 holds the threshold for the number of threads that can be active for each request. The table's abbreviation is "PT" to be used as standard naming convention for stored procedures.

Stored Procedures: NONE

Table 3-5. DsDdPriorityThread

Name	Code	Type	P	M
ThreadLimit	THREADLIMIT	int	No	Yes
ThreadName	THREADNAME	thread	Yes	Yes

Table 3-6 holds the distribution requests currently being maintained and processed by the EcDsDistributionServer. This table's abbreviation is "R" to be used as standard naming convention for stored procedures.

Stored Procedures: NONE

Table 3-6. DsDdRequest

Name	Code	Type	P	M
AuxState	AUXSTATE	varchar(255)	No	No
CallBackFunction	CALLBACKFUNCTION	nvarchar(50)	No	No
CurrDdistStageDisk	CURRDDISTSTAGEDISK	nvarchar(255)	No	No
EcsUserId	ECSUSERID	username	No	No
EndTime	ENDTIME	reqtime	No	No
EsdtType	ESDTTYPE	esdttype	No	No
LastSuccMediaNr	LASTSUCCMEDIANR	largecount	No	No
LastSuccStageNr	LASTSUCCSTAGENR	largecount	No	No
MediaBlockSize	MEDIABLOCKSIZE	float	No	No
MediaCapacity	MEDIACAPACITY	float	No	No
NrGranules	NRGRANULES	largecount	No	No
NrMedia	NRMEDIA	largecount	No	No
NrReqFiles	NRREQFILES	largecount	No	No
OrderedState	ORDEREDSTATE	state	No	No
OrderId	ORDERID	orderid	No	No
Priority	PRIORITY	priority	No	No
RequestId	REQUESTID	requestid	Yes	Yes
RPCId	RPCID	rpcid	No	No
SizeInMB	SIZEINMB	float	No	No
StartTime	STARTTIME	reqtime	No	No
State	STATE	state	No	No
Status	STATUS	status	No	No
WarmStartCounter	WARMSTARTCOUNTER	int	No	No

Table 3-7 holds generic configuration settings for the EcDsDistributionServer.

Stored Procedures: NONE

Table 3-7. DsDdServerGeneric

Name	Code	Type	P	M
GenericName	GENERICNAME	genericname	Yes	Yes
GenericValue	GENERICVALUE	genericvalue	No	Yes

Table 3-8 contains information for Archive specific Requests. Subsequently, when additional servers' requests are handled, the appropriate server's request table will be created. Abbreviated table name "AR" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStARDeleteById
- DsStARDeleteByState
- DsStARInsert
- DsStARUpdateCurrIdx
- DsStGRARSelect

Triggers:

1. DsStARDeleteTrig

Table 3-8. DsStArchiveRequest

Name	Code	Type	P	M
CompressionType	CompressionType	Compression	No	No
CurrentFileIndex	CurrentFileIndex	Fileindex	No	Yes
NumFiles	NumFiles	Largecount	No	No
RequestId	RequestId	requestid	Yes	Yes

Table 3-9 looks to the outside world to backup to for Archive. Abbreviated table name "B" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStBDelete
- DsStBInsert
- DsStBSelectAll
- DsStBSelectByName
- DsStBSelectTempDir
- DsStBUpdateStageAndStatus.

Triggers:

- DsStBDeleteTrig

Table 3-9. DsStBackup

Name	Code	User	M	M
ArchiveId	ARCHIVEID	Backup	No	Yes
BackupId	BACKUPID	Backup	No	No
CreateDate	CREATEDATE	Datetime	No	No
EndDate	ENDDATE	Datetime	No	No
FileName	FILENAME	File	Yes	Yes
OffsiteId	OFFSITEID	offsite	No	No
OriginalFileName	ORIGINALFILENAME	File	No	No
StartDate	STARTDATE	Datetime	No	No
TransferStage	TRANSFERSTAGE	stage	No	No
TransferStatus	TRANSFERSTATUS	status	No	No

Table 3-10 contains a historical record of all (Archive related) backup activity. Abbreviated table name "BH" for consistency of stored procedure naming.

Annotation:

Stored Procedures: None

Table 3-10. DsStBackupHistory

Name	Code	Type	P	M
ArchiveId	ARCHIVEID	Backup	No	Yes
BackupHistoryId	BACKUPHISTORYID	Backup	Yes	Yes
BackupId	BACKUPID	Backup	No	No
CreateDate	CREATEDATE	Datetime	No	No
EndDate	ENDDATE	Datetime	No	No
FileName	FILENAME	File	Yes	Yes
OffsiteId	OFFSITEID	offsite	No	No
OriginalFileName	ORIGINALFILENAME	File	No	No
StartDate	STARTDATE	Datetime	No	No
TempDirectory	TEMPDIRECTORY	temp	No	No
TransferStage	TRANSFERSTAGE	stage	No	No
TransferStatus	TRANSFERSTATUS	status	No	No

Table 3-11 identifies every instance of a cache related to Pull Monitor Cache Management. Abbreviated table name "C" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStCInsert
- DsStCSelect

Table 3-11. DsStCache

Name	Code	Type	P	M
CacheId	CACHEID	integer	Yes	Yes
Description	DESCRIPTION	description	No	Yes

Table 3-12 contains an entry for each file that the Storage Management is currently processing (pull_list). An entry is inserted into the entity for each file retrieved from the archive (AMASS). DsStFileLocation (pull_link) will track the individual cache locations of the file. Abbreviated table name "CF" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStCDCFLDeleteAll
- DsStCDCFLInsert
- DsStCDCFLSelectAll
- DsStCDCDDeleteByPath
- DsStCDInsert
- DsStCDSelectAll
- DsStCDSelectByPath
- DsStCDSelectPathByFileName
- DsStCDSelectServerByFileName

Table 3-12. DsStCacheDirectory

Name	Code	Type	P	M
CacheId	CACHEID	id	No	Yes
DirectoryId	DIRECTORYID	id	Yes	Yes
DirectoryPath	DIRECTORYPATH	path	No	Yes

Table 3-13 contains an entry for each file that the Storage Management is currently processing (pull-list). An entry is inserted into the entity for each file retrieved from the archive (AMASS). DsStFileLocation (pull-link) will track the individual cache locations of the file. Abbreviated table name “CF” for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStCFDeleteByCount
- DsStCFDeleteByFileName
- DsStCFDeleteOnExpiration
- DsStCFInsert
- DsStCFSelectByCacheId
- DsStCFSelectByCount
- DsStCFSelectByExpTime
- DsStCFSelectByFileName
- DsStCFUpdate
- DsStCFUpdateExpirationFlag

Triggers:

- DsStCFDeleteTrig
- DsStCFInsertTrig

Table 3-13. DsStCacheFile

Name	Code	Type	P	M
ActiveLinkCount	ACTIVELINKCOUNT	smallcount	No	Yes
AlwaysInCache	ALWAYSINCACHE	flag	No	No
CacheHitCount	CACHEHITCOUNT	smallcount	No	No
ExpirationFlag	EXPIRATIONFLAG	expirationflag	No	No
FileName	FILENAME	file	Yes	Yes
FileSize	FILESIZE	size	No	Yes
FileWeight	FILEWEIGHT	fileweight	No	No
InPullArea	INPULLAREA	boolean	No	Yes
OriginalFileName	ORIGINALFILENAME	file	No	Yes
TimeOfCachePlacement	TIMEOFCACHEPLACEMENT	datetime	No	No
TimeOfLastUse	TIMEOFLASTUSE	datetime	No	No

Table 3-14 contains an entry for information necessary to initialize each DsStServerType supported by Storage Management. The data will consist of information currently available in the configuration files plus information as it pertains to the status and node of each server. An entry is inserted for each parameter that a server uses. Abbreviated table name "CP" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStCPCkUpdAvailCacheSpace
- DsStCPDelete
- DsStCPInsertArchive
- DsStCPInsertDevice
- DsStCPInsertFtp
- DsStCPInsertPrinter
- DsStCPInsertPullMonitor
- DsStCPInsertStagingMonitor
- DsStCPSelectById
- DsStCPSelectByTape
- DsStCPUpdAvailableCacheSpace
- DsStCPUpdStatusAndServerHandle
- DsStCPUpdateArchive
- DsStCPUpdateDevice
- DsStCPUpdateFtp
- DsStCPUpdatePrinter
- DsStCPUpdatePullMonitor
- DsStCPUpdateStagingMonitor

Table 3-14. DsStConfigParameter (1 of 2)

Name	Code	Type	P	M
AvailableCacheSpace	AVAILABLECACHESPACE	int	NO	YES
BlockSize	BLOCKSIZE	int	NO	NO
CacheId	CACHEID	int	NO	NO
CacheReplacement	CACHEREPLACEMENT	char(1)	NO	NO
CacheSpace	CACHESPACE	int	NO	NO
ConfirmDelete	CONFIRMDELETE	smallint	NO	NO
Datalist	DATALIST	nvarchar(255)	NO	NO
DefaultBlockFactor	DEFAULTBLOCKFACTOR	smallint	NO	NO
DeviceTablePath	DEVICETABLEPATH	nvarchar(255)	NO	NO
Directory	DIRECTORY	nvarchar(255)	NO	NO

Table 3-14. DsStConfigParameter (2 of 2)

Name	Code	Type	P	M
EC_KFTP_Command	EC_KFTP_COMMAND	nvarchar(255)	NO	NO
ExpireNotify	EXPIRENOTIFY	smallint	NO	NO
FullPullMonitor	FULLPULLMONITOR	float	NO	NO
HighCapacity	HIGHCAPACITY	int	NO	NO
HighWaterMark	HIGHWATERMARK	decimal(5,2)	NO	NO
LowCapacity	LOWCAPACITY	int	NO	NO
LowWaterMark	LOWWATERMARK	decimal(5,2)	NO	NO
MaxCommandLine	MAXCOMMANDLINE	int	NO	NO
MaxFiles	MAXFILES	int	NO	NO
Model	MODEL	char(20)	NO	NO
Node	NODE	nvarchar(255)	NO	NO
NumColumns	NUMCOLUMNS	smallint	NO	NO
NumRows	NUMROWS	smallint	NO	NO
OriginalCacheSpace	ORIGINALCACHESPACE	int	NO	YES
PackingSlips	PACKINGSLIPS	smallint	NO	NO
PathLength	PATHLENGTH	int	NO	NO
PrintQue	PRINTQUE	nvarchar(250)	NO	NO
PullExpirationTime	PULLEXPIRATIONTIME	float	NO	NO
PullFtpHost	PULLFTPHOST	nvarchar(255)	NO	NO
PullFtpPassword	PULLFTPPASSWORD	nvarchar(50)	NO	NO
PullFtpUserName	PULLFTPUSERNAME	nvarchar(50)	NO	NO
RequestsProgressPath	REQUESTSPROGRESSPATH	nvarchar(255)	NO	NO
ResourceQueuePath	RESOURCEQUEUEPATH	nvarchar(255)	NO	NO
Retries	RETRIES	smallint	NO	NO
Rootpath	ROOTPATH	nvarchar(255)	NO	NO
ServerHandle	SERVERHANDLE	nvarchar(255)	NO	NO
ServerId	SERVERID	nvarchar(50)	YES	YES
ServerType	SERVERTYPE	nvarchar(20)	NO	YES
Sleeptime	SLEEPTIME	smallint	NO	NO
Status	STATUS	nvarchar(50)	NO	NO
TempDirectory	TEMPDIRECTORY	nvarchar(255)	NO	NO
TimeFactor	TIMEFACTOR	smallint	NO	NO
TimerDuration	TIMERDURATION	smallint	NO	NO
TimerId	TIMERID	int	NO	NO
TimerReload	TIMERRELOAD	smallint	NO	NO
TotalSpace	TOTALSPACE	int	NO	NO
UserStagingSpace	USERSTAGINGSPACE	int	NO	NO

Table 3-15 contains an entry for each file that Storage Management deletes from its cache or the DsStCacheFile table. This entity is used for maintaining a history of file and cache usage for reporting and analysis purposes. An entry is inserted into the entity via a delete trigger on the DsStCacheFile table. Abbreviated table name "DL" for consistency of stored procedure naming

Annotation:

Stored Procedures:

NONE

Table 3-15. DsStDeleteLogCacheFile

Name	Code	Type	P	M
AlwaysInCache	ALWAYSINCACHE	flag	No	No
CacheHitCount	CACHEHITCOUNT	smallcount	No	No
DeleteDate	DELETEDATE	datetime	No	Yes
DeleteLogId	DELETELOGID	id	Yes	Yes
ExpirationFlag	EXPIRATIONFLAG	datetime	No	No
FileName	FILENAME	file	No	Yes
FileSize	FILESIZE	size	No	No
FileWeight	FILEWEIGHT	weight	No	No
OriginalFileName	ORIGINALFILENAME	file	No	No
TimeOfCachePlacement	TIMEOFCACHEPLACEMENT	datetime	No	No
TimeOfLastUse	TIMEOFLASTUSE	datetime	No	No

Table 3-16 contains an entry for each peripheral device that Storage Management uses to service requests to Ingest or Distribution data. A Server Type's DsStConfigParameter record is associated with each piece of hardware for configuration parameters required to operate the Device/Resource. Abbreviated table name "D" for consistency of stored procedures naming.

Annotation:

Stored Procedures:

- DsStDDelete
- DsStDInsert
- DsStDMoveDriveDrive
- DsStDSelect
- DsStDSelectAll
- DsStDSelectByDeviceName
- DsStDSelectCurrentSlot

- DsStDSelectDeviceInfo
- DsStDSelectElemNo
- DsStDSelectForStacker
- DsStDSelectResPoolInfo
- DsStDUpdate
- DsStDUpdateCurrentStatus
- DsStDUpdateStatus

Trigger

- DsStDInsUpdDelTrig

Table 3-16. DsStDevice

Name	Code	Type	P	M
Capacity	CAPACITY	capacity	NO	NO
CurrentOperation	CURRENTOPERATION	operation	NO	NO
CurrentStatus	CURRENTSTATUS	status	NO	YES
Description	DESCRIPTION	description	NO	NO
DeviceName	DEVICENAME	device	YES	YES
DriveCurrentSlot	DRIVECURRENTSLOT	slot	NO	YES
DriveNumber	DRIVENUMBER	drive	NO	NO
DriveTapeId	DRIVETAPEID	id	NO	NO
ElementNo	ELEMENTNO	element	NO	NO
FilePartitionPath	FILEPARTITIONPATH	path	NO	NO
Model	MODEL	model	NO	NO
Node	NODE		NO	NO
OperationStatus	OPERATIONSTATUS	operation	NO	NO
PathName	PATHNAME	path	NO	NO
ServerId	SERVERID	id	NO	YES
StackerId	STACKERID	id	NO	NO
Status	STATUS	status	NO	YES

Table 3-17 tracks what Tape(Id) is in what stand-alone device (drive) at any point in time. For Distribution Operability of non-stacker devices.

Table 3-17. DsStDeviceTape

Name	Code	Type	P	M
CreateDate	CREATEDATE	datetime	No	No
DeviceName	DEVICENAME	device	No	No
DeviceTapeId	DEVICETAPEID	devicetapeid	Yes	Yes
TapeId	TAPEID	tapeid	No	No

Table 3-18 contains an entry for each file that Storage Management is currently processing related to a DsStFtpRequest entry. Abbreviated table name “DF” for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStDFInsert
- DsStDFSelect
- DsStDFUpdCkPtSt
- DsStDFUpdDate
- DsStDFUpdError

Table 3-18. DsStDistributedFile

Name	Code	Type	P	M
CheckPointState	CHECKPOINTSTATE	status	No	No
DateTimeIn	DATETIMEIN	datetime	No	No
ErrorCode	ERRORCODE	errorcode	No	No
FileIndex	FILEINDEX	fileindex	Yes	Yes
FileName	FILENAME	file	No	No
FileSize	FILESIZE	size	No	No
OriginalFileName	ORIGINALFILENAME	file	No	No
RequestId	REQUESTID	rpcid	Yes	Yes
StatusCode	STATUSCODE	status	No	No

Table 3-19 is required for all clients that wish to use the DsStErrorDetails class. Provides a mapping between character mnemonics and numeric error codes. It also defines the attributes for each error, providing adequate characterization for clients to infer appropriate retry/recovery procedures from the error attributes. Abbreviated table name "EA" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsSstEADeleteByCode
- DsStEAInsert
- DsStEASelectAll
- DsStEATSelectByCode
- DsStEATSelectByMnemonic
- DsStEAUpdate

Table 3-19. DsStErrorAttribute

Name	Code	Type	P	M
ErrorCode	ERRORCODE	errorcode	Yes	Yes
Mnemonic	MNEMONIC	mnemonic	No	Yes
Scope	SCOPE	scope	No	No
Severity	SEVERITY	severity	No	No

Table 3-20 provides text descriptions and suggested recovery actions for each error code; presents errors in a meaningful manner. Abbreviated table name "ET" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStEATSelectByMnemonic
- DsStEATSelectByCode
- DsStETDeleteByMnemonic
- DsStEAInsert
- DsStETSelectByMnemonic
- DsStETUpdate

Table 3-20. DsStErrorText

Name	Code	Type	P	M
Description	DESCRIPTION	Description	No	No
Mnemonic	MNEMONIC	mnemonic	Yes	Yes
Suggestion	SUGGESTION	description	No	No

Table 3-21 contains a history of STMGT Subsystem events and COTS errors encountered by Storage Management. The STMGT Subsystem software will insert records into the table using

the DsStELInsert.sp stored procedure. The calling sequence is: DsStELInsert @EventNumber=value, @EventMessage=value, @EventDate=value, @EventType=value.

Events and errors included in the entity are: Errors received from AMASS, Sybase, and other COTS software; Checksum errors received during archive monitoring; Operator notification levels for Cache Management; Device errors; Other errors generated by the Storage Management Software.

The Storage Management software will insert a new ERROR_LOG entry each time an event occurs or an error is encountered. The operator will have the ability to purge this entity periodically based on a date/time value.

Abbreviated table name "EL" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStELAlarms -
- DsStELDeleteByNum
- DsStELInsert
- DsStELPurge
- DsStELSelect
- DsStELSelectAny
- DsStELSelectByTime
- DsStELSelectByType -

Triggers:

- DsStELInsertTrig

Table 3-21. DsStEventLog

Name	Code	Type	P	M
EventDate	EVENTDATE	datetime	No	Yes
EventLevel	EVENTLEVEL	eventlevel	No	No
EventLogId	EVENTLOGID	id	Yes	Yes
EventMessage	EVENTMESSAGE	description	No	Yes
EventNumber	EVENTNUMBER	errorcode	No	No
EventType	EVENTTYPE	Eventtype	No	Yes

Table 3-22 contains an entry for each file that Storage Management is currently processing related to a DsStArchiveRequest entry. Abbreviated table name "F" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStFInsert
- DsStFSelect
- DsStFUpdateChecksum
- DsStFUpdateCkPtState
- DsStFUpdateFailure
- DsStFUpdateFileLoc
- DsStFSUpdateStgDskTag

Table 3-22. DsStFile

Name	Code	Type	P	M
ArchiveId	ARCHIVEID	archiveId	No	No
BackupId	BACKUPID	backupId	No	No
CheckPointState	CHECKPOINTSTATE	status	No	No
Checksum	CHECKSUM	checksum	No	No
EventMessage	EVENTMESSAGE	description	No	No
FileIndex	FILEINDEX	fileindex	Yes	Yes
FileLocation	FILELOCATION	path	No	No
FileName	FILENAME	file	No	No
FileSize	FILESIZE	size	No	No
FileStatus1	FILESTATUS1	status	No	No
FileStatus2	FILESTATUS2	status	No	No
OriginalFileName	ORIGINALFILENAME	file	No	No
OffsiteId	OFFSITEID	offsiteid	No	No
RequestId	REQUESTID	rpcid	Yes	Yes
StagingDiskTag	STAGINGDISKTAG	path	No	No
StagingId	STAGINGID	serverid	No	No

Table 3-23 maintains the location(s) in a cache of each of each record in the DsStCacheFile table. As each file is retrieved from the arcive and written to one of the Storage Mnagement caches, an entry is inserted in the entity. The entry must correspond to an existing DsStCacheFile entry. Abbreviated table name “FL” for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStFLDeleteByCache
- DsStFLDeleteByNmae
- DsStFLDeleteByNameAndDirId
- DsStFLDeleteByNameAndId
- DsStFLDeleteByOrigAndPath
- DsStFLInsert
- DsStFLSelectByFileName
- DsStFLSelectByNmaeAndId
- DsStFLSelectByPathName
- DsStFLSelectDeleteByCount
- DsStFLUpdAccessCount

Table 3-23. DsStFileLocation

Name	Code	Type	P	M
AccessCount	AccessCount	largecount	No	No
DirectoryId	DirectoryId	id	Yes	Yes
FileName	FileName	file	Yes	Yes

Table 3-24 contains information for Ftp specific Requests. Subsequently, when additional servers' requests are handled, the appropriate server's request table will be created. Abbreviated table name "FR" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStFRInsert
- DsStFRUpdPullDir
- DsStGRFRSelect

Table 3-24. DsStFtpRequest

Name	Code	Type	P	M
Length	LENGTH	length	No	No
ParameterList	PARAMETERLIST	parameterlist	No	No
PullDirectory	PULLDIRECTORY	path	No	No
RequestId	REQUESTID	rpcid	Yes	Yes

Table 3-25 contains common information related to all Storage Management requests regardless of type. Abbreviated table name "GR" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStGRCheckRetention
- DsStGRCleanup
- DsStGRDelete
- DsStGRDeleteById
- DsStGRInsert
- DsStGRSelectFile
- DsStGRSelectOpen
- DsStGRSelectOwner
- DsStGRUpdateAll
- DsStGRUpdateCkPtState
- DsStGRUpdateFailure
- DsStGRUpdateRetention

Table 3-25. DsStGenericRequest

Name	Code	Type	P	M
RequestId	REQUESTID	rpcid	Yes	Yes
CheckPointState	CHECKPOINTSTATE	status	No	No
CreationTime	CREATIONTIME	datetime	No	No
HWCI	HWCI	serverid	No	No
OwnerName	OWNERNAME	name	No	No
RequestStatus1	REQUESTSTATUS1	status	No	No
RequestStatus2	REQUESTSTATUS2	status	No	No
Retention	RETENTION	retention	No	No
TypeOperation	TYPEOPERATION	operation	No	No

Table 3-26 sequentially generates and stores unique id's for any of the id (domain) fields.

Annotation:

Stored Procedures:

- DsStNextIdGet
- DsStNextIdInsert

Table 3-26. DsStNextId

Name	Code	Type	P	M
NextId	NEXTID	id	No	No
TableName	TABLENAME	tablename	Yes	Yes

Table 3-27 contains date for mapping the offsite identifiers (e.g., GSF, RSC, ERC) with their appropriate Cell location (e.g., gsfc.nasa.com) as well as identifying their specifeied Archive directory for (reomte) backup. Abbreviated table name "O" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStOInsert
- DsStOSelectAll
- DsStOSelectById
- DsStOUpdate

Table 3-27. DsStOffSite

Name	Code	Type	P	M
CellName	CELLNAME	cell	No	Yes
CreateDate	CREATEDATE	datetime	Yes	Yes
EndDate	ENDDATE	datetime	No	No
HWCI	HWCI	hwci	No	No
OffsiteId	OFFSITEID	id	Yes	Yes
ServerId	SERVERID	id	No	No
VolumeGroupName	VOLUMEGROUPNAME	volumegroup	No	No
VolumeStartDate	VOLUMESTARTDATE	datetime	No	No

Table 3-28 contains the relationship to find all tapes associated with a Ddist) request.

Annotation:

Stored Procedures:

- DsStRTInsert

Table 3-28. DsStRequestTape

Name	Code	Type	P	M
CreateDate	CreateDate	datetime	No	No
ReqTapeId	ReqTapeId	id	Yes	Yes
RequestId	RequestId	requestid	No	Yes
TapeId	TapeId	barcode	No	Yes

Table 3-29 looks to the outside world to restore from. Abbreviated table name "R" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStRDelete
- DsStRInsert
- DsStRSelectAll
- DsStRSelectByName
- SelectTempDir
- DsStRUpdStageAndStatus

Table 3-29. DsStRestore

Name	Code	Type	P	M
ArchiveId	ARCHIVEID	backup	No	No
BackupId	BACKUPID	backup	No	Yes
CreateDate	CREATEDATE	datetime	No	No
EndDate	ENDDATE	datetime	No	No
FileName	FILENAME	file	Yes	Yes
OffsiteId	OFFSITEID	id	No	No
OriginalFileName	ORIGINALFILENAME	file	No	No
StartDate	STARTDATE	datetime	No	No
TransferStage	TRANSFERSTAGE	state	No	No
TransferStatus	TRANSFERSTATUS	state	No	No

Table 3-30 contains a historical record of all (Archive related) restore activity. Abbreviated table name "RH" for consistency of stored procedure naming.

Annotation:

Stored Procedures: None

Table 3-30. DsSt RestoreHistory

Name	Code	Type	P	M
ArchiveId	ARCHIVEID	backup	No	No
BackupId	BACKUPID	backup	No	Yes
CreateDate	CREATEDATE	datetime	No	No
EndDate	ENDDATE	datetime	No	No
FileName	FILENAME	file	Yes	Yes
OffsiteId	OFFSITEID	id	No	No
OriginalFileName	ORIGINALFILENAME	file	No	No
StartDate	STARTDATE	datetime	No	No
TempDirectory	TEMPDIRECTORY	path	No	No
TransferStage	TRANSFERSTAGE	state	No	No
TransferStatus	TRANSFERSTATUS	state	No	No

Table 3-31 contains an entry for scheduled request of a peripheral device that Storage Management receives. An entry is inserted into the entity every time a peripheral device is reserved to service a request to Ingest or distributed data. The unit of measure for the estimated duration is minutes. Abbreviated table name “S” for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStSDeallocate
- DsSTSInsert
- DsSTSSelect
- DsSTSSelectById
- DsSTSSelectByType
- DsSTSSelectDeviceName
- DsSTSUpdate
- DsSTSUpdateStatus
- DsSTSScheduler

Triggers

- DsStInsertTrig

Table 3-31. DsStSchedule

Name	Code	Type	P	M
Comment	COMMENT	description	No	No
DeviceName	DEVICENAME	resource	No	No
EndDate	ENDDATE	datetime	No	Yes
EstimatedDuration	ESTIMATEDDURATION	time	No	No
EstimatedEndDate	ESTIMATEDENDDATE	datetime	No	Yes
EstimatedStartDate	ESTIMATEDSTARTDATE	datetime	No	Yes
Operator	OPERATOR	username	No	No
Priority	PRIORITY	priority	No	No
RecdDate	RECDDATE	datetime	No	No
RequestId	REQUESTID	requestid	No	No
ScheduleId	SCHEDULEID	id	Yes	Yes
ServerHandle	SERVERHANDLE	path	No	No
ServerId	SERVERID	serverid	No	No
SlotNumber	SLOTNUMBER	slotnumber	No	No
StackerId	STACKERID	resource	No	No
StartDate	STARTDATE	datetime	No	Yes
Status	STATUS	status	No	No

Table 3-32 contains information about the types of operations that are vaild for a given server type that is to be monitored for a given server.

Annotation:

Stored Procedures: TBA

Table 3-32. DsStServerOperations

Name	Code	Type	P	M
ServerId	SERVERID	id	No	Yes
TypeOperation	TYPEOPERATION	type	No	Yes

Table 3-33 contains statistical information about the server operations such as; the types of requests received and serviced by the server.

Annotation:

Stored Procedures: TBA

Table 3-33. DsStServerStats

Name	Code	Type	P	M
HWCI	HWCI	hwci	No	No
LastCompleted	LASTCOMPLETED	datetime	No	No
LastCompleted2	LASTCOMPLETED2	datetime	No	No
LastReceived	LASTRECEIVED	datetime	No	No
LastReceived2	LASTRECEIVED2	datetime	No	No
TotalCompleted	TOTALCOMPLETED	int	No	No
TotalReceived	TOTALRECEIVED	int	No	No
TypeOperation	TYPEOPERATION	operation	No	Yes

Table 3-34 contains all types of servers and their associated description. Data is currently pre-populated (e.g., Archive, Staging Monitor, Pull Monitor, CDR, Distribution FTP, 4MM Tape, 8MM Tape, 9 Track, Staging Disk, Ingest FTP, D3, 3480/3490). Abbreviated table name "ST" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStSTSelect

Table 3-34. DsStServerType

Name	Code	Type	P	M
PollingRequired	POLLINGREQUIRED	flag	No	No
ServerDescription	SERVERDESCRIPTION	description	No	No
ServerType	SERVERTYPE	servertype	Yes	Yes

Table 3-35 contains a record of every individual slot and its status currently accessible for managing Storage Management requests. Abbreviated tabvle name “SL” for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStSLCheckOpenSlot
- DsStSLMoveDriveSlot
- DsStSLMoveSlotDrive
- DsStSLMoveSlotSlot

- DsStSLSelect
- DsStSLSelectCurrentDrive
- DsStSLSelectElemNo
- DsStSLSelectOpenSlotDrive
- DsStSLUpdateCurrentStatus
- DsStSLUpdateStatus
- DsStSLUpdateUse

Table 3-35. DsStSlot

Name	Code	Type	P	M
ElementNo	ELEMENTNO	elementno	No	No
SlotCapacity	SLOTCAPACITY	size	No	No
SlotCurrentDrive	SLOTCURRENTDRIVE	slotnumber	No	No
SlotCurrentStatus	SLOTCURRENTSTATUS	status	No	No
SlotNumber	SLOTNUMBER	slotnumber	Yes	Yes
SlotStatus	SLOTSTATUS	status	No	No
SlotTapeId	SLOTTAPEID	barcode	No	No
SlotUse	SLOTUSE	status	No	No
StackerId	STACKERID	resource	No	No

Table 3-36 contains information on stackers. A DsStDevice record may exist in Stacker form (containing more than one device/drive). It is necessary to track which devices are controlled by which stacker to adequately support the reservation requirements. Reserving a stacker automatically reserves the associated devices controlled by that stacker. Related to 4MM and 8MM Tape (Device) drives. Abbreviated table name "SK" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStSKDelete
- DsStSKInsert
- DsStSKSelect
- DsStSKSelectAll
- DsStSKSelectByDevSrvType
- DsStSKSelectByStackerNumber
- DsStSKUpdate

Table 3-36. DsStStacker

Name	Code	Type	P	M
ElementNo	ELEMENTNO	elementno	No	No
ErrorCount	ERRORCOUNT	smallcount	No	Yes
FixedSlot	FIXEDSLOT	slotnumber	No	No
MediumType	MEDIUMTYPE	mediumtype	No	Yes
OnlineDrives	ONLINEDRIVES	smallcount	No	Yes
OnlineSlots	ONLINESLOTS	smallcount	No	Yes
StackerId	STACKERID	resource	Yes	Yes
StackerNumber	STACKERNUMBER	stackernumber	No	No
StackerPath	STACKERPATH	path	No	No
StackerStatus	STACKERSTATUS	status	No	No
TotalDrives	TOTALDRIVES	smallcount	No	Yes
TotalRoSlots	TOTALROSLOTS	smallcount	No	Yes
TotalRwSlots	TOTALRWSLOTS	smallcount	No	Yes
TotalSlots	TOTALSLOTS	smallcount	No	Yes

Table 3-37 tracks staging disk usage**.** Abbreviated table name "SD" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStSGInsert
- DsStSGDelete

Table 3-37. DsStStackerGroup

Name	Code	Type	P	M
CreateDate	CREATEDATE	datetime	No	No
StackerGroupId	STACKERGROUPID	id	Yes	Yes
StackerId	STACKERID	resource	No	Yes
TapeGroupId	TAPEGROUPID	name	No	Yes

Table 3-38 tracks staging disk usage**.** Abbreviated table name "SD" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStSDDelete

- DsStSDDeleteAll
- DsStSDInsert
- DsStSDSelect
- DsStSDSelectAll
- DsStSDSelectDisk
- DsStSDSelectDiskNum
- DsStSDSelectRpc
- DsStSDUpdateRetention
- DsStSDUpdateSize

Table 3-38. DsStStagingDisk

Name	Code	Type	P	M
Access	ACCESS	access	No	No
AccessCount	ACCESSCOUNT	largecount	No	No
CreationTime	CREATIONTIME	datetime	No	No
DiskName	DISKNAME	path	Yes	Yes
DiskNum	DISKNUM	disknum	No	No
OwnerName	OWNERNAME	name	No	No
PathName	PATHNAME	path	No	Yes
Persistent	PERSISTENT	status	No	No
Priority	PRIORITY	priority	No	No
RequestId	REQUESTID	rpcid	Yes	Yes
Retention	RETENTION	retention	No	No
Size	SIZE	size	No	Yes

Table 3-39 containsinformation for Staging Monitor specific Requests. Subsequently, when additional servers' requests are handled, the appropriate server's request table will be created. Abbreviated table nmae "SMR" for consistency of stored procedure naming.

Annotation:
Stored Procedures:
- DsStSMRDelete ById
- DsStSMREndPending
- DsStSMREndSuspended
- DsStSMRInsert
- DsStSMRSelectAllSuspended
- DsStSMRSelectByFileName
- DsStSMRSelectById

- DsStSMRSelectSuspended
- UpdateStateDriver

Table 3-39. DsStStgMonRequest

Name	Code	Type	P	M
CompressionType	COMPRESSIONTYPE	compression	No	No
FileName	FILENAME	file	No	No
FileSize	FILESIZE	size	No	No
OriginalFileName	ORIGINALFILENAME	file	No	No
Priority	PRIORITY	priority	No	No
RequestId	REQUESTID	rpcid	Yes	Yes

Table 3-40 uniquely identifies every individual tape. Records(s) automatically inserted upon insert of a TapeGroupSet record(s).

Annotation:
Stored Procedures: DsStTInsert

Table 3-40. DsStTape

Name	Code	Type	P	M
CompletedLocation	COMPLETEDLOCATION	description	No	No
MediaType	MEDIATYPE	mediumtype	No	No
TapeCapacity	TAPECAPACITY	size	No	No
TapeId	TAPEID	barcode	Yes	Yes
TapeLabel	TAPELABEL	description	No	No
TapeStatus	TAPESTATUS	state	No	No
TapeUse	TAPEUSE	status	No	No

Table 3-41 uniquely identifies a tape tray or grouping of tapes in a rack for a stacker device.

Annotation:

Stored Procedures:

- DsStTGInsert

Table 3-41. DsStTapeGroup

Name	Code	Type	P	M
MediaType	MediaType	mediumtype	No	No
TapeGroupId	TapeGroupId	name	Yes	Yes
TotalSlots	TotalSlots	smallcount	No	No

Table 3-42 contains the relationship to find all tapes associated with a TapeGroup. Record(s) automatically inserted upon insert of a TapeGroup record with NULL TapeId's initially.

Annotation:

Stored Procedures:

- DsStTGSUpdate

Table 3-42. DsStTapeGroupSet

Name	Code	Type	P	M
CreateDate	CreateDate	datetime	No	No
ElementNo	ElementNo	elementno	No	No
SlotNumber	SlotNumber	slotnumber	No	Yes
TapeGroupId	TapeGroupId	name	No	Yes
TapeGroupSetId	TapeGroupSetId	id	Yes	Yes
TapeId	TapeId	barcode	No	No

Table 3-43 contains 'volume group' (section of Archive you are dealing with) information from configuration files such as the path currently pointed to and a history of paths related ONLY to a particular Archive server type. Abbreviated table name "VG" for consistency of stored procedure naming.

Annotation:

Stored Procedures:

- DsStVGInsert
- DsStVGSelectById
- DsStVGSelectHistory
- DsStVGUpdate

Table 3-43. DsStVolumeGroup

Name	Code	Type	P	M
ServerId	ServerId	serverid	Yes	Yes
VolumeEndDate	VolumeEndDate	datetime	No	No
VolumeGroupName	VolumeGroupName	name	Yes	Yes
VolumeGroupPath	VolumeGroupPath	path	No	Yes
VolumeStartDate	VolumeStartDate	datetime	Yes	Yes

Table 3-44 contains information about the current database version for Storage Management databases.

Annotation:

Stored Procedures: NONE

Table 3-44. EcDbDatabaseVersions

Name	Code	Type	P	M
EcDbComments	ECDBCOMMENTS	comments	No	No
EcDbCurrentVersionFlag	ECDBCURRENTVERSIONFLAG	flag	No	No
EcDbDatabaseName	ECDBDATABASENAME	name	No	No
EcDbDropDescription	ECDBDROPDESCRIPTION	description	No	No
EcDbDropInstallDate	ECDBDROPINSTALLDATE	datetime	No	No
EcDbDropVersion	ECDBDROPVERSION	version	Yes	Yes
EcDbSchemaVersionId	ECDBSCHEMAVERSIONID	id	No	No
EcDbSybaseServer	ECDBSYBASESERVER	server	No	No
EcDbSybaseVersion	ECDBSYBASEVERSION	version	No	No
EcDbUpdateProcess	ECDBUPDATEPROCESS	process	No	No

Table 3-45 holds information on AMASS resource reservation requests.

Table 3-45. Request [Obsolete: not currently used]

Name	Code	Type	P	M
AllocatedFlag	ALLOCATEDFLAG	int	No	No
AllocationTime	ALLOCATIONTIME	smalldatetime	No	No
ClientID	CLIENTID	int	No	No
EndTime	ENDTIME	smalldatetime	No	Yes
EstimateTime	ESTIMATETIME	int	No	No
Priority	PRIORITY	int	No	No
RequestRef	REQUESTREF	varchar(100)	No	No
Requester	REQUESTER	varchar(100)	No	No
RequesterID	REQUESTERID	varchar(150)	No	Yes
ResourceNumber	RESOURCENUMBER	int	No	Yes
ResourceType	RESOURCETYPE	varchar(100)	No	Yes
StartTime	STARTTIME	smalldatetime	No	Yes
mySize	MYSIZE	float	No	No

Table 3-46 holds information on approved reservation for AMASS resources.

Table 3-46. Reservations [Obsolete: not currently used]

Name	Code	Type	P	M
AllocatedFlag	ALLOCATEDFLAG	int	No	No
AllocationTime	ALLOCATIONTIME	smalldatetime	No	No
ClientID	CLIENTID	int	No	No
EndTime	ENDTIME	smalldatetime	No	Yes
EstimateTime	ESTIMATETIME	int	No	No
Priority	PRIORITY	int	No	No
RequestRef	REQUESTREF	varchar(100)	No	No
Requester	REQUESTER	varchar(100)	No	No
RequesterID	REQUESTERID	varchar(150)	No	Yes
ResourceNumber	RESOURCENUMBER	int	No	Yes
ResourceType	RESOURCETYPE	varchar(100)	No	Yes
StartTime	STARTTIME	smalldatetime	No	Yes
mySize	MYSIZE	float	No	No

Table 3-47 contains the AMASS resource schedule information.

Table 3-47. Schedular [Obsolete: not currently used]

Name	Code	Type	P	M
CompletionTime	COMPLETIONTIME	smalldatetime	No	No
EndTime	ENDTIME	smalldatetime	No	No
EstimateTime	ESTIMATETIME	int	No	No
Priority	PRIORITY	varchar(50)	No	No
Requester	REQUESTER	varchar(100)	No	No
RequesterID	REQUESTERID	varchar(150)	No	No
ReservationRef	RESERVATIONREF	varchar(100)	No	No
ResourceNumber	RESOURCENUMBER	int	No	No
ResourceType	RESOURCETYPE	varchar(100)	No	No
StartTime	STARTTIME	smalldatetime	No	No
mySize	MYSIZE	float	No	Yes
operation	OPERATION	varchar(100)	No	No

3.1.3 Column Specifications

Brief definitions of each of the columns within the STMGT and DDIST Subsystems database and their valid values, or references to other documents containing the valid values, are contained herein. "Valid Values" identify the permissible data content of the column where there is a finite set of acceptable values that can be defined. Other columns are simply formatted/free text or numeric.

Column: Archiveid

Description:

The Archive Id from science data server (SDSRV).

Column: Backupid

Description:

Relative to Archive Backup and Restore, it is external data received from SDSRV. Format: <HWCI>_<mode>:<VGname> or <HWCI>_<mode>:<diskname>

Column: CallBackFunction

Description:

Callback function that should get called when distribution requests are completed.

Column: Checksum

Description:

The Archive checksum.

Column: Compressability

Description:

The compressability of the granule.

Column: CurrDdistStageDisk

Description:

Current description staging disk.

Column: Distname

Description:

The User ID of the user initiating request.

Column: EcsUserId

Description:

The User ID of the user initiating request.

Column: EndDate

Description:

The date in which the mappings of the offsite identifiers and cell location was completed.

Column: EndTime

Description:

The time that distribution ended.

Column: EsdtType

Description:

The ESDT (Earth Science Data Type) Type. A Request is of one EsdtType and can include many Granules, but all Granules associated with a Request must be of the same EsdtType.

Column: Estfilesize
Description:

The estimated size of the file.

Column: EstGranuleSize
Description:

The sum of the estimated size of the files in the granule.

Column: Filesize
Description:

The size of the file.

Column: FtpHost
Description:

Holds the hostname to connect to for FTP push.

Column: FtpPassword
Description:

Holds the password to use for FTP push.

Column: FtpPushDest
Description:

Holds the target system directory.

Column: FtpUser
Description:

Holds the login to use for the FTP push.

Column: GranuleId
Description:

The granule Id of the actual granule.

Column: GranuleSize
Description:

The sum of the sizes of files in the granule.

Column: LastSuccMediaNr
Description:

The last successful media number.

Column: MediaBlockSize
Description:

The media blocksize format.

Column: MediaCapacity
Description:

The capacity for media.

Column: MediaFormat

Description:

The media distribution format. (i.e. FILEFORMAT, TARFORMAT...)

Column: MediaType

Description:

The type of media used for a request. (i.e.: 8MM TAPE, CDRom)

Column: Notify

Description:

Indicates the mail address to use for notification.

Column: NotifyType

Description:

If MAIL is specified, a Distribution Notification message will be sent, either to email address of logical queue specified in the NOTIFY parameter. If LIST is specified, a GLparameter list of distributive files will be returned to the RPC caller.

Column: NrGranFiles

Description:

The number of files in a granule.

Column: NrGranules

Description:

The number of granules per media object.

Column: NrReqFiles

Description:

The number of files in the distribution request.

Column: Offsiteid

Description:

Relative to Archive Backup and Restore, it is external data received from SDSRV. The value is three characters (i.e. GSF, ERC..)

Column: OwnerName

Description:

The client that submitted the request, internal or external; sdsv-sdsv, ddst-ddst.

Column: OrderedState

Description:

The ordered state of a request. (i.e. Cancel, Suspend, Marked Shipped...)

Column: OrderId

Description:

The OrderId for the distribution request.

Column: Priority

Description:

The priority for the DistRequest object.

Column: Requestid

Description:

The RequestID of the distribution request that came from science data server (SDSRV).

Column: RPCid

Description:

For rebinding/restarting. The format is a combination of a RequestId from a system level and a TransactionId which is fixed whenever the system restarts.

SDSRVStagingArea DsDdRequest Location where science data server is staging the request data.

Column: Site

Description:

Site to be notified.

Column: SizeInMB

Description:

The total size of bytes in the distribution request.

Column: SourceName

Description:

Input file name from science data server (SDSRV).

Column: SourcePath

Description:

The Staging file path.

Column: StageDiskSize

Description:

The staging disk size.

Column: StartTime

Description:

The start time of the distribution request.

Column: State

Description:

The queue state of the distribution request. (i.e.: Pending, Active, Shipped,...)

Column: Status

Description:

The status for the distribution Request object.

Column: ThreadLimit

Description:

Holds the limit for threads.

Column: ThreadName

Description:

Holds the priority level for the thread.

Column: TimeOfCacheReplacement

Description: Holds the date and time that the cache file was replaced.

Column: TimeOfLastUse

Description: Holds the time and date that the cache file was used last.

Column: UserProfile

Description:

Holds the profile ID.

Column: UserString

Description:

Free text string supplied by the user. Returned in the Distribution Email message as "UserString: <supplied string>"

Column: WarmStartCounter

Description:

The warm start counter.

Column: Access

Description:

Level of permission allowed for that staging disk (i.e. RW, RO)

Column: AccessCount

Description:

How many times a record/file has been accessed. Used to assess delete authorization.

Column: ActiveLinkCount

Description:

How many DsStFileLocation file links exist to a file for Pull Monitor Cache management only. Used to assess delete authorization.

Valid Values:

=0 or >0

Column: AlwaysInCache

Description:

"Y"es or "N"o if file should always remain in cache file and not be given delete authorization.

Valid Values:

Y (yes); N (no)

Column: ArchiveId

Description:

Relative to Archive Backup & Restore, it is external data received from SDSRV. Format: "<HWCI>_<mode>:<VG name>" or "<HWCI>_<mode>:<disk name>". Only one of ArchiveId or StagingId is populated; both are never filled.

Column: AvailableCacheSpace

Description:

Remaining disk space allocated/ available (in the Pull Monitor). Determined at start time and recalculated after each process performed; could be different on start up (e.g., 10000000).

Column: BackupHistoryId

Description:

Unique identifier of historic record inserted to a table. Sequentially generated from the DsStNextId table.

Column: BackupId

Description:

Relative to Archive Backup & Restore, it is external data received from SDSRV. Format: <HWCI>_<mode>:<VG name> or <HWCI>_<mode>:<disk name>. Only one of ArchiveId or StagingId is populated; both are never filled.

Column: BlockSize

Description:

Specifies the byte size blocks for the remote tape device or disk to which we are writing. Platform specific (for all servers).

Valid Values:

The only certain known value is 2048 (bytes) which is used by default. 65K is the maximum value that can be specified (e.g., 1024 for Sun, 4096 for SGI)

Column: CacheHitCount

Description:

Number of times cache file is hit or utilized.

Valid Values:

> or = "0" (zero)

Column: CacheId

Description:

Unique cache id (of Pull Monitor and Staging Monitor/ Disk).

Column: CacheReplacement

Description:

Turns On or Off cache replacement.

Column: CacheSpace

Description:

Amount of RO cache space allocated/ available on disk (to the Staging Monitor/ Disk) in blocksize increments (e.g., 7500000).

Column: Capacity

Description:

Total amount of space available for (Distribution and Ingest FTP, 4MM and 8MM Tapes) utilization (e.g., 1200000000). Annotation: Should accept either the HighCapacity or LowCapacity of its corresponding ServerId record on DsStConfigParameter table.

Column: CellName

Description:

Cell location related to an offsite identifier similar to the format of an IP address (e.g., gsfc.nasa.com).

Column: CheckPointState

Description:

For Table DsStDistributedFile: Processing state of a file; used for the purpose of getting back to an initial state.

Valid Values:

0 (= Initial)
1 (= Checkpointed)
2 (= Staging Disk Created)
3 (= Ready to Copy (after the release))
4 (= Copy Attempted (we did the copy))
5 (= Checksum Computed)
6 (= Backed-up Online)
7 (= Completed)

) For Table DsStGenericRequest:
Processing state of a Request; used for the purpose of getting back to an initial state.
0 (= Initial)
1 (= Checkpointed)
2 (= Failed)
3 (= Completed)

Column: Checksum

Description:

Computed. Used for the purpose of identifying a file's and its processed state.

Column: Comment

Description:

Any record of information needing to be kept related to a scheduled activity.

Column CompressionType

Description:

Type of compression required to process the data.

Valid Values:

0 (no compression (default)); 1 (compressed); 2 (decompressed)

Column: ConfirmDelete

Description:

Flag whether to automatically Delete upon reaching PullExpirationTime (Pull Monitor and Staging Monitor/ Disk).

Column: CreateDate

Description:

Date and Time at which a record is inserted/created. Used for uniqueness of repeated record details and for historical reference.

Column: CreationTime

Description:

Date and Time at which a record is inserted/ created. Used for uniqueness of repeated record details and for historical reference.

Column CurrentFileIndex

Description:

Which file is being requested for processing (e.g., file 4 of 12).

Column: CurrentOperation

Description:

Operation of the device at the present.

Valid Values:

"Read", "Write", "Null"

Column: CurrentStatus

Description:

Status of device for operation.

Valid Values:

"Inprogress", "Pending", "Complete"

Column: CurrentVersion

Description:

Holds if this version of the database current.

Column: Datalist

Description:

Path and name of (Staging Monitor/ Disk) list of files in cache area (e.g., /home/dsst/pull.list).

Column: DateTimeIn

Description:

Date and Time at which a record is inserted/ created. Used for uniqueness of repeated record details and for historical reference.

Column: DBInstallDate

Description:

Holds the date the database was installed.

Column: DefaultBlockFactor

Description:

Specifies the size in bytes of blocks for the remote tape device or disk which is being writing. Platform specific (for all servers).

Valid Values:

The only certain known value is 2048 (bytes) which is used by default. 65K is the maximum value that can be specified (e.g., 1024 for Sun, 4096 for SGI).

Column: DeleteDate

Description:

Date and Time the file was removed from cache (Pull Monitor or Staging Monitor/ Disk). Set with the current system date upon insert into the table.

Column: DeleteLogId

Description:

Unique identifier of each historical record inserted to table. Sequentially generated from the DsStNextId table.

Column: Description

Description:

1) For Table: DsStCache. For elaboration on or further identification of unique cache.

2) For Table: DsStDevice. Detailed description of the type of device (e.g., Large capacity 4MM Tape stacker device)

3) For Table: DsStErrorText. Textual information regarding an error.

Column: DeviceName

Description:

Unique identifier of the device record. A device can be either stand alone as with a 4MM Tape Drive, or a device can be related to a Stacker as with a 4MM Tape Stacker which would have more than one device/ drives associated with it. If a Device is related to a Stacker, the unique identifier is formatted by concatenating the DeviceName and StackerId columns as the DeviceName column value.

Column: DeviceTablePath

Description:

Used for scheduling and reservations in the Resource Provider for most of the resources.

Column: Directory

Description:

Created (by Pull Monitor) when files are linked and FTP'd (e.g., /home/dsst/user).

Column: DirectoryId

Description:

Unique identifier of each directory record inserted to table. Sequentially generated from the DsStNextId table.

Column: DirectoryPath

Description:

Full directory path in which a cache is located (Pull Monitor or Staging Monitor/ Disk).

Column: DiskName

Description:

Formatted as "Disk::1". The number is generated by the storage management software code and corresponds to the appropriate 'user' directory in the Staging Area. For example, Disk::1 corresponds to user1; Disk::43 to user43, etc.

Column: DiskNum

Description:

A unique integer given to a disk by the staging manager.

Column: DriveCurrentSlot

Description:

Current slot of tape that is in this drive.

Column: DriveNumber

Description:

Which drive of the available drives in the stacker hardware is being used (e.g., 1, 2, or 3).

Column: DriveTapeId

Description:

Identification or file name of tape currently in this drive.

Column: EC_KFTP_Command

Description:

If null, server code uses default from CCS library (Distribution Ftp).

Column: ElementNo

Description:

An identifying number (for robotic arm) to find location of a drive device.

Column: EndDate

Description:

Date and Time at which activity or record processing was completed.

Column: ErrorCode

Description:

Numeric value used to uniquely identify specific error record. Will be referenced in storage management software code (if and when an error occurs) for Standard Error Handling.

Column: ErrorCount

Description:

Count of number of errors received on stacker.

Column: EstimatedDuration

Description:

Total estimated time for duration of scheduled activity.

Column: EstimatedEndDate

Description:

Estimated date and time at which scheduled activity will end.

Column: EstimatedStartDate

Description:

Extimated date and time at which scheduled activity will begin.

Column: EventDate

Description:

Date and time of occurrence of (table insertion) error/ event on event log. Supplied by calling the application.

Column: EventLevel

Description:

Fatal or Retry related to Error.

Column: EventLogId

Description:

Unique identifier of an entry on the event log. Sequentially generated from DsStNextId table via an insert Trigger.

Column: EventMessage

Description:

The associated text for a STMGT event or COTS error message.

Column: EventNumber

Description:

Created independently of the Database; it is a number that is associated with a STMGT event message or COTS error number.

Column: EventType

Description:

Categorization of an entry on the event log (e.g., Server, Pull Monitor, Cache, Sybase).

Column: ExpirationFlag

Description:

Mark file(s) when the difference between current system datetime and DsStCacheFile.TimeOfLastUse exceeds DsStConfigParameter.PullExpirationTime (e.g., EXPIRED vs NOT EXPIRED).

Column: ExpireNotify

Description:

For PullMonitorServer.

Valid Values:

0 (=true); 1 (=false)

Column: FileIndex

Description:

This is file n of m files (e.g., file 2 of 12)

Column: FileLocation

Description:

Physical file location or directory path.

Column: FileName

Description:

The 'unique filename'. Relative to PullMonitor caching, it is the unique identifier of the metadata file (uniq_file). Relative to Archive Backup & Restore, it is the unique identifier of the metadata file provided as external data from SDSRV.

Column: FilePartitionPath

Description:

Applies to CDRom Drives only.

Column: FileSize

Description:

The size of the cache file in bytes. File sizes of greater that 2 gigabytes are not expected.

Column: FileStatus1

Description:

Succeeded or Failed.

Column: FileStatus2

Description:

Succeeded or Failed.

Column: FileWeight

Description:

Weight of cache file with floating decimal.

Column: FixedSlot

Description:

Fixed slot of the Stacker

Column: FullPullMonitor

Description:

Indicates the percentage at which the PullMonitorServer will maximize capacity.

Column: HighCapacity

Description:

Highest amount of space available for use (Disk Ftp, Ingest Ftp, 8MM Tape, 4MM Tape)

Column: HighWaterMark

Description:

Highest allowable percentage usage of space allocated (for the Pull Monitor and Staging Monitor/ Disk) (e.g., 74.80).

Column: HWCI

Description:

HardWare CI. Used to allow multiple instances of a ServerType to exist such as EcDsStArchiveServeDRP1 and EcDsStArchiveServerICL1.

Column: LastCompleted

Description:

The date of the primary server monitoring operations was completed.

Column: LastCompleted2

Description:

The date of the Secondary server monitoring operations was completed.

Column: LastReceived

Description:

The date of the primary server monitoring operations was last received.

Column: LastReceived2

Description:

The date of the secondary server monitoring operations was last received.

Column: Length

Description:

Size of the file in that request.

Column: LowCapacity

Description:

Lowest amount of space available for utilization (Disk Ftp, Ingest Ftp, 8MM Tape, 4MM Tape)

Column: LowWaterMark

Description:

Delete down to limit when High Water Mark is reached (for the Pull Monitor and Staging Monitor/ Disk) (e.g., 24.50).

Column: MaxCommandLine

Description:

Maximum length of UNIX filepath/ filename (for the Pull Monitor and Staging Monitor/ Disk) (e.g., 300).

Column: MaxFiles

Description:

Maximum number of files allowed in (Pull Monitor and Staging Monitor/ Disk) staging DataList file (e.g., 250000).

Column: MediumType

Description:

Type of medium this particular Stacker resource accommodates (e.g., 8mm Tape, 4mm Tape, D3 Tape).

Column: Mnemonic

Description:

Defined by internal standards for symbolic constants (e.g., DsCSt*).

Column: Model

Description:

Particular model number or reference for this device (for 4MM, 8MM Tapes and Stackers) (e.g., CM1).

Column: NextId

Description:

Automatically incremented next available integer for unique id.

Column: Node

Description:

1) For Table: DsStConfigParameter. The Node on which the server is currently running when it is brought up (e.g., kodiak, soe2sun, dss2). When the server is taken down, the node field will be set to NULL (default) or blank. Automatically set by application software.

2) For Table: DsStDevice. The Node on which the server is currently running when it is brought up (e.g., kodiak, soe2sun, dss2, etc.). When the server is taken down, the node field will be set to NULL or blank.

Column: NumColumns

Description:

The number of columns for formatting a page to print. Required for the printer server.

Column: NumFiles

Description:

Total files related to the RequestId.

Column: NumRows

Description:

The number of rows for formatting a page to print. Required for the printer server configuration.

Column: OffsiteId

Description:

Relative to Archive Backup & Restore, it is received as external data from SDSRV. It's value must be in the format of 3 characters (e.g., GSF, ERC).

Column: OnlineDrives

Description:

Number of drives that are on-line versus off-line in this stacker.

Column: OnlineSlots

Description:

Number of slots that are on-line versus off-line in this stacker.

Column: OperationStatus

Description:

Status of the Operation.

Valid Values:

Free, Allocated, Mounted, Completed

Column: Operator

Description:

The name of the person doing the scheduling.

Column: OriginalCacheSpace

Description:

Amount of space allocated (to the Pull Monitor) in Blocksize increments (e.g., 10000000).

Column: OriginalFileName

Description:

Relative to PullMonitor caching, it is the original file name received from the satellite-transmitted data. Relative to Archive Backup & Restore, it is the original file name received as external data from SDSRV.

Column: OwnerName

Description:

The name of the client whom the disk belongs.

Column: PackingSlips

Description:

The number of packing slips to be printed. Required for the pringer server configuration.

Column: ParameterList

Description:

Multiple Ftp related parameters and values strung together in one long string (text) format.

Column: PathLength

Description:

Length of UNIX filepath or filename used in system call (for the Pull Monitor and Staging Monitor or Disk) (e.g., 300).

Column: PathName

Description:

Directory path of device/resource files used (e.g., /ecs/usr/TS1/CUSTOM/bin/).

Column: Persistent

Description:

<TBS>

Column: PollingRequired

Description:

'Poll' the database to see if there is any work for this server.

Valid Values

Y(es); N(o)

Column: PrintQue

Description:

The destination printer queue to print to. Required for the printer server configuration.

Column: Priority

Description:

Priority assigned.

Valid Values:

High, Medium, Low

Column: PullDirectory

Description:

Stores the directory path for which DisFtp Server will FTP to while executing FtpPull.

Column: PullExpirationTime

Description:

Duration in hours when files may be considered for deletion (PullMonitorServer) (e.g., 24).

Column: PullFtpHost

Description:

Name of host where server runs (Distribution Ftp and Archive) (e.g., osaka).

Column: PullFtpPassword

Description:

Password for (Distribution FTP and Archive Backup Restore) account (e.g., user1).

Column: PullFtpUserName

Description:

User name for (Distribution FTP and Archive Backup Restore) account (e.g., newuser).

Column: RecdDate

Description:

Date and time of when the activity was scheduled.

Column: RequestId

Description:

1) For Table: DsStSchedule.

   Internally generated by stmgt to handle the scheduling (reservations) of multiple requests for a device/ resource. Not related to the RPCId.

2) For all other tables: Received from the DDIST (Data Distribution) CI as the RPCId

Column: RequestsProgressPath

Description:

Used scheduling and reservations in the resource provider for most of the resources.

Column: RequestStatus1

Description:

Succeeded or Failed.

Column: RequestStatus2

Description:

Succeeded or Failed.

Column: ResourceQueuePath

Description:

Required for the Device/Resource configuration.

Column: RestoreHistoryId

Description:

Unique identifier of each historical record inserted to table. Sequentially generated from the DsStNextId table.

Column: Retention

Description:

Refers to how long (in hours) an incomplete request will be held in the checkpoint table (stagind disk) before being discarded as an abondoned request

Column: Retries

Description:

Number of retries if (Distribution and Ingest FTP) request fails (e.g., 1).

Column: Rootpath

Description:

Path to Device/ Resource (staging area cache) (for the Staging Monitor/ Disk) (e.g., /home/dsst/pullmonitor)

Column: ScheduleId

Description:

Unique identifier of each scheduled activity record inserted to table. Sequentially generated from the DsStNextId table.

Column: Scope

Description:

Targeted level of the operation.

Valid Values:

'R' (request); 'A' (application); 'S' (system); 'E' (enterprise)

Column: ServerDescription

Description:

Description of server type (e.g., Large capacity 4MM Tape stacker device).

Column: ServerHandle

Description:

1) For Table DsStConfigParameter. UNIX pathname to where server is running in DCE; CDS path. Tells how to connect to a particular server. One handle exists per Server which can relate to multiple Devices.

2) For Table DsStSchedule. UNIX pathname to where server is running in DCE; CDS path. Tells how to connect to a particular server. One handle exists per Server which can relate to multiple Devices. **Annotation**: DsStSchedule.ServerHandle received from DsStConfigParameter when server is available.

Column: ServerId

Description:

Unique identifying name of server using pre-defined naming convention (e.g., EcDsStArchiveServer<HWCI>_<mode>, EcDsStPullMonitorServer<HWCI>_<mode>).

Column: ServerType

Description:

Unique identifier of type of server (e.g., Pull Monitor, Archive, Distribution FTP, D3, 4MM TAPE)

Column: Severity

Description:

Assessed degree of the error encountered.

Valid Values:

F'(atal); E(rror); W(arning)

Column: Size

Description:

The size of the staging disk measured in blocks.

Column: Sleeptime

Description:

Duration in minutes to wait between retries (for Distribution and Ingest FTP) (e.g., 10).

Column: SlotCapacity

Description:

Capacity in giga bytes of the tape in that slot.

Column: SlotCurrentDrive

Description:

Current drive of tape that came from this slot.

Column: SlotCurrentStatus

Description:

Status of the current slot.

Valid Values:

0 (= Offline or Free); 1 (= Online or Allocated)

Column: SlotNumber

Description:

Which slot of the available slots in the stacker hardware is being used (e.g., 1, 2, 3).

Column: SlotStatus

Description:

Status of currently used slot.

Valid Values:

0 (= not in use; 1 (= in use)

Column: SlotTapeId

Description:

Identification or file name of tape currently in this slot. **Annotation:** Potential candidate for barcoder data entry.

Column: SlotUse

Description:

Identifies the access mode permitted for the slot.

Valid Values:

0 (for read-only slot); 1 (for read-write slot)

Column: StackerId

Description:

Unique (Medium) type and (model) number of the stacker hardware (e.g., 4MMEXB218).

Column: StackerNumber

Description:

An identifier for a Stacker such as "Stacker1_OPS"

Column: StackerPath

Description:

Directory path of device or resource files used.

Column: StackerStatus

Description:

Indicates whether the stacker is online or offline.

Column: StagingDiskTag

Description:

The long name associated with each Stagng Disk such as HWCI1_: Disk:2.

Column: StagingId

Description:

Format: <HWCI>_<mode>:<VG name> or <HWCI>_<mode>:<disk name>. Only one of ArchiveId or StagingId is populated; both are never filled.

Column: StartDate

Description:

Date and time at which a scheduled activity begins.

Column: Status

Description:

) For Table: DsStConfigParameter. Status of server. Application software automatically sets to 'ONLINE' when server is brought up and 'OFFLINE'. (default) when brought down. ***Note:*** *The associated column domain is "state."*

Valid Values:

"ONLINE" ; "OFFLINE"

2) For Table: DsStDevice. Status of server (e.g., "0" for ONLINE or "1" for OFFLINE).

Valid Values:

0 (= online); 1 (=offline)

3) For Table: DsStSchedule. Status of server. Queued (initial), Complete, Inprogress, Reserved. ***Note****: The associated column domain is "status."*

Column: StatusCode

Description:

The status of the Request to distribute data on the Staging Disk.

Column: StmgtDBName

Description:

Holds the database name.

Column: StmgtDBVersion

Description:

Holds the version installed on the database.

Column: StmgtSRVRVersion

Description:

Holds the version required on the server.

Column: SRVRVersionInstalled

Description:

Holds the version installed on the server

Column: Suggestion

Description:

Recommendation for handling recovery related to an experienced error (mnemonic).

Column: TableName

Description:

Unique name of database table using the next available id.

Column: TempDirectory

Description:

Captured from DsStConfigParameter.ServerId, TempDirectory based on the associated ArchiveId of the Backup file.

Column: TimeFactor

Description:

Multiplied by (file) bytes; gives an estimated transfer rate

Column: TimeOfCachePlacement

Description:

Date and time cache file is created.

Column: TimeOfLastUse

Description:

Date and time cache file last used.

Column: TimerDuration

Description:

Time interval to delete the files (FtpNotifyFileName) that are Ftp'd.

Column: TimerId

Description:

If DsStServerType.PollingRequired is set to Y(es) then a value is automatically generated otherwise it is null.

Column: TimerReload

Description:

Sleep time between tape load attempts.

Column: TotalCompleted

Description:

Total number of server monitored operations that were complete.

Column: TotalReceived

Description:

Total number of server monitored operations that were received.

Column: TotalDrives

Description:

Total number of drives/devices available in this stacker (for Distribution and Ingest FTP, 4MM and 8MM Tapes) (e.g., 1, 2).

Column: TotalRoSlots

Description:

Number of (cartridge) slots that are read-only.

Column: TotalRwSlots

Description:

Number of (cartridge) slots that are read-write.

Column: TotalSlots

Description:

Total number of slots available in this stacker (e.g., 10, 12, 20)

Column: TotalSpace

Description:

The total size of raid allocated to the Staging Monitor and Staging Disk combined (e.g., 10000000).

Column: TransferStage

Description:

Identifies the status of a currently executing transfer. Values, in logical order, include first, 'secondary', second, 'temporary', third, 'offsite'.

Valid Values:

"secondary" ; "temporary" ; "offsite"

Column: TransferStatus

Description:

Identifies the status of a transfer. Values, in logical order, include first, "executing" and second either "succeeded" or "failed".

Valid Values:

"executing" ; "succeeded" or "failed".

Column: TypeOperation

Description:

Examples: "ArStore", "ArRetrieve"

Column: UserStagingSpace

Description:

Amount of space dedicated (to the Staging Disk). Value calculated as the difference between Total_Space and Cache_Space values (e.g., 2500000).

Column: VersionId

Description:

Holds a number generated by the database.

Column: VolumeEndDate

Description:

Date and time the volume group use was completed.

Column: VolumeGroupName

Description:

The name of the volume group (e.g., VG1).

Column: VolumeGroupPath

Description:

Location of the files associated with the volume group (e.g., /amass/volumegroupone).

Column: VolumeStartDate

Description:

Date and time the volume group use was created.

3.1.4 Column Domains

Domains specify the ranges of values allowed for a given table column. Sybase supports the definition of specific domains to further limit the format of data for a given column. Sybase domains are, in effect, user-defined data types. There are no domains defined for STMGT.

3.1.5 Column Default Values

Defaults are used to supply a value for a column when one is not defined at row insert time. Defaults defined in Sybase for the STMGT Subsystem database are described herein.

Column Name	Default Value
DsStConfigParameter.OriginalCacheSpace	0
DsStConfigParameter.AvailableCacheSpace	0
DsStDevice.Status	1 (Online)
DsStDevice.CurrentStatus	0 (Unallocated)
DsStDevice.DriveCurrentSlot	-1
DsStCacheFile.FileSize	0
DsStCacheFile.ActiveLinkCount	0
DsStCacheFile.InPullArea	0
DsStSlot.SlotStatus	2 (Loaded)
DsStSlot.SlotCurrentDrive	-1
DsStSlotSlotCurrentStatus	0 (Unallocated)
DsStStacker.ErrorCount	0
DsStStacker.OnlineSlots	0
DsStStacker.TotalDrives	0
DsStStacker.OnlineDrives	0
DsStStacker.TotalRoSlots	0
DsStStacker.TotalRwSlots	0
DsStStacker.StackerStatus	1 (Online)

3.1.6 Referential Integrity Rules

Sybase supports the definitions of rules. Rules provide a means for enforcing domain constraints on a given column. There are no rules defined in Sybase for the STMGT and DDIST.

3.1.7 Views

Sybase allows the definition of views as a means of limiting an application or users access to data in a table or tables. Views create a logical table from columns found in one or more tables. Currently, there are no views defined for the STMGT and DDIST Subsystem database.

3.1.8 Declarative Integrity Constraints

Sybase allows the enforcement of referential integrity via the use of declarative integrity constraints. Integrity constraints allow the SQL server to enforce primary and foreign key integrity checks automatically without requiring programming. Sybase is ANSI-92 compliant, therefore, its constraints support "restrict-only" operations. This means that a row can not be deleted or updated if there are rows in other tables having a foreign key dependency on that row. Cascade delete and update operations cannot be performed if a declarative integrity constraint has been used. Declarative integrity constraints used in the STMGT and DDIST Subsystem database are found here. Referential integrity is also maintained through use of user-defined triggers and procedures.

3.1.8.1 Dependencies on Table: DsDdGranule

Reference by List

Referenced by	Primary Key	Foreign Key
DsDdFile	RequestId GranuleId	RequestId GranuleId

3.1.8.2 Dependencies on Table: DsDdParameterList

Reference by List

Referenced by	Primary Key	Foreign Key
DsDdRequest	RequestId	RequestId

3.1.8.3 Dependencies on Table: DsDdParameterListVersion

Reference by List

Referenced by	Primary Key	Foreign Key
DsDdRequestVersion	RequestId VersionId	RequestId VersionId

3.1.8.4 Dependencies on Table: DsDdRequest

Reference by List

Referenced by	Primary Key	Foreign Key
DsDdGranule	RequestId	RequestId
DsStRequestMedia	RequestId	RequestId
DsDdStaging	RequestId	RequestId
DsDdTransferResults	RequestId	RequestId

3.1.8.5 Dependencies on Table: DsStCache

Reference by List

Referenced by	Primary Key	Foreign Key
DsStCacheFile	CacheId FileName	CacheId
DsStNotification DsStManagedCacheDir	CacheId CacheId DirectoryId	CacheId CacheId

3.1.8.6 Dependencies on Table: DsStCacheDirectory

3.1.8.7 Dependencies on Table: DsStCache

Reference by List

Referenced by	Primary Key	Foreign Key
DsStCacheFile	CacheId, FileName	CacheId
DsStManagedCacheDir	CacheId, DirName	CacheId

3.1.8.8 Dependencies on Table: DsStCacheFile

Reference by List

Referenced by	Primary Key	Foreign Key
DsStFileInfo	CacheId, UniqueFileName	CacheId, FileName
DsStFileLien	CacheId, FileName, OwnerName	CacheId, FileName
DsStFileLink	CacheId, DirName, FileName, LinkName	CacheId, FileName

3.1.8.9 Dependencies on Table: DsStConfigParameter

Reference by List

Referenced by	Primary Key	Foreign Key
DsStCache	CacheId	ServerId
DsStFile	RPCId FileIndex	RPCId VolumeGroupId
DsStFtpServer	ServerId	ServerId
DsStMediaServer	ServerId	ServerId
DsStArchiveServer	ServerId	ServerId
DsStStagingDiskServer	ServerId	ServerId
DsStServiceThreadConfig	PoolType ServerId	ServerId

3.1.8.10 Dependencies on Table: DsStDevice

Reference by List

Referenced by	Primary Key	Foreign Key
DsStMediaRequest	RPCId	MediaId StackerId ServerId DeviceName

3.1.8.11 Dependencies on Table: DsStErrorAttribute

Reference by List

Referenced by	Primary Key	Foreign Key
DsStFile	RPCId FileIndex	ErrorCode
DsStEventLog	EventLogId	EventNumber
DsStGenericRequest	RPCId	ErrorCode
DsStMediaServerContacted	RPCId ServerId	ErrorCode
DsStCancelledRequest	RPCId	ErrorCode

3.1.8.12 Dependencies on Table: DsStErrorText

Reference by List

Referenced by	Primary Key	Foreign Key
DsStErrorAttribute	ErrorCode	ErrorCode

3.1.8.13 Dependencies on Table: DsStFile

Reference by List

Referenced by	Primary Key	Foreign Key
DsStArchiveFileRequest	RPCId	OriginalRPCId FileIndex

3.1.8.14 Dependencies on Table: DsStGenericRequest

Reference by List

Referenced by	Primary Key	Foreign Key
DsStCacheManagerRequest	RPCId	RPCId
DsStFtpRequest	RPCId	RPCId
DsStMediaRequest	RPCId	RPCId
DsStPrintRequest	RPCId	RPCId
DsStArchiveRequest	RPCId	RPCId
DsStDependentRequest	DependentReqId	RPCId
DsStArchiveFileRequest	RPCId	RPCId

3.1.8.15 Dependencies on Table: DsStManagedCacheDir

Reference by List

Referenced by	Primary Key	Foreign Key
DsStFileLink	CacheId, DirName, FileName, LinkName	CacheId, DirName

Additionally, stored procedures identified in the PDL section will be added to the 311.

3.1.8.16 Dependencies on Table: DsStCacheDirectory

Reference by List

Referenced by	Primary Key	Foreign Key
DsStFileLocation	DirectoryId	DirectoryId

3.1.8.17 Dependencies on Table: DsStCacheFile

Reference by List

Referenced by	Primary Key	Foreign Key
DsStFileLocation	FileName	FileName

3.1.8.18 Dependencies on Table: DsStConfigParameter

Reference by List

Referenced by	Primary Key	Foreign Key
DsStDevice	ServerId	ServerId
DsStVolumeGroup	ServerId	ServerId
DsStSchedule	ServerId	ServerId

3.1.8.19 Dependencies on Table: DsStDevice

Reference by List

Referenced by	Primary Key	Foreign Key
DsStSchedule	DeviceName	DeviceName
DsStDeviceTape	DeviceName	DeviceName

3.1.8.20 Dependencies on Table: DsStErrorText

Reference by List

Referenced by	Primary Key	Foreign Key
DsStErrorAttribute	Mnemonic	Mnemonic

3.1.8.21 Dependencies on Table: DsStFtpRequest

Reference by List

Referenced by	Primary Key	Foreign Key
DsStDistributedFile	RequestId	RequestId

3.1.8.22 Dependencies on Table: DsStGenericRequest

Reference by List

Referenced by	Primary Key	Foreign Key
DsStArchiveRequest	RequestId	RequestId
DsStFtpRequest	RequestId	RequestId
DsStStgMonRequest	RequestId	RequestId

3.1.8.23 Dependencies on Table: DsStGenericRequest

Reference by List

Referenced by	Primary Key	Foreign Key
DsStArchiveRequest	RequestId	RequestId
DsStFtpRequest	RequestId	RequestId
DsStStagingDiskRequest	RequestId	RequestId
DsStStgMonRequest	RequestId	RequestId
DsStCancelledRequests	RpcId	RequestId
DsStDependency	DependentRpc	RequestId
DsStDependency	ActiveRpc	RequestId

3.1.8.24 Dependencies on Table: DsStStagingDisk

Reference by List

Referenced by	Primary Key	Foreign Key
DsStStagingDiskFile	DiskTag, Filename	DiskTag
DsStStagingDiskLien	DiskTag, OwnerName	DiskTag

3.1.8.25 Dependencies on Table: DsStStagingDiskRequest

Reference by List

Referenced by	Primary Key	Foreign Key
DsStStagingDisk	RequestId	DiskTag

Additionally, stored procedures identified in the PDL section will be added to the 311.

3.1.8.26 Dependencies on Table: DsStOffsite

Reference by List

Referenced by	Primary Key	Foreign Key
DsStBackup	OffsiteId CreateDate	OffsiteId CreateDate
DsStRestore	OffsiteId CreateDate	OffsiteId CreateDate

3.1.8.27 Dependencies on Table: DsStServerType

Reference by List

Referenced by	Primary Key	Foreign Key
DsStConfigParameter	ServerType	ServerType

3.1.8.28 Dependencies on Table: DsStSlot

Reference by List

Referenced by	Primary Key	Foreign Key
DsStSchedule	StackerId SlotNumber	StackerId SlotNumber

3.1.8.29 Dependencies on Table: DsStStacker

Reference by List

Referenced by	Primary Key	Foreign Key
DsStDevice	StackerId	StackerId
DsStSlot	StackerId	StackerId
DsStSchedule	StackerId	StackerId
DsStStackerGroup	StackerId	StackerId

3.1.8.30 Dependencies on Table: DsStTape

Reference by List

Referenced by	Primary Key	Foreign Key
DsStRequestTape	TapeId	TapeId
DsStTapeGroupSet	TapeId	TapeId
DsStDeviceTape	TapeId	TapeId
DsStSlot	TapeId	SlotTapeId

3.1.8.31 Dependencies on Table: DsStTapeGroup

Reference by List

Referenced by	Primary Key	Foreign Key
DsStTapeGroupSet	TapeGroupId	TapeGroupId
DsStStackerGroup	TapeGroupId	TapeGroupId

3.1.8.32 Dependencies on Table: DsStVolumeGroup

Reference by List

Referenced by	Primary Key	Foreign Key
DsStOffsite	ServerId VolumeGroupName VolumeStartDate	ServerId VolumeGroupName VolumeStartDate

3.1.8.33 Dependencies on Table: Request

Reference by List

Referenced by	Primary Key	Foreign Key
Reservations	RequesterID	RequesterID
Schedular	RequesterID	RequesterID

3.1.8 34 Dependencies on Table: Reservations

Reference by List

Referenced by	Primary Key	Foreign Key
Schedular	ReservationRef	ReservationRef

3.1.9 Triggers

Sybase supports the enforcement of business rules via the use of triggers. A trigger is best defined as a set of activities or checks that should be performed automatically whenever a row is inserted, updated, or deleted from a given table. Sybase version allows the definition of insert, update, and delete triggers at the table level. A summary listing of the triggers in the STMGT Subsystem database are given in Table 3-48 along with the database table it is associated with and a brief description of the purpose for the trigger. This listing is followed by a listing of the code.

Table 3-48. Summary List of Triggers (1 of 2)

Table	Trigger	User Defined	Description
DsDdRequest	DsDdRDeleteTrig	Yes	DsDdRequest table delete trigger
DsStArchiveRequest	DsStARDeleteTrig	Yes	Delete trigger to parent table DsStGenericRequest TABLES ACCESSED:DsStArchiveRequest DsStGenericRequest RETURNS:Status (Success = 0)
DsStBackup	DsStBDeleteTrig	Yes	Delete trigger on the DsStBackup table that logs deletions to another table using a cursor if DELETE has more than 1 row. TABLES ACCESSED:DsStBackup DsStBackupHistory RETURNS:Status (Success = 0)
DsStCacheFile	DsStCFInsertTrig	Yes	Insert trigger for the DsStCacheFile table. This trigger will update AvailableCacheSpace in DsStConfigParameter. TABLES ACCESSED: DsStConfigParameter RETURNS:Status (Success = 0)
DsStCacheFile	DsStCFDeleteTrig	Yes	Delete trigger on the DsStCacheFile table that logs deletions from another table using a cursor if DELETE has more than 1 row. TABLES ACCESSED:DsStCacheFile, DsStDeleteLogCacheFile DsStConfigParameter RETURNS:Status (Success = 0)
DsStConfigParameter	DsStCPInsertTrig	Yes	Insert trigger for the DsStConfigParameter table. This trigger will generate the TimerId value for the record being inserted. TABLES ACCESSED: DsStConfigParameter RETURNS:Status (Success = 0)
DsStDevice	DsStDInsUpdDelTrig	Yes	This trigger will update counts on the DsStStacker table related to DsStDevie records assoc with that Stacker. TABLES ACCESSED:DsStStacker DsStDevice RETURNS:Status (Success = 0)

Table 3-48. Summary List of Triggers (2 of 2)

Table	Trigger	User Defined	Description
DsStEventLog	DsStELInsertTrig	Yes	Insert trigger for the DsStEventLog table. This trigger will generate the EventLogId value for the record being inserted.-- TABLES ACCESSED:DsStEventLog RETURNS:Status (Success = 0)
DsStGenericRequest	DsStGRDeleteTrig	Yes	Delete Trigger that removes DsStStagingDisk table references to the deleted record(s).
DsStGRStatsTrig			
DsStRestore	DsStRDeleteTrig		Delete trigger that logs deletions to another table using a cursor if DELETE has more than 1 row.
DsStSchedule	DsStSInsertTrig	Yes	Insert trigger for the DsStSchedule table. This trigger will generate the DsStScheduleId value for the record being inserted. TABLES ACCESSED:DsStSchedule RETURNS:Status (Success = 0)
DsStSlot	DsStSLInsUpdDelTrig	Yes	This trigger will update counts on the DsStStacker table related to DsStSlot records assoc with that Stacker. TABLES ACCESSED:DsStStacker DsStSlot RETURNS:Status (Success = 0)
DsStStackerGroup	DsStSGInsertTrig	Yes	Insert trigger that configures the Stacker's Slots by inserting DsStSlot records.
DsStSlot	DsStSGDeleteTrig	Yes	Delete Trigger.

3.1.10 Stored Procedures

Sybase also supports business rules via the use of stored procedures. Stored procedures are typically used to capture a set of activities or checks that will be performed on the database repeatedly to enforce business rules and maintain data integrity. Stored procedures are parsed and compiled SQL code that reside in the database and may be called by name by an application, trigger or another stored procedure. A summary list of the stored procedures in the STMGT Subsystem database are given in Table 3-49 followed by listings of the code.

Table 3-49. Summary List of Procedures (1 of 8)

NAME
DsDdFDelete
DsDdFInsert
DsDdFSelectAll
DsDdFSelectAllFiles
DsDdFSelectByReqGranSrc
DsDdFUpdate
DsDdGDelete
DsDdGInsert
DsDdGSelectAll
DsDdGSelectAllGranules
DsDdGSelectByReqGran
DsDdGUpdate
DsDdPLAuxUpdate
DsDdPLDelete
DsDdPLInsert
DsDdPLSelectAll
DsDdPLSelectByReq
DsDdPLUpdate
DsDdPTDelete
DsDdPTGetLimit
DsDdPTInsert
DsDdPTSetLimit
DsDdRDelete
DsDdRInsert
DsDdRSelectAll
DsDdRSelectAllReq
DsDdRSelectByRequestId
DsDdRSelectByState
DsDdRSelectByTape
DsDdRSelectTape
DsDdRTSelectByReq
DsDdRUpdate
DsDdRUpdateOrdState
DsDdRUpdateState
DsDdSGInsert
DsDdSGSelectAll
DsDdSGUpdateGenValue
DsStARDeleteById
DsStARDeleteByState

Table 3-49. Summary List of Procedures (2 of 8)

NAME
DsStARInsert
DsStARUpdateCurrIdx
DsStBDelete
DsStBInsert
DsStBSelectAll
DsStBSelectByName
DsStBSelectTempDir
DsStBUpdStageAndStatus
DsStCDCFLDeleteAll
DsStCDCFLDeleteFileNames
DsStCDCFLInsert
DsStCDCFLSelectAll
DsStCDCFSelectByCacheId
DsStCDDeleteByPath
DsStCDInsert
DsStCDSelectAll
DsStCDSelectByPath
DsStCDSelectDirPath
DsStCDSelectPathByFileName
DsStCDSelectServerByFileName
DsStCFDeleteByCount
DsStCFDeleteByFileName
DsStCFDeleteByInPullArea
DsStCFDeleteOnExpiration
DsStCFInsert
DsStCFSelectByCacheId
DsStCFSelectByCount
DsStCFSelectByExpTime
DsStCFSelectByFileName
DsStCFSelectFileName
DsStCFUpdate
DsStCFUpdateExpirationFlag
DsStCFUpdateInPullArea
DsStCInsert
DsStCPCkUpdAvailCacheSpace
DsStCPDelete
DsStCPInsertArchive
DsStCPInsertDevice
DsStCPInsertFtp

Table 3-49. Summary List of Procedures (3 of 8)

NAME
DsStCPInsertPrinter
DsStCPInsertPullMonitor
DsStCPInsertStagingMonitor
DsStCPSelectById
DsStCPSelectByType
DsStCPUpdAvailableCacheSpace
DsStCPUpdStatusAndServerHandle
DsStCPUpdateArchive
DsStCPUpdateDevice
DsStCPUpdateFtp
DsStCPUpdatePrinter
DsStCPUpdatePullMonitor
DsStCPUpdateStagingMonitor
DsStCSelect
DsStDDelete
DsStDFInsert
DsStDFSelect
DsStDFUpdCkPtSt
DsStDFUpdDate
DsStDFUpdError
DsStDInsert
DsStDMoveDriveDrive
DsStDSelect
DsStDSelectAll
DsStDSelectByDeviceName
DsStDSelectCurrentSlot
DsStDSelectDeviceInfo
DsStDSelectElemNo
DsStDSelectForStacker
DsStDSelectResPoolInfo
DsStDUpdate
DsStDUpdateCurrentStatus
DsStDUpdateDevice
DsStDUpdateStatus
DsStDeallocate
DsStEADeleteByCode
DsStEAInsert
DsStEASelectAll
DsStEASelectByCode

Table 3-49. Summary List of Procedures (4 of 8)

NAME
DsStEASelectByMnemonic
DsStEATSelectByCode
DsStEATSelectByMnemonic
DsStEAUpdate
DsStELAlarms
DsStELDeleteByNum
DsStELInsert
DsStELInsertDdist
DsStELPurge
DsStELSelect
DsStELSelectAny
DsStELSelectByTime
DsStELSelectByType
DsStELSelectDdist
DsStETDeleteByMnemonic
DsStETInsert
DsStETSelectByMnemonic
DsStETUpdate
DsStFInsert
DsStFLDeleteByCache
DsStFLDeleteByName
DsStFLDeleteByNameAndDirId
DsStFLDeleteByNameAndId
DsStFLDeleteByOrigAndPath
DsStFLInsert
DsStFLSelectByFileName
DsStFLSelectByNameAndId
DsStFLSelectByPathName
DsStFLSelectDeleteByCount
DsStFLUpdAccessCount
DsStFRInsert
DsStFRUpdPullDir
DsStFSelect
DsStFUpdateChecksum
DsStFUpdateCkPtState
DsStFUpdateFailure
DsStFUpdateFileLoc
DsStFUpdateFileSize
DsStFUpdateStgDskTag

Table 3-49. Summary List of Procedures (5 of 8)

NAME
DsStGRARSelect
DsStGRCheckRetention
DsStGRCleanup
DsStGRDelete
DsStGRDeleteById
DsStGRFRSelect
DsStGRInsert
DsStGRSelectFile
DsStGRSelectOpen
DsStGRSelectOwner
DsStGRUpdateAll
DsStGRUpdateAllForOwner
DsStGRUpdateCkPtState
DsStGRUpdateFailure
DsStGRUpdateRetention
DsStNextIdGet
DsStNextIdInsert
DsStOInsert
DsStOSelectAll
DsStOSelectById
DsStOUpdate
DsStProcNumObjects
DsStRDelete
DsStRInsert
DsStRSelectAll
DsStRSelectByName
DsStRSelectTempDir
DsStRTInsert
DsStRTSelectByReq
DsStRUpdStageAndStatus
DsStSDDelete
DsStSDDeleteAll
DsStSDInsert
DsStSDSelect
DsStSDSelectAll
DsStSDSelectDisk
DsStSDSelectDiskNum
DsStSDSelectRpc
DsStSDUpdateOwner

Table 3-49. Summary List of Procedures (7 of 8)

NAME
DsStSDUpdatePersistent
DsStSDUpdateRetention
DsStSDUpdateSize
DsStSGDelete
DsStSGInsert
DsStSInsert
DsStSKDelete
DsStSKInsert
DsStSKNumStackers
DsStSKSelect
DsStSKSelectAll
DsStSKSelectByDevSrvType
DsStSKSelectByStackerNumber
DsStSKSelectByTapeGrp
DsStSKUpdStackerStatus
DsStSKUpdate
DsStSLCheckOpenSlot
DsStSLMoveDriveSlot
DsStSLMoveSlotDrive
DsStSLMoveSlotSlot
DsStSLSelect
DsStSLSelectCurrentDrive
DsStSLSelectElemNo
DsStSLSelectOpenSlotDrive
DsStSLUpdateCurrentStatus
DsStSLUpdateStatus
DsStSLUpdateUse
DsStSMRDeleteById
DsStSMREndPending
DsStSMREndSuspended
DsStSMRInsert
DsStSMRSelectAllSuspended
DsStSMRSelectByFileName
DsStSMRSelectById
DsStSMRSelectSuspended
DsStSMRUpdateStateDriver
DsStSSelect
DsStSSelectById
DsStSSelectByType

Table 3-49. Summary List of Procedures (8 of 8)

NAME
DsStSSelectDeviceName
DsStSTSelect
DsStSUpdate
DsStSUpdateStatus
DsStScheduler
DsStTGDelete
DsStTGInsert
DsStTGSSelect
DsStTGSUpdate
DsStTGSelect
DsStTSelectLoc
DsStTUpdateLoc
DsStVGInsert
DsStVGSelectById
DsStVGSelectHistory
DsStVGUpdate
datawarning
logdump
logwarning

3.2 Flat File Usage

A flat file is an operating system file that is written and subsequently read serially, generally independent of other files that exist, and usually static in nature. There are cases when the implementation of persistent data is better suited to a flat file than to a database (e.g., system configuration data, external interface data). There are no flat files used by the STMGT/DDIST Subsystems. Configuration information is stored in the STMGT and DDIST database. Additional configuration information may be found in the configuration registry.

3.2.1 File Descriptions

Not Applicable

3.2.2 Field Specifications

Not Applicable

3.2.3 Domain Definitions

Not Applicable

4. Performance and Tuning Factors

4.1 Indexes

An index provides a means of locating a row in a database table based on the value of a specific column(s), without having to scan all data in the table. When properly implemented, indexes can significantly decrease the time it takes to retrieve data, thereby increasing performance. Sybase allows the definition of two types of indexes, clustered and non-clustered.

In a clustered index, the rows in a database table are physically stored in sequence-determined by the index. Clustered indexes are particularly useful, when the data is frequently retrieved in sequential order. Only one clustered index may be defined per table.

Non-clustered indexes differ from their clustered counterpart, in that, data is not physically stored in sorted order—newly added rows are stored at the end of the related database table.

A key of the types of indexes found in STMGT is provided in Table 4-1 Index Type Key. Alist a description of each of the defined indexes is given in Table 4-2 Index List

Table 4-1. Index Type Key

Index Type Key	Description
PK	Primary Key
FK	Foreign Key
U	Unique - Only one for the column code combination
C	Clustered or non-clustered index
Sort	ASC (ascending) of DESC (descending) order

Table 4-2. Index List (1 of 3)

Table	Index Code	Column Code	P	F	U	C	Sort
DsDdFile	pk_dsddfile	RequestId GranuleId SourceName	Yes	No	Yes	Yes	ASC ASC ASC
DsDdGranule	pk_dsddgranule	RequestId GranuleId	Yes	No	Yes	Yes	ASC ASC
DsDdParameterList	pk_dsddparameterlist	RequestId	Yes	No	Yes	Yes	ASC
DsDdPriorityThread	pk_dsddprioritythread	ThreadName	Yes	No	Yes	Yes	ASC
DsDdRequest	pk_dsddrequest	RequestId	Yes	Yes	Yes	Yes	ASC
DsDdServerGeneric	pk_dsddservergeneric	GenericName	Yes	No	Yes	Yes	ASC
DsStArchiveRequest	pk_dsstarchiverequest	RequestId	Yes	Yes	Yes	Yes	ASC
DsStBackup	pk_dsstbackup	FileName	Yes	No	Yes	Yes	ASC

Table 4-2. Index List (2 of 3)

Table	Index Code	Column Code	P	F	U	C	Sort
DsStBackup	sk_dsstbtransferstage	TransferStage	No	No	No	No	ASC
DsStBackup	sk_dsstbtransferstatus	TransferStatus	No	No	No	No	ASC
DsStBackupHistory	pk_dsstbackuphistory	BackupHistoryId	Yes	No	Yes	Yes	ASC
DsStCache	pk_dsstcache	CacheId	Yes	No	Yes	Yes	ASC
DsStCacheDirectory	pk_dsstcachedirectory	DirectoryId	Yes	No	Yes	Yes	ASC
DsStCacheDirectory	sk_dsstcdcacheid	CacheId	No	Yes	No	No	ASC
DSStCacheFile	pk_dsstcachefile	FileName	Yes	No	Yes	Yes	ASC
DsStConfigParameter	pk_dsstconfigparameter	ServerId	Yes	No	Yes	Yes	ASC
DsStDeleteLogCacheFile	pk_dsstdeletelogcachefile	DeleteLogId	Yes	No	Yes	Yes	ASC
DsStDevice	pk_dsstdevice	DeviceName	Yes	No	Yes	Yes	ASC
DsStDeviceTape	pk_dsstdevicetape	DeviceTapeId	Yes	No	Yes	Yes	ASC
DsStDistributedFile	pk_dsstdistributedfile	RequestId FileIndex	Yes	No	Yes	Yes	ASC ASC
DsStErrorAtttribute	pk_dssterrorattribute	ErrorCode	Yes	No	Yes	Yes	ASC
DsStErrorText	pk_dssterrortext	Mnemonic	Yes	No	Yes	Yes	ASC
DsStEventLog	pk_dsseventlog	EventLogId	Yes	No	Yes	Yes	ASC
DsStFile	pk_dsstfile	RequestId FileIndex	Yes	No	Yes	Yes	ASC ASC
DsStFileLocation	pk_dsstfilelocation	FileName DirectoryId	Yes	No	Yes	Yes	ASC ASC
DsStFtpRequest	pk_dsstftprequest	RequestId	Yes	Yes	Yes	Yes	ASC
DsStNextId	pk_dsstnextid	TableName	Yes	No	Yes	Yes	ASC
DsStOffsite	pk_dsstoffsite	OffsiteId CreateDate	Yes	No	Yes	Yes	ASC ASC
DsStRequestTape	pk_dsstrequesttape	ReqTapeId	Yes	No	Yes	Yes	ASC
DsStRestore	pk_dsstrestore	FileName	Yes	No	Yes	Yes	ASC
DsStRestoreHistory	pk_dsstrestorehistory	RestoreHistoryId	Yes	No	Yes	Yes	ASC
DsStSchedule	pk_dsstschedule	ScheduleId	Yes	No	Yes	Yes	ASC
DsStServerType	pk_dsstservertype	ServerType	Yes	No	Yes	Yes	ASC
DsStSlot	pk_dsstslot	StackerId SlotNumber	Yes	No	Yes	Yes	ASC ASC
DsStStacker	pk_dsststacker	StackerId	Yes	No	Yes	Yes	ASC
DsStStackerGroup	pk_dsststackergroup	StackerGroupId	Yes	No	Yes	Yes	ASC
DsStStagingDisk	pk_dsststagingdisk	RequestId	Yes	No	Yes	Yes	ASC
DsStStagingDisk	sk_dsstsddisknum	DiskNum	No	No	No	No	ASC
DsStStgMonRequest	pk_dsststgmonrequest	RequestId	Yes	Yes	Yes	Yes	ASC
DsStTape	pk_dssttape	TapeId	Yes	No	Yes	Yes	ASC
DsStTapeGroup	pk_dssttapegroup	TapeGroupId	Yes	No	Yes	Yes	ASC
DsStTapeGroupSet	pk_dssttapegroupset	TapeGroupSetId	Yes	No	Yes	Yes	ASC

Table 4-2. Index List (2 of 3)

Table	Index Code	Column Code	P	F	U	C	Sort
DsStVolumeGroup	pk_dsstvolumegroup	ServerId VolumeGroupName VolumeStartDate	Yes	No	Yes	Yes	ASC ASC ASC
EcDbDatabaseVersions	pk_ecdbversions	EcDbDropVersion	Yes	No	Yes	Yes	ASC
Request	pk_dsstrequest	RequesterID	Yes	No	Yes	Yes	ASC
Reservations	pk_dsstreservations	ReservationRef	Yes	No	Yes	Yes	ASC

Table 4-3. Segment Descriptions

Segment Name	Description
default	Default data segment used if no other segment specified in the create statement.
logsegment	SYSLOGS, Transaction Logs
systemsegment	System tables and indexes.

4.2 Caches

A cache is a block of memory that is used by Sybase to retain and manage pages that are currently being processed. By default, each database contains three caches:

Data cache – retains most recently accessed data and index pages

Procedure cache – retains most recently accessed stored procedure pages

User transaction log cache – transaction log pages that have not yet been written to disk for each user

The size of each of these default caches is a confugrable item which must be managed on a per DAAC basis. These caches may be increased or decreased by the DAAC DBA as needed.

The data cache can be further subdivided into named caches. A *named cache* is a block of memory that is named and used by the DBMS to store data pages for select tables and/or indexes. Assigning a database table to named cache causes accessed pages to be loaded into memory and retained. The named cache does not need to be allocated to accommodate the entire database table since the DBMS manages the cache according to use. Named caches greatly increase performance by eliminating the time associated for disk input and output (I/O). There are no named caches that are currently defined for the STMGTSubsystem database. Named caches may be defined as the memory usage of the STMGT database becomes more well known and the DAACs move into an operational environment. As named caches are defined this portion of the document will be updated.

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5. Database Security

5.1 Approach

The database security discussed within this section is bounded to security implementation within the Sybase SQL Server DBMS. A Sybase general approach to security is adopted as illustrated in Figure 5-1.

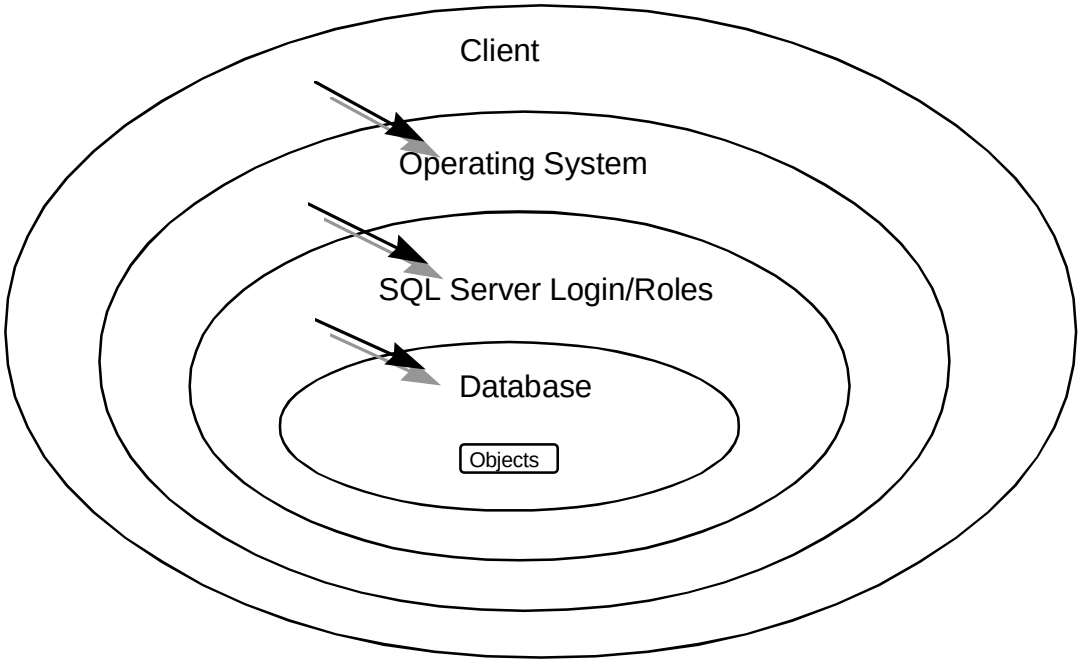

Figure 5-1. Sybase General Approach to SQL Server Security[1]

The client (user) requires a SQL Server login to access the DBMS The login is assigned to a user with certain related permissions for gaining access to particular objects (e.g., database tables, views, commands) within the database. The System Administrator may grant or revoke objects permissions for a login individually or based on defined group or roles.

Groups are a means of logically associating users with similar data access needs. Once a group has been defined, object and command permissions can be granted to that group. A user who is member of a group inherits all of the permissions granted to that group. No groups have been initially defined in the STMGT Subsystem "default database. The DAACs should define

[1] Reference Sybase Student Guide: *Advanced SQL Server Administration*.

database groups to support the database security requirements of their individual DAACs. Security for local DAAC users should be controlled by assigning each user to the appropriate group.

Roles were introduced in Sybase to allow a structured means for granting users the permissions needed to perform standard database administration activities and also provide a means for easily identifying such users. There are six pre-defined roles that may be assigned to a user. A definition of each of these roles follows, as well as a description of the types of activities that may be performed by each role.

System Administrator (*sa_role*): This role is used to grant a specific user permissions needed to perform standard system administrator duties including:

- installing SQL server and specific SQL server modules
- managing the allocation of physical storage
- tuning configuration parameters
- creating databases

Site Security Officer (*sso_role*): This role is used to grant a specific user the permissions needed to maintain SQL server security including:

- adding server logins
- administrating passwords
- managing the audit system
- granting users all roles except the *sa_role*

Operator (*oper_role*): This role is used to grant a specific user the permissions needed to perform standard functions for the database including:

- dumping transactions and databases
- loading transactions and databases

Navigator (*navigator_role*): This role is used to grant a specific user the permissions needed to manage the navigation server.

Replication (*replication_role*): This role is used to grant a specific user the permissions needed to manage the replication server.

Sybase Technical Support (*sybase_ts_role*): This role is used to grant a specific user the permissions needed to execute *database consistency checker (dbcc)*, a Sybase supplied utility supporting commands that are normally outside of the realm of routine system administrator activities.

The DAACs should review these roles and assign them to the appropriate login and/or groups.

5.2 Login/Group Object Permissions

During initial database installation logins used by the ECS custom code were created and permissions assigned for access to the STMGT Subsystem database. In addition, special database installation login, stmgt_role, was created to support database installation needs. For each login, the level of access is limited to that associated with their login, group or assigned group/role. Object Permissions are set within the installation scripts of the STMGT Subsystem for each object and group/role.

Permissions are identified in Table 5-1. A specification of the object permissions is contained in Table 5-2.

Table 5-1. Permission Key

Permission	Description
A	All
S	Select
I	Insert
U	Update
D	Delete
E	Execute

Table 5-2. Group Specifications

Group/Role	SYBASE LOGIN	Object	A	S	I	U	D	E
software	EcDsDdistGui	All	X					
software	EcDsDistributionServer	All	X					
software	EcDsSt4MMServer	All	X					
software	EcDsSt8MMServer	All	X					
software	EcDsStArchiveServer	All	X					
software	EcDsStCDROMServer	All	X					
software	EcDsStD3Server	All	X					
software	EcDsStFtpDisServer	All	X					
software	EcDsStIngestFtpServer	All	X					
software	EcDsStmgtGui	All	X					
software	EcDsStPrintServer	All	X					
software	EcDsStPullMonitorServer	All	X					
software	EcDsStStagingDiskServer	All	X					
software	EcDsStStagingMonitorServer	All	X					
NONE	sa	All	X					
sa_role	stmgt_role	All	X					

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6. Scripts

Script files in this section may be found in the directory /ecs/formal/DSS/stmgmt/src/database.

6.1 Installation Scripts

Any scripts used to support installation of the STMGT Subsystem database are described in Table 6-1.

Table 6-1. Installation Scripts

Script File	Description
EcDsStDbLogin	Adds unix Logins pre-defined for STMGT applications to the SQL server.
EcDsStDbUser	Adds user IDs pre-defined for STMGT applications to the SQL Server.
EcDsStDbBuild	Create and empty database and pre-loads initialization data.
EcDsStDbPatch	Upgrades a Release 4.0 Drop 4P database to Drop 4PL

6.2 De-Installation Scripts

No de-installation scripts are provided for the STMGT subsystem database.

6.3 Backup and Recovery Scripts

Any scripts used to facilitate backup or recovery of the STMGT Subsystem database are described in Table 6-2.

Table 6-2. Backup and Recovery Scripts

Script File	Description
EcDsStDbDump	Dumps the database to a backup device
EcDsStDbLoad	Restores the database from a backup copy.

6.4 Miscellaneous Scripts

There are no miscellaneous scripts applicable to the STMGT Subsystem.

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Appendix A. Storage Management Entity Relationship Diagrams

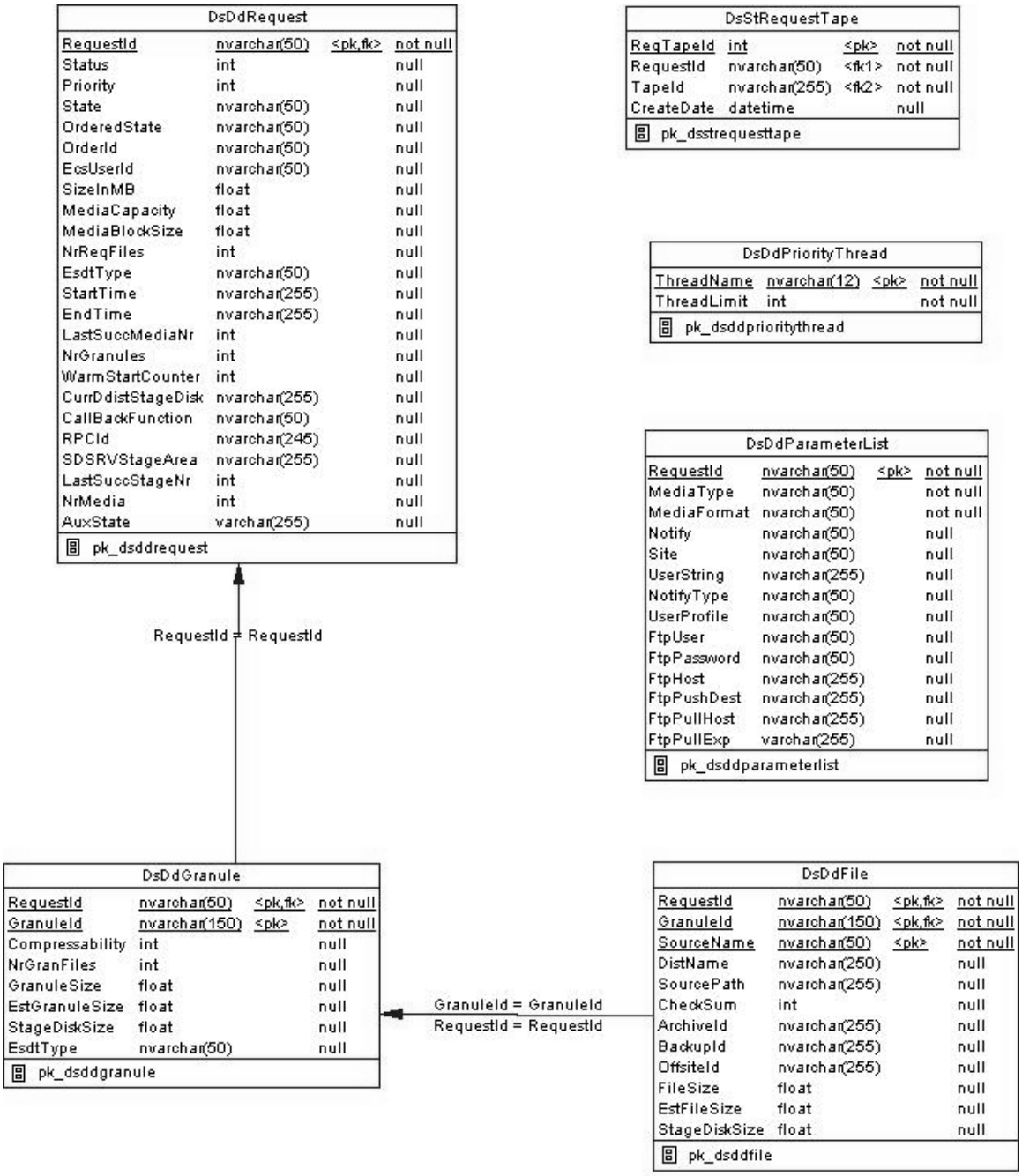

Figure A-1. Data Distribution (DDist)

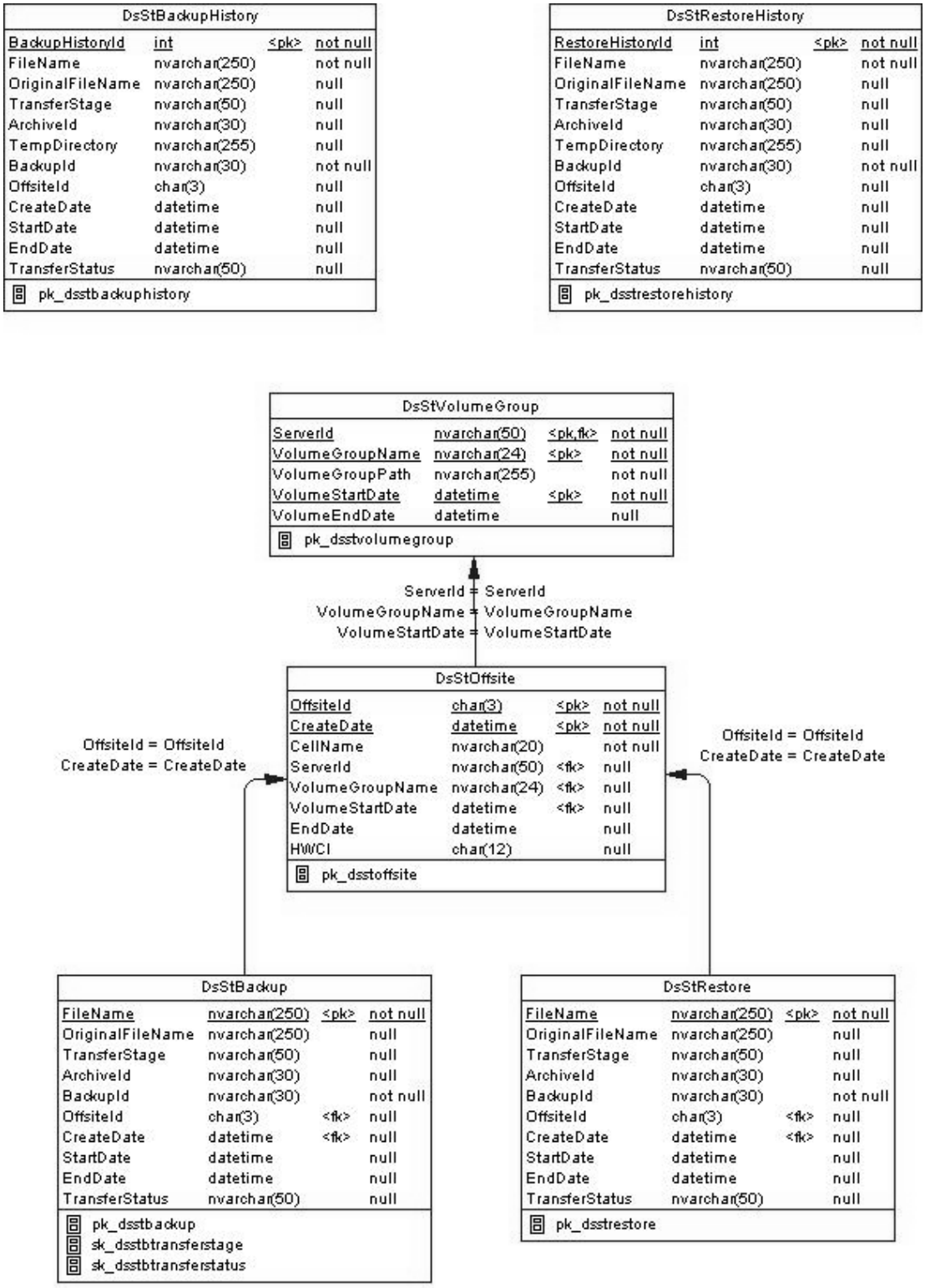

Figure A-2. Backup/Restor

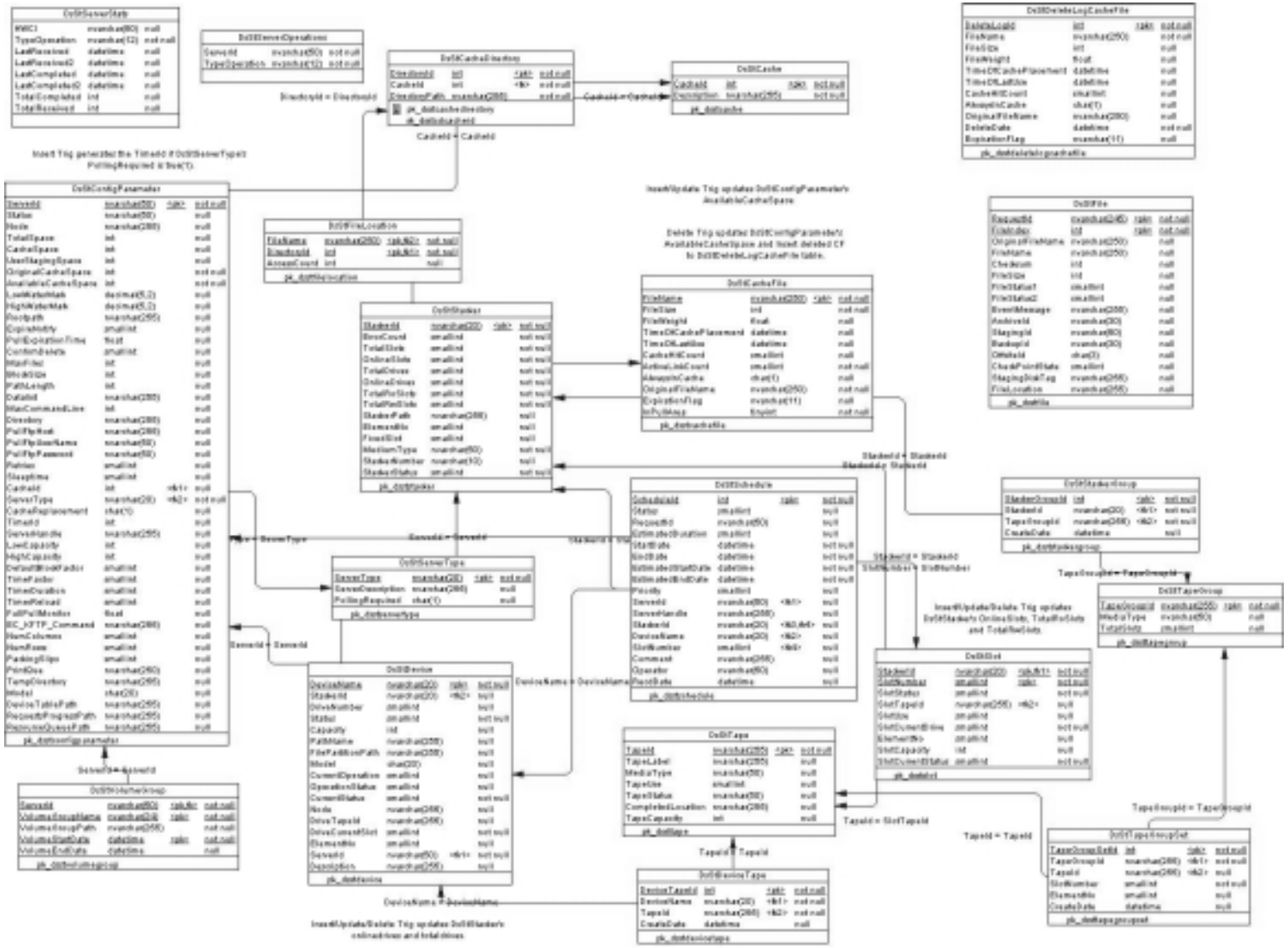

Figure A-3. Storage Devices

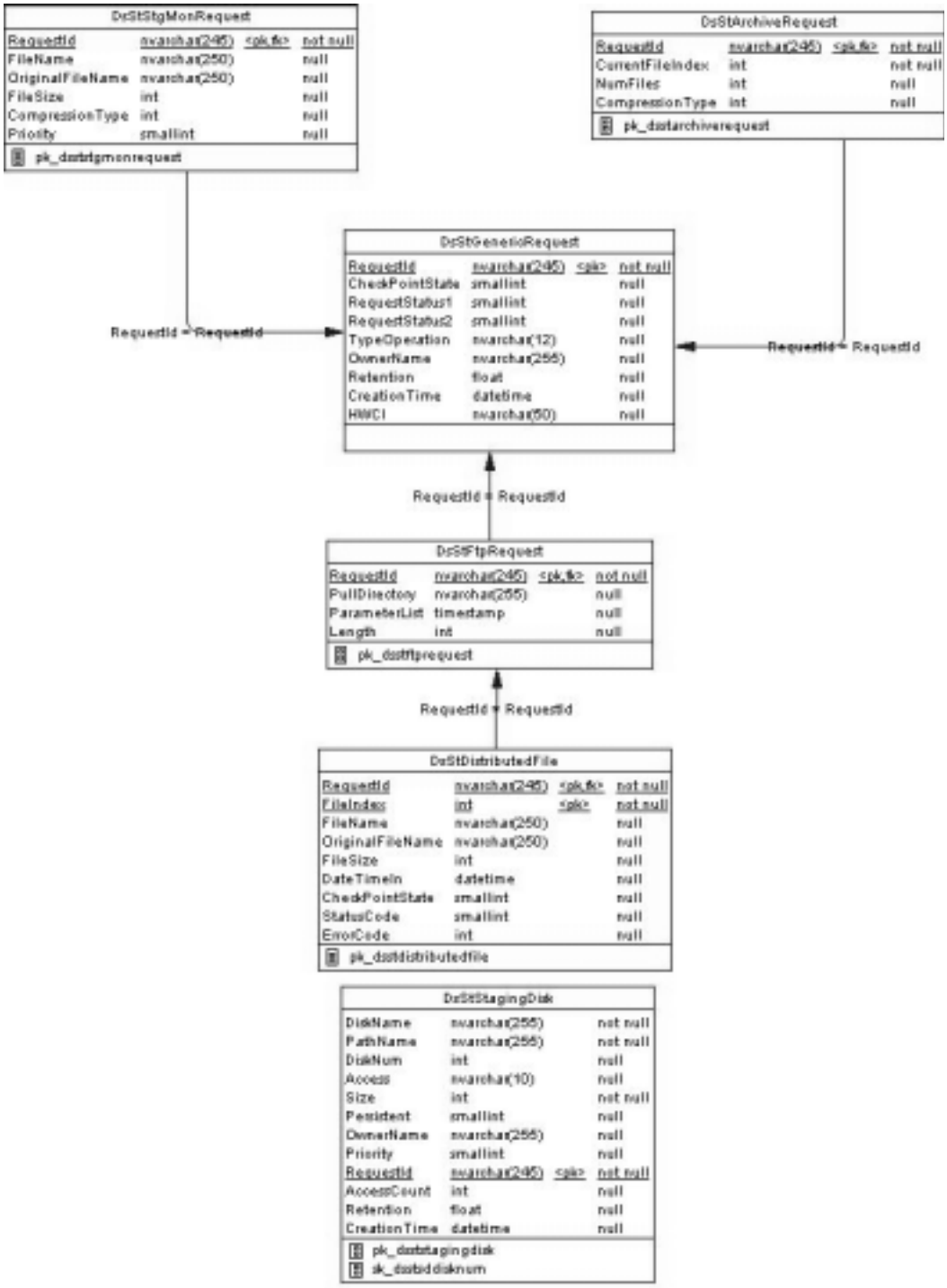

Figure A-4. Storage Management Requests

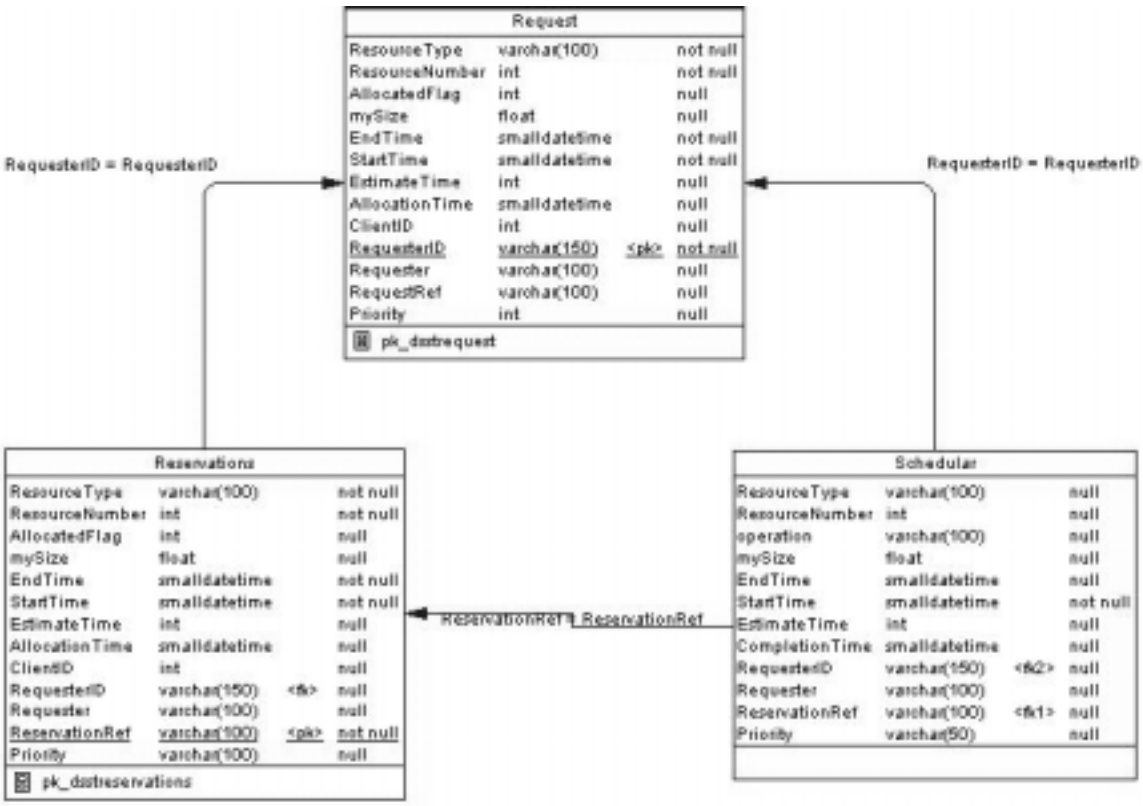

Figure A-5. Reservations [Obsolete]

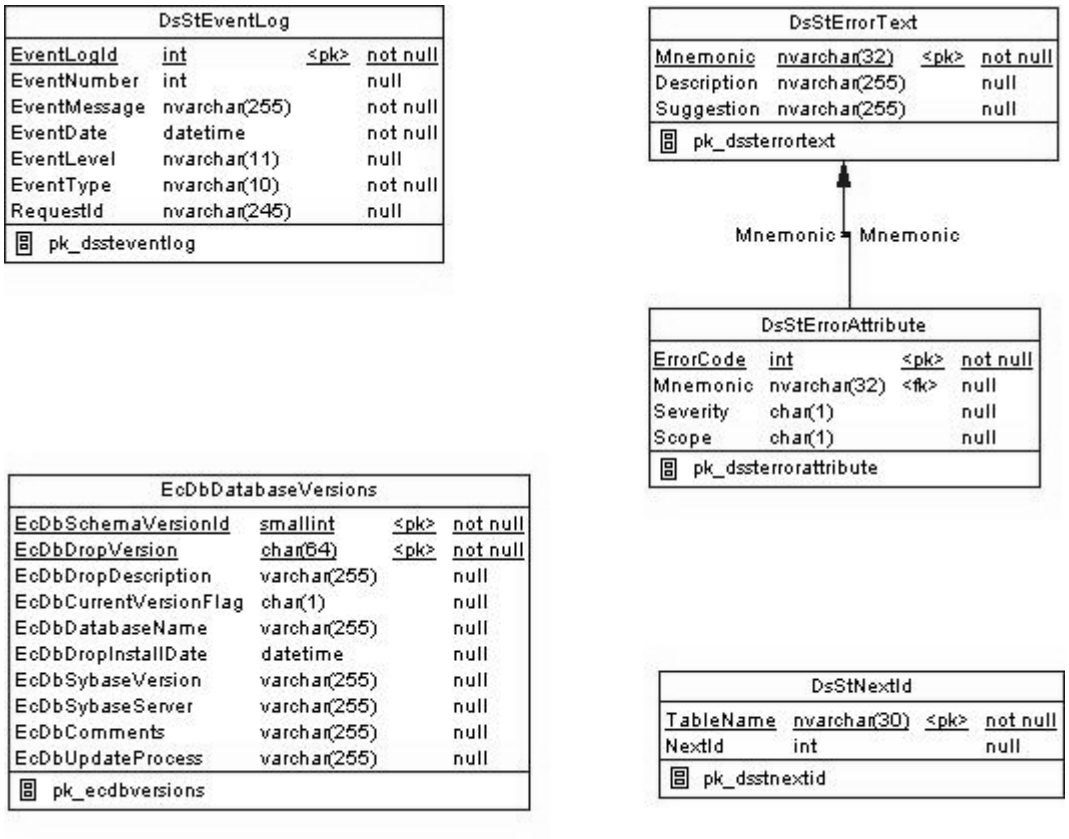

Figure A-6. System Information

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Abbreviations and Acronyms

ANSI	American National Standards Institute
ASCII	American Standard Code for Information Exchange
CASE	Computer Aided Software Engineering
CD	contractual delivery 213-001
CDRL	contract data requirements list
CI	configuration item
COTS	commercial off-the-shelf (hardware or software)
CSCI	computer software configuration item
DAAC	Distributed Active Archive Center
DBCC	Database Consistency Checker
DBMS	Database Management System
DCN	Document Change Notice
DID	data item description
DMS	Data Management Subsystem
ECS	EOSDIS Core System
EDC	EROS Data Center
EDHS	ECS Data Handling System
EOSDIS	Earth Observing System Data and Information System
EROS	Earth Resources Observation System
ERD	Entity Relationship Diagram
ESDIS	Earth Science Data and Information System (GSFC)
ESDT	Earth science data types
ESN	EOSDIS Science Network (ECS)
FK	Foreign Key
GSFC	Goddard Space Flight Center
GUI	graphic user interface
HDF	hierarchical data format

HDF-EOS	an EOS proposed standard for a specialized HDF data format
HTML	HyperText Markup Language
HTTP	Hypertext Transport Protocol
I/O	input/output
ICD	interface control document
INGST	Ingest Services CSCI
IOS	Interoperability Subsystem
LaRC	Langley Research Center (DAAC)
MSS	Management Support Subsystem
N/A	not applicable
NAS	National Academy of Science
NASA	National Aeronautics and Space Administration
NSIDC	National Snow and Ice Data Center (DAAC)
ODL	Object Definition Language
PCF	Process Control File
PDF	Portable Document Format
PDPS	Planning and Data Processing Subsystem
PGE	Product Generation Executive
PK	Primary Key
QA	Quality Assurance
SDSRV	Science Data Server CSCI
SQL	Structured Query Language
STMGT	Storage Management Software CSCI
SUBSRV	Subscription Server
WWW	World-Wide Web