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EOSDIS Evolution and Development (EED) Contract

Release 8.1 Data Pool (DPL) Database Design and Schema Specifications for the EOSDIS Evolution and Development (EED) Contract

Revision 01

April 2012

Raytheon Company
Riverdale, Maryland

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Release 8.1
Data Pool (DPL) Database Design and Schema Specifications for the EOSDIS Evolution and Development (EED) Contract

Revision 01

April 2012

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RESPONSIBLE ENGINEER

Robert Hartranft 4/26/2012

Robert Hartranft, Senior Principal Engineer Date
EOSDIS Evolution and Development (EED) Contract

SUBMITTED BY

Art Cohen 4/27/2012

Art Cohen, Task Lead Date
EOSDIS Evolution and Development (EED) Contract

Raytheon Company
Riverdale, Maryland

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Preface

This document is a formal contract deliverable. It requires Government review and approval within 45 business days. Changes to this document will be made by document change notice (DCN) or by complete revision.

Any questions should be addressed to:

Data Management Office
The EED Contract Office
Raytheon Company
5700 Rivertech Court
Riverdale, Maryland 20737

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This document describes the data design and database specification for the Subscription Server subsystem. It is one of eleven documents comprising the detailed database design specifications for each of the EED subsystems.

The subsystem database design specifications for the as delivered system include:

311-EED-001, Rev. 01 — Release 8.1 INGEST (INS) Subsystem Database Design and Schema Specifications for the EOSDIS Evolution and Development (EED) Contract

311-EED-002, Rev. 01 — Release 8.1 Order Manager (OMS) Database Design and Schema Specifications for the EOSDIS Evolution and Development (EED) Contract

311-EED-003, Rev .01 — Release 8.1 Spatial Subscription Server (SSS) Database Design and Schema Specifications for the EOSDIS Evolution and Development (EED) Contract

311-EED-004, Rev. 01 — Release 8.1 Data Pool Database (DPL) Design and Schema Specifications for the EOSDIS Evolution and Development (EED) Contract

Entity Relationship Diagrams (ERDs) presented in this document have been exported directly from tools and some cases contain too much detail to be easily readable within hard copy page constraints. The reader is encouraged to view these drawings on-line using the Portable Document Format (PDF) electronic copy available via the ECS Data Handling System (EDHS) on the world-wide web at http://edhs1.gsfc.nasa.gov.

Abstract

This document outlines Release 8.1 “as-built” database design and database schema of the Data Pool database including the physical layout of the database and initial installation parameters.

Keywords: data**,** database, design, configuration, database installation, scripts, security, data model, data dictionary, replication, performance tuning, SQL server, database security, replication, database scripts

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Appendix A. Entity Relationship Diagram

Abbreviations and Acronyms

1. Introduction

1.1 Purpose and Scope

The purpose of Data Pool Database Design and Database Schema Specification document is to describe the database design and schema specifications implemented to support the data requirements of Release 8.0 Data Pool CSCI.

1.2 Document Organization

Section 3 provides a detailed description of all objects used in the DataPool database including all object types with detailed definitions where appropriate.

Section 4 describes the performance strategies used within the DataPool database including indexes, segments and any defined caches used for memory optimization.

Section 5 describes the security measures used within the DataPool database. This includes strategies used at the user, group, object, server and role levels.

Section 6 describes custom utilities that provide means of installing and backing up the DataPool database including fault recovery mechanisms.

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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-EED-001, Rev. 01	Release 8.1 Segment Design Specifications for the EOSDIS Evolution and Development (EED) Contract
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-TDN-010	DAAC Database Configuration/NSIDC
920-TDE-010	DAAC Database Configuration/EDC
920-TDL-010	DAAC Database Configuration/LARC
920-TDN-011	DAAC Sybase Log Mapping/NSIDC
920-TDE-011	DAAC Sybase Log Mapping/EDC
920-TDL-011	DAAC Sybase Log Mapping/LARC
922-TDN-013	Disk Partitions/NSIDC
922-TDE-013	Disk Partitions/EDC
922-TDL-013	Disk Partitions/LARC

These documents are maintained as part of the EED 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 EED 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.

609-EED-001, Rev .01	Release 8.1 Operations Tools Manual for the EOSDIS Evolution and Development (EED) Contract
611-EED-001, Rev. 01	Release 8.1 Mission Operation Procedures for the EOSDIS Evolution and Development (EED) Contract

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3. Data Design

3.1 Database Overview

The Data Pool database implements the large majority of the persistent data requirements for the Data Pool subsystem. The database is designed in such a manner as to satisfy business policy while maintaining data integrity and consistency. Database tables are implemented using the Sybase Relational Database Management system (RDBMS). All components of the Data Pool database are described in the sections which follow, in sufficient detail to support maintenance needs.

3.1.1 Physical Data Model Entity Relationship Diagram

The Entity Relationship Diagram (ERD) presents a schematic depiction of the Data Pool physical data model. The ERDs presented here for the Data Pool database were produced using the Power Designer Data Architect Computer Aided Software Engineering (CASE) tool. ERDs represent the relationship between entities or database tables. On ERDs, tables are represented by rectangles and relationships are represented as arrow (see Figure 3-1).

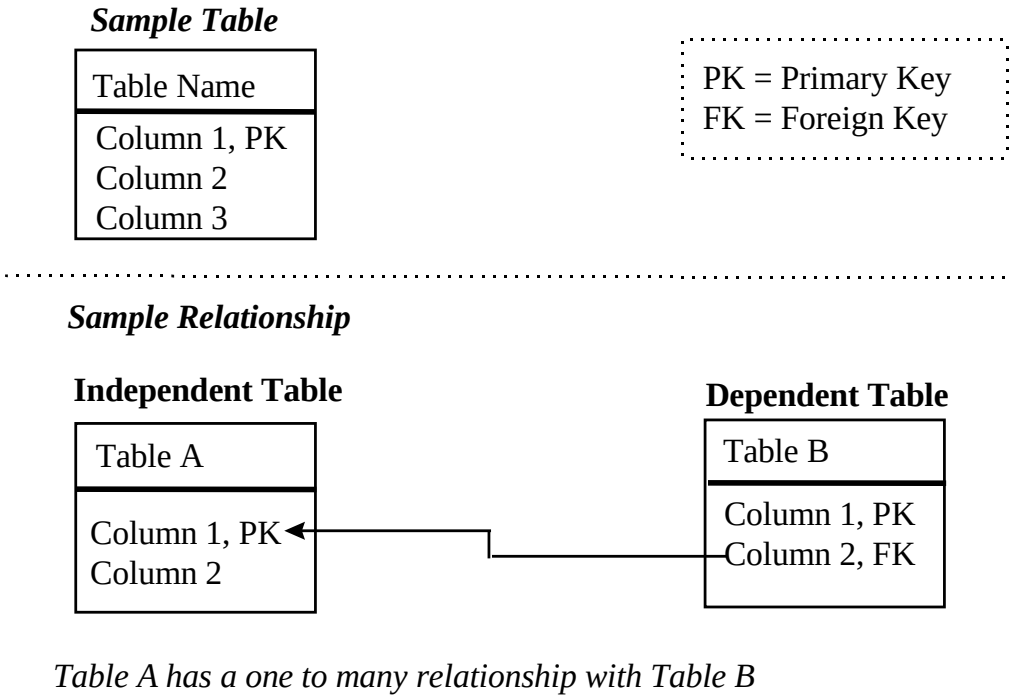

Figure 3-1. ERD Key

3.1.2 Tables

A listing of each the tables in the Data Pool database is given here. A brief definition of each of these tables follows including a listing of the columns comprising the tables in Table 3-1. The column list indicates if the column is part of the primary key for the table, that is, if the columns can be used alone or in combination with other primary key columns to uniquely identify a single row in the table. The column list also indicates whether the column is a mandatory attribute that must be included in every row.

Table 3-1. Data Tables Listing (1 of 2)

Table Name
DlBmgtEvents
DlBoundingRectangle
DlBulkWrkTable
DlCartOrder
DlCartOrderItem
DlCartOrderItemBand
DlCloudCoverDimension
DlCollectionDimension
DlDatetimeDimension
DlDayNightDimension
DlDimensionDayNight
DlDimensionGroupESDT
DlDimensionMP
DlDimensionMPScienceQAXref
DlDimensionPolygonXref
DlDimensionScienceQA
DlDimensionSpatialT6All
DlDimensionTemporal
DlDimensionTimeOfDay
DlESDTCurrentDensityMap
DlFactDayNight
DlFactGroupESDT
DlFactQA
DlFactTemporalRange
DlFactTimeOfDay
DlGPolygon
DlGranuleFact
DlGranuleMeasuredParamBridge
DlGranuleOWS
DlGranulesToBeUnpublished

Table 3-1. Data Tables Listing (2 of 2)

Table Name
DlGranuleThemeXref
DlGranuleTiles
DlGrCloudCover
DlHEGLookup
DlIdentifier
DlInstrumentTeamGridDimension
DlMeasuredParameter
DlMeasuredParamDimension
DlNOSELookup
DlOrbitCalculatedSpatial
DlOrbitPolygons
DlOWSDeletedGranules
DlPlatInstrCode
DlQAUpdFlagTemp
DlQAUpdTempBcp
DlStatESDT
DlStatGroupESDT
DlStatTheme
DlTempGrans
DlTempPhantoms
DlThemes
DlTileGroupBridge
DlTileGroupDimension
DlUpdGranulesTemp
DlWebAccessLog
EcDbDatabaseVersions

Table 3-2 identifies the current version level of the Data Pool database.

Table 3-2. EcDbDatabaseVersions (1 of 2)

Column Name	Data Type	PK Column	Mandatory Column
EcDbSchemaVersionId	smallint	Yes	Yes
EcDbDropVersion	char(64)	Yes	Yes
EcDbDropDescription	varchar(255)	No	No
EcDbCurrentVersionFlag	char(1)	No	No
EcDbDatabaseName	varchar(255)	No	No
EcDbDropInstallDate	datetime	No	No
EcDbSybaseVersion	varchar(255)	No	No

Table 3-2. EcDbDatabaseVersions (2 of 2)

Column Name	Data Type	PK Column	Mandatory Column
EcDbSybaseServer	varchar(255)	No	No
EcDbComments	varchar(255)	No	No
EcDbUpdateProcess	varchar(255)	No	No

Table 3-3 records the events involved in BMGT processing.

Table 3-3. DlBmgtEvents

Column Name	Data Type	PK Column	Mandatory Column
eventKey	numeric(16)	Yes	Yes
granuleId	ID	No	No
eventType	char(10)	No	Yes
ecsId	ID	No	No
exported	char(1)	No	Yes
eventTime	datetime	No	Yes
cycleId	numeric(16)	No	Yes
collectionId	ID	No	No

Table 3-4 contains information about Data Pool themes. It includes the theme name and flags to determine whether granules associated with the theme may be stored in the Data Pool and whether the theme is allowed for web drill down.

Table 3-4. DlThemes

Column Name	Data Type	PK Column	Mandatory Column
themeId	ID	Yes	Yes
name	varchar(40)	No	Yes
themeDescription	varchar(255)	No	No
insertEnabledFlag	char(1)	No	Yes
webVisibleFlag	char(1)	No	Yes
preConvertEnabledFlag	char(1)	No	No
serviceRequested	char(1)	No	No
insertTime	datetime	No	No
lastUpdate	datetime	No	No

Table 3-5 contains cross-reference information between Data Pool science granules and their associated themes.

Table 3-5. DlGranuleThemeXref

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
themeId	ID	Yes	Yes
collectionId	ID	No	Yes

Table 3-6 contains one row for each measured parameter associated with a granule in the Data Pool. All data in this table are copied from the DsMdMeasureParameter table in the ECS AIM database.

Table 3-6. DlMeasuredParameter

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
ParameterName	varchar(80)	Yes	Yes
ScienceQualityFlag	varchar(25)	No	No
OperationalQualityFlag	varchar(20)	No	No
AutomaticQualityFlag	varchar(64)	No	No
ScienceQualityFlagExplan	varchar(255)	No	No
OperationalQualityFlagExplan	varchar(255)	No	No
AutomaticQualityFlagExplan	varchar(255)	No	No
QAPercentMissingData	int	No	No
QAPercentOutOfBoundsData	int	No	No
QAPercentInterpolatedData	int	No	No
QAPercentCloudCover	int	No	No

Table 3-7 contains spatial information about granules whose spatial coverage is LLBOX.

Table 3-7. DlBoundingRectangle

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
BoundingRectangle	llbox	No	Yes
collectionId	ID	No	Yes

Table 3-8 contains spatial information about granules whose spatial coverage is a gpolygon.

Table 3-8. DlGPolygon

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
GPolygonContainer	gpolygon	No	Yes
collectionId	ID	No	Yes

Table 3-9 contains spatial information about granules with nominal orbital spatial coverage.

Table 3-9. DlOrbitCalculatedSpatial

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
PathNo	smallint	Yes	Yes
StartBlock	smallint	Yes	Yes
EndBlock	smallint	No	Yes
platInstrCode	tinyint	Yes	Yes
misrCameraId	varchar(20)	No	No
misrOrbitNumber	int	No	No
misrProductVersion	int	No	No
collectionId	ID	No	Yes

Table 3-10 contains a series of orbit polygons for a platform and instrument combination. The data in this table is static and applies only to MISR data.

Table 3-10. DlOrbitPolygons

Column Name	Data Type	PK Column	Mandatory Column
platInstrCode	tinyint	Yes	Yes
PathNo	smallint	Yes	Yes
SequenceNo	smallint	Yes	Yes
Orbit	polygon	No	Yes

Table 3-11 contains static look up information regarding the platform and instrument names for a given platInstrCode.

Table 3-11. DlPlatInstrCode

Column Name	Data Type	PK Column	Mandatory Column
platInstrCode	tinyint	Yes	Yes
platformShortName	varchar(20)	No	Yes
instrumentName	varchar(80)	No	Yes

Table 3-12 is used by the Data Pool Cleanup Utility as temporary storage for all granules which get deleted from the Data Pool inventory through a Data Pool clean up session.

Table 3-12. DlFilesToBeDeleted

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	No	No
browseId	ID	No	No
fileName	varchar(255)	No	Yes
fileSize	numeric(16,0)	No	Yes
directoryPath	varchar(255)	No	No
state	tinyint	No	Yes
ecsId	ID	No	No
ShortName	char(8)	No	No
VersionId	tinyint	No	No

Table 3-13 is a temporary table used by the Data Pool Access Statistic Utility. It contains entries for each Data Pool file (metadata, browse) access which appears in the web log.

Table 3-13. DlWebAccessLog

Column Name	Data Type	PK Column	Mandatory Column
directoryPath	varchar(255)	No	Yes
fileName	varchar(255)	No	Yes
accessTime	datetime	No	Yes
ipAddress	char(15)	No	Yes
domainName	varchar(255)	No	No

Table 3-14 is a static table used for web drill down. It contains information about all possible Data Pool collection groups and collections to which a Data Pool granule might belong.

Table 3-14. DlDimensionGroupESDT

Column Name	Data Type	PK Column	Mandatory Column
groupESDTKey	Int	Yes	Yes
groupESDTType	char(1)	No	Yes
groupESDTValue	varchar(12)	No	Yes
groupESDTDescription	varchar(255)	No	No
groupKey	Int	No	No

Table 3-15 is a static table used for web drill down. It contains information about all possible values of DayNightFlag for Data Pool granules might belong.

Table 3-15. DlDimensionDayNight

Column Name	Data Type	PK Column	Mandatory Column
dayNightKey	smallint	Yes	Yes
dayNightValue	char(1)	No	Yes
dayNightDescription	varchar(20)	No	No

Table 3-16 is a static table used for web drill down. It contains a row for each time of day bin to which a Data Pool granule might belong.

Table 3-16. DlDimensionTimeOfDay

Column Name	Data Type	PK Column	Mandatory Column
timeOfDayKey	smallint	Yes	Yes
timeOfDayType	char(1)	No	Yes
timeOfDayBeginTime	smallint	No	Yes
timeOfDayEndTime	smallint	No	Yes
todHourKey	smallint	No	No
todFourHourKey	smallint	No	No
todHalfDayKey	smallint	No	No

Table 3-17 is a static table used for web drill down. It contains information about all known measured parameters.

Table 3-17. DlDimensionMP

Column Name	Data Type	PK Column	Mandatory Column
qaKey	int	Yes	Yes
qaValue	varchar(80)	No	No
qaDescription	varchar(255)	No	Yes

Table 3-18 is a static table used for web drill down. It contains information about all known science QA flag values which could be present in a Data Pool granule.

Table 3-18. DlDimensionScienceQA

Column Name	Data Type	PK Column	Mandatory Column
qaCode	Tinyint	Yes	Yes
qaValue	varchar(40)	No	Yes
qaDescription	varchar(255)	No	Yes

Table 3-19 is a table used for web drill down. It contains unique key to indicate the combination of measured parameter and a valid science QA value.

Table 3-19. DlDimensionMPScienceQAXref

Column Name	Data Type	PK Column	Mandatory Column
qaKey	int	Yes	Yes
qaCode	tinyint	No	Yes
qaNameKey	int	No	Yes

Table 3-20 is a static table used for web drill down. It contains a row for each possible temporal bin (day, week, month, and year) to which a Data Pool granule might belong. NOTE: For purposes of this table, weeks are not defined as Sunday – Saturday groups of 7 days, but are instead defined as subsets of 7 day weeks wholly contained within a calendar month. For example, if a Sunday – Saturday week is July 29 – August 4, this table will store July 29-31 as one week, and August 1-4 as a different week.

Table 3-20. DlDimensionTemporal

Column Name	Data Type	PK Column	Mandatory Column
temporalKey	int	Yes	Yes
temporalType	char(1)	No	Yes
temporalBeginDate	datetime	No	Yes
temporalEndDate	datetime	No	Yes
weekKey	int	No	No
monthKey	int	No	No
yearKey	int	No	No

Table 3-21 is a static table used for web drill down. It contains a row for each possible spatial bin to which a Data Pool granule might belong.

Table 3-21. DlDimensionSpatialT6All

Column Name	Data Type	PK Column	Mandatory Column
spatialKey	int	Yes	Yes
gridLevel	tinyint	No	Yes
tile	int	No	Yes
BR_Degree	gpolygon	No	Yes

Table 3-22 is a static table used for populating the DlESDTCurrentDensityMap table for orbit data. It contains spatial keys for each polygon with specific path and instrument.

Table 3-22. DlDimensionPolygonXref

Column Name	Data Type	PK Column	Mandatory Column
spatialKey	int	Yes	Yes
platInstrCode	tinyint	Yes	Yes
PathNo	smallint	Yes	Yes
SequenceNo	smallint	Yes	Yes
gridLevel	tinyint	No	No

Table 3-23 stores the relation between granules and the group/ESDT search domain, defined in DlDimensionGroupESDT.

Table 3-23. DlFactGroupESDT

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
groupESDTKey	int	Yes	Yes

Table 3-24 stores the relation between granules and the DayNight search domain, defined in DlDimensionDayNight.

Table 3-24. DlFactDayNight

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
dayNightKey	smallint	Yes	Yes

Table 3-25 stores the relation between granules and the TimeOfDay search domain, defined in DlDimensionTimeOfDay.

Table 3-25. DlFactTimeOfDay

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
timeOfDayKey	smallint	Yes	Yes

Table 3-26 stores the relation between granules and the QA search domain, defined in DlDimensionMPScienceQAXref.

Table 3-26. DlFactQA

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
qaKey	int	Yes	Yes

Table 3-27 stores the relation between granules and the temporal search domain, defined in DlDimensionTemporal.

Table 3-27. DlFactTemporalRange

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
collectionId	ID	No	Yes
minDayKey	int	No	Yes
maxDayKey	int	No	Yes
minWeekKey	int	No	Yes
maxWeekKey	int	No	Yes
minMnthKey	int	No	Yes
maxMnthKey	int	No	Yes
minYearKey	int	No	Yes
maxYearKey	int	No	Yes
sizeMB	float	No	No

Table 3-28 contains the next available system generated unique identifier. There is a separate row in this table to generate identifiers for the DlCollections, DlGranules, DlThemes, and DlBrowse tables.

Each row in this table is padded out to the 2K page size to minimize locking contention on a per row basis.

Table 3-28. DlIdentifier

Column Name	Data Type	PK Column	Mandatory Column
identifierType	char(30)	Yes	Yes
identifierObjectType	char(30)	Yes	Yes
lastIdentifier	ID	No	Yes
lastIntIdentifier	int	No	Yes
lastSmallintIdentifier	smallint	No	Yes
identifierPad1	char(255)	No	Yes
identifierPad2	char(255)	No	Yes
identifierPad3	char(255)	No	Yes
identifierPad4	char(255)	No	Yes
identifierPad5	char(255)	No	Yes
identifierPad6	char(255)	No	Yes
identifierPad7	char(255)	No	Yes

Table 3-29 is temp permanent table, which will get the data from a flat file using the Sybase Bulk Copy Utility for the Update Granule Expiration utility.

Table 3-29. DlUpdGranulesTemp

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	No	Yes
ExpirationDate	datetime	No	Yes
RetentionPriority	int	No	No

Table 3-30 <needs verbage>

Table 3-30. DlHEGLookup

Column Name	Data Type	PK Column	Mandatory Column
ShortName	char(8)	Yes	Yes
VersionId	tinyint	Yes	Yes

Table 3-31 contains order information for HEG conversion orders that initiated through the Data Pool Web Access GUI.

Table 3-31. DlCartOrder

Column Name	Data Type	PK Column	Mandatory Column
orderId	ID	Yes	Yes
email	varchar(255)	No	Yes
realName	varchar(255)	No	No
status	varchar(10)	No	No
timestamp	datetime	No	No
notes	varchar(255)	No	No
insertDate	datetime	No	No
archiveFlag	char(1)	No	Yes

Table 3-32 contains order item information for HEG conversion orders that initiated through the Data Pool Web Access GUI.

Table 3-32. DlCartOrderItem

Column Name	Data Type	PK Column	Mandatory Column
itemId	ID	Yes	Yes
orderId	ID	No	Yes
inputFile	varchar(255)	No	Yes
outputProj	varchar(10)	No	No
outputFmt	varchar(10)	No	No
ul_lat	float	No	No
ul_lon	float	No	No
lr_lat	float	No	No
lr_lon	float	No	No
status	varchar(10)	No	No
errorCode	int	No	No
granuleId	ID	No	No
projParamStr	varchar(255)	No	No
subsetFlag	char(1)	No	Yes
compAlgorithmLabel	char(10)	No	No

Table 3-33 is a temporary table to hold QA flags to be updated and their values.

Table 3-33. DlQAUpdFlagTemp

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	No	Yes
ParameterName	varchar(40)	No	Yes
xmlUpdateFlag	char(1)	No	No
qaFlagType	varchar(11)	No	No
qaValue	varchar(25)	No	No
qaExplValue	varchar(255)	No	No

Table 3-34 will first load this table using Sybase Bulk Copy Utility for the final population of DlQAUpdFlagTemp table.

Table 3-34. DlQAUpdTempBcp

Column Name	Data Type	PK Column	Mandatory Column
ecsId	ID	No	Yes
ParameterName	varchar(40)	No	Yes
xmlUpdateFlag	char(1)	No	No
qaFlagType	varchar(11)	No	No
qaValue	varchar(25)	No	No
qaExplValue	varchar(255)	No	No

Table 3-35 contains the cloud cover percentage for a granule.

Table 3-35. DlGrCloudCover

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
cloudCover	int	No	Yes

Table 3-36 contains the list of spatial keys for a granule in HEX format.

Table 3-36. DlGranuleTiles

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	Yes	Yes
collectionId	ID	No	Yes
insertTime	datetime	No	Yes
tiles	varbinary(800)	No	Yes
gridLevel	tinyint	No	Yes

Table 3-37 contains the HEX representation of a density map for a collection.

Table 3-37. DlESDTCurrentDensityMap (1 of 2)

Column Name	Data Type	PK Column	Mandatory Column
collectionId	ID	Yes	Yes
lastUpdate	datetime	No	No

Table 3-37. DlESDTCurrentDensityMap (2 of 2)

Column Name	Data Type	PK Column	Mandatory Column
densityMap	image	No	Yes
lastUpdatedUtility	char(1)	No	Yes

Table 3-38 contains the band information for an order item.

Table 3-38. DlCartOrderItemBand

Column Name	Data Type	PK Column	Mandatory Column
itemId	ID	No	Yes
objectId	ID	No	Yes
bandId	ID	No	No
bandValue	int	No	No
dimId	ID	No	No
dimValue	int	No	No

Table 3-39 holds all collections that are NOSE data type. This table uses to fill out the gridLevel for NOSE collections in DlCollections.

Table 3-39. DlNOSELookup

Column Name	Data Type	PK Column	Mandatory Column
ShortName	char(8)	Yes	Yes
VersionId	tinyint	Yes	Yes
platformShortName	varchar(20)	No	Yes
instrumentName	varchar(80)	No	Yes

Table 3-40 contains all groupESDT Key space and the total number of granules that the group or ESDT contains.

Table 3-40. DlStatGroupESDT

Column Name	Data Type	PK Column	Mandatory Column
groupESDTKey	int	No	Yes
number	int	No	Yes

Table 3-41 contains all groupESDT Key space and the total number of granules that the ESDT contains.

Table 3-41. DlStatESDT

Column Name	Data Type	PK Column	Mandatory Column
groupESDTKey	int	No	Yes
groupESDTType	char(1)	No	Yes
number	int	No	Yes
size	float	No	Yes

Table 3-42 contains a list of themes and the total number of granules that each theme contains.

Table 3-42. DlStatTheme

Column Name	Data Type	PK Column	Mandatory Column
themeId	ID	No	Yes
number	int	No	Yes

Table 3-43 contains granules that are registered with OGC Web Services, OWS.

Table 3-43. DlGranuleOWS

Column Name	Data Type	PK Column	Mandatory Column
geoid	varchar(30)	Yes	Yes
granuleId	ID	No	Yes
serviceRequested	char(1)	No	Yes
processingState	varchar(10)	No	No
lastUpdate	datetime	No	No

Table 3-44 contains granules that have been deleted from the Data Pool database but are still registered with OGC Web Services, OWS.

Table 3-44. DlOWSDeletedGranules

Column Name	Data Type	PK Column	Mandatory Column
geoid	varchar(30)	Yes	Yes
expirationDate	datetime	No	Yes
serviceRequested	char(1)	No	Yes

Table 3-45 contains information of a list of Bulk URL ids.

Table 3-45. DlBulkWrkTable

Column Name	Data Type	PK Column	Mandatory Column
clientId	ID	No	Yes
granuleId	ID	No	Yes

Table 3-46 is a static dimension table defining the cloud cover bands.

Table 3-46. DlCloudCoverDimension

Column Name	Data Type	PK Column	Mandatory Column
CloudCoverId	smallint	Yes	Yes
CloudCoverType	varchar(16)	No	Yes
GreaterOrEqualTo	smallint	No	Yes
LessOrEqualTo	smallint	No	Yes

Table 3-47 is a dimension table defining collections.

Table 3-47. DlCollectionDimension

Column Name	Data Type	PK Column	Mandatory Column
CollectionId	smallint	Yes	Yes
ShortName	char(8)	No	Yes
VersionId	tinyint	No	Yes
Esdt	varchar(12)	No	Yes
GroupName	varchar(12)	No	Yes
SpatialType	varchar(20)	No	Yes
GridName	varchar(80)	No	Yes

Table 3-48 is a static dimension table that combines pure date and time dimensions into a single dimension.

Table 3-48. DlDatetimeDimension

Column Name	Data Type	PK Column	Mandatory Column
DatetimeId	int	Yes	Yes
DatetimeType	varchar(16)	No	Yes
FullDatetime	datetime	No	Yes
HourNumberInDay	tinyint	No	No
DayOfWeek	varchar(9)	No	No
DayNumberInEpoch	int	No	No
WeekNumberInEpoch	int	No	No
MonthNumberInEpoch	int	No	No
DayNumberInWeek	tinyint	No	No
DayNumberInMonth	tinyint	No	No
DayNumberInYear	smallint	No	No
LastDayInWeekIndicator	indicator	No	No
LastDayInMonthIndicator	indicator	No	No
WeekdayIndicator	indicator	No	No
WeekEndingDate	date	No	No
WeekNumberInYear	tinyint	No	No
MonthName	varchar(9)	No	No
MonthNumberInYear	tinyint	No	No
YearMonth	char(7)	No	No
Quarter	tinyint	No	No
YearQuarter	char(6)	No	No
HalfYear	tinyint	No	No
Year	smallint	No	No

Table 3-49 is a static dimension table defining day/night values.

Table 3-49. DlDayNightDimension

Column Name	Data Type	PK Column	Mandatory Column
DayNightId	smallint	Yes	Yes
DayNightType	varchar(16)	No	Yes
DayNight	varchar(16)	No	Yes

Table 3-50 holds measurements for each granule and expresses many-to-many relationships between dimensions.

Table 3-50. DlGranuleFact

Column Name	Data Type	PK Column	Mandatory Column
GranuleId	ID	Yes	Yes
CollectionId	smallint	No	Yes
TileGroupId	int	No	No
FittedTileId	smallint	No	No
CloudCoverId	smallint	No	No
DayNightId	smallint	No	No
GranuleBeginningDatetimeId	int	No	No
GranuleEndingDatetimeId	int	No	No
SizeMB	float	No	No
CloudCover	smallint	No	No

Table 3-51 associates granules with measured parameters.

Table 3-51. DlGranuleMeasuredParamBridge

Column Name	Data Type	PK Column	Mandatory Column
MeasuredParamId	smallint	Yes	Yes
DayNightType	smallint	Yes	Yes
DayNight	ID	Yes	Yes

Table 3-52 is a static dimension table that defines the grids for “instrument grid” collections.

Table 3-52. DlInstrumentTeamGridDimension

Column Name	Data Type	PK Column	Mandatory Column
FittedTileId	smallint	Yes	Yes
HorizontalTileId	smallint	No	No
VerticalTileId	smallint	No	No
TilePolygon	polygon	No	Yes
GridName	varchar(80)	No	Yes

Table 3-53 is a slow-growing dimension table that defines ParameterName/ScienceQualityFlag pairs.

Table 3-53. DlMeasuredParamDimension

Column Name	Data Type	PK Column	Mandatory Column
MeasuredParamId	smallint	Yes	Yes
ParameterName	varchar(80)	No	Yes
ScienceQualityFlag	varchar(20)	No	No

Table 3-54 associates granules tile groups (in DlTileGroupDimension) with triangular tiles (in DlDimensionSpatialT6All).

Table 3-54. DlTileGroupBridge

Column Name	Data Type	PK Column	Mandatory Column
TileGroupId	int	Yes	Yes
TileId	smallint	Yes	Yes

Table 3-55 is a growing dimension table that defines tile groups for collections with spatialType – “T6 grid”.

Table 3-55. DlTileGroupDimension

Column Name	Data Type	PK Column	Mandatory Column
TileGroupId	int	Yes	Yes
TileGroupMD5Digest	char(32)	No	Yes
TileCount	smallint	No	Yes

Table 3-56 stores the IDs of granules ready to be unpublished. This information is used to adjust the density maps of the collections containing these granules.

Table 3-56. DlGranulesToBeUnpublished

Column Name	Data Type	PK Column	Mandatory Column
granuleId	ID	No	Yes

Table 3-57 stores a “cross reference between the AIM and DPL IDs of Science granules.

Table 3-57. DlAimDplGranuleXref

Column Name	Data Type	PK Column	Mandatory Column
AimId	ID	Yes	Yes
DplId	ID	Yes	Yes

Table 3-58 stores a “cross reference between the AIM and DPL IDs of Browse granules.

Table 3-58. DlAimDplBrowseXref

Column Name	Data Type	PK Column	Mandatory Column
AimId	ID	Yes	Yes
DplId	ID	Yes	Yes

Table 3-59 stores a “cross reference between the AIM and DPL IDs of Collections.

Table 3-59. DlAimDplCollectionXref

Column Name	Data Type	PK Column	Mandatory Column
AimId	ID	Yes	Yes
DplId	ID	Yes	Yes

3.1.3 Columns

Brief definitions of each of the columns present in the database tables defined above are contained in Table 3-60.

Table 3-60. Column Descriptions (1 of 17)

Column Name	Table	Column Description	Valid Values
accessTime	DlWebAccessLog	The time at which the file was accessed through FTP or Web	
accessType	DlAccessRollup	The type of access log for this process.	FTP – any ftp access http – any web access

Table 3-60. Column Descriptions (2 of 17)

Column Name	Table	Column Description	Valid Values
archiveFlag	DlCartOrder	Flag used to determine whether delete was performed on the order	Y – Delete was performed on the order N – Delete was not performed on the order (default)
AutomaticQualityFlag	DlMeasuredParameter	Automatic Quality value for the granule	
AutomaticQualityFlag Explan	DlMeasuredParameter	Explanation for how to figure out the automatic quality value.	
bandValue	DlCartOrderItemBand	The value for the 3rd dimension in a HDF-EOS object	
BoundingRectangle	DlBoundingRectangle	A SQS type llbox representation of the spatial area for the granule.	
BR_Degree	DlDimensionSpatialT6All	The value of the geographical location	
clientId	DlBulkWrkTable	Bulk URL client ID	
cloudCover	DlGrCloudCover	The percentage for cloud cover.	
CloudCover	DlGranuleFact	Percentage cloud cover.	integer between 0 and 100
CloudCoverId	DlCloudCoverDimension DlGranuleFact	For rows having CloudCoverType = 'cloud cover' it starts at 1 increments by one for each band.	For other CloudCoverTypes the values are 1 – inapplicable, 2 – missing, 3 - corrupt
CloudCoverType	DlCloudCoverDimension	Indicates whether cloud cover data is present or the reason why not.	'inapplicable' 'missing' 'corrupt' 'cloud cover'
cloudSourceId	DlCollections DlCloudCoverSource	ID uses to indicate which cloud cover source that the collection uses.	

Table 3-60. Column Descriptions (3 of 17)

Column Name	Table	Column Description	Valid Values
collectionId	DlGranuleTiles DlESDTCurrentDensityMap DlFactTemporalRange DlBoundingRectangle DlGPolygon DlGranuleThemeXref DlOrbitCalculatedSpatial DlCollectionDimension DlGranuleFact DlGranuleMeasuredParamBridge	Identifier for each collection	
compAlgorithmLabel	DlCartOrderItem	Label uses to indicate which compression algorithm to use.	
DatetimeId	DlDatetimeDimension	An integer indicating the elapsed time in hours from a fixed starting date.	If DatetimeType = ‘datetime’, it starts at 1 for ‘1970/1/1 0:00’ and increments by one for every hour thereafter.
DatetimeType	DlDatetimeDimension	Indicates whether datetime information is present or why not.	‘datetime’ ‘inapplicable’ ‘missing’ ‘corrupt’
DayNight	DlDayNightDimension	Indicates whether collection was day, night, or both.	‘Both’ ‘Day’ ‘Night’
dayNightDescription	DlDimensionDayNight	Description for each dayNightValue	
DayNightId	DlDayNightDimension DlGranuleFact	Integer representation of DayNight	1 – Both 2 – Day 3 – Night -1 – inapplicable -2 – missing -3 – corrupt
dayNightKey	DlDimensionDayNight DlFactDayNight	Uniquely Identifies a condition of the day when the granule acquisition occurred.	
DayNightType	DlDayNightDimension DlGranuleFact	Indicates whether daynight information is present or why not.	‘day night’ ‘inapplicable’ ‘missing’ ‘corrupt’

Table 3-60. Column Descriptions (4 of 17)

Column Name	Table	Column Description	Valid Values
dayNightValue	DlDimensionDayNight	The value represented by the key.	D – Day N – Night B – Both X – Not Compatible
DayNumberInEpoch	DlDatetimeDimension	Positive integer denoting the number of days since January 1, 1970	1 for 1/1/70, incrementing by 1 for each day thereafter
DayNumberInMonth	DlDatetimeDimension	The day number within a month	1 for the first day of the month, incrementing by 1 each day thereafter
DayNumberInWeek	DlDatetimeDimension	The day number in the week	1= Sunday, 2=Monday, ..., 7=Saturday
DayNumberInYear	DlDatetimeDimension	The day number within the year	1=January 1, ..., 365=December 31 (or December 30 in a leap year)
DayOfWeek	DlDatetimeDimension	The name of the day of the week	One of “Sunday”, “Monday”, etc.
densityMap	DlESDTCurrentDensityMap	The HEX representation of the density map	
dimId	DlCartOrderItemBand	Unique identifier for the 4th dimension in a field in a HDF-EOS object.	
dimValue	DlCartOrderItemBand	The value for the 4th dimension in a HDF-EOS object.	
directoryPath	DlWebAccessLog	Path Name of the browse granule files relative to the Data Pool root directory.	
domainName	DlWebAccessLog	Domain name of the client	
EcDbComments	EcDbDatabaseVersions	Notes or comments on the database version level.	
EcDbCurrentVersionFlag	EcDbDatabaseVersions	Flag indicating if this row represents the current database version entry	
EcDbDatabaseName	EcDbDatabaseVersions	The name of the database for which this database version level is applied.	
EcDbDropDescription	EcDbDatabaseVersions	The official name of the ECS software drops for	
EcDbDropInstallDate	EcDbDatabaseVersions	The date and time that the database version level was installed.	

Table 3-60. Column Descriptions (5 of 17)

Column Name	Table	Column Description	Valid Values
EcDbDropVersion	EcDbDatabaseVersions	The official description of the ECS software drops for this database version level.	
EcDbSchemaVersionId	EcDbDatabaseVersions	The subsystem-specific identifier for this database schema version	
EcDbSybaseServer	EcDbDatabaseVersions	The name of the baseline Sybase SQL server controlling this database.	
EcDbSybaseVersion	EcDbDatabaseVersions	The software release version of the Sybase SQL server in place when this database version level was initially installed.	
EcDbUpdateProcess	EcDbDatabaseVersions	The installation method by which this database version level was installed.	
email	DlCartOrder	Email Id	
EndBlock	DlOrbitCalculatedSpatial	The ordinal number of the polygon where granule coverage ends.	
errorCode	DlCartOrderItem	if FAILED, error code from HEG converter	
Esdt	DlCollectionDimension	The collection identifier as a string value	"<ShortName> + '.' + <VersionId>"
fileName	DlWebAccessLog	The file name for a science, metadata or browse file	
FittedTileId	DlGranuleFact DlInstrumentTeamGridDimension	Alternative tile ID, referencing a (horizontal, vertical) pair rather than a T6 tile.	null, if collection has spatial type T6 grid
FullDatetime	DlDatetimeDimension	The datetime as an SQL datetime type	
GPolygonContainer	DlGPolygon	A SQS type gpolygon representation of the spatial area for the granule.	
GranuleBeginningDatetimeId	DlGranuleFact	Beginning datetime for a granule, rounded to the start of the hour	For example, "1/1/2000 11:59" becomes "1/1/2000 11:00"

Table 3-60. Column Descriptions (6 of 17)

Column Name	Table	Column Description	Valid Values
GranuleEndingDatetimeId	DlGranuleFact	Ending datetime for a granule, rounded to the start of the hour	For example, “1/1/2000 12:59” becomes “1/1/2000 12:00”
granuleId	DlGranuleTiles DlGranuleThemeXref DlMeasuredParameter DlGrCloudCover DlBoundingRectangle DlGPolygon DlOrbitCalculatedSpatial DlFactGroupESDT DlFactDayNight DlFactQA DlFactTemporalRange DlFactTimeOfDay DlFilesToBeDeleted DlUpdGranulesTemp DlQAUpdFlagTemp DlCartOrderItem DlGranulesToBeUnpublished	The unique ID which identifies the granule	
GranuleId	DlGranuleFact DlGranuleMeasuredParamBridge	granule Identifier	
GreaterOrEqualTo	DlCloudCoverDimension	band lower bound	
gridLevel	DlDimensionPolygonXref DlDimensionSpatialT6All DlGranuleTiles	Spatial grid level used to generate the density map. The default is 6.	Valid values are between 1 and 6 (default = 6)
GridName	DlCollectionDimension DlInstrumentTeamGridDimension	Name of the grid that an “instrument grid” collection uses	“MODIS LST sinusoidal”, “MODIS sinusoidal”, “MODIS EASE”, “inapplicable”
groupESDTDescription	DlDimensionGroupESDT	The description for the group or ESDT.	
groupESDTKey	DlDimensionGroupESDT DlFactGroupESDT DlStatESDT DlStatGroupESDT	Uniquely Identifies a group or ESDT	
groupESDTType	DlStatESDT DlDimensionGroupESDT	Identifies the type, either group or ESDT	G – Group E – ESDT

Table 3-60. Column Descriptions (7 of 17)

Column Name	Table	Column Description	Valid Values
groupESDTValue	DlDimensionGroupESDT	The value for the group or ESDT. If it is an ESDT, its value is a combination of ShortName and VersionId If it is a collection group, its value is the displayName of the group.	
groupKey	DlDimensionGroupESDT	If groupESDTType is G, this field contains the value NULL. Otherwise, the field contains the key of the group to which the ESDT belongs.	
GroupName	DlCollectionDimension	Label identifying the collection group	
HalfYear	DlDatetimeDimension	Indicates whether the datetime falls within the first or second half of the year	1=first half (Q1 or Q2) 2=second half (Q3 or Q4)
HorizontalTileId	DlInstrumentTeamGridDimension	The horizontal tile ID value	
HourNumberInDay	DlDatetimeDimension	The hour of the day	0 through 23
identifierObjectType	DlIdentifier	The name or type of the DPL database object for which the DlIdentifier row exists.	
identifierPad1	DlIdentifier	One of seven columns of type char(255) used to pad each row in the DlIdentifier table to the 2K page size.	
identifierPad2	DlIdentifier	One of seven columns of type char(255) used to pad each row in the DlIdentifier table to the 2K page size.	
identifierPad3	DlIdentifier	One of seven columns of type char(255) used to pad each row in the DlIdentifier table to the 2K page size.	
identifierPad4	DlIdentifier	One of seven columns of type char(255) used to pad each row in the DlIdentifier table to the 2K page size.	

Table 3-60. Column Descriptions (8 of 17)

Column Name	Table	Column Description	Valid Values
identifierPad5	DlIdentifier	One of seven columns of type char(255) used to pad each row in the DlIdentifier table to the 2K page size.	
identifierPad6	DlIdentifier	One of seven columns of type char(255) used to pad each row in the DlIdentifier table to the 2K page size.	
identifierPad7	DlIdentifier	One of seven columns of type char(255) used to pad each row in the DlIdentifier table to the 2K page size.	
identifierType	DlIdentifier	The data type of the identifier for which the DlIdentifier row exists.	
inputFile	DlCartOrderItem	File in datapool archive to process	
insertDate	DlCartOrder	When order was first inserted	
insertEnabledFlag	DlThemes	Flag used to determine whether granules from this collection are eligible for publication in the Data Pool.	Y – allow Data Pool insert (default) N – do not allow Data Pool insert
insertTime	DlThemes DlGranuleTiles	The time which the row inserted.	
insQueueId	DlInsertActionQueue	Uniquely identifies the queue entry	
instrumentName	DlPlatInstrCode DlNOSELookup	The name of an instrument for the platform.	
	DlWebAccessLog	IP Address of the user	
	DlCartOrderItem DlCartOrderItemBand	Unique Identifier for an item in the Cart.	
	DlDatetimeDimension	Indicates whether or not this is the last day of the month	'Y'=last day of month, 'N'=not the last day
	DlDatetimeDimension	Indicates whether or not this is the last day of the week	'Y'=last day of week, i.e. Saturday; 'N'=not the last day

Table 3-60. Column Descriptions (9 of 17)

Column Name	Table	Column Description	Valid Values
	DlIdentifier	The next available uniqueness identifier available of type ID for a specific IdentifierObjectType	
lastIntIdentifier	DlIdentifer	The next available uniqueness identifier available of type integer for a specific IdentifierObjectType.	
lastSmallintIdentifier	DlIdentifier	The next available uniqueness identifier available of type smallint for a specific IdentifierObjectType.	
lastUpdate	DlESDTCurrentDensityMap DlThemes	The time which the row last updated.	
lastUpdatedUtility	DlESDTCurrentDensityMap	The utility that last updated the density map	C – cleanup utility D – density map utility U – unknown
LessOrEqualTo	DlCloudCoverDimension	Band upper bound	
lr_lat	DlCartOrderItem	Lower right latitude	
lr_lon	DlCartOrderItem	Lower right longitude	
maxDayKey	DlFactTemporalRange	Maximum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type day.	
maxMnthKey	DlFactTemporalRange	Maximum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type month.	
maxWeekKey	DlFactTemporalRange	Maximum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type week.	
maxYearKey	DlFactTemporalRange	Maximum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type year.	

Table 3-60. Column Descriptions (10 of 17)

Column Name	Table	Column Description	Valid Values
MeasuredParamId	DlGranuleMeasuredParamBridge DlMeasuredParameterDimension	An identifier representing a measured parameter	
minDayKey	DlFactTemporalRange	Minimum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type day.	
minMnthKey	DlFactTemporalRange	Minimum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type month.	
minWeekKey	DlFactTemporRange	Minimum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type week.	
minYearKey	DlFactTemporalRange	Minimum temporal key for granule base on temporal range from DlDimensionTemporal with temporal type year.	
misrCameraId	DlOrbitCalculatedSpatial	SensorShortName for a MISR granule.	
misrOrbitNumber	DlOrbitCalculatedSpatial	Orbit number for a MISR granule.	
misrProductVersion	DlOrbitCalculatedSpatial	ProductVersion PSA for a MISR granule.	
monthKey	DlDimensionTemporal	Null if temporalType is Y or M. If temporalType is W or D, this field is used to cross reference this row to its corresponding month row in this table; i.e., this field contains the value of temporalKey for the row where temporalType is M, and this day or week is within that month.	
MonthName	DlDatetimeDimension	Name of a month	e.g. “January”, “October”, etc.
MonthNumberInEpoch	DlDatetimeDimension	Number of months elapsed since starting date	1=January, 1970; then increasing by 1 for each month thereafter

Table 3-60. Column Descriptions (11 of 17)

Column Name	Table	Column Description	Valid Values
MonthNumberInYear	DlDatetimeDimension	The month number within the year	1= January, etc. 12=December
name	DlThemes	The theme name.	
NominalCoverageRule	DlCollections	The rule used to derive the target directory name for a collection with nominal granule coverage.	
notes	DlCartOrder	Notes from operator on status of order	
number	DlStatESDT DlStatGroupESDT DlStatTheme	The total number of granules which the collection group, collection or theme contains.	
objectId	DlCartOrderItemBand	Unique identifier for a HDF-EOS object	
OperationalQualityFlag	DlMeasuredParameter	Operational quality flag value for a measured parameter.	
OperationalQualityFlagExplan	DlMeasuredParameter	Explanation for the operational quality flag.	
Orbit	DlOrbitPolygons	A polygon type representation of an orbit spatial coverage.	
orderId	DlCartOrder DlCartOrderItem	Order id which the item belongs.	
outputFmt	DlCartOrderItem	Output map projection for file	
outputProj	DlCartOrderItem	Output format for file – hdfeos/geotiff	
ParameterName	DlMeasuredParameter DlQAUpdTempBcp DlQAUpdFlagTemp DlMeasuredParamDimension	Name of a measured parameter for a granule	
PathNo	DlDimensionPolygonXref DlOrbitPolygons DlOrbitCalculatedSpatial	Orbit number.	
platformShortName	DlPlatInstrCode DlNOSELookup	The short name of a platform.	
platInstrCode	DlPlatInstrCode DlOrbitPolygons DlOrbitCalculatedSpatial DlDimensionPolygonXref	A code identifying a particular platform and instrument.	

Table 3-60. Column Descriptions (12 of 17)

Column Name	Table	Column Description	Valid Values
preConvertEnabledFlag	DlThemes	A flag to indicate whether the data should be converted to GeoTiff format prior to inserting the granule into the data pool.	Y – yes (pre-convert) N – no (don't pre-convert)
projParamStr	DlCartOrderItem	List of projection parameters.	
projectionId	DlHEGExceptions	Identifier for HEG projection	
qaCode	DlDimensionScienceQA DlDimensionMPScienceQAXref	Uniquely Identifies a value of the Science QA flag	
qaDescription	DlDimensionMP DlDimensionScienceQA	The description for the key and the value.	
qaExplValue	DlQAUpdFlagTemp DlQAUpdTempBcp	The value for Quality Flag Explan.	
qaFlagType	DlQAUpdFlagTemp DlQAUpdTempBcp	Either ScienceQualityFlag or OperationalQualityFlag	Valid values: ScienceQualityFlag OperationalQualityFlag
qaKey	DlDimensionMP DlDimensionMPScienceQAXref DlFactQA	Uniquely Identifies a measured parameter or the value of the Science QA flag	
qaNameKey	DlDimensionMPScienceQAXref	This field contains the value of qaKey for the corresponding measured parameter.	
QAPercentCloudCover	DlMeasuredParameter	The quality percentage for cloud cover.	
QAPercentInterpolatedData	DlMeasuredParameter	The quality percentage for Interpolated data.	
QAPercentMissingData	DlMeasuredParameter	The quality percentage for missing data.	
QAPercentOutOfBoundsData	DlMeasuredParameter	The quality percentage for OutOfBounds data.	
qaValue	DlDimensionMP DlQAUpdFlagTemp DlDimensionScienceQA DlQAUpdTempBcp	The value for the parameter	Actual value of ScienceQualityFlag or OperationalQualityFlag
Quarter	DlDatetimeDimension	The number of the quarter in the year	1=Q1 (Jan-Mar), etc.

Table 3-60. Column Descriptions (13 of 17)

Column Name	Table	Column Description	Valid Values
realName	DlCartOrder	User's real name	
RetentionPriority	DlUpdGranulesTemp	Retention Priority for a granule, uses to indicate how long that a granule is retained in Data Pool.	Valid values between 1 and 255
ScienceQualityFlag	DlMeasuredParameter DlMeasuredParamDimension	ScienceQuality Flag for a measured parameter	
ScienceQualityFlagExplan	DlMeasuredParameter	Explanation of the Science Quality Flag	
SequenceNo	DlDimensionPolygonXref DlOrbitPolygons	The sequence of the polygon for a MISR orbit granule.	
serviceRequested	DlThemes	The OWS services for which a granule is registered.	M (registered with WMS), C (registered with WCS), B (registered with both WMS and WCS), null (not registered)
ShortName	DlBulkWrkTable DlNOSELookup DlCollectionDimension	ECS collection short name	
size	DlStatESDT	The total size of all granules for the collection.	
sizeMB	DlFactTemporalRange	The granule size in MB	
SizeMB	DlGranuleFact	The granule size in MB	
spatialKey	DlDimensionSpatialT6All DlDimensionPolygonXref	Uniquely identifies a geographical location tile.	
SpatialType	DlCollectionDimension	Used by the webaccess GUI to determine how to implement spatial drilldowns	"instrument grid", "T6 grid", "orbit", "global", "inapplicable"
StartBlock	DlOrbitCalculatedSpatial	The ordinal number of the polygon where granule coverage starts. It points to the polygons covering this orbit in DlOrbitPolygons.	
state	DlFilesToBeDeleted	The status of cleaning up a granule.	0 – successfully deleted (default) 1 – not deleted

Table 3-60. Column Descriptions (14 of 17)

Column Name	Table	Column Description	Valid Values
status	DlCartOrder	The current status of the order	<NULL>- order just entered into system ENTERED - order ready for HEG processing PROCESSED – order processed by HEG PACKAGING - order is now being packaged DONE – order complete (user notified if necessary) FAILOPER – order failed – operator should be notified FAILOPERN - order failed – operator has been notified FAILED- order is failed – cannot retry
status	DlCartOrderItem	status (of individual file)	
subsetFlag	DlCartOrderItem	Flag uses to indicate whether the order requires subsetting.	
temporalBeginDate	DlDimensionTemporal	The beginning time for the date range	
temporalEndDate	DlDimensionTemporal	The ending time for the date range	
temporalKey	DlDimensionTemporal	Uniquely Identifies a date range bin	
temporalType	DlDimensionTemporal	Identifies the type of key.	D – Day W – Week M – Month Y – Year
themeDescription	DlThemes	Description of theme	
themeId	DlThemes DlGranuleThemeXref DlStatTheme	The unique ID that identifies a data pool theme.	

Table 3-60. Column Descriptions (15 of 17)

Column Name	Table	Column Description	Valid Values
tile	DlDimensionSpatialT6All	The index for the geographical location	
TileCount	DlTileGroupDimension	The number of tiles in the tile group	
TileGroupId	DlGranuleFact DlTileGroupBridge DlTileGroupDimension	Identifier for a tile group	
TileGroupMD5Digest	DlTileGroupDimension	The MD5 digest of the tile IDs associated with a tile group	For example, “2,3,5,8” means the tile group is associated with the tiles 2, 3, 5, and 8
TileId	DlTileGroupBridge	A tile id referring to a tile number in a DlGranuleTiles tiles array	
TilePolygon	DlInstrumentTeamGridDimension	A gpolygon that defines the spatial area of a tile	
tiles	DlGranuleTiles	The HEX representation of the list of spatial keys for a granule.	
timeOfDayBeginTime	DlDimensionTimeOfDay	The beginning time of the period	
timeOfDayEndTime	DlDimensionTimeOfDay	The ending time of the period	
timeOfDayKey	DlDimensionTimeOfDay DlFactTimeOfDay	Uniquely identifies periods of the day	
timeOfDayType	DlDimensionTimeOfDay	Type that is used to describe a period of the day.	1 – One hour 3 – 30 minutes 4 – Four hours D – Day H – Half day
timestamp	DlCartOrder	last update time/date	
todFourHourKey	DlDimensionTimeOfDay	Null if timeOfDayType is D, H, 0r 4. If timeOfDayType is 1 or 3, this field is used to cross reference this row to its corresponding 4-hour row in this table; i.e., this field contains the value of timeOfDayKey for the row where timeOfDayType is 4, and the time range for that 4 hour row contains the time range for this row.	

Table 3-60. Column Descriptions (16 of 17)

Column Name	Table	Column Description	Valid Values
todHalfDayKey	DlDimensionTimeOfDay	Null if timeOfDayType is D or H. If timeOfDayType is 1, 3 or 4, this field is used to cross reference this row to its corresponding halfday row in this table; i.e., this field contains the value of timeOfDayKey for the row where timeOfDayType is H, and the time range for that half day row contains the time range for this row.	
todHourKey	DlDimensionTimeOfDay	Null if timeOfDayType is D, H, 4, or 1. If timeOfDayType is 3, this field is used to cross reference this row to its corresponding hour row in this table; i.e., this field contains the value of timeOfDayKey for the row where timeOfDayType is 1, and the time range for that hour row contains the time range for this row.	
ul_lat	DlCartOrderItem	upper left latitude	
ul_lon	DlCartOrderItem	upper left longitude	
versionNumber	DlGranules DlBrowse DlRestoreOlaFilesFromTape DlRestoreTapeFilesFromOla	The suffix used to rename the root filename in case of duplicates.	
VerticalTileId	DlInstrumentTeamGridDimension	Identifier for a vertical tile	
webVisibleFlag	DlThemes	Flag use to determine whether granules from this theme are eligible for web drill down in Data Pool.	Y – allow Data Pool Web Drill Down N – do not allow Data Pool Web Drill Down

Table 3-60. Column Descriptions (17 of 17)

Column Name	Table	Column Description	Valid Values
WeekdayIndicator	DlDatetimeDimension	Indicates whether a day is a weekday or not	'Y'= weekday 'N'=weekend day
WeekEndingDate	DlDatetimeDimension	The first Saturday on or after this datetime	
WeekNumberInEpoch	DlDatetimeDimension	The number of weeks elapsed since 1/1/1970	1=week of 1/1/70 and then incrementing by 1 each week thereafter
WeekNumberInYear	DlDatetimeDimension	The week number within a year	1=first week of the year, etc.
weekKey	DlDimensionTemporal	Null if temporalType is Y, M, or W. If temporalType is D, this field is used to cross reference this row to its corresponding week row in this table; i.e., this field contains the value of temporalKey for the row where temporalType is W, and this day is within that week.	
xmlUpdateFlag	DlQAUpdTempBcp DlQAUpdFlagTemp	Flag uses to determine whether the XML file had updated.	Valid Values will be 'Y' or 'N'
Year	DlDatetimeDimension	The four-digit year	
yearKey	DlDimensionTemporal	Null if temporalType is Y. If temporalType is M, W, or D, this field is used to cross reference this row to its corresponding year row in this table; i.e., this field contains the value of temporalKey for the row where temporalType is Y, and this day, week, or month is within that year.	
YearMonth	DlDatetimeDimension	The four-digit year followed by '-' followed by the two-digit zero-padded month number	e.g. "2009-06"
YearQuarter	DlDatetimeDimension	The four-digit year followed by '-' followed by the quarter number	e.g. "2009-4"

3.1.4 Domains

Sybase supports the definition of specific data types, domains, to further limit the format of data for given column. There are no domains defined for Data Pool.Rules.

Sybase supports the definitions of rules. Rules provide a means for enforcing domain constraints on a given column.

Rule Name	Description
RetentionPriority	Value of retentionPriority is between 1 and 255.
ParameterType	Value for Parameter type column in DlConfig table. The valid values are “I”, “C”, “F”.
fileType	Valid values are “SCIENCE”, “METADATA”, and “BROWSE”, and “BROWSELINK”.
gridLevel	Valid values are between 1 and 6.
sourceType	Valid values are “P” and “C”
exceptionType	Valid values are “W”, “E”
processingState	Valid values are “converted”, “indexed”, “published”
serviceRequested	Valid values are M (registered with WMS), C (registered with WCS), B (registered with both WMS and WCS), null (not registered)

3.1.5 Defaults

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

Column Default	Default Value
gridLevel	6
required	N
lastUpdate	getdate()

3.1.6 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. DataPool uses view, EMSDistFTP, for EMS extract processing, as shown in Figure 3-2a. DlMisrProcessingCriteria, formerly a table in the database, was moved to the Inventory database and exists now as a view, as shown in Figure 3-2b.

EMSDistFTP_View	
Object Type	View

Columns

NAME	Datatype	Null
dbId	ID	No
age	int	Yes
fileSize	numeric(16,0)	No
fileType	varchar(10)	No
accessTime	varchar(18)	Yes
ecsId	ID	Yes
transferTime	int	Yes
ipAddress	varchar(15)	No
fileName	varchar(255)	Yes
ShortName	varchar(8)	No
VersionId	tinyint	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
EMSgroup					Y	

Dependencies

Referenced Objects

Object Name	Object Type
DlGranuleAccess	TABLE
ID	USER DATATYPE

Figure 3-2a. DataPool View for EMS Extract Processing

DlMisrProcessingCriteria	
Object Type	View

Columns

NAME	Datatype	Null
ShortName	char(8)	No
VersionId	tinyint	No
type	char(1)	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DsMdMisrProcessingCriteria	TABLE

Figure 3-2b. DataPool View for MISR Processing Criteria

DlBrowse	
Object Type	View

Columns

NAME	Datatype	Null
browseId	ID	Yes
externalId	varchar(80)	No
ecsId	ID	No
BrowseDescription	varchar(255)	No
ecsInsertTime	datetime	No
insertTime	datetime	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DAmBrowse	TABLE
DlAimDplBrowseXref	TABLE

Figure 3-2c. DataPool View for Browse Granules

DlBrowseFile	
Object Type	View

Columns

NAME	Datatype	Null
browseId	ID	Yes
fileName	varchar(255)	Yes
directoryPath	varchar(255)	Yes
fileType	varchar(10)	No
fileSize	numeric(16,0)	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..AmOnlineBrowseFile	TABLE
DlAimDplBrowseXref	TABLE

Figure 3-2d. DataPool View for Browse Granule Files

DlCloudCoverSource	
Object Type	View

Columns

NAME	Datatype	Null
cloudSourceId	ID	Yes
sourceName	varchar(40)	Yes
sourceDescription	varchar(255)	No
sourceType	char(1)	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlCloudCoverSource	TABLE

Figure 3-2e. DataPool View for Cloud Cover Source

DlCollectionGroup	
Object Type	View

Columns

NAME	Datatype	Null
groupId	char(12)	Yes
displayName	char(12)	Yes
CollGrpDescription	varchar(255)	No
ecsFlag	char(1)	Yes
insertTime	datetime	No
lastUpdate	datetime	No
orderOnlyGrpDirName	varchar(40)	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlCollectionGroup	TABLE

Figure 3-2f. DataPool View for Collection Groups

DlCollections	
Object Type	View

Columns

NAME	Datatype	Null
collectionId	ID	Yes
ShortName	char(8)	Yes
VersionId	tinyint	Yes
CollectionDescription	varchar(255)	No
groupId	char(12)	Yes
spatialSearchType	varchar(40)	Yes
exclusionSCFlag	char(1)	Yes
insertEnabledFlag	char(1)	Yes
convertEnabledFlag	char(1)	Yes
bulkExportedFlag	char(1)	Yes
insertTime	datetime	No
lastUpdate	datetime	No
qualitySummary	varchar(255)	No
fileSystemLabel	varchar(10)	Yes
compAlgorithmLabel	char(10)	No
moveFlag	char(1)	Yes
cloudSourceId	ID	No
Global	char(1)	Yes
dayNight	char(1)	Yes
twentyFourHr	char(1)	Yes
gridLevel	tinyint	Yes
orderOnlySNDirName	varchar(40)	No
orderOnlyFSLabel	char(10)	No
replacementOn	char(1)	Yes
GranPublicFlag	char(1)	No
PublicRetTime	int	No
PublicPriority	tinyint	No

NonECSFlag	char(1)	No
HiddenRetTime	int	No
NominalCoverageRule	varchar(40)	No
lastClMoveTime	Datetime	Yes
orderViewPH	char(1)	Yes
orderViewQA	char(1)	Yes
orderBrowse	char(1)	Yes
themePSAName	varchar(20)	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlCollection	TABLE
DlAimDplCollectionXref	TABLE

Figure 3-2g. DataPool View for Collections

DlConfig	
Object Type	View

Columns

NAME	Datatype	Null
parameterName	varchar(50)	Yes
parameterDescription	varchar(255)	No
parameterType	char(1)	Yes
intValue	int	No
charValue	varchar(255)	No
floatValue	float	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlConfig	TABLE

Figure 3-2h. DataPool View for Configuration parameters

DlFile	
Object Type	View

Columns

NAME	Datatype	Null
directoryPath	varchar(255)	Yes
fileName	varchar(255)	Yes
granuleId	ID	Yes
fileType	varchar(10)	No
fileSize	numeric(16,0)	No
origChksum	varchar(128)	No
compFileSize	numeric(16,0)	No
compAlgorithmLabel	char(10)	No
compChksum	varchar(128)	No
uncompChksum	varchar(128)	No
compTimeInSec	Int	No
uncompChksumTypeId	Tinyint	No
ChecksumOriginID	Tinyint	No
ChecksumLastVerified	Datetime	No
ChecksumVerificationStatus	char(1)	Yes
OriginalProviderChecksumTypeID	Tinyint	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..AmDataFile	TABLE
EcInDb..AmMetadataFile	TABLE
DlAimDplGranuleXref	TABLE

Figure 3-2i. DataPool View for data file information

DlFileSystems	
Object Type	View

Columns

NAME	Datatype	Null
fileSystemLabel	varchar(10)	Yes
absoluteFileSystemPath	varchar(255)	Yes
fileSystemPath	varchar(255)	No
freeSpaceMB	int	Yes
availabilityFlag	char(1)	Yes
availabilityFlagLastUpdate	datetime	No
freeSpaceFlag	char(1)	Yes
freeSpaceFlagLastUpdate	datetime	No
insertTime	datetime	Yes
insertStatus	varchar(30)	No
ingestStatus	varchar(30)	No
lastUpdate	datetime	No
fileSystemID	numeric(9)	Yes
consumedSpace	tinyint	No
freeSpaceChecked	datetime	No
freeSpaceGB	int	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlFileSystems	TABLE

Figure 3-2j. DataPool View for file system information

DlGranuleBrowseXref	
Object Type	View

Columns

NAME	Datatype	Null
granuleId	ID	Yes
browseId	ID	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..AmBrowseGranuleXref	TABLE
DlAimDplGranuleXref	TABLE
DlAimDplBrowseXref	TABLE

Figure 3-2k. DataPool View for Browse granule relationships

DlGranuleHdfObjectsXref	
Object Type	View

Columns

NAME	Datatype	Null
granuleId	ID	Yes
objectId	ID	Yes
bandId	ID	No
dimId	ID	No
fieldId	ID	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlGranuleHdfObjectsXref	TABLE

Figure 3-2l. DataPool View for Browse granule relationships

DlGranules

Object Type	View

Columns

NAME	Datatype	Null
granuleId	ID	Yes
externalId	varchar(80)	No
ecsId	ID	No
collectionId	ID	Yes
ShortName	char(8)	Yes
VersionId	tinyint	Yes
RangeBeginningDate	datetime	No
RangeBeginningTime	varchar(20)	No
RangeEndingDate	datetime	No
RangeEndingTime	varchar(20)	No
DayNightFlag	char(5)	No
sizeMB	float	No
ecsInsertTime	datetime	No
insertTime	datetime	No
lastUpdate	datetime	No
isOrderOnly	char(1)	No
versionNumber	int	No
archiveNeeded	char(1)	No
archiveTimeStamp	datetime	No
localGranuleId	varchar(80)	No
publishTime	datetime	No
granuleId	ID	Yes
expirationDate	datetime	Yes
retentionPriority	int	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies	
Referenced Objects	
Object Name	**Object Type**
EcInDb..AmGranule	TABLE
DlAimDplCollectionXref	TABLE
DlAimDplGranuleXref	TABLE

Figure 3-2m. DataPool View for Granule information

DlHEGExceptionCollXref		
Object Type	View	
Columns		
NAME	**Datatype**	**Null**
collectionId	ID	Yes
exceptionId	int	Yes

Privileges						
Object Name	**Delete**	**Execute**	**Insert**	**References**	**Select**	**Update**
datapool					Y	

Dependencies	
Referenced Objects	
Object Name	**Object Type**
EcInDb..DlHEGExceptionCollXref	TABLE
DlAimDplCollectionXref	TABLE

Figure 3-2n. DataPool View for HEG Exception relationships

DlHEGExceptions	
Object Type	View

Columns

NAME	Datatype	Null
exceptionId	int	Yes
formatId	int	No
projectionId	int	No
subsetId	int	No
resamplingId	int	No
subsamplingId	int	No
stitchingId	int	No
resolutionId	int	No
exceptionType	char(1)	No
message	varchar(255)	No

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHEGExceptions	TABLE
DlAimDplCollectionXref	TABLE

Figure 3-2o. DataPool View for HEG Exception information

DlHEGOptionCollXref	
Object Type	View

Columns

NAME	Datatype	Null
collectionId	ID	Yes
optionId	int	Yes
required	char(1)	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHEGOptionCollXref	TABLE
DlAimDplCollectionXref	TABLE

Figure 3-2p. DataPool View for HEG Option relationships

DlHEGOptionLabel	
Object Type	View

Columns

NAME	Datatype	Null
optionId	int	Yes
labelName	varchar(80)	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHEGOptionLabel	TABLE

Figure 3-2q. DataPool View for labels for HEG Options

DlHEGOptions	
Object Type	View

Columns

NAME	Datatype	Null
optionId	int	Yes
optionType	varchar(20)	Yes
optionName	varchar(80)	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHEGOptions	TABLE

Figure 3-2s. DataPool View for HEG Options

DlHdf4thDimensions	
Object Type	View

Columns

NAME	Datatype	Null
dimId	ID	Yes
dimName	varchar(255)	Yes
dimSize	int	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHdf4thDimensions	TABLE

Figure 3-2t. DataPool View for HDF 4th Dimension Configuration

DlHdfBands	
Object Type	View

Columns

NAME	Datatype	Null
bandId	ID	Yes
fieldName	varchar(255)	Yes
bandName	varchar(255)	Yes
bandSize	int	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHdfBands	TABLE

Figure 3-2u. DataPool View for HDF Band Configuration

DlHdfFields	
Object Type	View

Columns

NAME	Datatype	Null
fieldId	ID	Yes
fieldName	varchar(255)	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHdfFields	TABLE

Figure 3-2v. DataPool View for HDF Field Configuration

DlHdfObjects	
Object Type	View

Columns

NAME	Datatype	Null
objectId	ID	Yes
objectName	varchar(255)	Yes
objectType	varchar(60)	Yes

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
EcInDb..DlHdfObjects	TABLE

Figure 3-2w. DataPool View for HDF Object Configuration

DlQAFlagDimensionView	
Object Type	View

Columns

NAME	Datatype	Null
DimensionKey	Int	No
ParameterKey	Int	No
FlagKey	Tinyint	No
ParameterName	Varchar(80)	No
FlagValue	Varchar(40)	no

Privileges

Object Name	Delete	Execute	Insert	References	Select	Update
datapool					Y	

Dependencies

Referenced Objects

Object Name	Object Type
DlDimensionMPScienceQAXref	TABLE
DlDimensionMP	TABLE
DlDimensionScienceQA	TABLE

Figure 3-2x. DataPool View for QA Flag Information

3.1.7 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 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 can not be performed if a declarative constraint has been used. All declarative integrity constraints defined in the DPL database are described in Tables 3-61 through 3-71.

Table 3-61. Dependencies on Table: DlPlatInstrCode

Referenced by	Primary Key	Foreign Key
DlOrbitPolygons	platInstrCode	platInstrCode

Table 3-62. Dependencies on Table: DlDimensionSpatialT6All

Referenced by	Primary Key	Foreign Key
DlDimensionPolygonXref	spatialKey	spatialKey

Table 3-63. Dependencies on Table: DlDimensionTimeOfDay

Referenced by	Primary Key	Foreign Key
DlFactTimeOfDay	timeOfDayKey	timeOfDayKey

Table 3-64. Dependencies on Table: DlDimensionDayNight

Referenced by	Primary Key	Foreign Key
DlFactDayNight	dayNightKey	dayNightKey

Table 3-65. Dependencies on Table: DlDimensionGroupESDT

Referenced by	Primary Key	Foreign Key
DlFactGroupESDT	groupESDTKey	groupESDTKey

Table 3-66. Dependencies on Table: DlOrbitPolygons

Referenced by	Primary Key	Foreign Key
DlDimensionPolygonXref	platInstrCode	platInstrCode
DlDimensionPolygonXref	PathNo	PathNo
DlDimensionPolygonXref	SequenceNo	SequenceNo
DlOrbitCalculatedSpatial	platInstrCode	platInstrCode
DlOrbitCalculatedSpatial	PathNo	PathNo

Table 3-67. Dependencies on Table: DlThemes

Referenced by	Primary Key	Foreign Key
DlGranuleThemeXref	themeId	themeId

Table 3-68. Dependencies on Table: DlCartOrder

Referenced by	Primary Key	Foreign Key
DlCartOrderItem	orderId	orderId

Table 3-69. Dependencies on Table: DlDimensionMP

Referenced by	Primary Key	Foreign Key
DlDimensionMPScienceQAXref	qaKey	qaNameKey

Table 3-70. Dependencies on Table: DlDimensionScienceQA

Referenced by	Primary Key	Foreign Key
DlDimensionMPScienceQAXref	qaCode	qaCode

Table 3-71. Dependencies on Table: DlCartOrderItem

Referenced by	Primary Key	Foreign Key
DlCartOrderItemBand	itemId	itemId

3.1.8 Triggers

Sybase supports the enforcement of business policy via the use of triggers. A trigger is best defined as set of activities or checks that should be performed automatically by Sybase whenever a row is inserted, updated, or deleted from a given table. Sybase allows the definition of insert, update, and delete triggers for each table. Description of each of the triggers in the Data Pool database is given in Table 3-72. Trigger code may vary as new drops or test executables for Release 8.1 are installed into the implemented database. For this reason trigger code listings are no longer included in this documentation but may be reviewed on-line using the installed database.

Table 3-72. Trigger Listing

Table Code	Trigger Name	Trigger Type
DlBoundingRectangle	TrigUpdDlBoundingRectangle	Update
DlCartOrderItem	TrigUpdCartOrderStatus	Update
DlGPolygon	TrigUpdDlGPolygon	Update
DlGrCloudCover	TrigUpdDlGrCloudCover	Update
DlGranuleTiles	TrigUpdDlGranuleTiles	Update
DlMeasuredParameter	TrigInsMeasuredParameter	Insert
DlMeasuredParameter	TrigUpdMeasuredParameter	Update
DlOrbitCalculatedSpatial	TrigInsOrbitCalculatedSpatial	Insert
DlOrbitCalculatedSpatial	TrigUpdOrbitCalculatedSpatial	Update

3.1.9 Procedures

Sybase also includes support for business policy 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 policy 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 listing of each the stored procedures in the

Data Pool database is given here. A brief definition of each of these stored procedures follows in Table 3-73. Stored procedure code may vary as new drops or test executables for Release 8.1 are installed into the implemented database. For this reason stored procedure code listings are no longer included in this documentation but may be reviewed on-line using the installed database.

Table 3-74. Procedure Listing (1 of 5)

Name	Description
ProcGetDplGranuleXmlFileN	This procedure returns the directoryPath and xml filename for the specified granuleid.
ProcGetBrowseLinks	Insert into DlFilesToBeDeleted all links from browse granules that are associated with science granules that qualify for deletion.
ProcGetBrowseToDelete	Select all browse links from DlFilesToBeDeleted.
ProcGetDayNightKey	This procedure gathers the dayNightKey for a specific dayNight value.
ProcGetDayNightKeyMap	This procedure gathers the mapping of dayNightKey and dayNightKeyValue.
ProcGetDayNightSummary	This procedure gathers the counts of granules for each dayNightKey. All values of the dimension table are output.
ProcGetESDTSummary	This procedure gathers the counts of granules for each groupESDTKey given a groupKey
ProcGetGransByLimit	Insert into DlFilesToBeDeleted all files from granules which have expired and have priority less than a given limit.
ProcGetGranuleId	Retrieves the granuleId associated with a science file.
ProcGetGranules	Gathers the granule data associated with the all granuleId limited by max granule count.
ProcGetGroupESDTKeyMap	This procedure gathers the mapping of groupESDTKey and groupESDTValue.
ProcGetGroupESDTKeys	This procedure gathers the groupESDTKey for a specific collection.
ProcGetGroupSummary	Gathers the counts of granules for each groupKey
ProcGetMaxTemporalKeys	This procedure gathers the maximum set of temporal keys given a begin date and an end date.
ProcGetMaxTimeOfDayKeys	This procedure gathers the maximum set of time of day keys given a begin time and an end time.
ProcGetMinTemporalKeys	This procedure gathers the minimum set of temporal keys given a begin date and an end date.
ProcGetMinTimeOfDayKeys	This procedure gathers the minimum set of time of day keys given a begin date and an end date.
ProcGetMonthTemoralKey	This procedure gathers the temporalKey for a specific month.
ProcGetOverallSummaries	This procedure gathers the overall count, size in MB, and percent of the Datapool DB.
ProcGetQAKeys	This procedure gathers the qaKey for a specific QA parameter and it's science QA flag.

Table 3-74. Procedure Listing (2 of 5)

Name	Description
ProcGetQAParamValueKeyMap	This procedure gathers the mapping of qaKey and qaValue.
ProcGetQASummary	This procedure gathers the counts of granules for each qaKey.
ProcGetScienceAquisitionDateN	Return BeginningDateTime or EndingDateTime, if the former is not present, or NULL, if both are not present for the specified granule from DsMdGranules table in AIM database.
ProcGetTempDayNightSummary	This procedure gathers the counts of granules for each dayNightKey given a vector of granuleIds. All values of the dimension table are output
ProcGetTempESDTSummary	This procedure gathers the counts of granules for each groupESDTKey given a vector of granuleIds and a groupKey.
ProcGetTempGranules	This procedure gathers the granule data associated with the given vector of granuleIds.
ProcGetTempGroupSummary	This procedure gathers the counts of granules for each groupKey given a vector of granuleIds.
ProcGetTemporalSummary	This procedure gathers the counts of granules for each temporalKey given a vector of granuleIds and monthKey.
ProcGetTemporalSummaryESDT	This procedure gathers the counts of granules for each temporalKey given an ESDT.
ProcGetTemporalSummaryMkey	This procedure gathers the counts of granules for each temporalKey given a month key.
ProcGetTempOverallSummaries	This procedure gathers the overall count, size in MB, and percent of the Datapool DB for a vector of granuleIds.
ProcGetTempQASummary	This procedure gathers the counts of granules for each qaKey given a vector of granuleIds.
ProcGetTempTemporalSummary	This procedure gathers the counts of granules for each temporalKey given a vector of granuleIds and monthKey.
ProcGetTempTimeOfDaySummary	This procedure gathers the counts of granules for each timeOfDayKey given a vector of granuleIds.
ProcGetTimeOfDaySummary	This procedure gathers the counts of granules for each timeOfDayKey.
ProcTruncateTempGrans	Truncate DlTempGrans table.
ProcGetThemeId	Get themeId for a given theme name.
	Obtain summary information from the DlGranulesToBeUpdated temp table based on the status passed in.
ProcGetFilePath	Get xmlFileName based on the insQueueId that passed in.
ProcCartAddOrder	This procedure inserts a new order into the DlCartOrder table if there is room.
ProcCartAddOrderItem	This procedure inserts a new order item into the DlCartOrderItem table.
ProcCartHEGGetBands	This procedure gets HEG band info for a specified itemId.

Table 3-74. Procedure Listing (3 of 5)

Name	Description
ProcCartHEGGetNewWork	This procedure allows the HEG Frontend to look for new work.
ProcCartUpdateOrderItemStatus	This procedure updates the status field in the DlCartOrderItem table.
ProcCartUpdateOrderStatus	This procedure updates the status and notes field in the DlCartOrder table.
ProcGetBandsForGranule	This procedure returns a table of band information for a specified granuleId.
ProcGetCollectionId	This procedure returns the collectionId from DlCollections table.
ProcGetCollInsertEnabledFlag	This procedure returns the value of insertEnabledFlag from DlCollections table.
ProcGetOrderMgtConfig	This procedure gets order management operator config parameters
ProcGetScienceQAKey	This procedure returns the QA keys based on the specified parameter name and the QA flag.
ProcGetTempThemeSummary	This procedure gets count of granules grouped for each theme category given a vector of granuleIds.
ProcGetThemeKey	This procedure returns all theme key.
ProcGetThemeKeyMap	This procedure returns the value key map for theme search.
ProcGetThemeSummary	This procedure returns granule count for each theme.
ProcGetUniqueIDOutput	This procedure returns a unique DPL internal id as part of the output parameter based on the object type.
ProcIsEcsSCGranuleInDataPool	This procedure checks whether a record with the specified dbId exists in DlActiveInsertProcesses.
ProcGetDayNightFlagKey	This procedure returns the keys for day night search.
ProcIsSciGranGlobal	Retrieves the info to if the specified science granule is a global granule or not. The client code will implement the rules for global granules determination.
ProcMakeThemeRetroactive	This procedure associates all granules in the data pool which were previously inserted because of a subscription with theme that is now associated with that subscription.
ProcNumOfObjects	This procedure returns the tables, procedures, triggers and view count for the database.
ProcRemoveThemeXrefForThemes	This procedure removes all rows from DlGranuleThemeXref table for a specific theme ID as long as there is an associated entry in the DlFilesToBeDeleted table.
ProcSetXmlUpdFlag	This procedure updates xmlUpdateFlag to ‘Y’.
	This procedure checks whether the theme is enabled for DPL insert.
ProcUpdateDirectoryPath	This procedure modifies the directory path in DlFile by removing encryption-related characters.
ProcUpdateOrderMgtConfig	This procedure updates order management operator config parameters

Table 3-74. Procedure Listing (4 of 5)

Name	Description
ProcUpdateQa	This procedure updates the DlMeasuredParameter table for the ecsId with new science & operational QA value and explanation.
ProcDeleteCloudCover	This procedure deletes from the DlGrCloudCover table for all granules in DlFilesToBeDeleted.
ProcGetCloudCoverSummary	This procedure retrieves cloud cover information for all collections.
ProcPopulateOMSTmpGranfiles	This procedure populates the OMS #GRANFile for stored procedure OmInsBulkGranules in OMS database.
ProcPopulateOMSTmpGranules	This procedure populates granule information for OMS table #Granules in stored procedure OmInsBulkGranules in OMS database.
ProcCanRemoveBrowse	This procedure removes browse association for a specified granule.
	This procedure removes the browse granule for a specified granule.
ProcGetCloudCoverSourceInfo	This procedure retrieves cloud cover information for a specified ESDT.
ProcGetESDTsAvailability	This procedure checks the availability for the list of granules.
ProcGetESDTSkipFlags	This procedure returns the skip flags for a specified ESDT.
ProcGetOrbitIntersects	This procedure gets a list of spatialKey based on a search of DlDimensionPolygonXref.
ProcGetSpatialSummary	This procedure returns the density map for a specified ESDT.
ProcGetTempCloudCoverSummary	This procedure retrieves cloud cover information for an ESDT.
ProcGetTempSpatialSummary	This procedure returns the density map for a specified ESDT.
ProcInsertGranuleTiles	This procedure inserts spatial information for a granule.
ProcInsertGrCloudCover	This procedure inserts cloud cover information for a granule.
ProcUpdateCollectionGridLevel	This procedure returns the gridLevel for a specified ESDT.
ProcUpdateDlStatESDT	This procedure updates the DlStatESDT table.
ProcUpdateDlStatGroupESDT	This procedure updates the DlStatGroupESDT table.
ProcUpdateDlStatTheme	This procedure updates the DlStatTheme table.
ProcGetDplGranuleXmlFileN	This procedure returns the directoryPath and the xml filename for a specified granule.
ProcGetESDTSummaries	This procedure returns the total granule count and granule size for a specified ESDT.
ProcGetOrderedFiles	This procedure retrieves the ordered files.
ProcGetSpatialSummary	This procedure returns the density map for a specified ESDT.
ProcGetTimeOfDaySummary	This procedure retrieves the time of day summaries for a collection.

Table 3-74. Procedure Listing (5 of 5)

Name	Description
ProcInsDeletedGranByLimit	This procedure inserts the granules in the temp table base on the priority limit and expiration date.
ProcInsDeletedGranByTheme	This procedure inserts the granules in the temp table base on a theme.
ProcUpdOrderOnlyCollFileSys	This procedure updates the order only file System path mapping for a specified ESDT
ProcInsWebaccessTempTblByTheme	This procedure populates and maintains Webaccess temp table #myGranulesTable when theme name is selected and ESDT is not selected
ProcGetSpatialTypeByTheme	Selects collectionId, spatialSearchType for a given theme.
ProcInsSQSQueryTblByESDT	This procedure populates the temp table used by Webaccess SQS queries for a given collection.
ProcInsSQSQueryTblByTheme	This procedure populates the temp table used by Webaccess SQS queries for a given theme.
ProcInsWebaccessSQSQueryTbl	This procedure populate temp table used by Webaccess SQS query.
ProcInsWebaccessTempTable	This procedure populate and maintain Webaccess temp table #myGranulesTable
ProcInsWebaccessTempTblByESDT	This procedure populates and maintains Webaccess temp table #myGranulesTable
ProcLockGranule	Attempts to obtain a lock on a granule
ProcLockBrowse	Lock browse granules for cleanup
ProcGetCollSpatialType	Retrieves the SpatialType and GridName from DlCollectionDimension based on the collectionId
ProcInsertGrInstrumentTileFact	Insert MODIS granule with instrument tile information into DlGranuleFact table.
ProcInsertGrT6TileFact	Insert granule T6 tile group information into DlGranuleFact table.
ProcGetT6Granules	Gathers various information about a subset of granules.
ProcGetGranCountByEsdtAndTheme	This procedure gets the number of granules ta for a given ESDT and theme
ProcSetisOrderOnly	Changes the DlGranules.isOrderOnly flag so that the granule is no longer considered on order (B->null, Y->H) and return a string that states what the flag was changed to.
sp_thresholdaction	Action to take when crossing the threshold.
datawarning	Print warning message when data segment threshold is crossed.
logdump	Print message and dump the transaction log when log segment threshold is crossed.
logwarning	Print warning message when log segment threshold is crossed.

3.2 File Usage

There are cases when the implementation of a persistent data requirement is better suited to a flat file than to a database table. A typical example of such data is system configuration information. System configuration information is fairly static and usually has no explicit relationship to other data in the enterprise. Another common use of files in ECS is as an interface mechanism between ECS and the external world. Files utilized in Data Pool are described herein.

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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 Data Pool is provided in Table 4-1 Index Type Key. A list and 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) or DESC (descending) order

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

Table Code	Index Code	PK	FK	U	C
EcDbDatabaseVersions	EcDbDatabaseVersionsPkConstr	Yes	No	Yes	Yes
DlBoundingRectangle	xDlBoundingRectangle	No	No	No	Yes
DlBoundingRectangle	DlBoundingRectanglePk	Yes	Yes	Yes	No
DlCartOrder	DlCartOrderPkConstr	Yes	No	Yes	Yes
DlCartOrderItem	DlCartOrderItemPkConstr	Yes	No	Yes	Yes
DlCartOrderItemBand	DlCartOrderItemBandItemIdIdx	No	No	No	No
DlDimensionDayNight	DlDimensionDayNightPkConstr	Yes	No	Yes	Yes
DlDimensionGroupESDT	DlDimensionGroupESDTPkConstr	Yes	No	Yes	Yes
DlDimensionGroupESDT	DlDimensionGrpESDTgrpValueIdx	No	No	No	No
DlDimensionMP	DlDimensionMPPkConstr	Yes	No	Yes	Yes
DlDimensionMP	DlDimensionMPqaKeyqaValIdx	No	No	No	No

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

Table Code	Index Code	PK	FK	U	C
DlDimensionMP	DlDimensionMPqaValIdx	No	No	No	No
DlDimensionMPScienceQA Xref	DlDimMPScienceQAXrefPkConstr	Yes	No	Yes	Yes
DlDimensionMPScienceQA Xref	DlDimMPSCQAXrefqaNameKeyIdx	No	No	No	No
DlDimensionPolygonXref	DlDimensionPolygonXrefPkConstr	No	No	Yes	No
DlDimensionScienceQA	DlDimensionScienceQAPkConstr	Yes	No	Yes	Yes
DlDimensionSpatialT6All	DlDimensionSpatialIdx	No	No	No	Yes
DlDimensionSpatialT6All	DlDimensionSpatialT6PkConstr	Yes	No	Yes	No
DlDimensionTemporal	DlDimensionTemporalPkConstr	Yes	No	Yes	Yes
DlDimensionTemporal	DlDimensionTemporalTypeIdx	No	No	No	No
DlDimensionTimeOfDay	DlDimensionTimeOfDayPKConstr	Yes	No	Yes	Yes
DlESDTCurrentDensityMap	DlESDTCurrDensityMapPkConstr	Yes	No	Yes	Yes
DlESDTCurrentDensityMap	tDlESDTCurrentDensityMap	No	No	No	No
DlESDTCurrentDensityMap	DlESDTCurrDensityMapPkConstr	Yes	No	Yes	Yes
DlFactDayNight	DlFactDayNightPkConstr	Yes	No	Yes	Yes
DlFactDayNight	DlFactDayNightIdx	No	No	No	No
DlFactGroupESDT	DlFactGroupESDTPkConstr	Yes	No	Yes	Yes
DlFactGroupESDT	DlFactGroupESDTIdx	No	No	No	No
DlFactQA	DlFactQAPKConstr	Yes	No	Yes	Yes
DlFactQA	DlFactQAIdx	No	No	No	No
DlFactTemporalRange	DlFactTemporalRangePkConstr	Yes	Yes	Yes	Yes
DlFactTemporalRange	DlFactTemporalRangeCollMXDK	No	No	No	No
DlFactTemporalRange	DlFactTemporalRangeCollMXWK	No	No	No	No
DlFactTemporalRange	DlFactTemporalRangeCollMXMK	No	No	No	No
DlFactTemporalRange	DlFactTemporalRangeCollMXYK	No	No	No	No
DlFactTemporalRange	DlFactTemporalRangeCollSize	No	No	No	No
DlFactTemporalRange	idx_temporalrangecollidgranid	No	No	No	No
DlFactTimeOfDay	DlFactTimeOfDayPkConstr	Yes	No	Yes	No
DlFactTimeOfDay	DlFactTimeOfDayIdx	No	No	No	No
DlESDTCurrentDensityMap	DlESDTCurrDensityMapPkConstr	Yes	No	Yes	Yes
DlGPolygon	xDlGPolygon	No	No	No	Yes
DlGPolygon	DlGPolygonPk	Yes	Yes	Yes	No
DlGrCloudCover	DlCoudCoverPkConstr	Yes	Yes	Yes	Yes
DlGranuleThemeXref	DlGranuleThemeXrefPkConstr	Yes	Yes	Yes	Yes
DlGranuleThemeXref	idx_granthemexrefcollidthemeid	No	No	No	No
DlGranuleTiles	DlGranuleTilesCollInsTimeIdx	No	No	No	Yes
DlGranuleTiles	DlGranuleTilesPkConstr	Yes	Yes	Yes	No
DlIdentifier	DlIdentifierPkConstr	Yes	No	Yes	Yes
DlMeasuredParameter	DlMeasuredParameterPkConstr	Yes	Yes	Yes	Yes

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

Table Code	Index Code	PK	FK	U	C
DlNOSELookup	DlNOSELookupPkConstr	Yes	No	Yes	Yes
DlOrbitCalculatedSpatial	DlOrbitCalSpatialPk	Yes	No	Yes	Yes
DlOrbitCalculatedSpatial	DlOrbitCalSpatialGranuleIdx	No	No	No	No
DlOrbitPolygons	xDlOrbitPolygons	No	No	No	Yes
DlOrbitPolygons	DlOrbitPolygonsPkConstr	Yes	No	Yes	No
DlPlatInstrCode	DlplatInstrCodePkConstr	Yes	No	Yes	Yes
DlProcAttributes	PK_PROCATTRIBUTES	Yes	No	Yes	Yes
DlQAUpdFlagTemp	DlQAUpdFlagTempGranParmIdx	No	No	No	No
DlQAUpdTempBcp	DlQAUpdTempBcpEcsIdIdx	Np	No	No	No
DlStatTheme	idx_dlstatthemethemeid	No	No	No	No
DlThemes	DlThemePkConstr	Yes	No	Yes	Yes
DlThemes	DlThemesNameIdx	No	No	No	No
DlThemes	DlThemesConvSvcIdx	No	No	No	No
DlUpdGranulesTemp	DlUpdGransTempGranIdIdx	No	No	No	No
DlWebAccessLog	DlWebAccessLogIdx	No	No	No	Yes
DlThemes	DlThemePkConstr	Yes	No	Yes	Yes

4.2 Segments

Sybase supports the declaration of segments. A segment is a named pointer to a storage device(s). Segments are used to physically allocate a database object to a particular storage device. Segments defined for the Data Pool and all other subsystem databases are described in Table 4-3.

Table 4-3. Segment Descriptions

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

4.3 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 configurable item which is 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 is a named cache (dp_cache) that is currently defined for the Data Pool Subsystem database. Named caches may be defined as the memory usage of the Data Pool database becomes well known and the DAACs move into an operational environment.

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.

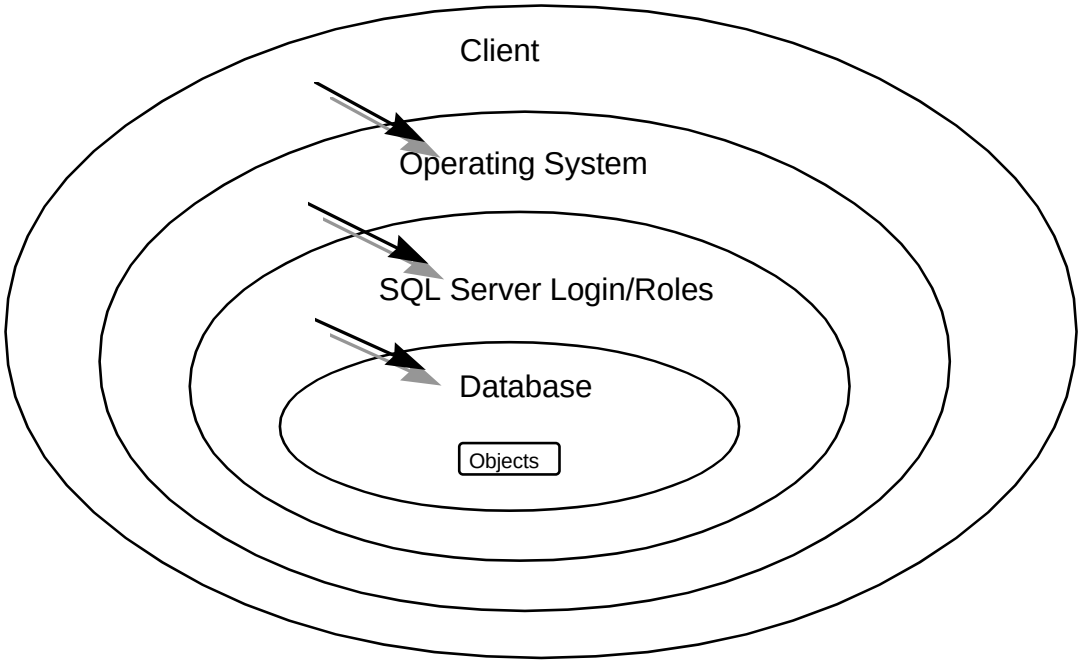

Figure 5-1. Sybase General Approach to SQL Server Security[1]

5.2 Users

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.

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

5.3 Groups

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 Data Pool Subsystem "default database. The DAACs should define database groups to support the database security requirements of their individual DAACs. Assigning each user to the appropriate group should control security for local DAAC users.

5.4 Roles

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.

5.5 Login/Group Object Permissions

During initial database installation logins used by the ECS custom code were created and permissions assigned for access to the Data Pool Subsystem database. In addition, special database installation login, dpl_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 Data Pool 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. Object Permissions (1 of 3)

Group Name	Group Users	Delete	Insert	Select	Update	Execute	Object Name
EMSgroup	EcDbEMSdataExtractor			X			DistFTP
EMSgroup	EcDbEMSdataExtractor			X			DlGranuleAccess

Table 5-2. Object Permissions (2 of 3)

Group Name	Group Users	Delete	Insert	Select	Update	Execute	Object Name
datapool	All	X	X	X	X		DlBoundingRectangle
datapool	All		X	X	X		DlCartOrder
datapool	All		X	X	X		DlCartOrderItem
datapool	All		X	X	X		DlCartOrderItemBand
datapool	All		X	X	X		DlDimensionDayNight
datapool	All		X	X	X		DlDimensionGroupESDT
datapool	All		X	X	X		DlDimensionMP
datapool	All		X	X	X		DlDimensionMPScienceQAXref
datapool	All	X	X	X	X		DlDimensionPolygonXref
datapool	All		X	X	X		DlDimensionScienceQA
datapool	All	X	X	X	X		DlDimensionSpatialT6All
datapool	All		X	X	X		DlDimensionTemporal
datapool	All		X	X	X		DlDimensionTimeOfDay
datapool	All	X	X	X	X		DlESDTCurrentDensityMap
datapool	All	X	X	X	X		DlFactDayNight
datapool	All	X	X	X	X		DlFactGroupESDT
datapool	All	X	X	X	X		DlFactQA
datapool	All		X	X	X		DlFactTemporalRange
datapool	All	X	X	X	X		DlFactTimeOfDay
datapool	All		X	X	X		DlFilesToBeDeleted
datapool	All	X	X	X	X		DlGPolygon
datapool	All		X	X	X		DlGrCloudCover
datapool	All	X	X	X	X		DlGranuleThemeXref
datapool	All	X	X	X	X		DlGranuleTiles
datapool	All		X	X	X		DlIdentifier
datapool	All		X	X	X		DlNOSELookup
datapool	All		X	X	X		DlOrbitCalculatedSpatial
datapool	All	X	X	X	X		DlOrbitPolygons
datapool	All		X	X	X		DlPlatInstrCode
datapool	All	X	X	X	X		DlQAUpdFlagTemp
datapool	All	X	X	X	X		DlStatESDT
datapool	All	X	X	X	X		DlStatGroupESDT
datapool	All	X	X	X	X		DlStatTheme
datapool	All	X	X	X	X		DlThemes
datapool	All	X	X	X	X		DlUpdGranulesTemp
datapool	All		X	X	X		DlWebAccessLog
datapool	All		X	X	X		EcDbDatabaseVersions
datapool	All					X	all stored procedures

Table 5-2. Object Permissions (3 of 3)

Group Name	Group Users	Delete	Insert	Select	Update	Execute	Object Name
nbgroup	All			X			DlBoundingRectangle
nbgroup	All			X			DlCartOrder
nbgroup	All			X			DlCartOrderItem
nbgroup	All			X			DlCartOrderItemBand
nbgroup	All			X			DlDimensionDayNight
nbgroup	All			X			DlDimensionGroupESDT
nbgroup	All			X			DlDimensionMP
nbgroup	All			X			DlDimensionMPScienceQAXref
nbgroup	All			X			DlDimensionPolygonXref
nbgroup	All			X			DlDimensionScienceQA
nbgroup	All			X			DlDimensionSpatialT6All
nbgroup	All			X			DlDimensionTemporal
nbgroup	All			X			DlDimensionTimeOfDay
nbgroup	All			X			DlESDTCurrentDensityMap
nbgroup	All			X			DlFactDayNight
nbgroup	All			X			DlFactGroupESDT
nbgroup	All			X			DlFactQA
nbgroup	All			X			DlFactTemporalRange
nbgroup	All			X			DlFactTimeOfDay
nbgroup	All			X			DlGPolygon
nbgroup	All			X			DlGrCloudCover
nbgroup	All			X			DlGranuleTiles
nbgroup	All			X			DlIdentifier
nbgroup	All			X			DlMeasuredParameter
nbgroup	All			X			DlNOSELookup
nbgroup	All			X			DlOMSGranules
nbgroup	All			X			DlOrbitCalculatedSpatial
nbgroup	All			X			DlOrbitPolygons
nbgroup	All			X			DlPlatInstrCode
nbgroup	All			X			DlThemes
nbgroup	All			X			DlUpdGranulesTemp
nbgroup	All			X			DlWebAccessLog
nbgroup	All			X			EcDbDatabaseVersions

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6. Scripts

6.1 Installation Scripts

Scripts used to support installation of the Data Pool Subsystem database are listed in Table 6-1.

Table 6-1. Installation Scripts

Script File	Description
EcDlDbBuild	Script used to build the DPL database from scratch.

6.2 De-Installation Scripts

Scripts used to support de-installation of the Data Pool Subsystem database are listed in Table 6-2.

Table 6-2. De-Installation Scripts

Script File	Description
DlDbDropSchema	Script used to delete all schema and data from database.

6.3 Backup and Recovery Scripts

Scripts developed to perform backup and recovery of the Data Pool Subsystem database are listed in Table 6-3. These scripts should be configured to run automatically using the Unix chron facility. It is recommended that, transaction logs dumps (incremental dumps) are performed a minimum of 3 times each day. It is recommended that database dumps (full database dumps) are performed a minimum of once each day. Backup and recovery are M&O activities. At their discretion, DAACs may modify these backup/recovery scripts or utilize backup/recovery scripts developed by their local M&O staff.

Table 6-3. Backup and Recovery Scripts

Script File	Description
EcCoDbSyb_DumpDb	Dumps all databases for managed by the SQL server instance.
EcCoDbSyb_DumpTran	Dumps the transaction log for all databases managed by the SQL server.

6.4 Miscellaneous Scripts

Miscellaneous scripts applicable to the Data Pool Subsystem database are shown in Table 6-4.

Table 6-4. Miscellaneous Scripts and Input Data Files

Script	Description
EcDdmMonitorServer	Monitors segment usage and user levels for a selected SQL server. Superseded by DbVision COTS.
EcDdmSegmentUse	Monitors segment usage. Used by EcDdmMonitorServer. Superseded by DbVision COTS.
EcDdmUserCounts	Monitors user access. Used by EcDdmMonitorServer. Superseded by DbVision COTS.
EcCoDbSyb_CkErrorLog	Checks the error log for error messages warranting DBO attention. Superseded by DbVision.
EcCoDbSyb_DbStat	Updates index statistics for each table in the selected database.
EcCoDbSyb_DboMail	Emails DBA error notification via e-mail. Used by EcCoDbSyb_DumpDb/Tran and EcCoDbSyb_CkErrorLog scripts.

Appendix A. Entity Relationship Diagram

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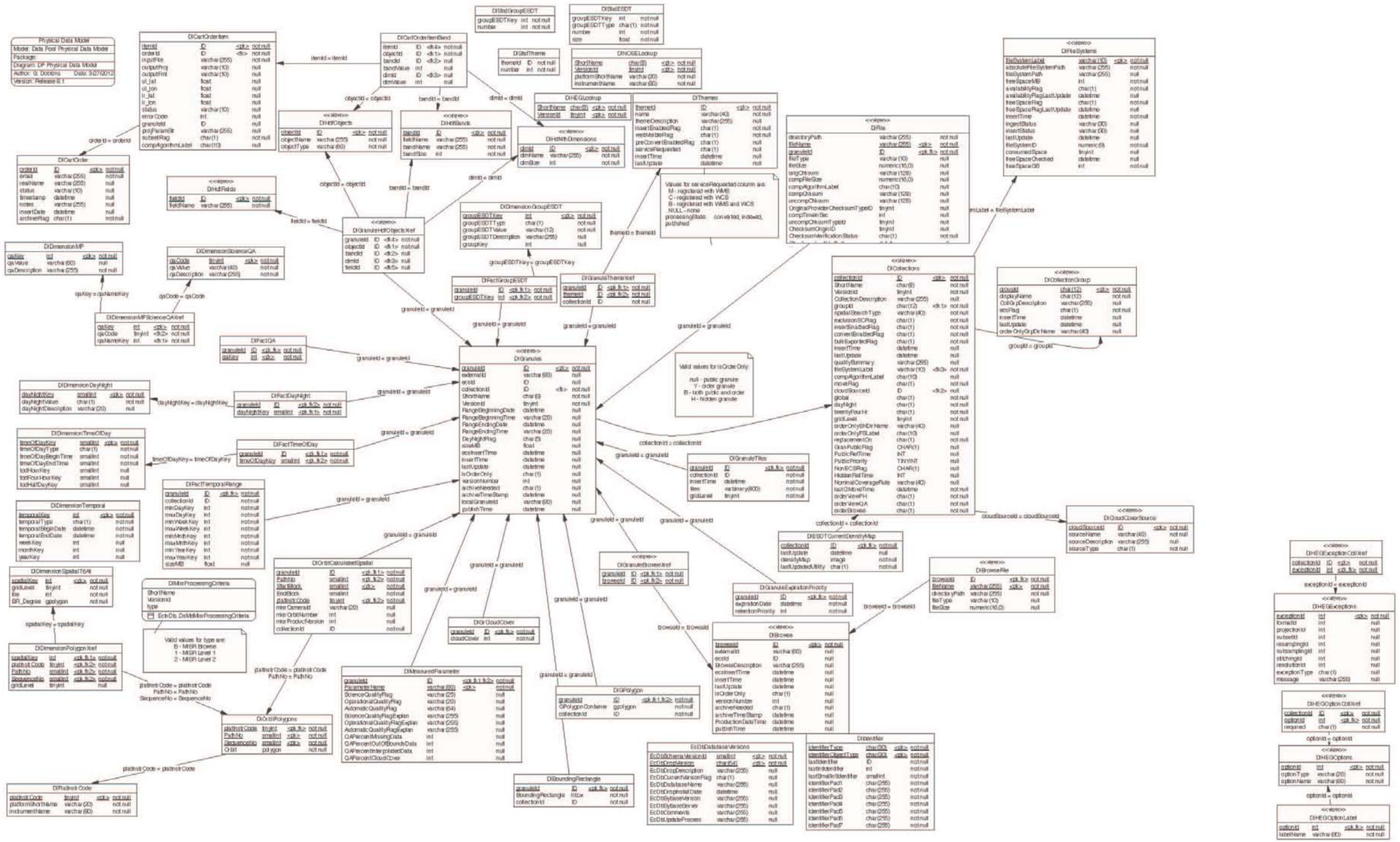

Figure A-1. Data Pool Inventory (1 of 2)

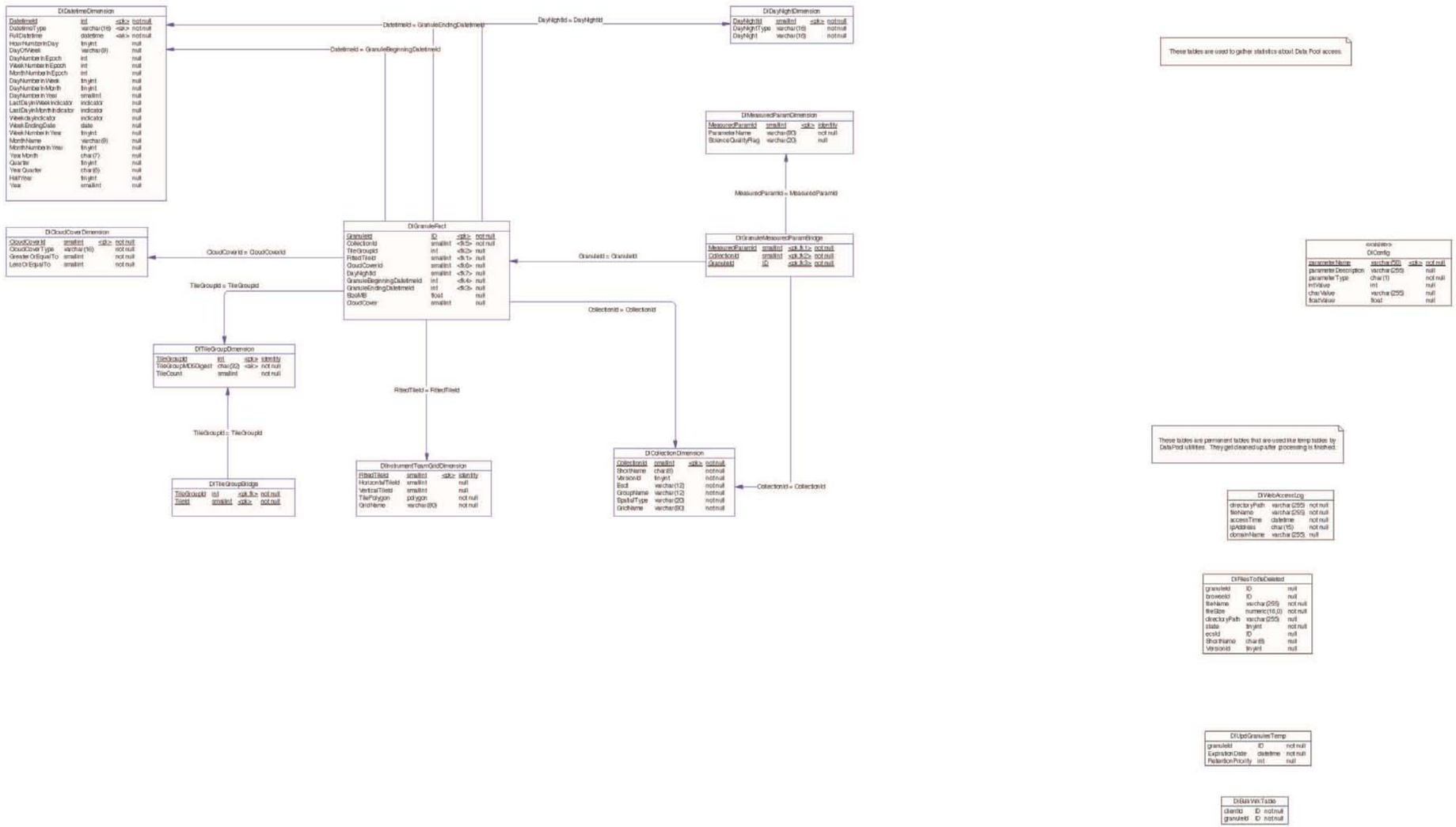

Figure A-1. Data Pool Inventory (2 of 2)

Abbreviations and Acronyms

ADSRV	Advertising Service CSCI
AIM	Archive Inventory Management
ANSI	American National Standards Institute
ASC	Ascending
BCP	Bulk Copy Utility
BMGT	Bulk Metadata Generation Tool
CASE	Computer Aided Software Engineering
CD	contractual delivery 214-001
CDRL	contract data requirements list
CDS	cell directory service
CI	configuration item
CONFIG	Configuration Registry Subsystem
COTS	commercial off-the-shelf (hardware or software)
CSCI	computer software configuration item
CSDT	Computer Science Data Type
CSMS	Communications and Systems Management Segment (ECS)
CSS	Communications Subsystem
DAAC	Distributed Active Archive Center
DESC	Descending
DBMS	Database Management System
DCN	Document Change Notice
DDICT	Data Dictionary CSCI
DDIST	Data Distribution Services CSCI
DDN	Data Delivery Notice
DID	data item description
DM	Data Management
DMS	Data Management Subsystem
DP	Data Provider

DPAD	Data Pool Action Driver
DPIU	Data Pool Insert Utility
DPL	Data Pool Subsystem
DPS	Data Processing Subsystem
DSS	Data Server Subsystem
ECS	EOSDIS Core System
EDC	EROS Data Center
EDHS	ECS Data Handling System
EDOS	EOS Data and Operations System
EOS	Earth Observing System
EOSDIS	Earth Observing System Data and Information System
ERD	Entity Relationship Diagram
EROS	Earth Resources Observation System
ESDIS	Earth Science Data and Information System (GSFC)
ESDT	Earth science data types
FK	Foreign Key
FTP	File Transfer Protocol
GIS	Geographic Information System
GSFC	Goddard Space Flight Center
GUI	graphic user interface
HTML	Hypertext Markup Language
HTTP	Hypertext Transport Protocol
HWCI	Hardware Configuration Item
ICD	interface control document
ID	identification
INGEST	Ingest Services CSCI
IOS	Interoperability Subsystem
IP	Internet Protocol
ISS	Internetworking Subsystem
IV&V	independent verification and validation
LaRC	Langley Research Center (DAAC)
MCF	Metadata Configuration File

MSFC	Marshall Space Flight Center
MSS	Management Support Subsystem
OGC	Open Geospatial Consortium
OLA	Online Archive
OWS	OGC Web Services
PDF	Portable Document Format
PDPS	Planning and Data Processing Subsystem
PK	Primary Key
PLANG	Production Planning CSCI
PLS	Planning Subsystem
RDBMS	Relational Data Base Management System
RPC	Remote Procedure Call
URL	Universal Reference Locator
WWW	World-Wide Web

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