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EOSDIS Core System Project

Release 6A.03
Systems Management Subsystem Database Design and Schema Specifications for the ECS Project

March 2001

Raytheon Company
Upper Marlboro, Maryland

Release 6A.03 Systems Management Subsystem Database Design and Schema Specifications for the ECS Project

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Preface

This document describes the data design and database specification for the Systems Management Subsystem. It is one of nine documents comprising the detailed database design specifications for each of the ECS subsystems.

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

311-CD-600-001	Release 6A.03 Data Management (DM) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-601-001	Release 6A.03 Ingest Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-602-001	Release 6A.03 Interoperability Subsystem (IOS) Database Design and Database Schema Specifications for the ECS Project
311-CD-603-001	Release 6A.03 Planning and Data Processing Subsystem (PDPS) Database Design and Database Schema Specifications for the ECS Project
311-CD-604-001	Release 6A.03 Science Data Server (SDSRV) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-605-001	Release 6A.03 Storage Management (STMGMT) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-606-001	Release 6A.03 Subscription Server (SUBSRV) Subsystem Database Design and Database Schema Specifications for the ECS Project
311-CD-607-001	Release 6A.03 Systems Management Subsystem (MSS) Database Design and Database Schema Specifications for the ECS Project
311-CD-608-001	Release 6A.03 Registry (REGIST) Database Design and Database Schema Specifications for the ECS Project

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

Entity Relationship Diagrams (ERDs) presented in this document has 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 (ECS) on the world wide web at http://edhs1.gsfc.nasa.gov.

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Abstract

This document outlines “as-built” database design and database schema of the Systems Management Subsystem 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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Change Information Page

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Contents

Preface

Abstract

Change Information Page

1. Introduction

1.1 Identification 1-1
1.2 Scope 1-1
1.3 Purpose 1-1
1.4 Audience 1-1

2. Related Documents

2.1 Applicable Documents 2-1
2.2 Information Documents 2-2

3. Data Design

3.1 Database Overview 3-1
3.1.1 Physical Data Model Entity Relationship Diagram 3-1
3.1.2 Tables 3-2
3.1.3 Columns 3-12
3.1.4 Column Domains 3-27
3.1.5 Rules 3-27
3.1.6 Defaults 3-28
3.1.7 Views 3-28
3.1.8 Integrity Constraints 3-28

3.1.9 Triggers 3-28
3.1.10 Stored Procedures 3-29
3.2 Flat File Usage 3-29
3.2.1 File Descriptions 3-29
3.2.2 Block Specifications 3-31
3.2.3 Field Specifications 3-32
3.2.4 Domain Definitions 3-33

4. Performance and Tuning Factors

4.1 Indexes 4-1
4.2 Segments 4-3
4.3 Caches 4-3

5. Database Security

5.1 Approach 5-1
5.2 Login/Group Object Permissions 5-3

6. Scripts

6.1 Installation Scripts 6-1
6.2 De-Installation Scripts 6-1
6.3 Backup and Recovery Scripts 6-1
6.4 Miscellaneous Scripts 6-2

7. Replication

7.1 Replication Overview 7-1
7.2 Replication Definitions 7-2
7.3 Replication Subscriptions 7-4
7.4 Replication Database Configuration 7-5
7.5 Replication Server Configuration 7-5

List of Figures

Figure 3-1. Sample ERD 3-1
Figure 5-1. Sybase General Approach to SQL Server Security 5-1

List of Tables

Table 3-1. Data Table Listing 3-2
Table 3-2. EcAcOrder 3-3
Table 3-3. EcAcOrderId 3-4
Table 3-4. EcAcRequest 3-4
Table 3-5. EcAcRequestId 3-6
Table 3-6. EcDbDatabaseVersions 3-6
Table 3-7. EcMsDAACSites 3-6
Table 3-8. MsAcAffiliationCode 3-7
Table 3-9. MsAcAsterCategory 3-7
Table 3-10. MsAcDAACCode 3-7
Table 3-11. MsAcInternetAffiliationCode 3-7
Table 3-12. MsAcMediaFormatCode 3-7
Table 3-13. MsAcMediaTypeCode 3-8
Table 3-14. MsAcOpPrivilege 3-8
Table 3-15. MsAcPriorityCode 3-8
Table 3-16. MsAcResearchFieldCode 3-8
Table 3-17. MsAcStatusCode 3-8
Table 3-18. MsAcUsrAudit 3-9
Table 3-19. MsAcUsrProfile 3-9
Table 3-20. MsAcUsrRequest 3-10
Table 3-21. role_to_cots 3-12
Table 3-22. Trigger Listing 3-28
Table 3-23. Procedure Listing 3-29

Table 3-24. Flat File Descriptions 3-30
Table 3-25. Flat File Block Descriptions 3-31
Table 3-26. Flat File Field Specifications 3-32
Table 3-27. Flat File Domain Definitions 3-33
Table 4-1. Index Type Key..... 4-1
Table 4-2. Index List..... 4-2
Table 4-3. Segment Descriptions..... 4-3
Table 5-1. Permission Key 5-3
Table 5-2. Group/Role Assignments..... 5-3
Table 5-3. Object Permissions..... 5-4
Table 6-1. Installation Scripts..... 6-1
Table 6-2. De-Installation Scripts..... 6-1
Table 6-3. Backup and Recovery Scripts..... 6-2
Table 6-4. Miscellaneous Scripts and Input Data Files 6-2

Appendix A. MSS ERDs

Abbreviations and Acronyms

.

1. Introduction

1.1 Identification

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

1.2 Scope

The MSS Accountability Database Design and Database Schema Specification document describes the data design and database specifications to support the data requirements of Release 6A.03 MSS software.

1.3 Purpose

The purpose of the MSS Accountability Database Design and Database Schema Specification document is to support the maintenance of MSS data and databases throughout the life cycle of ECS. This document communicates the database implementation in sufficient detail to support ongoing configuration management.

1.4 Audience

This document is intended to be used by ECS maintenance and operations staff. The document is organized as follows:

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

Section 2 provides a listing of the related documents, which were used as a source of information for this document.

Section 3 contains the MSS physical data model which is the database tables, triggers, stored procedures, and flat files usage.

Section 4 provides a description of database performance and tuning features such as indexes, caches, and segments.

Section 5 provides a description of the database security infrastructure used, the approach and a list of the users, login/group, and object permissions available upon initial installation.

Section 6 provides a description of database and database related scripts used for installation, de-installation, backup/recovery, and other miscellaneous functions.

Section 7 contains replication design, implementation details, and database/server configuration.

2. Related Documents

2.1 Applicable Documents

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

305-CD-600	Release 6A Segment Design Specification for the ECS Project
920-TDG-009	DAAC Hardware Database Mapping/GSFC
920-TDN-009	DAAC Hardware Database Mapping/NSIDC
920-TDE-009	DAAC Hardware Database Mapping/EDC
920-TDL-009	DAAC Hardware Database Mapping/LARC
920-TDS-009	DAAC Hardware Database Mapping/SMC
920-TDG-010	DAAC Database Configuration/GSFC
920-TDN-010	DAAC Database Configuration/NSIDC
920-TDE-010	DAAC Database Configuration/EDC
920-TDL-010	DAAC Database Configuration/LARC
920-TDS-010	DAAC Database Configuration/SMC
920-TDG-011	DAAC Sybase Log Mapping/GSFC
920-TDN-011	DAAC Sybase Log Mapping/NSIDC
920-TDE-011	DAAC Sybase Log Mapping/EDC
920-TDL-011	DAAC Sybase Log Mapping/LARC
920-TDS-011	DAAC Sybase Log Mapping/SMC
922-TDG-013	Disk Partitions/GSFC
922-TDN-013	Disk Partitions/NSIDC
922-TDE-013	Disk Partitions/EDC
922-TDL-013	Disk Partitions/LARC
922-TDS-013	Disk Partitions/SMC

These documents are maintained as part of the ECS baseline and available on the world wide web at the URL: http://cmdm.east.hitc.com/baseline. Please note that this is a partial mirror site in that some items are not available (they are identified) since this is OPEN to all. This site may also be reached through the EDHS homepage. Scroll page to the connection line and click on the ECS Baseline Information System link.

2.2 Information Documents

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

313-CD-600	Release 6A CSMS/SDPS Internal ICD for the ECS Project
609-CD-600	Release 6A Operations Tools Manual for the ECS Project
611-CD-600	Release 6A Mission Operation Procedures for the ECS Project

These documents are accessible via the EDHS homepage.

Advanced SQL Server Administration

3. Data Design

3.1 Database Overview

The MSS database implements the large majority of the persistent data requirements for the MSS Accountability Management Service CSC. 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 (DBMS). All components of the MSS 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 MSS physical data model. The ERDs presented here for the MSS database were produced using the Power Designor 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 arrows (see Figure 4-1).

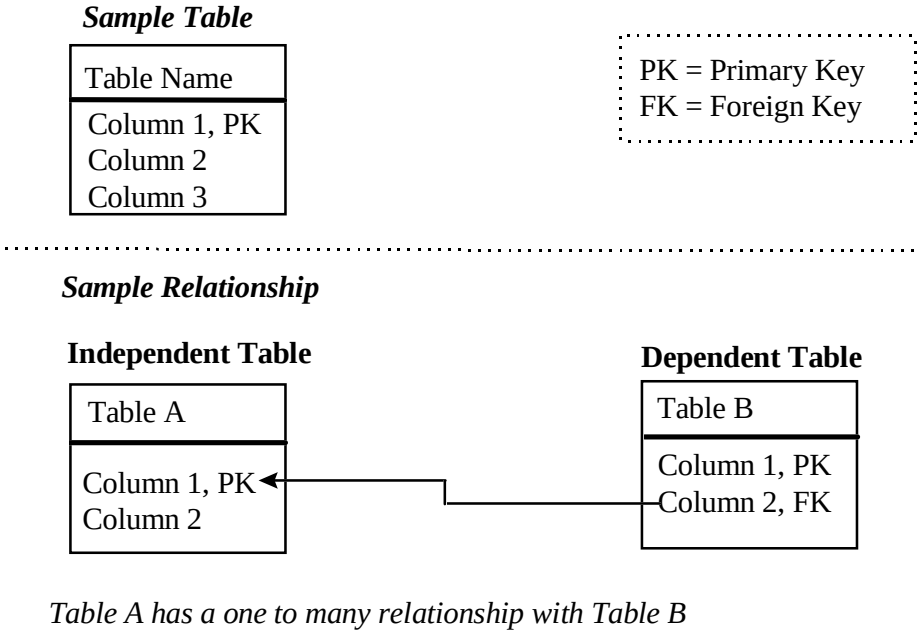

Figure 3-1. Sample ERD

The ERDs for the MSS database are found in the Appendix.

3.1.2 Tables

A listing of each of the tables in the MSS is given here. A brief definition of each of these tables follows including a listing of the columns comprising the table. The Column List indicates if the column is part of the primary key (PK) 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 column that must be included in every row.

Data requirements for MSS fall into five logical categories:

Order information - orders and requests placed for ECS products

Site information – information on the sites at which the database is housed

User Data – registered user information, user audit data, and user registration requests

Validation data – Domain definitions for codes used by MSS software

Versioning information – database schema version data

Table 3-1. Data Table Listing

Table Name	Contents	Logical Grouping
EcAcOrder	Order Information	Order Information
EcAcOrderId	Next available order ID	Order Information
EcAcRequest	Request Information	Order Information
EcAcRequestId	Next available request ID	Order Information
EcDbDatabaseVersions	The current schema version of the MSS database	Versioning Information
EcMsDAACSites	Information on the DAAC site-housing project database information	Site Information
MsAcAffiliationCode	Affiliation Codes	Validation Data
MsAcAsterCategory	Valid Aster categories	Validation Data
MsAcDAACCode	Valid DAAC shortnames	Validation Data
MsAcInternetAffiliationCode	Internet affiliation codes	Validation Data
MsAcMediaFormatCode	Valid media formats for an order	Validation Data
MsAcMediaTypeCode	Valid media type codes	Validation Data
MsAcOpPrivilege	Information that gives privilege to DAAC operators	Site Information
MsAcPriorityCode	Valid order/request priority codes	Validation Data
MsAcResearchFieldCode	Valid research field codes	Validation Data
MsAcStatusCode	Valid order/request status codes	Validation Data
MsAcUsrAudit	Auditing information	User Data
MsAcUsrProfile	User information	User Data
MsAcUsrRequest	User request information	User Data
role_to_cots	Role an operational user provides for a COTS package	User Data

Table 3-2 stores the end-user's order information. The data is used to fill and ship the request and to track the status of the order. An order can have many requests, and it may not be associated with a user in the MsAcUsrProfile table. (i.e. the order may 'belong' to a guest user). Data is stored indefinitely in the table.

Table 3-2. EcAcOrder (1 of 2)

Name	Code	Type	PK	Mandatory
abortedFlag	abortedFlag	char(1)	No	No
cancelledFlag	cancelledFlag	char(1)	No	No
darExpirationDateTime	darExpirationDateTime	datetime(8)	No	No
darId	darId	varchar(15)	No	No
emailAddr	eMailAddr	varchar(255)	No	No
externalRequestId	externalRequestId	varchar(10)	No	No
finishDateTime	finishDateTime	smalldatetime	No	No
firstName	firstName	varchar(20)	No	No
homeDAAC	homeDAAC	varchar(3)	No	No
lastName	lastName	varchar(20)	No	No
middleInit	middleInit	char(1)	No	No
orderDesc	orderDesc	varchar(50)	No	No
orderDistFormat	orderDistFormat	varchar(64)	No	No
orderGranule	orderGranule	numeric(9)	No	No
orderHomeDAAC	orderHomeDAAC	varchar(3)	Yes	Yes
orderId	orderId	varchar(10)	Yes	Yes
orderMedia	orderMedia	varchar(20)	No	No
orderPriority	orderPriority	varchar(10)	No	No
orderSource	orderSource	varchar(12)	No	No
orderStatus	orderStatus	varchar(30)	No	No
orderType	orderType	varchar(2)	No	No
ReceiveDateTime	receiveDateTime	smalldatetime	No	No
RpcId	rpcId	char(250)	No	No
ShipAddrCity	shipAddrCity	varchar(35)	No	No
ShipAddrCountry	shipAddrCountry	varchar(30)	No	No
ShipAddrFax	shipAddrFax	varchar(22)	No	No
ShipAddrPhone	shipAddrPhone	varchar(22)	No	No
ShipAddrState	shipAddrState	varchar(20)	No	No
ShipAddrStreet1	shipAddrStreet1	varchar(32)	No	No
ShipAddrStreet2	shipAddrStreet2	varchar(32)	No	No
ShipAddrStreet3	shipaddrstreet3	varchar(32)	No	No
Shipaddrzip	shipAddrZip	varchar(15)	No	No
Shipdatetime	shipDateTime	smalldatetime	No	No

Table 3-2. EcAcOrder (2 of 2)

Name	Code	Type	PK	Mandatory
StandingOrderId	standingOrderId	varchar(10)	No	No
StartDateTime	startDateTime	smalldatetime	No	No
TimeOfLastUpdate	timeOfLastUpdate	smalldatetime	No	No
Title	title	varchar(5)	No	No
UserId	userId	varchar(12)	Yes	Yes

Table 3-3 is used to generate the next orderId for the DAAC identified in the ECMSDAACSITES table. At any given time, there must be only one row in this table.

Table 3-3. EcAcOrderId

Name	Code	Type	PK	Mandatory
OrderId	orderId	numeric(10)	No	No

Table 3-4 stores the shipping and tracking data for an end-user's request. A user can place one or many requests for a given order.

Table 3-4. EcAcRequest (1 of 2)

Name	Code	Type	PK	Mandatory
DeleteRequestFlag	deleteRequestFlag	varchar(1)	No	Yes
DestinationDirectory	destinationDirectory	varchar(20)	No	No
DestinationNode	destinationNode	varchar(20)	No	No
DeviceDensity	deviceDensity	varchar(20)	No	No
DeviceId	deviceId	varchar(20)	No	No
EMailAddr	eMailAddr	varchar(255)	No	No
ESDT_Id	ESDT_Id	varchar(20)	No	No
FinishDateTime	finishDateTime	smalldatetime	No	No
FirstName	firstName	varchar(20)	No	No
FtpAddress	ftpAddress	varchar(128)	No	No
FtpPassword	ftpPassword	varchar(16)	No	No
LastName	lastName	varchar(20)	No	No
MediaQuantity	mediaQuantity	Numeric(3)	No	No

Table 3-4. EcAcRequest (2 of 2)

Name	Code	Type	PK	Mandatory
mediaType	mediaType	varchar(20)	No	No
middleInit	middleInit	char(1)	No	No
numBytes	numBytes	Float(15)	No	No
numFiles	numFiles	numeric(9)	No	No
numGranule	numGranule	numeric(9)	No	No
orderHomeDAAC	orderHomeDAAC	varchar(3)	No	Yes
orderId	orderId	varchar(10)	Yes	Yes
parentId	parentId	varchar(10)	No	No
receiveDateTime	receiveDateTime	smalldatetime	No	No
requestDesc	requestDesc	varchar(50)	No	No
requestDistFormat	requestDistFormat	varchar(64)	No	No
requestProcessingDAAC	requestProcessingDAAC	varchar(3)	Yes	Yes
requestId	requestId	varchar(10)	Yes	Yes
requestStatus	requestStatus	varchar(22)	No	No
requestType	requestType	varchar(2)	No	No
standingRequestId	standingRequestId	varchar(10)	No	No
requestPriority	requestPriority	varchar(10)	No	No
requestStatus	requestStatus	varchar(22)	No	No
shipAddrCity	shipAddrCity	varchar(35)	No	No
shipAddrCountry	shipAddrCountry	varchar(30)	No	No
shipAddrFax	shipAddrFax	varchar(22)	No	No
shipAddrPhone	shipAddrPhone	varchar(22)	No	No
shipAddrState	shipAddrState	varchar(20)	No	No
shipAddrStreet1	shipAddrStreet1	varchar(32)	No	No
shipAddrStreet2	shipAddrStreet2	varchar(32)	No	No
shipAddrStreet3	ShipAddrStreet3	varchar(32)	No	No
shipAddrZip	shipAddrZip	varchar(15)	No	No
shipDateTime	shipDateTime	Smalldatetime	No	No
startDateTime	startDateTime	Smalldatetime	No	No
tapeFormat	tapeFormat	varchar(20)	No	No
timeOfLastUpdate	timeOfLastUpdate	Smalldatetime	No	No
title	title	varchar(5)	No	No

Table 3-5 is used to generate the next requestId for the DAAC identified in the EcMsDAACSITES table. At any given time, there must be only one row in this table.

Table 3-5. EcAcRequestId

Name	Code	Type	PK	Mandatory
requestId	requestId	numeric(50)	No	Yes

Table 3-6 identifies the current version level of the MSS database

Table 3-6. EcDbDatabaseVersions

Name	Type	P	M
EcDbSchemaVersionID	Smallint	Yes	Yes
EcDbComments	Varchar(255)	No	No
EcDbCurrentVersionFlag	Char(1)	No	No
EcDbDatabaseName	Varchar(255)	No	No
EcDbDropDescription	Varchar(255)	No	Yes
EcDbDropInstallDate	Datetime	No	No
EcDbDropVersion	Char(64)	Yes	Yes
EcDbSybaseServer	Varchar(255)	No	No
EcDbSybaseVersion	Varchar(255)	No	No
EcDbUpdateProcess	Varchar(255)	No	No

Table 3-7 holds the database's DAAC ID, DAAC short, DAAC longname, Current DAAC Flag. This table **must** be the identifier of the DAAC at which the database is installed.

Table 3-7. EcMsDAACSites

Name	Code	Type	PK	Mandatory
DAAC_Id	DAAC_Id	char(2)	Yes	Yes
DAAC_long	DAAC_long	varchar(120)	No	Yes
DAAC_short	DAAC_short	char(10)	Yes	Yes
This_DAAC	This_DAAC	char(1)	No	Yes

Table 3-8 (not currently used) is a lookup table, it defines the list of user affiliations.

Table 3-8. MsAcAffiliationCode

Name	Code	Type	PK	Mandatory
AffiliationCode	AffiliationCode	varchar(16)	Yes	Yes
AffiliationDesc	AffiliationDesc	varchar(255)	No	No

Table 3-9 (not currently used) is a lookup table, it defines the list of Aster categories.

Table 3-9. MsAcAsterCategory

Name	Code	Type	PK	Mandatory
asterCategory	asterCategory	varchar(40)	No	No
asterCategoryId	asterCategoryId	numeric(2)	Yes	Yes

Table 3-10 (not currently used) is a lookup table, it list all the DAACs abbreviations and names.

Table 3-10. MsAcDAACCode

Name	Code	Type	PK	Mandatory
DAACAbbrv	DAACAbbrv	varchar(3)	Yes	Yes
DAACLongName	DAACLongName	varchar(255)	No	No
DAACShortName	DAACShortName	varchar(10)	No	Yes

Table 3-11 (not currently used) is a lookup table, it list all the internet affiliations.

Table 3-11. MsAcInternetAffiliationCode

Name	Code	Type	PK	Mandatory
InternetAffiliationCode	InternetAffiliationCode	varchar(14)	Yes	Yes
InternetAffiliationDesc	InternetAffiliationDesc	varchar(255)	No	No

Table 3-12 (not currently used) is a lookup table, it list all the available media format.

Table 3-12. MsAcMediaFormatCode

Name	Code	Type	PK	Mandatory
MediaFormatCode	MediaFormatCode	varchar(20)	Yes	Yes
MediaFormatDesc	MediaFormatDesc	varchar(255)	No	No

Table 3-13 (not currently used) is a lookup table, it list all the media type available.

Table 3-13. MsAcMediaTypeCode

Name	Code	Type	PK	Mandatory
MediaTypeCode	MediaTypeCode	varchar(20)	Yes	Yes
MediaTypeDesc	MediaTypeDesc	varchar(255)	No	No

Table 3-14 is a lookup table, it defines the list of operator privileges.

Table 3-14. MsAcOpPrivilege

Name	Code	Type	PK	Mandatory
userId	userId	varchar(12)	Yes	Yes
homeDAAC	homeDAAC	varchar(3)	No	Yes

Table 3-15 (not currently used) is a lookup table, it defines the list of user request priority levels.

Table 3-15. MsAcPriorityCode

Name	Code	Type	PK	Mandatory
PriorityCode	PriorityCode	varchar(10)	Yes	Yes
PriorityDesc	PriorityDesc	varchar(255)	No	No

Table 3-16 (not currently used) s is a lookup table, it defines the list of user research fields.

Table 3-16. MsAcResearchFieldCode

Name	Code	Type	PK	Mandatory
ResearchFieldCode	ResearchFieldCode	varchar(64)	Yes	Yes
ResearchFieldDesc	ResearchFieldDesc	varchar(255)	No	No

Table 3-17 (not currently used) is a lookup table, it defines the list order statuses.

Table 3-17. MsAcStatusCode

Name	Code	Type	PK	Mandatory
StatusCode	StatusCode	varchar(22)	Yes	Yes
StatusDesc	StatusDesc	varchar(255)	No	No

Table 3-18 is a lookup table, it defines the user audits.

Table 3-18. MsAcUsrAudit

Name	Code	Type	PK	Mandatory
userId	userId	varchar(12)	No	Yes
hostName	hostname	varchar(30)	No	Yes
activityType	activityType	varchar(20)	No	No
dateTime	DateTime	smalldatetime	No	No
location	location	varchar(20)	No	No
status	status	varchar(15)	No	No
program	program	varchar50)	No	No

Table 3-19 stores identifying, authenticating, and other data that is used by ECS servers to distribute data to registered users.

Table 3-19. MsAcUsrProfile (1 of 2)

Name	Code	Type	PK	Mandatory
accessPrivilege	accessPrivilege	Varchar(8)	No	No
affiliation	affiliation	varchar(16)	No	No
asterCategory	asterCategory	numeric(2)	No	No
billAddrCity	billAddrCity	varchar(35)	No	No
billAddrCountry	billAddrCountry	varchar(30)	No	No
billAddrFax	billAddrFax	varchar(22)	No	No
billAddrPhone	billAddrPhone	varchar(22)	No	No
billAddrState	billAddrState	varchar(20)	No	No
billAddrStreet1	billAddrStreet1	varchar(32)	No	No
billAddrStreet2	billAddrStreet2	varchar(32)	No	No
billAddrStreet3	billAddrStreet3	varchar(32)	No	No
billAddrZip	billAddrZip	varchar(15)	No	No
category	category	varchar(7)	No	No
creationDate	creationDate	smalldatetime	No	No
darExpeditedData	darExpeditedData	bit	No	Yes
ECSAuthenticator	ECSAuthenticator	varchar(32)	No	Yes
eMailAddr	eMailAddr	varchar(255)	No	No
expirationDate	expirationDate	smalldatetime	No	No
firstName	firstName	varchar(20)	No	Yes
GTWYUsrType	GTWYUsrType	varchar(20)	No	No
homeDAAC	homeDAAC	varchar(10)	No	Yes
internetAffiliation	internetAffiliation	varchar(14)	No	No

Table 3-19. MsAcUsrProfile (2 of 2)

Name	Code	Type	PK	Mandatory
lastName	lastName	varchar(20)	No	Yes
mailAddrCity	mailAddrCity	varchar(35)	No	No
mailAddrCountry	mailAddrCountry	varchar(30)	No	No
mailAddrFax	mailAddrFax	varchar(22)	No	No
mailAddrPhone	mailAddrPhone	varchar(22)	No	No
mailAddrState	mailAddrState	varchar(20)	No	No
mailAddrStreet1	mailAddrStreet1	varchar(32)	No	No
mailAddrStreet2	mailAddrStreet2	varchar(32)	No	No
mailAddrStreet3	mailAddrStreet3	varchar(32)	No	No
mailAddrZip	mailAddrZip	varchar(15)	No	No
middleInit	middleInit	char(1)	No	No
motherMaidenNam e	motherMaidenName	varchar(20)	No	No
nasaUser	nasaUser	char(1)	No	Yes
organization	organization	varchar(31)	No	No
privilegeLevel	privilegeLevel	varchar(10)	No	No
projectName	projectName	varchar(30)	No	No
researchField	researchField	varchar(64)	No	No
shipAddrCity	shipAddrCity	varchar(35)	No	No
shipAddrCountry	shipAddrCountry	varchar(30)	No	No
shipAddrFax	shipAddrFax	varchar(22)	No	No
shipAddrPhone	shipAddrPhone	varchar(22)	No	No
shipAddrState	shipAddrState	varchar(20)	No	No
shipAddrStreet1	shipAddrStreet1	varchar(32)	No	No
shipAddrStreet2	shipAddrStreet2	varchar(32)	No	No
shipAddrStreet3	shipAddrStreet3	varchar(32)	No	No
shipAddrZip	shipAddrZip	varchar(15)	No	No
title	title	varchar(5)	No	No
userId	userId	varchar(12)	Yes	Yes

Table 3-20 stores request for user registration. When a user places a request, the user must be approved first. If a user is approved, the user's data is copy into the MsAcUsrProfile, and deleted from this table, if it is denied, the user's data remains in this table until the operator deletes it.

Table 3-20. MsAcUsrRequest (1 of 2)

Name	Code	Type	PK	Mandatory
affiliation	affiliation	varchar(16)	No	No
accessPrivilege	accessPrivilege	Varchar(8)	No	No
billAddrCity	billAddrCity	varchar(35)	No	No
billAddrCountry	billAddrCountry	varchar(30)	No	No

Table 3-20. MsAcUsrRequest (2 of 2)

Name	Code	Type	PK	Mandatory
billAddrFax	billAddrFax	varchar(22)	No	No
billAddrPhone	billAddrPhone	varchar(22)	No	No
billAddrState	billAddrState	varchar(20)	No	No
billAddrStreet1	billAddrStreet1	varchar(32)	No	No
billAddrStreet2	billAddrStreet2	varchar(32)	No	No
billAddrStreet3	BillAddrStreet3	varchar(32)	No	No
billAddrZip	billAddrZip	varchar(15)	No	No
category	category	varchar(7)	No	No
creationDate	creationDate	smalldatetime	No	No
eMailAddr	eMailAddr	varchar(255)	No	No
expirationDate	expirationDate	smalldatetime	No	No
firstName	firstName	varchar(20)	No	Yes
homeDAAC	homeDAAC	varchar(10)	Yes	Yes
lastName	lastName	varchar(20)	No	Yes
mailAddrCity	mailAddrCity	varchar(35)	No	No
mailAddrCountry	mailAddrCountry	varchar(30)	No	No
mailAddrFax	mailAddrFax	varchar(22)	No	No
mailAddrPhone	mailAddrPhone	varchar(22)	No	No
mailAddrState	mailAddrState	varchar(20)	No	No
mailAddrStreet1	mailAddrStreet1	varchar(32)	No	No
mailAddrStreet2	mailAddrStreet2	varchar(32)	No	No
mailAddrStreet3	mailAddrStreet3	varchar(32)	No	No
mailAddrZip	mailAddrZip	varchar(15)	No	No
middleInit	middleInit	char(1)	No	No
motherMaidenName	motherMaidenName	varchar(20)	No	No
nasaUser	nasaUser	char(1)	No	No
organization	organization	varchar(31)	No	No
privilegeLevel	privilegeLevel	varchar(10)	No	No
projectName	projectName	varchar(30)	No	No
researchField	researchField	varchar(64)	No	No
shipAddrCity	shipAddrCity	varchar(35)	No	No
shipAddrCountry	shipAddrCountry	varchar(30)	No	No
shipAddrFax	shipAddrFax	varchar(22)	No	No
shipAddrPhone	shipAddrPhone	varchar(22)	No	No
shipAddrState	shipAddrState	varchar(20)	No	No
shipAddrStreet1	shipAddrStreet1	varchar(32)	No	No
shipAddrStreet2	shipAddrStreet2	varchar(32)	No	No
ShipAddrStreet3	shipAddrStreet23	varchar(32)	No	No
shipAddrZip	shipAddrZip	varchar(15)	No	No
status	status	varchar(7)	No	No
title	title	varchar(5)	No	No
userId	userId	varchar(12)	Yes	Yes

Table 3-21 defines operator's roles with accessible cots.

Table 3-21. role_to_cots

Name	Code	Type	PK	Mandatory
cots_list	cots_list	Varchar(255)	No	No
roleID	roleID	Varchar(15)	Yes	Yes

3.1.3 Columns

Brief definitions of each of the columns present in the database tables defined above are contained herein.

Column	Description	Data Type	Table	Valid Values
abortedFlag	This column indicates whether an order has been aborted.	char(1)	EcAcOrder	Y = Yes N = No
accessPrivilege	The highest priority level a user can give his or her order.	varchar(8)	MsAcUsrProfile MsAcUsrRequest	This was not carried over from Dev04.
activityType	The type of event that is taken place.	Varchar(20)	MsAcUsrAudit	
affiliation	This column contains the user's affiliation.	varchar(16)	MsAcUsrRequest MsAcUsrProfile	Gov. Research Government Other Univ. Research Univ. Class Work Commercial Kinder.-12 GradeNo
AffiliationCode	This is the user's affiliation code.	varchar(16)	MsAcAffiliationCode	Gov. Research Government Other Univ. Research Univ. Class Work Commercial Kinder.-12 GradeNo
AffiliationDesc	This column contains the long description of the affiliation code.	varchar(255)	MsAcAffiliationCode	
asterCategory	This is the description of the aster category id.	Varchar(40)	MsAcAsterCategory	

Column	Description	Data Type	Table	Valid Values
asterCategory	This column contains the user's aster category id.	numeric(2)	MsAcUserProfile	
asterCategoryId	This column defines an aster category identifier.	numeric(2)	MsAcAsterCategory	Not an ASTER DARUser MITI/NASA EOS Member IEOS agencies ASTER Science Team Leader US Team Leader ASTER Science Working Group ASTER Science Team Member AO User Special-Priority Japan User EOS Science Project Office ASTER Science Project ASTER CDS/ESDIS Project ASTER Instrument Team 14-99 Category 14-99
billAddrCity	This is the user's city, for billing purposes.	varchar(35)	MsAcUsrProfile MsAcUsrRequest	
billAddrCountry	This is the user's country, for billing purposes.	varchar(30)	MsAcUsrProfile MsAcUsrRequest	
billAddrFax	This is the user's fax number, for billing purposes.	varchar(22)	MsAcUsrProfile MsAcUsrRequest	
billAddrPhone	This is the user's phone number, for billing purposes.	varchar(22)	MsAcUsrProfile MsAcUsrRequest	
billAddrState	This is the user's state address, for billing purposes.	varchar(20)	MsAcUsrProfile MsAcUsrRequest	
billAddrStreet1	This is the user's street address, for billing purposes.	varchar(32)	MsAcUsrProfile MsAcUsrRequest	

Column	Description	Data Type	Table	Valid Values
billAddrStreet2	This is the user's street adddress, for billing purposes. Used only if address street is longer than what can be accommodated in billAddrStreet1.	varchar(32)	MsAcUsrProfile MsAcUsrRequest	
billAddrStreet3	This is the user's street adddress, for billing purposes. Used only if address street is longer than what can be accommodated in billAddrStreet2.	varchar(32)	MsAcUsrProfile MsAcUsrRequest	
billAddrZip	This is the user's zip code address, for billing purposes.	varchar(15)	MsAcUsrProfile MsAcUsrRequest	
cancelledFlag	This column identifies whether an order has been cancelled.	char(1)	EcAcOrder	Y=Yes N=No
category	This is the ASTER privilege category ID.	varchar(7)	MsAcUsrProfile MsAcUsrRequest	
creationDate	This is the date that the userid was created.	smalldatetime	MsAcUsrProfile MsAcUsrRequest	
cots_list	List of cots products.	varchar(255)	role_to_cots	
DAAC_Id	Identification for the DAAC.	char(2)	EcMsDAACSites	

Column	Description	Data Type	Table	Valid Values
DAAC_name	This is the DAAC's long name.	varchar(50)	EcMsDAACSites	Alaska SAR Facility Consortium for International Earth Science Information Network EROS Data Center Goddard Space Flight Center Jet Propulsion Laboratory Langley Research Center National Snow and Ice Data Center Oak Ridge National Laboratory
DAAC_short	This is the short home DAAC name.	char(10)	EcMsDAACSites	ASF CSN EDC GSF JPL LAR NSC ORN
DAACAbbrv	This is the 3-letters name abbreviation of the DAAC's (same values as daac_short).	varchar(3)	MsAcDAACCode	ASF CSN EDC GSF JPL LAR NSC ORN PVC

Column	Description	Data Type	Table	Valid Values
DAACLongName	This is the DAAC's long name.	varchar(255)	MsAcDAACCode	Alaska SAR Facility Consortium for International Earth Science Information Network EROS Data Center Goddard Space Flight Center Jet Propulsion Laboratory Langley Research Center National Snow and Ice Data Center Oak Ridge National Laboratory
DAACShortName	This is the short name abbreviation of the DAAC's.	varchar(10)	MsAcDAACCode	ASF CSN EDC GSF JPL LAR NSC ORN PVC
darExpeditedData	This column is false if the user is not allowed to submit DARs that request expedited data. The column is true if the user is allowed to submit DARs that request expedited data.	bit	MsAcUsrProfile	0=False 1=True
darExpirationDateTime	This column is the time the Data Acquistion Request Id will expire.	datetime	EcAcOrder	

Column	Description	Data Type	Table	Valid Values
darId	This column is the Data Acquistion Request Id for a particular Stranding Order.	Varchar(15)	EcAcOrder	
dateTime	The date that the activity has taken place.	datetime	MsAcUsrAudit	
deleteRequestFlag	Notes whether a request should be deleted or not.	char(1)	EcAcRequest	
destinationDirectory	This column holds the user's destination directory for ftp acquires.	varchar(20)	EcAcRequest	
destinationNode	This column holds the user's destination node for ftp acquires.	varchar(20)	EcAcRequest	
deviceDensity	This column holds the request’s device density.	varchar(20)	EcAcRequest	
deviceId	This column holds the requests's device ID.	varchar(20)	EcAcRequest	
EcDbComments	Notes or comments on the database version level.	Varchar(255)	EcDbVersions	
EcDbCurrentVersionFlag	Flag indicating if this row represents the current database version entry	Char(1)	EcDbVersions	0 = no 1 = yes
EcDbDatabaseName	The name of the database for which this database versions level is applied.	Varchar(255)	EcDbVersions	
EcDbDropDescription	The official name of the ECS software drops for this database version level.	Varchar(255)	EcDbVersions	
EcDbDropInstallDate	The date and time that the database versions level was installed.	Datetime	EcDbVersions	

Column	Description	Data Type	Table	Valid Values
EcDbDropVersion	The official description of the ECS software drops for this database version level.	Char(64)	EcDbVersions	
EcDbSchemaVersionID	The subsystem-specific identifier for this database schema version	Smallint	EcDbVersions	
EcDbSybaseServer	The name of the baseline Sybase SQL server controlling this database.	Varchar(255)	EcDbVersions	See 920-TDx-009
EcDbSybaseVersion	The software release version of the Sybase SQL server in place when this database version level was initially installed.	varchar(255)	EcDbVersions	
EcDbUpdateProcess	The installation method by which this database version level was installed	varchar(255)	EcDbVersions	
eMailAddr	The user's email address	varchar(255)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
ECSAuthenticator	Authentication entry for the user used to authenticate access.	varchar(32)	MsAcUsrProfile	
ESDT_Id	This name will identify the short name associated with the collection or granule.	varchar(20)	EcAcRequest	Refer to Document 910-TDA-019 ESDT Baseline
expirationDate	This is the expiration date of the user's profile. (i.e. account)	smalldatetime	MsAcUsrProfile MsAcUsrRequest	
externalRequestId	A SIPS-generated identifier that uniquely defines an order generated through the Machine-to-Machine Gateway.	varchar(10)	EcAcOrder	

Column	Description	Data Type	Table	Valid Values
finishDateTime	The column contains the time when all requests for the order have been completed.	smalldatetime	EcAcOrder	
finishDateTime	This column holds the time set by DDIST to the time DDIST finished writing the media for the request (i.e., the request status changed to "waiting for shipment").	smalldatetime	EcAcRequest	
firstName	This is the user's first name.	varchar(20)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
ftpAddress	This column holds a request's ftp staging address.	varchar(128)	EcAcRequest	
ftpPassword	This column holds the ftp password for the staging request.	varchar(16)	EcAcRequest	
GTWYUsrType	For registered users, the gateway will retrieve their user profile and check this attribute. If is filled, it will use GTWYUsrType and a generated password to log the user into DCE (rather than the userID attribute). A DCE account for GTWYUsrType must exist with the current V0GwPwd as its password.	varchar(20)	MsAcUsrProfile	DAACOPS - DAAC Operations User ECSDEV - ECS Development User V0CERES - V0 CERES User GUEST - Guest User
homeDAAC	This is the name of a DAAC, this is where the request for a user profile was processed.	varchar(3)	EcAcOrder MsAcOpPrivilege MsAcUsrProfile MsAcUsrRequest	
hostName	Identifies the host site.	varchar(30)	MsAcUsrAudit	

Column	Description	Data Type	Table	Valid Values
internetAffiliation	The column contains the user's internet affiliation.	varchar(14)	MsAcUserProfile	
internetAffiliationCode	The column contains the user's internet affiliation.	varchar(14)	MsAcInternetAffiliationCode	
internetAffiliationDesc	This column contains a description for an internet affiliation code.	varchar(255)	MsAcInternetAffiliationCode	
lastName	This is the user's last name.	varchar(20)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
location	Indicates the area of the activity.	varchar(20)	MsAcUsrAudit	
mailAddrCity	This is the user's mailing city address.	varchar(35)	MsAcUsrProfile MsAcUsrRequest	
mailAddrCountry	This is the user's mailing country address.	varchar(30)	MsAcUsrProfile MsAcUsrRequest	
mailAddrFax	This is the user's contact fax number.	varchar(22)	MsAcUsrProfile MsAcUsrRequest	
mailAddrPhone	This is the user's contact phone number.	varchar(22)	MsAcUsrProfile MsAcUsrRequest	
mailAddrState	This is the user's mailing state address.	varchar(20)	MsAcUsrProfile MsAcUsrRequest	
mailAddrStreet1	This is the user's mail street address.	varchar(32)	MsAcUsrProfile MsAcUsrRequest	
mailAddrStreet2	This is the user's mail street address. Used only if address street length is longer than what can be accommodated in mailAddrStreet1.	varchar(32)	MsAcUsrProfile MsAcUsrRequest	
mailAddrStreet3	This is the user's mail street address. Used only if address street length is longer than what can be accommodated in mailAddrStreet3.	varchar(32)	MsAcUsrProfile MsAcUsrRequest	

Column	Description	Data Type	Table	Valid Values
mailAddrZip	This is the user's mail zip code address.	varchar(15)	MsAcUsrProfile MsAcUsrRequest	
mediaFormatCode	This is the type of media format.	varchar(20)	MsAcMediaFormatCode	
mediaFormatDesc	This is the description of the media format.	varchar(255)	MsAcMediaFormatCode	
mediaQuantity	The number of media requested for an order.	numeric(3)	EcAcRequest	
mediaType	This column describes the media type of request distribution.	varchar(20)	EcAcRequest	
mediaTypeCode	This column identifies the media type of request distribution.	varchar(20)	MsAcMediaTypeCode	
mediaTypeDesc	This is the description of a media type.	varchar(255)	MsAcMediaTypeCode	
middleInit	This column holds the user's middle name.	char(1)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
motherMaidenName	This is the user's mother’s maiden name, recorded for security reasons.	varchar(20)	MsAcUsrProfile MsAcUsrRequest	
nasaUser	This field identifies whether a user works for NASA and his level of access to NASA data.	char(1)	MsAcUsrProfile MsAcUsrRequest	P=Privileged NASA User R=Regular NASA User N=Non-NASA User
numBytes	This column contains the number of bytes of a request.	float(15)	EcAcRequest	
numFiles	This column contains the number of files that fill a request.	numeric(9)	EcAcRequest	
numGranule	This column contains the number of granules that fill a request.	numeric(9)	EcAcRequest	
orderDesc	This column holds a description of the user's order.	varchar(50)	EcAcOrder	

Column	Description	Data Type	Table	Valid Values
orderDistFormat	This column holds the media format of the user's order.	varchar(64)	EcAcOrder	tar
orderGranule	This column contains the number of a granules that fill an order.	numeric(9)	EcAcOrder	
orderHomeDAAC	This column is pass from EcAcOrder, this is the home DAAC where the order was placed (same values as daac_short).	varchar(3)	EcAcOrder EcAcRequest	
orderId	This column identiifies an order.	varchar(10)	EcAcOrder EcAcRequest	
orderId	This column is passed from the EcAcOrder table and identiifies an order.	numeric(10)	EcAcOrderId	
orderMedia	This column holds the media type of the user's order.	varchar(20)	EcAcOrder	
orderPriority	This column holds the priority of the user's order.	varchar(10)	EcAcOrder	
orderSource	This column holds the where the source of the order.	varchar(12)	EcAcOrder	

Column	Description	Data Type	Table	Valid Values
orderStatus	This column holds the current status of an order.	varchar(30)	EcAcOrder	Pending Operator Intervention Staging Transferring Waiting For Shipment Shipped Aborted Canceled Terminated Subsetting Subsetting Staging Prep for Distributin SDSRV Staging Queued Waiting for data Waiting for processing Being Processed Completed processing Expired Awaiting L1B L1B received
orderType	The type of an order. Can be one of the following: -On Demand (valid value: PR) -Standing On Demand (valid value: ST) -MTMGW (valid value: MM) -Regular orders (valid value: blank)	varchar(2)	EcAcOrder	
organization	This is the user's organization.	varchar(31)	MsAcUsrProfile MsAcUsrRequest	
parentId	A request can be broken into subrequests, and this column holds the ID for that request.	varchar(10)	EcAcRequest	
PriorityCode	Defines a list of possible priority values.	varchar(10)	MsAcPriorityCode	

Column	Description	Data Type	Table	Valid Values
priorityDesc	This is the description of a request priority code.	varchar(255)	MsAcPriorityCode	
privilegeLevel	This column contains the highest priority level a user can give his or her order.	varchar(10)	MsAcUsrProfile MsAcUsrRequest	
program	This is the user's program name.	varchar(50)	MsAcUsrAudit	
projectName	This is the user's project name.	varchar(30)	MsAcUsrProfile MsAcUsrRequest	
receiveDateTime	This attibute holds the time the order and/or request was submitted (i.e., created) to the SDSRV, set by the V0 Gateway when it created the EcAcRequest.	smalldatetime	EcAcOrder EcAcRequest	
requestDesc	This column holds the resquest's description.	varchar(50)	EcAcRequest	
requestDistFormat	This column holds the distribution media format.	varchar(64)	EcAcRequest	
requestProcessingDAAC	The site at which the order is actually being processed.	varchar(3)	EcAcRequest	
requestId	This column holds the identifier for a request.	varchar(10)	EcAcRequest	
requestPriority	This column holds the user's request priority.	varchar(10)	EcAcRequest	
requestStatus	This column holds the user's request status.	varchar(22)	EcAcRequest	
requestType	This column identifies the type of request received or the type of request to be triggered by a subscription (e.g., "Notification ftp-pull").	varchar(2)	EcAcRequest	
researchField	This is the research field available in the system.	varchar(64)	MsAcUsrProfile MsAcUsrRequest	

Column	Description	Data Type	Table	Valid Values
researchFieldCode	This is the research field available in the system.	varchar(64)	MsAcResearchField Code	
researchFieldDesc	This is the research field description.	varchar(255)	MsAcResearchField Code	
roleID	The column contains an operator's role. changed to "staging".	varchar(15)	Role_to_cots	
rpcId	This column contains the ID of the RPC generated by the MTMGW before sending an acquire request to SDSRV. The MSS Accountability Service shall keep an external request ID and a rpcID as part of the order tracking information.	varchar(250)	EcAcOrder	
shipAddrCity	This is the user's city address to where the request will be shipped.	varchar(35)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
shipAddrCountry	This is the user's country address to where the request will be shipped.	varchar(30)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
shipAddrFax	This is the user's fax number to where the request will be shipped.	varchar(22)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
shipAddrPhone	This is the user's phone address to where the request will be shipped.	varchar(22)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
shipAddrState	This is the user's state address to where the request will be shipped.	varchar(20)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
shipAddrStreet1	This is the user's street address to where the request will be shipped.	varchar(32)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	

Column	Description	Data Type	Table	Valid Values
shipAddrStreet2	This is the user's street address to where the request will be shipped. Used only when street address length is longer than what can be accommodated in shipAddrStreet1.	varchar(32)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
shpAddrStreet3	This is the user's street address to where the request will be shipped. Used only when street address length is longer that what can be accommodated in shipAddrStreet3.	varchar(32)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	
shipAddrZip	This is the user's zip code address to where the request will be shipped.	varchar(15)	MsAcUsrRequest MsAcUsrProfile EcAcOrder EcAcRequest	
shipDateTime	This column hold the time the last request for the order was shipped, this time is set by MSS when propagating request status to the order.	smalldatetime	EcAcOrder EcAcRequest	
standingOrderId	ID of a standing order.	varchar(10)	EcAcOrder	
standingRequestID	ID of a standing request.	varchar(10)	EcAcRequest	
startDateTime	This column holds the time set by DDIST to the first time DDIST started to process the request, i.e., start the staging of its data, and the request status.	smalldatetime	EcAcOrder EcAcRequest	
status	The status of a user’s request for a user profile establishment.	varchar(7)	MsAcUsrAudit MsAcUsrRequest	

Column	Description	Data Type	Table	Valid Values
StatusCode	This is the status of a request (same values as orderStatus).	varchar(22)	MsAcStatusCode	
StatusDesc	This is the request status code's description.	varchar(255)	MsAcStatusCode	
tapeFormat	This column holds the format of the tape for the request.	varchar(20)	EcAcRequest	
This_DAAC	Ids the DAAC where work processed.	char(1)	EcMsDAACSites	
timeOfLastUpdate	This column holds the time of the last order or request update.	smalldatetime	EcAcOrder EcAcRequest	
title	This is the title of a user. (i.e., Dr.)	varchar(5)	EcAcOrder EcAcRequest MsAcUsrProfile MsAcUsrRequest	Dr Doctor Mr Mister Ms Miss/Mrs. Miss Miss Mrs Mrs. Rev Reverend Sr Senior
userId	A registered user id, a guest userid, or an application id.	varchar(12)	EcAcOrder EcAcUsrRequest MsAcOpPrivilege MsAcUsrAudit	No
userId	This column uniquely identifies a registered user.	varchar(12)	MsAcUsrProfile	No

3.1.4 Column Domains

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

3.1.5 Rules

Sybase supports the definitions of rules. Rules provide a means for enforcing domain constraints on a given column. All rules defined in Sybase for the MSS database are described herein.

There are no rules defined in the MSS databases.

3.1.6 Defaults

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

There are no defaults defined in the MSS databases.

3.1.7 Views

Sybase allows the definition of views as a means of limiting an application or users access to data in a table or tables. Views create a logical table from columns found in one or more tables. There are no views defined for MSS.

3.1.8 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. Sybase 11 is only ANSI-92 compliant, therefore its constraints support "restrict-only" operations. This means that a row can not be deleted or updated if there are rows in other tables having a foreign key dependency on that row. Cascade delete and update operations can not be performed if a declarative constraint has been used. There are no declarative integrity constraints defined in the MSS database.

3.1.9 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 whenever a row is inserted, updated, or deleted from a given table. Sybase allows the definition of insert, update, and delete trigger per table. A listing of each of the triggers in the MSS database is given here. A brief definition of each of these triggers follows. Trigger implementation may vary by drop/patch and therefore is not listed here.

Table 3-22. Trigger Listing (1 of 2)

Table	Trigger	Description
EcAcRequest	TrigInsEcAcRequest	Insert EcAcRequest
EcAcRequest	TrigUpdEcAcRequest	Update EcAcRequest
EcAcRequest	TrigDelEcAcRequest	Delete EcAcRequest
MsAcUsrProfile	TrigInsUpdMsAcUsrProfile	Insert/Update MsAcUsrProfile

Table 3-22. Trigger Listing (2 of 2)

Table	Trigger	Description
MsAcUsrProfile	TrigDelMsAcUsrProfile	Delete MsAcUsrProfile
EcAcOrder	TrigInsUpdEcAcOrder	Insert/Update EcAcOrder
EcAcOrder	TrigUpdEcAcOrder	Update EcAcOrder
MsAcOpPrivilege	TrigUpdMsAcOpPrivilege	Update McAcOpPrivilege

3.1.10 Stored 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 MSS database is given here. A brief definition of each of these stored procedures follows. Stored procedure implementation may vary by drop/patch and therefore is not listed here.

Table 3-23. Procedure Listing

Name	Description
datawarning	Notifies DBA when a data segment threshold is crossed.
logdump	Dump the log when log segment threshold is crossed.
logwarning	Notify the DBA when log segment approaches capacity threshold.
ProcIncrementOrderId	Passes back the next order Id to be used as a key for the EcAcOrder.
ProcIncrementEcAcRequestId	Passes the next request Id to be used as a key for the EcAcRequest.
ProcDecrementEcAcRequestId	Decrements the request ID by 1.
ProcDecrementOrderId	Decrements the order ID by 1.

3.2 Flat File Usage

A flat file is an operating system file that is written and subsequently read, generally independent of other files that exist, and usually static in nature. There are cases when the implementation of persistent data is better suited to a flat file than to a database. MSS Subsystem file usage is detailed in this section via file, block, field, and domain definitions.

3.2.1 File Descriptions

A summary listing of the files in the MSS Subsystem is given in Table 3-23 together with a brief description of the file usage. Many different record formats are used in ECS including ODL, HDF, HDF EOS, block, fixed length, variable length, etc.

Table 3-24. Flat File Descriptions (1 of 2)

File Name	File Type	Record Format	File Description
Accountability component files			
MsAcAffiliation.dat	ASCII	Single line records. One field.	Contains the list of valid affiliation names for selection of the user's affiliation.
MsAcAsterCategory.dat	ASCII	Single line records. Two fields.	Contains the list of valid Aster DAR user categories for selection of the user's category.
MsAcCountry.dat	ASCII	Single line records. One field.	Contains the list of valid country names for selecting a user's country of residence.
MsAcDceGroup.dat	ASCII	Single line records. One field.	Contains DCE account group. (e.g. SCIENTIST, ENGINEER)
MsAcDceOrganization.dat	ASCII	Single line records. One field.	DCE account organization. (e.g. NASA)
MsAcGateWayType.dat	ASCII	Single line records. One field.	User type. (e.g. DAACOPS, GUEST)
MsAcHomeDAAC.dat	ASCII	Single line records. One field.	Contains a list of valid DAAC names for selection of the user's home DAAC.
MsAcNasaUser.dat	ASCII	Single line records. One field.	Contains Y (yes) and N (no) to indicate NASA user or not.
MsAcPrimaryAreaStudy.dat	ASCII	Single line records. One field.	Contains the list of primary study areas for selecting the user's area.
MsAcPrivilegeLevel.dat	ASCII	Single line records. One field.	Contains a list of privilege levels for selecting the user's privilege level.
MsAcState.dat	ASCII	Single line records. One field.	Contains the list of states in the USA for selecting a user's state of residence.
MsAcTitle.dat	ASCII	Single line records. One field.	Contains the list of valid titles for selecting a user's title.
MsAcType.dat	ASCII	Single line records. One field.	Contains USA or NONE to indicate US user or not.
Subagent component files			
MsAgEventsHoldingFile	binary	EcAgEvent objects	If subagent is not connected to the deputy agent, the events holding file is used to store events to be processed upon connection to deputy.

Table 3-24. Flat File Descriptions (2 of 2)

File Name	File Type	Record Format	File Description
MsAgBindingVectorFile	binary	MsAgMgmtHandle object	The binding vector file contains binding information to ecs servers such as the uuid and the mode. Whenever a running ECS server is detected by subagent, it adds an entry to the binding vector file. Similarly, when a ecs servers is shutdown or dies for any other reason, its entry is removed from the binding vector. If the subagent is restarted, it uses the information in the binding vector to reconnect with the servers that it was previously monitoring.
MsAgInstanceFile	binary	integers	The instance ID file contains the number that was last assigned to a server by subagent. This number is saved to ensure a unique instance ID across different servers. Whenever subagent needs to assign an instance ID to a server, it reads the value in this file, increments it by one, and then assigns it to the server. The incremented value is written back to the instance ID file.
MsCmActiveModesFile	binary	list of strings	This file contains a list of all the active modes that subagent should discover. The mode manager GUI maintains the list.
MsCmAvailableModesFile	binary	list of strings	This file is a master list of all the modes available on all the ECS hosts within a cell. Each subagent in the cell adding all the installed modes on its host creates available modes file. The purpose of this file is to provide a list of all the modes that can be inserted into the active mode file.

3.2.2 Block Specifications

Table 3-25 identifies the block formats used in MSS files.

Table 3-25. Flat File Block Descriptions (1 of 2)

File Name	Block Name	Block Description
Accountability component file block descriptions		
MsAcAffiliation.dat	(standard)	Single line records; contain 1 field.
MsAcAsterCategory.dat	(standard)	Single line records; contain 2 fields.

Table 3-25. Flat File Block Descriptions (2 of 2)

File Name	Block Name	Block Description
MsAcCountry.dat	(standard)	Single line records; contain 1 field.
MsAcDceGroup.dat	(standard)	Single line records; contain 1 field.
MsAcDceOrganization.dat	(standard)	Single line records; contain 1 field.
MsAcGateWayType.dat	(standard)	Single line records; contain 1 field.
MsAcHomeDAAC.dat	(standard)	Single line records; contain 1 field.
MsAcNasaUser.dat	(standard)	Single line records; contain 1 field.
MsAcPrimaryAreaStudy.dat	(standard)	Single line records; contain 1 field.
MsAcPrivilegeLevel.dat	(standard)	Single line records; contain 1 field.
MsAcState.dat	(standard)	Single line records; contain 1 field.
MsAcTitle.dat	(standard)	Single line records; contain 1 field.
MsAcType.dat	(standard)	Single line records; contain 1 field.

3.2.3 Field Specifications

Brief specifications of the fields present within the MSS Subsystem flat files are contained in Table 3-26. The fields are ordered alphabetically by File Name.

Table 3-26. Flat File Field Specifications

File Name/Block Name	Field Name	Data Type	Field Description
MsAcAffiliation.dat	affiliation	String	Valid affiliation name.
MsAcAsterCategory.dat	Aster category ID	Char 2	Two digit Aster DAR category ID.
	Aster category mnemonic	String	Mnemonic corresponding to category ID.
Accountability component field descriptions			
MsAcCountry.dat	country	String	Valid country name.
MsAcDceGroup.dat	DCE group	String	DCE group.
MsAcDceOrganization.dat	DCE organization	String	DCE organization.
MsAcGateWayType.dat	gateway type	String	Gateway type.
MsAcHomeDAAC.dat	home DAAC	String	Valid DAAC name.
MsAcNasaUser.dat	NASA user indication	Char 1	NASA user flag.
MsAcPrimaryAreaStudy.dat	primary area of study	String	Valid primary study area.
MsAcPrivilegeLevel.dat	privilege level	String	Valid privilege level.
MsAcState.dat	state	String	State of residence.
MsAcTitle.dat	title	String	User's title.
MsAcType.dat	type	String	User location type.

3.2.4 Domain Definitions

Domain definitions specify the data type and valid content of fields within a file (e.g., specific values for a limited set of data, ranges of numeric data, units of measure for applicable data). This information is generally used by software to edit incoming data for validity prior to writing or changing data within the file. Use of domain values in updating (adding and changing) records within files preserves the integrity of the data within the file. The domain definitions for the MSS Subsystem are presented in Table 3-27.

Table 3-27. Flat File Domain Definitions

File Name/Block Name	Field Name	Domain Description
Accountability component field domains		
MsAcAffiliation.dat	affiliation	String: K-12 Commercial Government University Other
MsAcAsterCategory.dat	Aster category ID	Integer: 0-99
	Aster category mnemonic	String: (category 0 is not an Aster DAR user) MITI/NASA EOS member IEOS agencies ASTER Science Team Leader US Team Leader ASTER Science Working Groups ASTER Science Team Member AO User Special-Priority Japan user EOS Science Project Office ASTER Science Project (SSSG) ASTER CDS/ESDIS Project ASTER Instrument Team Category 14 Category 15 (through) Category 99

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
MsAcCountry.dat	country	String: Afghanistan Albania Algeria American Samoa Andorra Angola Anguilla Antarctica Antigua and Barbuda Argentina Armenia Aruba Australia Austria Azerbaijan Bahamas Bahrain Bangladesh Barbados Belarus Belgium Belize Benin Bermuda Bhutan Bolivia Bosnia-Hercegovina Botswana Bouvet Island Brazil British Indian Ocean Territory Brunei Darussalam Bulgaria Burkina Faso Burundi Cambodia Cameroon Canada Cape Verde Cayman Islands Central Africa Republic

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
		Chad Chile China Christmas Island Cocos(Keeling) Islands Colombia Comoros Congo Cook Island Costa Rica Cote d'Ivoire(Ivory Coast) Croatia Cuba Cyprus Czech Republic Denmark Djibouti Dominica Dominican Republic East Timor Ecuador Egypt El Salvador Equatorial Guinea Estonia Ethiopia Falkland Islands Faroe Islands Fiji Finland France French Guiana French Polynesia French Southern Territories Gabon Gambia Georgia Germany Ghana Gibraltar Greece Greenland

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
		Grenada Guadeloupe Guam Guatemala Guinea Guinea-Bissau Guyana Haiti heard and McDonald Islands Honduras Hong Kong Hungary Iceland India Indonesia Iran Iraq Ireland Israel Italy Jamaica Japan Jordan Kazakhstan Kenya Kiribati North Korea South Korea Kuwait Kyrgyzstan Lao People's Democratic Republic Latvia Lebanon Lesotho Liberia Libyan Arab Jamahiriya Liechtenstein Lithuania Luxembourg Macau Madagascar Malawi

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
		Malaysia
		Maldives
		Mali
		Malta
		Marchall Islands
		Martinique
		Mauritania
		Mauritius
		Mexico
		Micronesia
		Moldovia
		Monaco
		Mongolia
		Montserrat
		Morocco
		Mozambique
		Myanmar
		Namibia
		Nauru
		Nepal
		Netherlands
		Netherlands Antilles
		Neutral Zone
		New Caledonia
		New Zealand
		Nicaragua
		Niger
		Nigeria
		Niue
		Norfolk Island
		Northern Mariana Islands
		Norway
		Oman
		Pakistan
		Palau
		Panama
		Papua New Guinea
		Paraguay
		Peru
		Phillippines
		Pitcairn Island
		Poland

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
		Portugal Puerto Rico Qatar Reunion Island Romania Russian Federation Rwanda St. Helena St. Kitts and Nevis St. Lucia St. Pierre and Miquelon St. Vincent and the Grenadines Samoa San Marino Sao Tome and Principe Saudi Arabia Senegal Seychelles Sierra Leone Singapore Slovak Republic Slovenia Solomon Islands Somalia South Africa Spain Sri Lanka Sudan Suriname Svalbard and Jan Mayen Islands Swaziland Sweden Switzerland Syrian Arab Republic Taiwan Tajkistan Tanzania Thailand Togo Tokelau Tonga Trinidad and Tobago

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
		Tunisia Turkey Turkmenistan Turks and Caicos Islands Tuvalu Uganda Ukraine United Arab Emirates United Kingdom United States Uruguay Uzbekistan Vanuatu Vatican City Venezuela Vietnam Virgin Islands(British) Virgin Islands(U.S.) Wallis and Fortuna Islands Western Sahara Yemen Yogoslavia(former) Zaire Zambia Zimbabwe
MsAcGateWayType.dat	Gateway type	String: DAACOPS ECSDEV V0CERES GUEST
MsAcHomeDAAC.dat	user's home DAAC	String: ASF CSN EDC GSF JPL LAR NSC ORN
MsAcNasaUser.dat	NASA user	String: Y N

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
MsAcPrimaryAreaStudy.dat	Primary area of study	String: Air-Sea Interaction JPL Atmospheric Aerosols LaRC Biogeochemical Dynamics ORNL Biological Ocenanography JPL Cryospheric Studies NSIDC Geophysics NSIDC Global Biosphere GSFC Human Dimensions of Global Change SEDAAC Hydrologic Cycle GSFC Land Processes EDC Physical Oceanography JPL Polar Processes ASF Radiation Budget LaRC Sea Ice ASF Tropospheric Chemistry LaRC Upper Atmosphere Composition GSFC Upper Atmosphere Dynamics GSFC
MsAcPrivilegeLevel.dat	privilege level	String: XPRESS Vhigh HIGH NORMAL LOW
MsAcState.dat	State of residence	Alabama Alaska Arizona Arkansas California Colorado Connecticute Delaware District of Columbia Florida Georgia Hawaii Idaho Illinois Indiana Iowa Kansas Kentucky

Table 3-27. Flat File Domain Definitions (cont.)

File Name/Block Name	Field Name	Domain Description
		Louisana Maine Maryland Massachusetts Michigan Minnesota Mississippi Missouri Montana Nebraska Nevada New Hampshire New Jersey New Mexico New York North Carolina North Dakota Ohio Oklahoma Oregon Pennsylvania South Carolina South Dakota Tennessee Texas Utah Vermont Virginia Washington West Virginia Wisconsin Wyoming
MsAcTitle.dat	User's title	String: Dr Mr Ms Miss Mrs Rev Sr
MsAcType.dat	User's location	String: USA NONE

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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 MSS is provided in Table 4-1 Index Type Key. A description of each of the defined indexes is given in Table 4-2 Index List.

Table 4-1. Index Type Key

Index Type Key	Description
P	Primary Key
F	Foreign Key
U	Unique - Only one for the column code combination
C	Clustered or non-clustered index

Table 4-2. Index List

Table Code	Index Code	P	F	U	C
EcMsDAACSites	EcMsDAACSi_7367737321	Yes	No	Yes	Yes
MsAcDAACCode	PK_MSACDAACCODE	Yes	No	Yes	Yes
MsAcInternetAffiliationCode	PK_MSACINTERNETAFFILIATIONCODE	Yes	No	Yes	Yes
MsAcMediaTypeCode	PK_MSACMEDIATYPECODE	Yes	No	Yes	Yes
MsAcPriorityCode	PK_MSACPRIORITYCODE	Yes	No	Yes	Yes
MsAcResearchFieldCode	PK_MSACRESEARCHFIELDCODE	Yes	No	Yes	Yes
MsAcStatusCode	PK_MSACSTATUSCODE	Yes	No	Yes	Yes
EcDbDatabaseVersions	EcDbSchemaVersionId	Yes	No	Yes	Yes
EcAcOrder	EcAcOrderPkIdx EcAcOrderOrderIdIdx EcAcOrderUserIdIdx	Yes No No	No No No	Yes No No	No No No
EcAcRequest	EcAcRequestPkIdx EcAcRequestIdIdx	Yes No	No No	Yes No	No No
MsAcAffiliationCode	PK_MSACAFFILIATIONCODE	Yes	No	Yes	Yes
MsAcAsterCategory	PK_MSACAsterCategory	Yes	No	Yes	Yes
MsAcInternetAffiliationCode	PK_MSACINTERNETAFFILIATIONCODE	Yes	No	Yes	Yes
MsAcMediaFormatCode	PK_MSACMEDIAFORMATCODE	Yes	No	Yes	Yes
MsAcMediaTypeCode	PK_MSACMEDIATYPECODE	Yes	No	Yes	Yes
MsAcOpPrivilege	PK_MSACOPPRIV_1088774986	No	No	Yes	No
MsAcPriorityCode	PK_MSACPRIORITYCODE	Yes	No	Yes	Yes
MsAcResearchFieldCode	PK_MSACRESEARCHFIELDCODE	Yes	No	Yes	Yes
MsAcStatusCode	PK_MSACSTATUSCODE	Yes	No	Yes	Yes
MsAcUsrAudit	MsAcUsrAuditActivityTypeIdx MsAcUsrAuditDateTimeIdx MsAcUsrAuditHostNameIdx MsAcUsrAuditLocationIdx MsAcUsrAuditProgramIdx MsAcUsrAuditStatusIdx MsAcUsrAuditUserIdIdx	No No No No No No No	No No No No No No No	No No No No No No No	No No No No No No No
MsAcUsrProfile	MsAcUsrProfilePkIdx UserProfileAlt_1 MsAcUserProfileNameIdx MsAcUsrProfileUserIdIdx	No No No No	No No No No	Yes Yes No No	No No No No
MsAcUsrRequest	MsAcUsrRequestPkIdx	Yes	No	Yes	No
MsAcVersions	PK_MSACVERSIONS	Yes	No	Yes	Yes
role_to_cots	role_to_co_20320102701	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 MSS and all other subsystem databases are described in Table 4-3.

Table 4-3. Segment Descriptions

Segment Name	Description
default	Default data segment used if no other segment specified in the create statement.
logsegment	SYSLOGS, Transaction Logs.
systemsegment	System tables and indexes.
MSSOPSDAT01	MSS OPS mode data segment.
MSSOPSIDX01	MSS OPS mode index segment.
MSSTS1DAT01	MSS TS1 mode data segment.
MSSTS1IDX01	MSS TS1 mode index segment.
MSSTS2DAT01	MSS TS2 mode data segment.
MSSTS2IDX01	MSS TS2 mode index segment.

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 must be managed on a per DAAC basis. These caches may be increased or decreased by the DAAC DBA as needed.

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

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5. Database Security

5.1 Approach

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

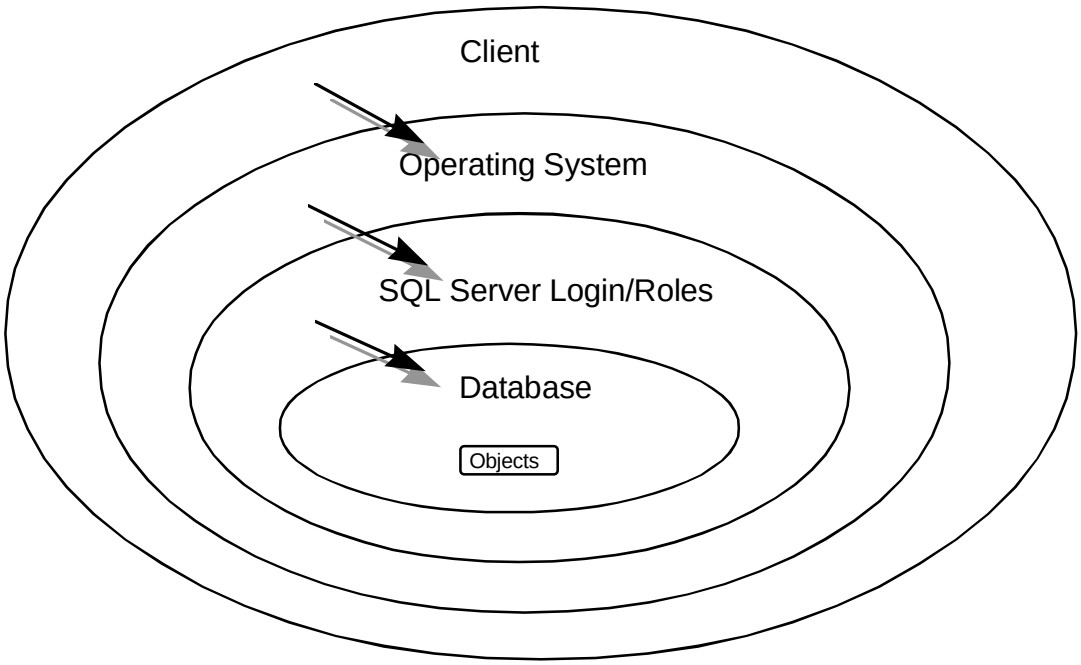

Figure 5-1. Sybase General Approach to SQL Server Security[1]

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

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

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

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.

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

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

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

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

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

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

- dumping transactions and databases
- loading transactions and databases

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

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

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

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

5.2 Login/Group Object Permissions

During initial database installation logins used by the ECS custom code were created and permissions assigned for access to the MSS Subsystem database. In addition, special database installation login, mss_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 MSS subsystem for each object and group/role.

Permissions are identified in Table 5-1. A specification of the object permissions is contained in Table 5-3. Table 5-2 maps users to groups or roles. Table 5-3 details object permissions for a group or role.

Table 5-1. Permission Key

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

Table 5-2. Group/Role Assignments

Group/Role	Assigned Users
AcctGroup	EcAcOrderManager EcMsAcOrderSrvr EcMsAcRegUserSrvr MsAcManager
ClientGroup	EcClDtDesktopDaacUser
RepGroup	
public	EcMsAcOrderGUI EcMsAcRegUserGUI EcMsBaBAASMgr
sa_role	mss_role

Table 5-3. Object Permissions

Group/Role	Object	A	S	I	U	D	E
Acct Group	ProcIncrementEcAcRequestId						X
	ProcIncrementOrderId						X
	EcAcOrder		X	X	X	X	
	EcAcRequest		X	X	X	X	
	MsAcAffiliationCode			X	X	X	
	MsAcDAACCode			X	X	X	
	MsAcInternetAffiliationCode			X	X	X	
	MsAcMediaFormatCode			X	X	X	
	MsAcMediaTypeCode			X	X	X	
	MsAcPriorityCode			X	X	X	
	MsAcResearchFieldCode			X	X	X	
	MsAcStatusCode			X	X	X	
	MsAcUsrAudit			X	X	X	
	MsAcUsrProfile		X	X	X	X	
	MsAcUsrRequest		X	X	X	X	
ClientGroup	Role_to_cots			X	X	X	
RepGroup	MsAcUsrProfile		X	X	X	X	
public	EcAcOrderId		X				
	EcAcRequestId		X				
	L_LOCAL_DAAC		X				
	MsAcAffiliationCode		X				
	MsAcAsterCategoryCode		X				
	MsAcDAACCode		X				
	MsAcInternetAffiliationCode		X				
	MsAcMediaFormatCode		X				
	MsAcMediaTypeCode		X				
	MsAcPriorityCode		X				
	MsAcResearchFieldCode		X				
	MsAcStatusCode		X				
	MsAcUsrAudit		X				
	Role_to_cots		X				
sa_role		X					

6. Scripts

The scripts identified in this section may be found in the directory named /ecs/formal/MSS/src/database.

6.1 Installation Scripts

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

Table 6-1. Installation Scripts

Script File	Description
EcMsDbBuild	Create a new initialized MSS database.
EcMsDbPatch	Upgrade an existing MSS database to the next valid database version level.
EcMsDbDump	Dump a specified MSS database on demand.
EcMsDbLoad	Load a specified <SUBSYS> database on demand.
EcDbDesc	List and detail the structure of all database objects in the specified ECS database.
EcDbChecksum	Provide row count totals for each of the tables in a specific ECS database.

6.2 De-Installation Scripts

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

Table 6-2. De-Installation Scripts

Script File	Description
EcMsDbDrop	Drop all objects in the specified MSS database.

6.3 Backup and Recovery Scripts

Scripts used to perform backup and recovery of the MSS Subsystem database are listed in Table 6-3. These are configured to run automatically using the Unix chron facility. Transaction logs dumps (incremental dumps) are performed 3 times each day. Database dumps (full database dumps) are performed once each day.

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 MSS Subsystem database are listed 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. Superceded by DbVision COTS.
EcDdmSegmentUse	Monitors segment usage. Used by EcDdmMonitorServer. Superceded by DbVision COTS.
EcDdmUserCounts	Monitors user access. Used by EcDdmMonitorServer. Superceded by DbVision COTS.
EcCoDbSyb_CkErrorLog	Checks the error log for error messages warranting DBO attention. Superceded 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.

7. Replication

7.1 Replication Overview

Replication as the name implies is a set of Sybase products that allow replication of data from one database to another. The MSS database employs replication to support its data distribution requirements. In order for replication to be accomplished the data source must defined the tables and columns that may be replicated to a data recipient. These definitions are referred to replication definitions. In the same manner a data recipient must specify the replication definitions in which he is interested. These specifications are referred to as replication subscriptions. In addition the replication database and server must be configured to support the potentially large volumes of data that will be transferred between the source and recipient databases. Each of these important parameters is outlined in detail below.

The Replication Definition and Subscription scripts for MSS were developed as templates. These templates will be installed at the DAAC site or SMC. Since peer to peer configuration for MsAcUsrProfile is required, the template approach was decided so that only those scripts that need to be implemented at each site are configured. The template files provide the necessary generic functions needed to configure the MSS MsAcUsrProfile replication environment. Unix shell scripts have been developed to allow installers to pass the appropriate site specific information (i.e. database name, replicate replication server name, etc.) when prompted. The Unix script then customizes the template script files for the specific site. Listed below are the templates for Replication definitions and subscriptions for MSS's MsAcUsrProfile table.

The DD&M group has created naming conventions for all replication scripts and naming conventions for the subscriptions, replication definitions, and other objects related to the ECS replication environment. Script names consist of the following conventions:

<action>.<SUBSYS>.<Replication Object>.<Primary Site ID>.sql.<*Replicate Site ID*>

Action -	Replication command to run on a particular object (i.e. drop, alter, check, etc.)
SUBSYS -	The CSCI Subsystem being replicated.
Replication Object -	The type of replication object being acted upon. (i.e. Subscription, replication definition, etc.)
Primary Site ID -	The site ID identified as the Primary site for this particular subsystem's data. This field is named "PRIME" for the template scripts and is changed via a Unix install script during installation and configuration activities at the site.
sql -	convention for identifying that this script is an SQL (Replication) script.

Replicate Site ID - This field does not apply to every script convention. This field is defined on scripts that act upon replication subscription objects. The "REP" field name for the template script is changed during installation and configuration at the site. This suffix identifies the replicate site to which the data will be replicated.

7.2 Replication Definitions

Replication definitions that have been defined against MSS tables and columns are detailed herein.

create.mss.repdefs.sql.PRIME

```
create replication definition MsAcUsrProfile_repdef_SMC(RV_ID)
        with primary at <pDs>.<pDb>
        with all tables named 'MsAcUsrProfile'
                (userId varchar(12),
                 homeDAAC varchar(3),
                 title varchar(5),
                 firstName varchar(20),
                 middleInit varchar(1),
                 lastName varchar(20),
                 motherMaidenName varchar(20),
                 ECSAuthenticator varchar(32),
                 GTWYUsrType varchar(20),
                 eMailAddr varchar(255),
                 internetAffiliation varchar(14),
                 organization varchar(31),
                 projectName varchar(30),
                 affiliation varchar(16),
                 researchField varchar(64),
                 accountNumber varchar(17),
                 privilegeLevel varchar(10),
                 creationDate datetime,
                 expirationDate datetime,
                 mailAddrStreet1 varchar(32),
                 mailAddrStreet2 varchar(32),
                 mailAddrStreet3 varchar(32),
                 mailAddrCity varchar(35),
                 mailAddrState varchar(20),
                 mailAddrZip varchar(15),
                 mailAddrCountry varchar(30),
                 mailAddrPhone varchar(22),
                 mailAddrFax varchar(22),
```

```
                billAddrStreet1 varchar(32),
                billAddrStreet2 varchar(32),
                billAddrStreet3 varchar(32),
                billAddrCity varchar(35),
                billAddrState varchar(20),
                billAddrZip varchar(15),
                billAddrCountry varchar(30),
                billAddrPhone varchar(22),
                billAddrFax varchar(22),
                shipAddrStreet1 varchar(32),
                shipAddrStreet2 varchar(32),
                shipAddrStreet2 varchar(32),
                shipAddrCity varchar(35),
                shipAddrState varchar(20),
                shipAddrZip varchar(15),
                shipAddrCountry varchar(30),
                shipAddrPhone varchar(22),
                shipAddrFax varchar(22),
                asterCategory numeric,
                darExpeditedData bit,
                nasaUser varchar(1)
                category varchar(17),
                accessPrivilege varchar(8))
        primary key ( userId)
        searchable columns (homeDAAC)
        replicate all columns
go
create replication definition EcAcRequest__<PSITE_RV_ID>
        with primary at <pDs>.<pDb>
        with all tables named 'EcAcRequest'
                (orderId varchar(10),
                orderHomeDAAC varchar(3),
                requestId varchar(10),
                requestProcessingDAAC varchar(3)
                parentId varchar(10),
                title varchar(5),
                firstName varchar(20),
                middleInit varchar(1),
                lastName varchar(20),
                eMailAddr varchar(255),
                requestDesc varchar(50),
                requestStatus varchar(22),
                requestDistFormat varchar(64),
                numFiles numeric,
```

```
                numBytes numeric,
                numGranule numeric,
                deviceId varchar(20),
                deviceDensity varchar(20),
                tapeFormat varchar(20),
               mediaQuantity numeric(3),
                mediaType varchar(20),
                ESDT_Id varchar(20),
                requestPriority varchar(10),
                shipAddrStreet1 varchar(32),
                shipAddrStreet2 varchar(32),
                shipAddrStreet3 varchar(32),
                shipAddrCity varchar(35),
                shipAddrState varchar(20),
                shipAddrZip varchar(15),
                shipAddrCountry varchar(30),
                shipAddrPhone varchar(22),
                shipAddrFax varchar(22),
                receiveDateTime datetime,
                startDateTime datetime,
                finishDateTime datetime,
                timeOfLastUpdate datetime,
                shipDateTime datetime,
                ftpAddress varchar(128),
                ftpPassword varchar(16),
                destinationNode varchar(20),
                destinationDirectory varchar(20))
        primary key (requestProcessingDAAC, requestId)
        searchable columns (requestProcessingDAAC)
go
               darId varchar(15),
               darExpirationDateTime datetime(8),
               externalRequestId varchar(10),
               rpcId char(250),
               standingOrderId varchar(10),
```

7.3 Replication Subscriptions

Replication subscriptions that have been defined against MSS tables and columns are detailed herein.

define.mss.subs.PRIME.sql.REP

```
/* ============================================================ */
```

```
/*   DAAC Table : MsAcUsrProfile                                          */
/* ============================================================ */

Create subscription MsAcUsrProfile_sub_SMC_<DAAC>_<RV_ID>
for _MsAcUsrProfile_repdef_SMC_<RV_ID>
with replicate at <rDs>.<rDb>
go

/* ============================================================ */
/*  DAAC Table:   EcAcRequest                                           */
/* ============================================================ */

Create subscription EcAcRequest_sub_<DAAC>_SMC_<RV_ID>
For EcAcRequest_rd_<DAAC>_<RV_ID>
With replicate at <rDs>.<rDb>
Where order_HomeDAAC = 'SMC'
And requestProcessingDAAC = '<DAAC>'
```

7.4 Replication Database Configuration

Replication Database Configuration specifications applicable to MSS replication are contained herein.

MSS - Uses the following parameters:

dsi_keep_triggers (This parameter enables or disables the
ability for replicated transactions to execute triggers at the replicated database. (Off for MSS)
dsi_replication (This parameter enables or disables the
ability to replicate transactions executed by the maintenance user.
(Off for MSS)

7.5 Replication Server Configuration

Replication Server Configuration specifications applicable to MSS replication are contained herein.

Configure the enable rep agent threads to 1. This enables the RepAgent thread Integration in the Adaptive server.

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Appendix A. MSS ERDs

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EcAcRequest			
orderId	varchar(10)	<fk>	not null
orderHomeDAAC	varchar(3)	<fk>	not null
requestId	varchar(10)	<pk>	not null
requestProcessingDAAC	varchar(3)	<pk>	not null
parentId	varchar(10)		null
title	varchar(5)		null
firstName	varchar(20)		null
middleInit	char(1)		null
lastName	varchar(20)		null
eMailAddr	varchar(255)		null
requestDesc	varchar(50)		null
requestStatus	varchar(30)		null
requestDistFormat	varchar(64)		null
numFiles	numeric(9)		null
numBytes	float(8)		null
numGranule	numeric(9)		null
deviceId	varchar(20)		null
deviceDensity	varchar(20)		null
tapeFormat	varchar(20)		null
mediaType	varchar(20)		null
ESDT_Id	varchar(20)		null
requestPriority	varchar(10)		null
shipAddrStreet1	varchar(32)		null
shipAddrStreet2	varchar(32)		null
shipAddrStreet3	varchar(32)		null
shipAddrCity	varchar(35)		null
shipAddrState	varchar(20)		null
shipAddrZip	varchar(15)		null
shipAddrCountry	varchar(30)		null
shipAddrPhone	varchar(22)		null
shipAddrFax	varchar(22)		null
receiveDateTime	smalldatetime		null
startDateTime	smalldatetime		null
finishDateTime	smalldatetime		null
timeOfLastUpdate	smalldatetime		null
shipDateTime	smalldatetime		null
ftpAddress	varchar(128)		null
ftpPassword	varchar(16)		null
destinationNode	varchar(20)		null
destinationDirectory	varchar(20)		null
requestType	varchar(2)		null
deleteRequestFlag	char(1)		not null
standingRequestId	varchar(10)		null
mediaQuantity	numeric(3)		null
EcAcRequestPkIdx			
EcAcRequestIdIdx			

Figure A-1. Order Tracking

MsAcUsrProfile		
userId	varchar(12)	not null
homeDAAC	varchar(3)	not null
title	varchar(5)	null
firstName	varchar(20)	not null
middleInit	char(1)	null
lastName	varchar(20)	not null
motherMaidenName	varchar(20)	null
ECSAuthenticator	varchar(32)	not null
GTWYUsrType	varchar(20)	null
eMailAddr	varchar(255)	null
internetAffiliation	varchar(14)	null
organization	varchar(31)	null
projectName	varchar(30)	null
affiliation	varchar(16)	null
researchField	varchar(64)	null
privilegeLevel	varchar(10)	null
creationDate	smalldatetime	null
expirationDate	smalldatetime	null
mailAddrStreet1	varchar(32)	null
mailAddrStreet2	varchar(32)	null
mailAddrStreet3	varchar(32)	null
mailAddrCity	varchar(35)	null
mailAddrState	varchar(20)	null
mailAddrZip	varchar(15)	null
mailAddrCountry	varchar(30)	null
mailAddrPhone	varchar(22)	null
mailAddrFax	varchar(22)	null
billAddrStreet1	varchar(32)	null
billAddrStreet2	varchar(32)	null
billAddrStreet3	varchar(32)	null
billAddrCity	varchar(35)	null
billAddrState	varchar(20)	null
billAddrZip	varchar(15)	null
billAddrCountry	varchar(30)	null
billAddrPhone	varchar(22)	null
billAddrFax	varchar(22)	null
shipAddrStreet1	varchar(32)	null
shipAddrStreet2	varchar(32)	null
shipAddrStreet3	varchar(32)	null
shipAddrCity	varchar(35)	null
shipAddrState	varchar(20)	null
shipAddrZip	varchar(15)	null
shipAddrCountry	varchar(30)	null
shipAddrPhone	varchar(22)	null
shipAddrFax	varchar(22)	null
asterCategory	numeric(2)	null
darExpeditedData	bit	not null
nasaUser	char(1)	not null
category	varchar(7)	null
accessPrivilege	varchar(8)	null

MsAcUsrAudit		
userId	varchar(12)	not null
hostName	varchar(30)	not null
activityType	varchar(20)	null
DateTime	smalldatetime	null
location	varchar(20)	null
status	varchar(15)	null
program	varchar(50)	null

role_to_cots			
roleID	varchar(15)	<pk>	not null
cots_list	varchar(255)		null

MsAcUsrRequest			
userId	varchar(12)	<pk>	not null
homeDAAC	varchar(3)	<pk>	null
title	varchar(5)		null
firstName	varchar(20)		not null
middleInit	char(1)		null
lastName	varchar(20)		not null
motherMaidenName	varchar(20)		null
eMailAddr	varchar(255)		null
organization	varchar(31)		null
projectName	varchar(30)		null
affiliation	varchar(16)		null
researchField	varchar(64)		null
privilegeLevel	varchar(10)		null
creationDate	smalldatetime		null
expirationDate	smalldatetime		null
mailAddrStreet1	varchar(32)		null
mailAddrStreet2	varchar(32)		null
mailAddrStreet3	varchar(32)		null
mailAddrCity	varchar(35)		null
mailAddrState	varchar(20)		null
mailAddrZip	varchar(15)		null
mailAddrCountry	varchar(30)		null
mailAddrPhone	varchar(22)		null
mailAddrFax	varchar(22)		null
billAddrStreet1	varchar(32)		null
billAddrStreet2	varchar(32)		null
billAddrStreet3	varchar(32)		null
billAddrCity	varchar(35)		null
billAddrState	varchar(20)		null
billAddrZip	varchar(15)		null
billAddrCountry	varchar(30)		null
billAddrPhone	varchar(22)		null
billAddrFax	varchar(22)		null
shipAddrStreet1	varchar(32)		null
shipAddrStreet2	varchar(32)		null
shipAddrStreet3	varchar(32)		null
shipAddrCity	varchar(35)		null
shipAddrState	varchar(20)		null
shipAddrZip	varchar(15)		null
shipAddrCountry	varchar(30)		null
shipAddrPhone	varchar(22)		null
shipAddrFax	varchar(22)		null
nasaUser	char(1)		null
status	varchar(7)		null
category	varchar(7)		null
accessPrivilege	varchar(8)		null

Figure A-2. User Profile Data

MsAcInternetAffiliationCode			
InternetAffiliationCode	varchar(14)	<pk>	not null
InternetAffiliationDesc	varchar(255)		null
PK_MSACINTERNETAFFILIATIONCODE			

MsAcAffiliationCode			
AffiliationCode	varchar(16)	<pk>	not null
AffiliationDesc	varchar(255)		null
PK_MSACAFFILIATIONCODE			

MsAcAsterCategory			
asterCategoryId	numeric(2)	<pk>	not null
asterCategory	varchar(40)		null
PK_MSACAsterCategory			

MsAcStatusCode			
StatusCode	varchar(22)	<pk>	not null
StatusDesc	varchar(255)		null
PK_MSACSTATUSCODE			

MsAcResearchFieldCode			
ResearchFieldCode	varchar(64)	<pk>	not null
ResearchFieldDesc	varchar(255)		null
PK_MSACRESEARCHFIELDCODE			

MsAcMediaFormatCode			
MediaFormatCode	varchar(20)	<pk>	not null
MediaFormatDesc	varchar(255)		null
PK_MSACMEDIAFORMATCODE			

MsAcMediaTypeCode			
MediaTypeCode	varchar(20)	<pk>	not null
MediaTypeDesc	varchar(255)		null
PK_MSACMEDIATYPECODE			

MsAcPriorityCode			
PriorityCode	varchar(10)	<pk>	not null
PriorityDesc	varchar(255)		null
PK_MSACPRIORITYCODE			

MsAcDAACCode			
DAACAbbrv	varchar(3)	<pk>	not null
DAACShortName	varchar(10)		not null
DAACLongName	varchar(255)		null
PK_MSACDAACCODE			

Figure A-3. Validation Data

MsAcOpPrivilege			
userId	varchar(12)	<pk>	not null
homeDAAC	varchar(3)		not null
MsAcOpPriv_6901014991			

EcMsDAACSites			
DAAC_Id	char(2)	<pk>	not null
DAAC_Short	char(3)	<pk>	not null
DAAC_Long	varchar(120)		not null
This_DAAC	char(1)		not null
EcMsDAACSi_3381002451			

Figure A-4. Site Information

EcDbDatabaseVersions			
EcDbSchemaVersionId	smallint	<pk>	not null
EcDbDropVersion	char(64)	<pk>	not null
EcDbDropDescription	varchar(255)		null
EcDbCurrentVersionFlag	char(1)		null
EcDbDatabaseName	varchar(255)		null
EcDbDropInstallDate	datetime		null
EcDbSybaseVersion	varchar(255)		null
EcDbSybaseServer	varchar(255)		null
EcDbComments	varchar(255)		null
EcDbUpdateProcess	varchar(255)		null
PK_MSACVERSIONS			

Figure A-5. Versioning Information

Abbreviations and Acronyms

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

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