**EOSDIS Maintenance and Development Project**

# Release 7.20
# Systems Management Subsystem
# Database Design and Schema
# Specifications for the EMD Project

July 2007

Raytheon Company
Upper Marlboro, Maryland

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# Release 7.20 Systems Management Subsystem Database Design and Schema Specifications for the EMD Project

**July 2007**

Prepared Under Contract NAS5-03098
CDRL Item #023

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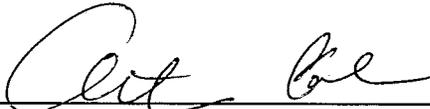
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311-EMD-103

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# Preface

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

Any questions should be addressed to:

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

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

311-EMD-100     Release 7.20 INGEST (INS) Subsystem Database Design and Schema Specifications for the EMD Project

311-EMD-101     Release 7.20 Science Data Server Database Design and Schema Specifications for the EMD Project

311-EMD-102     Release 7.20 Storage Management and Data Distribution Subsystems Database Design and Schema Specifications for the EMD Project

311-EMD-103     Release 7.20 Systems Management Subsystem Database Design and Schema Specifications for the EMD Project

311-EMD-104     Release 7.20 Order Manager Database Design and Schema Specifications for the EMD Project

311-EMD-105     Release 7.20 Spatial Subscription Server (SSS) Database Design and Schema Specifications for the EMD Project

311-EMD-106     Release 7.20 Data Pool Database Design and Schema Specifications for the EMD Project

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

# Abstract

This document outlines "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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# 1.  Introduction

## 1.1  Identification

This Systems Management Subsystem (MSS) Accountability Database Design and Database Schema Specification document, is part of Contract Data Requirements List (CDRL) Item Number 23, which is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Maintenance and Development (EMD) Contract (NAS5-03098).

## 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 7 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.

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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-EMD-100            Release 7.20 Segment Design Specification for the EMD Project

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

## 2.2  Information Documents

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

609-EMD-100           Release 7.20 Operations Tools Manual for the EMD Project

611-EMD-100           Release 7.20 Mission Operation Procedures for the EMD Project

# 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 3-1).

*Sample Table*

| Table Name |
| --- |
| Column 1, PK |
| Column 2 |
| Column 3 |

PK = Primary Key
FK = Foreign Key

*Sample Relationship*

**Independent Table**

| Table A |
| --- |
| Column 1, PK |
| Column 2 |

**Dependent Table**

| Table B |
| --- |
| Column 1, PK |
| Column 2, FK |

*Table A has a one to many relationship with Table B*
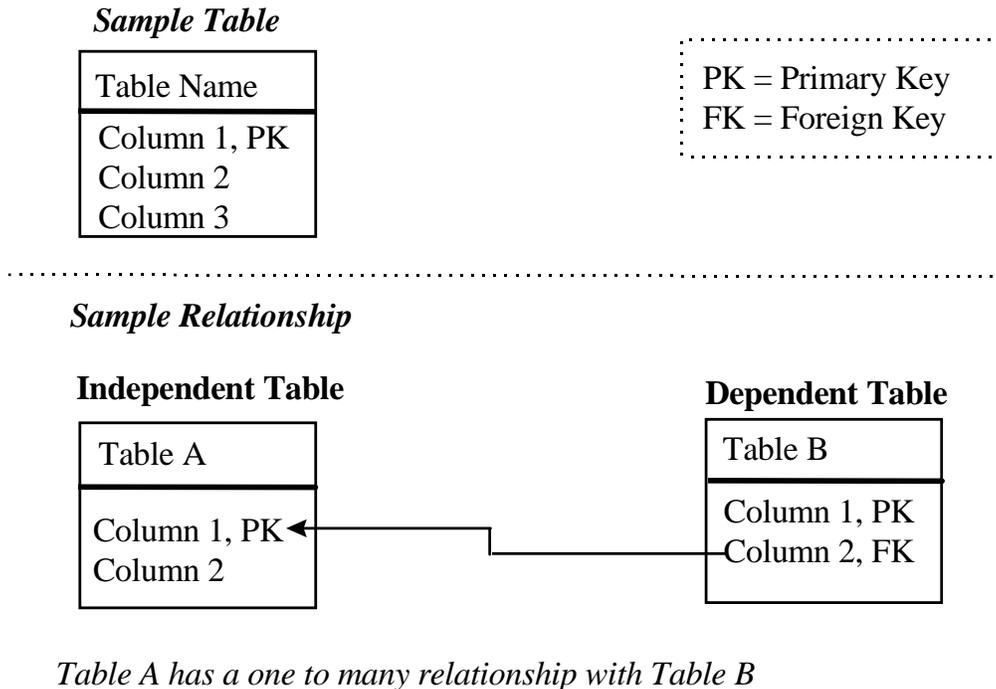
**Figure 3-1.  Sample ERD**

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

## 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 (1 of 2)

| Table Name | Logical Grouping |
|---|---|
| EcAcAddress | Order Information |
| EcAcOrder | Order Information |
| EcAcOrderId | Order Information |
| EcAcRequest | Order Information |
| EcAcRequestId | Order Information |
| EcDbDatabaseVersions | Versioning Information |
| EcEMSextractRecord | EMS |
| EcEMSExtractTypeDateRange | EMS |
| EcMsDAACSites | Site Information |
| MsAcAffiliationCode | Validation Data |
| MsAcAsterCategory | Validation Data |
| MsAcDAACCode | Validation Data |
| MsAcEMChecksumUsers | Validation Data |
| MsAcInternetAffiliationCode | Validation Data |
| MsAcMediaFormatCode | Validation Data |
| MsAcMediaTypeCode | Validation Data |
| MsAcOpPrivilege | Site Information |
| MsAcPriorityCode | Validation Data |
| MsAcResearchFieldCode | Validation Data |
| MsAcStatusCode | Validation Data |
| MsAcUsrAudit | User Data |
| MsAcUsrProfile | User Data |

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

| Table Name | Logical Grouping |
|---|---|
| MsAcUsrRequest | User Data |
| role_to_cots | User Data |

Table 3-2 stores identifying address information per request.

### Table 3-2.  EcAcAddress

| Name | Code | Type | PK | Mandatory |
|---|---|---|---|---|
| orderId | ORDERID | varchar(10) | No | Yes |
| title | TITLE | varchar(5) | No | No |
| firstName | FIRSTNAME | varchar(20) | No | Yes |
| middleInit | MIDDLEINIT | char(1) | No | No |
| lastName | LASTNAME | varchar(20) | No | Yes |
| organization | ORGANIZATION | varchar(60) | No | No |
| eMailAddr | eMailAddr | varchar(255) | No | No |
| 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 |
| 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 |
| billAddrCity | billAddrCity | varchar(35) | No | No |
| billAddrZip | billAddrZip | varchar(15) | No | No |
| billContactName_First | billContactName_First | varchar(20) | No | No |
| billContactName_Last | billContactName_Last | varchar(20) | No | No |
| billContactName_MI | billContactName_MI | char(1) | No | No |
| billContactOrg | billContactOrg | varchar(60) | No | No |
| billContactTitle | billContactTitle | varchar(5) | No | No |
| billEMailAddr | billEMailAddr | varchar(255) | No | No |
| shipContactOrg | shipContactOrg | varchar(60) | No | No |

Table 3-3 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 3-3.  EcAcOrder (1 of 2)*

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| abortedFlag | abortedFlag | char(1) | No | No |
| cancelledFlag | cancelledFlag | char(1) | No | No |
| darExpirationDateTime | darExpirationDateTime | datetime | No | No |
| darId | darId | varchar(15) | No | No |
| eMailAddr | eMailAddr | varchar(255) | No | No |
| externalRequestId | externalRequestId | varchar(50) | 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 |
| logicalLock | logicalLock | int | 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) | No | Yes |
| orderId | orderId | varchar(10) | No | Yes |
| orderMedia | orderMedia | varchar(20) | No | No |
| orderPriority | orderPriority | varchar(10) | No | No |
| orderSource | orderSource | varchar(21) | 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 |

### Table 3-3.  EcAcOrder (2 of 2)

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| shipDateTime | shipDateTime | smalldatetime | No | No |
| 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(14) | No | Yes |

Table 3-4 is used to generate the next request for the DAAC identified in the ECMSDAACSITES table. At any given time, there must be only one row in this table.

### Table 3-4.  EcAcOrderId

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

Table 3-5 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 3-5.  EcAcRequest (1 of 2)

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| ESDT_Id | ESDT_Id | varchar(20) | No | No |
| deleteRequestFlag | deleteRequestFlag | char(1) | No | Yes |
| destinationDirectory | destinationDirectory | varchar(255) | No | No |
| destinationNode | destinationNode | varchar(100) | No | No |
| deviceDensity | deviceDensity | varchar(20) | No | No |
| deviceId | DeviceId | varchar(20) | No | No |
| eMailAddr | EmailAddr | varchar(255) | No | No |
| finishDateTime | finishDateTime | smalldatetime | No | No |
| firstName | FirstName | varchar(20) | No | No |
| ftpAddress | ftpAddress | varchar(128) | No | No |
| ftpPassword | ftpPassword | varchar(50) | No | No |
| lastName | LastName | varchar(20) | No | No |
| mediaQuantity | mediaQuantity | numeric(3) | No | No |
| mediaType | mediaType | varchar(20) | No | No |
| middleInit | MiddleInit | char(1) | No | No |

*Table 3-5. EcAcRequest (2 of 2)*

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| numBytes | NumBytes | float(8) | No | No |
| numFiles | NumFiles | numeric(9) | No | No |
| numGranule | numGranule | numeric(9) | No | No |
| orderHomeDAAC | orderHomeDAAC | varchar(3) | No | Yes |
| orderId | Ordered | varchar(10) | No | Yes |
| parentId | parentId | varchar(10) | No | No |
| receiveDateTime | receiveDateTime | smalldatetime | No | No |
| requestDesc | requestDesc | varchar(50) | No | No |
| requestDistFormat | requestDistFormat | varchar(64) | No | No |
| requestId | requestId | varchar(10) | Yes | Yes |
| requestPriority | requestPriority | varchar(10) | No | No |
| requestProcessingDAAC | requestProcessingDAAC | varchar(3) | Yes | Yes |
| requestStatus | requestStatus | char(30) | No | No |
| requestType | requestType | varchar(2) | 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 |
| standingRequestId | standingRequestId | varchar(10) | 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 3-6 is used to generate the next requested for the DAAC identified in the EcMsDAACSITES table. At any given time, there must be only one row in this table.

*Table 3-6.  EcAcRequestId*

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| requestId | requestId | numeric(10) | No | No |

Table 3-7 identifies the current version level of the MSS database.

### Table 3-7.  EcDbDatabaseVersions

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| EcDbSchemaVersionId | EcDbSchemaVersionID | smallint | Yes | Yes |
| EcDbComments | EcDbComments | varchar(255) | No | No |
| EcDbCurrentVersionFlag | EcDbCurrentVersionFlag | char(1) | No | No |
| EcDbDatabaseName | EcDbDatabaseName | varchar(255) | No | No |
| EcDbDropDescription | EcDbDropDescription | varchar(255) | No | No |
| EcDbDropInstallDate | EcDbDropInstallDate | datetime | No | No |
| EcDbDropVersion | EcDbDropVersion | char(64) | Yes | Yes |
| EcDbSybaseServer | EcDbSybaseServer | varchar(255) | No | No |
| EcDbSybaseVersion | EcDbSybaseVersion | varchar(255) | No | No |
| EcDbUpdateProcess | EcDbUpdateProcess | varchar(255) | No | No |

Table 3.8 stores identifying information for EMS dataset runs.

### Table 3-8.  EcEMSextractRecord

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| ExtractId | ExtractId | numeric(8,0) | No | Yes |
| ExtractType | ExtractType | varchar(255) | No | No |
| RunStartTime | RunStartTime | datetime | No | Yes |
| RunCompletionTime | RunCompletionTime | datetime | No | No |
| StartDate | StartDate | datetime | No | Yes |
| EndDate | EndDate | datetime | No | No |
| ExtractFileName | ExtractFileName | varchar(500) | No | No |
| FTPcompletionTime | FTPcompletionTime | datetime | No | No |
| ExecutionMode | ExecutionMode | varchar(8) | No | No |
| MediaType | MediaType | varchar(20) | No | No |
| DataSource | DataSource | varchar(50) | No | No |
| Provider | Provider | Varchar(50) | No | No |

Table 3-9 stores information used during EMS processing of datasets

### Table 3-9.  EcEMSExtractTypeDateRange

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| ExtractId | StartDate | datetime | No | No |
| ExtractType | EndDate | datetime | No | No |
| RunStartTime | MediaType | varchar(20) | No | No |

Table 3-10 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 3-10.  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(3) | Yes | Yes |
| This_DAAC | This_DAAC | char(1) | No | Yes |

Table 3-11 (not currently used) is a lookup table that defines the list of user affiliations.

### Table 3-11.  MsAcAffiliationCode

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

Table 3-12 (not currently used) is a lookup table, it defines the list of Aster categories.

### Table 3-12.  MsAcAsterCategory

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

Table 3-13 (not currently used) is a lookup table; it lists all the DAACs abbreviations and names.

### Table 3-13.  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 3-14 is a lookup table; holds User Ids of users who should receive checksum info in emails.

### Table 3-14.  MsAcEMChecksumUsers

| Name | Code | Type | PK | Mandatory |
|---|---|---|---|---|
| EcsUserId | EcsUserId | varchar(50) | Yes | Yes |

Table 3-15 (not currently used) is a lookup table; it lists all the internet affiliations.

### Table 3-15.  MsAcInternetAffiliationCode

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

Table 3-16 (not currently used) is a lookup table; it lists all the available media formats.

### Table 3-16.  MsAcMediaFormatCode

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

Table 3-17 (not currently used) is a lookup table; it lists all the media types available.

### Table 3-17.  MsAcMediaTypeCode

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

Table 3-18 is a lookup table; it defines the list of operator privileges.

### Table 3-18.  MsAcOpPrivilege

| Name | Code | Type | PK | Mandatory |
|------|------|------|----|-----------| 
| userId | UserId | varchar(12) | Yes | Yes |
| homeDAAC | HomeDAAC | varchar(3 ) | No | Yes |

Table 3-19 (not currently used) is a lookup table; it defines the list of user request priority levels.

### Table 3-19.  MsAcPriorityCode

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

Table 3-20 (not currently used) is a lookup table; it defines the list of user research fields.

### Table 3-20.  MsAcResearchFieldCode

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

Table 3-21 (not currently used) is a lookup table; it defines the list order statuses.

### Table 3-21.  MsAcStatusCode

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

Table 3-22 is a lookup table; it defines the user audits.

### Table 3-22.  MsAcUsrAudit (1 of 2)

| Name | Code | Type | PK | Mandatory |
|------|------|------|----|-----------| 
| DateTime | DateTime | smalldatetime | No | No |
| activityType | activityType | varchar(20) | No | No |
| hostName | hostName | varchar(30) | No | Yes |
| location | location | varchar(20) | No | No |

### Table 3-22.  MsAcUsrAudit (2 of 2)

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| program | program | varchar(50) | No | No |
| status | status | varchar(15) | No | No |
| userId | userId | varchar(12) | No | Yes |

Table 3-23 stores identifying, authenticating, and other data that is used by ECS servers to distribute data to registered users.

### Table 3-23.  MsAcUsrProfile (1 of 2)

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| ECSAuthenticator | ECSAuthenticator | varchar(32) | No | Yes |
| GTWYUsrType | GTWYUsrType | varchar(20) | No | No |
| 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 |
| billContactName_First | billContactName_First | varchar(20) | No | No |
| billContactName_Last | billContactName_Last | varchar(20) | No | No |
| billContactName_MI | billContactName_MI | char(1) | No | No |
| billContactOrg | billContactOrg | varchar(60) | No | No |
| billContactTitle | billContactTitle | varchar(5) | No | No |
| billEMailAddr | billEMailAddr | varchar(255) | No | No |
| category | category | varchar(7) | No | No |
| creationDate | creationDate | smalldatetime | No | No |
| darExpeditedData | darExpeditedData | bit | No | Yes |

### Table 3-23. MsAcUsrProfile (2 of 2)

| Name | Code | Type | PK | Mandatory |
|------|------|------|----|-----------|
| eMailAddr | EmailAddr | varchar(255) | No | No |
| expirationDate | expirationDate | smalldatetime | No | No |
| firstName | FirstName | varchar(20) | No | Yes |
| homeDAAC | HomeDAAC | varchar(3) | No | Yes |
| internetAffiliation | internetAffiliation | varchar(14) | No | No |
| 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 | Yes |
| organization | organization | varchar(60) | 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 |
| shipContactName_First | shipContactName_First | varchar(20) | No | No |
| shipContactName_Last | shipContactName_Last | varchar(20) | No | No |
| shipContactName_MI | shipContactName_MI | char(1) | No | No |
| shipContactOrg | shipContactOrg | varchar(60) | No | No |
| shipContactTitle | shipContactTitle | varchar(5) | No | No |
| shipEMailAddr | shipEMailAddr | varchar(255) | No | No |
| title | title | varchar(5) | No | No |
| userId | userId | varchar(14) | Yes | Yes |

Table 3-24 stores user request information.  Not used.

*Table 3-24.  MsAcUsrRequest (1 of 2)*

| Name | Code | Type | PK | Mandatory |
|------|------|------|-----|-----------|
| userId | userId | varchar(12) | Yes | Yes |
| homeDAAC | homeDAAC | varchar(3) | Yes | Yes |
| title | title | varchar(5) | No | No |
| firstName | firstName | varchar(20) | No | Yes |
| middleInit | middleInit | char(1) | No | No |
| lastName | lastName | varchar(20) | No | Yes |
| motherMaidenName | motherMaidenName | varchar(20) | No | No |
| eMailAddr | eMailAddr | varchar(255) | No | No |
| organization | organization | varchar(31) | No | No |
| projectName | projectName | varchar(30) | No | No |
| affiliation | affiliation | varchar(16) | No | No |
| researchField | researchField | varchar(64) | No | No |
| privilegeLevel | privilegeLevel | varchar(10) | No | No |
| creationDate | creationDate | smalldatetime | No | No |
| expirationDate | expirationDate | smalldatetime | No | No |
| mailAddrStreet1 | MailAddrStreet1 | varchar(32) | No | No |
| mailAddrStreet2 | mailAddrStreet2 | varchar(32) | No | No |
| mailAddrStreet3 | mailAddrStreet3 | varchar(32) | No | No |
| mailAddrCity | mailAddrCity | varchar(35) | No | No |
| mailAddrState | mailAddrState | varchar(20) | No | No |
| mailAddrZip | mailAddrZip | varchar(15) | No | No |
| mailAddrCountry | mailAddrCountry | varchar(30) | No | No |
| mailAddrPhone | mailAddrPhone | varchar(22) | No | No |
| mailAddrFax | mailAddrFax | varchar(22) | No | No |
| billAddrStreet1 | billAddrStreet1 | varchar(32) | No | No |
| billAddrStreet2 | billAddrStreet2 | varchar(32) | No | No |
| billAddrStreet3 | billAddrStreet3 | varchar(32) | No | No |
| billAddrCity | billAddrCity | varchar(35) | No | No |
| billAddrState | billAddrState | varchar(20) | No | No |
| billAddrZip | billAddrZip | varchar(15) | No | No |
| billAddrCountry | billAddrCountry | varchar(30) | No | No |
| billAddrPhone | billAddrPhone | varchar(22) | No | No |
| billAddrFax | billAddrFax | varchar(22) | No | No |
| shipAddrStreet1 | ShipAddrStreet1 | varchar(32) | No | No |
| shipAddrStreet2 | shipAddrStreet2 | varchar(32) | No | No |

*Table 3-24.  MsAcUsrRequest (2 of 2)*

| Name | Code | Type | PK | Mandatory |
|---|---|---|---|---|
| shipAddrStreet3 | shipAddrStreet3 | varchar(32) | No | No |
| shipAddrCity | shipAddrCity | varchar(35) | No | No |
| shipAddrState | shipAddrState | varchar(20) | No | No |
| shipAddrZip | shipAddrZip | varchar(15) | No | No |
| shipAddrCountry | shipAddrCountry | varchar(30) | No | No |
| shipAddrPhone | shipAddrPhone | varchar(22) | No | No |
| shipAddrFax | shipAddrFax | varchar(22) | No | No |
| nasaUser | nasaUser | char(1) | No | No |
| status | status | varchar(7) | No | No |
| category | category | varchar(7) | No | No |
| accessPrivilege | accessPrivilege | varchar(8) | No | No |

Table 3-25 defines operator's roles with accessible cots.

*Table 3-25.  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 in Table 3-26.

*Table 3-26.  Column Description (1 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| ExtractId | Extract record key for EMS | |
| ExtractType | For a specific EMS run specifies data that is being extracted. | Value can be 'UsrProf', 'Arch', 'DistFTP', 'DistMedia', 'Meta', 'searchExp', or 'Ing' |
| RunStartTime | Time EMS extraction process started | |
| RunCompletionTime | Time EMS extraction process completed | |
| StartDate | For a specific EMS run specifies the StartDate for data retrieval | |
| EndDate | For a specific EMS run specifies the EndData for data retrieval | |
| ExtractFileName | EMS Extract file name with directory path.  Extract file name format is specified in section 4.18.3. | |
| FTPcompletionTime | Datetime that the EMS FTP of file was completed. | |
| ExecutionMode | For a specific EMS run specifies mode of execution | Value can be 'default' or 'override' |
| MediaType | For a specific EMS run specifies mediatype that is being extracted. | Value can be 'FtpPush', 'FtpPull', 'scp', 'CDROM', 'DVD' or 'DLT' |
| DataSource | Designates the EMS name of the system, subsystem, file, table or other identifying information where the logs/flat files/metadata was created.  Value is the MODE + the DistFTP mediatype. | |
| Provider | EMS DAAC Provider of Data | |
| abortedFlag | This column indicates whether an order has been aborted. | Y = Yes  N = No |
| accessPrivilege | The highest priority level a user can give his or her order. | |
| ActivityType | The type of event that is taken place. | |
| Affiliation | This column contains the user's affiliation. | Gov. Research Government Other Univ. Research Univ. Class Work Commercial Kinder.-12 GradeNo |

*Table 3-26.  Column Description (2 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| AffiliationCode | This is the user's affiliation code. | |
| AffiliationDesc | This column contains the long description of the affiliation code. | |
| AsterCategory | (column In MsAcAsterCategory table) This is the description of the aster category id. | |
| AsterCategory | (column in in MsAcUsrProfile table. ) This column contains the user's aster category id. | |
| AsterCategoryId | This column defines an aster category identifier. | |
| BillAddrCity | This is the user's city, for billing purposes. | |
| BillAddrCountry | This is the user's country, for billing purposes. | |
| BillAddrFax | This is the user's fax number, for billing purposes. | |
| BillAddrPhone | This is the user's phone number, for billing purposes. | |
| BillAddrState | This is the user's state address, for billing purposes. | |
| BillAddrStreet1 | This is the user's street address, for billing purposes. | |

*Table 3-26.  Column Description (3 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| billAddrStreet2 | This is the user's street address, for billing purposes.  Used only if address street is longer than what can be accommodated in billAddrStreet1. | |
| BillAddrStreet3 | This is the user's street address, for billing purposes.  Used only if address street is longer than what can be accommodated in billAddrStreet2. | |
| BillAddrZip | This is the user's zip code address, for billing purposes. | |
| BillContactName_First | The first name of the billing contact. | |
| BillContactName_Last | The last name of the billing contact. | |
| BillContactName_MI | The middle initial of the billing contact. | |
| BillContactOrg | The organization name associated with billing contact. | |
| BillContactTitle | The title of the billing contact | |
| billEMailAddr | The email address for the billing contact. | |
| CancelledFlag | This is the ASTER privilege category ID. | Y=Yes<br>N=No |
| category | This is the date that the userid was created. | |
| Cots_list | Identification for the DAAC. | |
| CreationDate | This is the date that the userid was created. | |
| DAAC_Id | Identification for the DAAC. | |

*Table 3-26.  Column Description (4 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| DAAC_Long | This is the DAAC's long name. | Alaska SAR Facility<br><br>Consortium for International Earth Science Information Network<br>EROS Data Center<br>Goddard Space Flight Center<br><br>Jet Propulsion Laboratory<br><br>Langley Research Center<br><br>National Snow and Ice Data Center<br><br>Oak Ridge National Laboratory |
| DAAC_Short | This is the short name abbreviation of the DAAC's. | ASF<br>CSN<br>EDC<br>GSF<br>JPL<br>LAR<br>NSC<br>ORN |
| DAACAbbrv | This is the 3-letters name abbreviation of the DAAC's (same values as DAAC_Short). | ASF<br>CSN<br>EDC<br>GSF<br>JPL<br>LAR<br>NSC<br>ORN<br>PVC |
| DAACLongName | This is the DAAC's long name. | Alaska SAR Facility<br><br>Consortium for International Earth Science Information Network<br>EROS Data Center<br>Goddard Space Flight Center<br><br>Jet Propulsion Laboratory<br><br>Langley Research Center<br><br>National Snow and Ice Data Center<br><br>Oak Ridge National Laboratory |

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*Table 3-26.  Column Description (5 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| DAACShortName | This is the short name abbreviation of the DAAC's. | ASF<br>CSN<br>EDC<br>GSF<br>JPL<br>LAR<br>NSC<br>ORN<br>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. | 0=False<br>1=True |
| darExpirationDateTime | This column is the time the Data Acquisition Request Id will expire. | |
| DarId | This column is the Data Acquisition Request Id for a particular Stranding Order. | |
| DateTime | The date that the activity has taken place. | |
| DeleteRequestFlag | Notes whether or not a request should be deleted. | |
| DestinationDirectory | This column holds the user's destination directory for ftp acquires. | |
| DestinationNode | This column holds the user's destination node for ftp acquires. | |
| DeviceDensity | This column holds the request's device density. | |
| DeviceId | This column holds the requests' device ID. | |
| EcDbComments | Notes or comments on the database version level. | |
| EcDbCurrentVersionFlag | Flag indicating if this row represents the current database version entry. | 0 = no<br>1 = yes |
| EcDbDatabaseName | The name of the database for which this database versions level is applied. | |

*Table 3-26.  Column Description (6 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| EcDbDropDescription | The official name of the ECS software drops for this database version level. | |
| EcDbDropInstallDate | The date and time that the database versions level was installed. | |
| EcDbDropVersion | The official description of the ECS software drops for this database version level. | |
| EcDbSchemaVersionId | The subsystem-specific identifier for this database schema version. | |
| EcDbSybaseServer | The name of the baseline Sybase SQL server controlling this database. | |
| EcDbSybaseVersion | The software release version of the Sybase SQL server in place when this database version level was initially installed. | |
| EcDbUpdateProcess | The installation method by which this database version level was installed. | |
| ECSAuthenticator | Authentication entry for the user used to authenticate access. | |
| EcsUserId | ECS User Id. | |
| EMailAddr | The user's email address. | |
| ESDT_Id | This name will identify the short name associated with the collection or granule. | |
| ExpirationDate | This is the expiration date of the user's profile. (i.e. account) | |
| externalRequestId | A SIPS-generated identifier that uniquely defines an order generated through the Machine-to-Machine Gateway. | |
| FinishDateTime | The column contains the time when all requests for the order have been completed. | |
| FirstName | This is the user's first name. | |

*Table 3-26.  Column Description (7 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| ftpAddress | This column holds a request's ftp staging address. | |
| FtpPassword | This column holds the ftp password for the staging request. | |
| 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. | DAACOPS – DAAC Operations User<br>ECSDEV – ECS Development User<br>V0CERES – V0 CERES User<br>GUEST  - Guest User |
| homeDAAC | The name of the DAAC, where the request for a user profile was processed. | |
| HostName | Identifies the host site. | |
| InternetAffiliation | The column contains the user's internet affiliation. | |
| InternetAffiliationCode | The column contains the user's internet affiliation. | |
| InternetAffiliationDesc | This column contains a description for an internet affiliation code. | |
| LastName | This is the user's last name. | |
| Location | Indicates the area of the activity. | |
| LogicalLock | Used to lock an order associated with a request that will be updated. | Default value is "0" |
| mailAddrCity | This is the user's mailing city address. | |
| MailAddrCountry | This is the user's mailing country address. | |
| MailAddrFax | This is the user's contact fax number. | |
| MailAddrPhone | This is the user's contact phone number. | |
| MailAddrState | This is the user's mailing state address. | |

*Table 3-26.  Column Description (8 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| mailAddrStreet1 | This is the user's mail street address. | |
| MailAddrStreet2 | This is the user's mail street address. Used only if address street length is longer than what can be accommodated in mailAddrStreet1. | |
| MailAddrStreet3 | This is the user's mail street address. Used only if address street length is longer than what can be accommodated in mailAddrStreet2. | |
| MailAddrZip | This is the user's mail zip code address. | |
| MediaFormatCode | This is the type of media format. | |
| MediaFormatDesc | This is the description of the media format. | |
| MediaQuantity | The number of media requested for an order. | |
| MediaType | This column describes the media type of request distribution. | |
| MediaTypeCode | This column identifies the media type of request distribution. | |
| MediaTypeDesc | This is the description of a media type. | |
| MiddleInit | This column holds the user's middle name. | |
| MotherMaidenName | This is the user's mother's maiden name, recorded for security reasons. | |
| NasaUser | This field identifies whether a user works for NASA and his level of access to NASA data. | |
| NumBytes | This column contains the number of bytes of a request. | |
| NumFiles | This column contains the number of files that fill a request. | |

*Table 3-26.  Column Description (9 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| numGranule | This column contains the number of granules that fill a request. | |
| OrderDesc | This column holds a description of the user's order. | |
| OrderDistFormat | This column holds the media format of the user's order. | |
| OrderGranule | This column contains the number of granules that fill an order. | |
| OrderHomeDAAC | This column is passed from EcAcOrder, this is the home DAAC where the order was placed (same values as DAAC_Short). | |
| OrderId | This column identifies an order. | |
| OrderMedia | This column holds the media type of the user's order. | |
| OrderPriority | This column holds the priority of the user's order. | |
| OrderSource | This column holds the where the source of the order. | |
| OrderStatus | This column holds the current status of an order. | Pending, Operator Intervention, Staging, Transferring, Waiting For Shipment, Shipped, Aborted, Canceled, Terminated, Subsetting, Subsetting Staging, Prep for Distribution, SDSRV Staging, Queued, Waiting for data, Waiting for processing, Being Processed, Completed processing, Expired, Awaiting L1B, L1B received. |
| OrderType | The type of an order | -On Demand (valid value: PR)<br>-Standing On Demand (valid value: ST)<br>-MTMGW (valid value: MM)<br>-Regular orders (valid value: blank) |
| organization | This is the user's organization. | |

*Table 3-26.  Column Description (10 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| parentId | A request can be broken into sub-requests, and this column holds the ID for that request. | |
| PriorityCode | Defines a list of possible priority values. | |
| PriorityDesc | This is the description of a request priority code. | |
| PrivilegeLevel | This column contains the highest priority level a user can give his or her order. | |
| Program | This is the user's program name. | |
| ProjectName | This is the user's project name. | |
| ReceiveDateTime | This attribute 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. | |
| RequestDesc | This column holds the request's description. | |
| RequestDistFormat | This column holds the distribution media format. | |
| RequestId | This column holds the identifier for a request. | |
| RequestPriority | This column holds the user's request priority. | |
| RequestProcessingDAAC | The site at which the order is actually being processed. | |
| RequestStatus | This column holds the user's request status. | |
| 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"). | |
| ResearchField | This is the research field available in the system. | |
| ResearchFieldCode | This is the research field available in the system. | |
| ResearchFieldDesc | This is the research field description. | |

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*Table 3-26.  Column Description (11 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| roleID | The column contains an operator's role. | |
| 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. | |
| ShipAddrCity | This is the user's city address to where the request will be shipped. | |
| ShipAddrCountry | This is the user's country address to where the request will be shipped. | |
| ShipAddrFax | This is the user's fax number to where the request will be shipped. | |
| ShipAddrPhone | This is the user's phone address to where the request will be shipped. | |
| ShipAddrState | This is the user's state address to where the request will be shipped. | |
| ShipAddrStreet1 | This is the user's street address to where the request will be shipped. | |
| 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. | |
| ShipAddrStreet3 | This is the user's street address to where the request will be shipped. Used only when street address length is longer thatn what can be accommodated in shipAddrStreet2. | |

*Table 3-26.  Column Description (12 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| shipAddrZip | This is the user's zip code address to where the request will be shipped. | |
| ShipContactName_First | This is the user's first name where request will be shipped. | |
| ShipContactName_Last | This is the user's last name where request will be shipped. | |
| ShipContactName_MI | This is the user's middle initial where request will be shipped. | |
| ShipContactOrg | This is the user's organization name where request will be shipped. | |
| ShipContactTitle | This is the user's title where request will be shipped. | |
| 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. | |
| ShipEMailAddr | This is the user's email address where request will be shipped. | |
| StandingOrderId | ID of a standing order. | |
| StandingRequestId | ID of a standing request. | |
| 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. | |
| Status | The status of a user's request for a user profile establishment. | |
| StatusCode | This is the status of a request (same values as orderStatus). | |
| StatusDesc | This is the request status code's description. | |
| TapeFormat | This column holds the format of the tape for the request. | |

*Table 3-26.  Column Description (13 of 13)*

| Column Name | Column Description | Valid Values |
|---|---|---|
| This_DAAC | Ids the DAAC where work processed. | |
| TimeOfLastUpdate | This column holds the time of the last order or request update. | |
| Title | This is the title of a user. (i.e., Dr.) | Dr     Doctor<br>Mr     Mister<br>Ms     Miss/Mrs.<br>Miss   Miss<br>Mrs    Mrs.<br>Rev    Reverend<br>Sr     Senior |
| userId | This column uniquely identifies a registered user. | |

### 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.

The following defaults are defined in the MSS database:

- EcAcOrder.orderSource defaults to "Unknown"

- EcAcOrder.orderStatus defaults to "Pending"

- EcAcOrder.logicalLock defaults to 0

- EcAcRequest.deleteRequestFlag defaults to 'N'

- MsAcUsrProfile.nasaUser defaults to 'N'

### 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 three views in MSS, DistMedia, DistFTP, and UsrProf that have been created for EMS processing.**

## EMSDistFTP_View

### Columns

| NAME | Datatype | Null |
|------|----------|------|
| requestId | varchar(10) | No |
| orderId | varchar(10) | No |
| userId | varchar(14) | No |
| orderSource | varchar(21) | Yes |
| orderType | varchar(7) | Yes |
| ShortName | varchar(12) | Yes |
| VersionID | tinyint | Yes |
| receiveDateTime | varchar(18) | Yes |
| tranDuration | int | Yes |
| ECS_GranuleId | numeric(16,0) | Yes |
| StatusDesc | varchar(30) | Yes |
| eMailAddr | varchar(255) | Yes |
| Billable | varchar(255) | Yes |
| FileType | varchar(8) | Yes |
| FileSize | int | Yes |
| fileNamePath | varchar(510) | Yes |
| Domain | varchar(255) | Yes |
| shipAddrCity | varchar(35) | Yes |
| shipAddrState | varchar(20) | Yes |
| shipAddrZip | varchar(15) | Yes |
| shipAddrCountry | varchar(30) | Yes |

*Figure 3.1.7-1.  EMSDistFTP_View (1 of 2)*

## Privileges

| Object Name | Delete | Execute | Insert | References | Select | Update |
|---|---|---|---|---|---|---|
| EMSgroup | | | | | Y | |

## Dependencies

### Referenced Objects

| Object Name | Object Type |
|---|---|
| EcAcOrder | TABLE |
| EcAcRequest | TABLE |
| EcEMSExtractTypeDateRange | TABLE |

*Figure 3.1.7-1. EMSDistFTPView (2 of 2)*

# EMSDistMedia_View

## Columns

| NAME | Datatype | Null |
|---|---|---|
| requestId | varchar(10) | No |
| orderId | varchar(10) | No |
| userId | varchar(14) | No |
| orderSource | varchar(21) | Yes |
| orderType | varchar(7) | Yes |
| ShortName | varchar(12) | Yes |
| VersionID | tinyint | Yes |
| receiveDateTime | varchar(18) | Yes |
| tranDuration | int | Yes |
| ECS_GranuleId | numeric(16,0) | Yes |
| StatusDesc | varchar(30) | Yes |
| eMailAddr | varchar(255) | Yes |
| Billable | varchar(255) | Yes |
| FileType | varchar(8) | Yes |
| FileSize | int | Yes |
| fileNamePath | varchar(510) | Yes |
| Domain | varchar(255) | Yes |
| shipAddrCity | varchar(35) | Yes |
| shipAddrState | varchar(20) | Yes |
| shipAddrZip | varchar(15) | Yes |
| shipAddrCountry | varchar(30) | Yes |

## Privileges

| Object Name | Delete | Execute | Insert | References | Select | Update |
|---|---|---|---|---|---|---|
| EMSgroup | | | | | Y | |

## Dependencies

Referenced Objects

| Object Name | Object Type |
|---|---|
| dbo.EcAcOrder | TABLE |
| dbo.EcAcRequest | TABLE |
| dbo.EcEMSExtractTypeDateRange | TABLE |

*Figure 3.1.7-2.  EMSDistMedia_View*

# EMSUsrProf_View

## Columns

| NAME | Datatype | Null |
|------|----------|------|
| userId | varchar(14) | No |
| userType | varchar(1) | No |
| eMailAddr | varchar(255) | Yes |
| internetAffiliation | varchar(14) | Yes |

## Privileges

| Object Name | Delete | Execute | Insert | References | Select | Update |
|-------------|--------|---------|--------|------------|--------|--------|
| EMSgroup | | | | | Y | |

## Dependencies

### Referenced Objects

| Object Name | Object Type |
|-------------|-------------|
| EcEMSExtractTypeDateRange | TABLE |
| MsAcUsrProfile | TABLE |

*Figure 3.1.7-3.  EMSUsrProf_View*

### 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, however, therefore its constraints support "restrict-only" operations.  This means that a row cannot 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.

The following declarative integrity constraints are defined in the MSS database:

- fk_orderId – EcAcRequest foreign key (orderId) references EcAcOrder (orderId)

- fk_addressordid – EcAcAddress foreign key (orderId) references EcAcOrder (orderId)

### 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 in Table 3-27. A brief definition of each of these triggers follows. Trigger implementation may vary by drop/patch and therefore is not listed here.

#### *Table 3-27.  Trigger Listing*

| Table Code | Trigger Name | Trigger Type |
|---|---|---|
| EcAcOrder | TrigUpdEcAcOrder | UpdateTrigger |
| EcAcRequest | TrigInsEcAcRequest | InsertTrigger |
| EcAcRequest | TrigUpdEcAcRequest | UpdateTrigger |
| MsAcOpPrivilege | TrigUpdMsAcOpPrivilege | UpdateTrigger |
| MsAcUsrProfile | TrigInsUpdMsAcUsrProfile | Insert/Update Trigger |
| MsAcUsrProfile | TrigDelMsAcUsrProfile | DeleteTrigger |

### 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 in Table 3-28. 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 3-28. 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. |
| ProcCreateNewRequest | Used by OMS to create new requests from V0GTWY |
| ProcCreateNewOrder | Used by OMS to create new orders from V0GTWY |
| ProcGetShipAddress | Retrieves shipping information |
| ProcInsEcAcRequest | Used by OMS Gui to create new requests during partitioning |
| ProcDecrementEcAcRequestId | Decrements the request ID by 1 |
| ProcDecrementOrderId | Decrements the order ID by 1 |
| ProcIncrementEcAcRequestId | Increments the request ID by 1 |
| ProcIncrementOrderId | Increments the order ID by 1 |
| ProcGetOrderStatusEmail | Retrieves orderStatus and emailAddress for an order |
| ProcInsEcAcOrder | Inserts a new row into EcAcOrder |
| ProcUpdBORequest | Updates a bundling order request |
| ProcUpdEcAcRequest | Updates a request |
| ProcUpdFtpMediaTypeInfo | Updates FTP-related information for a request |
| ProcUpdPdsRequest | Called by PDS to update a request |
| ProcUpdRequestInfo | Updates a request (certain fields only) |
| ProcUpdRequestPriority | Updates the priority of a request |
| ProcUpdRequestStatus | Updates the requestStatus of a request |
| ProcUpdateShipAddress | Updates shipping address information |
| ProcValidateDAAC | Validates the DAAC name associated with the caller |
| ProcGetInsEcAcOrder | Inserts a new order and selects the orderId |
| ProcGetInsEcAcRequest | Inserts a new request and selects the requestId |
| ProcGetOrderByExReqId | Retrieves information about an order based on its external request ID |
| ProcGetOrderByExReqIdAndUsrId | Gets order information based on both external   equested and userId |
| ProcGetOrderByOrderId | Gets order information based on the orderId |
| ProcGetOrderByStOrderId | Gets order information based on standing order ID |
| ProcGetOrderByUsrName | Gets order information based on first and last name |
| ProcGetRequestByOrderId | Gets request information based on orderId |
| ProcGetRequestByReqId | Gets request information based on requestId |
| ProcGetRequestByUsrName | Gets request information based on first and last name |
| ProcUpdEcAcOrder | Updates order information based on orderId |
| ProcUpdOrderStatus | Updates order status based on orderId |
| ProcIdInEMChecksumUsers | Determines if user or request should get checksum info in email |

## 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.

### 3.2.1   Files Definitions

Not Applicable

### 3.2.2   Attributes

Not Applicable

### 3.2.3   Attribute Domains

Not Applicable

# 4. Performance and Tuning Factors

## 4.1 Indexes

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

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

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

A key of the types of indexes found in MSS is provided in Table 4-1 Index Type Key.  A list 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 (1 of 2)

| Table | Code | P | F | U | C |
|---|---|---|---|---|---|
| EcEMSextractRecord | xtypeCompl_idx | NO | NO | YES | NO |
| EcEMSextractRecord | xfilenameCompl_idx | NO | NO | YES | NO |
| EcEMSextractRecord | StartEndDate_idx | NO | NO | YES | NO |
| EcAcAddress | EcAcAddressOrdIdIdx | NO | NO | YES | YES |
| EcAcOrder | EcAcOrderOrderIdIdx | NO | NO | YES | YES |
| EcAcOrder | EcAcOrderExtReqIdIdx | NO | NO | NO | YES |
| EcAcOrder | EcAcOrderUserIdIdx | NO | NO | NO | YES |
| EcAcOrder | EcAcOrderOrderTypeIdx | NO | NO | NO | YES |
| EcAcOrder | EcAcOrderStandOrdIdx | NO | NO | NO | YES |
| EcAcOrder | EcAcOrderNamesIdx | NO | NO | NO | YES |
| EcAcRequest | EcAcRequestPkIdx | YES | NO | YES | YES |
| EcAcRequest | EcAcRequestOrderIdx | NO | NO | NO | YES |
| EcAcRequest | EcAcRequestReceiveIdx | NO | NO | NO | YES |
| EcAcRequest | EcAcRequestdNodeIdx | NO | NO | NO | YES |
| EcAcRequest | EcAcRequestStatusIdx | NO | NO | NO | YES |
| EcDbDatabaseVersions | PK_MSACVERSIONS | YES | NO | YES | YES |
| EcMsDAACSites | EcMsDAACSi | NO | NO | YES | YES |
| MsAcAffiliationCode | PK_MSACAFFILIATIONCODE | YES | NO | YES | YES |
| MsAcAsterCategory | PK_MSACAsterCategory | YES | NO | YES | YES |
| MsAcDAACCode | PK_MSACDAACCODE | YES | NO | YES | YES |
| MsAcEMChecksumUsers | pk_mssemchecksumusers | 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 | MsAcOpPriv | NO | NO | YES | YES |
| MsAcPriorityCode | PK_MSACPRIORITYCODE | YES | NO | YES | YES |
| MsAcResearchFieldCode | PK_MSACRESEARCHFIELDCODE | YES | NO | YES | YES |
| MsAcStatusCode | PK_MSACSTATUSCODE | YES | NO | YES | YES |
| MsAcUsrAudit | MsAcUsrAuditActivityTypeIdx | NO | NO | NO | YES |
| MsAcUsrAudit | MsAcUsrAuditDateTimeIdx | NO | NO | NO | YES |
| MsAcUsrAudit | MsAcUsrAuditHostNameIdx | NO | NO | NO | YES |
| MsAcUsrAudit | MsAcUsrAuditLocationIdx | NO | NO | NO | YES |
| MsAcUsrAudit | MsAcUsrAuditProgramIdx | NO | NO | NO | YES |
| MsAcUsrAudit | MsAcUsrAuditStatusIdx | NO | NO | NO | YES |
| MsAcUsrAudit | MsAcUsrAuditUserIdIdx | NO | NO | NO | YES |
| MsAcUsrProfile | MsAcUserProfileNameIdx | NO | NO | NO | YES |
| MsAcUsrProfile | MsAcUsrProfilePkIdx | NO | NO | YES | YES |
| MsAcUsrProfile | UserProfileAlt_1 | NO | NO | YES | YES |

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

| Table | Code | P | F | U | C |
|---|---|---|---|---|---|
| MsAcUsrProfile | UserProfilehomeDaacIdx | NO | NO | NO | YES |
| MsAcUsrProfile | UserProfileGTWYUsrIdx | NO | NO | NO | YES |
| MsAcUsrRequest | MsAcUsrRequestPkIdx | YES | NO | YES | YES |
| role_to_cots | role_to_co | NO | 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. |

## 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

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DAACs move into an operational environment.  As named caches are defined this portion of the document will be updated.

# 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.
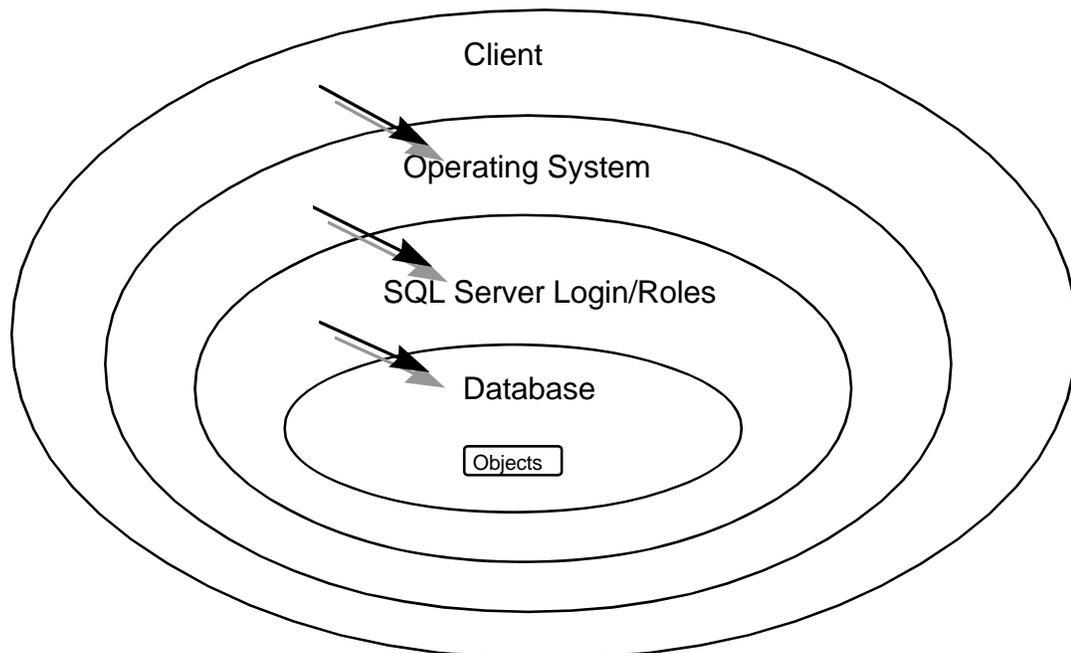


**Figure 5-1.  Sybase General Approach to SQL Server Security[1]**

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

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[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 (1 of 2)

| Group/Role | Assigned Users |
|------------|----------------|
| AcctGroup | EcAcOrderManager |
| | EcCsMtMGateway |
| | EcCsMtMGateway_1 |
| | EcCsMtMGateway_2 |
| | EcCsMtMGateway_3 |
| | EcDmV0ToEcsGateway |
| | EcDsDistributionServer |
| | EcMsAcOrderSrvr |
| | EcMsAcRegUserSrvr |
| | EcOmGui |
| | EcOmOrderManager |
| | MsAcManager |
| | OmSriCliDriver |
| ClientGroup | EcClDtDesktopDaacUser |
| RepGroup | "No users assigned" |
| DDIST_Group | EcDsEPD |

### Table 5-2. Group/Role Assignments (2 of 2)

| Group/Role | Assigned Users |
|---|---|
| NBSRV_Group | EcNbSubscriptionCLI |
| | EcNbSubscriptionGUI |
| | EcNbActionDriver |
| PDS_Group | PDS |
| DPL_Group | EcDlWebAccess |
| EMSgroup | EcDbEMSdataExtractor |

### Table 5-3. Object Permissions

| Group/Role | Object | A | S | I | U | D | E |
|---|---|---|---|---|---|---|---|
| AcctGroup | 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 | |
| DDIST_Group | EcAcOrder | | X | | | | |
| | EcAcRequest | | X | | X | | |
| | MsAcUsrProfile | | X | | | | |
| PDS_Group | EcAcRequest | X | | | | | |
| | MsAcUsrProfile | | X | | | | |
| | EcAcOrder | | X | | X | | |
| RepGroup | MsAcUsrProfile | | X | X | X | X | |
| NBSRV_Group | MsAcUsrProfile | | X | | | | |
| | EcAcAddress | | X | X | | | |
| | EcAcOrder | | X | X | X | | |
| | EcAcRequest | | X | X | X | | |
| DPL_Group | EcAcAddress | | X | X | | | |
| | EcAcOrder | | X | | | | |
| | EcAcRequest | | X | | | | |

# 6.  Scripts

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

## 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 intialized 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 <u><SUBSYS></u> database on demand. |

## 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 |
|---|---|
| EcCoDbSyb_CkErrorLog | Checks the error log for error messages warranting DBO attention. |
| 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 Data Development and Management (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.

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## 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(14),
                 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(60),
                 projectName varchar(30),
                 affiliation varchar(16),
                 researchField varchar(64),
                 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),
                 billContactName_First varchar(20),
                 billContactName_Last varchar(20),
                 billContactName_MI char(1),
                 billContactOrg varchar(60),
                 billContactTitle varchar(5),
                 billEMailAddr varchar(255),
```

```
                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),
                shipContactName_First varchar(20),
                shipContactName_Last varchar(20),
                shipContactName_MI char(1),
                shipContactOrg varchar(60),
                shipContactTitle varchar(5),
                shipEMailAddr varchar(255),
                asterCategory numeric,
                darExpeditedData bit,
                nasaUser varchar(1)
                category varchar(7),
                accessPrivilege varchar(8))
        primary key ( userId)
        searchable columns (homeDAAC)
        replicate all columns
go
```

## 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
```

## 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 RepAgent threads to 1.  This enables the RepAgent thread Integration in the Adaptive server.

# Appendix A.  MSS ERDs

Physical Data Model
Model: MSS Physical Data Model
Package:
Diagram: MSS ERD
Author: gdobbins  Date : 4/9/2007
Version : 2
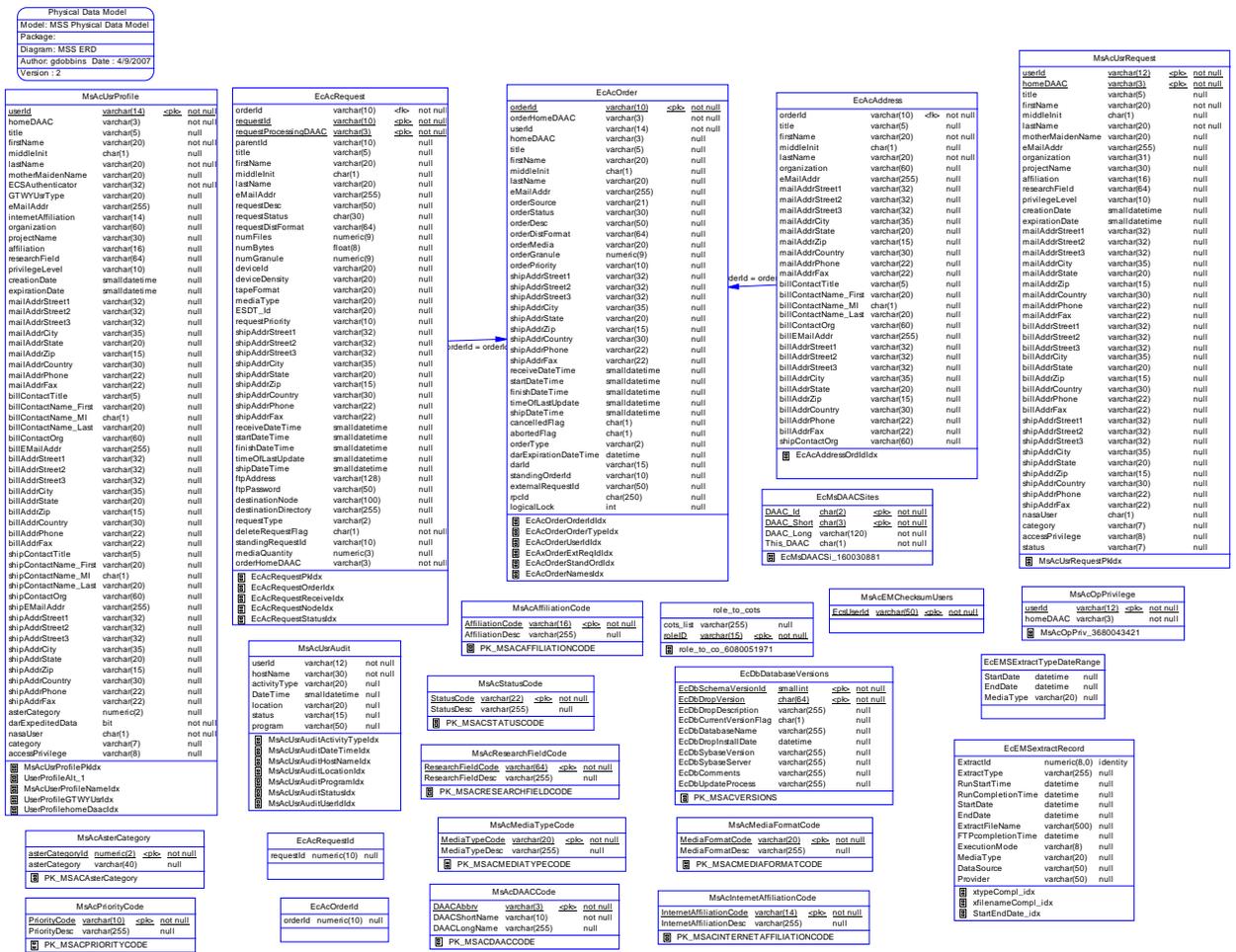
*Figure A-1.  Systems Management Subsystem*

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# Abbreviations and Acronyms

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|---|---|
| CASE | Computer Aided Software Engineering |
| CDRL | Contract Data Requirements List |
| CONFIG | Configuration Registry Subsystem |
| DBMS | Database Management System |
| DCN | Document Change Notice |
| DD&M | Data Development and Management |
| DID | Data Item Description |
| DM | Data Management |
| EDHS | ECS Data Handling System |
| EOS | Earth Observing System |
| EOSDIS | EOS Data and Information System |
| ERD | Entity Relationship Diagram |
| FK | Foreign Key |
| I/O | Input/Output |
| MSS | Management Support Subsystem<br>Management Subsystem |
| PDF | Portable Document Format |
| PDPS | Planning and Data processing Subsystem |
| PK | Primary Key |
| SDSRV | Science Data Server |
| SSS | Spatial Subscription Server |
| STMGT | Storage Management |
| SUBSRV | Subscription Server |
| URL | Universal Resource Locator |
| WWW | World-Wide Web |

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