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EOSDIS Core System Project

ECS Project Training Material
Volume 9: Data Distribution

March 2001

Raytheon Company
Upper Marlboro, Maryland

ECS Project Training Material
Volume 9: Data Distribution

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Preface

This document is a contract deliverable with an approval code of 3. As such, it does not require formal Government approval. This document is delivered for information only, but is subject to approval as meeting contractual requirements.

Any questions should be addressed to:

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Note: This document contains change bars to indicate the addition or revision of material since the issuance of the predecessor document containing training material for Release 5B of the Earth Observing System Data and Information System (EOSDIS) Core System (ECS).

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Abstract

This is Volume 9 of a series of lessons containing the training material for Release 6A of the Earth Observing System Data and Information System (EOSDIS) Core System (ECS). This lesson provides a detailed description of the process required for data distribution.

Keywords: training, instructional design, course objective, distribution, data distribution, Release 6A.

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Introduction

Identification

Training Material Volume 9 is part of Contract Data Requirements List (CDRL) Item 129, whose requirements are specified in Data Item Description (DID) 625/OP3 and is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Core System (ECS), Contract (NAS5-60000).

Scope

Training Material Volume 9 describes the process and procedures for data distribution. This lesson is designed to provide the operations staff with sufficient knowledge and information to satisfy all lesson objectives.

Purpose

The purpose of this Student Guide is to provide a detailed course of instruction that forms the basis for understanding data distribution. Lesson objectives are developed and will be used to guide the flow of instruction for this lesson. The lesson objectives will serve as the basis for verifying that all lesson topics are contained within this Student Guide and slide presentation material.

Status and Schedule

This lesson module provides detailed information about training for Release 6A. Subsequent revisions will be submitted as needed.

Organization

This document is organized as follows:

Introduction:	The Introduction presents the document identification, scope, purpose, and organization.
Related Documentation:	Related Documentation identifies parent, applicable and information documents associated with this document.
Student Guide:	The Student Guide identifies the core elements of this lesson. All Lesson Objectives and associated topics are included.
Slide Presentation:	Slide Presentation is reserved for all slides used by the instructor during the presentation of this lesson.

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Related Documentation

Parent Document

The parent document is the document from which this ECS Training Material's scope and content are derived.

423-41-01	Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work

Applicable Documents

The following documents are referenced within this ECS Training Material, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this document:

420-05-03	Goddard Space Flight Center, Earth Observing System (EOS) Performance Assurance Requirements for the EOSDIS Core System (ECS)
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS)

Information Documents

Information Documents Referenced

The following documents are referenced herein and amplify or clarify the information presented in this document. These documents are not binding on the content of the ECS Training Material.

609-CD-600	Release 6A Operations Tools Manual for the ECS Project
611-CD-600	Mission Operation Procedures for the ECS Project
910-TDA-022	Custom Configuration Parameters for ECS Release 6A

Information Documents Not Referenced

The following documents, although not referenced herein and/or not directly applicable, do amplify or clarify the information presented in this document. These documents are not binding on the content of the ECS Training Material.

305-CD-600	Release 6A Segment/Design Specification for the ECS Project
311-CD-600	Release 6A Data Management Subsystem Database Design and Database Schema Specifications for the ECS Project

311-CD-601	Release 6A Ingest Database Design and Database Schema Specifications for the ECS Project
311-CD-602	Release 6A Interoperability Subsystem (IOS) Database Design and Database Schema Specifications for the ECS Project
311-CD-603	Release 6A Planning and Data Processing Subsystem Database Design and Schema Specifications for the ECS Project
311-CD-604	Release 6A Science Data Server Database Design and Schema Specifications for the ECS Project
311-CD-605	Release 6A Storage Management and Data Distribution Subsystems Database Design and Database Schema Specifications for the ECS Project
311-CD-606	Release 6A Subscription Server Database Design and Schema Specifications for the ECS Project
311-CD-607	Release 6A Systems Management Subsystem Database Design and Schema Specifications for the ECS Project
311-CD-608	Release 6A Registry Database Design and Schema Specifications for the ECS Project
313-CD-600	Release 6A ECS Internal Interface Control Document for the ECS Project
334-CD-600	6A Science System Release Plan for the ECS Project
601-CD-001	Maintenance and Operations Management Plan for the ECS Project
603-CD-003	ECS Operational Readiness Plan for Release 2.0
604-CD-001	Operations Concept for the ECS Project: Part 1-- ECS Overview
604-CD-002	Operations Concept for the ECS Project: Part 2B -- ECS Release B
605-CD-002	Release B SDPS/CSMS Operations Scenarios for the ECS Project
607-CD-001	ECS Maintenance and Operations Position Descriptions
152-TP-001	ACRONYMS for the EOSDIS Core System (ECS) Project
152-TP-003	Glossary of Terms for the EOSDIS Core System (ECS) Project
211-TP-005	Transition Plan 4PX to 4PY, 4PY to 5A, and 5A to 5B for the ECS Project
220-TP-001	Operations Scenarios - ECS Release B.0 Impacts
500-1002	Goddard Space Flight Center, Network and Mission Operations Support (NMOS) Certification Program, 1/90

535-TIP-CPT-001	Goddard Space Flight Center, Mission Operations and Data Systems Directorate (MO&DSD) Technical Information Program Networks Technical Training Facility, Contractor-Provided Training Specification

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Data Distribution Overview

Lesson Overview

This lesson will provide you with the complete process by which the ECS personnel perform data distribution. The processes described in the lesson apply to Ingest/Distribution Technicians. The procedures involved in data distribution include such tasks as monitoring data distribution requests; changing the priority of a distribution request; canceling, suspending and/or resuming a distribution request; or unloading/loading tape stackers.

Lesson Objectives

Overall Objective - The overall objective of the Data Distribution lesson is for Maintenance and Operations (M&O) personnel to develop proficiency in the procedures that apply to data distribution operations for the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS).

Condition - The student will be given oral or written information and requirements for performing data distribution activities, access to the Data Server Subsystem, a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform data distribution activities in accordance with the prescribed procedures without error.

Specific Objective 1 - The student will describe the general functions and processes associated with data distribution (in the context of ECS operations).

Condition - The student will be given written or oral questions concerning the general functions and processes associated with data distribution.

Standard - The student will state without error the general functions and processes associated with data distribution in accordance with the lesson content and the applicable procedures.

Specific Objective 2 - The student will perform the steps involved in launching the Data Distribution Operator graphical user interface (GUI) and the Storage Management Control GUI.

Condition - The student will be given a statement of the requirements for launching the Data Distribution Operator and Storage Management Control GUIs, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will log in to the appropriate host using secure shell, enter the

command to start the Data Distribution Operator GUI in the specified mode, and enter the command to start the Storage Management Control GUI in the specified mode.

Specific Objective 3 - The student will perform the steps involved in monitoring/controlling data distribution requests, including configuring data distribution polling, filtering data distribution requests, changing the priority of distribution requests, suspending/resuming distribution requests, and canceling distribution requests.

Condition - The student will be given a statement of the requirements for monitoring/controlling data distribution requests, access to the previously launched Data Distribution Operator GUI in the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will monitor/control data distribution requests (including configuring data distribution polling, filtering requests, and changing the status of distribution requests as directed) and respond to questions concerning the current status of distribution requests.

Specific Objective 4 - The student will perform the steps involved in modifying an e-mail preamble applicable to data distribution.

Condition - The student will be given a statement of the requirements for modifying an e-mail preamble applicable to data distribution, access to the previously launched Data Distribution Operator GUI in the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will select the Preamble Editor tab of the Data Distribution Operator GUI, select the appropriate media type, select the appropriate preamble type, edit the preamble text, and save the edited preamble.

Specific Objective 5 - The student will perform the steps involved in configuring Storage Management polling functions.

Condition - The student will be given a statement of the requirements for configuring Storage Management polling functions, access to the previously launched Storage Management Control GUI in the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will select the appropriate option from the pull-down menu on the Storage Management Control GUI, set the Operator Notification Timer and/or Cache Statistics Timer to the appropriate polling states as directed, enter database polling rates as directed, set the error retry rate as directed, and apply the modifications.

Specific Objective 6 - The student will perform the steps involved in deleting files from cache.

Condition - The student will be given a statement of the requirements for deleting files from cache, access to the previously launched Storage Management Control GUI in the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will select the Cache Stats. tab on the Storage Management Control GUI, select the cache containing the files to be deleted, select the file(s) to be deleted from the cache, and mark the file(s) for deletion.

Specific Objective 7 - The student will perform the steps involved in viewing storage management event log information.

Condition - The student will be given a statement of the requirements for viewing storage management event log information, access to the previously launched Storage Management Control GUI in the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will select the Event Logging tab of the Storage Management Control GUI, enter the defining characteristic(s) of the event, search the event log for events that meet the specified criteria, observe event information displayed in the Event Log window, and respond to questions concerning the event information displayed in the Event Log window.

Specific Objective 8 - The student will perform the steps involved in monitoring storage management server operations.

Condition - The student will be given a statement of the requirements for monitoring storage management server operations, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will monitor storage management servers (including filtering requests) and respond to questions concerning the current status of storage management requests.

Specific Objective 9 - The student will perform the steps involved in modifying system parameters in database tables.

Condition - The student will be given a statement of the requirements for modifying system parameters in database tables, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will log in to the appropriate host using secure shell and use the appropriate GUI, script, or interactive structured query language (isql) commands to modify the value assigned to the parameter in a database table.

Specific Objective 10 - The student will perform the steps involved in troubleshooting data distribution problems.

Condition - The student will be given a statement of the requirements for troubleshooting data distribution problems, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*, and a copy of 611-CD-600-001, *Mission Operation Procedures for the ECS Project*.

Standard - In accordance with the lesson content, the applicable procedure, and the statement of requirements the student will review the trouble symptoms, respond to requests that exceed the distribution request threshold (if applicable), check for an acquire failure, check appropriate log files (as necessary), take action to correct the problem(s), verify that distribution request processing has resumed, and respond to questions concerning the possible cause(s) of the problem.

Importance

This lesson applies to students who will be Distributed Active Archive Center (DAAC) Ingest/Distribution Technicians. The lesson will provide them with the knowledge and skills needed when performing their assigned tasks. Those tasks include the following types of activities:

- Launching the Data Distribution Operator and Storage Management Control GUIs.
- Monitoring/controlling data distribution requests.
- Modifying packing list and e-mail preambles.
- Configuring Storage Management polling.
- Deleting files from cache.
- Viewing Storage Management Event Log information.
- Monitoring Storage Management server operations.
- Modifying system parameters.
- Troubleshooting Data Distribution problems.

The lesson describes why and how the activities are performed. Consequently, the students will become aware of what tasks they will be performing on the job and how to accomplish those tasks.

Distribution Concepts

ECS Context

Data distribution for ECS is accomplished at the Distributed Active Archive Centers (DAACs). The people involved in data distribution activities are Ingest/Distribution Technicians.

The ECS Context Diagram (Figure 1) shows the relationships among subsystems within the Science Data Processing component of ECS. The Data Server Subsystem (DSS), which manages access to the data archive, is key to data distribution as well as several other functions. Of course, the context diagram shows a generalized (high-level) view of ECS. The Data Distribution (DDIST), Storage Management (STMGT), and Science Data Server (SDSRV) architecture diagrams (Figures 2 through 4 respectively) focus on the individual computer software configuration items (CSCIs) of the Data Server Subsystem and their relationships with each other and with other subsystems.

- DDIST (Figure 2) is the part of the DSS that formats and distributes data to users.
  - Accepts requests from the SDSRV CSCI.
  - Directs the STMGT CSCI to transfer data.
- STMGT (Figure 3) is the part of the DSS that stores, manages, and retrieves data files on behalf of other parts of the Science Data Processing components (including Data Distribution).
  - Provides interfaces that allow Data Distribution to obtain access to disk space.
  - Maintains a user pull area that supports electronic pull distribution.
  - Provides for the copying of files into the archive for permanent storage.
- SDSRV (Figure 4) is the part of the DSS that manages and provides user access to collections of non-document Earth Science data.
  - Checks/verifies metadata.
  - Issues requests to the STMGT and DDIST CSCIs to perform storage and distribution services in support of the processing of service requests, such as insertion of data into the archive or distribution of data products from the archive.

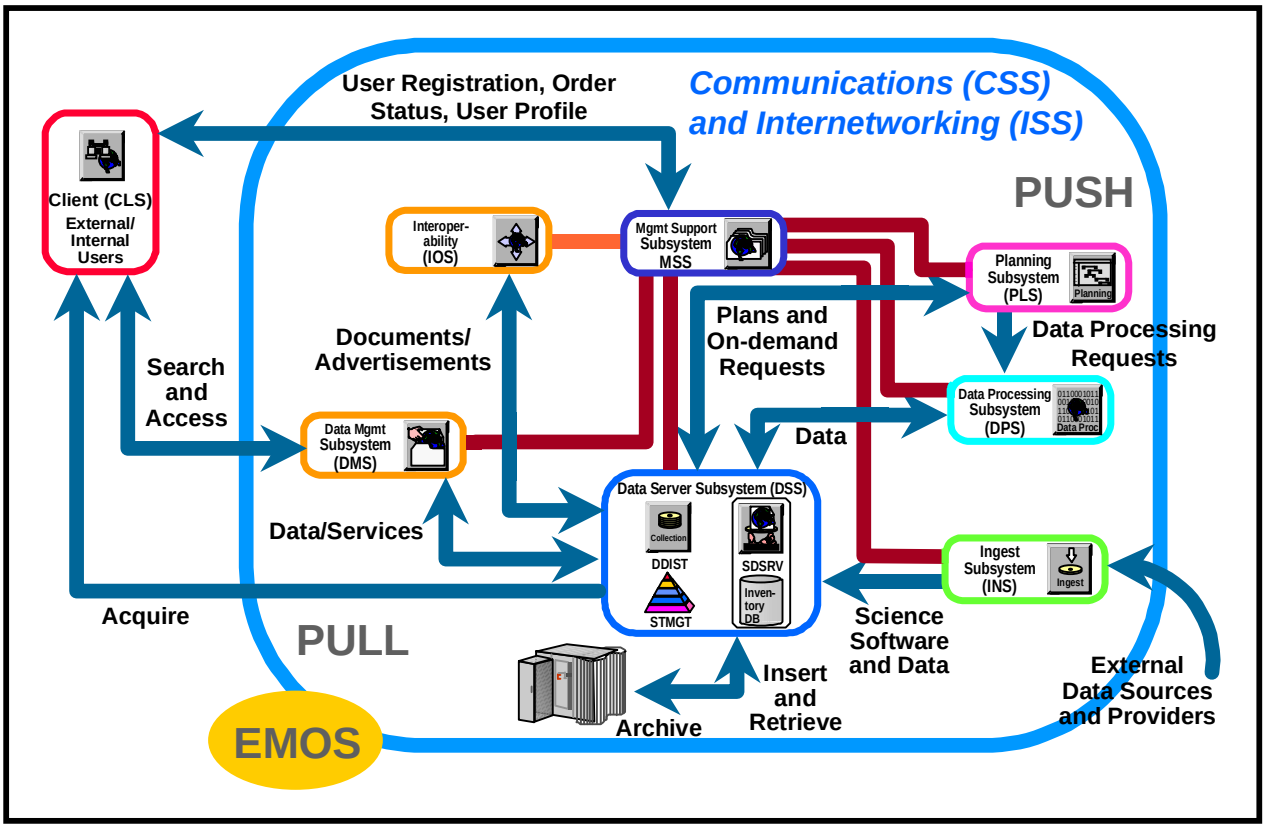

Figure 1. ECS Context Diagram

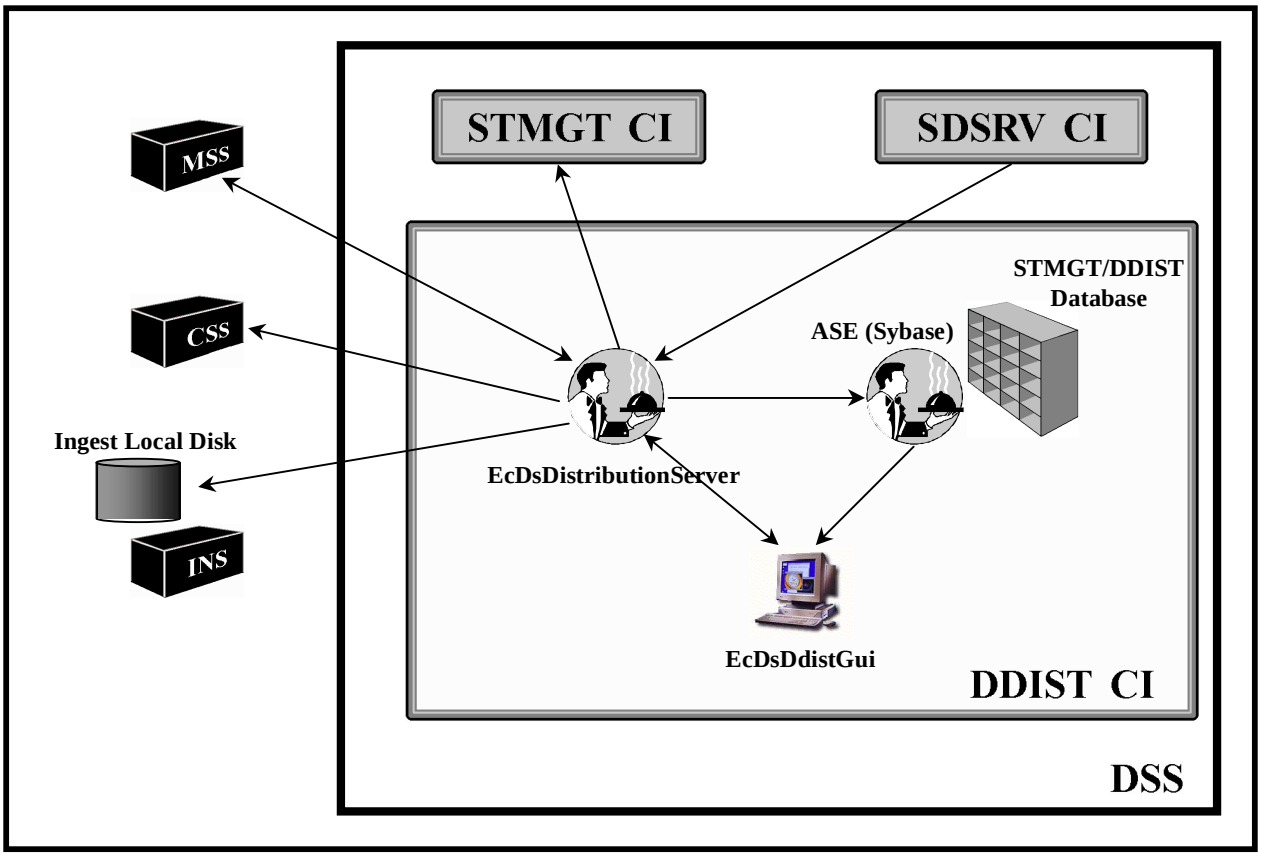

Figure 2. DSS Data Distribution (DDIST) CSCI Architecture

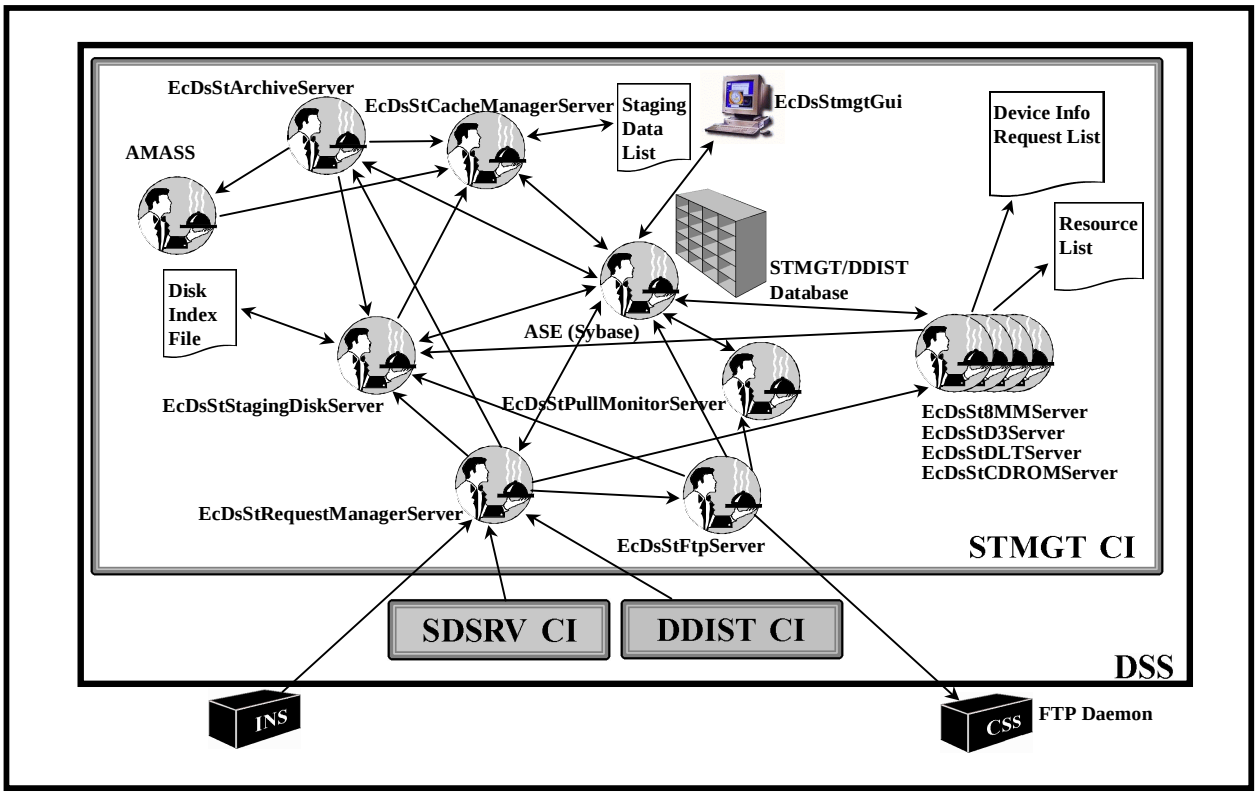

Figure 3. DSS Storage Management (STMGT) CSCI Architecture

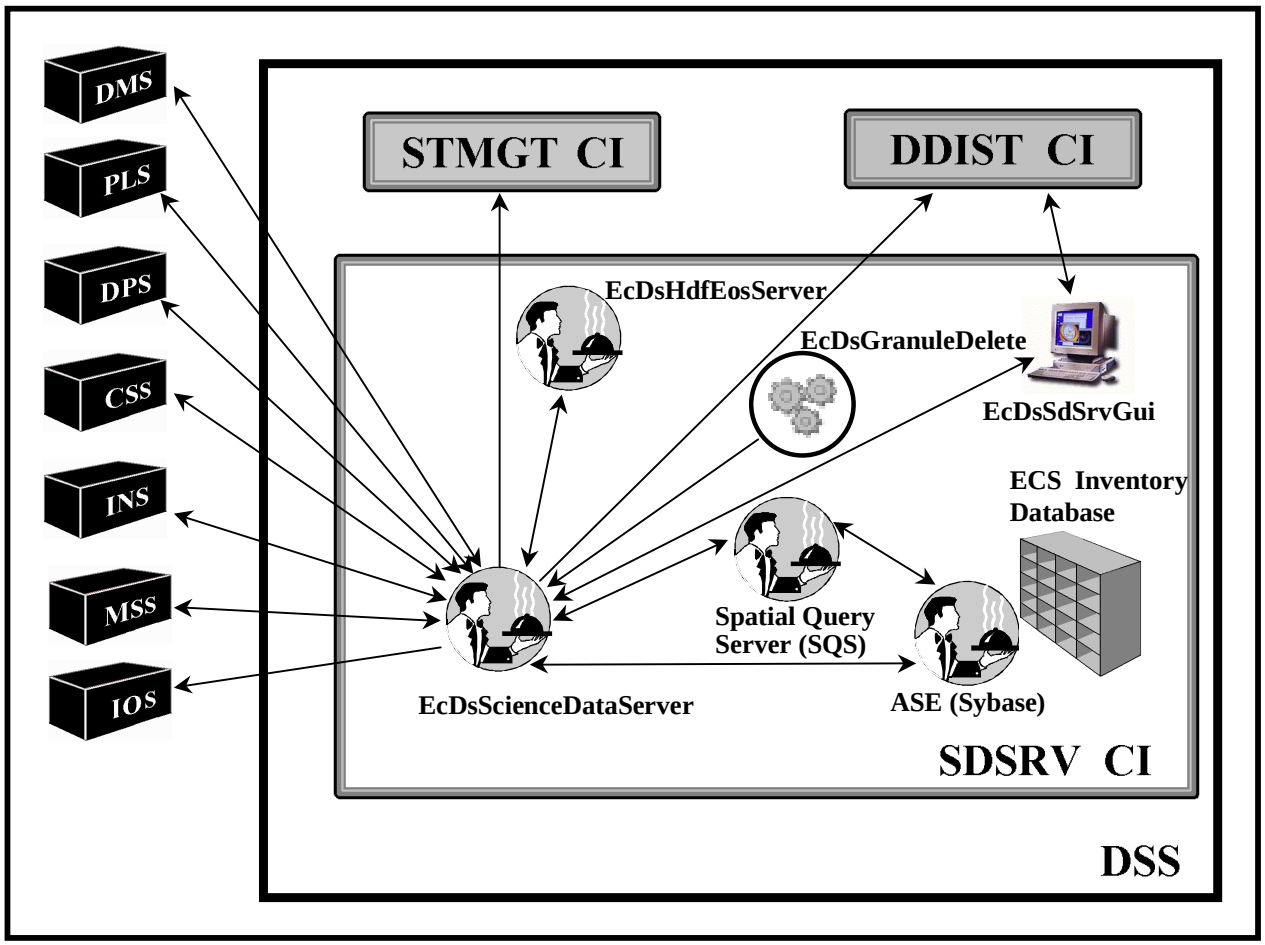

Figure 4. DSS Science Data Server (SDSRV) CSCI Architecture

A recent addition to ECS is the Product Distribution System (PDS), which supports the distribution of data on the following types of media:

- 8mm tape cartridges.
- Digital Linear Tape (DLT).
- Compact disk (CD).
- DVD (formerly digital video disk or digital versatile disk now referred to as just "DVD").

A description of PDS (including procedures for the distribution of data on hard media) is described in an addendum to this document.

Data Distribution (DDIST)

The DDIST CSCI is the part of ECS Science Data Processing (SDP) that manages the distribution of data products to requesters, whether they are internal or external to SDP. The Ingest/Distribution Technician uses DDIST when monitoring and controlling the distribution of data products. The Ingest/Distribution technician has access to DDIST primarily through the Data Distribution Operator graphical user interface (GUI).

DDIST has the following three major components (as shown in Figure 2):

- Data Distribution Operator GUI (EcDsDdistGui).
  - GUI that allows the technician to track and manipulate distribution requests through GUI controls and database information.
- Distribution Server (EcDsDistributionServer).
  - Server that provides the control and coordination for data distribution through request processing.
- Sybase Adaptive Server Enterprise (ASE) Server.
  - Commercial off-the-shelf (COTS) software application that handles the request list and has a set of stored procedures that updates the request configuration, provides the request configuration to GUI operations and check-points the state of the CSCI for fault recovery purposes.

Distribution personnel use the following start-up script that is available in the /usr/ecs/*MODE*/CUSTOM/utilities directory on the Distribution Server host:

- EcDsDdistGuiStart.
  - Launches the Data Distribution Operator GUI.

The following start-up scripts in the /usr/ecs/*MODE*/CUSTOM/utilities directory on the Distribution Server host are typically called by other applications and are not normally invoked directly by Distribution personnel:

- EcDsDataDistributionAppStart.
- EcDsDdStart.
- EcDsDistributionServerStart.
  - Starts the Distribution Server.

In addition to the preceding start-up scripts the following scripts are available in the /us/ecs/*MODE*/CUSTOM/utilities directory on the Distribution Server host:

- DsDdSendMailPl.pl.

- EcDsDdPTEdit.pl.
  - Perl script that allows system operators to change the threshold for the number of threads that can be active for each priority level of distribution requests.

Storage Management (STMGT)

The STMGT CSCI manages all physical storage resources for all DSS components including the following items:

- Tape robotic archive.
- Random Array of Inexpensive Disks (RAID) disk cache.
- On-line storage.
- Peripheral devices (e.g., various types of magnetic tape drives) used for ingesting data.

During the distribution of data, STMGT provides DDIST and SDSRV with interfaces that copy files out of the archive and allocate magnetic disk space for staging the files. In addition, STMGT provides DDIST with interfaces that copy files for electronic distribution. Furthermore, STMGT maintains a user pull area that supports electronic pull distribution.

STMGT has the following major components (as shown in Figure 3):

- Archive Server (EcDsStArchiveServer).
  - Server that provides access to stored data.
  - There can be multiple archive servers running at a given site, each with its own type of data or storage medium.
- Staging Servers.
  - Cache Manager Server (EcDsStCacheManagerServer) - Server that manages a group of data files that have been retrieved from the archive and placed into a cache area on staging disk; it maintains a list of the data files so that subsequent data retrieval requests are fulfilled immediately without requiring an additional archive access.
  - Pull Monitor (EcDsStPullMonitorServer) [The pull monitor is just a symbolic link to the Cache Manager Server binary executable image.] - Server that manages the files in the user pull area; deletes files as they are retrieved (i.e., electronically "pulled") from the user pull area by respective ECS users or as the files become stale (their time-out periods expire).
  - Staging Disk Server (EcDsStStagingDiskServer) - Server that manages shared disk space; it allows clients to allocate disk space and reserve files between staging directories and from non-staging to staging directories.

- Resource Managers.
  - 8mm Server (EcDsSt8MMServer) - Server that schedules access to the 8mm cartridge tape drives used by Ingest; maintains a request queue based on priority and time of request receipt.
  - D3 Server (EcDsStD3Server) - Server that schedules access to the D3 cartridge tape drive(s); maintains a request queue.
  - FTP Server (EcDsStFtpServer) - Server that schedules access for Ingest or distribution file transfer protocol (ftp); maintains a request queue.
- Storage Management Request Manager (EcDsStRequestManagerServer).
  - Routes requests to the appropriate server for servicing.
  - Provides the primary point of detection and recovery for unexpected client or server termination.
- Storage Management Control GUI (EcDsStmgtGui).
  - GUI to the Storage Management/Data Distribution shared database; allows the technician to set parameters and configurations that control the STMGT servers.
- Sybase ASE Server.
  - COTS software application that handles insertion and retrieval of data concerning storage management activities into/from the STMGT/DDIST database.
- Archival Management and Storage System (AMASS).
  - COTS software application that supports the functioning of the data repository hardware (e.g., archive robotics).

Distribution personnel use the following start-up script that is available in the /usr/ecs/*MODE*/CUSTOM/utilities directory on the Distribution Server host:

- EcDsStmgtGuiStart.
  - Launches the Storage Management Control GUI.

The following start-up scripts in the /usr/ecs/*MODE*/CUSTOM/utilities directory on the Ingest Server host, Access/Process Coordinators (APC) Server host, Distribution Server host, File and Storage Management System (FSMS) Server host, and/or Working Storage host are typically called by other applications and are not normally invoked directly by Distribution personnel:

- EcDsStFtpServerStart.
  - Starts the ftp server.

- EcDsStStagingDiskServerStart.
  - Starts a staging disk server.
- EcDsStStart.
- EcDsStStorageMgmtAppStart.
- EcEcsAppStart.
- EcDsStArchiveServerStart.
  - Starts an archive server.
- EcDsStCacheManagerServerStart.
  - Starts a cache manager server.
- EcDsStRequestManagerServerStart.
  - Starts the Request Manager.
- EcDsSt8MMServerStart.
  - Starts the 8mm Server.
- EcDsStD3ServerStart.
  - Starts the D3 Server.
- EcDsStDLTServerStart.
  - Starts the DLT Server.
- EcDsStCDROMServerStart.
  - Starts the CD Server.

In addition to the preceding applications the following scripts are available in the /us/ecs/*MODE*/CUSTOM/utilities directory on a variety of hosts, including the APC Server host, FSMS Server host, and/or Working Storage host:

- EcDsCheckArchive.
- EcDsStConfigVolGrps.
- EcDsStDbBuild.
- EcDsStDbDrop.
- EcDsStDbDump.
- EcDsStDbDumpTrans.
- EcDsStDbLoad.

- EcDsStDbLoadTrans.
- EcDsStDbPatch.
- EcDsStFilesPerTapeUtility.
- EcDsStVolGrpCreateMain.pl.

Science Data Server (SDSRV)

The SDSRV CSCI is the part of the Data Server Subsystem that issues requests to the STMGT and DDIST CSCIs to perform storage and distribution services in support of the processing of service requests, such as insertion of data into the archive or distribution of data products to requesters (including other ECS subsystems).

SDSRV has the following major components (as shown in Figure 4):

- Science Data Server (EcDsScienceDataServer).
  - Server responsible for managing collections of Earth Science and related data and for servicing requests for the storage, search, retrieval, and manipulation of data within those collections.
- Hierarchical Data Format (HDF) EOS Server (EcDsHdfEosServer).
  - Server that provides science data subsetting capabilities for Earth Science data that have been configured with a subsetting service.
- Granule Deletion Administration Tool (EcDsGranuleDelete).
  - Provides a command line operator interface for deleting granules either in both the inventory and the archive or just the archive.
  - The associated Production History (PH), Quality Assessment (QA) and Browse granules can also be deleted.
- Science Data Server GUI (EcDsSdSrvGui).
  - GUI that allows the operator to monitor active EcDsScienceDataServer requests and receive descriptor files and dynamic link libraries (dll) for configuring Earth Science Data Types (ESDTs) in the EcDsScienceDataServer.
- Autometric Spatial Query Server (SQS).
  - COTS software application that provides the capability to manage spatial data types of earth science catalog metadata (including specialized spatial searches) for the ECS Science Data Processing Segment (SDPS).

- Sybase Adaptive Server Enterprise (ASE) Server.
  - COTS software application that provides the management of spatial data types of an earth science catalog of metadata for the SDPS. Includes capabilities for searching and storing the catalog.

The following start-up script is available in the /usr/ecs/*MODE*/CUSTOM/utilities directory on the SDSRV Server host and the Operations Workstation:

- EcDsSdSrvGuiStart.
  - Launches the Science Data Server GUI.

In addition to the preceding applications the following scripts are available in the /us/ecs/*MODE*/CUSTOM/utilities directory on the SDSRV Server host:

- EcTsDsClientDriverStart.
- EcDsSrConvertEvt.
- EcDsSrDbBuild.
- EcDsSrDbDrop.
- EcDsSrDbDump.
- EcDsSrDbLoad.
- EcDsSrDbMigrate.
- EcDsSrDbPatch.
- EcDsSrDbValids.

System Changes for Release 6A

Release 6A involves changes in the following areas:

- Increased data processing load at certain DAACs in support of…
  - Reprocessing of Terra satellite data (in addition to routine processing of Terra data).
    - Essentially doubles the previous Terra processing load.
  - Processing of data from the Aqua satellite.
    - Release 5B supported Aqua Science Software Integration and Test (SSI&T) only.

- Greater volume of data to be ingested.
  - Supports more interfaces and a larger number of Earth Science Data Types (ESDTs).
- Higher volume of data products to be distributed.

ECS hardware configuration upgrades for Release 6A include the following changes:

- Replacement of the Fiber Distributed Data Interface (FDDI) networks with gigabit Ethernet networks at two DAACs [i.e., Goddard Spaceflight Center (GSFC) and Earth Resources Observation Systems Data Center (EDC)].
  - The gigabit Ethernet networks are expected to handle the increased throughputs of Terra reprocessing along with routine processing for Aqua.
- Addition of an SGI Origin processor to the Science Processing configuration at GSFC to handle the additional Aqua MODIS processing load.
- Replacement of SGI Challenge archive machines with SGI Origin machines.
- Upgrading of Science Data Server configurations (both the SDSRV and Sybase/SQS hosts) at EDC and GSFC so that the request load is shared between two separate host configurations.
- Additional staging disks in the Release 6A configuration to handle increased Ingest and Data Distribution loads.

The Data Distribution Process

Data Distribution is a process of retrieving archived data and providing the data to requesters in response to the orders they submit. The requesters may be classified in either of the following two categories:

- External to ECS.
  - For example, scientists at Science Computing Facilities (SCFs) may have standing orders for the data products that are processed using their science software.
- Internal to ECS.
  - For example, the Data Processing Subsystem depends on Data Distribution to distribute copies of archived science software and input data in support of data processing.

Data retrieved from the archives can be distributed to requesters using any of the following three general methods:

- Electronic pull.
- Electronic push.
- Hard (physical) media distribution on disks or tape cartridges [distributed through the Product Distribution System (PDS)].

The method of data distribution is dictated by the nature of the data distribution request. (The requester specifies the distribution method when ordering or subscribing to the data.)

If the requester specifies distribution in the electronic "pull" mode, data are retrieved from the archive and placed in the "pull area" on the data server staging disk. The requester is notified that the data are available for retrieval from that particular location for a set period of time. The requester initiates a file transfer procedure (ftp "get") to move the data electronically (over a communications network) to the requester's own system.

In response to a request for distribution in the electronic "push" mode, data are retrieved from the archive and placed on a data server staging disk. Then the retrieved data on the staging disk are transferred electronically (via ftp "put") to the requester's designated storage location (specified in the distribution request) under the control of the data server. The requester is notified when the data push has been completed.

If the requester submits a request for hard media distribution, the retrieved data and metadata files on the staging disk are transferred via ftp push to the designated PDS staging area. The PDS generates and mails the media; and sends an e-mail distribution notice (order shipment notification) in standard ECS format to the requester's e-mail address (as specified in the original order).

In general, data distribution operations proceed as follows:

- Electronic Pull:
  - A requester connects to the system and performs a search [e.g., using the EOS Data Gateway (EDG)] for a specific data product.
  - When the system notifies the requester that the product has been found, the requester submits an order for a "pull" of the data using ftp.
  - STMGT retrieves the data from the archive and places the data on the Data Server pull disk.
  - DDIST builds an e-mail notification that the requester's order has been filled.
  - Message is sent via e-mail to the requester's e-mail address, which is determined from the User Profile.
  - The requester pulls (transfers) the data from the Data Server pull disk to the requester's own system.

- The data are deleted from the pull disk in accordance with DAAC policy (usually after a set period of time).

- Electronic Push:
  - A requester connects to the system and performs a search for a specific data product.
  - When the system notifies the requester that the product has been found, the requester submits an order for an ftp push of the data. The requester supplies all the necessary system, path, and security information to enable the requested data to be placed in a directory on the requester's system.
  - The data are retrieved from the archive, placed on the Data Server staging disk and pushed (transferred) to the requester's system.
  - DDIST builds an e-mail notification that the requester's order has been filled.
  - Message is sent via e-mail to the requester's e-mail address, which is determined from the User Profile.
  - The data are deleted from the staging disk in accordance with DAAC policy (e.g., after a set period of time).

- Physical Media Distribution:
  - A requester connects to the system and performs a search for a specific data product.
  - The requester submits an order for a shipment of specific data on a physical medium.
  - If an order to be delivered on a physical medium is for a product other than a Landsat-7 product, the V0 Gateway forwards the order to the Product Distribution System (PDS).
  - For Landsat-7 products, the V0 Gateway first forwards the order to be delivered on a physical medium to the Distributed Ordering, Research, Reporting and Accounting Network (DORRAN) at the Earth Resources Observation Systems (EROS) Data Center (EDC); then when the gateway receives a validated Product Request from DORRAN, it forwards the Landsat-7 order to the PDS.
  - For each order it receives from the V0 Gateway, the PDS orders the requested data from the ECS using the Science Data Server (SDSRV) Command Line Interface (SCLI).
    - The PDS may break up large orders into smaller sets and may elect to order granules for a request individually.
  - ECS delivers the data to the PDS using its standard ftp push data distribution capability.

- The PDS transfers the data to the specified physical medium.
- PDS e-mails a data distribution notice (order shipment notification) to the user and (for Landsat-7 orders) to DORRAN.
- The PDS updates the ECS order tracking database to completed status.

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Launching the Data Distribution Operator and Storage Management Control GUIs

Launching the Data Distribution Operator and Storage Management Control GUIs

The following software applications are associated with Data Distribution:

- Data Distribution Operator GUI (EcDsDdistGui).
- Distribution Server (EcDsDistributionServer).
- Sybase ASE Server.

In addition, Data Distribution depends on a number of related servers, especially the Science Data Server and Storage Management servers, to participate in the distribution of data from the archive.

The following software applications are associated with Storage Management:

- Storage Management Control GUI (EcDsStmgtGui).
- Archive Server (EcDsStArchiveServer).
- Cache Manager Server (EcDsStCacheManagerServer).
- Pull Monitor (EcDsStPullMonitorServer).
- Staging Disk Server (EcDsStStagingDiskServer).
- 8mm Server (EcDsSt8MMServer).
- D3 Server (EcDsStD3Server).
- FTP Server (EcDsStFtpServer).
- Storage Management Request Manager (EcDsStRequestManagerServer).
- Sybase ASE Server.
- Archival Management and Storage System (AMASS).

The Storage Management Control GUI can be used in distribution operations to monitor cache (e.g., pull area) statistics. Access to the GUIs must be gained through the use of UNIX commands.

Launching the Data Distribution Operator and Storage Management Control GUIs starts with the assumption that the applicable servers are running and the Ingest/Distribution Technician has logged in to the ECS system.

NOTE: Commands in Steps 1 through 7 are typed at a UNIX system prompt.

1 Type **setenv DISPLAY *clientname*:0.0** then press the **Return/Enter** key.

- Use either the X terminal/workstation IP address or the machine-name for the ***clientname***.
- When using secure shell, the DISPLAY variable is set just once, before logging in to remote hosts. If it were to be reset after logging in to a remote host, the security features would be compromised.

2 Start the log-in to the Distribution Server host by typing **/tools/bin/ssh *hostname*** (e.g., **e0dis02**, **g0dis02**, **l0dis02**, or **n0dis02**) in the new window then press the **Return/Enter** key.

- If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** ("**y**" alone will not work).
- If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears; continue with Step 3.
- If you have not previously set up a secure shell passphrase; go to Step 4.

3 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.

- Go to Step 5.

4 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

5 Type **cd /usr/ecs/*MODE*/CUSTOM/utilities** then press **Return/Enter**.

- Change directory to the directory containing the Data Distribution Operator GUI and Storage Management Control GUI start-up scripts (e.g., EcDsDdistGuiStart, EcDsStmgtGuiStart).
- The ***MODE*** will most likely be one of the following operating modes:
  - OPS (for normal operation).
  - TS1 (for SSI&T).
  - TS2 (new version checkout).
- Note that the separate subdirectories under /usr/ecs apply to different operating modes.

6 Type **EcDsDdistGuiStart** ***MODE*** then press **Return/Enter**.

- The **Data Distribution Operator** GUI **Distrib'n Requests** tab (Figure 5) is displayed.

7 Type **EcDsStmgtGuiStart** ***MODE*** then press **Return/Enter**.

- The **Storage Management Control** GUI **Storage Config.** tab (Figure 6) is displayed.

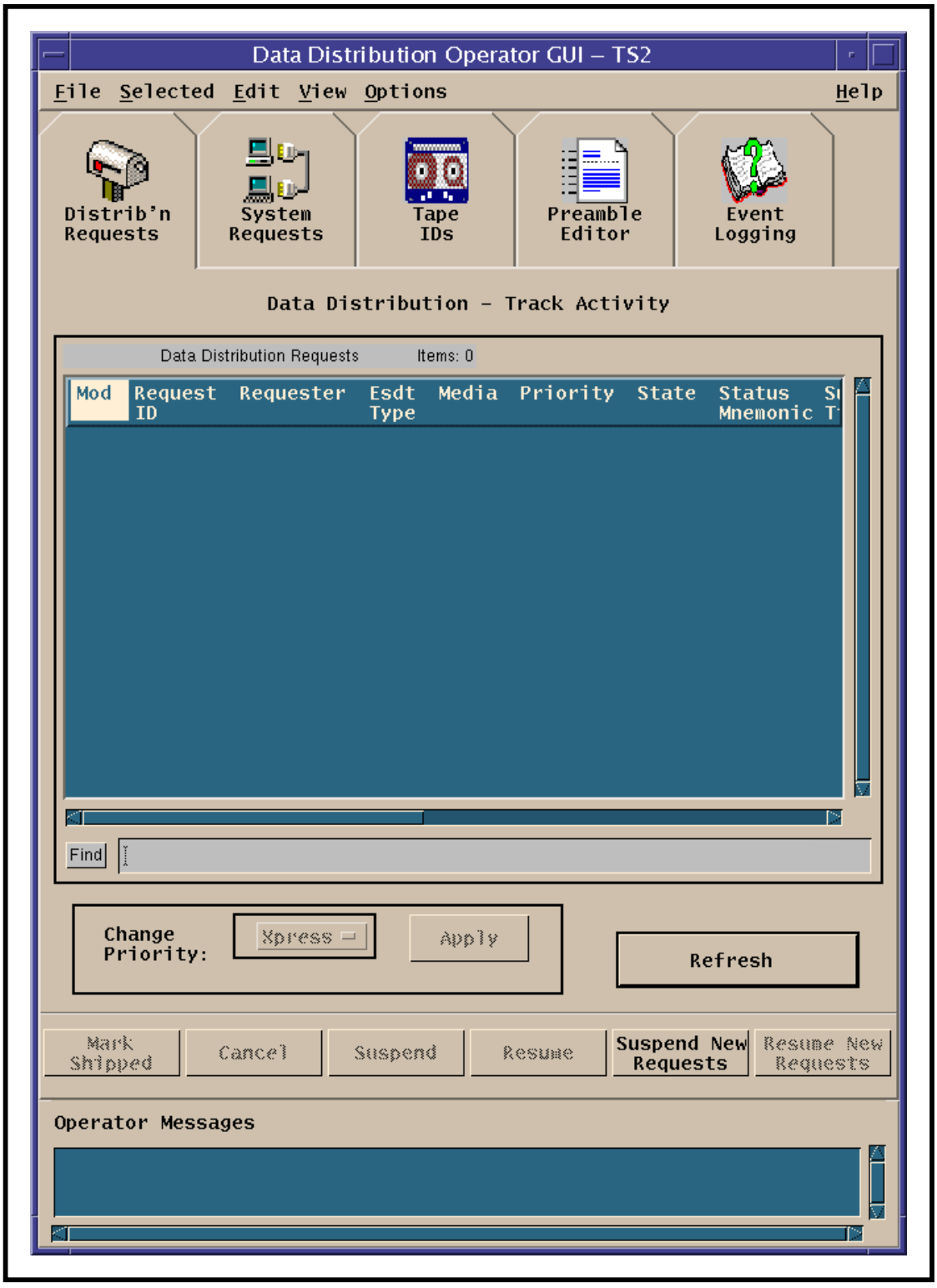

Figure 5. Distrib'n Requests Tab (Data Distribution Operator GUI)

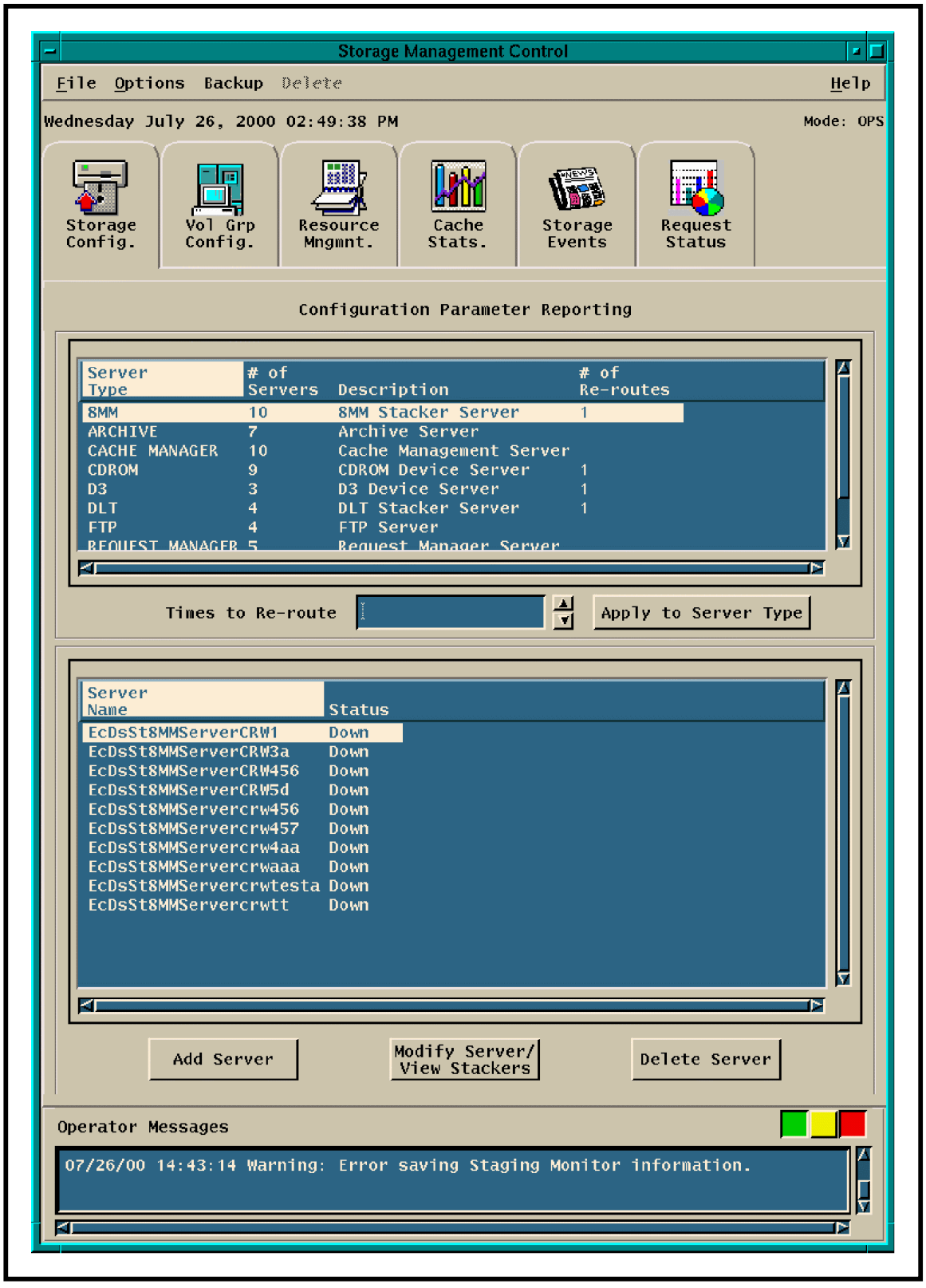

Figure 6. Storage Config. Tab (Storage Management Control GUI)

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Monitoring/Controlling Distribution Requests

Monitoring/Controlling Data Distribution Requests

Data Distribution activities are monitored and controlled using the **Data Distribution Operator GUI** and the **Storage Management Control** GUI. The **Data Distribution Operator GUI** has the following five tabs:

- **Distrib'n Requests** [for monitoring/controlling distribution requests].
- **System Requests** [not currently functional].
- **Hard Media** [obsolete].
- **Preamble Editor** [for editing packing lists and other messages to requesters].
- **Event Logging** [not currently functional].

The **Storage Management Control** GUI has the following six tabs:

- **Storage Config.** [for configuring Storage Management components].
- **Vol Grp Config.** [for configuring archive volume groups].
- **Resource Mngmnt.** [for monitoring/controlling media resources].
- **Cache Stats.** [for monitoring/controlling the contents of various caches].
- **Storage Events** [for searching for events in the Event Log].
- **Request Status** [for displaying the status of requests in Storage Management].

The Ingest/Distribution Technician monitors and manages data distribution requests primarily via the **Data Distribution - Track Activity** window of the **Distrib'n Requests** tab (Figure 5) on the **Data Distribution Operator GUI**. From the **Data Distribution - Track Activity** window the DAAC Ingest/Distribution Technician can perform the following functions:

- View data distribution requests.
- Change the priority of a selected distribution request.
- Cancel or suspend a request.
- Resume processing of a suspended request.
- Filter on all or specific requests by...
  - Request ID.
  - Requester.

- All Requests.
- Media Type.
- State (current status).

The **Data Distribution - Track Activity** window displays the following information for each data distribution request:

- •• Mod [contains a check mark if the request has been selected/modified (e.g., suspended) by the operator during the current session].
- Request ID.
- Requester.
- Esdt Type.
- Media [type].
- Priority.
- State [current state of the request].
- •• Status Mnemonic [message indicating there is an operator message attached to the request].
- Submission Time [(and date) GMT].
- End Time [(and date) GMT].
- Total Size [of the request] (bytes).
- Media # Completed.
- # of Media.
- # of Granule.
- # of Files.
- Order ID.
- Ordered State [the next state that the request should have (based on operator input)].

The procedure for monitoring data distribution requests starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Distrib'n Requests** screen (Figure 5) is being displayed.

Monitoring/Controlling Data Distribution Requests

---

1 Configure polling as described in the procedure for **Configuring Data Distribution Polling** (subsequent section of this lesson).

2 Observe information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI**.

- By default all current distribution requests are shown in the **Data Distribution Requests** list of the **Data Distribution - Track Activity** window (**Distrib'n Requests** tab).
- Note that virtually all data retrieved from the archive is controlled by Data Distribution; consequently there may be a lot of activity on the **Data Distribution - Track Activity** screen, especially if data processing is operating at or near capacity.
  - Consequently, it may be useful to restrict the number of distribution requests displayed by filtering them as described in the next step of this procedure.
- Horizontal and vertical scroll bars allow viewing data that are not readily visible in the window.
- The **Refresh** button provides a means of updating the data on the screen.
- The **Find** button provides a means of performing a keyword search of the distribution requests.
- The **Operator Messages** field at the bottom of the GUI displays messages concerning events occurring in distribution operations.
- Selecting **Options → Verify Connection** from the pull-down menu allows the operator to check the status of the connection to the server.
  - The status is displayed in the **Operator Messages** field at the bottom of the GUI.
- Selecting **Options → Reconnect** from the pull-down menu allows the operator to re-establish a connection with the server.
  - The status is displayed in the **Operator Messages** field at the bottom of the GUI.
- Highlighting a distribution request in the **Data Distribution - Track Activity** window then selecting **View→ Detailed** from the pull-down menu allows the operator access to more detailed information concerning the status of the distribution request.
  - The information is displayed in the **Operator Messages** field at the bottom of the GUI.

3 If the list of data distribution requests shown in the **Data Distribution - Track Activity** window needs to be filtered, perform the procedure for **Filtering Data Distribution Requests** (subsequent section of this lesson).

4 Observe data distribution requests displayed in the **Data Distribution Requests** list.

5 If it becomes necessary to change the priority of a data distribution request, perform the procedure for **Changing the Priority of Data Distribution Requests** (subsequent section of this lesson).

6 If it becomes necessary to either suspend a data distribution request or resume processing of a suspended request, perform the procedure for **Suspending/Resuming Data Distribution Requests** (subsequent section of this lesson).

7 If it becomes necessary to cancel a data distribution request, perform the procedure for **Canceling Data Distribution Requests** (subsequent section of this lesson).

8 Repeat Steps 3 through 7 as necessary to monitor data distribution requests.

9 If it becomes necessary to exit from the **Data Distribution Operator GUI** select **File → Exit** from the pull-down menu.

Configuring Data Distribution Polling

The **Data Distribution Operator GUI Options** menu provides the Ingest/Distribution Technician with a means of switching the Data Distribution database polling function on or off. In addition, there are two parameters that the technician can modify:

- DDist Polling Rate
  - How often (in seconds) the system updates the information displayed in the **Data Distribution - Track Activity** window.
- Error Retry Rate
  - Amount of time (in seconds) that the system waits before trying to poll the Data Server after a failed attempt.

The procedure for configuring data distribution polling starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Configuring Data Distribution Polling

---

1 Select **Options → System Settings** from the pull-down menu.

- The **Refresh Options** dialogue box (Figure 7) is displayed.

2 To change the DDist Polling state (from off to on or vice versa), click on the **DDist Polling On** button.

- If the button does not have a check mark in it, clicking on it turns DDist Polling on.

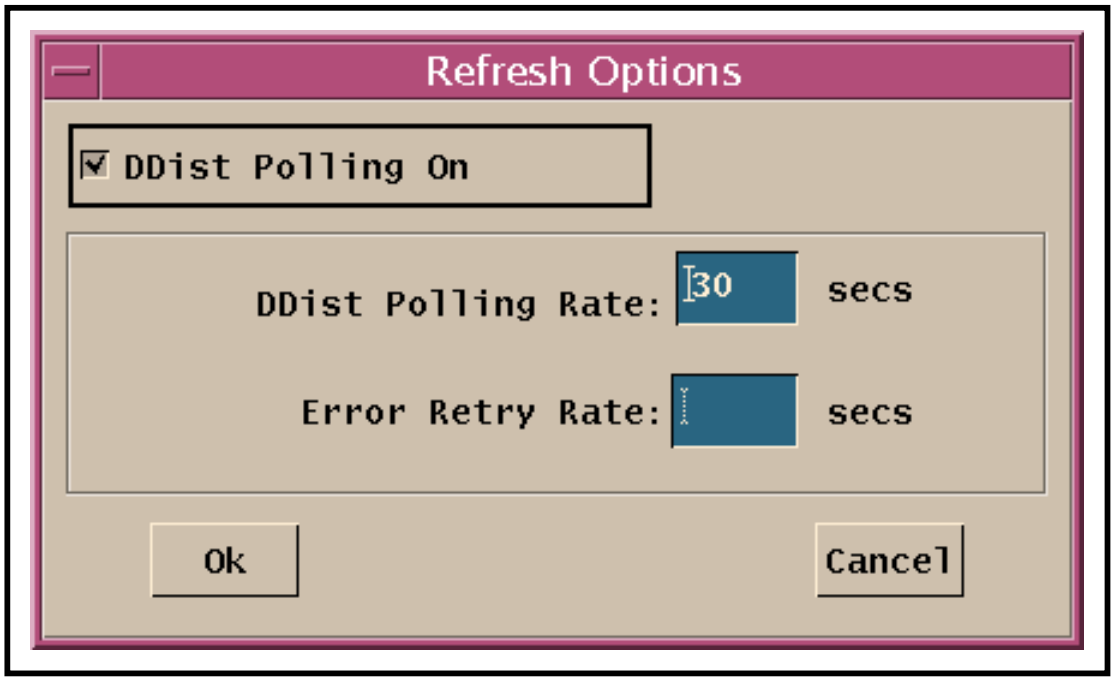

Figure 7. Refresh Options Dialogue Box

- If the button already has a check mark in it, clicking on it turns DDist Polling off.

3 To change the polling rate type the desired value (in seconds) in the **DDist Polling Rate** field.

- The default value is 30 seconds.

4 To specify an error retry rate, type the desired value (in seconds) in the **Error Retry Rate** field.

5 When the appropriate data have been entered in the **Refresh Options** dialogue box fields, click on the appropriate button.

- **Ok** - to apply the selections and dismiss the **Refresh Options** dialogue box.
- **Cancel** - to dismiss the **Refresh Options** dialogue box without applying the selections.

6 Return to the procedure for Monitoring/Controlling Data Distribution Requests.

Filtering Data Distribution Requests

The distribution requests to be displayed in the **Data Distribution Requests** list (**Data Distribution - Track Activity** window shown in Figure 5) can be filtered using the

Distribution Filter Requests dialogue box. The filtering can be done on the basis of the following criteria, either individually or in combination:

- Request ID.
- Requester.
- Media Type.
- State [of the request].

The procedure for filtering data distribution requests starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Filtering Data Distribution Requests

---

1 Select **View → Filter** from the pull-down menu.

- The **Distribution Filter Requests** dialogue box (Figure 8) is displayed.

•• Perform as many of the following steps as necessary depending on the criteria for filtering distribution requests:

- Request ID - Step 2.
- Requester - Step 3.
- All Requests - Step 4.
- Media Type - Step 5.
- State - Step 6.

2 If a specific distribution request is desired and the request ID is known, first click on the **Request ID** radio button, then click in the adjacent text box and type the request ID.

3 If data distribution requests submitted by a particular requester are desired, first click on the **Requester** radio button, then click in the adjacent text box and type the requester's identification.

•• In the text box the requester must be identified exactly as known to the Data Server Subsystem.

4 If all data distribution requests are to be displayed in the **Data Distribution Requests** list, click on the **All Requests** radio button and go to Step 7.

•• The **All Requests** button is particularly useful for restoring the **Data Distribution Requests** list after reviewing a previously filtered set of requests.

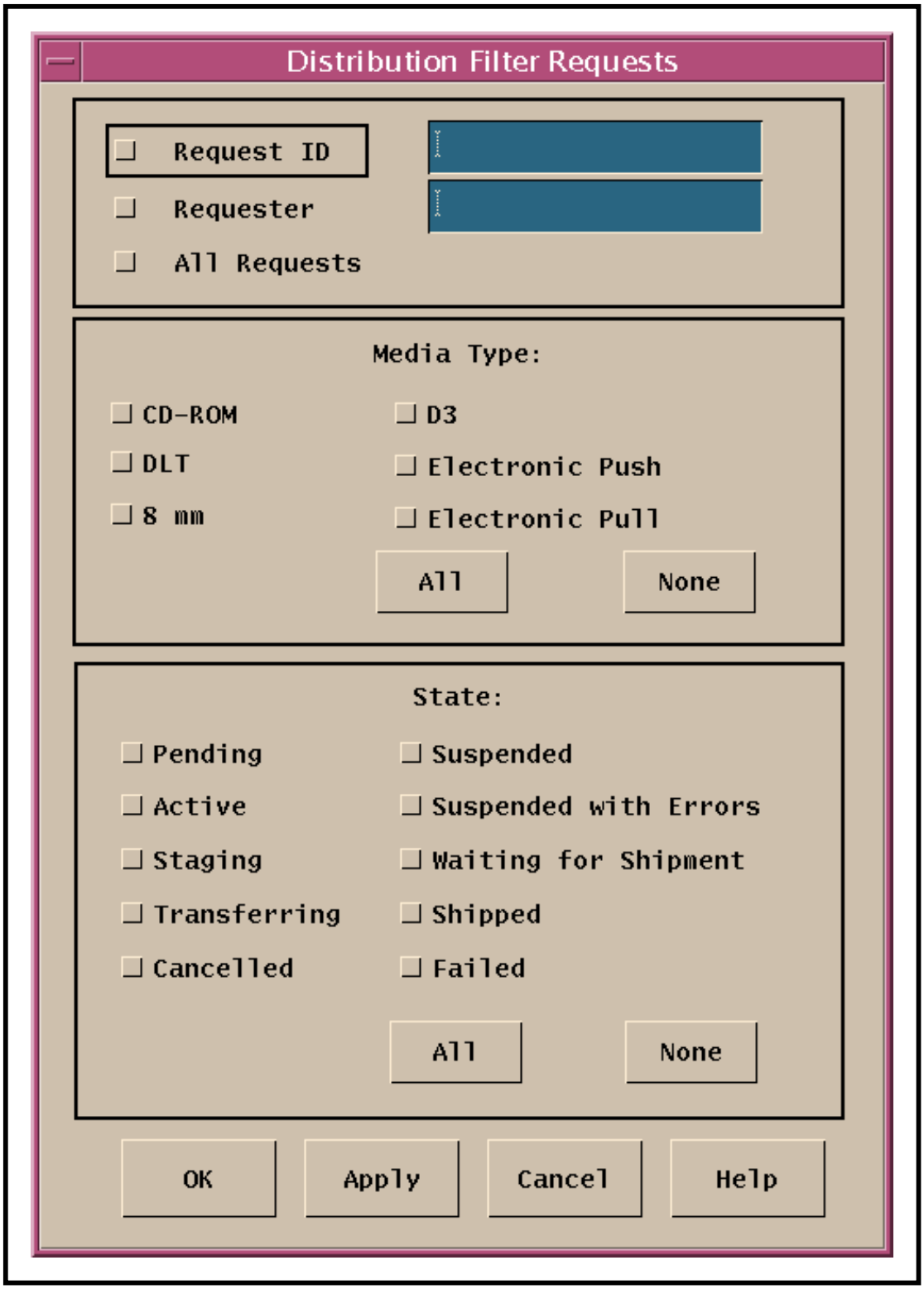

Figure 8. Distribution Filter Requests Dialogue Box

5 If a list of data distribution requests filtered by media type(s) is needed, click on the applicable button(s) in the **Media Type** section of the **Filter Requests** dialogue box.

- Radio buttons corresponding to the following types of media are available:
  - **CD-ROM** [(Compact Disk – Read-Only Memory (not relevant in Release 6A)].
  - **DLT** [Digital Linear Tape (not relevant in Release 6A)].
  - **8 mm** (tape) (not relevant in Release 6A).
  - **D3** (not relevant in Release 6A).
  - **Electronic Push.**
  - **Electronic Pull.**
- In addition, the following media selections are available:
  - **All.**
  - **None.**
- If other filters (e.g., requester or state) are to be applied, the **Apply** button may be clicked to implement the media type filter and leave the **Filter Requests** dialogue box open.

6 If a list of data distribution requests filtered by state(s) is needed, click on the applicable button(s) in the **State** section of the **Filter Requests** dialogue box.

- Radio buttons corresponding to the following states are available:
  - **Pending.**
  - **Active.**
  - **Staging.**
  - **Transferring.**
  - **Cancelled.**
  - **Suspended.**
  - **Suspended with Errors.**
  - **Waiting for Shipment.**
  - **Shipped.**
  - **Failed.**
- In addition, the following state selections are available:
  - **All.**

– **None.**

•• If other filters (e.g., requester or media type) are to be applied, the **Apply** button may be clicked to implement the state filter and leave the **Filter Requests** dialogue box open.

7 When all filter criteria have been selected, click on the appropriate button:

•• **OK** - to implement the selections and dismiss the **Distribution Filter Requests** dialogue box.

–• The **Data Distribution - Track Activity** window (Figure 5) reappears; only requests that meet the specified filter criteria appear in the list.

•• **Apply** - to implement the selections without dismissing the **Distribution Filter Requests** dialogue box.

– The **Distribution Filter Requests** dialogue box remains open.

•• **Cancel** - to dismiss the **Distribution Filter Requests** dialogue box without implementing the selections.

–• The previously available **Data Distribution Requests** list is shown in the **Data Distribution - Track Activity** window (Figure 5).

8 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.

Changing the Priority of Data Distribution Requests

The **Change Priority** area of the **Data Distribution - Track Activity** window (Figure 5) allows the Ingest/Distribution Technician to change the priority of data distribution requests. The procedure for changing the priority of data distribution requests starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Changing the Priority of Data Distribution Requests

---

1 If the list of data distribution requests shown in the **Data Distribution - Track Activity** window needs to be filtered to include the distribution request for which the priority is to be changed, perform the procedure for **Filtering Data Distribution Requests**.

2 Highlight the distribution request to be assigned a different priority by clicking on its entry in the **Data Distribution Requests** list.

3 Click and **hold** the **Change Priority** option button to display a menu of priorities, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.

- The following priority codes are available:
  - **Xpress.**
  - **Vhigh.**
  - **High.**
  - **Normal.**
  - **Low.**

•• Selected code is displayed on the **Change Priority** option button when the mouse button is released.

4 To implement the priority change click on the **Apply** button to the right of the priority option button.

5 Click on the **Refresh** button to update the data displayed on the screen.

•• Priority of the request, as displayed in the **Priority** column of the **Data Distribution Requests** list, changes from its original value to the newly selected priority.

•• A check mark is displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the request has been changed.

6 Repeat the preceding steps as necessary to change the priority of additional data distribution requests.

7 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.

Suspending/Resuming Data Distribution Requests

Under certain circumstances it may be advisable to suspend the processing of a data distribution request and resume it at a later time. For example, if there is a very large request that is taking up resources and causing other requests to back up waiting (especially requests from data processing that must be filled to allow processing to proceed), the processing of that request should be suspended until a time when there is less demand on data distribution.

Use the procedure that follows to suspend and subsequently resume data distribution. The procedure starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

1 If the list of data distribution requests shown in the **Data Distribution - Track Activity** window needs to be filtered to include the distribution request to be suspended or resumed, perform the procedure for **Filtering Data Distribution Requests**.

2 To **suspend** requests, perform Steps 3 through 6; to **resume** suspended requests, go to Step 7.

3 If all new requests displayed in the **Data Distribution Requests** list are to be suspended, click on the **Suspend New Requests** button.

- The data distribution requests are suspended.
- Go to Step 5.

4 If a single request displayed in the **Data Distribution Requests** list is to be suspended, first click on the corresponding row in the **Data Distribution Requests** list to highlight the request, then click on the **Suspend** button.

- The selected data distribution request is suspended.

5 Click on the **Refresh** button to update the data displayed on the screen.

- Status of request(s), as displayed in the **State** column of the **Data Distribution Requests** list, change(s) from original value to "Suspended."
- Check mark(s) is (are) displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that changes have been made to the request(s).

6 If there are no suspended requests to be resumed at this time, return to the procedure for **Monitoring/Controlling Data Distribution Requests**.

7 If processing of all new requests displayed in the **Data Distribution Requests** list is to be resumed, click on the **Resume New Requests** button.

- The data distribution requests resume processing.
- Go to Step 9.

8 If processing of a single request displayed in the **Data Distribution Requests** list is to be resumed, first click on the corresponding row in the **Data Distribution Requests** list to highlight the request, then click on the **Resume** button.

- The selected data distribution request resumes processing.

9 Click on the **Refresh** button to update the data displayed on the screen.

- Status of request(s), as displayed in the **State** column of the **Data Distribution Requests** list, changes from "Suspended" to whatever state(s) is (are) appropriate for

the continuation of request processing (depending on each request's status when it was suspended).

- •• Check mark(s) is (are) displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that changes have been made to the request(s).

10 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.

Canceling Data Distribution Requests

Sometimes it may be necessary to cancel the processing of a data distribution request. The procedure for canceling data distribution request processing starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Canceling Data Distribution Requests

1 If the list of data distribution requests shown on the **Data Distribution - Track Activity** window needs to be filtered to include the distribution request to be canceled, perform the procedure for **Filtering Data Distribution Requests**.

2 To cancel a request first click on the corresponding row in the **Data Distribution Requests** list to highlight the desired request.

3 Click on the **Cancel** button near the bottom of the **Distrib'n Requests** tab.

- The selected data distribution request is canceled.

4 Click on the **Refresh** button to update the data displayed on the screen.

- •• Status of the request, as displayed in the **State** column of the **Data Distribution Requests** list, changes from its original value to "Canceled."
- •• A check mark is displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the request has been changed.

5 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.

Modifying Preambles

The **Preamble Editor** tab (Figure 9) on the **Data Distribution Operator GUI** allows the Ingest/Distribution Technician to review and/or modify the text of preambles to the following types of documents:

- Packing list.
- Successful e-mail.
- Failed e-mail.

The preambles are accessible in the **/usr/ecs/*MODE*/CUSTOM/data/DSS** directory on the Distribution Server host. Figure 10 is a sample of the "ftp push failed e-mail" preamble file (EcDsDdFtpPushEMFailurePreamble.txt). The directory contains preambles for the different types of distribution. The following two types of distribution only are relevant for Release 6A:

- Ftp pull.
- Ftp push.

The procedure for modifying preambles starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Data Distribution - Track Activity** window (Figure 5) on the **Distrib'n Requests** tab is being displayed.

Modifying Preambles

1 Click on the **Data Distribution Operator GUI Preamble Editor** tab.

- The **Preamble Editor** screen (Figure 9) is displayed.

2 Click and hold the **Media Type** option button to display a menu of types of distribution media, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.

- The following media types are listed:
  - **8mm.**
  - **D3.**
  - **FtpPush.**
  - **FtpPull.**

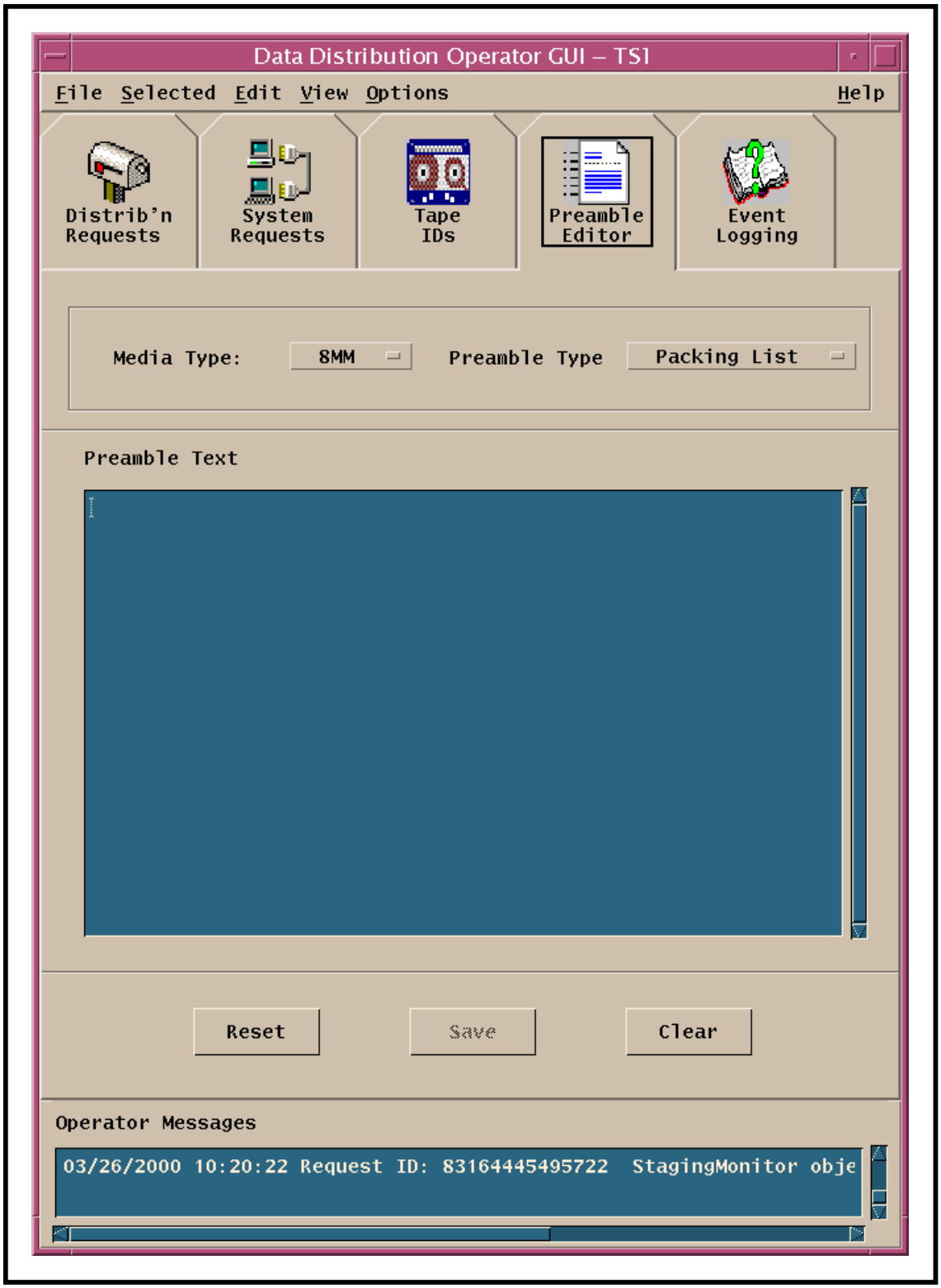

Figure 9. Preamble Editor Tab (Data Distribution Operator GUI)

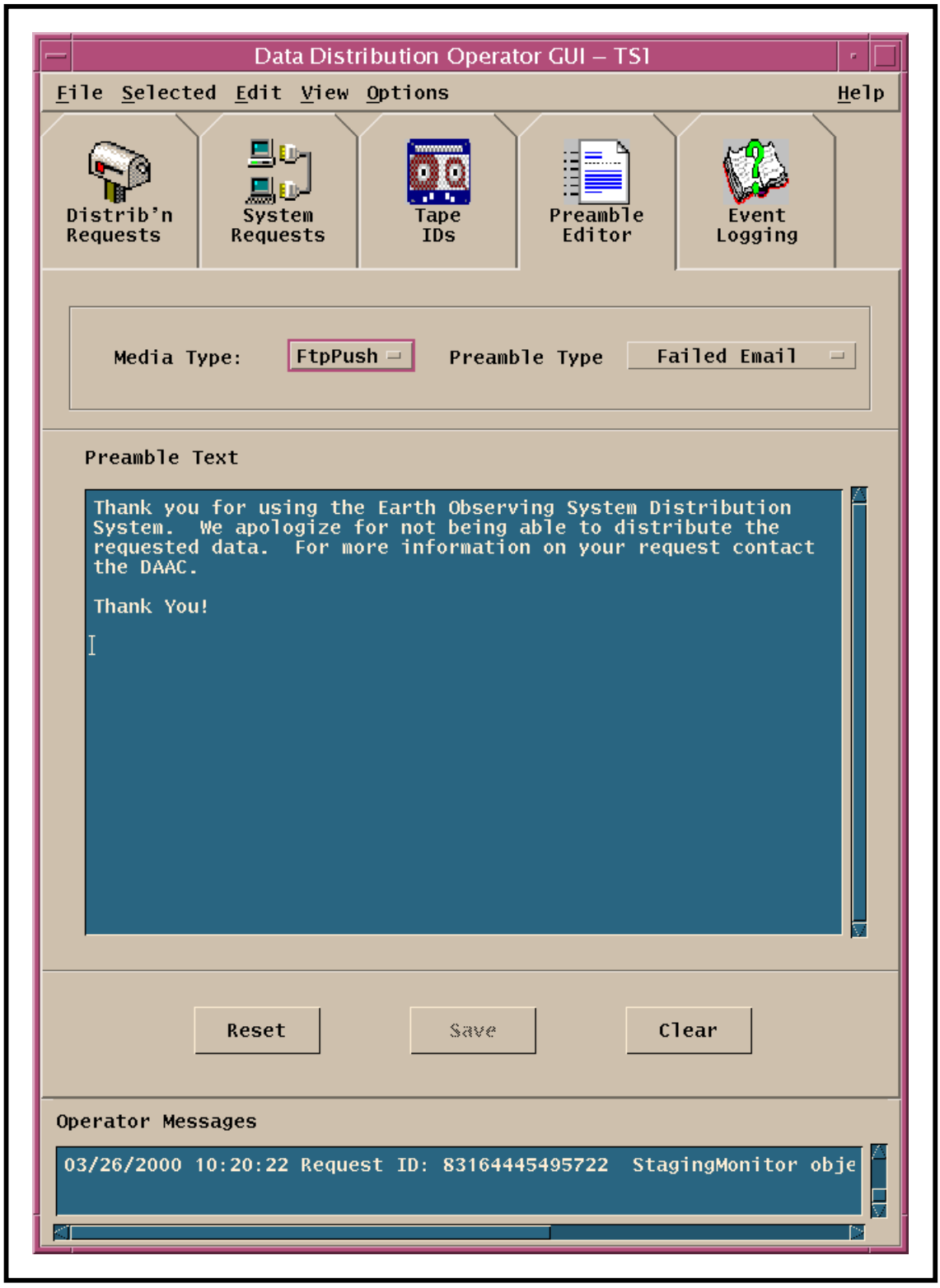

Figure 10. Sample FTP Push Failed E-Mail Preamble

- **CDROM.**
- **DLT.**

- The selected media type is displayed on the **Media Type** option button.

3 Click and hold the **Preamble Type** option button to display a menu of types of preambles, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.

- The following preamble types are listed:
  - **Packing List.**
  - **Successful Email.**
  - **Failed Email.**
- The selected preamble type is displayed on the **Preamble Type** option button.
- The selected preamble is displayed in the **Preamble Text** window.
  - If the **Preamble Text** window is blank, either there is no current preamble of the specified type or the preamble file is empty. Proceed to Step 4 and create a new preamble.

4 Click in the **Preamble Text** window and type modifications to the preamble text as necessary.

- The following editing functions are available from the **Edit** pull-down menu or by clicking on the right mouse button:
  - **Cut.**
  - **Copy.**
  - **Paste.**

5 Click on the appropriate button from the following selections:

- **Save** - to save the preamble text as modified.
- **Reset** - to discard any changes and revert to the original (unmodified) preamble text.
- **Clear** - to remove all text from the **Preamble Text** window.
  - When the **Clear** button has been selected, a **Preamble Save Confirmation Dialogue Box** (Figure 11) is displayed.

6 If the **Preamble Save Confirmation Dialogue Box** is displayed, click on the appropriate button from the following selections:

- **Yes** - to save the preamble text as modified.
- **No** - to revert to the original (unmodified) preamble text.

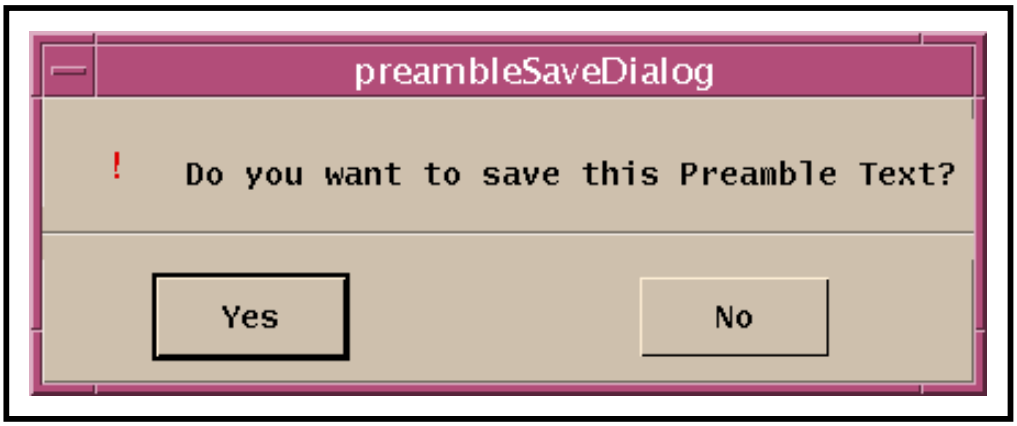

Figure 11. Preamble Save Confirmation Dialogue Box

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Performing Hard (Physical) Media Operations

Media Operations

Media operations are accomplished through the Product Distribution System (PDS), which is described in an addendum to this document.

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Configuring Storage Management Polling and Deleting Files from Cache

Configuring Storage Management Polling

The **Storage Management Control** GUI **Options** menu provides the Ingest/Distribution Technician with a means of switching the following two database polling functions on or off:

- **Operator Notification Timer** [e.g., polling for displaying Event Log data]**.**
- **Cache Statistics Timer** [polling for displaying cache statistics data]**.**

In addition, the technician can modify the following parameters relevant to the **Operator Notification Timer**:

- Database Polling Rate.
  - How often (in seconds) the system updates the information displayed on the GUI.
- Error Retry Rate.
  - Amount of time (in seconds) that the system waits before trying to poll the database server after a failed attempt.

The technician can modify the following parameter relevant to the **Cache Statistics Timer**:

- Database Polling Rate.

The procedure for configuring storage management polling starts with the assumption that all applicable servers and the **Storage Management Control** GUI are currently running and the **Storage Config.** tab (Figure 6) is being displayed.

Configuring Storage Management Polling

1 Select **Options → System Settings** from the pull-down menu.

- The **Session Settings** dialogue box (Figure 12) is displayed.

2 To change either the **Operator Notification Timer** or **Cache Statistics Timer** Polling state (from off to on or vice versa), click on the corresponding **Polling** button.

- If **OFF** is displayed in the **Polling** field , clicking on the adjacent button turns Polling on.
- If **ON** is displayed in the **Polling** field , clicking on the adjacent button turns Polling off.

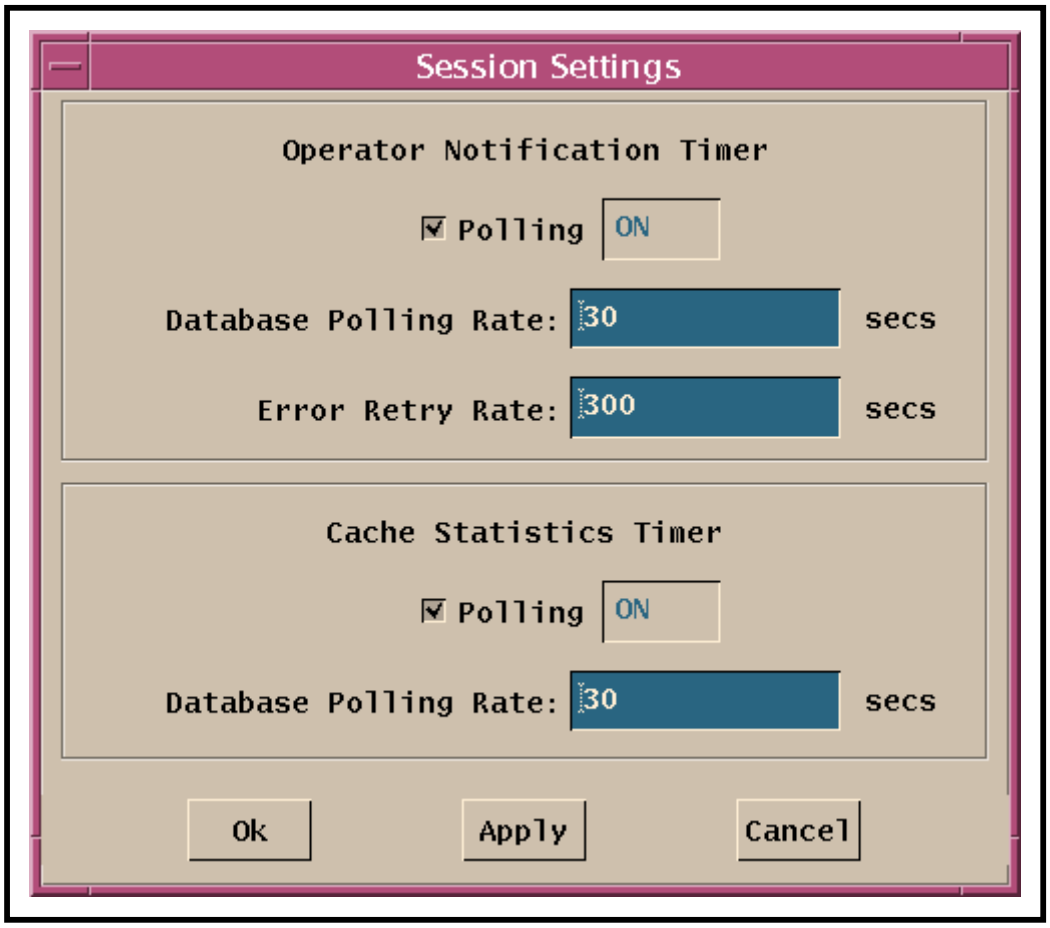

Figure 12. Session Settings Dialogue Box

3 To change the database polling rate for either the **Operator Notification Timer** or **Cache Statistics Timer** type the desired value (in seconds) in the corresponding **Database Polling Rate** field.

- The default value is 30 seconds.

4 To change the error retry rate for the **Operator Notification Timer**, type the desired value (in seconds) in the **Error Retry Rate** field.

5 When the appropriate data have been entered in the **Session Settings** dialogue box fields, click on the appropriate button.

- **Ok** - to apply the selections and dismiss the **Session Settings** dialogue box.
- **Apply** - to apply the selections without dismissing the **Session Settings** dialogue box.
- **Cancel** - to dismiss the **Session Settings** dialogue box without applying the selections.

Deleting Files from Cache

The **Storage Management Control** GUI's **Cache Stats.** tab displays all of the files that are in the cache areas, including the Pull Monitor and other staging areas. The data displayed on the **Cache Stats.** tab reports general statistics on the selected cache and allows the operator to delete expired files in cache areas. If a cache area reaches an operator-configurable threshold, the operator receives a warning message in the operator messages area of the GUI. If expired files are not deleted and the cache fills completely, the server is not able to copy new files to the cache area.

The procedure for deleting files from cache starts with the assumption that all applicable servers and the **Storage Management Control** GUI are currently running and the **Storage Config.** tab (Figure 6) is being displayed.

Deleting Files from Cache

---

1 Click on the **Storage Management Control** GUI **Cache Stats.** tab.

- The **Cache Stats.** tab (Figure 13) is displayed.

2 To view the contents of a particular cache (e.g., **Pull Monitor cache 1**) click and hold on the option button to the right of the **Cache Id** field, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.

- The selected cache is displayed in the **Cache Id** field of the **Cache Stats.** tab.
- The following cache statistics are displayed in the **Cache Statistics** area:
  - **Current Utilization.**
  - **Used Space (Blocks).**
  - **Free Space (Blocks).**
  - **Total Space (Blocks).**
  - **Number of Resident Files.**
  - **Maximum File Size (Blocks).**
  - **Minimum File Size (Blocks).**
  - **Average File Size (Blocks).**
- The following information concerning the files in the selected cache is listed in the **Cache Information** window:
  - **Filename.**
  - **File Size.**
  - **Last Accessed.**

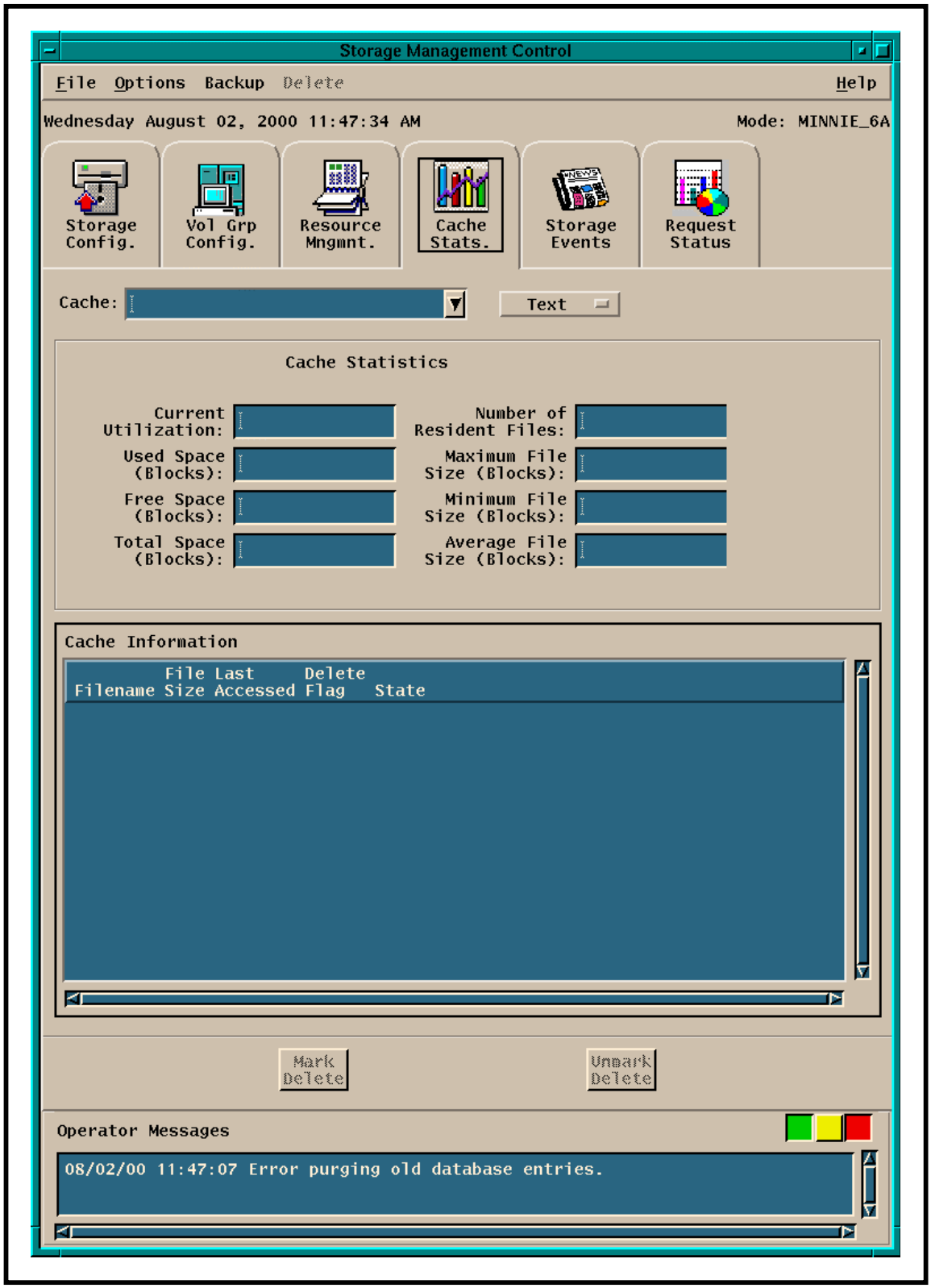

Figure 13. Storage Management Control GUI's Cache Stats. Tab

- **Delete Flag** (displays either blank space or **DELETE**).
- **State.**

3 Observe cache statistics information displayed on the **Cache Stats.** tab.

4 Click on the row corresponding to a file to be deleted in the **Cache Information** window of the **Cache Stats.** tab.

- Multiple rows may be selected.

5 Click on the **Mark Delete** button near the bottom of the **Cache Stats.** tab.

- **Y** is displayed in the **Del. Flag** field for the row in the **Cache Information** window.

6 If any file that should be left in the cache has been inadvertently marked **Delete**, first click on the row corresponding to the file then click on the **Unmark Delete** button near the bottom of the **Cache Stats.** tab.

- **N** is displayed in the **Del. Flag** field for the row in the **Cache Information** window.

7 If it becomes necessary to exit from the **Storage Management Control** GUI select **File → Exit** from the pull-down menu.

Viewing Storage Management Event Log Information

The **Storage Events** tab (**Storage Management Control** GUI) provides the Ingest/Distribution Technician with the ability to search the Event Log and obtain reports on events that have occurred in Storage Management. It is possible to review the following information concerning any particular Storage Management event:

- Number.
- Date.
- Level.
- Type.
- Message.

The following search criteria can be used individually or in combination to view entries in the Event Log:

- Date Interval.
- Event Type.
- Event Level.
- Message.

The procedure for viewing Storage Management Event Log information starts with the assumption that all applicable servers and the **Storage Management Control** GUI are currently running and the **Storage Config.** tab (Figure 6) is being displayed.

Viewing Storage Management Event Log Information

---

1 Click on the **Storage Management Control** GUI **Storage Events** tab.

- The **Storage Events** screen (Figure 14) is displayed.
- If Event Log entries are to be displayed on the basis of a particular….
  - Time period, perform Step 2. (If no time period is specified, log entries for the current day will be displayed.)
  - Event type, perform Step 3.
  - Event level, perform Step 4.
  - Message, perform Step 5.
- Any of the preceding criteria (time period, event type, event level, or message) may be used individually or in combination to view entries in the Event Log.

2 To view Event Log entries for a particular **time period**, click in the appropriate **Date Interval: Begin**, and/or **Date Interval: End** field, and type the appropriate numerical values in ***MM/DD/YYYY*** format.

- The **Tab** key may be pressed to move from field to field.
- Another method of changing date settings (other than typing the numbers) is to click in each of the date fields in turn and click on the up/down buttons adjacent to the **Date Interval** fields until the correct date is indicated.

3 To view log entries for a particular **event type**, click and hold on the **Event Type** option button, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.

- The selected event type is displayed on the **Event Type** option button.
- The following event types are displayed on the **Event Type** option button:
  - **Any.**
  - **Device.**
  - **Cache.**
  - **Software.**
  - **COTS.**

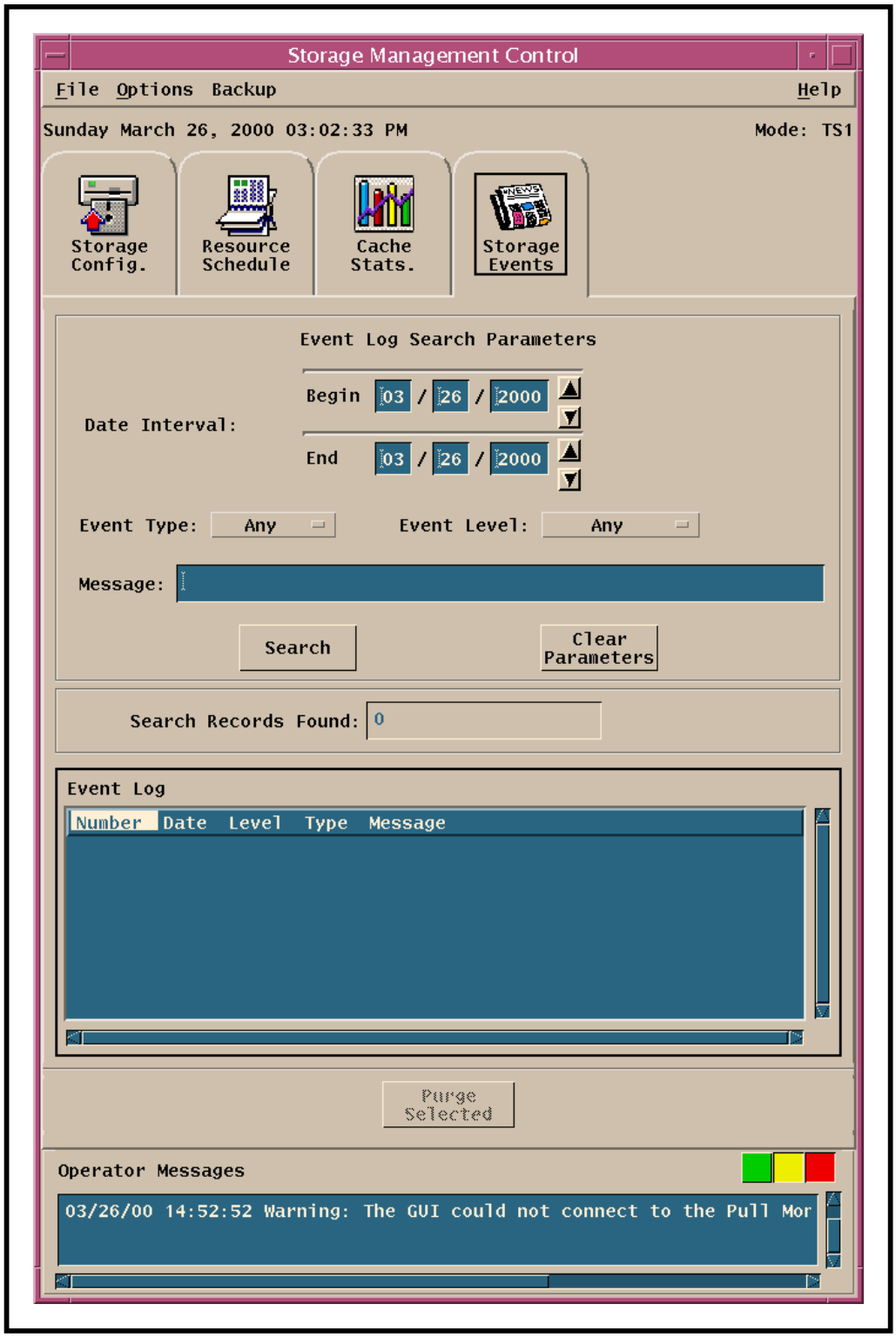

Figure 14. Storage Events Screen

- **Sybase.**
- **Pulldisk.**
- **Unknown.**

4 To view log entries for a particular **event level**, click and hold on the **Event Level** option button, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.

- The selected event level is displayed on the **Event Level** option button.
- The following event levels are displayed on the **Event Level** option button:
  - **Any.**
  - **Information.**
  - **Warning.**
  - **Error.**
  - **Severe.**
  - **Fatal.**
  - **Unknown.**

5 To view log entries for a particular **message** type the relevant message in the **Message** field.

6 Click on the **Search** button to search the event log for events that meet the specified criteria.

- The search results are displayed in the **Event Log** window of the **Storage Management Control** GUI **Storage Events** tab (Figure 14).

7 Observe event information displayed in the **Event Log** window.

8 To clear entries in the Event Log Search Parameter fields, click on the **Clear Parameters** button.

- Entries in the Event Log Search Parameter fields are cleared.

9 To purge entries from the Event Log, first click on the row corresponding to the event to be deleted in the **Event Log** window then click on the **Purge Selected** button.

- Multiple entries may be selected.
- Selected entries are deleted from the Event Log.

10 If a new Event Log search is to be performed on the basis of a particular….

- time period, return to Step 2.

- event type, return to Step 3.
- event level, return to Step 4.
- message, return to Step 5.

11 If it becomes necessary to exit from the **Storage Management Control** GUI select **File → Exit** from the pull-down menu.

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Monitoring Storage Management Server Operations

Request Status

The **Request Status** tab (Figure 15) on the **Storage Management Control** GUI provides the Ingest/Distribution Technician with the ability to monitor processing activity in all of the storage management servers for a given mode. The **Request Status Information** table lists the requests that are currently being serviced by storage management servers and those that have been completed within the last 24 hours. It is possible to review the following information concerning any particular storage management request:

- Operation [type of operation represented by the request].
- Request ID.
- Progress [stage of processing on which the request is currently working (may include a numeric progress indication)].
- Status.
- Priority.
- When Submitted [time and date when the request was received by the Storage Management server that is responsible for the request].
- Last Updated [time and date when the status was last updated for the request].

Using the **Request Status** tab the Ingest/Distribution Technician can detect stalled requests or servers that appear to be idle.

The procedure for monitoring storage management server operations starts with the assumption that all applicable servers and the **Storage Management Control** GUI are currently running and the **Storage Config.** tab (Figure 6) is being displayed.

Monitoring Storage Management Server Operations

1 Click on the **Storage Management Control** GUI **Request Status** tab.

- The **Request Status** tab (Figure 15) is displayed.

2 Observe information displayed on the **Request Status** tab of the **Storage Management Control** GUI.

- The **Request Status Information** table displays the following information:
  - Operation.

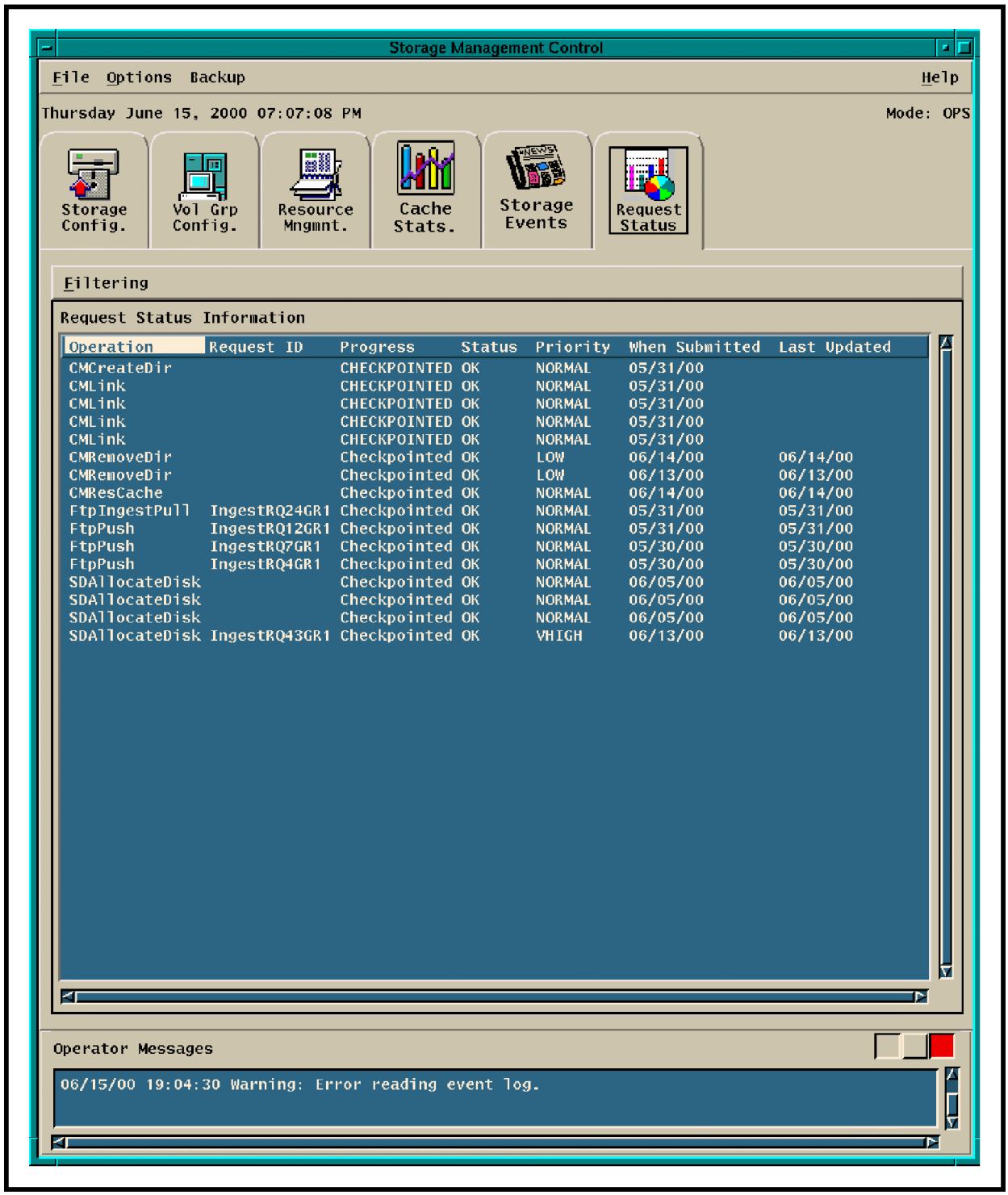

Figure 15. Request Status Tab (Storage Management Control GUI)

  - Request ID.
  - Progress.
  - Status.
  - Priority.
  - When Submitted.
  - Last Updated.

- By default all storage management server requests for the last 24 hours are shown in the **Request Status Information** table of the **Request Status** tab.
- Note that virtually all data inserted into or retrieved from the archive is controlled by storage management servers; consequently there may be a lot of activity on the **Request Status** tab.
  - Consequently, it may be useful to restrict the number of requests displayed by filtering them as described in the next step of this procedure.
- Clicking on any of the column headers of the **Request Status Information** table causes the listed requests to be sorted in order by the column selected.
  - For example, clicking on the **Last Updated** column header causes the requests to be listed in order from the least recently updated to the most recently updated.
- The **Operator Messages** field at the bottom of the GUI displays messages concerning events occurring in storage management operations.

3 If the list of Storage Management requests shown in the **Request Status Information** table needs to be filtered, make the appropriate selection from the following choices listed on the **Filtering** pull-down menu:

- **Server.**
  - Controls what activity is displayed by limiting the list to the requests being/having been serviced by a specific server.
  - Selecting **All** displays all requests throughout the Storage Management CSCI.
  - Other selections include the individual archive servers, cache manager servers, ftp servers, request manager server, and staging disk servers.
- **Operation.**
  - Allows the Ingest/Distribution Technician to focus on a specific type of operation.

- The list of operations is dynamically generated to reflect those operations for which requests are currently in queue, for example (among others):
  - All.
  - CMLink.
  - ArStore.
  - FtpPull.
  - FtpPush.

- **Processing State.**
  - Allows the Ingest/Distribution Technician to differentiate among requests that are being actively processed; have been completed, either successfully or to a retryable error state; or have been suspended and are awaiting the outcome of another event.
  - The following selections are available:
    - All.
    - Processing.
    - Suspended.
    - Completed.

- **Submitter.**
  - Allows the Ingest/Distribution Technician to see the status of requests submitted by a specific client process.
  - The list of possible clients is dynamically generated to reflect the list of clients with outstanding requests for example (among others)
    - All.
    - DSDD.
    - SDSV.
    - this.
    - [ftp server].
    - [archive server].
    - [staging disk server].

4 Observe the Storage Management requests displayed in the **Request Status Information** table.

5 Repeat Steps 3 and 4 as necessary to monitor Storage Management requests.

6 If it becomes necessary to exit from the **Storage Management Control** GUI select **File → Exit** from the pull-down menu.

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Tuning System Parameters

Tuning System Configuration Parameters

The values assigned to system parameters affect the functioning and performance of the system. When certain parameters are modified, the system operates differently. Changes to some other parameters may not appear to affect the system although there may in fact be subtle effects. In any case before system parameters are modified it is essential to understand what will happen to system functioning and performance.

Many system parameters may be subject to control by Configuration Management (CM). When making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable).

Values are assigned to Storage Management and Data Distribution parameters in the following databases:

- Storage Management and Data Distribution database.
- Configuration Registry database.

The Configuration Registry Server provides a single interface (via a Sybase server) for retrieving configuration attribute-value pairs for ECS servers from the Configuration Registry database. When ECS servers are started, they access the Configuration Registry Database to obtain needed configuration parameters.

The Database Administrator has access to a Configuration Registry GUI for viewing and editing configuration data in the database. Therefore, it is necessary to coordinate with the Database Administrator when changes to configuration parameters are needed. Also, as previously mentioned, changes to configuration-controlled parameters are subject to approval through the site CM process.

Default and adjusted values assigned to system parameters vary from site to site. For guidance concerning the assignment of values to parameters included in the Configuration Registry refer to document 910-TDA-022 rev2, Custom Configuration Parameters for ECS Release 6A. The document is available at http://cmdm.east.hitc.com/baseline/ under "Technical Documents."

The following parameters are examples of parameters whose values may be modified to enhance system functioning or performance:

- AppLogSize
  - Maximum size of the application log (ALOG) file for a particular application.
- AppLogLevel
  - Level of detail provided in the ALOG file for a particular application.

- DebugLevel
  - Level of detail provided in the debug log file for a particular application.
- DBMaxConnections
  - Maximum number of database connections allowed a particular application.
- FtpPushThreshold
  - Maximum number of bytes per distribution request via ftp push.
  - The FtpPushThreshold should always be greater than the size of the largest input granule used by the Planning and Data Processing Subsystems (PDPS) in order to ensure that PDPS distribution requests are processed without manual intervention. For example, at a DAAC that archives MODIS Level 0 (L0) data the FtpPushThreshold might be greater than the maximum size of a MODIS L0 granule (~7GB).
  - When a distribution request exceeds a threshold (e.g., FtpPushThreshold or FtpPullThreshold), the request is suspended in DDIST.
- FtpPullThreshold
  - Maximum number of bytes per distribution request via ftp pull.
- Checksum Status
  - Check-summing can be enabled or disabled for either acquires or inserts using the Storage Config. tab of the **Storage Management Control** GUI.
  - The checksum status entry (for EcDsStArchiveServer) controls whether or not a checksum is calculated for each file inserted into the archive.
  - Note that checksums are calculated on retrieval only when the file is first moved from the archive to the read-only cache. As long as the file remains resident in the read-only cache, the checksum is not recalculated.
  - Checksum calculation is a highly time-consuming process, and makes intensive use of central processing unit (CPU) resources. Consequently, enabling check-summing has significant effects on both archive server and cache manager servers.
- ListenThreads
  - Number of listen threads assigned to a particular application.

When the value assigned to a parameter has been changed and saved in the Configuration Registry, the modified value does not take effect until the affected server has been restarted. For example, if the debug level for the Distribution Server log has been changed from “2” to “3” in the Configuration Registry, the modification does not affect the recording of data in the log until

after a warm restart of the Distribution Server (at which time the server would read the parameters in the Configuration Registry).

Tuning System Parameters in the Storage Management and Data Distribution Database

Staging Area Size and Read-Only Cache Size

The DsStConfigParameter table in the Storage Management and Data Distribution database has columns related to staging area size and read-only cache size. The TotalSpace column contains the total size of raid allocated to the associated Cache Manager and staging disk combined. The CacheSpace column contains the amount of read-only cache space allocated/available on disk (to the associated Cache Manager/staging disk) in block-size increments.

The staging area size and read-only cache size parameters are tuned in tandem. They determine how much disk space is available for staging of files (both for Ingest and acquires), and how large the read-only cache is. When either area is exhausted, requests hang until space becomes available.

Pull area read-only cache size defaults to 2,000,000,000 (blocks). There is no need for much user space because the user files are symbolically linked back to the files in the read-only cache.

Staging area read-only cache size depends on the server and the data being handled. Staging read-only cache comes out of the same disk space as staging disk. The more need there is for staging disk, the smaller the size of the read-only cache can be. If the staging disk is being used primarily to link files from the read-only cache, the read-only cache can take most of the total staging area (90% or so). If data is being staged in support of Ingest or subsetting of data for distribution, the read-only cache should be smaller (e.g., 40% or 50% of the total staging area).

The parameters are modified using the **Storage Management Control** GUI. Refer to the section on **Modifying System Parameters in the Storage Management and Data Distribution Database Using the Storage Management Control GUI** (subsequent section of this lesson) for the applicable procedure.

Setting the FTP Pull Expiration Time

Among the columns in the DsStConfigParameter table in the Storage Management and Data Distribution database is the PullExpirationTime column. The value listed for a particular pull monitor server specifies the duration (in hours) after which files may be considered for deletion.

The ftp pull expiration time is used as a cleanup mechanism for files that have not been pulled. The appropriate setting for the ftp pull expiration time depends on the following factors:

- Frequency of files being left behind in the pull area.
  - The more files, the lower the expiration time.

- Size of the files.
  - The bigger the files, the lower the expiration time.
- Capacity of disk used.
  - The higher the capacity used, the lower the expiration time.
- Pull expiration time defaults to 24 hours.

The parameter is modified using the **Storage Management Control** GUI. Refer to the section on **Modifying System Parameters in the Storage Management and Data Distribution Database Using the Storage Management Control GUI** (subsequent section of this lesson) for the applicable procedure.

Priority Thread Allocation

The DsDdPriorityThread database table holds the threshold for the number of threads that can be active for each priority level of distribution requests. The priorities are set either via a Perl script (EcDsDdPTEdit.pl) or through command line sql. Table 1 lists representative default values as listed in the DsDdPriorityThread database table.

Refer to the section on **Modifying PriorityThread Table Values in the Storage Management and Data Distribution Database Using the EcDsDdPTEdit.pl Script** or the section on **Modifying System Parameters in the Storage Management and Data Distribution Database Using ISQL** (subsequent section of this lesson) for the applicable procedure.

Table 1. Representative Number of Active Threads for Each Priority of Distribution Requests (DsDdPriorityThread Database Table)

ThreadName	ThreadLimit
LOW	28
NORMAL	128
HIGH	64
VHIGH	5
XPRESS	2

Modifying System Parameters in the Storage Management and Data Distribution Database Using the Storage Management Control GUI

As previously mentioned the effects on system functioning and performance must be considered before modifying system parameters. In addition, when making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable). Depending on circumstances (e.g., operator permissions) at a particular site, it may be necessary to request that someone else make parameter modifications using the **Storage Management Control** GUI. The procedure that follows is provided to assist Ingest/Distribution Technicians who have to make parameter modifications using the **Storage Management Control** GUI.

The procedure for changing system parameters using the **Storage Management Control** GUI starts with the assumption that all applicable servers and the **Storage Management Control** GUI are running and the **Storage Config.** screen (Figure 6) is being displayed.

Modifying System Parameters in the Storage Management and Data Distribution Database Using the Storage Management Control GUI

1 Click on **Cache Manager** in the **Configuration Parameter Reporting** window on the **Storage Config.** tab.

- The selected server type is highlighted in the **Configuration Parameter Reporting** window on the **Storage Config.** tab.
- Associated servers are listed in the server information window on the **Storage Config.** tab.

2 Click on the appropriate server in the server information window on the **Storage Config.** tab.

- The selected server is highlighted in the server information window on the **Storage Config.** tab.

4 Click on the **Modify Server/View Stackers** button.

- The **Cache Manager Server Configuration** dialogue box (Figure 16) is displayed.
- The **Cache Manager Server Configuration** dialogue box (Figure 16) displays data in the following fields (as applicable):
  - **Server Name.**
  - **RPC Tag.**
  - **Original Cache Space (blocks).**
  - **Available Cache Space (blocks)** [cannot be modified from GUI].
  - **Allocation Block Size (bytes).**
  - **Description** [e.g., "Cache Manager"].
  - **Expiration Threshold (hours).**
  - **Expired Files Confirm Delete** [option button with **Yes** and **No** as the options]**.**
  - **Disk Capacity: Fault Level.**
  - **Disk Capacity: Warning Level.**
  - **File I/O Block Size (bytes).**
  - **Retries.**

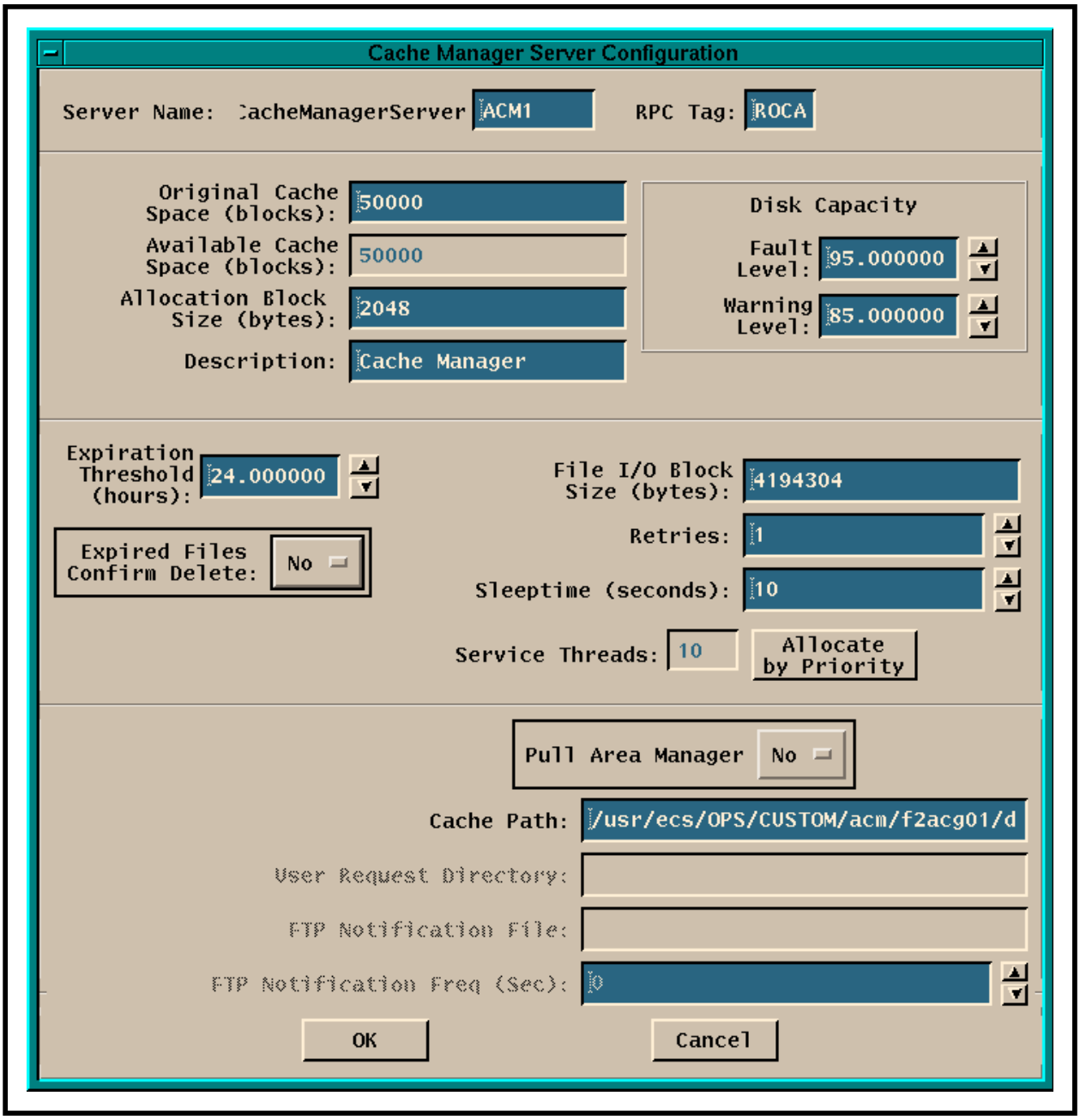

Figure 16. Cache Manager Server Configuration Dialogue Box

- **Sleeptime (seconds).**
- **Service Threads** [number of worker threads that are allocated within the server instance to process requests].
- **Pull Area Manager** [option button with **Yes** and **No** as the options].

- **Cache Path.**
- **User Request Directory.**
- **FTP Notification File.**
- **FTP Notification Freq (Sec).**

5 Type modified data in relevant field(s) as necessary.

6 If service threads are to be allocated by priority in order to reserve certain resources for higher priority requests, click on the **Allocate by Priority** button.

- The **Service Threads: Allocate by Priority** window (Figure 17) is displayed.

7 If service threads are to be allocated by priority, type the desired values in the appropriate fields in the **Service Threads: Allocate by Priority** window (Figure 17).

- Lower-priority threads may be used to service higher priority requests, but never vice versa.
- By default, all service threads are created as low priority service threads, since they may be pre-empted by any priority request.

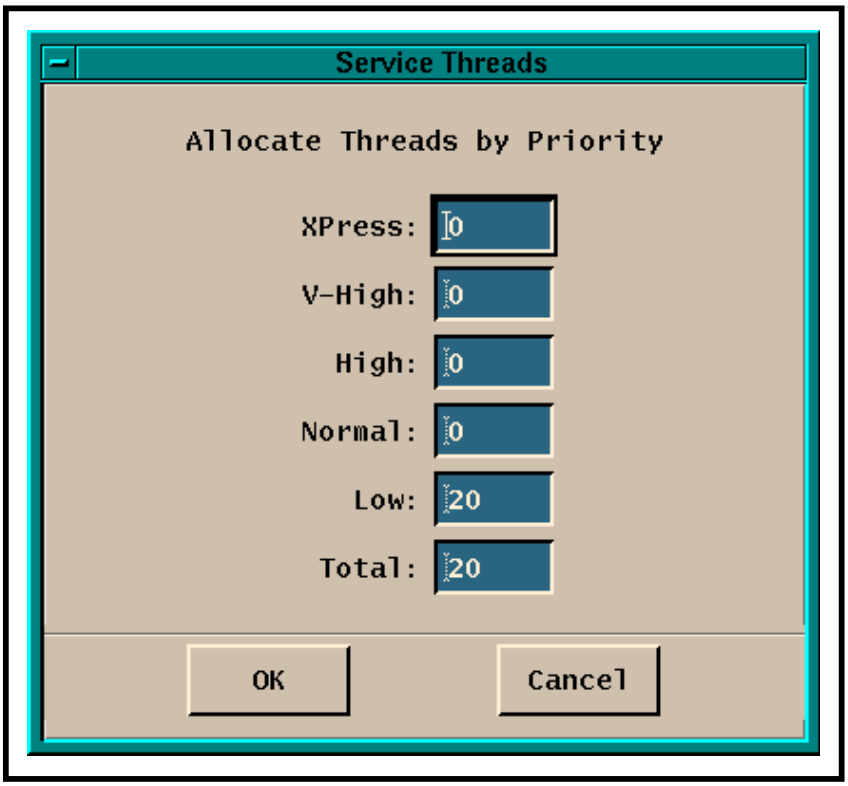

Figure 17. Service Threads: Allocate by Priority window

- The number of low threads is automatically re-calculated whenever the number of any of the other thread types is changed.
  - Consequently, the total of the numbers in each of the five different thread type fields equals the number in the **Total** field.

8 If service threads are to be allocated by priority, click on the appropriate button from the following selections:

- **OK** - to approve the new value(s) and dismiss the **Service Threads: Allocate by Priority** window.
  - The **Cache Manager Server Configuration** dialogue box (Figure 17) is displayed.
- **Cancel** - to return to the **Cache Manager Server Configuration** dialogue box without saving the new value(s).
  - The **Cache Manager Server Configuration Dialogue Box** (Figure 17) is displayed.

9 When new values have been entered in all fields to be modified, click on the appropriate button from the following selections:

- **OK** - to approve the new value(s) and dismiss the configuration dialogue box.
  - The **Storage Config.** screen (Figure 6) is displayed.
- **Cancel** - to return to the **Storage Config.** screen without saving the new value(s).
  - The **Storage Config.** screen (Figure 6) is displayed.

10 Repeat Steps 1 through 9 as necessary.

Modifying PriorityThread Table Values in the Storage Management and Data Distribution Database Using the EcDsDdPTEdit.pl Script

The EcDsDdPTEdit.pl script is a tool that can be used to change the limits for priority levels of threads in the DsDdPriorityThread database table. The script operates in either of two modes:

- Interactive.
  - A menu presents the old limits for the priority levels and prompts the technician to make necessary changes.
- Non-Interactive (command line).
  - The technician specifies new limits on the command line (useful for cron jobs).

As previously mentioned the effects on system functioning and performance must be considered before modifying system parameters. In addition, when making or requesting a change to

system parameters, the CM process at the particular site must be followed (if applicable). Depending on circumstances at a particular site it may be necessary to request that the Database Administrator modify parameters in the Storage Management and Data Distribution database. The procedure that follows is provided to assist Ingest/Distribution Technicians who have to make the database modifications themselves.

The procedure for changing PriorityThread table values in the Storage Management and Data Distribution Database using the EcDsDdPTEdit.pl Script starts with the assumption that the Ingest/Distribution Technician has logged in to the system.

Modifying PriorityThread Table Values in the Storage Management and Data Distribution Database Using the EcDsDdPTEdit.pl Script

1 Access a terminal window logged in to the Distribution Server (e.g., **e0dis01**, **g0dis01**, **l0dis02** or **n0dis01**).

- If values in the Storage Management and Data Distribution Database using….
  - Non-interactive mode, perform Step 2.
  - Interactive mode, perform Steps 3 through 7.

2 Type **EcDsDdPTEdit.pl USER *userID* PASSWORD *password* DBNAME *DBName* SERVER *DBServer PRIORITYLEVEL #threads [PRIORITYLEVEL #threads] [PRIORITYLEVEL #threads] […]*** then press **Return/Enter**.

- For example:

  EcDsDdPTEdit.pl USER stmgt_role PASSWORD greetings DBNAME stmgtdb1_TS1 SERVER x0acg01_srvr HIGH 60 LOW 32

  - Would set the thread limits for HIGH and LOW priorities in TS1 mode.
  - Thread limit for HIGH priority would be set at 60 threads.
  - Thread limit for LOW priority would be set at 32 threads.

- If necessary type **SYBASE *sybase_home_dir*** after **SERVER *DBServer***, for example:

  EcDsDdPTEdit.pl USER stmgt_role PASSWORD greetings DBNAME stmgtdb1_TS1 SERVER x0acg01_srvr SYBASE /tools/sybOCv11.1.1 HIGH 60 LOW 32

- The script makes the specified changes (end of procedure).

3 To use interactive mode type **EcDsDdPTEdit.pl USER *userID* PASSWORD *password* DBNAME *DBName* SERVER *DBServer*** then press **Return/Enter**.

- For example:

  EcDsDdPTEdit.pl USER stmgt_role PASSWORD greetings DBNAME stmgtdb1_TS1 SERVER x0acg01_srvr

- If necessary type **SYBASE *sybase_home_dir*** after **SERVER *DBServer***, for example:

  EcDsDdPTEdit.pl USER stmgt_role PASSWORD greetings DBNAME stmgtdb1_TS1 SERVER x0acg01_srvr SYBASE /tools/sybOCv11.1.1

- A menu similar to the following one is displayed:

  Configuration Parameter Change Menu

  Priority Nr. Threads

  -------- -----------

  1. HIGH 16,

  2. LOW 16,

  3. NORMAL 16,

  4. VHIGH 16,

  5. XPRESS 16,

  Enter number of Priority (1 - 5) to change, q to quit, or s to save and exit.

4 **Type** the number corresponding to the priority thread to be modified at the **Enter number of Priority….** prompt then press **Return/Enter**.

- For example:

  1

- The script responds with the following type of message:

  value of HIGH is 16,

  Enter new value for HIGH

5 **Type** the new value for the number of priority threads for the specified priority then press **Return/Enter**.

- For example:

  10

- The value in the table associated with the menu changes to the value entered; for example:

  Configuration Parameter Change Menu

  Priority Nr. Threads

  -------- -----------

  1. HIGH 10,

  2. LOW 16,

  3. NORMAL 16,

  4. VHIGH 16,

  5. XPRESS 16,

  Enter number of Priority (1 - 5) to change, q to quit, or s to save and exit.

6 Repeat Steps 4 and 5 as necessary to enter new values for all PriorityThread table values to be modified.

7 When new values have been entered for all PriorityThread table values to be modified, type the appropriate response from the following selections then press **Return/Enter**:

- **s** - to implement the new PriorityThread table values and dismiss the **Configuration Parameter Change Menu.**
  - The following message is displayed while the new values are being saved to the database:

    ok, saving values...

- **q** - to dismiss the **Configuration Parameter Change Menu** without implementing the new PriorityThread table values.

Modifying System Parameters in the Storage Management and Data Distribution Database Using ISQL

As previously mentioned the effects on system functioning and performance must be considered before modifying system parameters. In addition, when making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable). Depending on circumstances at a particular site it may be necessary to request that the Database Administrator modify parameters in the Storage Management and Data Distribution database. The procedure that follows is provided to assist Ingest/Distribution Technicians who have to make the database modifications themselves.

The procedure for changing system parameters specified in the Storage Management and Data Distribution database using interactive structured query language (isql) starts with the assumption that the Ingest/Distribution Technician has logged in to the system.

Modifying System Parameters in the Storage Management and Data Distribution Database Using ISQL

1 Access a terminal window logged in to the Access/Process Coordinators (APC) Server (e.g., **e0acg01**, **g0acg01**, **l0acg02** or **n0acg01**).

2 Type **isql –U*userID* -S*DBServer*** then press **Return/Enter**.

- For example:

  isql –Ustmgt_role –Sx0acg01_srvr

3 At the **Password:** prompt type ***dbpassword*** then press **Return/Enter**.

- The ***dbpassword*** is the password for logging in to the database using the specified ***userID***.

4 Type **use *dbname*** at the **1>** prompt then press **Return/Enter**.

- The ***dbname*** is likely to be one of the following names:
  - **stmgtdb1** [OPS mode].
  - **stmgtdb1_TS1** [TS1 mode].
  - **stmgtdb1_TS2** [TS2 mode].

5 Type **go** at the **2>** prompt then press **Return/Enter**.

6 Type **select * from *TableName*** at the **1>** prompt then press **Return/Enter**.

- For example:

  select * from DsDdPriorityThread

- Alternatively, type **select *columnName* from *TableName*** at the **1>** prompt then press **Return/Enter**.
  - For example:

    select ThreadLimit from DsDdPriorityThread
- Another alternative is to type **select *columnName1,columnName2[,columnName3,…]* from *TableName*** at the **1>** prompt then press **Return/Enter**.
  - For example:

    select ThreadName,ThreadLimit from DsDdPriorityThread

7 Type **go** at the **2>** prompt then press **Return/Enter**.

- Table contents are displayed.
  - If * (wildcard) was specified, all entries in the table are displayed.
  - If specific columnNames were entered, the data associated with those columns only are displayed.
- For example:

```
1> select * from DsDdPriorityThread
2> go
 ThreadName   ThreadLimit
 ------------ -----------
 HIGH                  64
 LOW                   28
 NORMAL               128
 VHIGH                  5
 XPRESS                 2
(5 rows affected)
```

8 Type **update *TableName* set *columnName1=value1* where *columnName2=value2*** at the **1>** prompt then press **Return/Enter**.

- For example:

  update DsDdPriorityThread set ThreadLimit=125 where ThreadName=NORMAL

9 Type **go** at the **2>** prompt then press **Return/Enter**.

10 Start verification of the update by typing **select * from *TableName*** (or one of the options described in Step 6) at the **1>** prompt then pressing **Return/Enter**.

11 Type **go** at the **2>** prompt then press **Return/Enter**.

- Table contents are displayed.
- Specified value should have been updated.

- For example:

```
1> select * from DsDdPriorityThread
2> go
 ThreadName   ThreadLimit
 ------------ -----------
 HIGH                  64
 LOW                   28
 NORMAL               125
 VHIGH                  5
 XPRESS                 2
(5 rows affected)
```

12 To exit from isql type **quit** at the **1**> prompt then press **Return/Enter**.

Troubleshooting Data Distribution Problems

Trouble Symptoms

Troubleshooting is a process of identifying the source of problems on the basis of observed trouble symptoms. Most problems with data distribution can be traced to some part of the Data Server Subsystem:

- Data Distribution.
- Science Data Server.
- Storage Management.

However, a common source of problems involves the reliance on messages or data from other subsystems. Like many other operational areas in ECS, data distribution has interfaces with other subsystems. Consequently, it is possible to trace some problems to another ECS subsystem, including (but not necessarily limited to) those in the following list:

- Communications Subsystem (CSS).
- System Management Subsystem (MSS).

Table 2 describes actions to be taken in response to some common data distribution problems. If the problem cannot be identified and fixed without help within a reasonable period of time, the appropriate response is to call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 2. Troubleshooting Data Distribution Problems

Symptom	Response
Unable to log in to any host (e.g., Distribution Server, g0dis02).	Check with the Operations Controller/System Administrator to ensure that the host is "up."
GUI not displayed when the start-up script has been properly invoked.	Ensure that the DISPLAY variable was set properly. [For detailed instructions refer to the procedure for **Launching the Data Distribution Operator and Storage Management Control GUIs** (previous section of this lesson).]
Error message associated with the Data Distribution Operator GUI.	Refer to Table 3, Data Distribution Operator GUI User Messages (adapted from the corresponding table in 609-CD-600-001, *Release 6A Operations Tools Manual for the ECS Project*).
Request status change to "Suspended with Errors," indicating a data distribution failure.	1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 4) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up. 3. If hosts/servers are all "up," notify the Operations Controller/System Administrator to have the STMGT servers bounced (shut down and immediately restarted). 4. Resume processing of the suspended request. [For detailed instructions refer to the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).] 5. If processing does not resume, refer to the procedure for **Recovering from a Data Distribution Failure** (subsequent section of this lesson).
Other problems.	Check the log files (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG, EcDsStStagingDiskServer.ALOG, EcDsStCacheManagerServer.ALOG) in the /usr/ecs/*MODE*/CUSTOM/logs directory of the Distribution Server host for error messages. [For detailed instructions refer to the procedure for **Checking Log Files** (subsequent section of this lesson).]

Table 3. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
Cannot create connection pool.	Attempt to create connection pool to database failed.	1. Refresh the GUI display (click on the **Refresh** button). 2. Check the database connections. [For detailed instructions refer to the procedure for **Checking Database Connections** (subsequent section of this lesson).] 3. Refresh the GUI display (click on the **Refresh** button). 4. If the problem recurs, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
Cannot create the DsDdDistRequestList.	The Data Distribution Request List was not created.	1. Refresh the GUI display (click on the **Refresh** button). 2. Check the database connections. [For detailed instructions refer to the procedure for **Checking Database Connections** (subsequent section of this lesson).] 3. Refresh the GUI display (click on the **Refresh** button). 4. If the problem recurs, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
Cannot get a dbInterface connection pool.	Attempt to get a dbInterface from connection pool to database failed.	1. Refresh the GUI display (click on the **Refresh** button). 2. Check the database connections. [For detailed instructions refer to the procedure for **Checking Database Connections** (subsequent section of this lesson).] 3. Refresh the GUI display (click on the **Refresh** button). 4. If the problem recurs, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 3. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DDist Cancel Failure.	GUI received failure from server. Request was not canceled.	1. Check the current state of the distribution request (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Canceling the request may not be a valid operation in the current state (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up. 4. Refresh the GUI display (click on the **Refresh** button). 5. Try again to cancel the request. [For detailed instructions refer to the procedure for **Canceling Data Distribution Requests** (previous section of this lesson).] 6. If repeated attempts to cancel the request fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
DDist Mark Shipped Failure.	GUI received failure from server. Request was not marked "Shipped."	No Longer Applicable.
DDist Refresh Failure.	Data Distribution Refresh Error. Dialogue Message GUI was not able to get new request list from server.	1. Check the database connections. [For detailed instructions refer to the procedure for **Checking Database Connections** (subsequent section of this lesson).] 2. Refresh the GUI display (click on the **Refresh** button). 3. If the problem recurs, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 3. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DDist Resume All Failure.	GUI received failure from server. Requests were not resumed.	1. Check the current state of the distribution request(s) (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Resuming the request(s) may not be a valid operation in the current state(s) (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up. 4. Refresh the GUI display (click on the **Refresh** button). 5. Try again to resume the request(s). [For detailed instructions refer to the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).] 6. If repeated attempts to resume request processing fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
DDist Resume Failure.	GUI received failure from server. Request was not resumed.	1. Check the current state of the distribution request (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Resuming the request may not be a valid operation in the current state (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up. 4. Refresh the GUI display (click on the **Refresh** button). 5. Try again to resume the request. [For detailed instructions refer to the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).] 6. If repeated attempts to resume request processing fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 3. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DDist Set Priority Failure.	GUI received failure from server. Request set priority failed.	1. Check the current state of the distribution request (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Setting priority may not be a valid operation in the current state (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the server has gone down, notify the Operations Controller/System Administrator to have it brought back up. 4. Try again to set the priority of the selected distribution request. [For detailed instructions refer to the procedure for **Changing the Priority of Data Distribution Requests** (previous section of this lesson).] 5. If repeated attempts to set the request priority fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
DDist Suspend All Failure.	GUI received failure from server. Requests will not be submitted in a SuspendAll state.	1. Check the current state of the distribution request(s) (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Suspending the request(s) may not be a valid operation in the current state(s) (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up. 4. Refresh the GUI display (click on the **Refresh** button). 5. Try again to suspend the request(s). [For detailed instructions refer to the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).] 6. If repeated attempts to suspend request processing fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 3. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DDist Suspend Failure.	GUI received failure from server. Request was not suspended.	1. Check the current state of the distribution request (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Suspending the request may not be a valid operation in the current state (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up. 4. Refresh the GUI display (click on the **Refresh** button). 5. Try again to suspend the request. [For detailed instructions refer to the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).] 6. If repeated attempts to suspend request processing fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
DsDdRequestMgrC Cancel Failure.	GUI received failure from server. Request was not canceled.	1. Check the current state of the distribution request (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Canceling the request may not be a valid operation in the current state (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up. 4. Refresh the GUI display (click on the **Refresh** button). 5. Try again to cancel the request. [For detailed instructions refer to the procedure for **Canceling Data Distribution Requests** (previous section of this lesson).] 6. If repeated attempts to cancel the request fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 3. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DsDdRequestMgrC create handle error.	Error cannot create Request Manager Handle to the Data Distribution Server.	1. Click on the **Refresh** button to try again. 2. Check the database connections. [For detailed instructions refer to the procedure for **Checking Database Connections** (subsequent section of this lesson).] 3. Refresh the GUI display (click on the **Refresh** button). 4. If the problem recurs, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
DsDdRequestMgrC Mark Shipped Failure.	GUI received failure from server. Request was not marked "Shipped."	No Longer Applicable.
DsDdRequestMgrC Resume Failure.	GUI received failure from server. Request was not resumed.	1. Check the current state of the distribution request (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Resuming the request may not be a valid operation in the current state (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up. 4. Refresh the GUI display (click on the **Refresh** button). 5. Try again to resume the request. [For detailed instructions refer to the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).] 6. If repeated attempts to resume request processing fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 3. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DsDdRequestMgrC Set Priority Failure.	GUI received failure from server. Request priority was not changed.	1. Check the current state of the distribution request (**State** column of the **Data Distribution Requests** list on the **Distrib'n Requests** tab (Figure 5)). Setting priority may not be a valid operation in the current state (e.g., if the current state is "Shipped"). 2. Ensure (e.g., using ECS Assistant) that the Distribution Server is "up." 3. If the server has gone down, notify the Operations Controller/System Administrator to have it brought back up. 4. Try again to set the priority of the selected distribution request. [For detailed instructions refer to the procedure for **Changing the Priority of Data Distribution Requests** (previous section of this lesson).] 5. If repeated attempts to set the request priority fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.
Invalid text field entry.	Invalid data was entered.	1. Enter valid data in the relevant field. 2. Retry the operation that led to the error message.
No Ddist request selected. Please select one.	An operation was performed without first selecting a request from the scrolled list.	1. Select (highlight) the appropriate request in the list. 2. Retry the operation that led to the error message.

Table 4. Hosts, Servers, Clients and Other Software Relevant to Data Distribution

HOST	SERVER/CLIENT/OTHER SOFTWARE
Distribution Server (e.g., x0dis02)	Data Distribution Operator GUI (EcDsDdistGui) Distribution Server (EcDsDistribution Server) Staging Disk Server (EcDsStStagingDiskServer) Storage Management Request Manager (EcDsStRequestManagerServer)
Working Storage (e.g., x0wkg01)	HDF EOS Server (EcDsHdfEosServer) Archive Server (EcDsStArchiveServer) Cache Manager Server (EcDsStCacheManagerServer) FTP Server (EcDsStFtpServer) Staging Disk Server (EcDsStStagingDiskServer)
SDSRV Server (e.g., x0acs03)	Science Data Server (EcDsScienceDataServer)
Access/Process Coordinators (APC) Server (e.g., x0acg01)	Archive Server (EcDsStArchiveServer) Cache Manager Server (EcDsStCacheManagerServer) FTP Server (EcDsStFtpServer) Staging Disk Server (EcDsStStagingDiskServer) Pull Monitor Server (EcDsStPullMonitorServer)
FSMS Server (e.g., x0drg01)	Archive Server (EcDsStArchiveServer) Cache Manager Server (EcDsStCacheManagerServer) FTP Server (EcDsStFtpServer) Staging Disk Server (EcDsStStagingDiskServer)
Ingest Server (e.g., x0icg01)	Registry Server (EcCsRegistry)
Interface Server 02 (e.g., x0ins01)	Subscription Server (EcSbSubServer) Event Server (EcSbEventServer)

Recovering from a Data Distribution Failure

The automated data distribution processes (push and pull) normally do not require intervention by the Ingest/Distribution Technician. However, when a data distribution fault (error) occurs, there may be a requirement for action to recover from the error. For example, recovery actions may be made necessary by the failure of storage management to acquire granules from the archive so they can be distributed. When a fault (error) occurs, the request status on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** is likely to change to "Suspended with Errors."

The Ingest/Distribution Technician may use the **Data Distribution Operator GUI Distrib'n Requests** tab (refer to the section on Monitoring/Controlling Data Distribution Requests) and/or log files on various host machines to review the failure event.

When recovering from a data distribution failure, use the procedure that follows. The procedure starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Distrib'n Requests** screen (Figure 5) is being displayed.

Recovering from a Data Distribution Failure

---

1 Observe the information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** to identify distribution requests with a status of "Suspended with Errors."

2 If a suspended request has the error mnemonic **DsEDdXLargeRequest** associated with it, perform the procedure for **Responding to Requests that Exceed the Distribution Request Threshold** (subsequent section of this lesson).

3 Perform the procedure for **Handling an Acquire Failure** (subsequent section of this lesson).

4 If additional information is needed, open and read the appropriate log file in the **/usr/ecs/*MODE*/CUSTOM/logs** directory on the appropriate host machine(s).

- Applicable host machines are listed in Table 4. Hosts, Servers, Clients and Other Software Relevant to Data Distribution.
- For detailed instructions refer to the procedure for **Checking Log Files** (subsequent section of this lesson).

5 If the problem could not be identified through any of the preceding steps, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

6 When the problem has been corrected, review the information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** to determine whether the distribution request resumed processing.

7 If the distribution request does not resume processing after the problem has been corrected, return to Step 3.

Responding to Requests that Exceed the Distribution Request Threshold

When a distribution request exceeds the corresponding distribution request threshold (e.g., FtpPushThreshold or FtpPullThreshold), the request is suspended in DDIST with the following error mnemonic:

- DsEDdXLargeRequest

The procedure for responding to requests that exceed the distribution request threshold starts with the assumption that all applicable servers and the **Data Distribution Operator GUI** are currently running and the **Distrib'n Requests** screen (Figure 5) is being displayed.

1 Contact User Services to determine whether or not the user's request should be processed.

- User Services may contact the requester to verify whether or not the requester intended to order so much data.

2 If User Services responds that the request should be aborted, perform the procedure for **Canceling Data Distribution Requests** (previous section of this lesson).

- An e-mail message is automatically sent to the requester indicating that the request was cancelled through operator intervention.
- User Services should follow up with an additional e-mail message to the requester explaining the rationale for not completing the request.

3 If User Services responds that the request should be completed, first determine whether the request should be resumed immediately or should be left suspended until an off-hours period when the system is less loaded.

- Another alternative may be to submit a request to the Database Administrator to increase (at least temporarily) the corresponding threshold.

4 If the request should be completed, perform the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).

Handling an Acquire Failure

Diagnosing an acquire failure involves examining the following system log files and directories involved in the process:

- Science Data Server ALOG File (EcDsScienceDataServer.ALOG file).
- Archive Server ALOG File (EcDsStArchiveServer.ALOG).
- Staging Area.
  - Presence of the relevant file.
  - Staging Disk ALOG File (EcDsStStagingDiskServer.ALOG or EcDsStCacheManagerServer.ALOG).
  - Space available in the staging area.

Checking the Science Data Server ALOG File

The procedure for checking the EcDsScienceDataServer.ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Science Data Server ALOG File

---

1 Log in to the SDSRV Server host (e.g., e0acs05, g0acs03, l0acs03, n0acs04) as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution Operator and Storage Management Control GUIs** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

3 Type **view EcDsScienceDataServer.ALOG** then press **Return/Enter**.

- Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**) can be used to review the log file.

4 Review the log file to determine whether the relevant file was successfully acquired.

- The EcDsScienceDataServer.ALOG file should contain entries identifying the file to be acquired by the ShortName of the corresponding ESDT.
- The EcDsScienceDataServer.ALOG file should contain entries regarding the acquire activity. The following types of messages should be included in the ALOG file:

  Msg: File 1 to be distributed: :SC:MOD03.001:1369:1.HDF-EOS

  Priority: 0 Time : 07/29/98 12:35:42

  PID : 24279:MsgLink :1684108385 meaningfulname :DsSrWorkingCollectionDistributeOneDistributFile

  Msg: File 2 to be distributed: SCMOD03.0011369.met

- If the ShortName does not appear in the ALOG file, with a timestamp corresponding to the time of the attempted acquire, SDSRV may not be running, or may not be communicating with other servers.
- If the ALOG file does contain entries for that ShortName, and indicates that two files (the file and its associated metadata file) are being distributed, SDSRV has completed its role in the acquire.
- If the ALOG contains the ShortName, and also contains an error showing that the data file time stamp does not match the time stamp required by the acquire, the data file needs to be removed from the Science Data Server and reinserted.
  - This is usually done using a script called DsDbCleanGranules.

5 Type **:q!** then press **Return/Enter** to quit the view application.

6 If the ShortName does **not** appear in the ALOG file, with a timestamp corresponding to the time of the attempted acquire, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 4) are "up."

- If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up.
- Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.

7 If the ALOG contains the ShortName, and also contains an error showing that the data file time stamp does not match the time stamp required by the acquire, notify the Archive Manager to have the data file removed from the Science Data Server and reinserted.

- Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.

8 If the ALOG file does contain entries for the ShortName and indicates that two files (the file and its associated metadata file) are being distributed, continue with the procedure for **Checking the Archive Server ALOG File**.

Checking the Archive Server ALOG File

Acquire success from the Science Data Server is only part of the acquire process. Since any file entered into SDSRV is stored in the archive, the Archive Server must be involved during an acquire. Consequently, it may be useful to inspect the Archive Server ALOG file (EcDsStArchiveServer.ALOG) to check for error messages associated with the ShortName of the file type.

The procedure for checking the archive server ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Archive Server ALOG File

---

1 Log in to the Distribution Server (e.g., e0drg01, g0 drg01, l0 drg01, n0 drg01) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution Operator and Storage Management Control GUIs** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

3 Type **view EcDsStArchiveServer.ALOG** then press **Return/Enter**.

- Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**) can be used to review the log file.

4 Review the log file to determine whether the relevant file was successfully acquired.

5 Type **:q!** then press **Return/Enter** to quit the view application.

6 If the relevant file was **not** successfully acquired, notify the Archive Manager to have the data file reacquired for Data Processing.

- Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.

7 If the relevant file was successfully acquired, continue with the procedure for **Checking the Staging Disk**.

Checking the Staging Disk

During an acquire, files are copied to a staging area as an intermediate step before distributing them to their destination. As part of diagnosing an acquire failure it is useful to check the staging area to ascertain whether the files have completed part of their journey. A subdirectory containing both the data granule and metadata file should be written to the staging area.

The procedure for checking the staging disk starts with the assumption that the operator has logged in to the ECS system.

Checking the Staging Disk

---

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution Operator and Storage Management Control GUIs** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/drp/*archivehost*/data/staging/user#** then press **Return/Enter**.

3 Type **ls -lrt** then press **Return/Enter**.

4 Review the directory to determine whether the relevant file was successfully staged.

5 If the relevant file was successfully staged, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 4) are "up."

- If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up.
- Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.

6 If the relevant file was **not** successfully staged, continue with the procedure for **Checking the Staging Disk ALOG File** to determine why it was not successfully staged.

Checking the Staging Disk ALOG File

If the failure occurs in copying the files to the staging area, then the Staging log files (EcDsStStagingDiskServer.ALOG or EcDsStCacheManagerServer.ALOG) may reveal the cause.

The procedure for checking the staging disk ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Staging Disk ALOG File

---

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution Operator and Storage Management Control GUIs** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

3 Type **view EcDsStStagingDiskServer.ALOG** or **EcDsStCacheManagerServer.ALOG** then press **Return/Enter**.

- Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**) can be used to review the log file.

4 Review the log file to determine whether the relevant file was successfully staged.

5 Type **:q!** then press **Return/Enter** to quit the view application.

6 If the relevant file was successfully staged, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 4) are "up."

- If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up.
- Return to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.

7 If the relevant file was **not** successfully staged, continue with the procedure for **Checking the Space Available in the Staging Area**.

Checking the Space Available in the Staging Area

Failure can be caused by a lack of space in the staging area.

The procedure for checking the space available in the staging area starts with the assumption that the operator has logged in to the ECS system.

Checking the Space Available in the Staging Area

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching the Data Distribution Operator and Storage Management Control GUIs** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/drp/*archivehost*/data/** then press **Return/Enter**.

3 Type **df -k .** (being sure to include the dot) then press **Return/Enter**.

4 Review the available space listed to determine whether there is adequate space for staging the relevant file.

5 If there is **not** adequate space for staging the relevant file, notify the Operations Controller/System Administrator of the lack of space.

6 If there is adequate space for staging the relevant file, notify the Archive Manager to have the data file reacquired for Data Processing.

7 Go to the procedure for **Troubleshooting a Data Distribution Failure** after the problem has been corrected.

Checking Log Files

Log files can provide indications of the following types of problems:

- DCE problems.
- Database problems.
- Lack of disk space.

The procedure for checking log files starts with the assumption that the operator has logged in to the ECS system and the appropriate host.

Checking Log Files

1 Access a terminal window logged in to the appropriate host.

- Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host has the following data distribution and storage management log files:
  - EcDsDdistGui.ALOG.
  - EcDsDistributionServer.ALOG.
  - EcDsStStagingDiskServer.ALOG.

- EcDsStCacheManagerServer.ALOG.
- EcDsStmgtGui.ALOG.

- APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) host has the following storage management log files:
  - EcDsStArchiveServer.ALOG.
  - EcDsStStagingDiskServer.ALOG.
  - EcDsStCacheManagerServer.ALOG.
- FSMS Server (e.g., e0drg01, g0drg01, l0drg01, n0drg01) host has the following storage management log files:
  - EcDsStArchiveServer.ALOG
  - EcDsStStagingDiskServer.ALOG.
  - EcDsStCacheManagerServer.ALOG.
- Working Storage (e.g., e0wkg01, g0wkg01, l0wkg01) host has the following storage management log files:
  - EcDsStArchiveServer.ALOG.
  - EcDsStStagingDiskServer.ALOG.
  - EcDsStCacheManagerServer.ALOG.
- SDSRV Server (e.g., e0acs05, g0acs03, l0acs03, n0acs04) host has the following science data server log files:
  - EcDsHdfEosServer.ALOG.
  - EcDsScienceDataServer.ALOG
  - EcDsScienceDataServerClient.ALOG.
  - EcDsSdSrvGui.ALOG.
- Interface Server 02 (e.g., e0ins01, g0ins01, l0ins01, n0ins01) host has the EcSbSubServer.ALOG file.

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

- Change directory to the directory containing the data distribution, science data server, or storage management log files (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG).

3 Type **pg** ***filename*** then press **Return/Enter**.

- ***filename*** refers to the data distribution, science data server, or storage management log file to be reviewed (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG).
- The first page of the log file is displayed.
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view, more**) can be used to review the log file.

4 Review the log file to identify problems that have occurred.

5 Respond to problems as follows:

- DCE problems.
  - Notify the Operations Controller/System Administrator of suspected DCE problems.
- Database problems.
  - Verify that relevant database servers are running.
  - Check for lack of (or corruption of) data in the database using either a database browser or isql commands.
  - Notify the Database Administrator of suspected database problems.
- Lack of disk space.
  - Remove unnecessary files.
  - Notify the Operations Controller/System Administrator of recurring disk space problems.

Checking Database Connections

The storage management/data distribution shared database is the repository of data concerning data distribution requests. If applications (including the Data Distribution Operator GUI) are unable to connect to the database, the data distribution request data cannot be retrieved or (in the case of the GUI) displayed. Consequently, if the GUI does not display data or if the display does not refresh, checking the database connections is a logical step in trying to isolate the problem.

The procedure for checking database connections starts with the assumption that the operator has logged in to the ECS system.

1 Submit a request to the Database Administrator to identify the values for the following parameters associated with the EcDsDistributionServer:

- **DBName.**
- **DBServer.**
- **DBMaxConnections.**

2 Access a terminal window logged in to the APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) host.

- APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) typically hosts Sybase for the storage management/data distribution shared database.

3 Type **isql –U*userID* -S*DBServer*** then press **Return/Enter**.

- For example:

```
isql –Ustmgt_role  –Sx0acg01_srvr
```

4 At the **Password:** prompt type ***dbpassword*** then press **Return/Enter**.

- The ***dbpassword*** is the password for logging in to the database using the specified ***userID***.

5 Type **sp_who** at the **1>** prompt then press **Return/Enter**.

6 Type **go** at the **2>** prompt then press **Return/Enter**.

- A listing similar to the following one is displayed (some lines have been deleted):

```
spid   status       loginame                        hostname   blk
      dbname                          cmd
------ ------------ ------------------------------ ---------- -----
       ------------------------------ ----------------
     1 recv sleep   stmgt_role                     x0acs03      0
       stmgtdb1_TS1                    AWAITING COMMAND
     2 sleeping     NULL                                       0
       master                          NETWORK HANDLER
     3 sleeping     NULL                                       0
       master                          DEADLOCK TUNE
     4 sleeping     NULL                                       0
       master                          MIRROR HANDLER
     5 sleeping     NULL                                       0
       master                          HOUSEKEEPER
     6 sleeping     NULL                                       0
       master                          CHECKPOINT SLEEP
     7 sleeping     NULL                                       0
       master                          AUDIT PROCESS
     8 recv sleep   stmgt_role                     x0ais01   0
       stmgtdb1_TS1                    AWAITING COMMAND
```

```
 9 recv sleep   EcDsStArchiveServer                          0
    stmgtdb1_TS2                  AWAITING COMMAND
10 recv sleep   EcInReqMgr                                   0
    Ingest_TS3                    AWAITING COMMAND
11 recv sleep   EcDsStCacheManagerServer                     0
    stmgtdb1_TS2                  AWAITING COMMAND
12 recv sleep   EcDsStStagingDiskServer                      0
    stmgtdb1_TS2                  AWAITING COMMAND
13 recv sleep   EcInGran                          x0icg01   0
    Ingest_TS3                    AWAITING COMMAND
14 recv sleep   EcDsStFtpServer                             0
    stmgtdb1_TS2                  AWAITING COMMAND
15 recv sleep   EcDsStArchiveServer                          0
    stmgtdb1_TS1                  AWAITING COMMAND
16 recv sleep   EcDsStCacheManagerServer                     0
    stmgtdb1_TS1                  AWAITING COMMAND
17 recv sleep   EcDsStStagingDiskServer                      0
    stmgtdb1_TS1                  AWAITING COMMAND
18 recv sleep   EcInGran                                     0
    Ingest_TS3                    AWAITING COMMAND
19 recv sleep   EcDsStStagingDiskServer                      0
    stmgtdb1_TS1                  AWAITING COMMAND
20 recv sleep   EcInGUI                                      0
    Ingest_TS1                    AWAITING COMMAND
21 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
22 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
23 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
24 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
25 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
26 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
27 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
28 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
29 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
30 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
31 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
32 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
33 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
34 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
35 recv sleep   EcDsDistributionServer                       0
    stmgtdb1_TS1                  AWAITING COMMAND
36 recv sleep   EcInPolling                                  0
    Ingest_TS1                    AWAITING COMMAND
[…]
49 recv sleep   EcDsStmgtGui                                 0
```

```
          stmgtdb1_TS1                    AWAITING COMMAND
     50 recv sleep   EcDsDdistGui                                  0
          stmgtdb1_TS1                    AWAITING COMMAND
     51 recv sleep   EcDsDdistGui                                  0
          stmgtdb1_TS1                    AWAITING COMMAND
     52 recv sleep   EcDsDdistGui                                  0
          stmgtdb1_TS1                    AWAITING COMMAND
     53 recv sleep   EcDsDdistGui                                  0
          stmgtdb1_TS1                    AWAITING COMMAND
     54 running      stmgt_role                      x0icg01   0
          stmgtdb1                        SELECT
     55 recv sleep   EcDsStArchiveServer                           0
          stmgtdb1                        AWAITING COMMAND
(55 rows affected)
(return status = 0)
```

7 Type **sp_configure "user connections"** at the **1>** prompt then press **Return/Enter**.

8 Type **go** at the **2>** prompt then press **Return/Enter**.

- A listing similar to the following one is displayed:

```
Parameter Name                 Default     Memory Used Config Value
         Run Value
 ------------------------------ ----------- ----------- ------------
         -----------
 number of user connections              25       20195          255
                255
(1 row affected)
(return status = 0)
```

9 Type **quit** at the **1>** prompt then press **Return/Enter**.

10 Compare the number of actual connections (results of **sp_who**) with the number of connections for which the database has been configured (results of **sp_configure "user connections"**).

11 If the number of actual connections is very close to the number of connections for which the database has been configured, notify the Database Administrator of the fact.

12 If the number of actual connections is **not** very close to the number of connections for which the database has been configured, compare the number of actual connections with the value for DBMaxConnections that the Database Administrator specified (Step 1).

13 If the number of actual connections is very close to the value for DBMaxConnections, notify the Database Administrator of the fact.

- It may be advisable to increase the value assigned to the DBMaxConnections parameter in the Configuration Registry.

Practical Exercise

Introduction

This exercise is designed to give the students practice in data distribution activities.

Equipment and Materials

One ECS workstation per student.

Statement of the requirements for the exercise.

Release 6A Operations Tools Manual for the ECS Project, 609-CD-600-001, one copy per student.

Mission Operation Procedures for the ECS Project, 611-CD-600-001, one copy per student.

Launching the Data Distribution Operator and Storage Management Control GUIs

The exercise involves launching the Data Distribution Operator and Storage Management Control GUIs. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/ requirements for launching the Data Distribution Operator and Storage Management Control GUIs. The student launches the data distribution and storage management control GUIs as specified in the requirements.

Perform the following steps:

1. Log in to the distribution server host using secure shell.
2. Set the environmental variables.
3. Enter the path to the utilities directory.
4. Enter the command to start the **Data Distribution Operator** GUI in the specified mode.
5. Enter the command to start the **Storage Management Control** GUI in the specified mode.

Monitoring/Controlling Data Distribution Requests

The exercise involves monitoring and controlling data distribution requests via ftp push or ftp pull. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for monitoring/controlling data distribution requests. The requirements may include instructions to configure data distribution polling, filter data distribution requests, change the priority of a distribution request, or change the status of a

distribution request (e.g., cancel, suspend, or resume). The student monitors/controls data distribution requests as specified in the requirements.

Perform the following steps:

1. Monitor/control data distribution requests as specified in the written or stated requirements.
2. Configure data distribution polling as specified in the written or stated requirements.
3. Filter requests as necessary.
4. Change the status of distribution requests as specified in the written or stated requirements.
5. Respond to questions concerning the current status of distribution requests.

Modifying Preambles

The exercise involves modifying an e-mail preamble applicable to data distribution. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for modifying an e-mail preamble. The student modifies the e-mail preamble in accordance with the requirements.

Perform the following steps:

1. Select the **Preamble Editor** tab of the **Data Distribution Operator GUI**.
2. Select the appropriate media type.
3. Select the appropriate preamble type.
4. Edit the preamble text.
5. Save the edited preamble.

Configuring Storage Management Polling

The exercise involves configuring Storage Management polling functions. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements to configure Storage Management polling functions. The student configures Storage Management polling functions as specified in the requirements.

Perform the following steps:

1. Select **Options → System Settings** from the pull-down menu on the **Storage Management Control** GUI.
2. Set the **Operator Notification Timer** and/or **Cache Statistics Timer** to the appropriate polling states (off or on) if applicable.
3. Enter the database polling rate for the **Operator Notification Timer** and/or **Cache Statistics Timer** if applicable.
4. Set the error retry rate for the **Operator Notification Timer** if applicable.

5. Apply the modifications.

Deleting Files from Cache

The exercise involves deleting files from cache. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements to delete files from cache. The student deletes files from cache as specified in the requirements.

Perform the following steps:

1. Select the **Cache Stats.** tab on the **Storage Management Control** GUI.
2. Select the cache containing the files to be deleted.
3. Select the file to be deleted from the cache.
4. Click on the **Mark Delete** button.

Viewing Storage Management Event Log Information

The exercise involves viewing storage management event log information. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for viewing storage management event log information. The student views storage management event log information as specified in the requirements.

Perform the following steps:

1. Select the **Storage Events** tab of the **Storage Management Control** GUI.
2. Enter the defining characteristic(s) (e.g., time period, event type, event level) of the event.
3. Click on the **Search** button to search the event log for events that meet the specified criteria.
4. Observe event information displayed in the **Event Log** window.
5. Respond to questions concerning the event information that is displayed in the **Event Log** window.

Monitoring Storage Management Server Operations

The exercise involves monitoring storage management server operations. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for monitoring storage management server operations. The requirements may include instructions to filter storage management requests. The student monitors storage management server operations as specified in the requirements.

Perform the following steps:

1. Monitor storage management server operations as specified in the written or stated requirements.
2. Filter requests as necessary.

3. Respond to questions concerning the current status of requests.

Modifying System Parameters

The exercise involves modifying system parameters in database tables. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/ requirements for modifying system parameters in database tables. The student modifies a system parameter in a database table as specified in the requirements.

Perform the following steps:

1. Access the command shell.
2. Log in to the appropriate host using secure shell.
3. Use the appropriate GUI, script, or isql commands to modify the value assigned to the parameter.

Troubleshooting Data Distribution Problems

The exercise involves troubleshooting data distribution problems. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary trouble symptom information and requirements for troubleshooting the problem(s). The student reviews the specified trouble symptoms, takes action to correct the problem(s), and responds to questions concerning the possible cause(s).

Perform the following steps:

1. Review the trouble symptoms.
2. Respond to requests that exceed the distribution request threshold if applicable.
3. Check for an acquire failure.
4. Check appropriate log files as necessary.
5. Take action to correct the problem(s).
6. Verify that distribution request processing has resumed.
7. Respond to questions concerning the possible cause(s) without error.

Slide Presentation

Slide Presentation Description

The following slide presentation represents the slides used by the instructor during the conduct of this lesson.

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