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EOSDIS Core System Project

ECS Project Training Material Volume 9: Data Distribution

April 2000

Raytheon Systems 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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Abstract

This is Volume 9 of a series of lessons containing the training material for Release 5B 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

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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 5B. 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-510 Release 5B Operations Tools Manual for the ECS Project

611-CD-510 Mission Operation Procedures for the ECS Project

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-510 Release 5B Segment/Design Specification for the ECS Project

311-CD-520 Release 5B Data Management Subsystem Database Design and Database Schema Specifications for the ECS Project

311-CD-521 Release 5B INGEST Database Design and Database Schema Specifications for the ECS Project

311-CD-522 Release 5B Interoperability Subsystem (IOS) Database Design and Database Schema Specifications for the ECS Project

311-CD-523 Release 5B Planning and Data Processing Subsystem Database Design and Schema Specifications for the ECS Project

311-CD-524 Release 5B Science Data Server Database Design and Schema Specifications for the ECS Project

311-CD-525 Release 5B Storage Management and Data Distribution Subsystems Database Design and Database Schema Specifications for the ECS Project

311-CD-526 Release 5B Subscription Server Database Design and Schema Specifications for the ECS Project

311-CD-527 Release 5B Systems Management Subsystem Database Design and Schema Specifications for the ECS Project

311-CD-528 Release 5B Registry Database Design and Schema Specifications for the ECS Project

313-CD-510 Release 5B ECS Internal Interface Control Document for the ECS Project

334-CD-510 5B 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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 a packing list or e-mail preamble applicable to data distribution.

Condition - The student will be given a statement of the requirements for modifying a packing list or 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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 setting up the 8mm stackers for data distribution purposes.

Condition - The student will be given a statement of the requirements for setting up the 8mm stackers for data distribution purposes, access to the previously launched Storage Management Control GUI in the Data Server Subsystem, access to the 8mm tape stacker(s), a copy of 609-CD-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 Resource Schedule tab of the Storage Management Control GUI, set up a new tape group (using the Manage Tapes function) for the tapes to be put in the stacker, load the blank tapes in the sleeve and stacker, and assign the tape group to the stacker.

Specific Objective 6 - The student will perform the steps involved in unloading and loading 8mm tape cartridges for data distribution purposes.

Condition - The student will be given a statement of the requirements for unloading and loading 8mm tape cartridges for data distribution purposes, access to the previously launched Data Distribution Operator and Storage Management Control GUIs in the Data Server Subsystem, access to the 8mm tape stacker(s), a copy of 609-CD-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 verify that there are no active 8mm distribution requests in the system, unload the 8mm tape stacker, and load the 8mm tape stacker.

Specific Objective 7 - The student will perform the steps involved in printing labels for 8mm tape cartridges.

Condition - The student will be given a statement of the requirements for printing labels for 8mm tape cartridges, access to the applicable personal computer (PC) and label printer, a copy of 609-CD-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 start the Zebra Bar-One Design Program on the personal computer (PC), open the label file, set up the file to print, and print the file.

Specific Objective 8 - The student will perform the steps involved in processing 8mm tapes for shipment.

Condition - The student will be given a statement of the requirements for processing 8mm tapes for shipment, access to the previously launched Data Distribution Operator and Storage Management Control GUIs in the Data Server Subsystem, access to the 8mm tape stacker(s), a copy of 609-CD-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 identify an 8mm distribution request that is “Waiting for Shipment,” identify the 8mm tapes associated with the distribution request, determine the location of the 8mm tapes associated with the distribution request, unload the 8mm tapes associated with the distribution request from the stacker, verify that the tape IDs on the packing list correspond with the bar codes on the 8mm tapes, and mark the distribution request as “shipped.”

Specific Objective 9 - 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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 10 - 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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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, mark the file(s) for deletion, and purge the file(s) from the cache.

Specific Objective 11 - The student will perform the steps involved in setting cache fault and warning thresholds.

Condition - The student will be given a statement of the requirements for setting cache fault and warning thresholds, 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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 with the thresholds to be set, click on the Change Threshold button, enter the new threshold value(s) in the appropriate field(s), and apply the modifications.

Specific Objective 12 - 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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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 13 - The student will perform the steps involved in modifying system parameters in configuration files or database tables.

Condition - The student will be given a statement of the requirements for modifying system parameters in configuration files or database tables, access to the Data Server Subsystem (through a workstation or X terminal), a copy of 609-CD-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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, edit the appropriate .CFG file (if the parameter being modified is defined in a configuration file) or use the appropriate GUI, script, or isql commands to modify the value assigned to the parameter (if the parameter is defined in a database table).

Specific Objective 14 - 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-510-002, *Release 5B Operations Tools Manual for the ECS Project*, and a copy of 611-CD-510-001, *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.
- Viewing Data Distribution Event Log information.
- Modifying packing list and e-mail preambles.
- Setting up the 8mm tape stackers.
- Unloading/loading 8mm tape cartridges for Data Distribution purposes.
- Printing labels.
- Processing 8mm tapes for shipment.
- Configuring Storage Management polling.

- Deleting files from cache.
- Setting cache thresholds.
- Viewing Storage Management Event Log information.
- 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 either electronically or on physical media (i.e., 8mm tape cartridges).
 - Accepts requests from the SDSRV CSCI.
 - Directs the STMGT CSCI to transfer data either electronically or by 8mm tape.
- 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 (which allow Data Distribution to obtain access to disk space) and peripheral devices (e.g., tape drives), which are resources that are shared with Data Distribution.
 - 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.

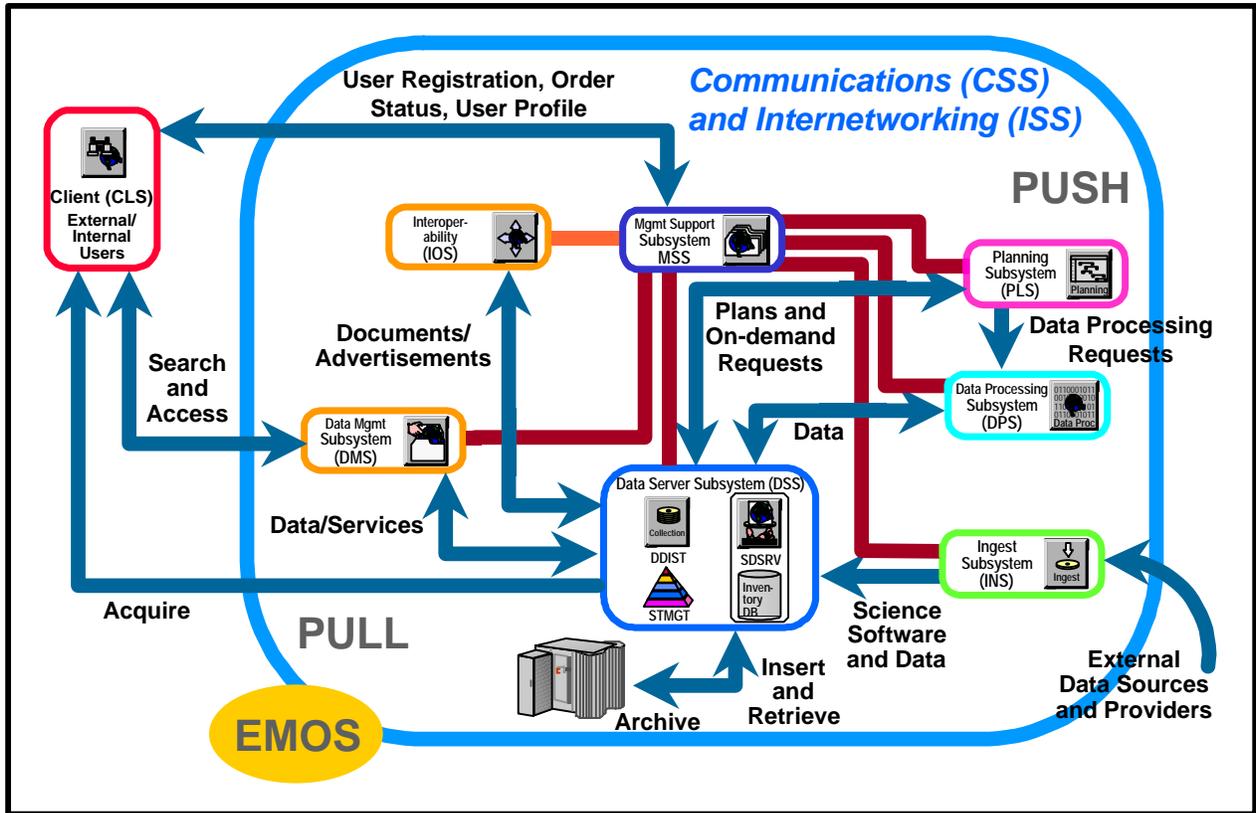


Figure 1. ECS Context Diagram

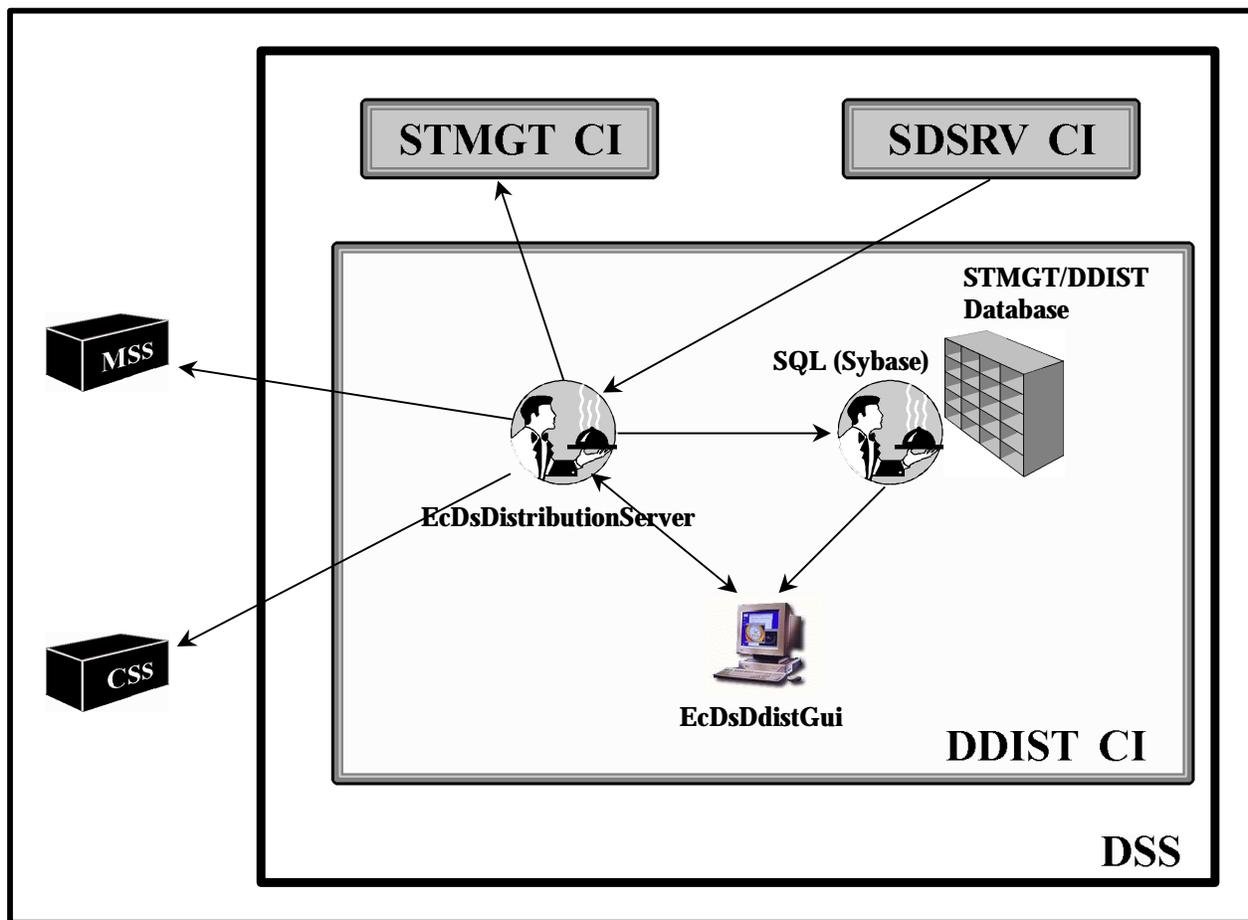


Figure 2. Data Distribution (DDIST) CSCI Architecture

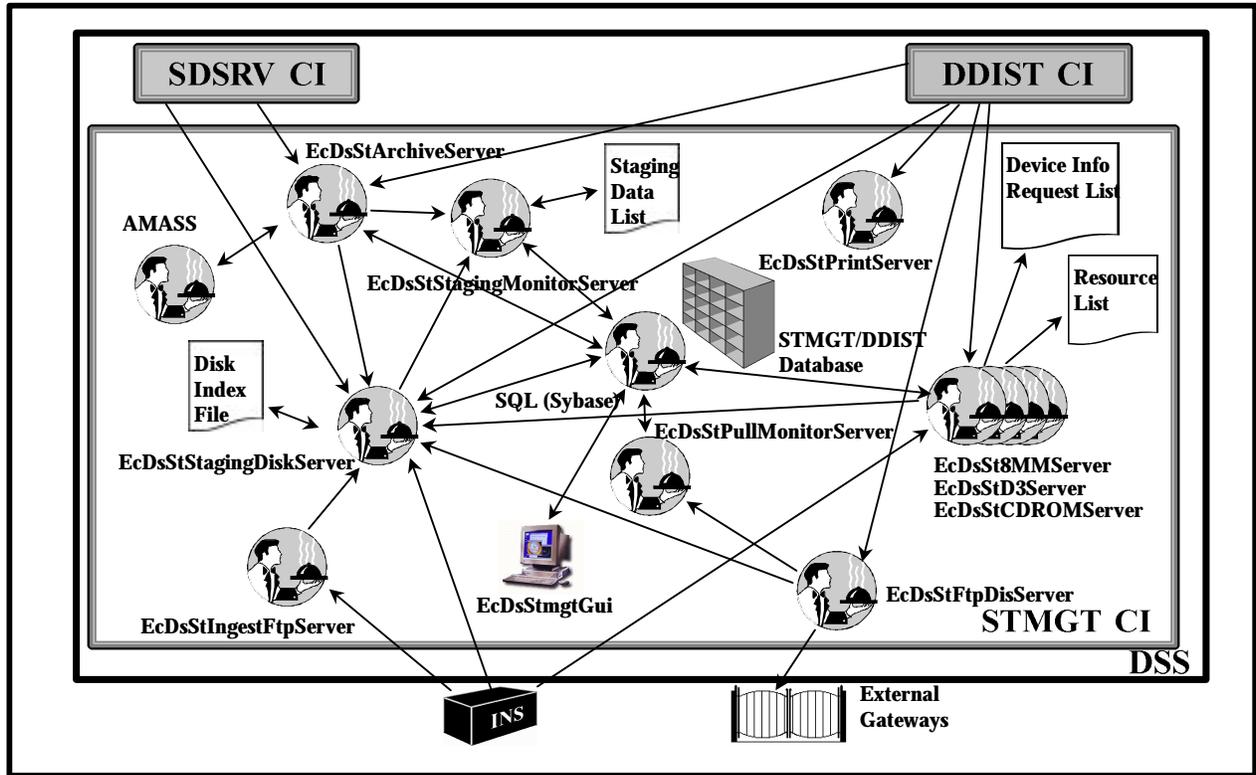


Figure 3. Storage Management (STMGT) CSCI Architecture

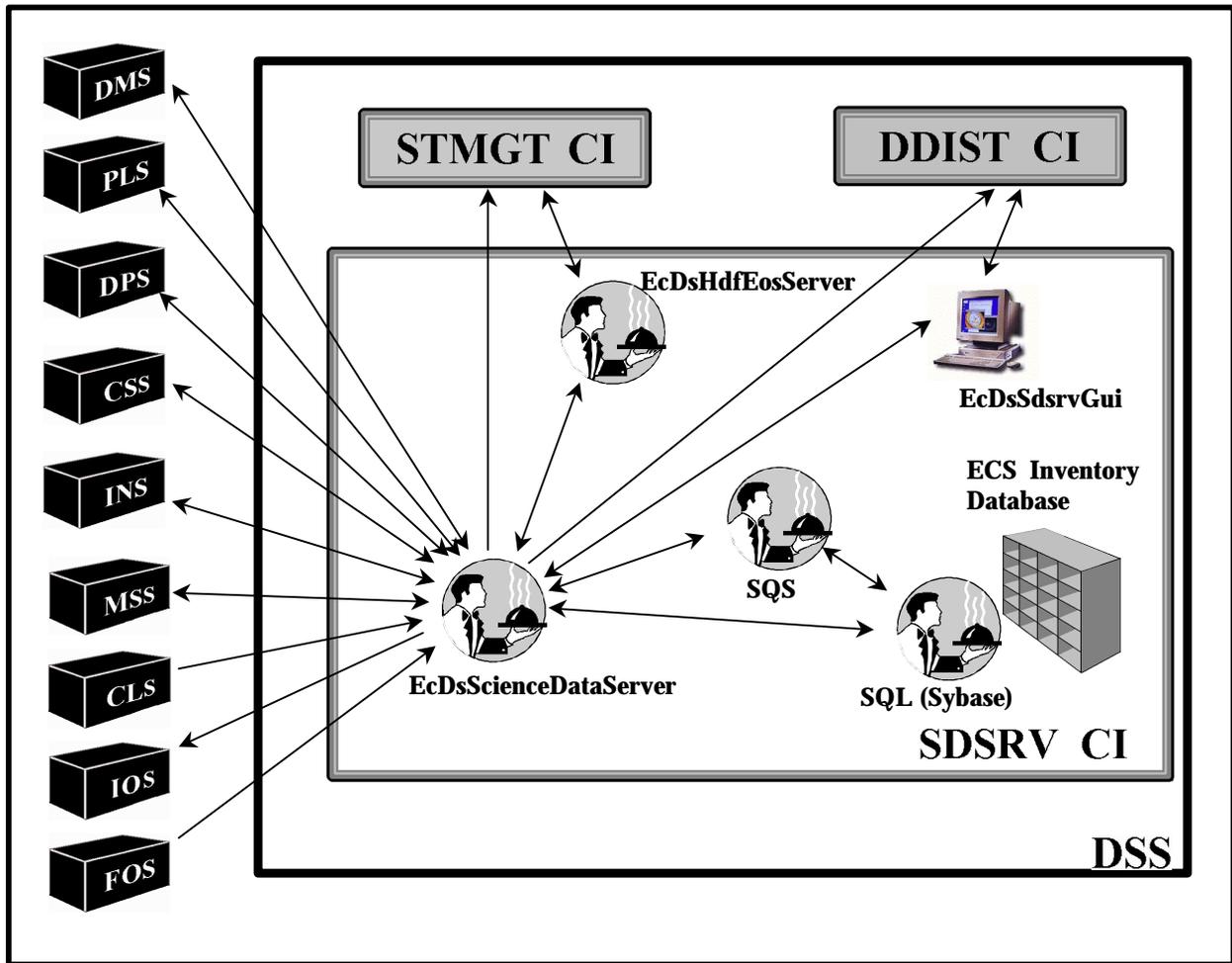


Figure 4. Science Data Server (SDSRV) CSCI Architecture

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 Structured Query Language (SQL) 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 /usr/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 and distributing 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 either allocate peripheral devices (that are shared with Ingest) for copying files to hard media, or 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.
 - Staging Monitor Server (EcDsStStagingMonitorServer) - 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.
 - 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 shared between Ingest and Data Distribution; 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.
 - Ingest FTP Server (EcDsStIngestFtpServer) - Server that schedules access for Ingest file transfer protocol (ftp); maintains a request queue.
 - FTP Distribution Server (EcDsStFtpDisServer) - Server that schedules access for distribution ftp; maintains a request queue.
 - Print Server (EcDsStPrintServer) - Server that manages printing out packing list files associated with distribution requests.

- Pull Monitor Server (EcDsStPullMonitorServer).
 - Server that manages the files in the user pull area; deletes files as they are either retrieved (i.e., electronically pulled) from the user pull area or become stale (when their time-out periods expire).
- 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 SQL 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 Ingest personnel:

- EcDsStIngestFtpServerStart.
 - Starts the Ingest ftp server.
- EcDsStStagingDiskServerStart.
 - Starts a staging disk server.
- EcDsStStart.
- EcDsStStorageMgmtAppStart.
- EcEcsAppStart.
- EcDsStArchiveServerStart.
 - Starts an archive server.

- EcDsStFtpDisServerStart.
 - Starts an ftp distribution server.
- EcDsStPullMonitorServerStart.
 - Starts a pull monitor server.
- EcDsStStagingMonitorServerStart.
 - Starts a staging monitor server.
- EcDsSt8MMServerStart.
 - Starts the 8mm (Stacker) Server.
- EcDsStD3ServerStart.
 - Starts the D3 (Drive) Server.
- EcDsStPrintServerStart.
 - Starts the Print 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.
- 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.
- Sybase 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 Structured Query Language (SQL) 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 `/usr/ecs/MODE/CUSTOM/utilities` directory on the SDSRV Server host:

- EcTsDsClientDriverStart.
- EcDsSrConvertEvt.

- EcDsSrDbBuild.
- EcDsSrDbDrop.
- EcDsSrDbDump.
- EcDsSrDbLoad.
- EcDsSrDbMigrate.
- EcDsSrDbPatch.
- EcDsSrDbValid.

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.

Currently, 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 8mm tape cartridges.

The method of data distribution is dictated by the nature of the data distribution request. (The requester specifies the distribution method when ordering 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 on the staging disk are transferred to a physical medium (i.e., 8mm tape cartridge). Then the DAAC Ingest/Distribution Technician has the hard media product packaged and shipped to the requester.

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.
 - STMGMT 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 8mm tape cartridge. The distribution request specifies the necessary UNIX data format, compression method (if any), and media form factor required.
 - The data are retrieved from the archive and placed on the appropriate volume of a Data Server staging disk.
 - The DAAC Ingest/Distribution Technician will have loaded the 8mm tape drive and indicated to the system that the drive is ready for data transfer.
 - The data are transferred to an 8mm tape cartridge. The packing list is generated automatically when the Ingest/Distribution Technician notifies the system to mark the request “shipped.”
 - 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 Ingest/Distribution Technician has the tape cartridge packaged and shipped to the requester.
 - The data are deleted from the staging disk in accordance with DAAC policy.

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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 SQL 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).
- Staging Monitor Server (EcDsStStagingMonitorServer).
- Staging Disk Server (EcDsStStagingDiskServer).
- 8mm Server (EcDsSt8MMServer).
- D3 Server (EcDsStD3Server).
- Ingest FTP Server (EcDsStIngestFtpServer).
- FTP Distribution Server (EcDsStFtpDisServer).
- Print Server (EcDsStPrintServer).
- Pull Monitor Server (EcDsStPullMonitorServer).
- Sybase SQL Server.
- Archival Management and Storage System (AMASS).

The Storage Management Control GUI can be used in distribution operations for taking 8mm stackers off line (e.g., prior to loading tapes) and putting the stackers back on line. In addition, the GUI can be used 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.

Launching the Data Distribution Operator and Storage Management Control GUIs

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.
-

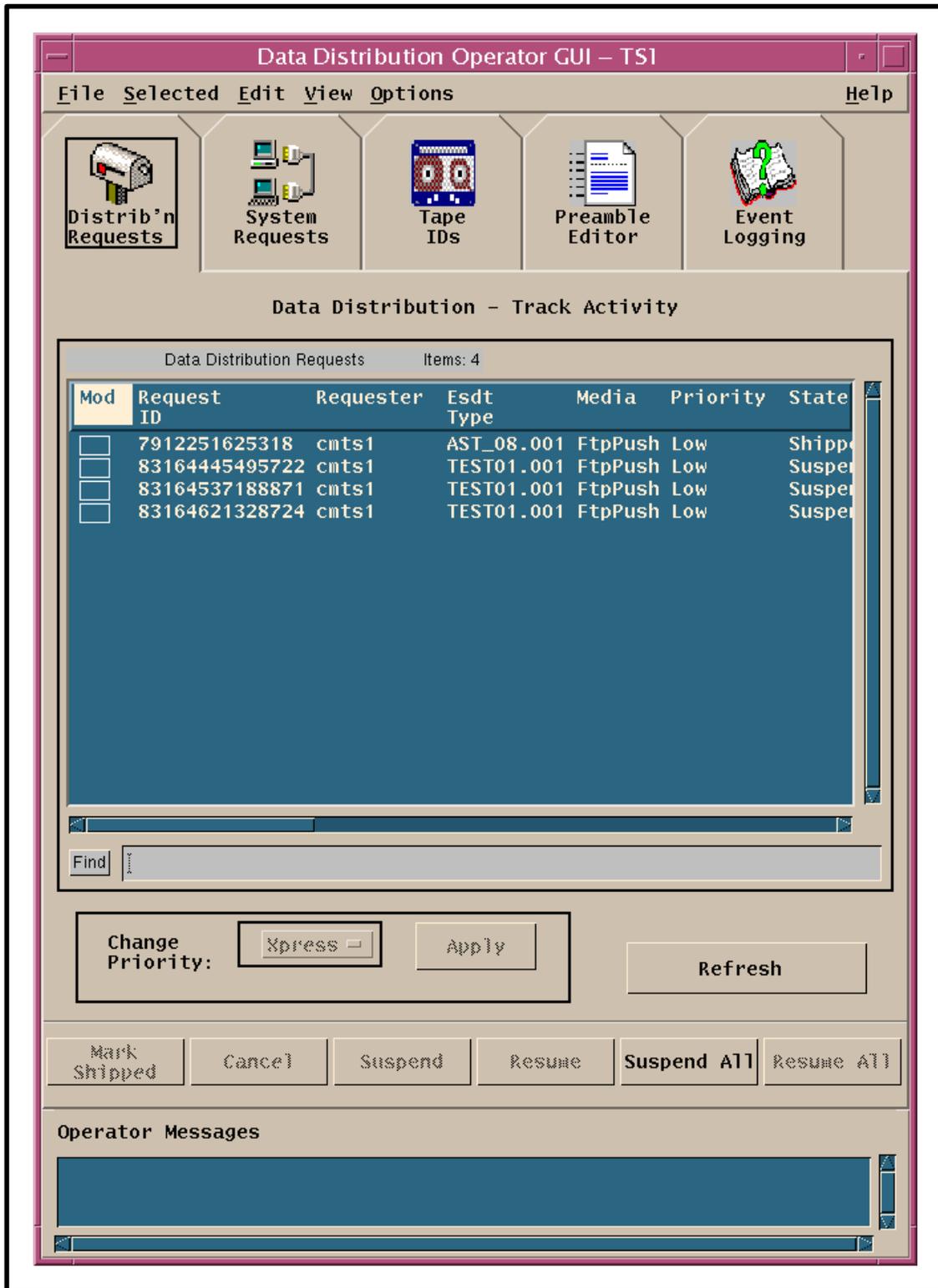


Figure 5. Distrib'n Requests Tab (Data Distribution Operator GUI)

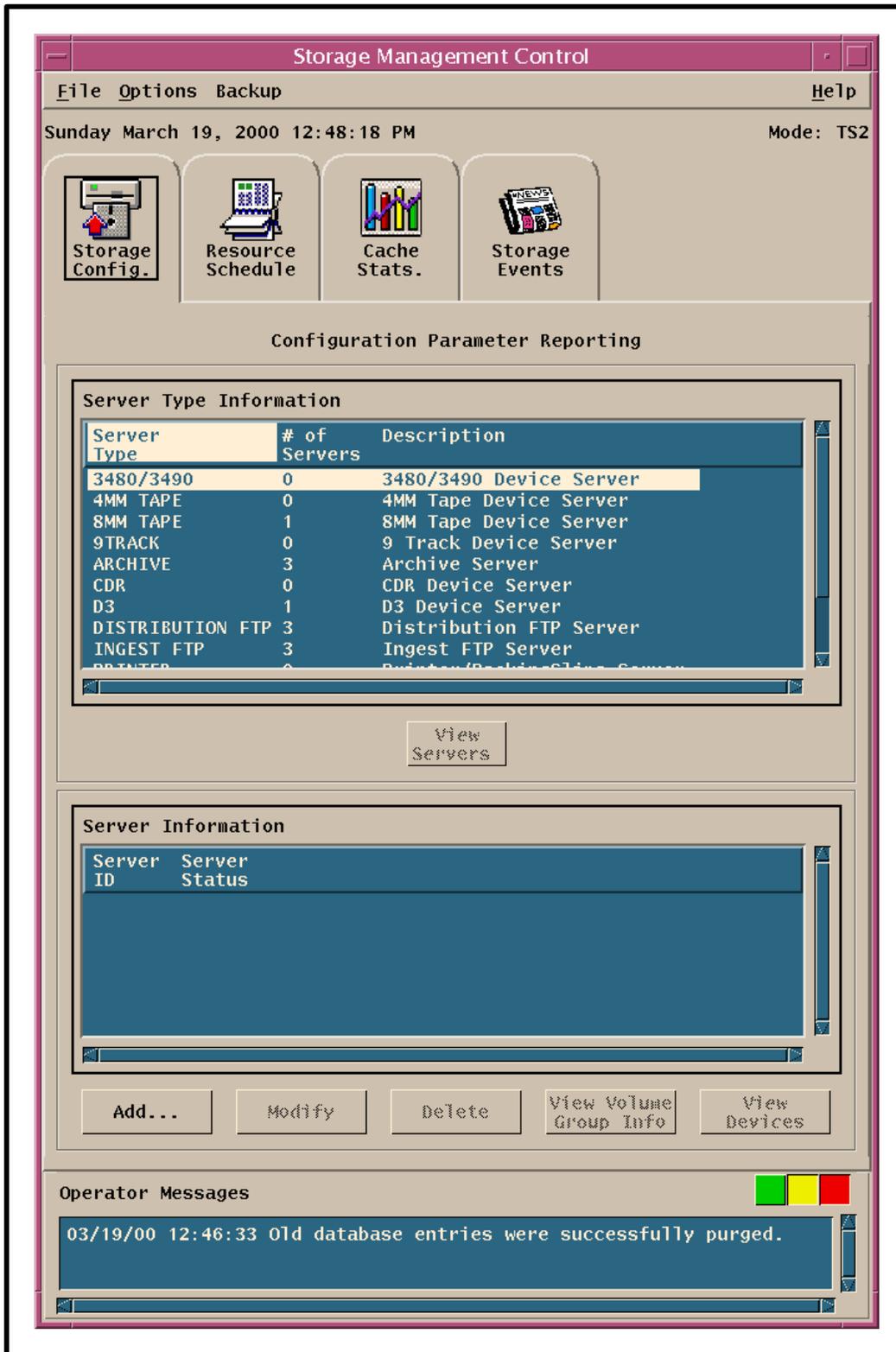


Figure 6. Storage Config. Tab (Storage Management Control GUI)

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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].
- **Tape ID's** [for determining which tapes were used in fulfilling distribution requests].
- **Preamble Editor** [for editing packing lists and other messages to requesters].
- **Event Logging** [not currently functional].

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

- **Storage Config.** [for configuring Storage Management components].
- **Resource Schedule** [for monitoring/controlling 8mm stackers].
- **Cache Stats.** [for monitoring/controlling the contents of various caches].
- **Storage Events** [for searching for events in the Event Log].

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 [GMT].
- End Time [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.
 - 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.
 - The **Operator Messages** field at the bottom of the GUI displays messages concerning events occurring in distribution operations.
 - 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 If a hard medium (8mm) distribution has a status of “Waiting for Shipment” displayed in the **State** column of the **Data Distribution Requests** list, perform the procedure for **Processing 8mm Tapes for Shipment** (subsequent section of this lesson).
 - 9 Repeat Steps 3 through 8 as necessary to monitor data distribution requests.
 - 10 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.

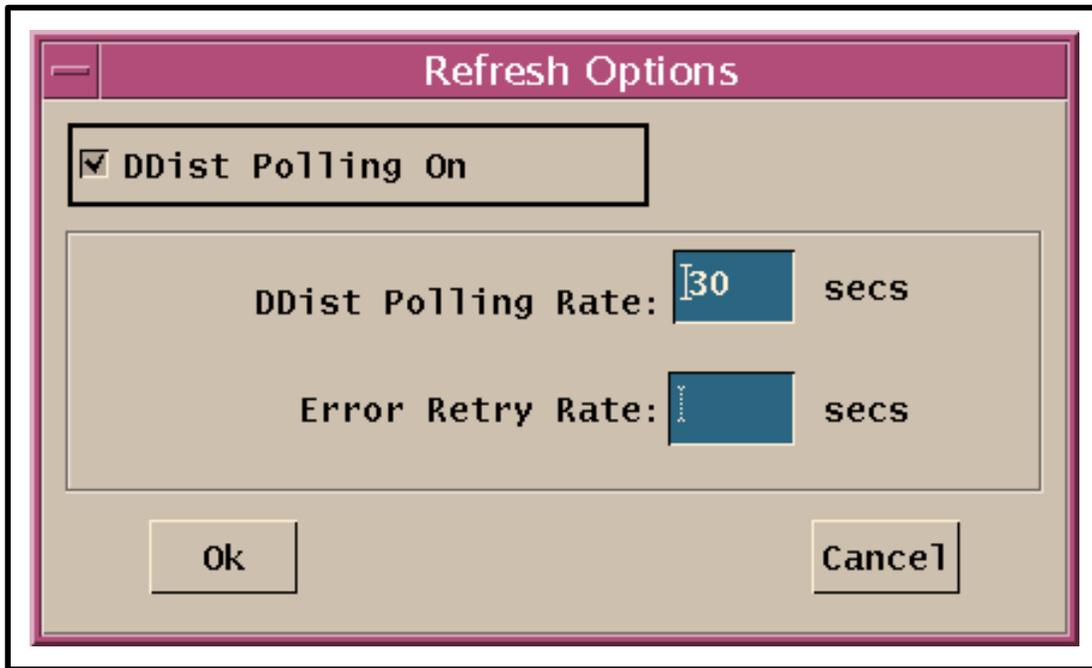


Figure 7. Refresh Options Dialogue Box

- 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.

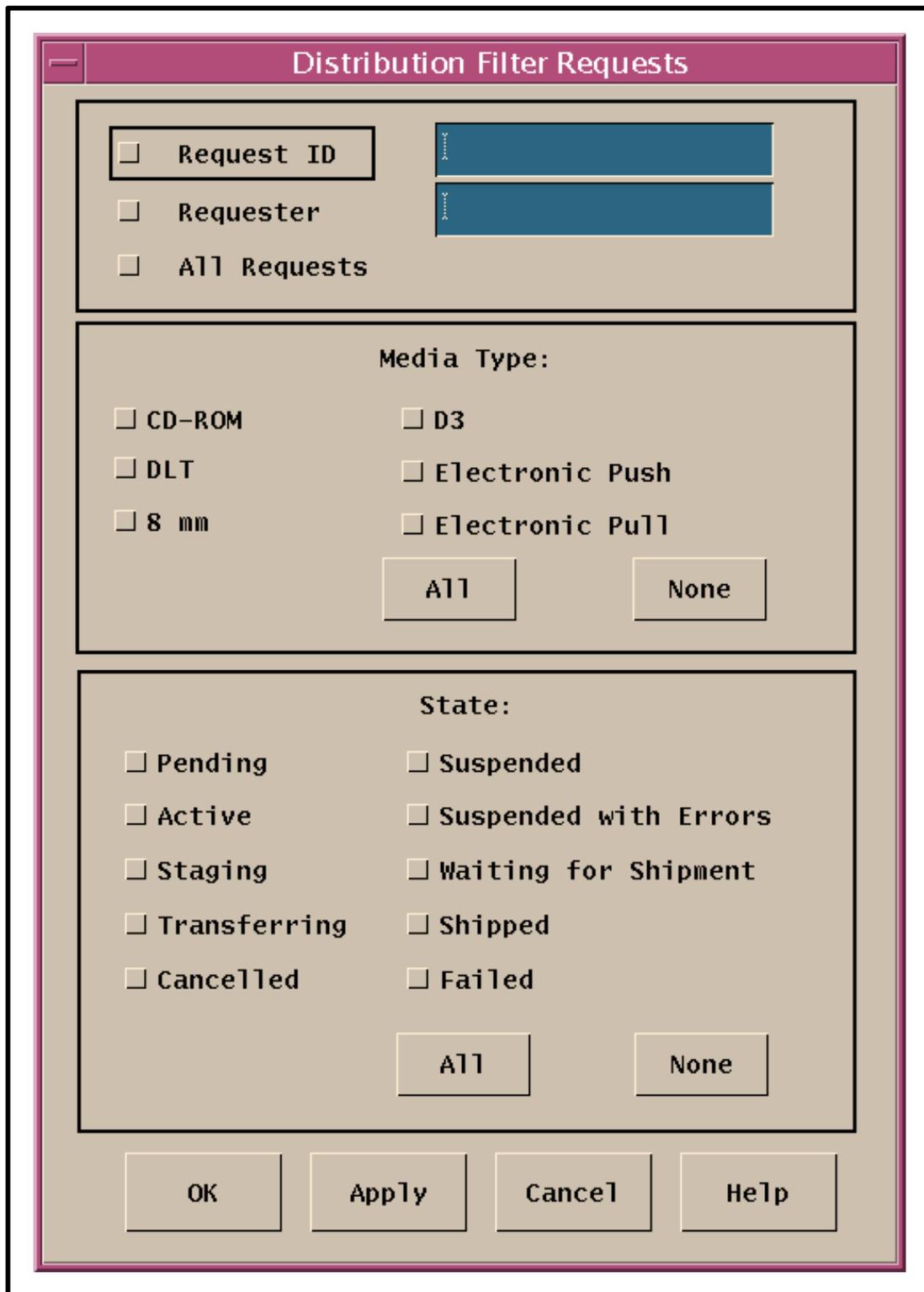


Figure 8. Distribution Filter Requests Dialogue Box

- 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 currently implemented)].
 - **DLT** [Digital Linear Tape (not currently implemented)].
 - **8 mm** (tape).
 - **D3**.
 - **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.
 - 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.
 - 5 Click on the **Refresh** button to update the data displayed on the screen.
 - 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.

Suspending/Resuming 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 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 requests displayed in the **Data Distribution Requests** list are to be suspended, click on the **Suspend All** button.
 - Status of all requests, as displayed in the **State** column of the **Data Distribution Requests** list, changes from original values to “Suspended.”
 - Check marks are displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the requests have been changed.
 - 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.
 - Status of the request, as displayed in the **State** column of the **Data Distribution Requests** list, changes from its original value to “Suspended.”
 - A check mark is displayed in the **Mod** column of the **Data Distribution Requests** list to indicate that the request has been changed.
- 5 Click on the **Refresh** button to update the data displayed on the screen.
- 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 requests displayed in the **Data Distribution Requests** list is to be resumed, click on the **Resume All** button.
 - Status of all requests, as displayed in the **State** column of the **Data Distribution Requests** list, changes from “Suspended” to whatever states are appropriate for the continuation of request processing (depending on each request’s status when it was suspended).
 - 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.

- Status of the request, as displayed in the **State** column of the **Data Distribution Requests** list, changes from “Suspended” to whatever state is appropriate for the continuation of request processing (depending on its status when it was suspended).
- 9 Click on the **Refresh** button to update the data displayed on the screen.
 - 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.
 - 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.
 - 4 Click on the **Refresh** button to update the data displayed on the screen.
 - 5 Return to the procedure for **Monitoring/Controlling Data Distribution Requests**.
-

Modifying Preambles

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:

- Ftp pull.
- Ftp push.
- Physical media (e.g., 8mm).

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.**

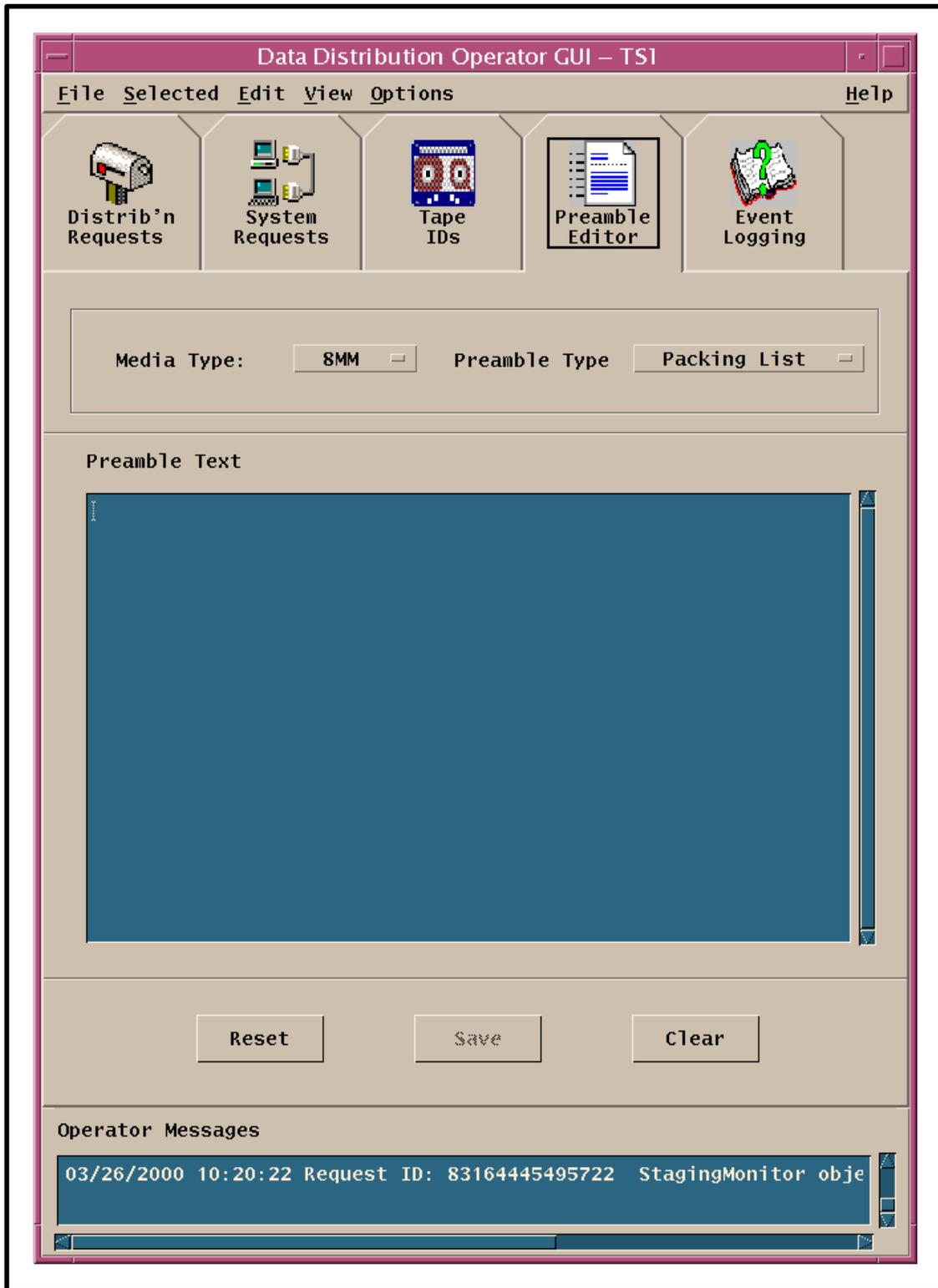


Figure 9. Preamble Editor Tab (Data Distribution Operator GUI)

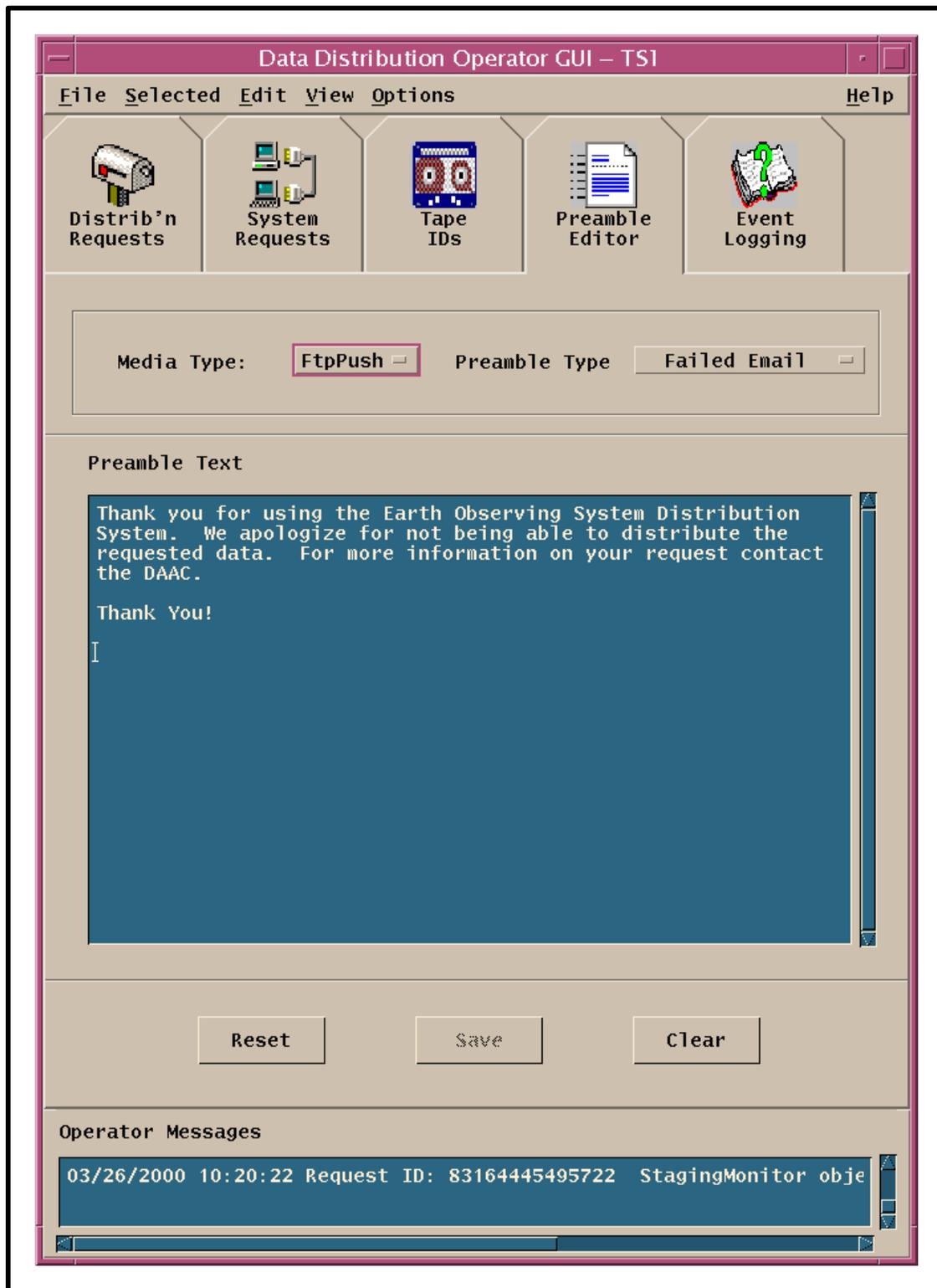


Figure 10. Sample FTP Push Failed E-Mail Preamble

- **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.
- 5** Click on the appropriate button from the following selections:
- **Save** - to save the preamble text as modified.
 - **Reset** - to 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 currently consist of the following tasks:

- Labeling Tape Cartridges with Bar Codes.
- Setting Up the 8mm Tape Stackers.
- Unloading and Loading Tapes
- Correcting Tape Faults.
- Printing Labels.
- Processing 8mm Tapes for Shipment.
- Performing Quality Control (QC) of Hard Media.
- Packaging Hard Media Products for Shipment.

Processes or procedures for the preceding tasks are provided in the sections that follow.

Labeling Tape Cartridges with Bar Codes

Bar-code labels are either purchased or printed for the 8mm tape cartridges. (The procedure for **Printing Labels** is in a subsequent section of this lesson.) When boxes of new 8mm tapes have been delivered to the distribution area, the Ingest/Distribution Technician removes the tapes from their boxes and affixes a bar-code label to the label area on the edge of each tape.

Setting Up the 8mm Tape Stackers

Setting up the 8mm tape stackers is in part a manual process. It is recommended that the DAAC Ingest/Distribution Technician check the stackers at the beginning of each shift and throughout the day to ensure that tapes are available for the distribution process to fulfill hard media distribution requests. The procedure that follows involves the use of the Storage Management Control GUI to perform the following activities:

- Define tape groups (by stacker sleeve).
- Record the bar code (Tape ID) of each tape loaded in a particular location in a sleeve.
- Identify the stacker into which each sleeve is loaded.

The procedure for setting up the 8mm tape stackers starts with the following assumptions:

- All applicable servers are currently running.
- The **Data Distribution Operator GUI** is running.
 - The **Distrib'n Requests** screen (Figure 5) is being displayed.

- The **Storage Management Control** GUI is running.
 - The **Storage Config.** screen (Figure 6) is being displayed.

Setting Up the 8mm Tape Stackers

- 1 Click on the **Resource Schedule** tab on the **Storage Management Control** GUI.
 - The **Storage Management Control** GUI **Resource Schedule** tab (Figure 12) is displayed.
- 2 If a new tape group is needed, perform Steps 3 through 6; otherwise, go to Step 7.
- 3 Click on the **Manage Tapes** button on the **Resource Schedule** tab.
 - The **Manage Tape Groups** window (Figure 13) is displayed.
- 4 Click on the **New Tape Group** button in the **Manage Tape Groups** window.
 - The **New Tape Group** window (Figure 14) is displayed.
 - A tape group is defined in terms of a stacker sleeve (tape cartridge holder), which holds ten tapes.
- 5 Type the following information in the **New Tape Group** window.
 - Name for the new tape group.
 - Number of slots (i.e., **10**).
 - The number of slots entered must agree with the number of slots in the stacker.
 - Type of Media (i.e., **8MM**).
- 6 Click on the **OK** button.
 - The **Manage Tape Groups** window (Figure 13) is displayed.
- 7 Load tapes in the sleeve and stacker by performing the procedure for **Unloading and Loading Tapes** (subsequent section of this lesson).
 - Verify that the write-protect switch (e.g., red tab) on each tape is set at the appropriate position for the desired operation. (Either position is acceptable for Ingest.)
 - **REC** (writable).
 - **SAVE** (read only).
 - Slot 1 is at the top of the sleeve; Slot 10 is at the bottom of the sleeve.
 - There is one orientation feature at the top of the sleeve; there are two orientation features at the bottom of the sleeve.

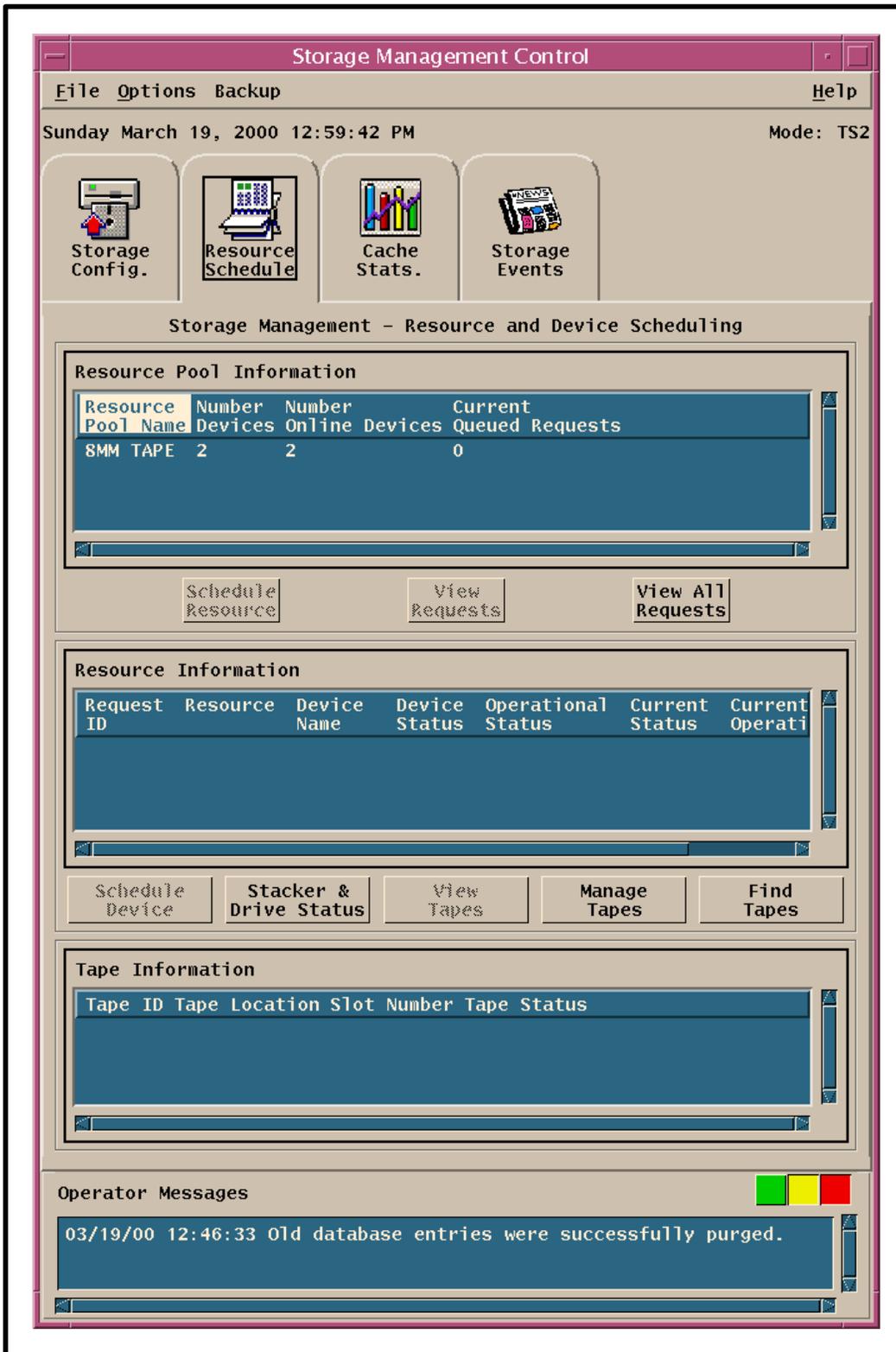


Figure 12. Resource Schedule Tab (Storage Management Control GUI)

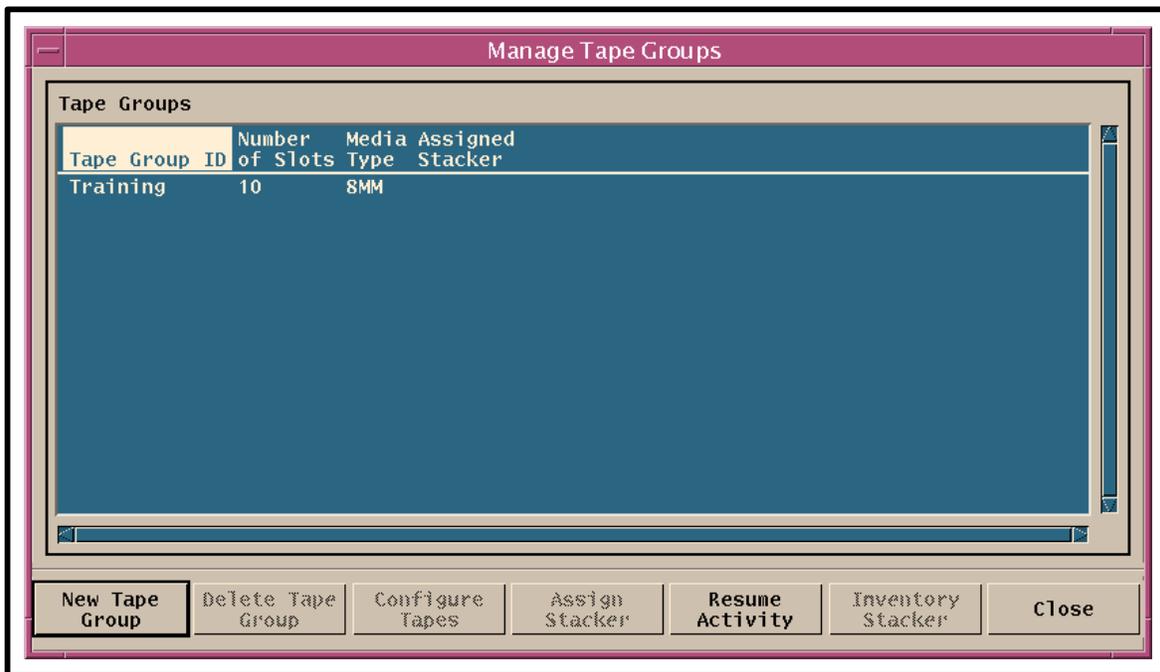


Figure 13. Manage Tape Groups Window (Storage Management Control GUI)

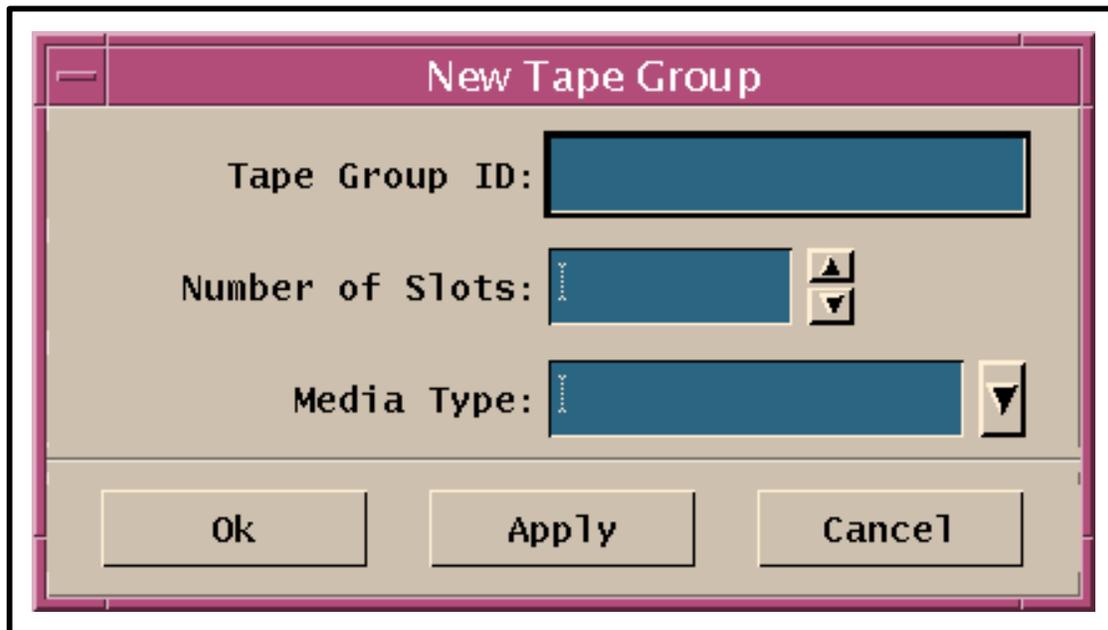


Figure 14. New Tape Group Window (Storage Management Control GUI)

- 8 Highlight the tape group to be modified by clicking on the name of the tape group in the **Manage Tape Groups** window (Figure 13).
 - The tape group is highlighted and the **Delete Tape Group**, **Configure Tapes**, and **Assign Stacker** buttons are activated.
 - A new tape group must be created if different tapes (with different bar codes) are to be loaded into the stacker sleeve.
- 9 Click on the **Configure Tapes** button in the **Manage Tape Groups** window.
 - The **Configure Tape Group** window (Figure 15) is displayed.

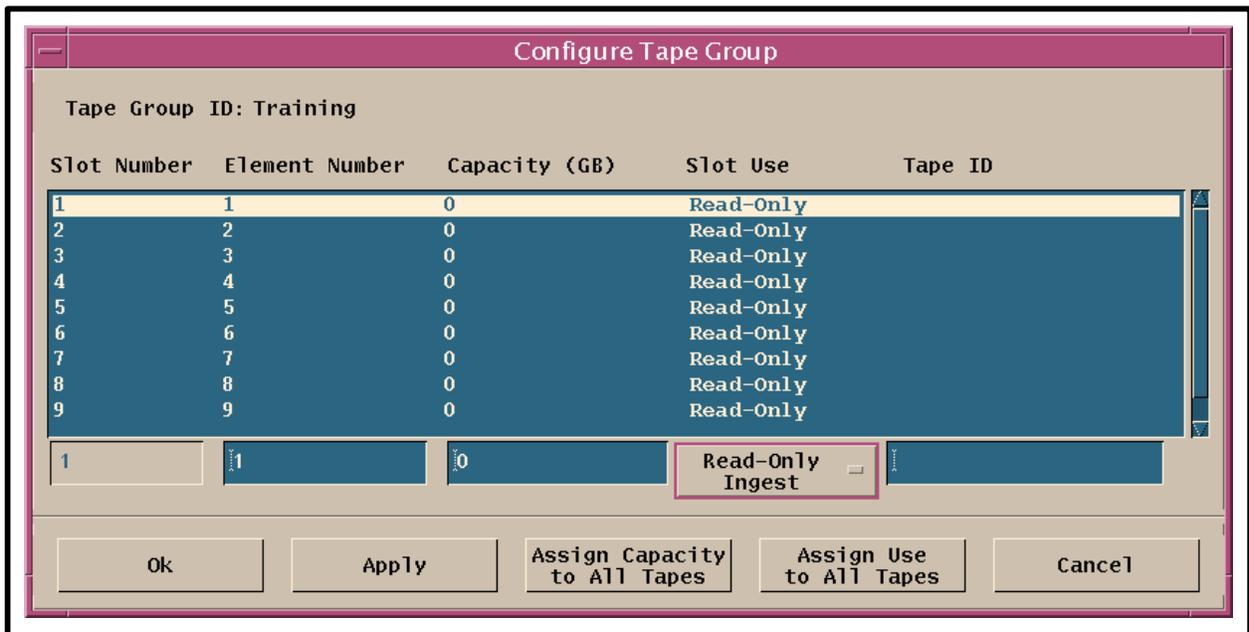


Figure 15. Configure Tape Group Window

- 10 Select (highlight) a line (in the **Configure Tape Group** window) corresponding to a tape in the stacker sleeve for which data need to be entered or modified.
- 11 Enter the appropriate data for each tape in the sleeve in the **Configure Tape Group** window:
 - Element Number.
 - Use the default value.
 - Capacity (GB)
 - Enter the number (e.g., **4**) corresponding to the capacity of the tape in gigabytes.

- Slot Use.
 - Select **Read-Only Ingest** for Ingest.
 - Select **Read/Write Distribution** for Data Distribution.
- Tape ID.
 - Type the bar code of the tape in the corresponding slot.
 - Leading zeros on the bar code do not have to be entered.
- The **Assign Use to All Tapes** and the **Assign Capacity to All Tapes** buttons may be used to expedite entering data in the **Configure Tape Group** window.

12 Click on the **OK** button.

- The **Manage Tape Groups** window (Figure 13) is displayed.
- If another tape group is already assigned to the stacker to be used, it is necessary to unassign that tape group before assigning the new tape group to the stacker.
 - If no other tape group is already assigned to the stacker to be used by the new tape group, proceed to Step 16.
 - If another tape group is already assigned to the stacker to be used, continue with Step 13.

13 If another tape group is already assigned to the stacker to be used, select (highlight) the line in the **Manage Tape Groups** window corresponding to the tape group that has been assigned to the stacker.

14 Click on the **Unassign Stacker** button.

- The **Assign Tape Group to Stacker** window (Figure 16) is displayed.

15 Click on the **Unassign Stacker** button.

- The **Assign Tape Group to Stacker** window is dismissed.
- The **Manage Tape Groups** window (Figure 13) is displayed.

16 Select (highlight) the line (in the **Manage Tape Groups** window) corresponding to the new tape group to be assigned to the stacker.

17 Click on the **Assign Stacker** button.

- The **Assign Tape Group to Stacker** window (Figure 16) is displayed.

18 Click on the stacker into which the tape group (sleeve) was loaded.

19 Click on the **Assign** button.

- The **Assign Tape Group to Stacker** window is dismissed.

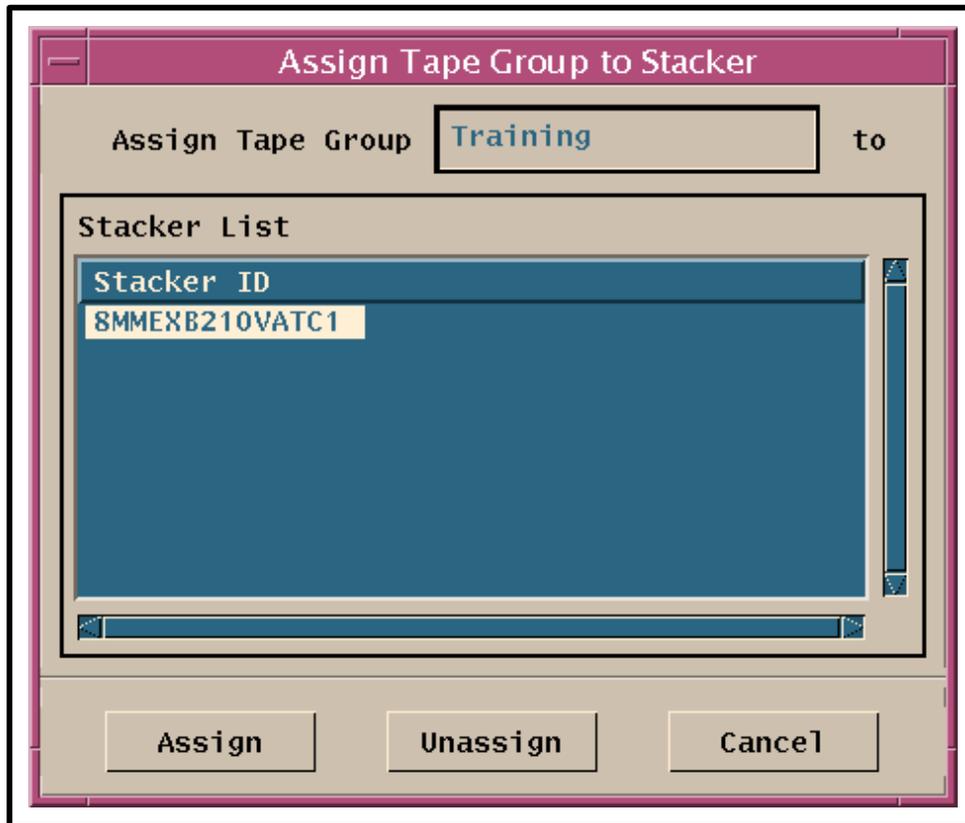


Figure 16. Assign Tape Group to Stacker Window (Storage Management Control GUI)

- 20 Verify that the line in the **Stacker Information** window (Storage Management Control GUI) corresponding to the stacker to be used for distributing data has been selected (is highlighted).
- 21 Click and hold the **Status** option button below the **Stacker Information** window to display the menu of statuses, move the mouse cursor to **Online** (highlighting it), then release the mouse button.
- 22 Select (highlight) a line in the **Drive Information** window corresponding to one of the drives in the stacker.
- 23 Click and hold the **Status** option button below the **Drive Information** window to display a menu of statuses, move the mouse cursor to **Online** (highlighting it), then release the mouse button.
- 24 Repeat Steps 22 and 23 to put the other drive on line.
- 25 If any 8mm distribution requests were suspended to allow stacker unloading/loading, resume 8mm data distribution request processing using the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).

- 26 Repeat Steps 2 through 25 as necessary for each additional stacker to be set up.
 - 27 Go to the procedure for **Monitoring/Controlling Data Distribution Requests**.
-

Unloading and Loading Tapes

The procedure that follows involves the following activities:

- Verifying that there are **no** active 8mm distribution requests in the system.
- Unloading an 8mm tape stacker.
- Loading an 8mm tape stacker.

The procedure starts with the following assumptions:

- All applicable servers are currently running.
- The **Data Distribution Operator GUI** is running.
 - The **Distrib'n Requests** screen (Figure 5) is being displayed.
- The **Storage Management Control GUI** is running.
 - The **Storage Config.** screen (Figure 6) is being displayed.

Unloading and Loading Tapes

- 1 Click on the **Refresh** button on the **Data Distribution Operator GUI** to update the data displayed on the screen.
- 2 Using the procedure for **Filtering Data Distribution Requests** (previous section of this lesson) filter the list of data distribution requests shown in the **Data Distribution - Track Activity** window to show the requests for distribution on 8mm tape.
- 3 Observe information displayed on the **Distrib'n Requests** tab of the **Data Distribution Operator GUI** to identify whether there are any pending or active 8mm distribution requests.
 - Status of the request displayed in the **State** column of the **Data Distribution Requests** list may be...
 - Waiting for Shipment.
 - Shipped.
 - Suspended.

- Status of the request displayed in the **State** column of the **Data Distribution Requests** list should **not** be...
 - Pending.
 - Active.
 - Staging.
 - Transferring
- 4 Either wait until all 8mm distribution requests are in an inactive state or suspend all active 8mm data distribution requests using the procedure for **Suspending/Resuming Data Distribution Requests** (previous section of this lesson).
 - 5 Click on the **Resource Schedule** tab on the **Storage Management Control** GUI.
 - The **Storage Management Control** GUI **Resource Schedule** tab (Figure 12) is displayed.
 - 6 Click on the **Stacker & Drive Status** button on the **Resource Schedule** tab.
 - The **Schedule Stacker/Drive** window (Figure 17) is displayed.
 - 7 Observe the information displayed in the **Stacker Information** window near the top of the **Schedule Stacker/Drive** window (Figure 17).
 - If line in the **Stacker Information** window corresponding to the stacker to be taken off line to unload/load tapes indicates an **Offline** status, go to Step 14; otherwise, continue with Step 8.
 - 8 Select (highlight) the line in the **Stacker Information** window corresponding to the stacker to be taken off line to unload/load tapes.
 - 9 Observe the information displayed in the **Drive Information** window near the bottom of the **Schedule Stacker/Drive** window (Figure 17).
 - If both drives associated with the stacker to be taken off line to unload/load tapes indicate an **Offline** “Status” and **Unallocated** “Current Status,” go to Step 13; otherwise, continue with Step 10.
 - A **Loaded** “Status” and **Allocated** “Current Status” would indicate that there was a tape in the drive and it was being used in processing a request.
 - 10 If either drive indicates a status other than **Offline**, select (highlight) the line in the **Drive Information** window corresponding to a drive with an **Online** or **Loaded** status.
 - 11 Click and hold the **Status** option button below the **Drive Information** window to display a menu of statuses, move the mouse cursor to **Offline** (highlighting it), then release the mouse button.
 - 12 Repeat Steps 10 and 11 to take the other drive off line if necessary.

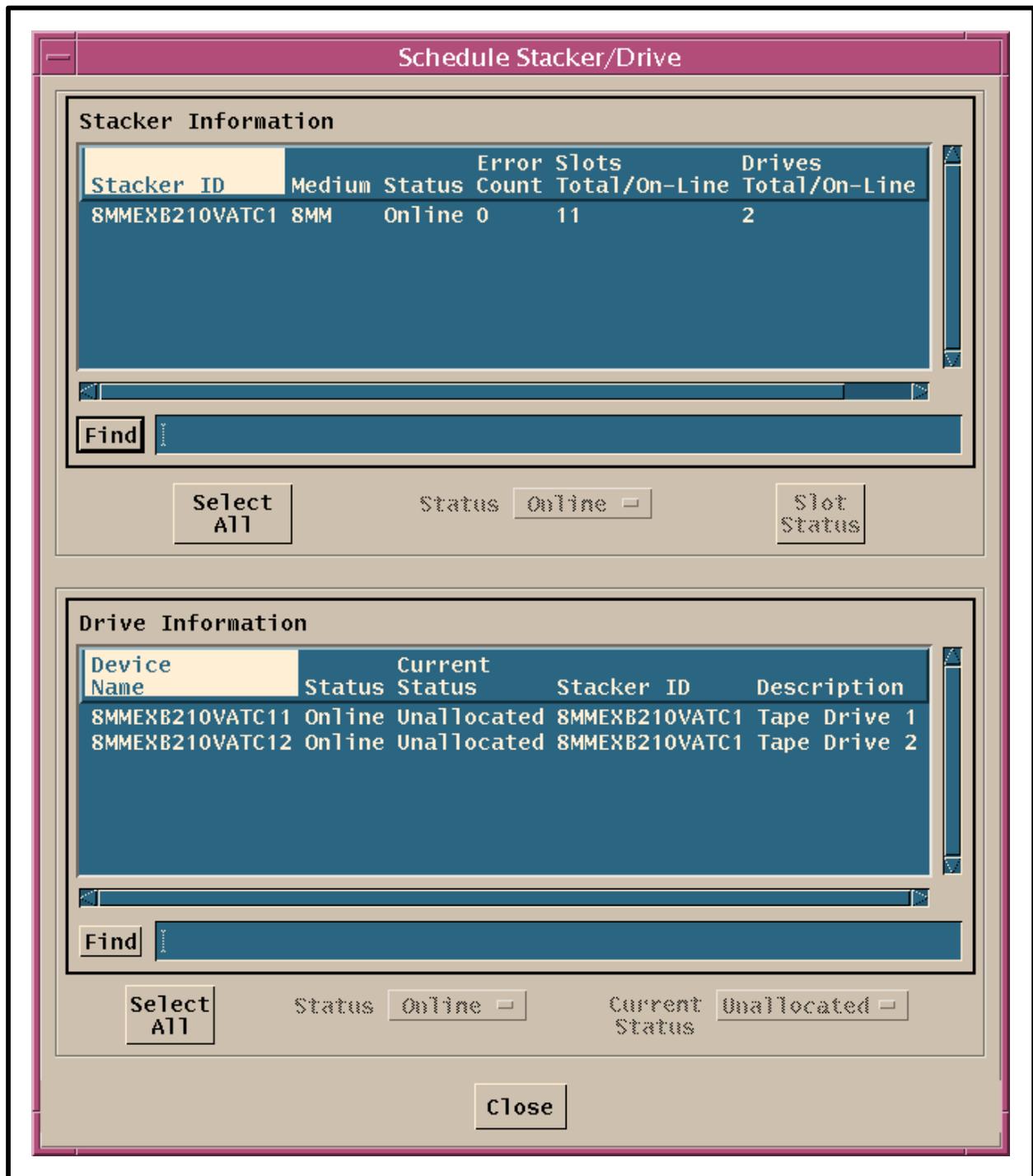


Figure 17. Schedule Stacker/Drive Window (Storage Management Control GUI)

- 13 Click and hold the **Status** option button below the **Stacker Information** window to display a menu of statuses, move the mouse cursor to **Offline** (highlighting it), then release the mouse button.
- 14 Turn the key in the key-lock of the EXB-210 8mm tape stacker to stop tape stacker unit operation.
- 15 Wait for the tape stacker cartridge handling mechanism to finish the current operation and move to the “park” position.
 - When the handling mechanism reaches the “park” position, the stacker unit’s door interlock mechanism releases and a **Status: Unlocked** message is displayed on the unit.
- 16 Open the front door of the tape stacker.
- 17 Remove the cartridge holder (sleeve) by pulling out, first from the top, then the bottom.
- 18 Remove the tapes by gently pulling each one straight out from its slot.
 - 8mm tapes can be removed and replaced individually without having to unload and load the entire stacker.
 - When the tapes have been removed, unloading has been completed; loading can begin.
- 19 Verify all of the following characteristics of all tapes to be loaded into the stacker:
 - The write-protect switch (e.g., red tab) on each replacement tape is set correctly for the desired operation. (Either position is acceptable for Ingest.)
 - **REC** (writable - mandatory position for distribution).
 - **SAVE** (read only).
 - There is a bar-code label properly attached to each tape.
 - The bar codes on all tapes have been accurately recorded in the **Storage Management Control GUI Configure Tape Group** window as described in the procedure for **Setting Up the 8mm Tape Stackers** (previous section of this lesson).
- 20 Hold the tape with the write-protect switch toward the right.
- 21 Insert the tape by pushing gently straight into a slot in the cartridge holder (sleeve).
- 22 Repeat Steps 19 through 21 for each tape cartridge to be loaded into the tape stacker.
- 23 Replace the cartridge holder by inserting the two orientation features on the bottom of the holder (sleeve) into the bottom of the plate then pressing on the top and snapping the holder (sleeve) in place.
- 24 Close the door to start the process of resuming tape stacker operation.
- 25 Lock the door by turning the key in the key-lock.

Correcting Tape Faults

Tape faults may prevent the system from writing to a specific tape but not the drive. When the system is unable to write to a tape on a specific drive, the system notifies the Ingest/Distribution Technician and the system restarts the specific operation on a new tape.

Correcting a tape fault involves replacing the faulty tape cartridge. The procedure is identical to that for Unloading and Loading Tapes. What differs is the reason for replacing the tape; i.e., because the tape cartridge is faulty rather than full.

Printing Labels

The procedure for printing labels describes the steps involved in using the **Zebra Bar-One** Design Program to print labels. The procedure starts with the assumptions that the Ingest/Distribution Technician has logged in to Windows 95 on the applicable personal computer (PC) and that the label printer power is on.

Printing Labels

- 1 Start the **Zebra Bar-One** Design Program on the PC.
 - For example, select **Start** → **Programs** → **Zebra Labeling System** → **Design Program** from the Windows taskbar.
 - The program to run is c:\barone\labelsys\bin\labels.exe
 - Directory path may vary from site to site.
- 2 Select **File** → **Open** from the pull-down menu.
 - An **Open** dialogue box is displayed.
- 3 Select the appropriate file (e.g., c:\labelsys\formats\flt.lbl).
 - Directory path may vary from site to site.
- 4 Click on the **Open** button.
 - Label file is opened.
- 5 Double-click on the highlighted box in the label.
- 6 Highlight **Advanced**.
- 7 Click on the **Define...** button
 - Format of the label appears.

- 8 Change the 2nd parameter in the **READFILE** function to indicate the starting row of the file.
 - The first label starts with row 1.
 - 9 Click on the **OK** button.
 - 10 Click on the **OK** button.
 - 11 Select **File** → **Print**.€
 - 12 Click on the **OK** button to save.€
 - 13 Type an appropriate name in the **File Name** field.€
 - 14 Click on the **OK** button to print.€
 - 15 Verify that the **Number of labels** in the **Data required to print...** window is correct.€
 - 16 Click on the **OK** button.€
 - 17 Repeat Steps 3 through 16 until all labels have been printed.€
-

Processing 8mm Tapes for Shipment

The **Tape ID's** tab (Figure 18) of the **Data Distribution Operator GUI** allows the DAAC Ingest/Distribution Technician to determine which tape(s) on which stacker(s) contain(s) the data specified in a particular data distribution request. There are two windows on the tab, the **Distribution Tape Requests Items** window and the **Tape ID's Associated with Request** window.

The following information is displayed in the **Distribution Tape Requests Items** window:

- Request ID.
- Media Type.
- # of Tapes.
- # of Tapes Completed.
- State.

The following information is displayed in the **Tape ID's Associated with Request** window:

- Tape ID's.
- Status.
- Location.

The procedure for processing 8mm tapes for shipment starts with the following assumptions:

- All applicable servers are currently running.

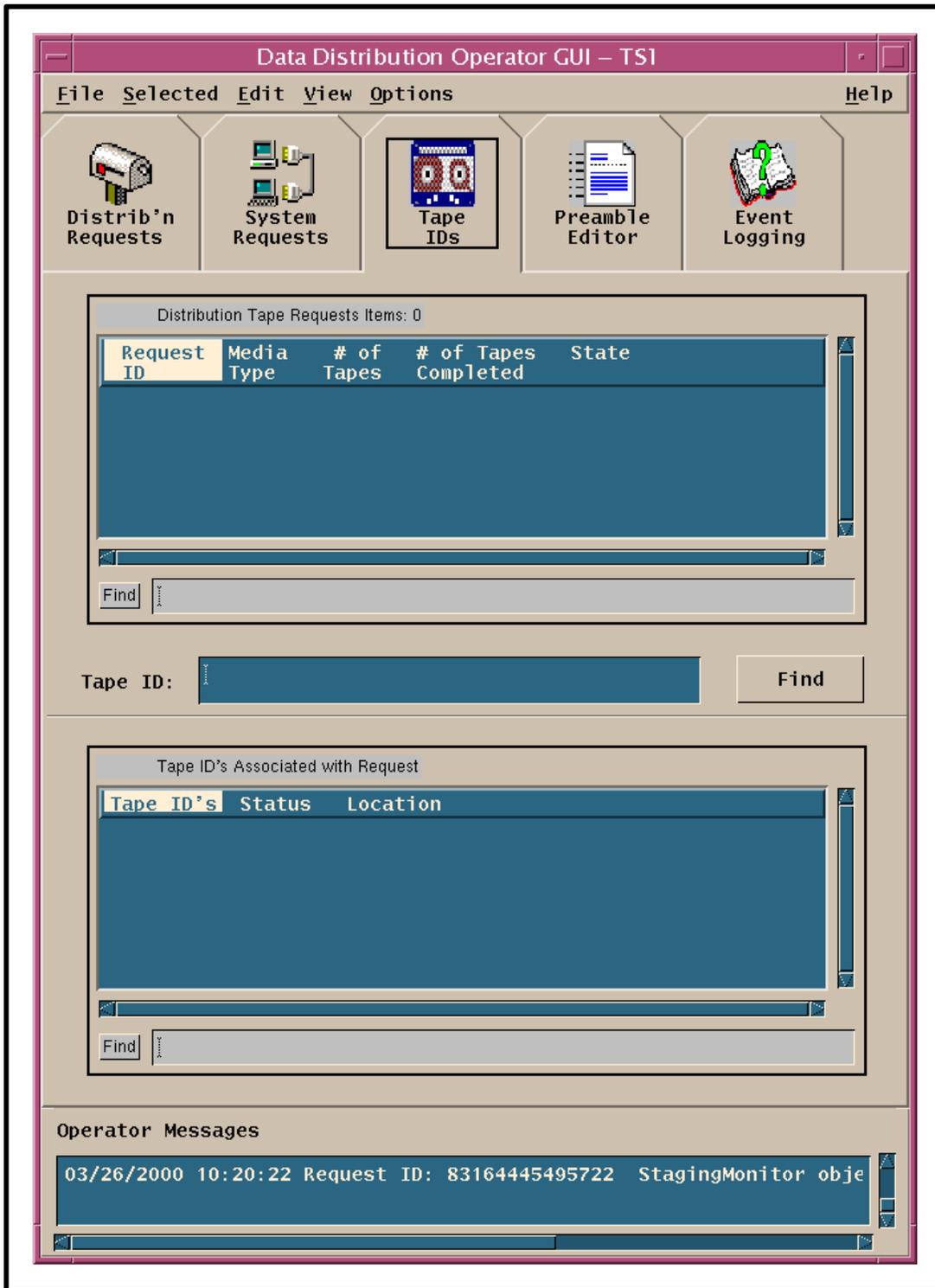


Figure 18. Tape ID's Tab (Data Distribution Operator GUI)

- The **Data Distribution Operator GUI** is running.

- The **Distrib'n Requests** screen (Figure 5) is being displayed.
- The **Storage Management Control** GUI is running.
 - The **Storage Config.** screen (Figure 6) is being displayed.

Processing 8mm Tapes for Shipment

- 1 When a hard medium (8mm) distribution has a status of “Waiting for Shipment” displayed in the **State** column of the **Data Distribution Requests** list, make a note of the Request ID.
- 2 Click on the **Tape ID's** tab on the **Data Distribution Operator GUI**.
 - The **Data Distribution Operator GUI Tape ID's** tab (Figure 18) is displayed.
- 3 Highlight the Request ID of the 8mm distribution that is “Waiting for Shipment” by clicking on its entry in the **Distribution Tape Requests Items** list.
 - Find the Request ID corresponding to the request identified on **Distrib'n Requests** screen (Step 1).
 - Use the **Find** field and button if necessary.
 - The tape IDs associated with the highlighted request are displayed in the **Tape ID's Associated with Request** window.
- 4 Make a note of the tape IDs associated with the highlighted request.
- 5 On the **Storage Management Control** GUI click on the **Resource Schedule** tab.
 - The **Storage Management Control GUI Resource Schedule** tab (Figure 12) is displayed.
- 6 Click on the **Find Tapes** button on the **Resource Schedule** tab.
 - The **Tape Information** window (Figure 19) is displayed.
- 7 Type a tape ID in the **Tape ID** field of the **Tape Information** window.
 - Enter the tape ID for one of the tapes associated with the distribution request that is “Waiting for Shipment.”
 - Tape IDs were noted in Step 4.
- 8 Click on the **Find** button in the **Tape Information** window.
 - The following information is displayed in the **Tape Information** window:
 - Tape Status.

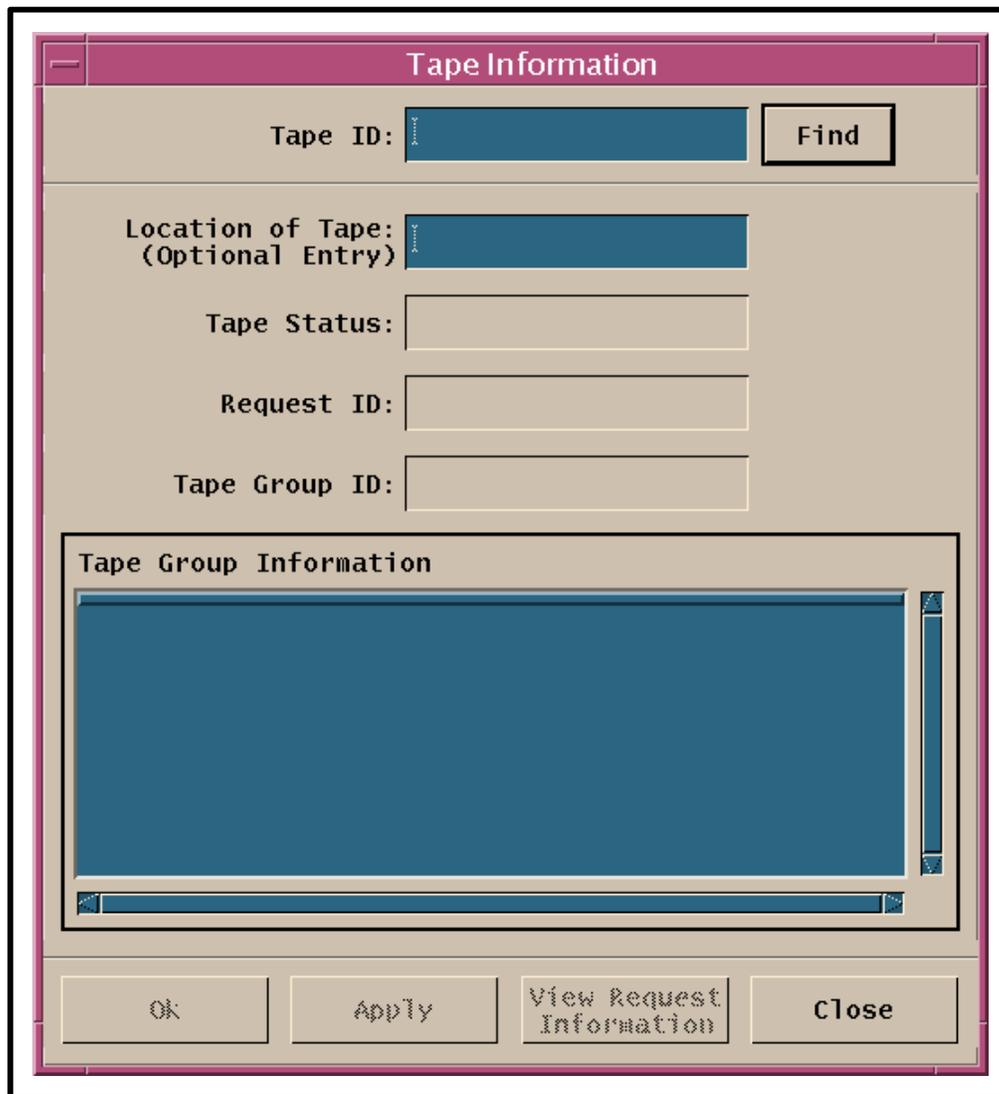


Figure 19. Tape Information Window (Storage Management Control GUI)

- Request ID.
- Tape Group ID.
- Slot Number.
- It is expected that multi-tape requests may take some time to complete and the tapes associated with the request may be spread across multiple stackers. Therefore, the following suggestions are made:
 - Set up some bins for assembling orders.
 - Label each bin with a unique identifier.

- Use the bin # (identifier) to identify the temporary storage location of tapes for an order.
- 9 If the tapes associated with a distribution request are going to be placed in a temporary location (bin) while the order is being assembled, type the location (e.g., bin identifier) in the **Location of Tape** field of the **Tape Information** window.
 - 10 Repeat Steps 7 through 9 for each tape associated with the request.
 - 11 Unload the tapes from the stacker and sleeve by performing the relevant steps of the procedure for **Unloading and Loading Tapes** (previous section of this lesson).
 - If applicable, ensure that the tapes associated with a particular distribution request are put in the appropriate bin.
 - 12 On the **Data Distribution Operator** GUI **Distrib'n Requests** tab click on the row corresponding to the distribution request to highlight the request.
 - 13 Click on the **Mark Shipped** button near the bottom of the **Distrib'n Requests** tab.
 - Status of the request displayed in the **State** column of the **Data Distribution Requests** list changes from “Waiting for Shipment” to “Shipped.”
 - 14 Retrieve the packing list from the printer.
 - 15 Verify that the tape IDs on the packing list correspond with the bar codes on the tapes removed from the stackers.
 - 16 Secure the packing list and corresponding tapes with a rubber band.
 - 17 Place the packing list/tapes in the area designated for completed tape orders.
-

Performing QC of Hard Media

Before products are packaged and shipped, the contents of the hard media should be verified. If possible, each media product should be read to ensure that the content meets the following conditions:

- Readable.
- Correct.
- Matches the corresponding packing list.

It may not be possible to perform QC on every product distributed on hard media. Each DAAC develops its own policy for QC based on an evaluation of its QC needs and the effects of QC on the overall throughput of distribution processing. The QC policy will have the goal of achieving the proper balance of throughput with respect to QC processing requirements.

Packaging Hard Media Products for Shipment

After the contents of the hard media products have been verified and a packing list has been printed, the DAAC Ingest/Distribution Technician has the products packaged for shipment. Packaging and shipping are accomplished in accordance with local DAAC policy.

Deleting Files from Cache and Setting Cache Thresholds

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 20) 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.

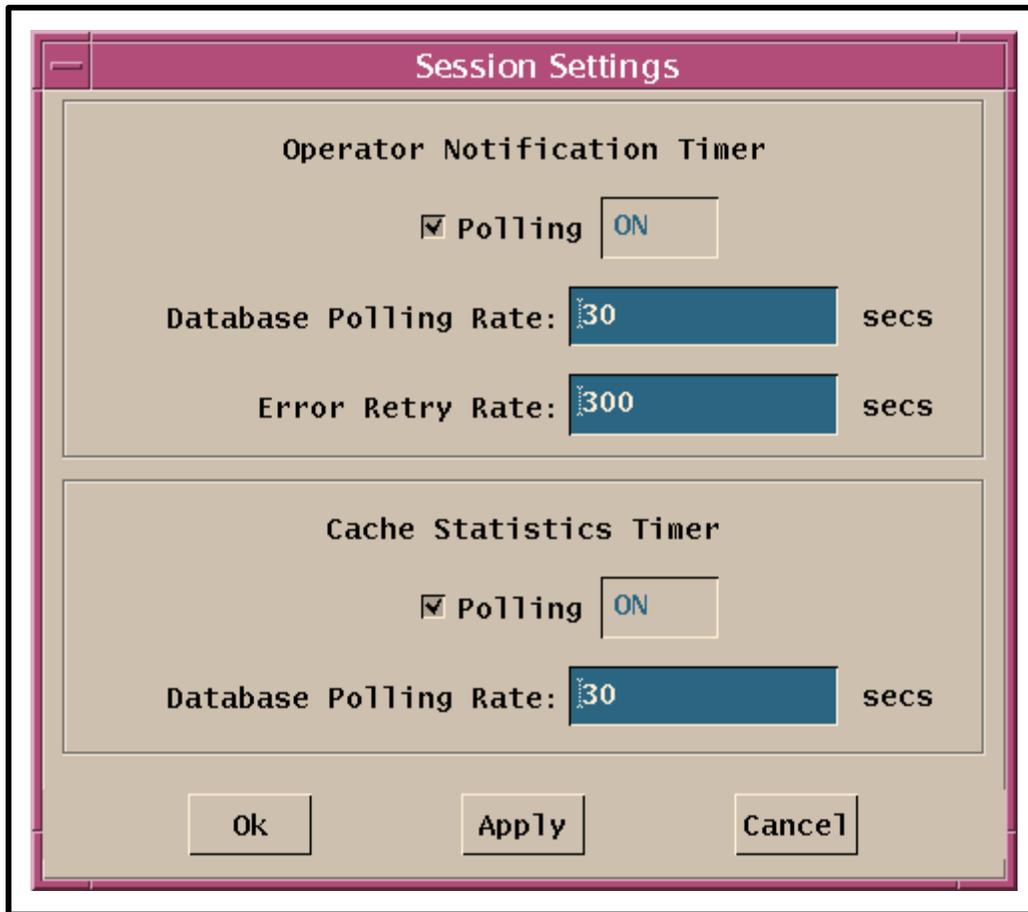


Figure 20. Session Settings Dialogue Box

- 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 following two presentation modes of the same statistics are available:

- Graphical view (Figure 21).
- Text view (Figure 22).

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 21) is displayed.
- 2 To change the presentation mode click (i.e., text view vs. graphic view) click and hold on the **Text/Graphics** option button at the upper right of the **Cache Stats.** tab, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
 - The selected view of the **Cache Stats.** tab (Figure 21 or Figure 22) is displayed.
- 3 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 information concerning the files in the selected cache is listed in the **Cache Information** window:
 - **Exp. Flag** (displays either **EXPIRED** or **NOT EXPIRED**).
 - **Del. Flag** (displays either blank space or **DELETE**).
 - **Filename.**
 - **File Size (Blocks).**
 - **Reference Count.**

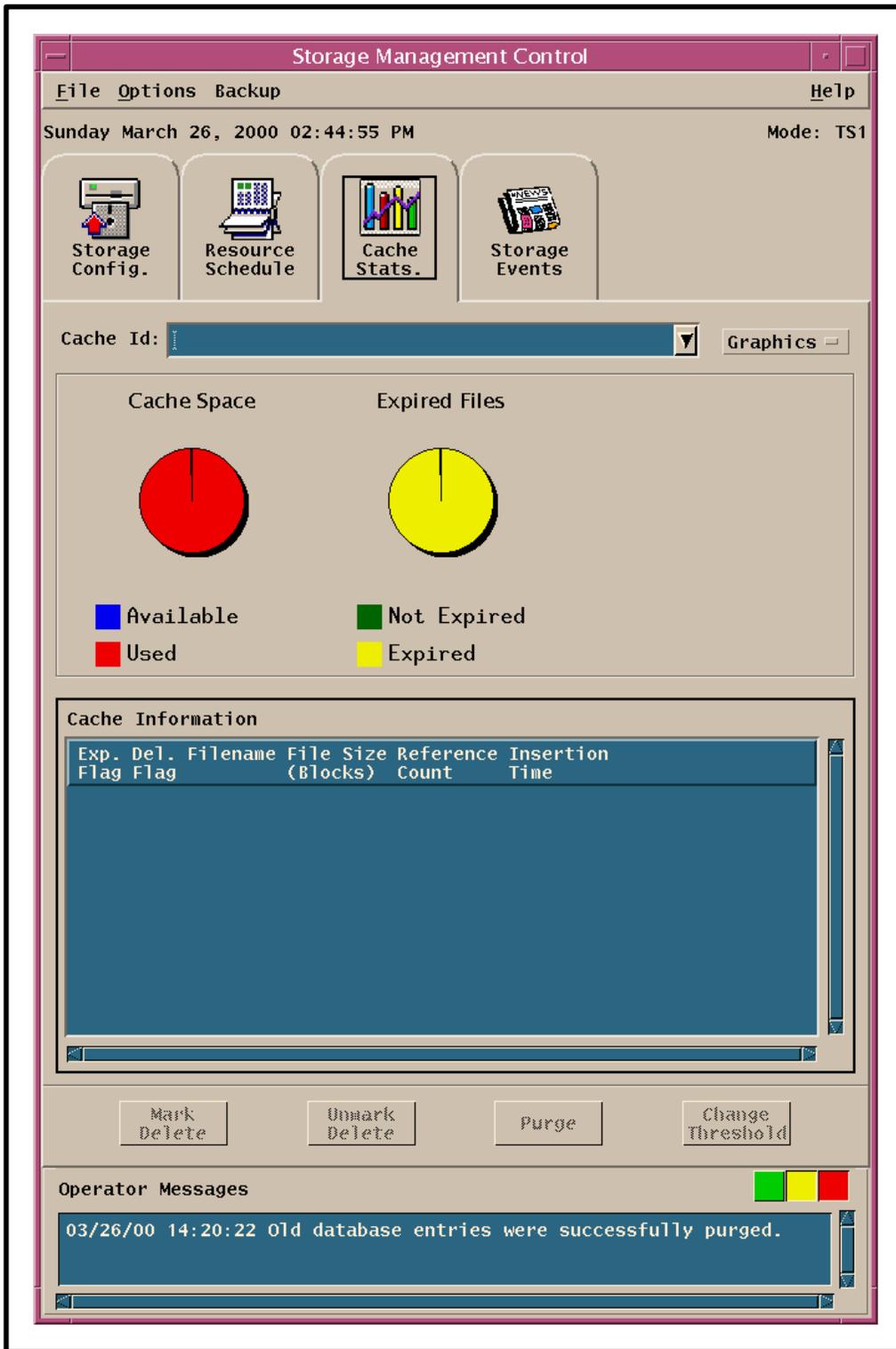


Figure 21. Storage Management Control GUI's Cache Stats. Tab - Graphical View

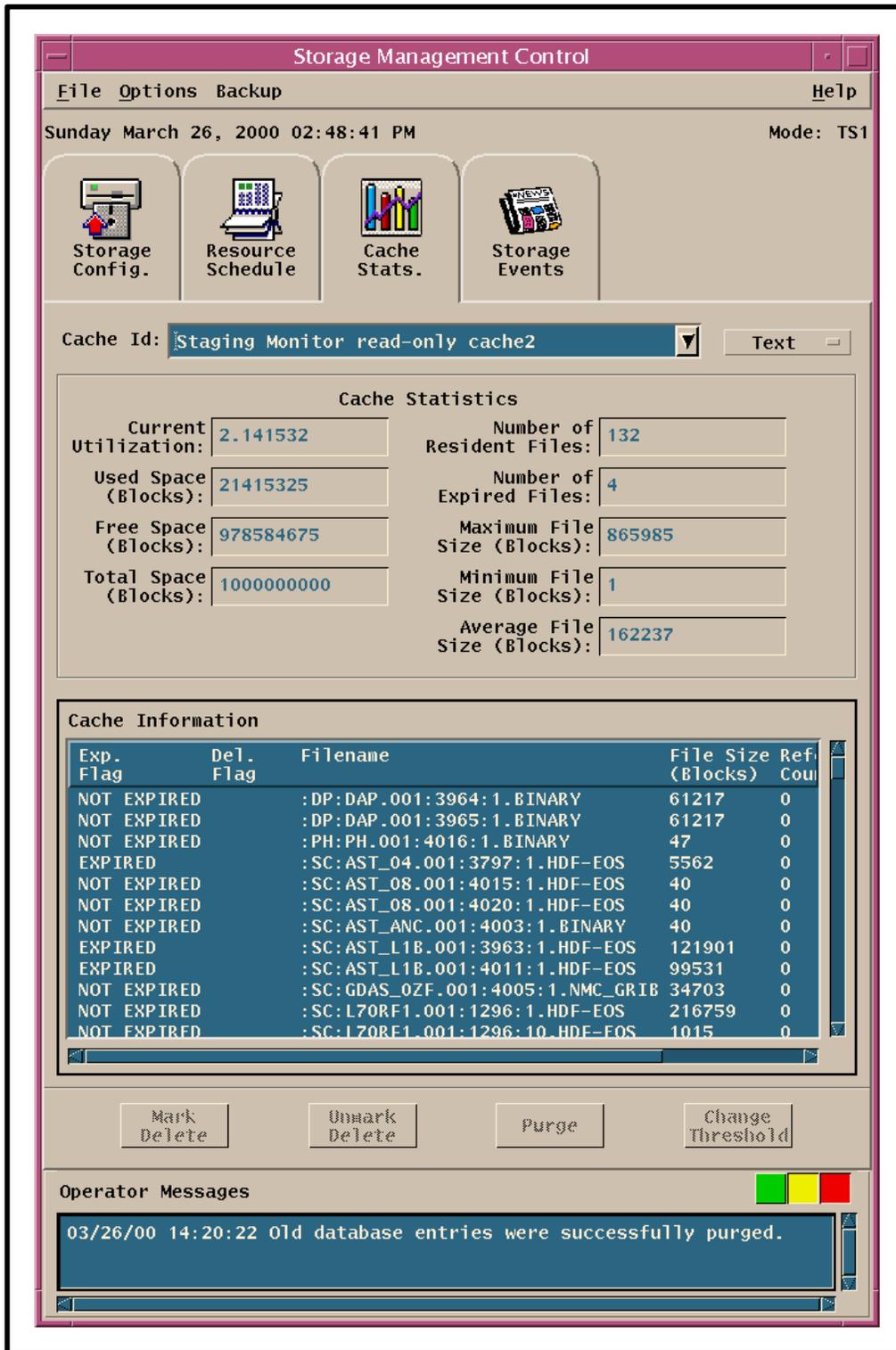


Figure 22. Storage Management Control GUI's Cache Stats. Tab - Text View

- **Insertion Time.**
 - The following cache statistics are displayed in the **Cache Statistics** area (text view):
 - **Current Utilization.**
 - **Used Space (Blocks).**
 - **Free Space (Blocks).**
 - **Total Space (Blocks).**
 - **Number of Resident Files.**
 - **Number of Expired Files.**
 - **Maximum File Size (Blocks).**
 - **Minimum File Size (Blocks).**
 - **Average File Size (Blocks).**
 - The following cache statistics are displayed on pie charts in the **Cache Statistics** area (graphic view):
 - **Cache Space** (Available/Used).
 - **Expired Files** (Not Expired/Expired).
 - The following cache **File Size Statistics** are displayed on bar charts in the **Cache Statistics** area (graphic view):
 - **Max.**
 - **Min.**
 - **Ave.**
- 4** Observe cache statistics information displayed on the **Cache Stats.** tab.
- 5** Click on the row corresponding to the file to be deleted in the **Cache Information** window of the **Cache Stats.** tab.
- Multiple rows may be selected.
- 6** Click on the **Mark Delete** button near the bottom of the **Cache Stats.** tab.
- **Delete** is displayed in the **Del. Flag** field for the row in the **Cache Information** window.

- 7 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.
 - **Delete** disappears from the **Del. Flag** field for the row in the **Cache Information** window.
 - 8 When all files to be deleted from the cache have been marked **Delete**, click on the **Purge** button near the bottom of the **Cache Stats.** tab.
 - All selected files are deleted from the cache.
-

Setting Pull Monitor Cache Thresholds

The **Storage Management Control** GUI's **Cache Stats.** tab can be used to modify the fault and warning thresholds for the pull monitor cache.

The procedure for setting pull monitor cache thresholds 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.

Setting Pull Monitor Cache Thresholds

- 1 Click on the **Storage Management Control** GUI **Cache Stats.** tab.
 - The **Cache Stats.** tab (Figure 21) is displayed.
- 2 To change the presentation mode click (i.e., text view vs. graphic view) click and hold on the **Text/Graphics** option button at the upper right of the **Cache Stats.** tab, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
 - The selected view of the **Cache Stats.** tab (Figure 21 or Figure 22) is displayed.
- 3 Click and hold on the option button to the right of the **Cache Id** field, move the mouse cursor to the **Pull Monitor Cache** (highlighting it), then release the mouse button.
 - The selected cache is displayed in the **Cache Id** field of the **Cache Stats.** tab.
 - The following information concerning the files in the selected cache is listed in the **Cache Information** window:
 - **Exp. Flag.**
 - **Del. Flag.**
 - **Filename.**
 - **File Size (Blocks).**

- **Reference Count.**
- **Insertion Time.**
- The following cache statistics are displayed in the **Cache Statistics** area (text view):
 - **Current Utilization.**
 - **Used Space (Blocks).**
 - **Free Space (Blocks).**
 - **Total Space (Blocks).**
 - **Number of Resident Files.**
 - **Number of Expired Files.**
 - **Maximum File Size (Blocks).**
 - **Minimum File Size (Blocks).**
 - **Average File Size (Blocks).**
- The following cache statistics are displayed on pie charts in the **Cache Statistics** area (graphic view):
 - **Cache Space** (Available/Used).
 - **Expired Files** (Not Expired/Expired).
- The following cache **File Size Statistics** are displayed on bar charts in the **Cache Statistics** area (graphic view):
 - **Max.**
 - **Min.**
 - **Ave.**

4 Click on the **Change Threshold** button near the bottom of the **Cache Stats.** tab.

- The **Change Threshold** dialogue box (Figure 23) is displayed.
- Percentage values for the following thresholds are displayed in the corresponding fields in the **Change Threshold** dialogue box:
 - **Fault Disk Level.**
 - **Warning Disk Level.**

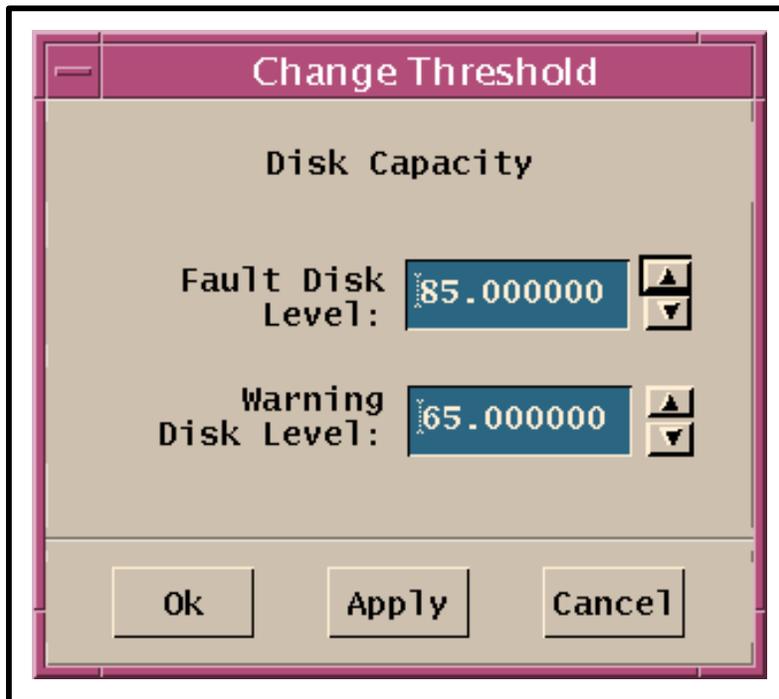


Figure 23. Change Threshold Dialogue Box

- 5 If a threshold setting is to be modified, type the new threshold value (as a percent) in the appropriate field (i.e., **Fault Disk Level** or **Warning Disk Level**).
 - Another method of changing threshold settings (other than typing the numbers) is to click in the appropriate threshold field then click on the up/down buttons adjacent to the threshold field until the correct value is indicated.
 - 6 Repeat Step 5 to set the other threshold value if applicable.
 - 7 When the threshold value(s) have been set, click on the appropriate button:
 - **OK** - to implement the new threshold values and dismiss the **Change Threshold** dialogue box.
 - The **Cache Stats.** tab (Figure 21 or Figure 22) reappears.
 - **Apply** - to implement the selections without dismissing the **Change Threshold** dialogue box.
 - The **Change Threshold** dialogue box remains open.
 - **Cancel** - to dismiss the **Change Threshold** dialogue box without implementing the selections.
 - The **Cache Stats.** tab (Figure 21 or Figure 22) is displayed.
-

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 24) 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.

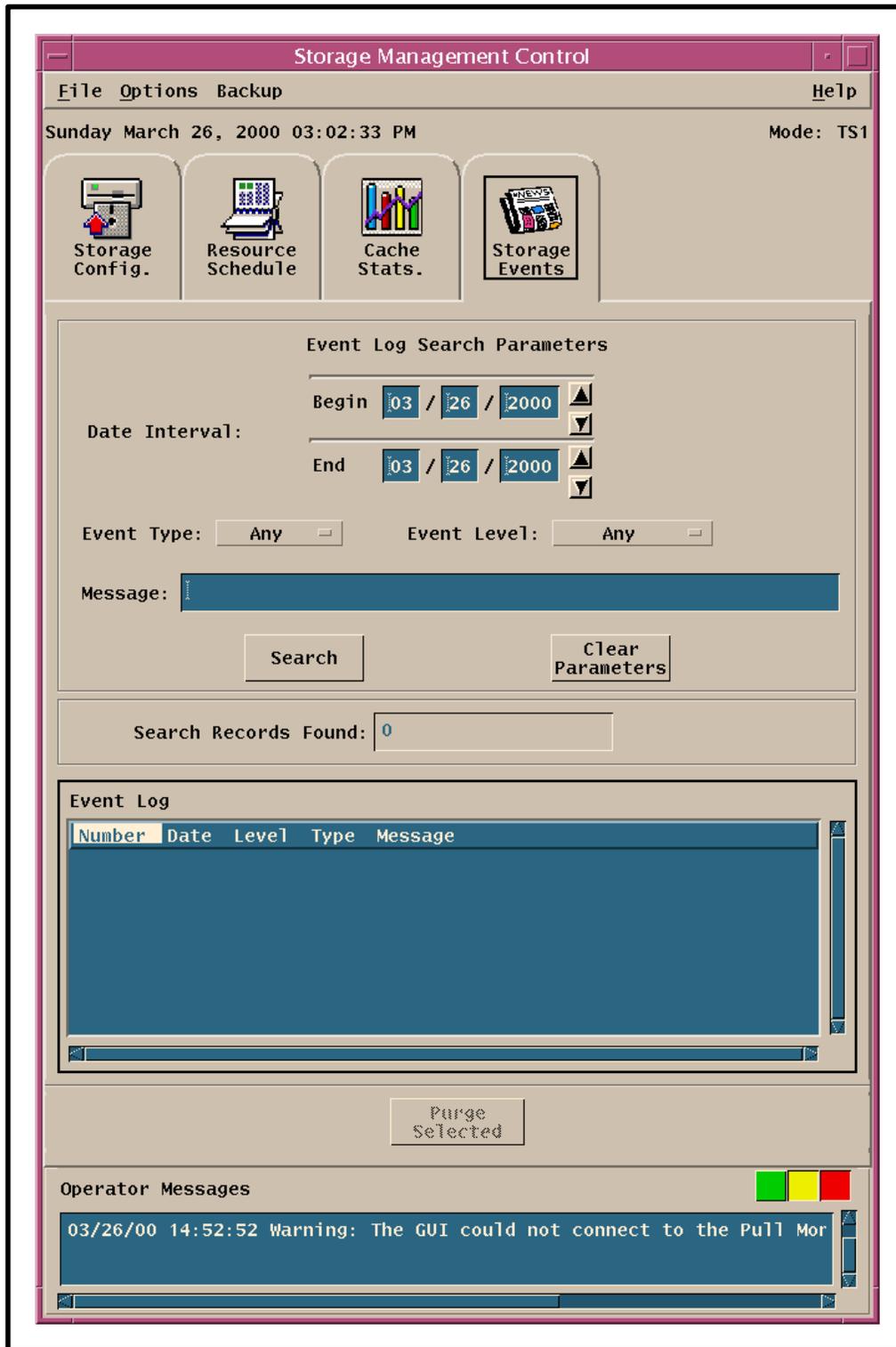


Figure 24. Storage Events Screen

- 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.**
 - **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 24).
 - 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.
-

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Tuning System Parameters

Tuning System Parameters in the Configuration Files

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 modifying system parameters 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 places:

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

In general the system parameters in the database are modified using the GUIs. The system parameters specified in configuration files are modified by editing the appropriate configuration file.

A significant change in the management of system parameters is scheduled for the second delivery of Release 5B. The ECS configuration parameters specified in configuration files will be maintained in a *Configuration Registry*. The Configuration Registry Server will provide a single interface for retrieving configuration attribute-value pairs for ECS servers from the Configuration Registry Database, via a Sybase server. The Configuration Registry Database will be loaded with data from the configuration files. After the Configuration Registry is loaded the configuration files will be moved or renamed, making them inaccessible to the applicable servers. Consequently, when ECS servers are started they will access the Configuration Registry Database to obtain needed configuration parameters.

The Database Administrator will have access to a Configuration Registry GUI for viewing and editing configuration data in the database. Therefore, it will be 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.

The following parameters are specified in configuration files and are the parameters whose assigned values are most likely to be modified to enhance system functioning or performance:

- AppLogSize
 - Maximum size of the application log (ALOG) file for the application in whose configuration file the parameter is specified.
- AppLogLevel
 - Level of detail provided in the ALOG file for the application in whose configuration file the parameter is specified. A setting of “0” provides the most data.
- DebugLevel
 - Level of detail provided in the debug log file for the application in whose configuration file the parameter is specified. A setting of “3” provides the most data.
- DBMaxConnections
 - Maximum number of database connections allowed the application in whose configuration file the parameter is specified.
- 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 (FtpPushThreshold, FtpPullThreshold, or 8MMThreshold), the request is suspended in DDIST.
- FtpPullThreshold
 - Maximum number of bytes per distribution request via ftp pull.
- 8MMThreshold
 - Maximum number of tapes per distribution request via 8mm tape.
- CHECKSUMSTATUS
 - Check-summing can be enabled or disabled for either acquires or inserts.

- The CHECKSUMSTATUS entry in the EcDsStArchiveServer.CFG file controls whether or not a checksum is calculated for each file inserted into the archive.
- The corresponding entry in the EcDsStStagingMonitorServer.CFG file controls whether or not a checksum is calculated when a file is acquired from 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 staging monitor server.
- ListenThreads
 - Number of listen threads assigned to the application in whose configuration file the parameter is specified.
 - Pull monitor is single-threaded (one listen thread).
 - Staging disk server, staging monitor server, and archive server each have a maximum of 125 listen threads (based on 1024 file descriptors divided by eight file descriptors per request).
 - FtpDisServer has less than eight listen threads; the number is based on the practice in the Distributed Computing Environment (DCE) of setting the inbound remote procedure call (rpc) queue to eight (8) times the number of listen threads. If there are more than eight listen threads to FtpDisServer, some of the requests being sent to Pull Monitor could be lost because the Pull Monitor has only one listen thread.
 - IngestFtpServer has a maximum of 125 listen threads that is derived from the number of Ingest granule servers (EcInGran) times the number of listen threads per InGran server (the maximum number of threads available to the IngestFtpServer is 125).
 - D3 server has 7 listen threads; only one request can be processed at a time.
 - 8MMServer has 30 listen threads; i.e., a thread for each request from DDIST for media distribution plus extra for pinging the server.
 - PrintServer has a number of listen threads that is derived from the number of physical media devices being used for distribution of data up to a maximum of 125. Realistically, one (1) listen thread would be adequate in most situations because there are no long-running rpcs being done by the print server.

Table 1 contains a list of configuration file parameters involved in system tuning as well as some potential adjusted values.

Table 1. Storage Management and Data Distribution Configuration Parameters

File(s)	Parameter	Default Value	Adjusted Value or Range
<p>Note: Default and adjusted values vary from site to site. The values listed in the table are provided as examples only. Refer to the appropriate 920-TDx-013 Custom Code Configuration Parameters document. The documents are available at http://cmdm.east.hitc.com/baseline/ under "Technical Documents."</p>			
EcDsSt8MMServer.CFG EcDsStArchiveServer.CFG EcDsStD3Server.CFG EcDsStFtpDisServer.CFG EcDsStIngestFtpServer.CFG EcDsStmgtGui.CFG EcDsStPrintServer.CFG EcDsStPullMonitorServer.CFG EcDsStStagingDiskServer.CFG EcDsStStagingMonitorServer.CFG	AppLogSize	= 3000000	= 3000000
EcDsDdistGui.CFG	AppLogSize	= 50000	= 50000
EcDsDistributionServer.CFG	AppLogSize	=1000000	= 1000000
EcDsSt8MMServer.CFG EcDsStArchiveServer.CFG EcDsStD3Server.CFG EcDsStFtpDisServer.CFG EcDsStIngestFtpServer.CFG EcDsStmgtGui.CFG EcDsStPrintServer.CFG EcDsStPullMonitorServer.CFG EcDsStStagingDiskServer.CFG EcDsStStagingMonitorServer.CFG	AppLogLevel	= 0	0 – 2 A setting of 0 provides the most data.
EcDsDdistGui.CFG EcDsDistributionServer.CFG	AppLogLevel	= 0	0 – 2 A setting of 0 provides the most data.
EcDsSt8MMServer.CFG EcDsStArchiveServer.CFG EcDsStD3Server.CFG EcDsStFtpDisServer.CFG EcDsStIngestFtpServer.CFG EcDsStmgtGui.CFG EcDsStPrintServer.CFG EcDsStPullMonitorServer.CFG EcDsStStagingDiskServer.CFG EcDsStStagingMonitorServer.CFG	DebugLevel	= 3	0 – 3 A setting of 3 provides the most data.
EcDsDdistGui.CFG EcDsDistributionServer.CFG	DebugLevel	= 3	0 – 3 A setting of 3 provides the most data.

Table 1. Storage Management and Data Distribution Configuration Parameters

File(s)	Parameter	Default Value	Adjusted Value or Range
EcDsDdistGui.CFG	DBMaxConnections	= 4	= 4 (number of connections)
EcDsDistributionServer.CFG	DBMaxConnections	= 15	= 15 (number of connections)
EcDsDistributionServer.CFG	FtpPushThreshold	= 20000000000	= 20000000000 (number of bytes)
EcDsDistributionServer.CFG	FtpPullThreshold	= 20000000000	= 20000000000 (number of bytes)
EcDsDistributionServer.CFG	8MMThreshold	= 20	= 20 (number of tapes)
EcDsStArchiveServer.CFG EcDsStStagingMonitorServer.CFG	CHECKSUMSTATUS	= OFF	= OFF
EcDsDistributionServer.CFG	ListenThreads	= 80	= 100 (number of threads) If not set, the Distributed Computing Environment (DCE) default is 10.
EcDsStPullMonitorServer.CFG	ListenThreads	= 1	= 1 (number of threads)
EcDsStArchiveServer.CFG EcDsStStagingDiskServer.CFG EcDsStStagingMonitorServer.CFG	ListenThreads	= 7	= 125 (number of threads)
EcDsStFtpDisServer.CFG	ListenThreads	= 7	< 8 (number of threads)
EcDsStIngestFtpServer.CFG	ListenThreads	= 7	= 1 – 125 (number of threads)
EcDsStD3Server.CFG	ListenThreads	= 7	= 7 (number of threads)
EcDsSt8MMServer.CFG	ListenThreads	= 2	= 30 (number of threads)
EcDsStPrintServer.CFG	ListenThreads	= 7	= 1 – 7 (number of threads)

Modifying System Parameters in Configuration Files

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 the Operations Controller or System Administrator modify parameters in the configuration files. The procedure that follows is provided to assist Ingest/Distribution Technicians who have to modify the files themselves.

The procedure for changing system parameters specified in configuration files starts with the assumption that the Ingest/Distribution Technician has logged in to the system.

Modifying System Parameters in Configuration Files

NOTE: Commands in Steps 1 through 6 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, File and Storage Management System (FSMS) Server, or Access/Process Coordinators (APC) Server (as appropriate) by typing **/tools/bin/ssh *hostname*** (e.g., **e0dis02**, **e0drg01**, **e0acg01**) 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** */path* then press **Return/Enter**.
 - Change directory to the directory (e.g., */usr/ecs/MODE/CUSTOM/cfg*) containing the appropriate .CFG file (e.g., *EcDsDistributionServer.CFG*, *EcDsStStagingDiskServer.CFG*, *EcDsStArchiveServer.CFG*).
 - The particular path to be typed may vary from site to site.
- 6 Type **vi** *filename* then press **Return/Enter**.
 - The configuration file is displayed by the vi text editor.
- 7 Using vi editor commands find *parameter* = and replace the existing value with the adjusted value.
 - Table 1 contains a list of parameters used in system tuning.
 - The value may already have been changed to some value other than the default value.
 - The following vi editor commands are useful:
 - **h** (move cursor left).
 - **j** (move cursor down).
 - **k** (move cursor up).
 - **l** (move cursor right).
 - **i** (insert text).
 - **x** (delete a character).
 - **u** (undo previous change).
 - **Esc** (switch to command mode).
- 8 Press the **Esc** key.
- 9 Type **ZZ**.
 - New parameter value is entered and saved in the configuration file.
 - UNIX prompt is displayed.

NOTE: When the value assigned to a parameter in a configuration file has been changed and saved, the modified value does not take effect until the affected server has been restarted. For example, consider the case in which the debug level for the Distribution Server log has been changed from “2” to “3” in the Distribution Server configuration file. 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 configuration file).

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 associate staging monitor and staging disk combined. The CacheSpace column contains the amount of read-only cache space allocated/available on disk (to the associated staging monitor/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 2 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 2. 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 the appropriate server type (e.g., **Staging Monitor** or **Pull Monitor**) in the **Server Type Information** window on the **Storage Config.** tab.
 - The selected server is highlighted in the **Server Type Information** window on the **Storage Config.** tab.
- 2 Click on the **View Servers** button.
 - Associated servers are listed in the **Server Information** window on the **Storage Config.** tab.
- 3 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** button.
 - The appropriate **Pull Monitor Configuration** (Figure 25) or **Staging Monitor Configuration** dialogue box (Figure 26) is displayed.
 - The **Pull Monitor Configuration** dialogue box (Figure 25) displays data in the following fields:
 - **Server ID.**
 - **Original Cache Space (blocks).**
 - **Available Cache Space (blocks)** [cannot be modified from GUI].€
 - **Block Size (bytes).**
 - **Percent When Full.**
 - **Expiration Threshold (hours).**
 - **FTP Notify Timer Duration (seconds).**
 - **Expired Files Confirm Delete** [option button with **Yes** and **No** as the options].
 - **Disk Capacity: Fault Disk Level.**
 - **Disk Capacity: Warning Disk Level.**
 - **Root Path.**

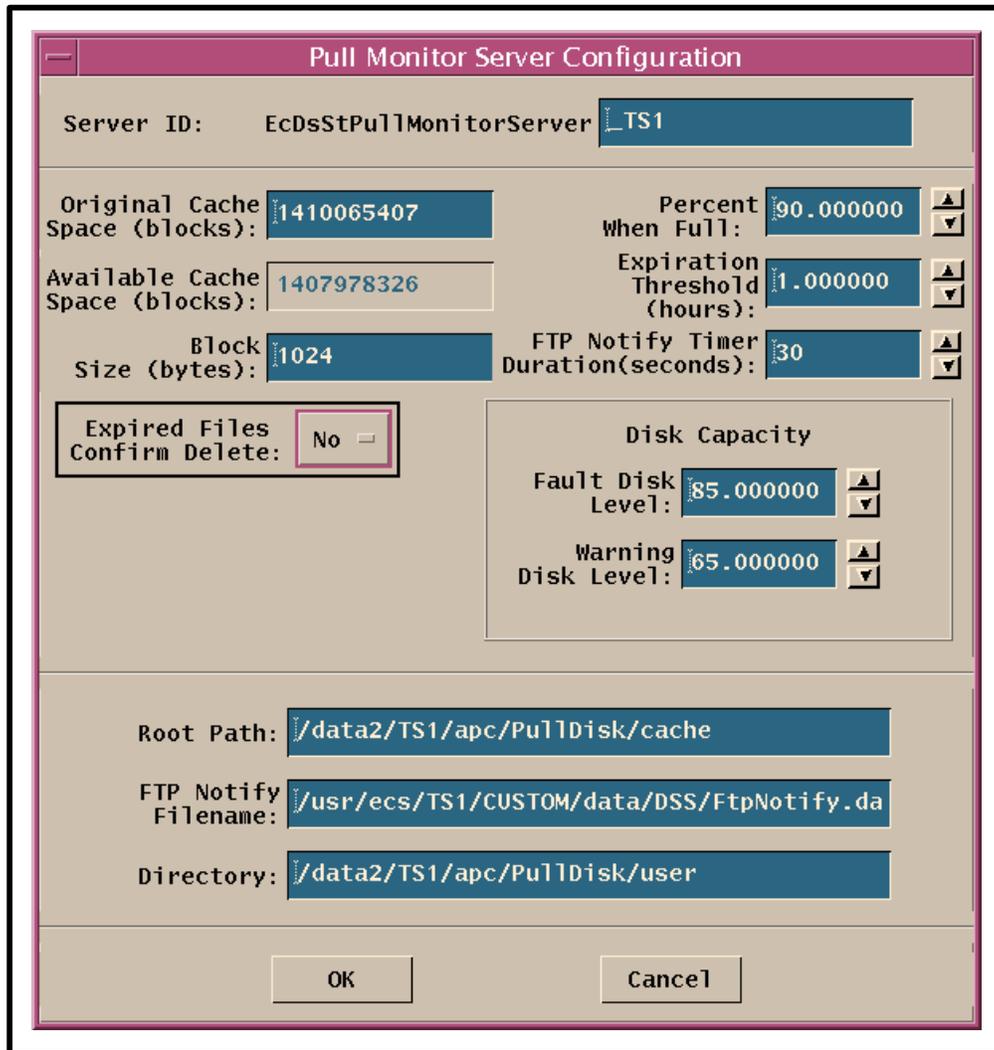


Figure 25. Pull Monitor Configuration Dialogue Box

- **FTP Notify Filename.**
- **Directory.**
- The **Staging Monitor Configuration** dialogue box (Figure 26) displays data in the following fields:
 - **Server ID.**
 - **Total Space (blocks).**
 - **Cache Space (blocks).**
 - **User Staging (blocks)** [cannot be modified from GUI].€

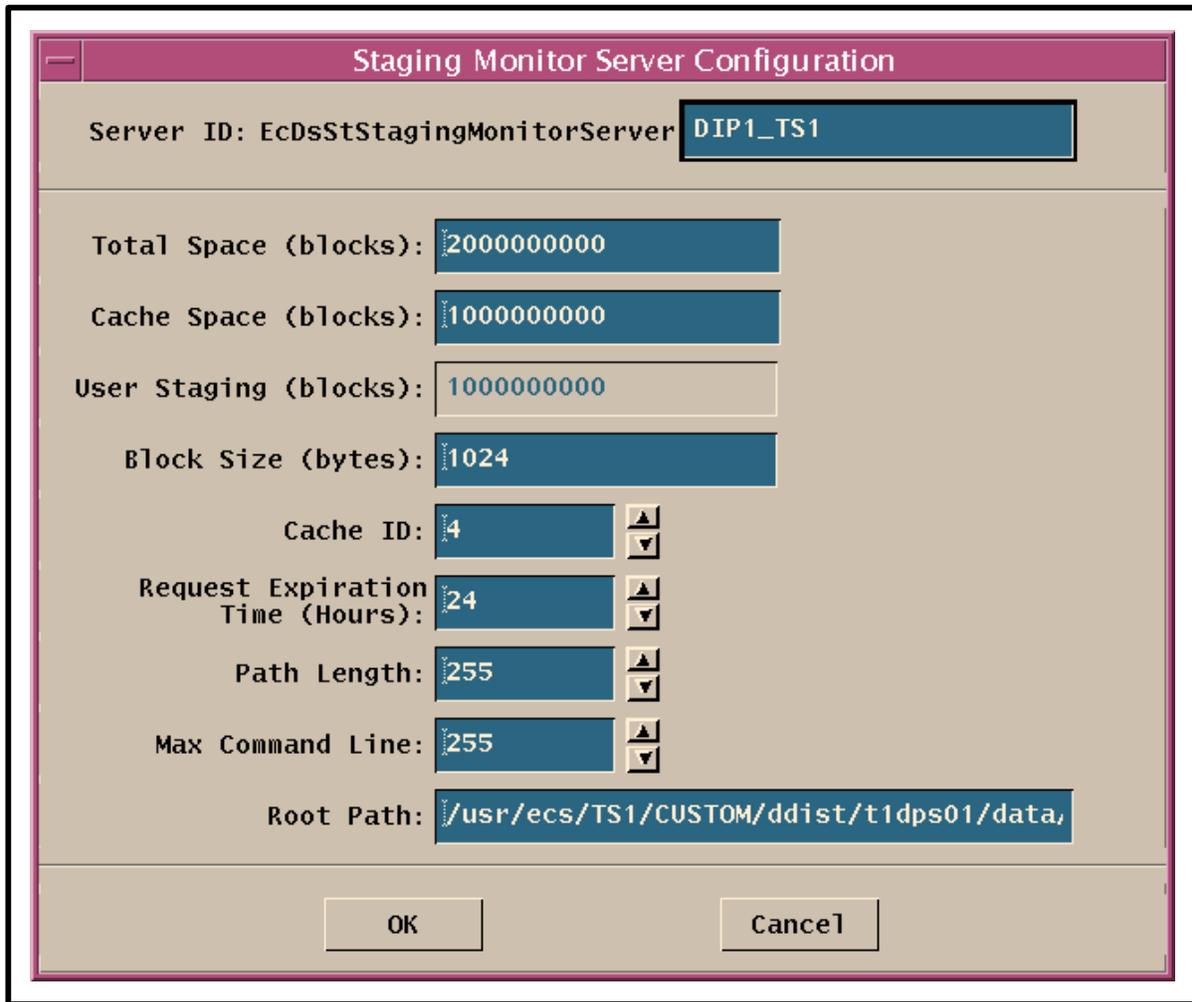


Figure 26. Staging Monitor Configuration Dialogue Box

- **Block Size (bytes).**
- **Cache ID.**
- **Request Expiration Time (Hours).**
- **Path Length.**
- **Max Command Line.**
- **Root Path.**

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

6 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 **Production Request - PR Edit** GUI without saving the new value(s).
 - The **Storage Config.** screen (Figure 6) is displayed.

7 Repeat Steps 1 through 6 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 stmgmt_role PASSWORD greetings DBNAME
stmgtddb1_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 stmgmt_role PASSWORD greetings DBNAME
stmgtddb1_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 stmgmt_role PASSWORD greetings DBNAME
stmgtddb1_TS1 SERVER x0acg01_srvr
```

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

```
EcDsDdPTEdit.pl USER stmgmt_role PASSWORD greetings DBNAME
stmgtddb1_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 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 -UserID -SDBServer** then press **Return/Enter**.
 - For example:
isql -Ustmgmt_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 3 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 3. 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 4, Data Distribution Operator GUI User Messages (adapted from the corresponding table in 609-CD-510-002, <i>Release 5B Operations Tools Manual for the ECS Project</i>).
Request status change to "Suspended with Errors," indicating a data distribution failure.	<ol style="list-style-type: none"> 1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 5) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," notify the Operations Controller/System Administrator to have the STMGMT 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).
Tape fault.	Replace the faulty tape cartridge. [For detailed instructions refer to the procedure for Unloading and Loading Tapes (previous section of this lesson).]
Other problems.	Check the log files (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG, EcDsStStagingDiskServer.ALOG, EcDsStStagingMonitorServer.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 4. 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.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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 4. 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.	<ol style="list-style-type: none"> 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 using HP OpenView. 4. Refresh the GUI display (click on the Refresh button). 5. Try again to cancel the request. <p>[For detailed instructions refer to the procedure for Canceling Data Distribution Requests (previous section of this lesson).]</p> <ol style="list-style-type: none"> 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."	<ol style="list-style-type: none"> 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)). "Mark shipped" is a valid operation if the request is in the "Waiting for Shipment" state only. 2. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 5) are "up." 3. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 4. If hosts/servers are all "up," notify the Operations Controller/System Administrator to have the STMGT servers bounced (shut down and immediately restarted). 5. Refresh the GUI display (click on the Refresh button). 6. Try again to mark the request shipped. <p>[For detailed instructions refer to the procedure for Processing 8mm Tapes for Shipment (previous section of this lesson).]</p> <ol style="list-style-type: none"> 7. If repeated attempts to mark the request shipped fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 4. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DDist Refresh Failure.	Data Distribution Refresh Error. Dialogue Message GUI was not able to get new request list from server.	<ol style="list-style-type: none"> 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.
DDist Resume All Failure.	GUI received failure from server. Requests were not resumed.	<ol style="list-style-type: none"> 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 using HP OpenView. 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.	<ol style="list-style-type: none"> 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 using HP OpenView. 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 4. 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.	<ol style="list-style-type: none"> 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 using HP OpenView. 4. Try again to set the priority of the selected distribution request. <p>[For detailed instructions refer to the procedure for Changing the Priority of Data Distribution Requests (previous section of this lesson).]</p> <ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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 using HP OpenView. 4. Refresh the GUI display (click on the Refresh button). 5. Try again to suspend the request(s). <p>[For detailed instructions refer to the procedure for Suspending/Resuming Data Distribution Requests (previous section of this lesson).]</p> <ol style="list-style-type: none"> 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 4. 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.	<ol style="list-style-type: none"> 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 using HP OpenView. 4. Refresh the GUI display (click on the Refresh button). 5. Try again to suspend the request. <p>[For detailed instructions refer to the procedure for Suspending/Resuming Data Distribution Requests (previous section of this lesson).]</p> <ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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 using HP OpenView. 4. Refresh the GUI display (click on the Refresh button). 5. Try again to cancel the request. <p>[For detailed instructions refer to the procedure for Canceling Data Distribution Requests (previous section of this lesson).]</p> <ol style="list-style-type: none"> 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 4. 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.	<ol style="list-style-type: none"> 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."	<ol style="list-style-type: none"> 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)). "Mark shipped" is a valid operation if the request is in the "Waiting for Shipment" state only. 2. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 5) are "up." 3. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 4. If hosts/servers are all "up," notify the Operations Controller/System Administrator to have the STMGT servers bounced (shut down and immediately restarted). 5. Refresh the GUI display (click on the Refresh button). 6. Try again to mark the request shipped. [For detailed instructions refer to the procedure for Processing 8mm Tapes for Shipment (previous section of this lesson).] 7. If repeated attempts to mark the request shipped fail, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 4. Data Distribution Operator GUI User Messages

Message Text	Impact	Cause and Corrective Action
DsDdRequestMgrC Resume Failure.	GUI received failure from server. Request was not resumed.	<ol style="list-style-type: none"> 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 using HP OpenView. 4. Refresh the GUI display (click on the Refresh button). 5. Try again to resume the request. <p>[For detailed instructions refer to the procedure for Suspending/Resuming Data Distribution Requests (previous section of this lesson).]</p> <ol style="list-style-type: none"> 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.
DsDdRequestMgrC Set Priority Failure.	GUI received failure from server. Request priority was not changed.	<ol style="list-style-type: none"> 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 using HP OpenView. 4. Try again to set the priority of the selected distribution request. <p>[For detailed instructions refer to the procedure for Changing the Priority of Data Distribution Requests (previous section of this lesson).]</p> <ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 1. Select (highlight) the appropriate request in the list. 2. Retry the operation that led to the error message.

Table 5. Hosts, Servers, Clients and Other Software Relevant to Data Distribution

HOST	SERVER/CLIENT/OTHER SOFTWARE
Distribution Server (e.g., x0dis02)	Distribution Server (EcDsDistribution Server) 8mm Server (EcDsSt8MMServer) D3 Server (EcDsStD3Server)
Working Storage (e.g., x0wkg01)	Archive Server (EcDsStArchiveServer) Staging Monitor Server (EcDsStStagingMonitorServer) Staging Disk Server (EcDsStStagingDiskServer)
SDSRV Server (e.g., x0acs03)	Science Data Server (EcDsScienceDataServer) HDF EOS Server (EcDsHdfEosServer)
Access/Process Coordinators (APC) Server (e.g., x0acg01)	Archive Server (EcDsStArchiveServer) FTP Distribution Server (EcDsStFtpDisServer) Staging Monitor Server (EcDsStStagingMonitorServer) Staging Disk Server (EcDsStStagingDiskServer) Pull Monitor Server (EcDsStPullMonitorServer)
FSMS Server (e.g., x0drg01)	Archive Server (EcDsStArchiveServer) Staging Monitor Server (EcDsStStagingMonitorServer) Staging Disk Server (EcDsStStagingDiskServer)
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 5. 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 distribution is a hard media distribution and the acquire did not fail (but the data were not written to the tape), replace the tape.
 - For detailed instructions refer to the procedure for **Unloading and Loading Tapes** (subsequent section of this lesson).
 - 6 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.
 - 7 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.
 - 8 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 (i.e., `FtpPushThreshold`, `FtpPullThreshold`, or `8MMThreshold`), 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.

Responding to Requests that Exceed the Distribution Request Threshold

- 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 increase (at least temporarily) the corresponding threshold in accordance with the procedure for **Modifying System Parameters in Configuration Files** (previous section of this lesson).
 - 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 EcDsStStagingMonitorServer.ALOG).

- Space available in the staging area.

Checking the Science Data Server ALOG File

The procedure for checking the EcDsScienceDataServer.ALLOG 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.ALLOG` 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.ALLOG file should contain entries identifying the file to be acquired by the ShortName of the corresponding ESDT.
 - The EcDsScienceDataServer.ALLOG 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 5) are “up.”
 - If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
 - 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 5) are “up.”
 - If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
 - 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.ALLOG or EcDsStStagingMonitorServer.ALLOG) 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.ALLOG` or `EcDsStStagingMonitorServer.ALLOG` 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 5) are “up.”
 - If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
 - 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.
 - EcDsSt8MMServer.ALOG.

- EcDsStD3Server.ALOG.
- EcDsStPrintServer.ALOG.
- EcDsStStagingDiskServer.ALOG.
- EcDsStStagingMonitorServer.ALOG.
- EcDsStmgmtGui.ALOG.
- APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) host has the following storage management log files:
 - EcDsStArchiveServer.ALOG.
 - EcDsStFtpDisServer.ALOG.
 - EcDsStPullMonitorServer.ALOG.
 - EcDsStStagingDiskServer.ALOG.
 - EcDsStStagingMonitorServer.ALOG.
- FSMS Server (e.g., e0drg01, g0drg01, l0drg01, n0drg01) host has the following storage management log files:
 - EcDsStArchiveServer.ALOG
 - EcDsStFtpDisServer.ALOG.
 - EcDsStStagingDiskServer.ALOG.
 - EcDsStStagingMonitorServer.ALOG.
- Working Storage (e.g., e0wkg01, g0wkg01, l0wkg01) host has the following storage management log files:
 - EcDsStArchiveServer.ALOG.
 - EcDsStFtpDisServer.ALOG.
 - EcDsStStagingDiskServer.ALOG.
 - EcDsStStagingMonitorServer.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, EcDsSt8MMServer.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, EcDsSt8MMServer.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.

Checking Database Connections

- 1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 6 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/cfg` then press **Return/Enter**.
- 3 Type `view EcDsDistributionServer.CFG` 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 configuration file to identify the values for the following parameters:
 - **DBName.**
 - **DBServer.**
 - **DBMaxConnections.**
- 5 Type `:q!` then press **Return/Enter** to quit the view application.
- 6 Log in to the APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) host as described in Steps 1 through 6 of the procedure for **Launching the Data Distribution Operator and Storage Management Control GUIs** (previous section of this lesson).
 - APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) typically hosts Sybase for the storage management/data distribution shared database.
 - The DBServer identified in the Data Distribution configuration file includes the host name (e.g., g0acg01_svr).
- 7 Type `isql -UserID -SDBServer` then press **Return/Enter**.
- 8 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`.
- 9 Type `sp_who` at the `1>` prompt then press **Return/Enter**.

10 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
	stmgtddb1_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
	stmgtddb1_TS1		AWAITING COMMAND	
9	recv sleep	EcDsStArchiveServer		0
	stmgtddb1_TS2		AWAITING COMMAND	
10	recv sleep	EcInReqMgr		0
	Ingest_TS3		AWAITING COMMAND	
11	recv sleep	EcDsStStagingMonitorServer		0
	stmgtddb1_TS2		AWAITING COMMAND	
12	recv sleep	EcDsStStagingDiskServer		0
	stmgtddb1_TS2		AWAITING COMMAND	
13	recv sleep	EcInGran	x0icg01	0
	Ingest_TS3		AWAITING COMMAND	
14	recv sleep	EcDsStFtpDisServer		0
	stmgtddb1_TS2		AWAITING COMMAND	
15	recv sleep	EcDsStArchiveServer		0
	stmgtddb1_TS1		AWAITING COMMAND	
16	recv sleep	EcDsStStagingMonitorServer		0
	stmgtddb1_TS1		AWAITING COMMAND	
17	recv sleep	EcDsStStagingDiskServer		0
	stmgtddb1_TS1		AWAITING COMMAND	
18	recv sleep	EcInGran		0
	Ingest_TS3		AWAITING COMMAND	
19	recv sleep	EcDsStStagingDiskServer		0
	stmgtddb1_TS1		AWAITING COMMAND	
20	recv sleep	EcInGUI		0
	Ingest_TS1		AWAITING COMMAND	
21	recv sleep	EcDsDistributionServer		0
	stmgtddb1_TS1		AWAITING COMMAND	
22	recv sleep	EcDsDistributionServer		0
	stmgtddb1_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)

```

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

12 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)
```

- 13 Type **quit** at the 1> prompt then press **Return/Enter**.
 - 14 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"**).
 - 15 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.
 - 16 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 value for DBMaxConnections identified in the Data Distribution configuration file (Step 4).
 - 17 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 DBMaxConnections in the configuration file.
-

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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 5B Operations Tools Manual for the ECS Project, 609-CD-510-002, one copy per student.

Mission Operation Procedures for the ECS Project, 611-CD-510-001, 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, ftp pull, or 8mm tape cartridge. 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, resume, or mark a distribution request as “shipped”). 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 a packing list or 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 a packing list or e-mail preamble. The student modifies the packing list or 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.

Setting Up the 8mm Tape Stackers

The exercise involves setting up the 8mm stackers for data distribution purposes. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for setting up the 8mm stackers for data distribution purposes. The student sets up the 8mm stackers as specified in the requirements.

Perform the following steps:

1. Select the **Resource Schedule** tab of the **Storage Management Control GUI**.
2. Set up a new tape group (using the **Manage Tapes** function) for the tapes to be put in the stacker.
3. Load tapes in the sleeve and stacker (refer to Unloading/Loading 8mm Tape Cartridges for Data Distribution Purposes).
4. If another tape group is already assigned to the stacker to be used, unassign that tape group.

5. Assign the tape group to the stacker.
6. Put the stacker on line.
7. Put the stacker drives on line.
8. Resume any suspended requests.

Unloading/Loading 8mm Tape Cartridges for Data Distribution Purposes

The exercise involves unloading/loading 8mm tape cartridges for data distribution purposes. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for unloading/loading 8mm tape cartridges for data distribution purposes. The student unloads and loads an 8mm tape stacker as specified in the requirements.

Perform the following steps:

1. Verify that there are **no** active 8mm distribution requests in the system.
2. Unload the 8mm tape stacker.
3. Load the 8mm tape stacker.

Printing Labels

The exercise involves printing labels for 8mm tape cartridges. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements for printing labels for 8mm tape cartridges. The student prints labels as specified in the requirements.

Perform the following steps:

1. Start the Zebra Bar-One Design Program on the PC.
2. Open the label file.
3. Set up the file to print.
4. Print the file.

Processing 8mm Tapes for Shipment

The exercise involves processing 8mm tapes for shipment. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements to process 8mm tapes for shipment. The student processes 8mm tapes for shipment as specified in the requirements.

Perform the following steps:

1. On the **Data Distribution Operator GUI Distrib'n Requests** tab identify an 8mm distribution request that is "Waiting for Shipment."
2. On the **Data Distribution Operator GUI Tape ID's** tab identify the 8mm tapes associated with the distribution request.
3. On the **Storage Management Control GUI Resource Schedule** tab determine the location of the 8mm tapes associated with the distribution request.
4. Unload the 8mm tapes associated with the distribution request from the stacker.
5. On the **Data Distribution Operator GUI Distrib'n Requests** tab mark the distribution request as "shipped."
6. Verify that the tape IDs on the packing list correspond with the bar codes on the 8mm tapes.

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.
5. Click on the **Purge** button.

Setting Pull Monitor Cache Thresholds

The exercise involves setting Pull Monitor cache fault and warning thresholds. The exercise begins with a student acting in the role of Ingest/Distribution Technician receiving the necessary information/requirements to set cache fault and warning thresholds. The student sets cache fault and warning thresholds as specified in the requirements.

Perform the following steps:

1. Select the **Cache Stats** tab on the **Storage Management Control** GUI.
2. Select the Pull Monitor cache.
3. Click on the **Change Threshold** button.
4. Enter the new threshold value(s) (as percent) in the appropriate field(s) (i.e., **Fault Disk Level** or **Warning Disk Level**).
5. Apply the modifications.

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.

Modifying System Parameters

The exercise involves modifying system parameters in configuration files or 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 configuration files or database tables. The student modifies a system parameter in a configuration file or 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. If the parameter is defined in a configuration file, edit the appropriate .CFG file.
4. If the parameter is defined in a database table, 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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