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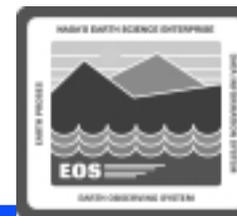
# DATA DISTRIBUTION

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**ECS Release 5B Training**

# Overview of Lesson

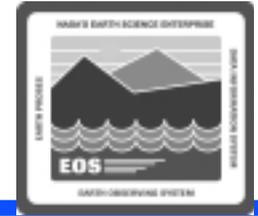
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- **Introduction**
- **Distribution Concepts**
- **Launching the Data Distribution Operator and Storage Management Control GUIs**
- **Monitoring/Controlling Distribution Requests**
- **Modifying Preambles**
- **Performing Hard (Physical) Media Operations**
- **Deleting Files from Cache and Setting Cache Thresholds**
- **Tuning System Parameters**

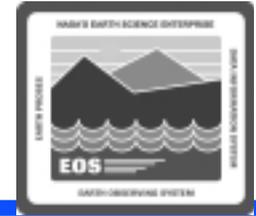
# Overview of Lesson (Cont.)

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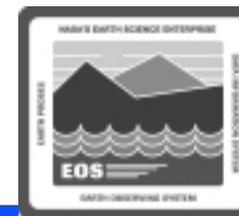
- **Troubleshooting Data Distribution Problems**
- **Practical Exercise**

# Objectives



- **OVERALL:**
  - Develop proficiency in the procedures that apply to data distribution operations
- **SPECIFIC:**
  - Describe the general functions and processes associated with data distribution
  - Perform the steps involved in...
    - » launching the Data Distribution Operator and Storage Management Control GUIs
    - » monitoring/controlling data distribution requests
    - » viewing data distribution event log information
    - » modifying a packing list or e-mail preamble
    - » setting up the 8mm tape stackers

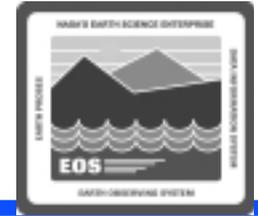
# Objectives (Cont.)



- **SPECIFIC (Cont.):**
  - **Perform the steps involved in...**
    - » **unloading/loading 8mm tape cartridges for data distribution purposes**
    - » **printing labels**
    - » **processing 8mm tapes for shipment**
    - » **configuring Storage Management polling functions**
    - » **deleting files from cache**
    - » **setting cache fault and warning thresholds**
    - » **viewing storage management event log information**
    - » **modifying system parameters in configuration files or database tables**
    - » **troubleshooting data distribution problems**

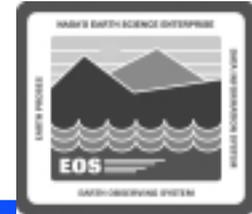
# Objectives (Cont.)

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- **STANDARDS:**
  - Lesson content (procedures in the lesson)
  - Mission Operation Procedures for the ECS Project (611-CD-510-001)

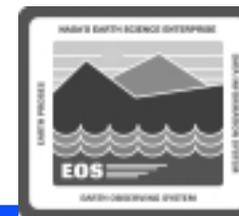
# Distribution Concepts



- **ECS Context**

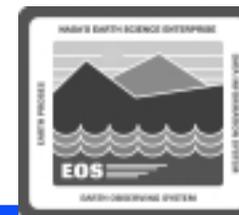
- **Data distribution for ECS is accomplished at the Distributed Active Archive Centers (DAACs)**
- **People involved in data distribution activities are Ingest/Distribution Technicians**
- **Data Server Subsystem (DSS), which manages access to the data archive, is key to data distribution as well as several other functions**
- **Computer software configuration items (CSCIs) in DSS**
  - » **DDIST**
  - » **STMGT**
  - » **SDSRV**

# Distribution Concepts



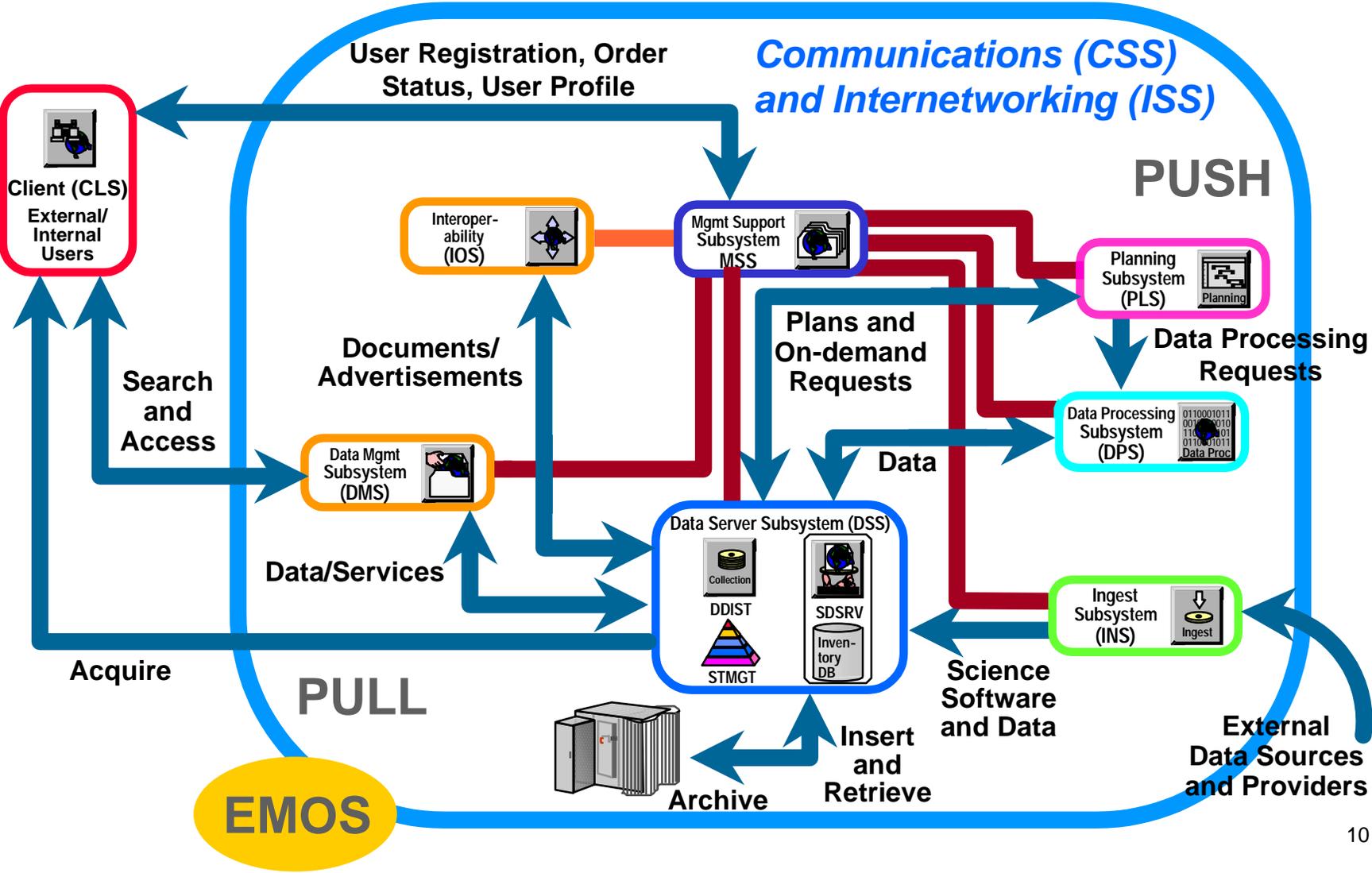
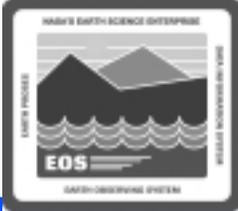
- **ECS Context (Cont.)**
  - **DDIST CSCI formats and distributes data to users, either electronically or on physical media (i.e., 8mm tape cartridges)**
    - **Accepts requests from the SDSRV CSCI**
    - **Directs the STMGT CSCI to transfer data either electronically or by 8mm tape**
  - **STMGT CSCI stores, manages, and retrieves data files on behalf of other science data processing components**
    - **Provides interfaces and peripheral devices (e.g., tape drives)**
    - **Maintains a user pull area that supports electronic pull distribution**

# Distribution Concepts



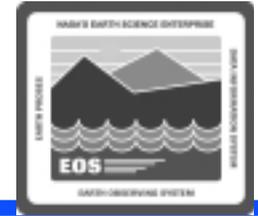
- **ECS Context (Cont.)**
  - **SDSRV CSCI manages and provides user access to collections of non-document Earth Science data**
    - » **Checks/verifies metadata**
    - » **Issues requests to the STMGT and DDIST CSCIs to perform storage and distribution services in support of the processing of service requests, such as insertion of data into the archive or distribution of data products from the archive**

# ECS Context Diagram



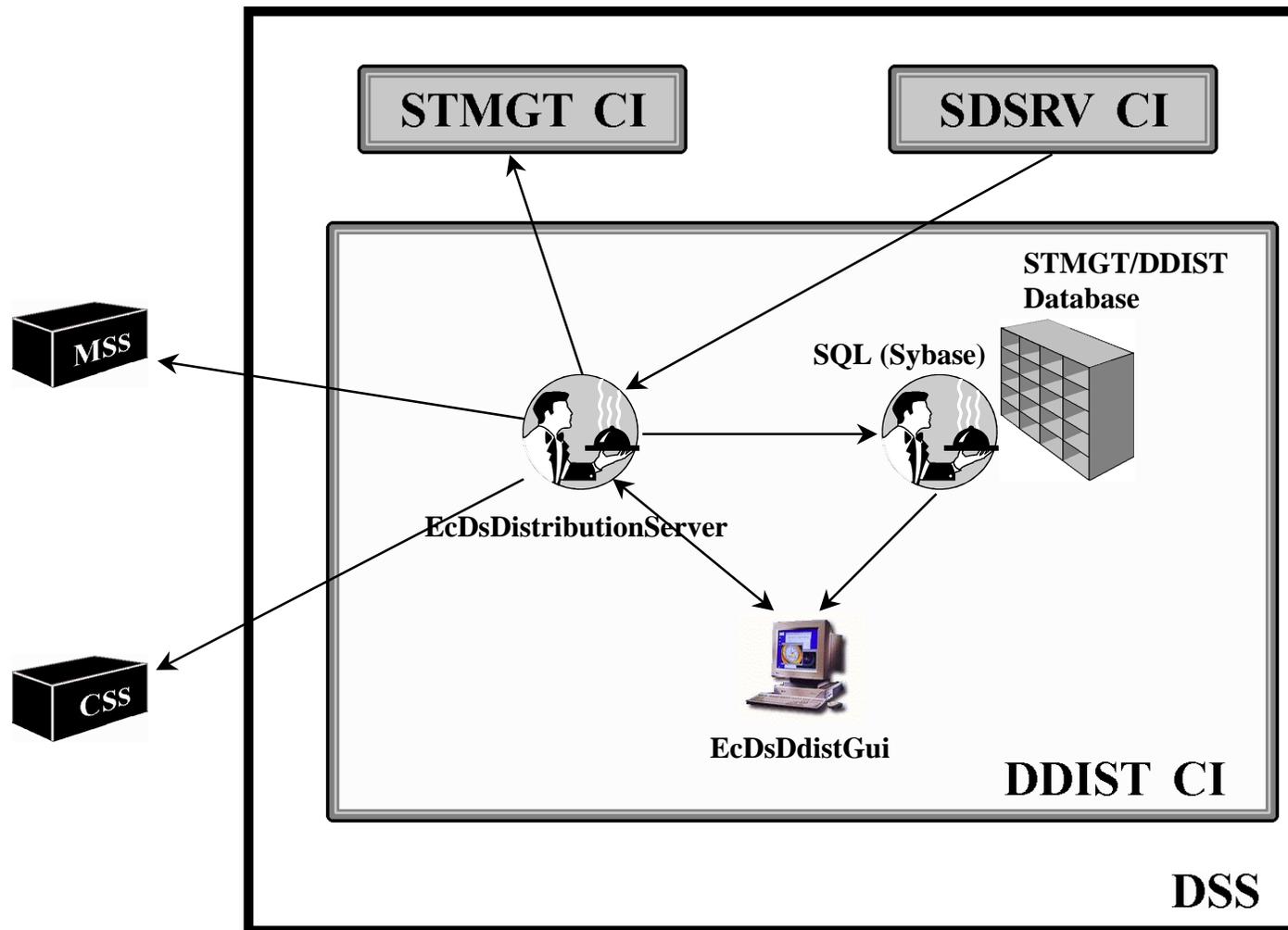
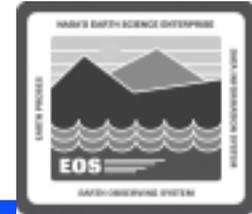
# Distribution Concepts (Cont.)

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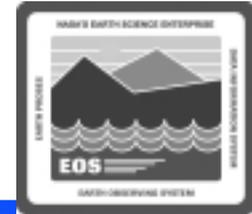


- **DDIST**
  - **Data Distribution Operator GUI (EcDsDdistGui)**
  - **Distribution Server (EcDsDistributionServer)**
  - **Sybase Structured Query Language (SQL) Server**

# Data Server Subsystem: DDIST Architecture and Interfaces

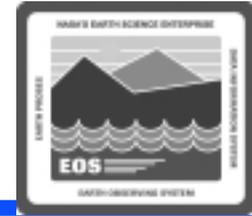


# Distribution Concepts (Cont.)



- **DDIST (Cont.)**
  - **Start-up script used by Ingest/Distribution Technicians (/usr/ecs/MODE/CUSTOM/utilities directory on the Distribution Server host)**
    - » **EcDsDdistGuiStart**
  - **Start-up scripts called by other applications (not normally invoked directly by Ingest/Distribution Technicians)**
    - » **EcDsDataDistributionAppStart**
    - » **EcDsDdStart**
    - » **EcDsDistributionServerStart**
  - **Other scripts**
    - » **DsDdSendMailPI.pl**
    - » **EcDsDdPTEdit.pl**

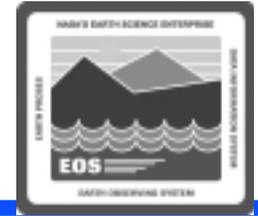
# Distribution Concepts (Cont.)



- **STMGT**
  - **Archive Server (EcDsStArchiveServer)**
  - **Staging Servers**
    - » **Staging Monitor Server (EcDsStStagingMonitorServer)**
    - » **Staging Disk Server (EcDsStStagingDiskServer)**
  - **Resource Managers**
    - » **8mm Server (EcDsSt8MMServer)**
    - » **D3 Server (EcDsStD3Server)**
    - » **Ingest FTP Server (EcDsStIngestFtpServer)**
    - » **FTP Distribution Server (EcDsStFtpDisServer)**
    - » **Print Server (EcDsStPrintServer)**

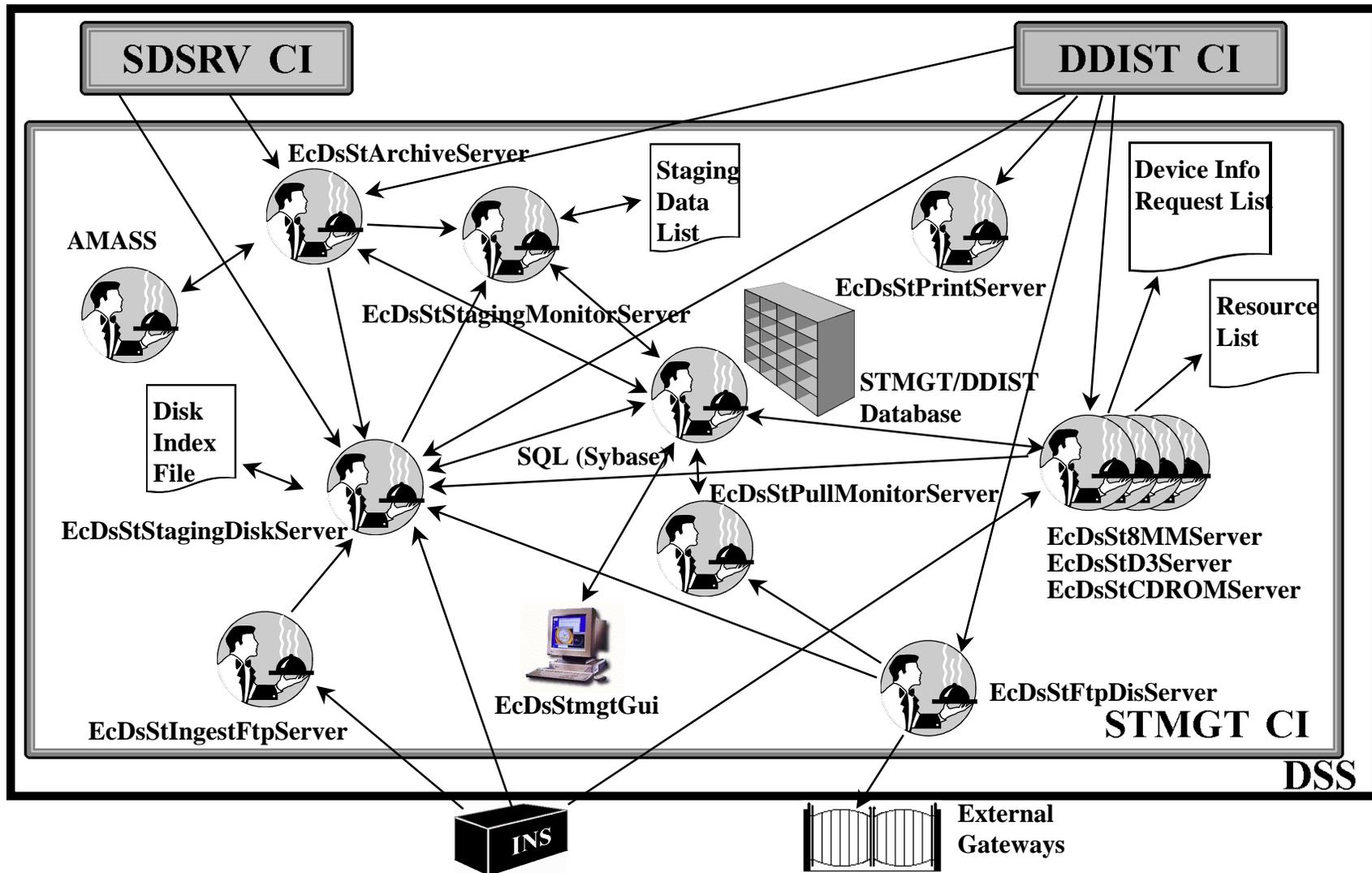
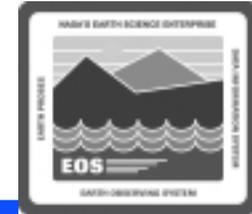
# Distribution Concepts (Cont.)

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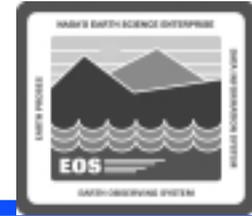
- **STMGT (Cont.)**
  - **Pull Monitor Server (EcDsStPullMonitorServer)**
  - **Storage Management Control GUI (EcDsStmgtGui)**
  - **Sybase SQL Server**
  - **Archival Management and Storage System (AMASS)**

# Data Server Subsystem: STMGT Architecture and Interfaces



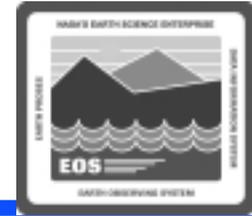
# Distribution Concepts (Cont.)

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- **STMGT (Cont.)**
  - **Start-up script used by Ingest/Distribution Technicians (/usr/ecs/MODE/CUSTOM/utilities directory on the Distribution Server host)**
    - » **EcDsStmgtGuiStart**

# Distribution Concepts (Cont.)

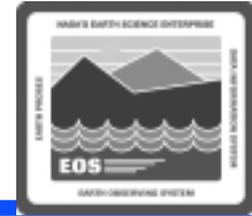


- **STMGT (Cont.)**

- **Start-up scripts called by other applications (not normally invoked directly by Ingest personnel)**

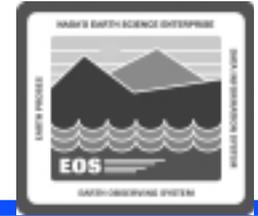
- » **EcDsStIngestFtpServerStart**
    - » **EcDsStStagingDiskServerStart**
    - » **EcDsStStart**
    - » **EcDsStStorageMgmtAppStart**
    - » **EcEcsAppStart**
    - » **EcDsStArchiveServerStart**
    - » **EcDsStFtpDisServerStart**
    - » **EcDsStPullMonitorServerStart**
    - » **EcDsStStagingMonitorServerStart**
    - » **EcDsSt8MMServerStart**
    - » **EcDsStD3ServerStart**
    - » **EcDsStPrintServerStart**

# Distribution Concepts (Cont.)



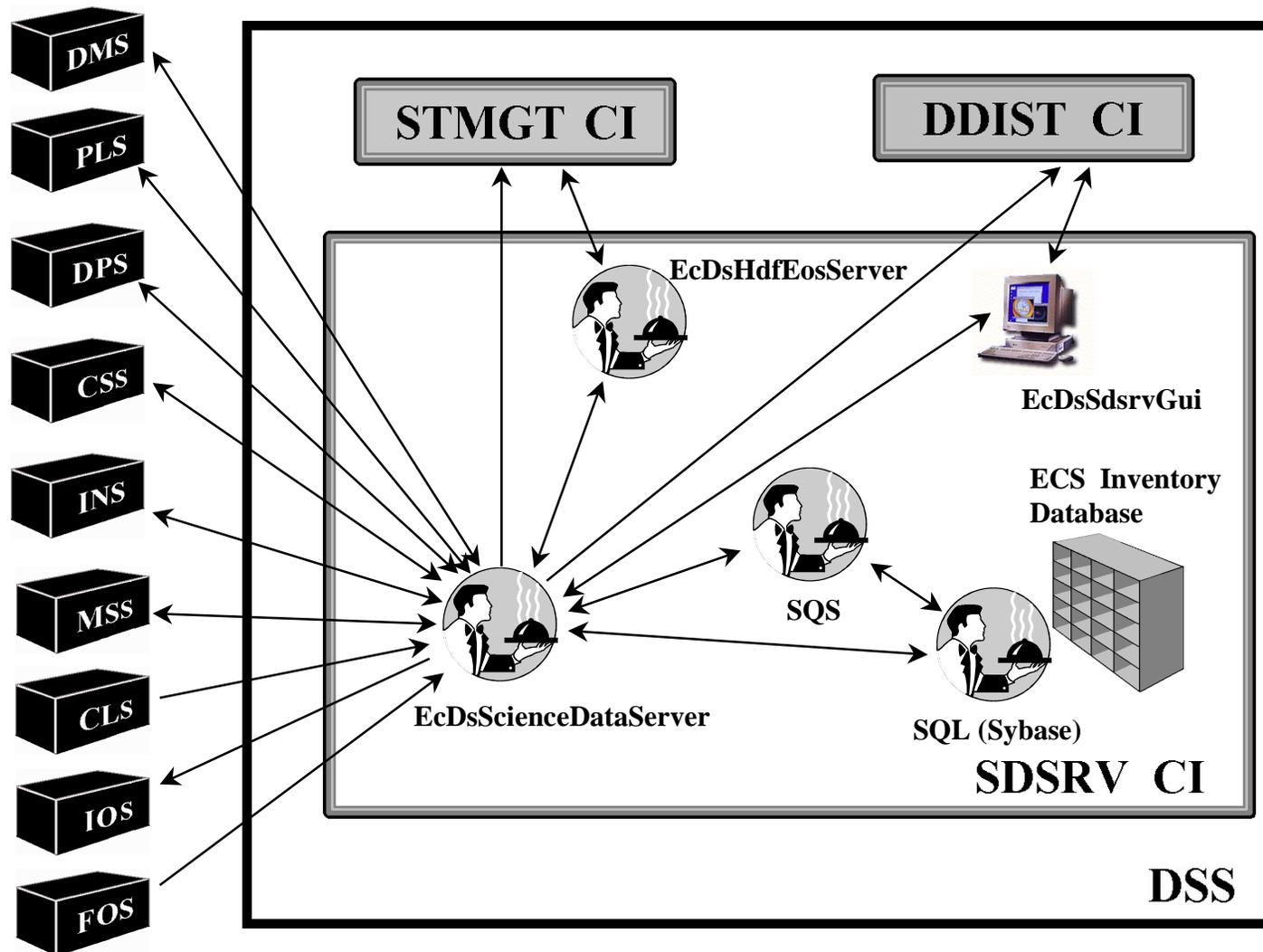
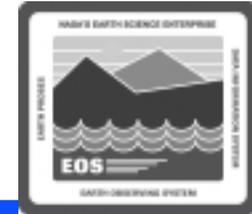
- **STMGT (Cont.)**
  - **Other scripts**
    - » **EcDsCheckArchive**
    - » **EcDsStConfigVolGrps**
    - » **EcDsStDbBuild**
    - » **EcDsStDbDrop**
    - » **EcDsStDbDump**
    - » **EcDsStDbDumpTrans**
    - » **EcDsStDbLoad**
    - » **EcDsStDbLoadTrans**
    - » **EcDsStDbPatch**
    - » **EcDsStFilesPerTapeUtility**
    - » **EcDsStVolGrpCreateMain.pl**

# Distribution Concepts (Cont.)



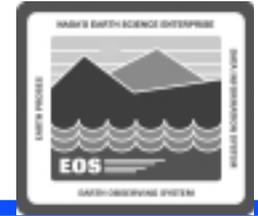
- **SDSRV**
  - **Science Data Server (EcDsScienceDataServer)**
  - **Hierarchical Data Format (HDF) EOS Server (EcDsHdfEosServer)**
  - **Science Data Server GUI (EcDsSdSrvGui)**
  - **Sybase Spatial Query Server (SQS)**
  - **Sybase SQL Server**

# Data Server Subsystem: SDSRV Architecture and Interfaces



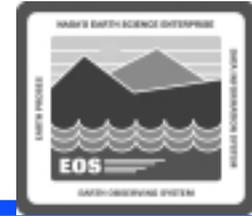
# Distribution Concepts (Cont.)

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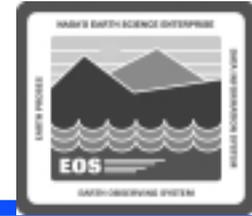
- **SDSRV (Cont.)**
  - **Start-up script (/usr/ecs/MODE/CUSTOM/utilities directory on the SDSRV Server host and the Operations Workstation)**
    - » **EcDsSdSrvGuiStart**

# Distribution Concepts (Cont.)



- **SDSRV (Cont.)**
  - **Other scripts**
    - » **EcTsDsClientDriverStart**
    - » **EcDsSrConvertEvt**
    - » **EcDsSrDbBuild**
    - » **EcDsSrDbDrop**
    - » **EcDsSrDbDump**
    - » **EcDsSrDbLoad**
    - » **EcDsSrDbMigrate**
    - » **EcDsSrDbPatch**
    - » **EcDsSrDbValid**

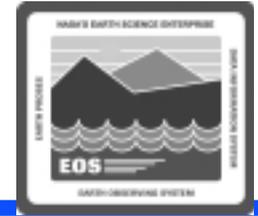
# Distribution Concepts (Cont.)



- **Data Distribution is a process of retrieving archived data and providing the data to requesters in response to the orders they submit**
  - external requesters
  - internal processes
- **Data retrieved from the archives can be distributed to requesters using either of the following three general methods:**
  - Electronic pull
  - Electronic push
  - Hard (physical) media distribution on 8mm tape cartridges

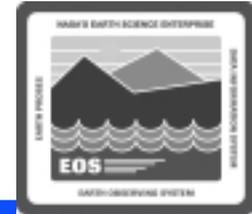
# Distribution Concepts (Cont.)

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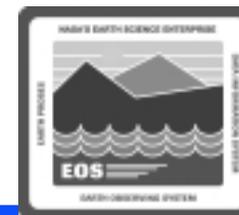
- **Method of data distribution is dictated by the nature of the data distribution request**
  - **Requester specifies the distribution method when ordering the data**

# Distribution Concepts (Cont.)



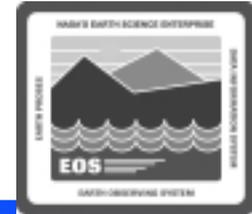
- **Electronic Pull:**
  - Requester searches for a specific data product
  - Requester submits an order for a “pull” of the data using file transfer protocol (ftp)
  - **STMGT** retrieves the specified data from the archive and places it on the pull disk
  - **DDIST** builds an e-mail notification that 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
  - Requester pulls (transfers) the data from the Data Server pull disk to the requester’s own system
  - Data are deleted from the pull disk in accordance with DAAC policy

# Distribution Concepts (Cont.)



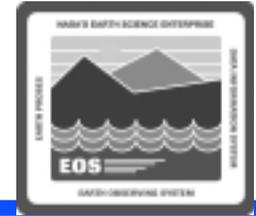
- **Electronic Push:**
  - Requester searches for a specific data product
  - Requester submits an order for ftp “push” of the data
  - Data are retrieved from the archive, placed on the Data Server staging disk and pushed (transferred) to the requester's system
  - DDIST builds an e-mail notification 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
  - Data are deleted from the staging disk in accordance with DAAC policy

# Distribution Concepts (Cont.)



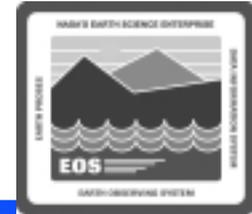
- **Physical Media Distribution:**
  - Requester searches for a specific data product
  - Requester submits an order for shipment of data on 8mm tape cartridge
  - Data are retrieved from the archive, placed on the appropriate volume of a Data Server staging disk
  - Data are transferred to an 8mm tape cartridge
  - Ingest/Distribution Technician has the tape packaged and shipped to the requester
  - 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
  - Data are deleted from the staging disk in accordance with DAAC policy

# Launching Data Distribution and Storage Management GUIs



- **Software applications associated with Data Distribution**
  - Data Distribution Operator GUI (EcDsDdistGui)
  - Distribution Server (EcDsDistributionServer)
  - Sybase SQL Server
- **Data Distribution depends on a number of related servers, especially...**
  - Science Data Server servers
  - Storage Management servers

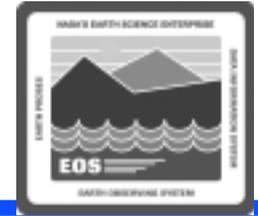
# Launching Data Distribution and Storage Management GUIs (Cont.)



- **Software applications 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)**

# Launching Data Distribution and Storage Management GUIs (Cont.)

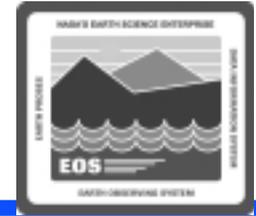
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- **Software applications associated with Storage Management (Cont.)**
  - Pull Monitor Server (EcDsStPullMonitorServer)
  - Sybase SQL Server
  - Archival Management and Storage System (AMASS)

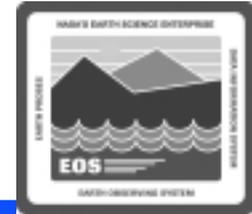
# Launching Data Distribution and Storage Management GUIs (Cont.)

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- **Use UNIX command line to gain access to GUIs**
- **Procedure (Launching the Data Distribution Operator and Storage Management Control GUIs)**
  - **Log in to the distribution server GUI host using secure shell**
  - **Change directory to the utilities directory**
  - **Enter the command to start the Data Distribution Operator GUI**
  - **Enter the command to start the Storage Management Control GUI**

# Data Distribution Operator GUI: Distrib'n Requests Tab



Data Distribution Operator GUI - TS1

File Selected Edit View Options Help

Distrib'n Requests System Requests Tape IDs Preamble Editor Event Logging

Data Distribution - Track Activity

Data Distribution Requests Items: 4

Mod	Request ID	Requester	Esdt Type	Media	Priority	State
<input type="checkbox"/>	7912251625318	cnts1	AST_08.001	FtpPush	Low	Shipped
<input type="checkbox"/>	83164445495722	cnts1	TEST01.001	FtpPush	Low	Suspended
<input type="checkbox"/>	83164537188871	cnts1	TEST01.001	FtpPush	Low	Suspended
<input type="checkbox"/>	83164621328724	cnts1	TEST01.001	FtpPush	Low	Suspended

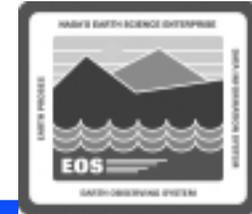
Find

Change Priority: Xpress Apply Refresh

Mark Shipped Cancel Suspend Resume Suspend All Resume All

Operator Messages

# Storage Management Control GUI: Storage Config. Tab



Storage Management Control

File Options Backup Help

Sunday March 19, 2000 12:48:18 PM Mode: TS2

Storage Config. Resource Schedule Cache Stats. Storage Events

Configuration Parameter Reporting

Server Type Information

Server Type	# of Servers	Description
3480/3490	0	3480/3490 Device Server
4MM TAPE	0	4MM Tape Device Server
8MM TAPE	1	8MM Tape Device Server
9TRACK	0	9 Track Device Server
ARCHIVE	3	Archive Server
CDR	0	CDR Device Server
D3	1	D3 Device Server
DISTRIBUTION FTP	3	Distribution FTP Server
INGEST FTP	3	Ingest FTP Server
ORBITER	0	Orbiter Device Server

View Servers

Server Information

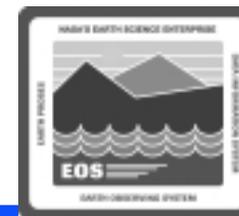
Server ID	Server Status
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Add... Modify Delete View Volume Group Info View Devices

Operator Messages

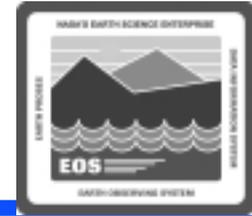
03/19/00 12:46:33 Old database entries were successfully purged.

# Distribution Request Operations



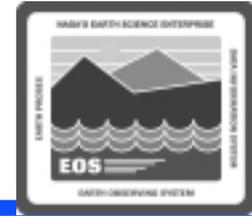
- **Data Distribution activities are monitored and controlled using....**
  - **Data Distribution Operator GUI**
  - **Storage Management Control GUI**
- **DAAC Ingest/Distribution Technician monitors and manages data distribution requests primarily via the Data Distribution - Track Activity window of the Data Distribution Operator GUI**

# Monitoring/Controlling Data Distribution Requests (Cont.)



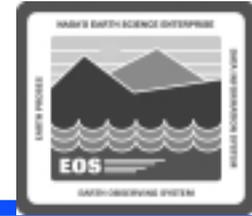
- From the Data Distribution - Track Activity window the DAAC Ingest/Distribution Technician can perform the following functions:
  - View data distribution requests
  - Change the priority of a selected distribution request
  - Cancel or suspend a request
  - Resume processing of a suspended request
  - Filter on all or specific requests by...
    - » Request ID
    - » Requester
    - » Media Type
    - » State (current status)

# Monitoring/Controlling Data Distribution Requests (Cont.)



- **The Data Distribution - Track Activity window displays the following information (plus additional information) for each data distribution request:**
  - Request ID
  - Requester
  - ESDT Type
  - Media type
  - Priority
  - State
  - # of Files
  - Total Size of the request in Mbytes
  - Order ID

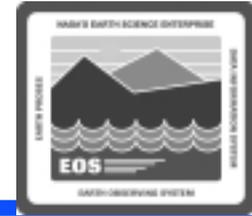
# Monitoring/Controlling Data Distribution Requests (Cont.)



- **Procedure**

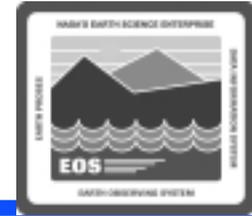
- **Configure data distribution polling (subordinate procedure)**
- **Observe data distribution request information displayed in the Data Distribution Requests list**
- **Filter requests as necessary (subordinate procedure)**
- **Change the priority of distribution requests (subordinate procedures)**
- **Change the status of distribution requests (subordinate procedures)**
  - » **Suspend requests**
  - » **Resume processing of suspended requests**
  - » **Cancel requests**
  - » **Process 8mm Tapes for Shipment**

# Configuring Data Distribution Polling



- **Refresh Options Dialogue from the Data Distribution Operator GUI Options menu is used for...**
  - **switching the Data Distribution database polling function on or off**
  - **modifying DDist Polling Rate**
    - » **specifies how often (in seconds) the system updates the information displayed in the Data Distribution - Track Activity window**
  - **modifying Error Retry Rate**
    - » **specifies the amount of time (in seconds) that the system waits before trying to poll the Data Server after a failed attempt**

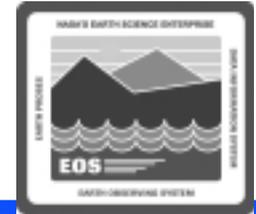
# Configuring Data Distribution Polling (Cont.)



- **Procedure**

- **Select Options → System Settings from the pull-down menu of the Data Distribution Operator GUI**
- **Click on the DDist Polling On button to change the state of polling**
- **Enter value for the polling rate**
  - » **default value is 30 seconds**
- **Enter value for the error retry rate**
- **Click on the Ok button to apply the values and dismiss the dialogue box**

# Refresh Options Dialogue Box



Refresh Options

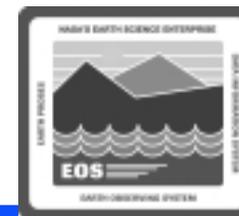
DDist Polling On

DDist Polling Rate: [30] secs

Error Retry Rate: [30000] secs

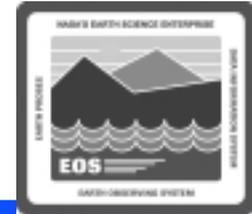
Ok Cancel

# Filtering Data Distribution Requests



- **Filtering Data Distribution Requests**
  - **Data distribution requests can be filtered with respect to the following criteria:**
    - » **request ID**
    - » **requester**
    - » **media type**
    - » **state**
  - **Procedure**
    - » **Select View → Filter**
    - » **Select filter criteria**
    - » **Click on the OK button to implement the selections and dismiss the dialogue box**

# Distribution Filter Requests Dialogue Box



**Distribution Filter Requests**

Request ID

Requester

All Requests

**Media Type:**

CD-ROM       D3

DLT       Electronic Push

8 mm       Electronic Pull

**State:**

Pending       Suspended

Active       Suspended with Errors

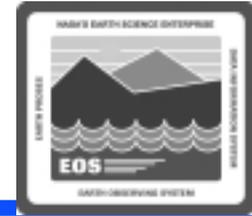
Staging       Waiting for Shipment

Transferring       Shipped

Cancelled       Failed

# Changing the Priority of Data Distribution Requests

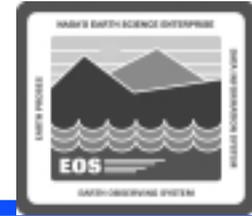
---



- **Procedure**

- **Highlight the distribution request to be assigned a different priority**
- **Select the new priority using the Change Priority button**
- **Click on the Apply button to implement the priority change**

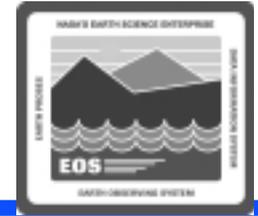
# Suspending/Resuming Data Distribution Requests



- Under certain circumstances it may be advisable to suspend the processing of a data distribution request and resume it at a later time
- Procedure
  - Click on the Suspend All button to suspend all distribution requests
  - Select the individual distribution request to be suspended and click on the Suspend button to suspend a single distribution request
  - Click on the Resume All button to resume processing of all suspended distribution requests
  - Select the individual distribution request for which processing is to be resumed and click on the Resume button to resume processing of a single distribution request

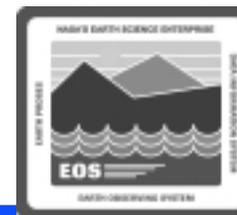
# Canceling Data Distribution Requests

---



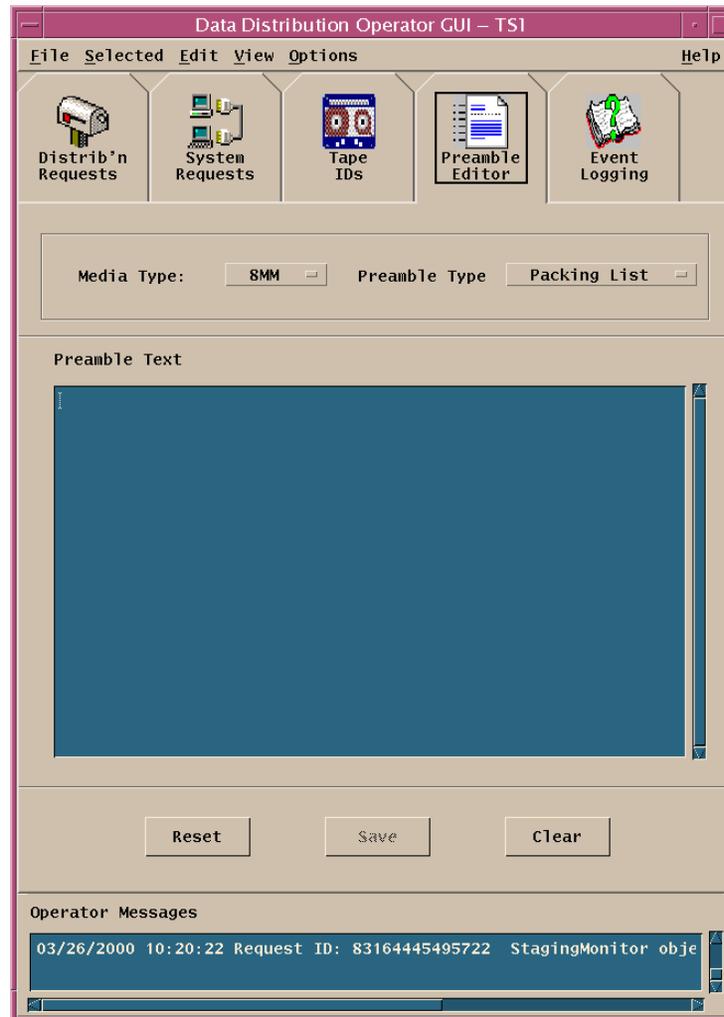
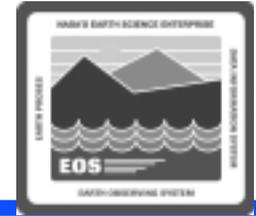
- **Sometimes it may be necessary to cancel the processing of a data distribution request**
- **Procedure**
  - **Select the distribution request to be canceled**
  - **Click on the Cancel button**

# Modifying Preambles

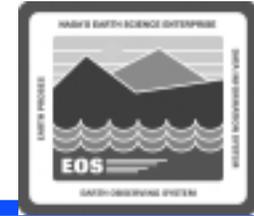


- **Preamble Editor tab on the Data Distribution Operator GUI allows the Ingest/Distribution Technician to review and/or modify the text of preambles to the following types of documents:**
  - Packing list
  - Successful e-mail
  - Failed e-mail
- **Preambles for different types of distribution are accessible in the `/usr/ecs/MODE/CUSTOM/cfg` directory on the Distribution Server host**
  - Ftp pull
  - Ftp push
  - Physical media distribution (e.g., 8mm)

# Data Distribution Operator GUI: Preamble Editor Tab



# Physical Media Operations (Cont.): FTP Push Failed E-Mail Preamble



Data Distribution Operator GUI – TSI

File Selected Edit View Options Help

Distrib'n Requests System Requests Tape IDs Preamble Editor Event Logging

Media Type:  Preamble Type:

Preamble Text

Thank you for using the Earth Observing System Distribution System. We apologize for not being able to distribute the requested data. For more information on your request contact the DAAC.

Thank You!

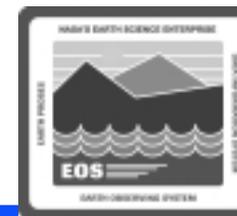
I

Reset Save Clear

Operator Messages

03/26/2000 10:20:22 Request ID: 83164445495722 StagingMonitor obje

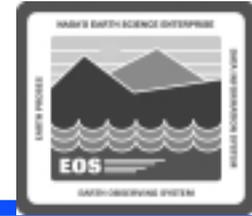
# Modifying Preambles (Cont.)



- **Procedure**
  - **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**
  - **Save the edited preamble**

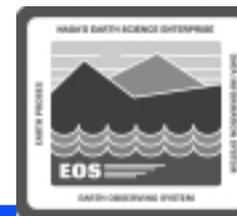
# Preamble Save Confirmation Dialogue Box

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# Physical Media Operations

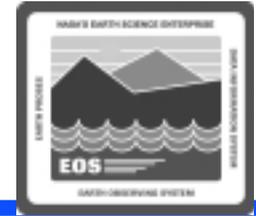
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- **Media operations currently consist of the following tasks:**
  - **Labeling Tape Cartridges with Bar Codes**
  - **Setting Up the 8mm Tape Stackers**
  - **Unloading and Loading Tapes (8mm)**
  - **Correcting Tape Faults**
  - **Printing Labels**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

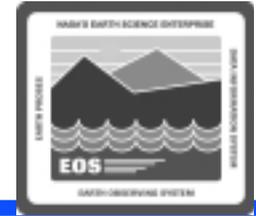
# Labeling Tape Cartridges with Bar Codes

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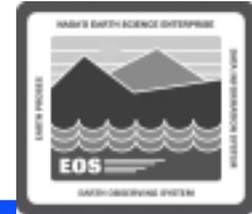
- **Bar-code labels are either purchased or printed for the 8mm tape cartridges**
- **When boxes of new 8mm tapes have been delivered to the distribution area, the Ingest/Distribution Technician removes the tapes from their boxes and affixes a bar-code label to the label area on the edge of each tape**

# Setting Up the 8mm Stackers



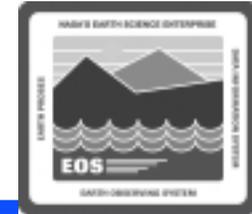
- **DAAC Ingest/Distribution Technician should check the stackers at the beginning of each shift and throughout the day to ensure that tapes are available for the distribution process to fill hard media distribution requests**
- **Setting up the 8mm stackers involves the following activities:**
  - **Define the tape groups (by stacker sleeve) if necessary**
  - **Record the bar code of each tape loaded in a particular location in a sleeve**
  - **Identify the stacker into which each sleeve is loaded**

# Setting Up the 8mm Stackers (Cont.)



- **Procedure**
  - **Select the Resource Schedule tab of the Storage Management Control GUI**
  - **Set up a new tape group (using the Manage Tapes function) for the tape(s) to be put in the stacker**
  - **Load tapes in the sleeve and stacker by performing the procedure for Unloading and Loading Tapes**
  - **If another tape group is already assigned to the stacker to be used, unassign that tape group**
  - **Assign the tape group to the stacker**
  - **Put the stacker on line**
  - **Put the stacker drives on line**
  - **Resume any suspended requests**

# Storage Management Control GUI: Resource Schedule Tab



Storage Management Control

File Options Backup Help

Sunday March 19, 2000 12:59:42 PM Mode: TS2

Storage Config. Resource Schedule Cache Stats. Storage Events

Storage Management - Resource and Device Scheduling

Resource Pool Information

Resource Pool Name	Number Devices	Number Online Devices	Current Queued Requests
SMM TAPE	2	2	0

Schedule Resource View Requests View All Requests

Resource Information

Request ID	Resource	Device Name	Device Status	Operational Status	Current Status	Current Operati

Schedule Device Stacker & Drive Status View Tapes Manage Tapes Find Tapes

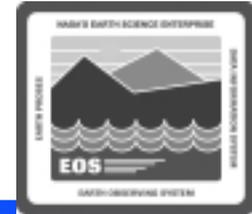
Tape Information

Tape ID	Tape Location	Slot Number	Tape Status

Operator Messages

03/19/00 12:46:33 Old database entries were successfully purged.

# Storage Management Control GUI: Manage Tape Groups Window



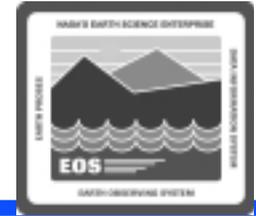
Manage Tape Groups

Tape Groups

Tape Group ID	Number of Slots	Media Assigned Type	Assigned Stacker
Training	10	8MM	

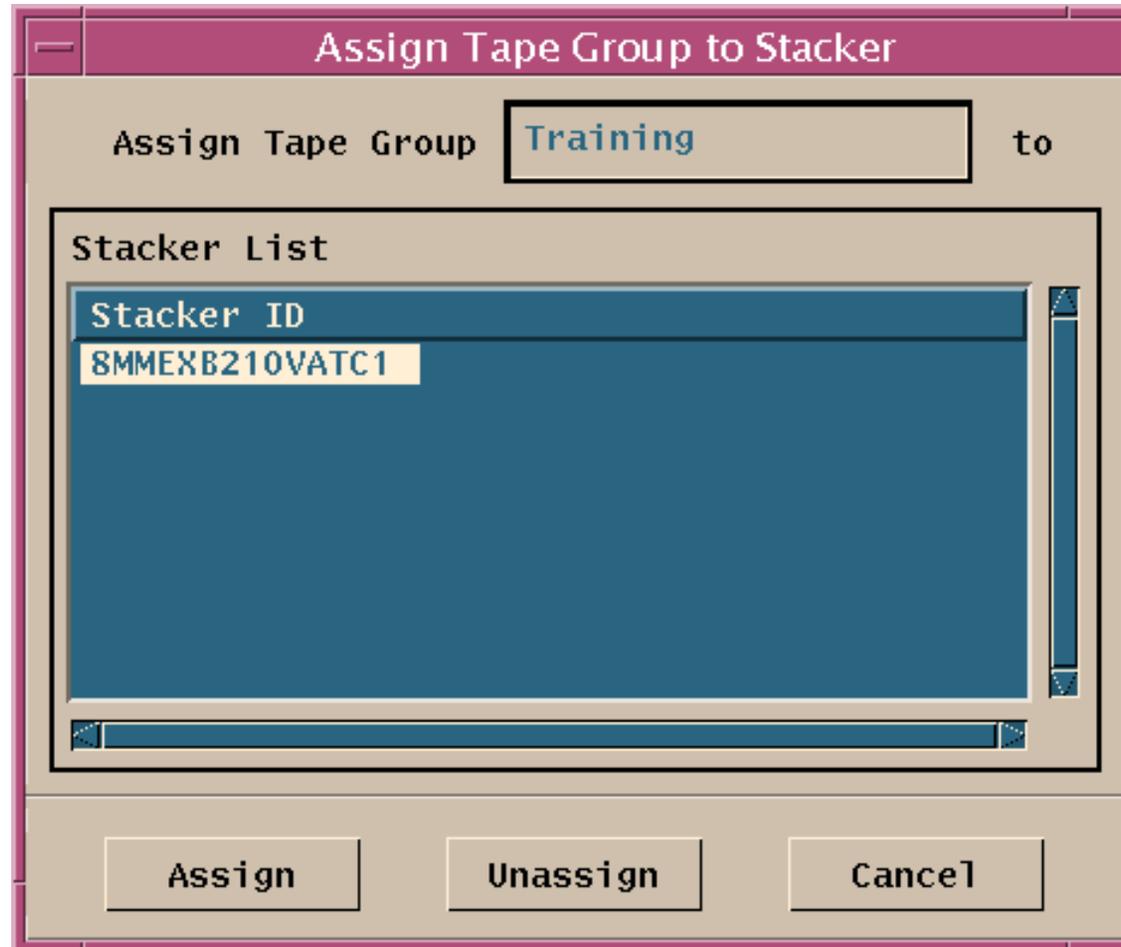
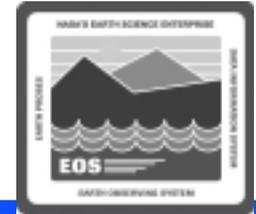
New Tape Group    Delete Tape Group    Configure Tapes    Assign Stacker    Resume Activity    Inventory Stacker    Close

# Storage Management Control GUI: New Tape Group Window

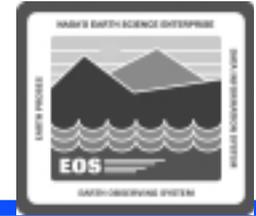
A screenshot of a dialog box titled "New Tape Group". The dialog box has a light beige background and a dark purple title bar. It contains three input fields: "Tape Group ID:" followed by a text box; "Number of Slots:" followed by a spin box with up and down arrow buttons; and "Media Type:" followed by a dropdown menu with a downward arrow button. At the bottom of the dialog box, there are three buttons: "Ok", "Apply", and "Cancel".



# Storage Management Control GUI: Assign Tape Group to Stacker



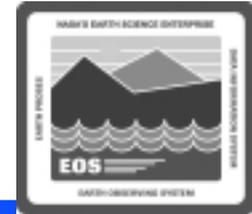
# Unloading and Loading Tapes



- **Procedure**

- **Verify that there are no active 8mm distribution requests in the system**
- **Take the stacker drives off line**
- **Take the stacker off line**
- **Unload the stacker**
- **Load the stacker with tapes**

# Storage Management Control GUI: Schedule Stacker Drive



Schedule Stacker/Drive

Stacker Information

Stacker ID	Medium	Status	Error Count	Slots Total/On-Line	Drives Total/On-Line
8MMEXB210VATC1	8MM	Online	0	11	2

Find

Select All      Status       Slot Status

Drive Information

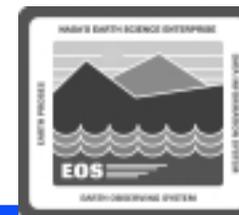
Device Name	Status	Current Status	Stacker ID	Description
8MMEXB210VATC11	Online	Unallocated	8MMEXB210VATC1	Tape Drive 1
8MMEXB210VATC12	Online	Unallocated	8MMEXB210VATC1	Tape Drive 2

Find

Select All      Status       Current Status

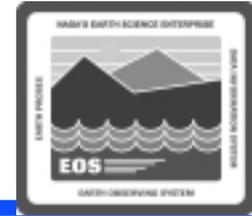
Close

# 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
  - restarts the specific operation on a new tape
- **Correcting a tape fault involves replacing the faulty tape cartridge**
  - 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

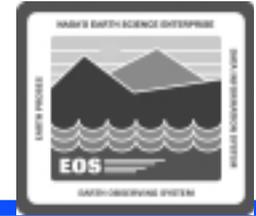
# Printing Labels



- **Procedure**

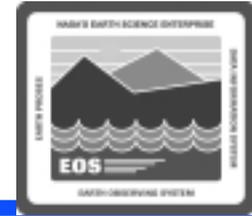
- **Start the Zebra Bar-One Design Program on the PC**
- **Open the label file**
- **Modify the file if necessary**
- **Set up the file to print**
- **Print the file**

# Processing 8mm Tapes for Shipment



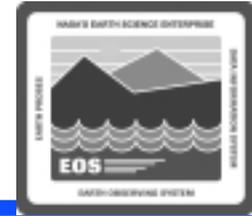
- **The Tape ID's tab of the Data Distribution Operator GUI**
  - allows the DAAC Ingest/Distribution Technician to determine which tape(s) on which stacker(s) contain(s) the data specified in a particular data distribution request

# Processing 8mm Tapes for Shipment (Cont.)



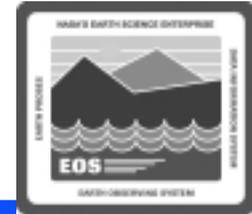
- **Tape ID's tab of the Data Distribution Operator GUI**
  - **Information displayed in the Distribution Tape Requests Items window:**
    - » Request ID
    - » Media Type
    - » # of Tapes
    - » # of Tapes Completed
    - » State
  - **Information displayed in the Tape ID's Associated with Request window:**
    - » Tape ID's
    - » Status
    - » Location

# Processing 8mm Tapes for Shipment (Cont.)



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

# Data Distribution Operator GUI: Tape ID's Tab



Data Distribution Operator GUI – TS1

File Selected Edit View Options Help

Distrib'n Requests System Requests **Tape IDs** Preamble Editor Event Logging

Distribution Tape Requests Items: 0

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

Find

Tape ID:  Find

Tape ID's Associated with Request

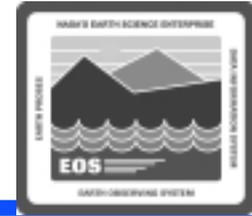
Tape ID's	Status	Location
-----------	--------	----------

Find

Operator Messages

03/26/2000 10:20:22 Request ID: 83164445495722 StagingMonitor obje

# Storage Management Control GUI: Tape Information Window



**Tape Information**

Tape ID:

Location of Tape:  
(Optional Entry)

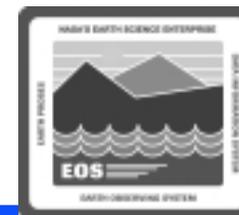
Tape Status:

Request ID:

Tape Group ID:

**Tape Group Information**

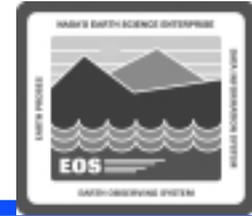
# Performing QC of Hard Media



- **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**
  - **QC policy will have the goal of achieving the proper balance of throughput with respect to QC processing requirements**

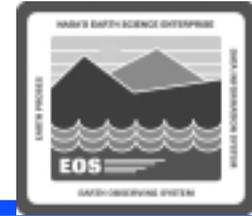
# Packaging Hard Media Products for Shipment

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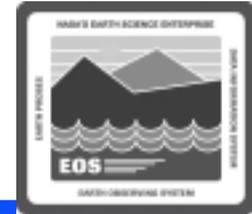
- After the contents of the hard media products have been verified and a packing list has been printed, the DAAC Ingest/Distribution Technician has the products packaged for shipment
- Packaging and shipping are accomplished in accordance with local DAAC policy

# Deleting Files from Cache and Setting Cache Thresholds



- **Configuring Storage Management Polling (Storage Management Control GUI Options menu)**
  - **Switch 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]**
  - **Modify parameters relevant to the Operator Notification Timer**
    - » **Database Polling Rate**
    - » **Error Retry Rate**
  - **Modify parameter relevant to the Cache Statistics Timer**
    - » **Database Polling Rate**

# Storage Management Control GUI: Session Settings Dialogue



Session Settings

Operator Notification Timer

Polling

Database Polling Rate:  secs

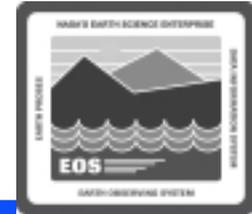
Error Retry Rate:  secs

Cache Statistics Timer

Polling

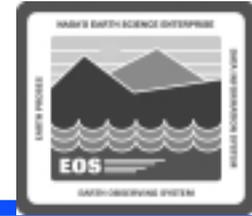
Database Polling Rate:  secs

# Deleting Files from Cache and Setting Cache Thresholds (Cont.)



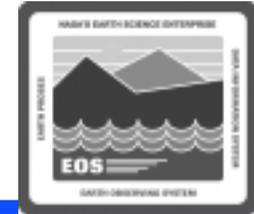
- **Configuring Storage Management Polling: Procedure**
  - **Select Options → System Settings from the pull-down menu on the Storage Management Control GUI**
  - **Set the Operator Notification Timer and/or Cache Statistics Timer to the appropriate polling states (off or on) if applicable**
  - **Enter the database polling rate for the Operator Notification Timer and/or Cache Statistics Timer if applicable**
  - **Set the error retry rate for the Operator Notification Timer if applicable**
  - **Apply the modifications**

# Deleting Files from Cache and Setting Cache Thresholds (Cont.)



- **Cache Stats. tab on the Storage Management Control GUI**
  - Displays all of the files that are in the cache areas, including the Pull Monitor and other staging areas
  - Presentation modes
    - » Graphical view
    - » Text view
  - Displays general statistics on the selected cache
  - 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

# Storage Management Control GUI: Cache Stats. Tab (Graphical View)



Storage Management Control

File Options Backup Help

Sunday March 26, 2000 02:44:55 PM Mode: TS1

Storage Config. Resource Schedule Cache Stats. Storage Events

Cache Id: [ ] Graphics [ ]

Cache Space Expired Files

Available Not Expired  
Used Expired

Cache Information

Exp. Flag	Del. Flag	Filename	File Size (Blocks)	Reference Count	Insertion Time
-----------	-----------	----------	--------------------	-----------------	----------------

Mark Delete Unmark Delete Purge Change Threshold

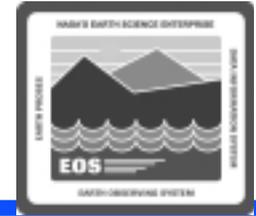
Operator Messages

03/26/00 14:20:22 Old database entries were successfully purged.



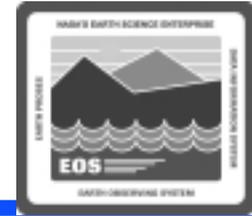
# Deleting Files from Cache and Setting Cache Thresholds (Cont.)

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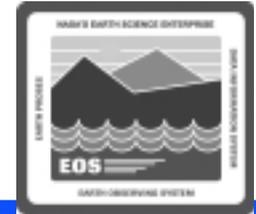
- **Deleting Files from Cache: Procedure**
  - **Select the Cache Stats. tab on the Storage Management Control GUI**
  - **Select the cache containing the files to be deleted**
  - **Select the file to be deleted from the cache**
  - **Click on the Mark Delete button**
  - **Click on the Purge button**

# Deleting Files from Cache and Setting Cache Thresholds (Cont.)



- **Setting Pull Monitor Cache Thresholds**
  - Use the Cache Stats. tab (Storage Management Control GUI) to modify the fault and warning thresholds for the Pull Monitor cache
- **Setting Pull Monitor Cache Thresholds: Procedure**
  - Select the Cache Stats. tab on the Storage Management Control GUI
  - Select the Pull Monitor cache
  - Click on the Change Threshold button
  - Enter type the new threshold value(s) (as percent) in the appropriate field(s) (i.e., Fault Disk Level or Warning Disk Level)
  - Apply the modifications

# Storage Management Control GUI: Change Threshold Dialogue



Change Threshold

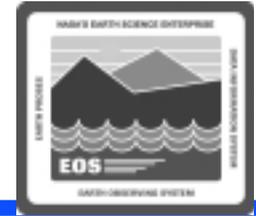
Disk Capacity

Fault Disk Level: 85.000000

Warning Disk Level: 65.000000

Ok Apply Cancel

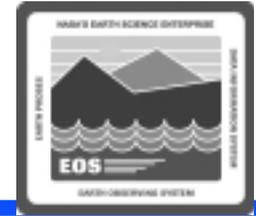
# Viewing Storage Management Event Log Information



- **Storage Events tab on the Storage Management Control GUI**
  - **Search the Event Log**
  - **Obtain reports on events that have occurred in Storage Management**
  - **Review information concerning a particular Storage Management event**
    - » **Number**
    - » **Date**
    - » **Level**
    - » **Type**
    - » **Message**

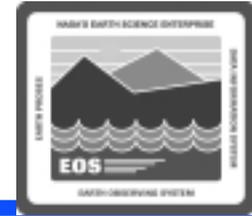
# Viewing Storage Management Event Log Information

---



- **Storage Events tab (Cont.)**
  - **Search criteria (can be used individually or in combination to view entries in the Event Log)**
    - » **Date Interval**
    - » **Event Type**
    - » **Event Level**
    - » **Message**

# Storage Management Control GUI: Storage Events Tab



Storage Management Control

File Options Backup Help

Sunday March 26, 2000 03:02:33 PM Mode: TS1

Storage Config. Resource Schedule Cache Stats. Storage Events

Event Log Search Parameters

Begin 03 / 26 / 2000

Date Interval: End 03 / 26 / 2000

Event Type: Any Event Level: Any

Message:

Search Clear Parameters

Search Records Found: 0

Event Log

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

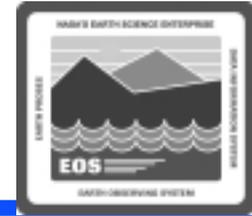
Purge Selected

Operator Messages

03/26/00 14:52:52 Warning: The GUI could not connect to the Pull Mor

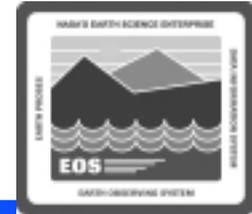
# Viewing Storage Management Event Log Information

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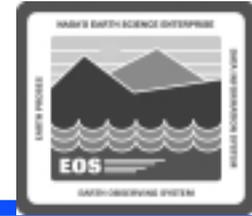
- **Viewing Storage Management Event Log Information: Procedure**
  - **Select the Storage Events tab of the Storage Management Control GUI**
  - **Enter the defining characteristic(s) (e.g., time period, event type, event level) of the event**
  - **Click on the Search button to search the event log for events that meet the specified criteria**
  - **Observe event information displayed in the Event Log window**

# Tuning System Parameters



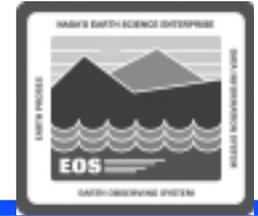
- **System parameters may be subject to control by Configuration Management (CM)**
  - When making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable)
- **Two types of places where parameters can be set:**
  - Storage Management and Data Distribution database
  - Configuration files
- **In general the system parameters in the database are modified using the GUI**
- **System parameters specified in configuration files are modified by editing the appropriate configuration file**

# Tuning System Parameters (Cont.)



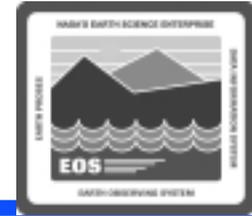
- **Configuration Registry**
  - **Scheduled for the second delivery of Release 5B**
  - **Significant change in the management of ECS configuration parameters**
    - » **Configuration Registry Server will provide a single interface for retrieving configuration attribute-value pairs for ECS servers from the Configuration Registry Database, via a Sybase server**
    - » **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**
    - » **When ECS servers are started they will access the Configuration Registry Database to obtain needed configuration parameters**

# Tuning System Parameters (Cont.)



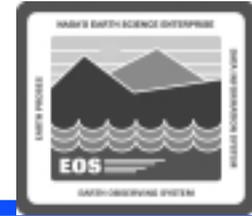
- **Configuration Registry (Cont.)**
  - Database Administrator will have access to a Configuration Registry GUI for viewing and editing configuration data in the database
  - It will be necessary to coordinate with the Database Administrator when changes to configuration parameters are needed
  - Changes to configuration-controlled parameters are subject to approval through the site CM process

# Tuning System Parameters (Cont.)



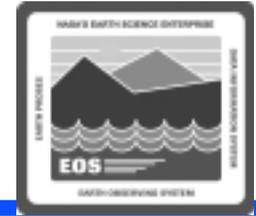
- **Tuning Parameters specified in configuration files**
  - **AppLogSize**
    - » **Maximum size of the application log (ALOG) file for the application in whose configuration file the parameter is specified**
  - **AppLogLevel**
    - » **Level of detail provided in the ALOG file for the application in whose configuration file the parameter is specified**
    - » **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**
    - » **Setting of “3” provides the most data**

# Tuning System Parameters (Cont.)



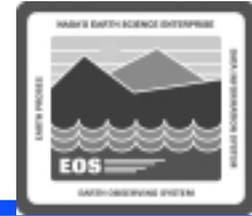
- **Tuning Parameters specified in configuration files (Cont.)**
  - **DBMaxConnections**
    - » Maximum number of database connections allowed the application in whose configuration file the parameter is specified
  - **FtpPushThreshold**
    - » Maximum number of bytes per distribution request
    - » 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
    - » When a distribution request exceeds a threshold (FtpPushThreshold, FtpPullThreshold, or 8MMThreshold), the request is suspended in DDIST

# Tuning System Parameters (Cont.)



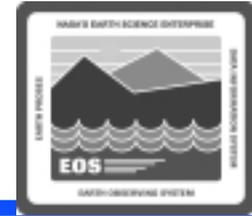
- **Tuning Parameters specified in configuration files (Cont.)**
  - **FtpPullThreshold**
    - » Maximum number of bytes per distribution request
  - **8MMThreshold**
    - » Maximum number of tapes per distribution request
  - **CHECKSUMSTATUS**
    - » Check-summing can be enabled or disabled for either acquires or inserts
    - » Checksum calculation is a highly time-consuming process, and makes intensive use of central processing unit (CPU) resources
    - » Enabling check-summing has significant effects on both archive server and staging monitor server

# Tuning System Parameters (Cont.)



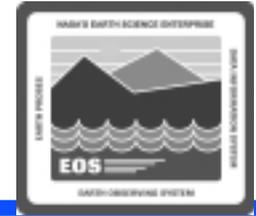
- **Tuning Parameters specified in configuration files (Cont.)**
  - **ListenThreads**
    - » **Number of listen threads assigned to the application in whose configuration file the parameter is specified**
    - » **Pull monitor is single-threaded (one listen thread)**
    - » **Staging disk server, 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**

# Tuning System Parameters (Cont.)



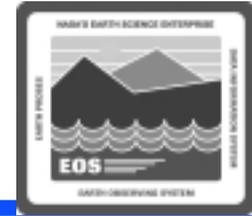
- **Tuning Parameters specified in configuration files (Cont.)**
  - **ListenThreads (Cont.)**
    - » **IngestFtpServer has a maximum of 125 listen threads that is derived from the number of Ingest granule servers (EclnGran) times the number of listen threads per InGran server (the maximum number of 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; one (1) listen thread would be adequate in most situations**

# Tuning System Parameters (Cont.)



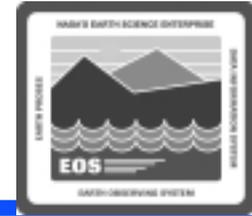
- **Tuning Parameters specified in configuration files (Cont.)**
  - Default and adjusted values vary from site to site
  - Values listed in the table in the text are provided as examples only
  - Refer to the appropriate 920- TDx- 013 Custom Code Configuration Parameters document
    - » Documents are available at URL <http://cmdm.east.hitc.com/baseline/> under “Technical Documents”

# Modifying System Parameters in Configuration Files



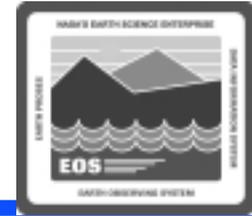
- **Procedure**
  - Access the command shell
  - Set the **DISPLAY** environmental variable
  - Log in to the appropriate host using secure shell
  - Change directory to the directory containing the applicable **.CFG** file
  - Use the **vi** editor to find the parameter to be changed and replace the existing value with the desired value
  - Save the edited file

# Modifying System Parameters in Configuration Files (Cont.)



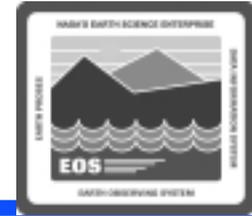
- **When the value assigned to a parameter in a configuration file has been changed and saved, the modified value does not take effect until the affected server has been restarted**
- **Example**
  - **Debug level for the Distribution Server log has been changed from “2” to “3” in the Distribution Server configuration file**
  - **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)**

# Modifying System Parameters in the Database



- **When making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable)**
- **Staging Area Size and Read-Only Cache Size**
  - **The DsStConfigParameter table in the Storage Management and Data Distribution database**
    - » **TotalSpace column contains the total size of raid allocated to the associate staging monitor and staging disk combined**
    - » **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**

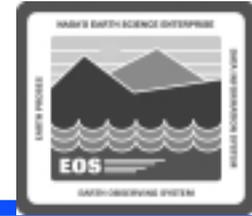
# Modifying System Parameters in the Database (Cont.)



- **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)
    - » How large is the read-only cache
  - When either area is exhausted, requests hang until space becomes available
  - The parameters are modified using the Storage Management Control GUI

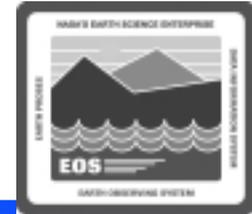
# Modifying System Parameters in the Database (Cont.)

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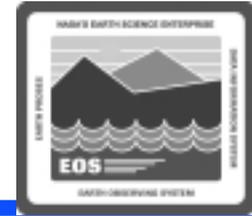
- **Staging area size and read-only cache size parameters (Cont.)**
  - **Pull area read-only cache size defaults to 2,000,000,000 (blocks)**
    - » **There is no need for much user space because the user files are symbolically linked back to the files in the read-only cache**

# Modifying System Parameters in the Database (Cont.)



- **Staging area size and read-only cache size parameters (Cont.)**
  - **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 greater the need for staging disk, the smaller the size of the read-only cache**
    - » **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)**

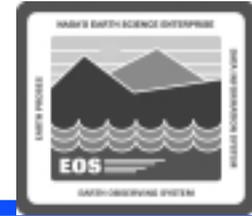
# Modifying System Parameters in the Database (Cont.)



- **Setting the FTP Pull Expiration Time**
  - **DsStConfigParameter table in the Storage Management and Data Distribution database**
    - » **PullExpirationTime column**
    - » **Value listed for a particular pull monitor server specifies the duration (in hours) after which files may be considered for deletion**
  - **Ftp pull expiration time is used as a cleanup mechanism for files that have not been pulled**
  - **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)**

# Modifying System Parameters in the Database (Cont.)

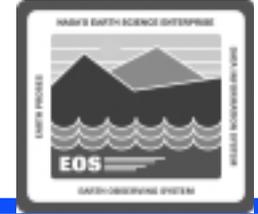
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- **Setting the FTP Pull Expiration Time (Cont.)**
  - Pull expiration time defaults to 24 hours
  - Parameter is modified using the Storage Management Control GUI

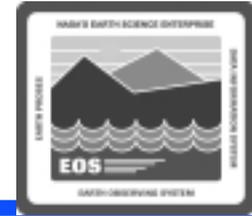
# Modifying System Parameters in the Database (Cont.)

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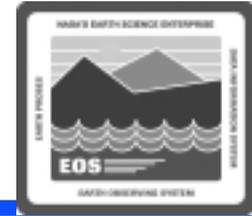
- **Priority Thread Allocation**
  - **DsDdPriorityThread** database table holds the threshold for the number of threads that can be active for each priority level of distribution requests
  - **Priorities are set in one of two ways**
    - » **Via a Perl script (EcDsDdPTEdit.pl)**
    - » **Through command line sql**

# Modifying System Parameters in the Database (Cont.)



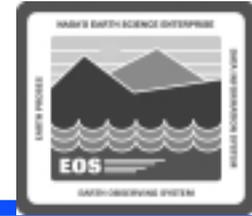
- **Modifying System Parameters in the Database Using the Storage Management Control GUI**
  - As previously mentioned the effects on system functioning and performance must be considered before modifying system parameters
  - When making or requesting a change to system parameters, the CM process at 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

# Modifying System Parameters in the Database (Cont.)



- **Modifying System Parameters in the Database Using the Storage Management Control GUI: Procedure**
  - Click on the appropriate server type (e.g., Staging Monitor or Pull Monitor) in the Server Type Information window on the Storage Config. tab
  - Click on the View Servers button
  - Click on the appropriate server in the Server Information window on the Storage Config. tab
  - Click on the Modify button
  - Enter modified data in relevant field(s) as necessary
  - When new values have been entered in all fields to be modified, click on the OK button

# Pull Monitor Server Configuration Dialogue



**Pull Monitor Server Configuration**

Server ID: EcDsStPullMonitorServer

Original Cache Space (blocks):  Percent When Full:

Available Cache Space (blocks):  Expiration Threshold (hours):

Block Size (bytes):  FTP Notify Timer Duration(seconds):

Expired Files Confirm Delete:

Disk Capacity

Fault Disk Level:

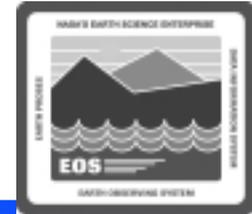
Warning Disk Level:

Root Path:

FTP Notify Filename:

Directory:

# Staging Monitor Server Configuration Dialogue



Staging Monitor Server Configuration

Server ID: EcDsStStagingMonitorServer

Total Space (blocks):

Cache Space (blocks):

User Staging (blocks):

Block Size (bytes):

Cache ID:  ▲ ▼

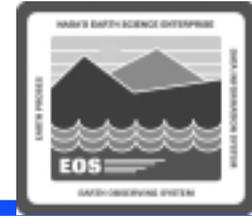
Request Expiration Time (Hours):  ▲ ▼

Path Length:  ▲ ▼

Max Command Line:  ▲ ▼

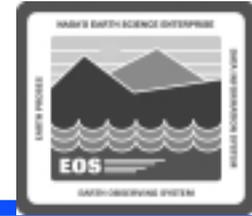
Root Path:

# Modifying System Parameters in the Database (Cont.)



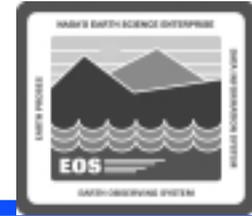
- **Modifying PriorityThread Table Values in the Database Using the EcDsDdPTEdit.pl Script**
  - EcDsDdPTEdit.pl script is a tool that can be used to change the limits for priority levels of threads in the DsDdPriorityThread database table
  - Script operates in either of two modes:
    - » Interactive (menu driven)
    - » Non-Interactive (command line)
  - Effects on system functioning and performance must be considered before modifying system parameters
  - 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 database parameters

# Modifying System Parameters in the Database (Cont.)



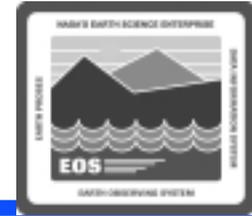
- **Modifying PriorityThread Table Values in the Database Using the EcDsDdPTEdit.pl Script: Procedure**
  - Access a terminal window logged in to the Distribution Server
  - Type script command in either interactive or non-interactive format (as applicable)
  - Respond to menu prompts for entering new value(s) for the number of priority threads (if applicable)
  - Save new values

# Modifying System Parameters in the Database (Cont.)



- **Modifying System Parameters in the Database Using ISQL**
  - Effects on system functioning and performance must be considered before modifying system parameters
  - 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 database parameters

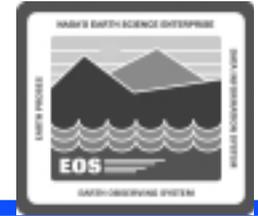
# Modifying System Parameters in the Database (Cont.)



- **Modifying System Parameters in the Database Using ISQL: Procedure**
  - Access a terminal window logged in to the Access/Process Coordinators (APC) Server
  - Log in to isql
  - Specify the proper database name
  - Check the current contents of the ThreadName and ThreadLimit columns in the DsDdPriorityThread table
  - Update the appropriate rows in the DsDdPriorityThread table
  - Verify table update by checking the current contents of the ThreadName and ThreadLimit columns in the DsDdPriorityThread table
  - Quit isql

# Troubleshooting Data Distribution Problems

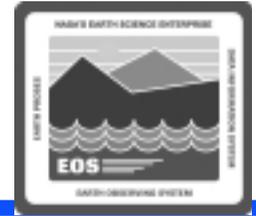
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- **Troubleshooting:**

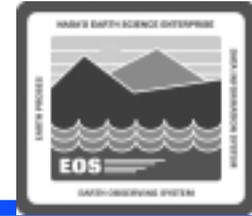
**process of identifying the source of problems on the basis of observed trouble symptoms**

# Troubleshooting Data Distribution Problems (Cont.)



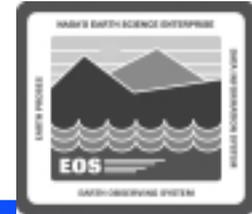
- **Problems with data distribution can usually be traced to...**
  - **some part of the Data Server Subsystem**
    - » **Data Server Subsystem (DSS)**
    - » **Science Data Server**
    - » **Storage Management**
  - **problems in other ECS subsystems, including (but not necessarily limited to):**
    - » **Communications Subsystem (CSS)**
    - » **System Management Subsystem (MSS)**

# Troubleshooting Data Distribution Problems (Cont.)



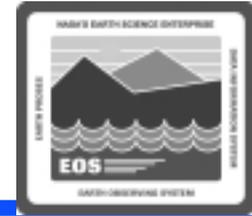
- **Troubleshooting table**
  - describes actions to be taken in response to some common data distribution problems
  - if the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk and submit a trouble ticket in accordance with site Problem Management policy

# Troubleshooting Data Distribution Problems (Cont.)



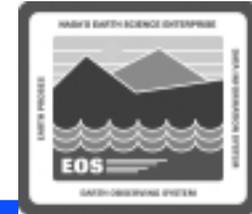
Symptom	Response
Unable to log in to any host (e.g., Distribution Server, g0dis02).	Check with the Operations Controller/System Administrator to ensure that the host is "up."
GUI not displayed when the start-up script has been properly invoked.	Ensure that the DISPLAY variable was set properly. [For detailed instructions refer to the procedure for <b>Launching the Data Distribution Operator and Storage Management Control GUIs</b> (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"> <li>1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 5) are "up."</li> <li>2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.</li> <li>3. If hosts/servers are all "up," notify the Operations Controller/System Administrator to have the STMGT servers bounced (shut down and immediately restarted).</li> <li>4. Resume processing of the suspended request. [For detailed instructions refer to the procedure for <b>Suspending/Resuming Data Distribution Requests</b> (previous section of this lesson).]</li> <li>5. If processing does not resume, refer to the procedure for <b>Recovering from a Data Distribution Failure</b> (subsequent section of this lesson).</li> </ol>

# Troubleshooting Data Distribution Problems (Cont.)



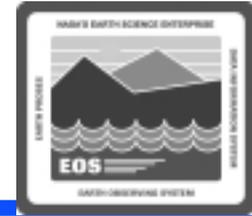
Symptom	Response
Tape fault.	Replace the faulty tape cartridge. [For detailed instructions refer to the procedure for <b>Unloading and Loading Tapes</b> (previous section of this lesson).]
Other problems.	Check the log files (e.g., EcDsDdistGui.ALOG, EcDsDistributionServer.ALOG, EcDsStStagingDiskServer.ALOG, EcDsStStagingMonitorServer.ALOG) in the /usr/ecs/ <i>MODE</i> /CUSTOM/logs directory of the Distribution Server host for error messages. [For detailed instructions refer to the procedure for <b>Checking Log Files</b> (subsequent section of this lesson).]

# Hosts, Servers, Clients and Other Software Relevant to DDIST



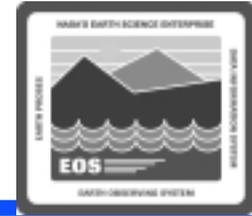
HOST	SERVER/CLIENT/OTHER SOFTWARE
Distribution Server (e.g., x0dis02)	Distribution Server (EcDsDistribution Server) 8mm Server (EcDsSt8MMServer) D3 Server (EcDsStD3Server)
Working Storage (e.g., x0wkg01)	Archive Server (EcDsStArchiveServer) Staging Monitor Server (EcDsStStagingMonitorServer) Staging 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)

# Recovery from Data Distribution Failure



- **Recovery from a data distribution failure**
  - Operator intervention may be required when there is a data distribution fault or error (e.g., failure of storage management to acquire granules from the archive )
  - Ingest/Distribution Technician may use several sources for troubleshooting information
    - » Data Distribution Operator GUI Distrib'n Requests tab
    - » log files on various host machines

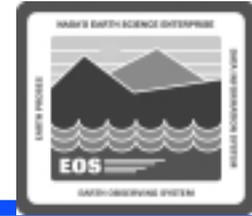
# Recovery from Data Distribution Failure (Cont.)



- **Procedure**
  - Review the trouble symptoms
  - Check for requests that exceed the distribution request threshold
  - 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

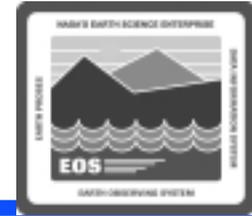
# Responding to Requests that Exceed the Dist. Request Threshold

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- 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`

# Responding to Requests that Exceed the Dist. Request Threshold

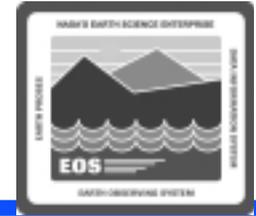


- **Procedure**

- **Contact User Services to determine whether or not the user's request should be processed**
- **If the request should be aborted, cancel the data distribution request**
- **If 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**
  - » **An alternative may be to increase (at least temporarily) the corresponding threshold in accordance with the procedure for Modifying System Parameters in Configuration Files**
- **If the request should be completed, resume processing of the data distribution request**

# Handling an Acquire Failure

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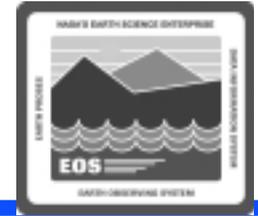


- **Procedure**

- **Check the Science Data Server ALOG File**
- **Check the Archive Server ALOG File**
- **Check the Staging Disk**
- **Check the Staging Disk ALOG File**
- **Check the Space Available in the Staging Area**

# Checking Log Files

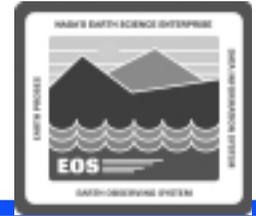
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- **Log files can provide indications of the following types of problems:**
  - **DCE problems**
  - **Database problems**
  - **Lack of disk space**

# Checking Log Files (Cont.)

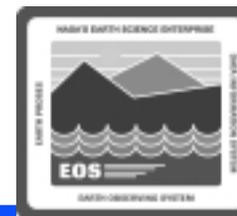
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- **Procedure**

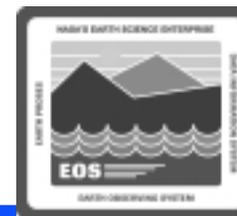
- Access a terminal window logged in to the appropriate host
- Change directory to the directory containing the data distribution log files
  - » `/usr/ecs/MODE/CUSTOM/logs`
- Review log file to identify problems
- Respond to problems

# Checking Database Connections



- **Storage management/data distribution shared database**
  - Repository of data concerning data distribution requests
  - If applications are unable to connect to the database, the data distribution request data cannot be retrieved or displayed on the GUI
  - Checking the database connections is a logical step in trying to isolate the following types of problems:
    - » GUI does not display data
    - » Display does not refresh

# Checking Database Connections



- **Procedure**
  - Review the configuration file to identify the values for the following parameters:
    - » DBName
    - » DBServer
    - » DBMaxConnections
  - Use the isql sp\_who command to obtain a list of actual connections
  - Use the isql sp\_configure command to obtain a list of the number of connections for which the database has been configured
  - 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")
  - Notify the Database Administrator of problems