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August 1997 Demo Scenario Preparation Plan

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Hughes Information Technology Systems
Upper Marlboro, Maryland

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Abstract

This presentation package presents documentation for the EOSDIS Core System (ECS) August 1997 Demonstration. This demonstration is driven by an ESDIS Memo of Understanding dated June 10.1997.

This presentation demonstrates the current integration progress of the ECS implementation. Scenarios were developed making use of MODIS, ASTER, and Landsat7 activities (including data, PGEs and ESDTs that are the result of Science Software Integration and Test). This presentation package for the August Demonstration (hereafter referred to as the "Demo") identifies and describes the scenarios, components, functions and host site software and hardware configuration required for the Demo in addition to providing copies of the presentation material and posters. This demo is being fielded in the Mini-DAAC located in Landover.

Keywords:

Release B.0, August Demo, RCC, integration.

Related Documents:

EOSDIS Core System (ECS) August Demonstration, Memo of Understanding, June 10. 1997;

Build Plan for Release B.0 Release Critical Contingency Iteration, July 1997.

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Contents

Abstract

1. Introduction

2. Demo Scenarios

3. Demo Science Software and Data Support

4. Deployment of Hardware at Mini-DAAC

Figures

Tables

Abbreviations and Acronyms

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1. Introduction

1.1 Purpose

The purpose of this presentation package is to provide a guide for the observation of the August 1997 Demo. This document describes the scenarios to be demonstrated, MODIS, ASTER and Landsat7 data and SSI&T activities, the Mini-DAAC site-specific hardware configurations that host the software, as well as slides of the presentation/demo and the supporting demo posters.

1.2 Content

Section 2 of this document describes the scenarios and activities that will be demonstrated to show the current status of integrated ECS processing capabilities. Section 3 contains information about the data, PGEs and ESDTs needed for the demo. Section 4 details the hardware and software mappings for the demo.

Appendix A has copies of the demo presentation slides, Appendix B has copies of the detailed scenario presentations, and Appendix C has copies of the poster presentations.

The Demo is hosted in the Mini-DAAC at Landover. Release B hardware configurations are being used wherever possible and the current Release B.0 COTS baseline (revision levels of all COTs products) is the baseline for the Demo.

1.3 Demo Drivers

As stated in the ESDIS memo of understanding, end-to-end processing (including data ingest and distribution) are being demonstrated in the August demo, using ‘real’ data and science software to the extent available. The purpose of the Demo is to show the current progression and level of readiness of ECS. Functionality included in this Demo was driven by the processing criteria support activities requested.

Table 1.3-1 lists Demo processing criteria identified by the ESDIS, instrument teams and the ECS Science Data Engineering Office.

Table 1.3-1. Demo Processing Criteria (1 of 2)

6/10/97 Demo Processing Criteria - By Area

1. External Interfaces
1.1 Demonstrate ASTER Data Acquisition Request (DAR) submission.
1.2 Show that the system can support the EDOS (PDS & EDS), Landsat-7 Processing System (LPS)(via LPS Simulator), and Landsat-7 Instrument Assessment System (IAS) interface protocols.
1.3 Show that the system can support expedited data access to ASTER L0 by notifying users on data ingest and by allowing them to electronically access the data.
2. Data Ingest
2.1 Demonstrate ingest of AM-1 Level 0 data, ASTER L1A and L1B data (from D3 tape), Landsat-7 L0R, and IAS calibration parameter files.
2.2 The system must support > 50% of its at-launch GSFC and EDC ingest rates; at launch rate is 3.0
3. Data Production
3.1 Show that archived data, including ancillary data, can be used as input to PGE execution.
3.2 Show that the insertion of data into the archive can cause the automatic scheduling of PGE executions.
3.3 Show concurrent execution of PGEs that have different resource needs (e.g., CPU utilization, memory allocation, I/O bandwidth, etc.), preferably using a mix of ASTER and MODIS PGEs.
3.4 Demonstrate that the system can support all B.0' production rules, including Advanced Temporal, Metadata-based Activation, Orbit-based Activation, Alternate Inputs (including timers and use of ancillary data), and boundary and period specifications.
3.5 Show that the system can support multiple runs of the same PGE.
3.6 Show that the output of one PGE can be used as the input of another PGE, preferably using an ASTER or MODIS end-to-end processing thread
3.7 Show that the system can handle failed PGE executions.
3.8 Demonstrate support for converting AM-1 ancillary packets into orbit and attitude files.
3.9 Demonstrate the B.0' workaround for ASTER on-demand processing and backward chaining.
4. Data Archive
4.1 Show that ingested data and data resulting from production are catalogued and archived so that they can be located and retrieved for production and distribution.

Table 1.3-1. Demo Processing Criteria (2 of 2)

5. Data Access and QA
5.1 Demonstrate the B.0' SCF QA metadata update workaround in which an SCF can acquire and view production results to perform QA, and a DAAC operator can update QA metadata on behalf of the SCF.
5.2 Show that the system supports user registration and login. User registration includes the user submitting their contact, billing and shipping information (e.g., address) to any ECS DAAC, and the DAAC using this information to create a system-wide acc
5.3 Show that the B.0' Version 0-like Client allows a user to perform directory and inventory searches to locate archived data.
5.4 Show that a user can order any archived data to be delivered electronically via FTP and through mail via 8mm tape.
5.5 Show that the system supports user orders for Landsat-7 scene data, which is generated on-the-fly using subsetting services
5.6 Show that an operator can submit subscriptions, including standing orders, on behalf of a user. Subscriptions are an ECS service that allow users to be notified and possibly order data (subject to the user's choice) whenever data satisfying user-spec
5.7 Show that the system can distribute data in response to an order (including a subscription) both electronically via FTP and via 8mm tape.
5.8 Demonstrate that operations staff can obtain order status from the system. In B.0', users will obtain order status by requesting it from a DAAC.
5.9 Show that the system can support simultaneous orders from multiple users.
5.10 Show that a user can use EOSView to view data that are distributed to them.

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2. Demo Scenarios

2.1 Overview

These Scenarios have been selected to show that the Demo criteria have been meet. Four scenarios have been selected for this purpose: Pre-Demo Ingest; ASTER Processing; MODIS Processing; and Landsat Processing. These scenarios are presented in sections 2.2 through 2.5 below.

2.2 Ingest Scenario (Pre-Demo Activity)

2.2.1 High Level Definition

The activities described in this section will be executed PRIOR to the demonstration. They consist of:

1. Ingest activities to demonstrate ECS ingest performance. ECS will ingest and archive several MODIS level 0 2-hour data granules (full-size PDS of 7.3 GB each). This activity will be timed to obtain the throughput rate that was achieved.

2. Ingest activities to demonstrate the ability to interface with the EDOS interface protocol (polling with delivery record) as demanded by demo criterion 1.2.1, using a file and PDR supplied by EDOS.

3. ECS will also ingest and archive ASTER L1A and L1B granules from a D3 tape.

4. ECS will run DPREP to demonstrate conversion of AM-1 ancillary data into orbit and attitude data using an ESDT.

2.2.2 Trace to Demo Criteria

The scenario will meet the following demonstration criteria:

1.2.1 Show that the system can support the EDOS PDS interface protocol.

2.1.1 Demonstrate ingest of AM-1 Level 0 data.

2.1.2 Demonstrate ingest of ASTER L1A and L1B data from D3 tape.

2.2 The system must support > 50% of its at-launch (3.0 Mbytes/s) ingest rates.

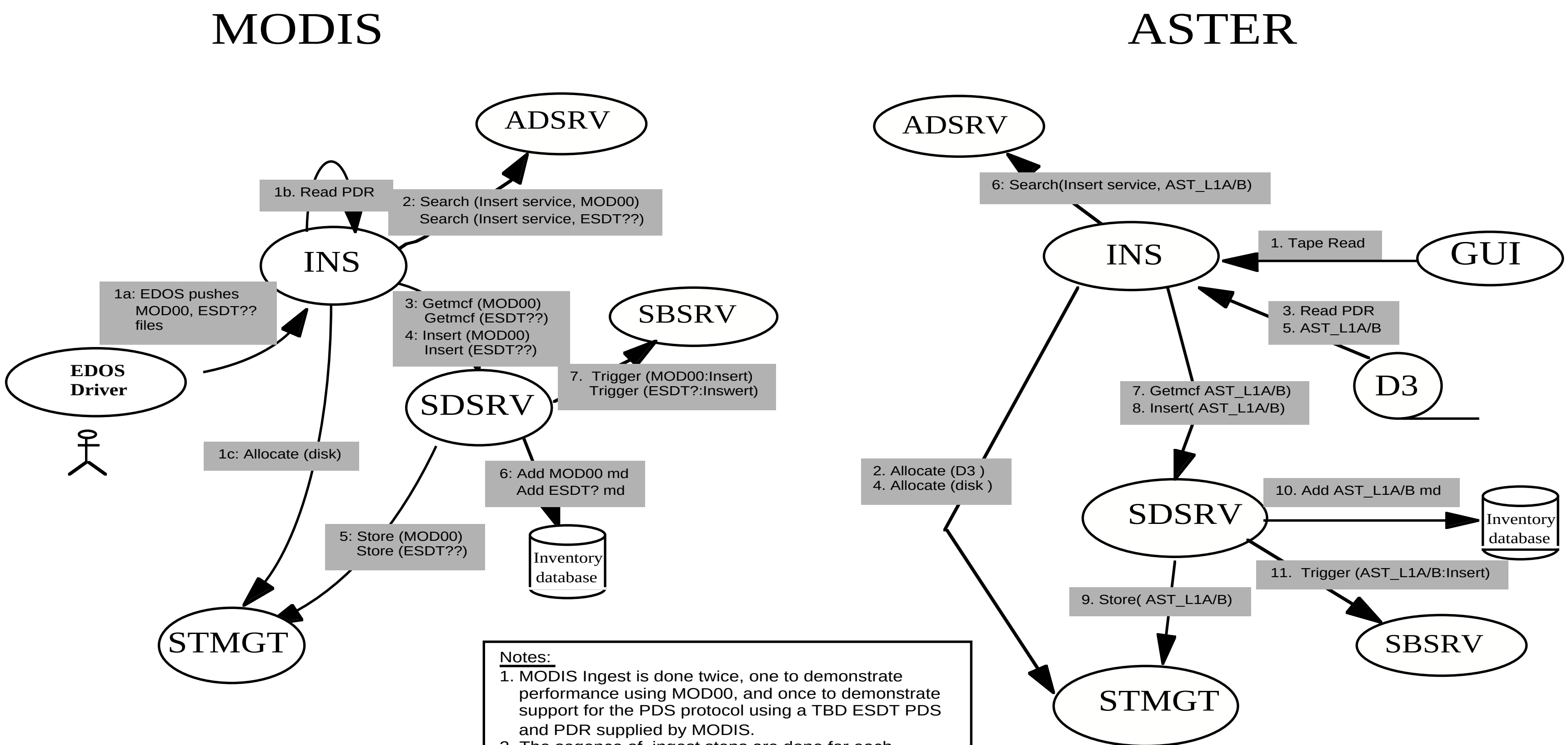
3.8.1 Demonstrate support for converting AM-1 ancillary packets into orbit files.

3.8.2 Demonstrate support for converting AM-1 ancillary packets into attitude files.

2.2.3 Scenario Interaction Diagrams

Figure 2.2.3-1 illustrate the high-level ECS component interactions that are supported by the Ingest scenario.

Ingest Scenarios



Notes:
1. MODIS Ingest is done twice, one to demonstrate performance using MOD00, and once to demonstrate support for the PDS protocol using a TBD ESDT PDS and PDR supplied by MODIS.
2. The seqence of ingest steps are done for each ganule individually (except for the tape read). To simplify the graphics, this is not shown explicitly.

Figure 2.2.3-1 Ingest Scenario Interaction Diagram

2.2.4 Partitioned Activities

Install Relevant ESDTs - All ESDTs needed for the test threads will have been installed prior to the respective tests:

MOD00 Ingest: MOD00.

EDOS PDS protocol test: TBD.

ASTER D3 Ingest: AST_L1A, AST_L1B.

DPREP test: TBD

Ingest MOD00 - This activity will be timed. INS will ingest and archive one or two full MOD00 granules. INS will perform the ingest via ftp using an EDOS driver, find the insert service in the ADSRV, and submit the insert operation to the SDSRV. SDSRV will then store the data via STMGT to the archive and create an entry for the MOD00 metadata in its inventory (in a Sybase database).

EDOS PDS protocol test - is a repeat of the previous scenario using data and PDR supplied by EDOS.

Aster Tape Ingest - DAAC Operations loads a D3 tape which contains ASTER L1A and L1B data, along with appropriate PDR files. Ingest reads all data from the D3 tape and inserts each AST L1A and L1B granule into the SDSRV. The SDSRV will control the storage of each granule's files. STMGT will archive the files using the AMASS COTS. Upon successful archival of the granule's files, the SDSRV inventory is updated with the metadata for each granule.

DPREP test - will execute DPREP to produce orbit and attitude files (not shown in digrams)

2.3 ASTER Processing Scenario

2.3.1 High Level Definition

This scenario will demonstrate initial ECS support of the ASTER mission. The DARTool can be used to submit two DARs. The system will notify the DAR requester when the appropriate DAR data is available from ECS. Two ASTER L1BT granules will be ingested from a D3 tape and stored in the ECS archive. The B0SOT will be used to verify that the data was inserted correctly.

Also demonstrated will be the B.0' workaround for on-demand processing of ASTER PGEs. A subscription will be placed for the automatic distribution of the Aster Level 2 data (AST04 and AST08) via ftp push, and a production request submitted for each. The first production request (for AST08) will be used to demonstrate backwards chaining of ETS and ACT PGEs. This request also stages a large number of ancillary and static files. When processing completes and inserts the output into the archive, the ftp distribution of AST08 to a workstation (simulating the SCF) will be triggered. The AST08 granule will be viewed.

The second production request (for AST04) will be used to demonstrate failed PGE handling. The BCT PGE will be cancelled. PDPS will tar up the data and insert it as an instance of the PGEFail ESDT, triggering a subscription which causes the data to be pushed via ftp to the workstation simulating the SCF. The data will be examined.

The AST08 ftp push will be used to demonstrate the SCF science QA metadata workaround. Via e-mail, the DAAC will be requested to update the science QA metadata for this AST08 granule, and the QA Monitor GUI will be used to apply the requested QA update.

Additionally, a simplified ASTER Expedited Data support will be shown. The ASTER Expedited Data will be ingested into ECS using an EDOS simulator and the capability to subscribe to expedited data will be demonstrated.

2.3.2 Trace to Demo Criteria

The scenario will fulfill the following demonstration criteria:

1.1 Demonstrate ASTER DAR submission.

1.2.2 Show that the system can support the EDOS EDS interface protocol.

1.3 Show that the system can support expedited data access to ASTER L0.

2.1.1 Demonstrate ingest of AM-1 Level 0 data.

3.1.1 Show that archived data can be used as input to PGE execution.

3.1.2 Show that archived ancillary data can be used as input to PGE execution.

3.2 Show that the insertion of data into the archive can cause the automatic scheduling of PGE executions.

3.4.1 Demonstrate that the system can support the Advanced Temporal production rule.

3.4.5 Demonstrate that the system can support the boundary and period specification production rule (*the period specification rule is demonstrated)*

3.6 Show that the output of one PGE can be used as the input of another PGE.

3.7 Show that the system can handle failed PGE executions.

3.9 Demonstrate the B.0’ workaround for ASTER on-demand processing and backward chaining.

4.1.2 Show that data resulting from production are catalogued and archived so that they can be located and retrieved for production and distribution.

5.1.1 Demonstrate that an SCF can acquire and view production results to perform QA.

5.1.2 Demonstrate that a DAAC operator can update QA metadata on behalf of the SCF.

5.2.2 Show that the system supports user login.

5.3.2 Show that the B.0' Version 0-like Client allows a user to perform inventory searches.

5.6.1 Show that an operator can submit subscriptions on behalf of a user.

5.7.1 Show that the system can distribute data in response to a subscription order electronically via FTP.

5.10 Show that a user can use EOSView to view data that are distributed to them.

2.3.3 Scenario Interaction Diagrams

The following diagrams, Figures 2.3.3-1 and -2, illustrate the high-level ECS component interactions that are supported in the ASTER scenario demonstration. The scenario omits the interaction of B0SOT and GTWY with MSS, CSS and the DSKTP (they are shown on the Landsat interaction diagram).

ASTER Scenario - Part 1

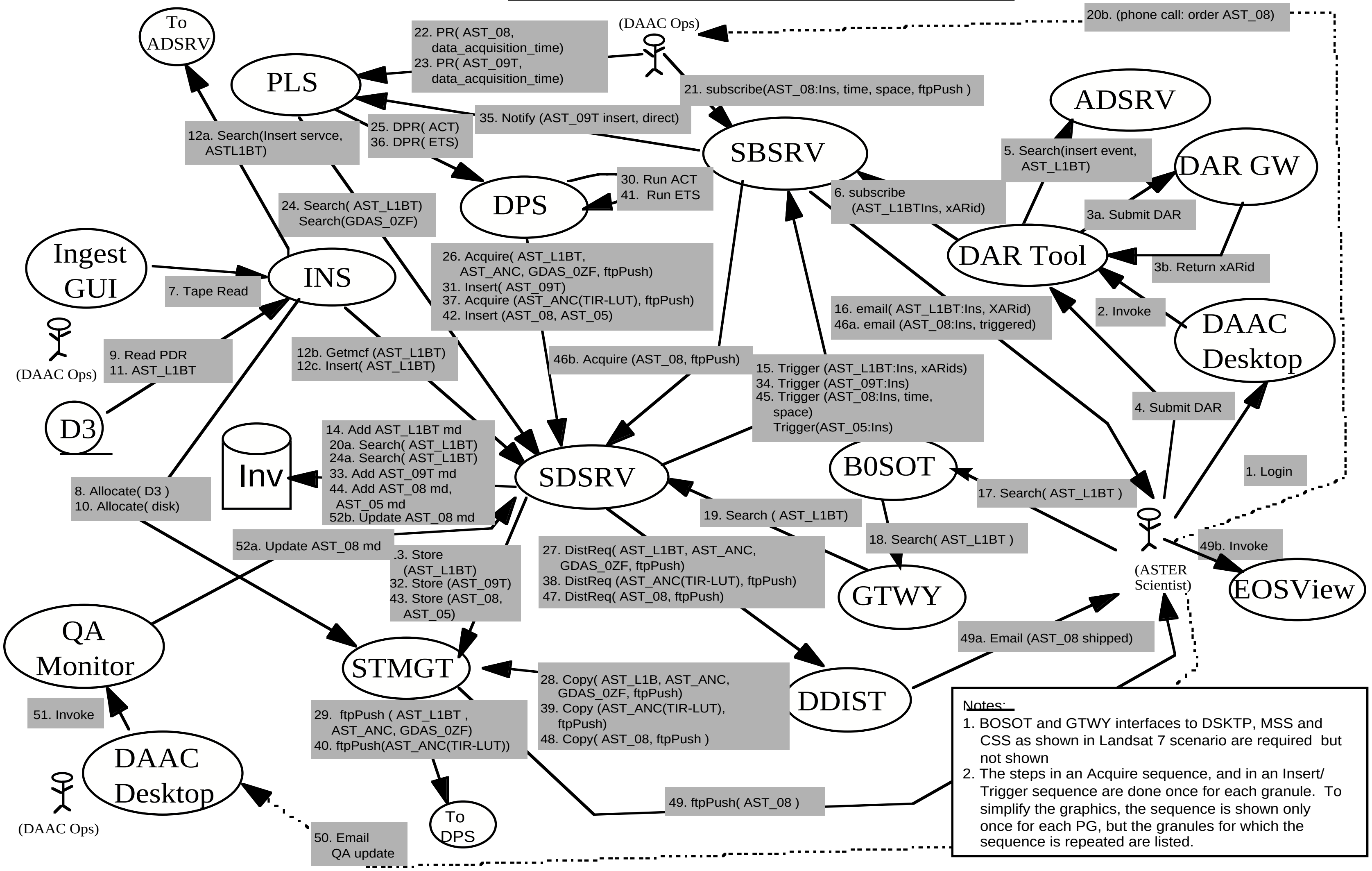


Figure 2.3.3-1. ASTER Scenario Interaction - Part 1

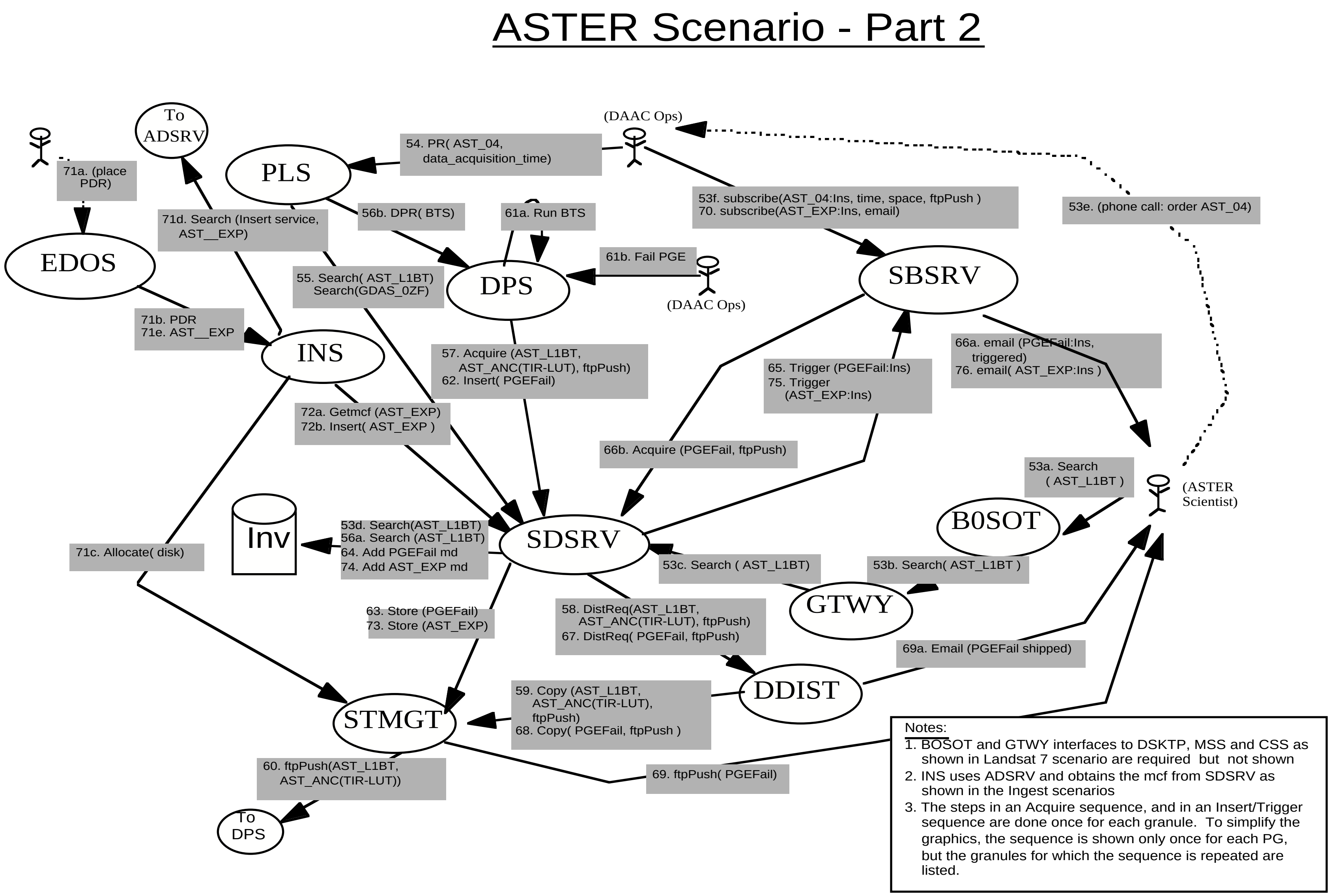


Figure 2.3.3-2 ASTER Scenario Interaction - Part 2

2.3.4 Partitioned Activities

Initialize System - Prior to the start of the demonstration, the required ESDTs will have been installed in the SDSRV (AST_ANC, AST_EXP, AST_L1BT, AST_09T, AST_04, AST_05, AST_08, AST_09T, GDAS_0ZF (NCEP ancillary data)). Three PGEs which have passed the Release B.0’ SSI&T process, will have been installed (ACT, ETS, BTS) and the planning database will have been initialized with PGE and resource related data. The ancillary and static data needed for the production part of the scenario will have been ingested into the ECS archive. A subscription will have been placed for PGEFail for ASTER. A DAR will have been placed prior to the demo which will be satisfied by the “Niger” L1BT.

DAR Submittal - The DAR User (an ASTER scientist) logs in to the DAAC Desktop, then uses the DARTool to indicate the data in which the user is interested. The request to acquire that data is sent to ASTER DAR GW which responds with a XARid The DARTool then submits a subscription for the insertion of ASTER L1BT data, qualified by the XARid of interest.

Tape Ingest - DAAC Operations loads a D3 tape which contains ASTER L1BT data, along with appropriate PDR files. Ingest reads all data from the D3 tape and inserts each AST L1BT granule into the SDSRV.

Archive L1B Data - The SDSRV will control the storage of each granule’s files. STMGT will archive the files using the AMASS COTS. Upon successful archival of the granule’s files, the SDSRV inventory, in a Sybase database, is updated with the metadata for each record. The successful insertion for each granule will result in the SDSRV triggering the SBSRV events for the AST_L1BT::Insert. These are qualified events, therefore the SDSRV will pass the list of XARids that the granule meets to the SBSRV. The SBSRV will then notify the ASTER scientist when the AST_L1BT granule that meet their DAR have been ingested. The XARId will have been entered as comment into the subscription and, therefore, will be provided as part of the e-mail notice.

Search for Data - The ASTER scientist will then use the B0SOT to locate the indicated L1BT granule. B0SOT will be used to determine metadata characteristics of the granule that are required by the Production Plan. This will be done twice, once for each L1BT granule.

On-Demand Production - The ASTER scientist calls the DAAC Production Planner, requesting that a AST_08 granule be produced from the AST L1BT granule and specified run-time inputs. The Production Planner first submits a subscription on behalf of the ASTER scientist, requesting that the AST_08 granule be sent via ftpPush to the ASTER scientist’s machine. The Production Editor is then used to create and submit a Production Request for the two ASTER PGEs needed to be run as a production chain to generate the AST_08 from the AST_L1BT (the ACT and ETS PGE).

Level 2 Processing - In order to produce an AST_08 granule, DPS will prepare to run the ASTER ACT PGE. Required input for this PGE are the AST_L1BT granule and a number of static and ancillary data granules (GDAS_0ZF, AST_ANC). DPS will connect to the SDSRV and submit Acquire requests for those data granules, via ftpPush. Upon delivery of the required input data, the PGE will execute and produce the proper AST_09T data and archive it. This will trigger the ETS PGE, which also requires an AST_ANC granule (the static TIR_BTemp_LUT). DPS will connect to the SDSRV and submit an Acquire request for the granule. Upon its delivery, the PGE will execute and produce the AST_08 and AST_05 granules, inserting them into the SDSRV during the DPS destaging step.

Archive L2 Data - SDSRV will have STMGT archive the AST_08 and AST_05 files, and update the inventory database with the granule's metadata. The SBSRV event for AST_08::Insert is triggered, with appropriate qualifier values.

Automatic L2 Distribution - The SBSRV will assess each subscription on the AST_08::Insert event. The only subscription that should be activated will be the one submitted by the DAAC Planner, on behalf of the ASTER scientist. A notification, via email, will be sent to the ASTER scientist, informing them that the event had been triggered; a AST_08 granule of interest to them had been inserted. The SBSRV will then submit an Acquire request (ftpPush to the ASTER scientist's workstation) for the AST_08 granule, on behalf of the ASTER scientist. SDSRV receives this request and translates it into a list of files that are placed into a Distribution Request for DDIST. DDIST works with STMGT to form a request for all the files to be copied to the ftpPush device. STMGT uses underlying infrastructure services to actually ftp the requested files to the ASTER scientist's workstation.

SCF QA Update - EOSView will be used to assess the AST_08 granule. Its UR will be copied into an e-mail message, together with instructions for updating its science QA metadata. The e-mail message will be sent to the DAAC (the QA Monitor workstation), where the QA Monitor GUI is used to update the SDSRV inventory metadata.

Failed PGE Handling - The ASTER scientist calls the DAAC Production Planner, requesting that a AST_04 granule be produced from the AST L1BT granule and specified run-time inputs. The Production Planner first submits a subscription on behalf of the ASTER scientist, requesting that the AST_04 granule be sent via ftpPush to the ASTER scientist's machine. The Production Editor is then used to create and submit a Production Request for the ASTER PGE needed (the BTS PGE). As before, DPS will prepare to run the requested ASTER PGE by connecting to the SDSRV and submitting Acquire requests for the needed data granules (the AST_L1BT and a AST_ANC granule (the static TIR_BTemp_LUT). Upon their delivery, the BTS PGE will start, and then will be cancelled to create a PGE failure. DPS will tar up the various PGE outputs and insert them into the SDSRV as an instance of PGEFail.

Failed PGE Distribution - SDSRV will notify the SBSRV of the insert, which will examine the subscriptions and detect that the subscription for failed ASTER PGE qualifies. It will notify the ASTER scientist that a failed PGE subscription was triggered, and submit an Acquire request to the SDSRV to distribute the PGEFail "granule" via ftp Push to the ASTER scientist workstation. As in the previous ftp push, the SDSRV will generate the list of files to be distributed, and submit a Distribute Request to DDIST, which will use STMGT to push the file to the simulated SCF workstation, where the file will be untared and the outputs will be examined.

Expedited Data Ingest - Ingest detects a PDR in the previously configured directory. The PDR indicates the files of an AST_EXP granule that are to be ingested into ECS. Ingest gets the AST_EXP mcf file from SDSRV, then formulates an insert request for the AST_EXP data.

Archive Expedited Data - SDSRV stores the AST_EXP files to STMGT. STMGT archives the AST_EXP granule's files in the AMASS system. The inventory database is then updated with the metadata of the new AST_EXP granule. The SBSRV AST_EXP::Insert event is triggered.

Notification of Expedited Data Availability - The SBSRV will activate all subscriptions on the AST_EXP::Insert event. All the interested subscribers will receive an email notification which will indicate that there is a new AST_EXP granule available. Ordering an expedited granule will not be shown as part of the scenario.

Viewing Data - Selected data granules will be viewed using EOSView.

Search Inventory - The B0SOT will be used to submit inventory searches to view inventory information for granules related to a DAR. Inventory searches have been discussed above.

2.4 MODIS Scenario

2.4.1 High Level Definition

This scenario will demonstrate the launch-critical ECS capabilities supporting the MODIS mission. A previously prepared production plan will be activated. This will trigger a MODIS production chain starting with a synthetic MODIS MOD_01 PGE (PGE01).

PGE01 will run for a time period. It produces four 5-minute granules of MOD01 and MOD03 Geolocation granules as output. Since the synthetic PGE is not capable of really producing MOD01 and MOD03 data, the same granules are read as input, however, under different ESDT names (MOD01_SYN and MOD03_SYN). As a result, this PGE will stage and destage 2.5 Gbytes of data.

Completion of PGE01 (and the data insertions) will trigger two instances of PGE02. Each PGE02 will execute for 30 minutes, and produce a MOD02 L1B granule as output (1.7 Gbytes). Together, the two PGE02 will destage 3.4 Gbytes of data.

Completion of each PGE02 and its insertion of the MOD02 granule along with the insertion of the MOD03 granule needed by PGE08 will trigger one execution of PGE08. Each PGE08 will execute for about 5 minutes and produce and archive a MOD029 granule (11 Mbytes).

B0SOT will be used after the processing chains complete to search and display inventory metadata to verify that the products have been properly inserted into the archive.

2.4.2 Trace to Demo Criteria

The scenario satisfies the following demonstration criteria:

3.1.1 Show that archived data can be used as input to PGE execution.

3.2 Show that the insertion of data into the archive can cause the automatic scheduling of PGE executions.

3.3 Show concurrent execution of PGEs (not met: *that have different resource needs*).

3.4.1 Demonstrate that the system can support the Advanced Temporal production rule.

3.4.5 Demonstrate that the system can support the boundary and period specification production rule (*the period specification rule is demonstrated)*

3.6 Show that the output of one PGE can be used as the input of another PGE.

4.1.2 Show that data resulting from production are catalogued and archived so that they can be located and retrieved for production and distribution.

5.6.2 Show that an operator can submit standing orders on behalf of a user.

5.7.3 Show that the system can distribute data in response to subscription orders via 8mm tape.

2.4.3 Scenario Interaction Diagrams

The following diagrams, Figures 2.4.3-1 and -2, illustrate the high-level ECS component interactions that are supported during the execution of the first and second part of the MODIS scenario.

MODIS Scenario - Part 1

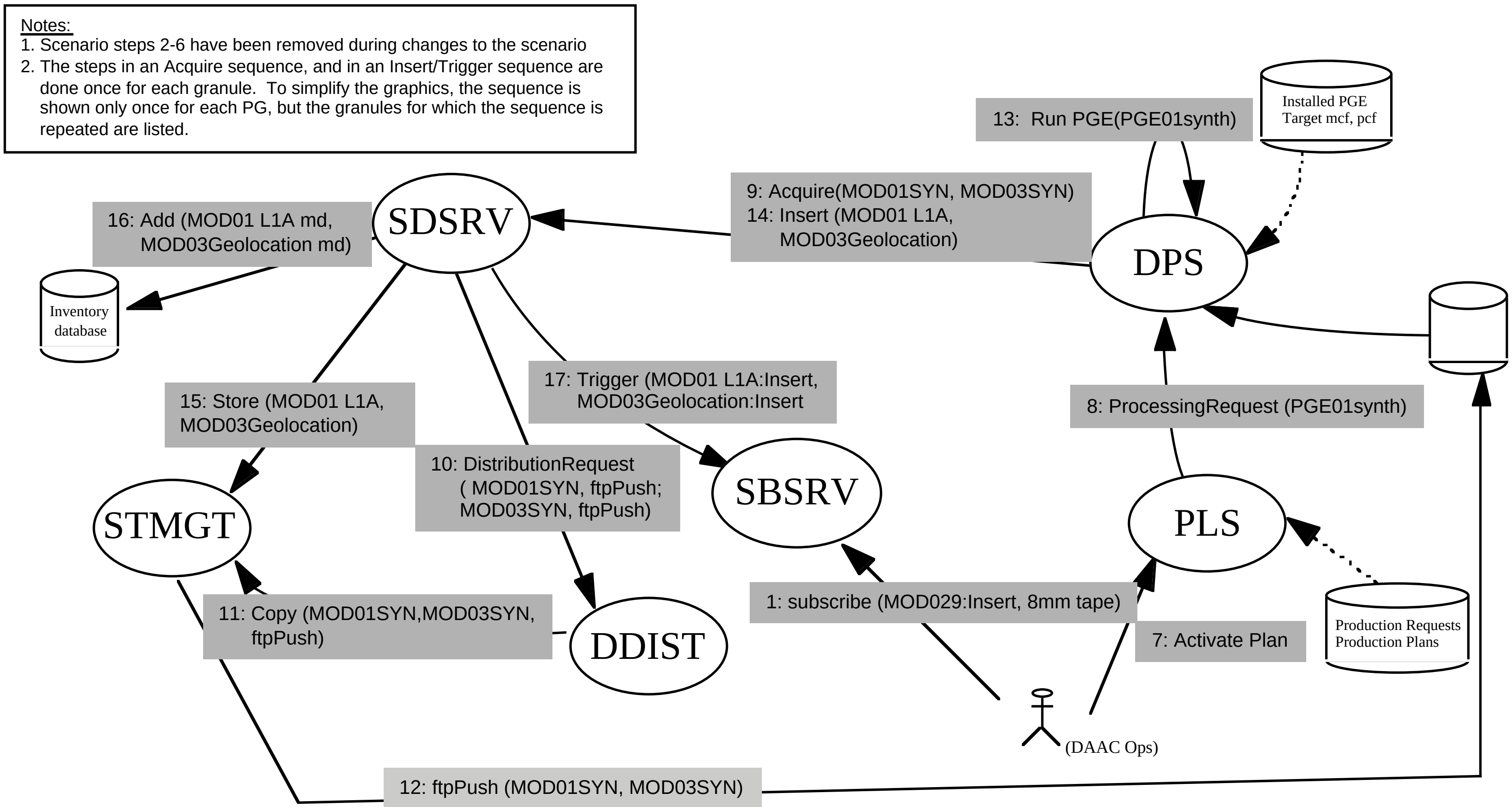


Figure 2.4.3-1 MODIS Scenario Interaction - Part 1

MODIS Scenario - Part 2

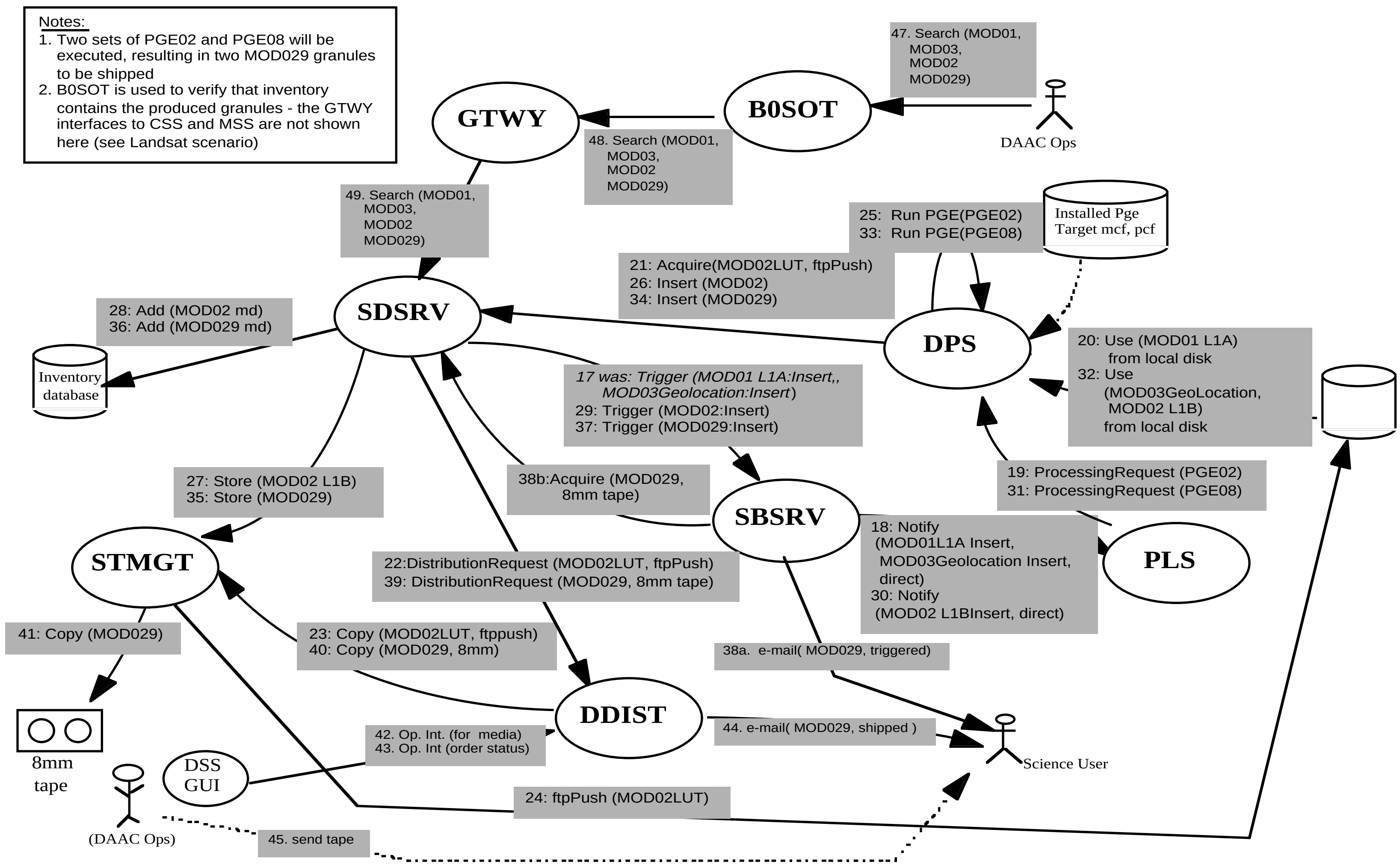


Figure 2.4.3-2 MODIS Scenario Interaction Diagram- Part 2

2.4.4 Partitioned Activities

Initialize System - Prior to the start of the demonstration, all ESDT needed for the MODIS production thread will be installed (MOD01_SYN, MOD03_SYN, MOD01, MOD02LUT, MOD02, MOD03, MOD029). The data needed as input into the production chain will have been stored in the archive.

Generate Production Plan - A production plan will be created before the demonstration starts. The plan will cover the L1 and L2 MODIS products generated in the scenario.

Subscriptions on User's Behalf - A subscription on behalf of a user will be placed on MOD029 L2 data (no qualifiers). The subscription will be for the distribution on 8 mm tape.

Activate Production Plan - The Planning Workstation is used to activate the prepared plan and thereby trigger the execution of PGE01.

Data Acquisition (SDSRV vs. Local)- The data needed for particular PGE executions is either found locally on the Data Processing Disk, or it is requested from the SDSRV via an Acquire (ftpPush) request. The SDSRV will create a list of the files comprising the requested granules and make a Distribution Request with that list. DDIST will use STMGT services to copy the requested files from the archive (or cache if they are still in cache) to the ftpPush device. Actual ftp'ing of the files is accomplished by using infrastructure services. In the scenario, data produced by preceding jobs will not be staged; all other data will be staged from the archive. The MOD01_SYN, MOD03_SYN, and MOD02LUT files will be served up from archive.

MODIS L1A Processing - Upon receipt of all required data DPS will start the PGE chain with PGE01. Note that this is a synthetic PGE, and the data being served up is a set of synthesized files which can be used by the PGE to produce the required MOD01 and MOD03 outputs. This PGE will insert the resulting MOD01 and MOD03 granules into the SDSRV. The SDSRV will give the files to STMGT for archival and update the inventory with the granules' metadata. Upon successful insertion of the granules, the SDSRV will trigger the MOD01::Insert and MOD03::Insert events.

MODIS L1B Processing- The SBSRV will notify the PLS that new MOD01 and MOD03 granules are now available. After PGE01 completes, leaving the new MOD01 granules on the processing disks, and after retrieving the MOD02LUT granule from the archive, the DPS begins the processing of PGE02 for the creation of the next MOD02 data granule. (In the demo scenario, we will trigger two concurrent chains of PGE02/PGE08, ultimately resulting in ~10 minutes worth of MOD029 L2 Sea Ice data.) Upon completion of each PGE02, its MOD02 output granule is inserted into the SDSRV. The granules' files are stored in the archive using STMGT and the inventory is updated. SBSRV MOD02::Insert events are triggered.

MODIS L2 Processing - The SBSRV will notify the PLS of the availability of the new MOD02 granules. Combined with the previous notifications on the availability of the MOD03 granules, the PLS knows to begin the PGE08 execution. Upon completion of the PGE08, MOD029 data is created. The new MOD029 granule is inserted into the SDSRV. The granule's files are stored in the archive using STMGT and the inventory is updated.

Standing order for 8mm tape distribution - The subscription server will trigger distributions of MOD029 data on 8mm tape each time a MOD029 granule is inserted (twice in the demo).

Subscription services - The subscription server will be exercised when an insert of data that has an outstanding subscription is entered in to ECS. For this scenario the Subscription Server will send notifications of insert events to the PLS, and trigger the acquire requests for MOD029 mentioned above.

Inventory searches - The B0SOT running on a DAAC desktop will be used to search the data server inventory for the granules inserted by the production chains to demonstrate the successful insertion and the correct updating of the inventory. The granules are not ordered and not viewed (EOSView is not used in this scenario).

2.5 Landsat Processing Scenario

2.5.1 High Level Definition

This scenario demonstrates launch-critical ECS capabilities supporting Landsat 7, as well as the user registration capability.

A user profile request will be submitted and processed. While this is being demonstrated. ECS will ingest a CPF file and a small Format 1 and Format 2 subinterval consisting of three scenes (1.7 Gbytes) via the Landsat 7 simulator located at GSFC.

The B0SOT will be used to search Landsat scene data, order a browse file via ftp, and order a scene for 8mm tape distribution and for ftp pull. The order will be placed concurrently from two workstations to demonstrate the ability to execute orders concurrently.

While the orders are being processed, the DSS GUI will be used to demonstrate how operators can view order status. The DSS GUI will also be exercised to allocate the 8mm tape to the order. The scenario will also show the generation of the packing list.

2.5.2 Trace to Demo Criteria

The scenario will meet the following demonstration criteria:

1.2.3 Show that the system can support the LPS interface protocol.

1.2.4 Show that the system can support the IAS interface protocols.

2.1.3 Demonstrate ingest of Landsat-7 L0R.

2.1.4 Demonstrate ingest of IAS calibration parameter files.

5.2.1 Show that the system supports user registration.

5.2.2 Show that the system supports user login.

5.3.1 Show that the B.0' Version 0-like Client allows a user to perform directory searches.

5.3.2 Show that the B.0' Version 0-like Client allows a user to perform inventory searches.

5.4.1 Show that a user can order any archived data to be delivered electronically via FTP.

5.4.2 Show that a user can order any archived data to be delivered through mail via 8mm tape.

5.5 Show that the system supports user orders for Landsat-7 scene data, which is generated on-the-fly using subsetting services

5.7.2 Show that the system can distribute data in response to a client order electronically via FTP.

5.7.4 Show that the system can distribute data in response to client order via 8mm tape.

5.8 Demonstrate that operations staff can obtain order status from the system.

5.9 Show that the system can support simultaneous orders from multiple users.

5.10 Show that a user can use EOSView to view data that are distributed to them.

2.5.3 Scenario Interaction Diagrams

The following diagram, Figure 2.5.3-1, illustrates the high-level ECS component interactions that are supported in the Landsat scenario demonstration.

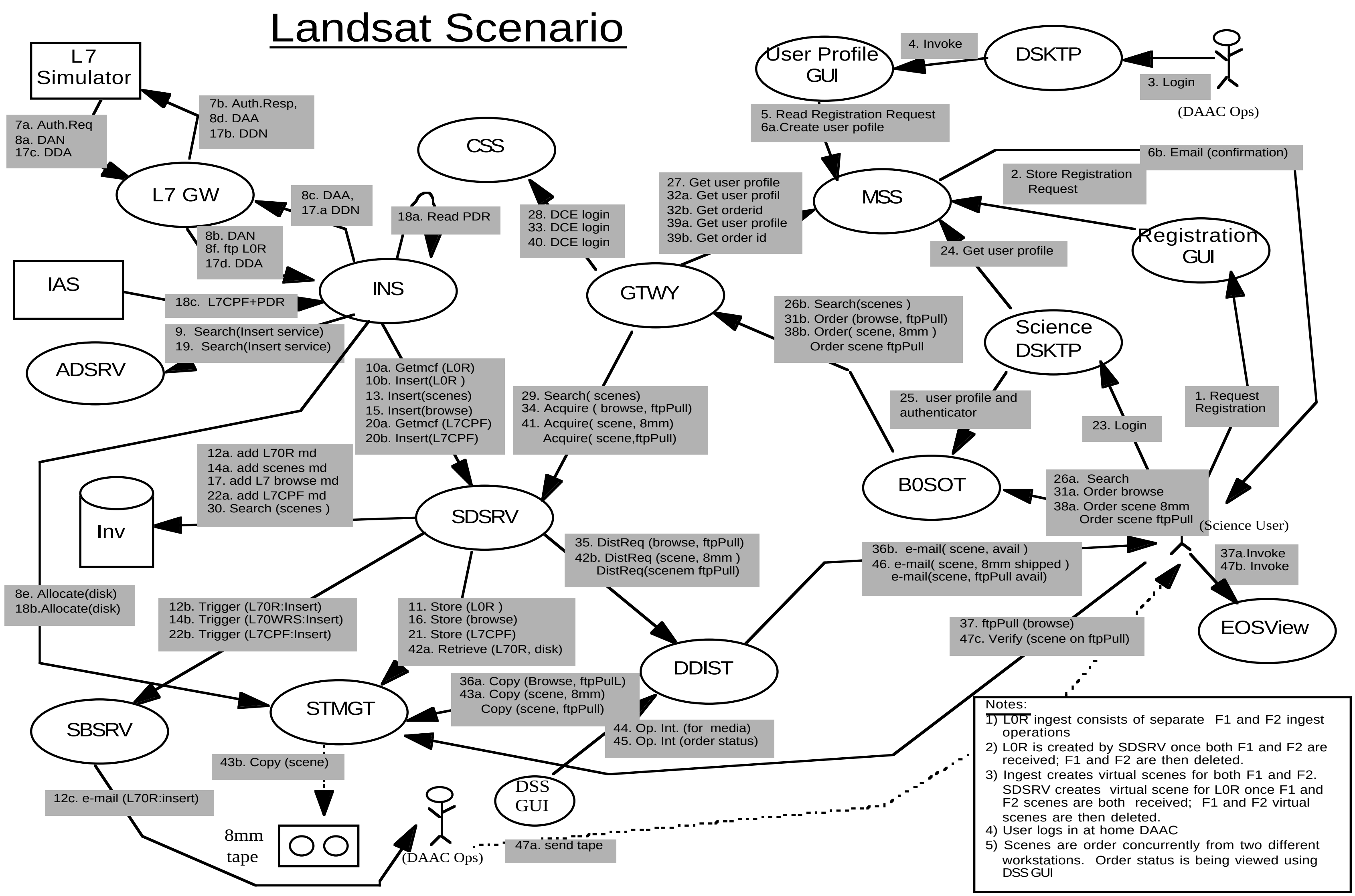


Figure 2.5.3-1 Landsat Scenario Interaction Diagram

2.5.4 Partitioned Activities

Initialize System - Prior to the start of the demonstration, all ESDTs needed for the Landsat thread will be installed (L70R, L70RF1, L70RF2, L70RWRS, L70RWRS1, L70RWRS2, L7CPF). A subscription will have been placed on the L70R. Its purpose is to let the demonstration team know when ingest completes.

Register a user - A user will submit a request for registration. The request will be processed by MSS at the DAAC and saved into the MSS user registration database as a pending request. The MSS User Registration GUI will be started to process pending user profile requests. The entered request will be examined, password and other information needed in the use profile will be assigned, and the user profile created and saved in the MSS database. Upon completion, a confirmation message will be sent to the user.

Ingest LPS Format 1 and Format 2 data - INS will ingest and archive a Landsat Format1 & Format 2 subinterval. INS will perform the ingest via the ECS Landsat 7 gateway using a Landsat7 simulator at GSFC (for the electronic messages), and via ftp (for the files), and submit the Data Server insert operations for the subintervals, scenes and browse. Data Server will store the subinterval to the archive (browse will be stored on disk), and create the corresponding metadata entries in the inventory. The Subscription Server will be notified of the insert events, however, no subscriptions will be pending in this case.

Ingest IAS CPF data - INS will ingest and archive one CPF via ftp using the IAS interface protocol (polling with delivery record). INS will submit the CPF to the Data Server, which will store it to the archive and create its metadata entries in the inventory.

Start desktop and login - Two Science desktops will be started and logins will be performed. The desktop will obtain the user profile from the MSS user profile server.

Search for scenes - The B0SOT is started on each desktop. It obtains user profile and authenticator from the desktop – no further login into V0 is required. The search requests are sent to the V0 Gateway along with the authenticator. The GTWAY uses the authenticator to obtain the user's profile, and uses the profile information to perform a DCE login on behalf of the user. It submits query operations to the SDSRV. The queries are executed against the inventory and the results are returned to the GTWAY which returns it to the B0SOT.

FTP pull browse - On one of the workstations, the B0SOT is used to order a Landsat browse via ftp pull. The GTWAY will obtain the user profile, perform the login, and this time also register the order and request with MSS Order Management. It then converts the request into an SDSRV ftp-pull acquire request. The SDSRV will identify the required browse file, and issue a Distribute Request for the files to DDIST. DDIST instructs STMGT to copy the file to the pull area and when the copy is complete, sends instructions for the ftp-pull via e-mail to the user.

Order scene for 8 mm tape - Next, the B0SOT on this workstation will be used to formulate an order for this Landsat scene to be distributed via 8 mm tape. The SDSRV will identify the required subinterval, use STMGT to retrieve it form the archive, subset it to produce the requested scene, and then stage the scene files to disk. When DDIST gets the distribution request, it instructs STMGT to a) stage the files, b) allocate an 8 mm tape drive, c) copy the files to the tape, and d) generate a packing slip. During these operations, DDIST interfaces with the operator for any manual handling of the tape. When the tape is ready to be shipped, an e-mail is sent to the user. The tape will be mounted on a different 8mm drive, and tar will be used to compare the tape inventory with the packing slip generated by DDIST.

Order scene for FTP pull - Concurrently, the B0SOT is used on the other workstation to order a Landsat scene via ftp pull. The scene order is handled in a fashion similar to the 8mm order, but after having extracted the scene, the SDSRV will call DDIST to stage it to the ftp pull area. FTP will be used from the workstation to verify that the scene has indeed been staged, but the scene will not be retrieved.

Order tracking - Throughout the various distribution steps the DSS GUI will be used to demonstrate that DAACs can view the current state of the order..

View browse files and scenes - EOSView will be used to view the browse file and scene retrieved in this scenario.

3. Demo Science Software and Data Support

3.1 Overview

Science data processing in the August Demo will be performed (wherever possible) using science software which is developed independently of ECS by Instrument Teams at their local Science Computing Facilities (SCFs) and “real” data. In cases where the software (PGEs and corresponding ESDTs) or the actual data was not available in advance of the August Demo, synthetic PGEs and generated data has been substituted. The Science and Data Engineering (SDE) office worked with the Instrument Teams to get the required PGEs, ESDTs, and Data sets ready for the August Demo and the scenarios to be run. Section 3.2 describes the PGEs, ESDTs and Data that are required for the Demo.

SDE provided Science Software Integration and Test (SSI&T) support that covers activities starting with the delivery of the science software from the instrument teams (IT) and follows through the integration of science software PGEs into the Demo Software. These activities involve populating the Demo databases and building the science software with the DAAC Toolkit. Such activities involve the actual integration and running of the software.

SSI&T can be defined as the process by which science software developed by Instrument Teams (ITs) at local SCFs is tested and integrated into the ECS at the DAACs. Steps in this process include

1. To ensure that the delivered PGEs conform to ESDIS Project standards and the August Demo production rules;
2. To port the PGEs to computer platforms at the Mini-DAAC;
3. To integrate the PGEs with the Mini-DAAC version of the SDP Toolkit and execute them using the ECS PDPS;
4. Configuration of Earth Science Data Types (ESDTs);
5. Collection of Data to support the Demo Scenarios and the needed PGEs; and
6. Configuration management of the Science Software and Data using ClearCase.

The science software may be developed on a variety of computer platforms using many versions of compilers and operating systems. The ECS Project allows the software to be coded in C, FORTRAN 77, Fortran 90, and Ada. All of this software must comply with ESDIS standards which include ANSI standards, sets of allowed functions, and required use of the ECS Science Data Processing (SDP) Toolkit libraries for functions such as file access, error handling, and process control. Using the science software in ECS requires that the software be ported to the Silicon Graphics, Inc. (SGI) platforms at the Distributed Active Archive Centers (DAACs), integrated with the DAAC version of the SDP Toolkit, and executed under control of the automated Planning and Data Processing System (PDPS).

3.2 Science Software and Data

Table 3.2-1 describes the Science Software, PGEs, ESDTs, and Data required for the August Demo.

Table 3.2-1. Data, PGEs, and ESDTs for the August Demo (1 of 4)

Scenario Name	PGE Names)	ESDTs	Input/Output Files	Size	Path for Files	File Names	POC	Comments
1. MODIS	PGE01	MOD00	Level 0	7.3 GB			W. Smith	Data used to generate test data (prior to demo)
		MOD03DEM	Digital Elevation Model	49.5 MB				Data used to generate test data (prior to demo)
		MOD03LUT	Look Up Tables for PGE01	16 KB				Data used to generate test data (prior to demo)
	PGE01SYN	MOD01SYN	MOD01 input to PGE01SYN	4 x 569 MB	/home/PDPS/MODIS	mod01a.hdfsyn mod01a.hdfsyn.met		Output from PGE01
						mod01b.hdfsyn mod01b.hdfsyn.met		
						mod01c.hdfsyn mod01c.hdfsyn.met		
						mod01d.hdfsyn mod01d.hdfsyn.met		
		MOD03SYN	MOD03 input to PGE01SYN	4 x 58 MB	/home/PDPS/MODIS	mod03b.hdfsyn mod03b.hdfsyn.met		Output from PGE01
						mod03c.hdfsyn mod03c.hdfsyn.met		
		PGEEXE	Synthetic PGE for MOD01		/home/PDPS/MODIS	modsynv4.tar MODPGE01#1.0.tar.met		
	PGE02	MOD01	Level 1A	4 x 569 MB	Dynamic		J. Pals	Output from PGE01SYN
		MOD02LUT	Look Up Tables for PGE02	357 KB	/home/PDPS/MODIS	Emissive_Lookup_Tables_f Emissive_Lookup_Tables.m et		
						L1B.control.params L1B.control.params.met		
						sd.coeff.trend sd.coeff.trend.met		
						GEO_parameters.dat GEO_parameters.met		
		PGEEXE	MODIS PGE02		/home/PDPS/MODIS	pge02.tar MODPGE02#1.0.tar.met	C. Tsai	
	PGE08	MOD02	Level 1B Radiances	2 x 1.7 GB	Dynamic		Boettcher	Output from PGE08
		MOD03	Geolocation Data	4 x 58 MB	Dynamic			Output from PGE01SYN
		MOD029	L2 Sea Ice-Cover	2 x 10.9 MB	Dynamic		Boettcher	Output from PGE08
		PGEEXE	MODIS PGE08		/home/PDPS/MODIS	pge08.tar MODPGE08#1.0.tar.met		
	ingest test	MOD00	Level 0 data + PDR file	7.3 GB	(on huckfinn) /data3/pollEDOS/data		Gire	Data used for ingest test (prior to demo)

Table 3.2-1. Data, PGEs, and ESDTs for the August Demo (2 of 4)

Scenario Name	PGE Names)	ESDTs	Input/Output Files	Size	Path for Files	File Names	POC	Comments
2. ASTER	ACT	AST_09T	L2 Surface Radiance TIR	9.7 MB	Dynamic, Produced by ACT		Theobald	
					/home/mtheobal/ASTER≠	ozone_clim.ti		
		AST_ANC	ASTER Ancillary Data Sets	4 MB	static	ozone_clim.ti.met		
						NRL_H20_1.hdf		
						NRL_H20_1.hdf.met		
						NRL_Pressure_1.hdf		
						NRL_Pressure_1.hdf.met		
						NRL_Temperature_1.hdf		
						NRL_Temperature_1.hdf.met		
						aerosol_clim.ti		
						aerosol_clim.ti.met		
						climatology2DSupport.dat		
						climatology2DSupport.dat.met		
						co2_clim.ti		
						co2_clim.ti.met		
						dummydem.ti		
						dummydem.ti.met		
						filter_1.dat		
						filter_1.dat.met		
						filter_10.dat		
						filter_10.dat.met		
						filter_11.dat		
						filter_11.dat.met		
						filter_12.dat		
						filter_12.dat.met		
						filter_13.dat		
						filter_13.dat.met		
						filter_14.dat		
						filter_14.dat.met		
						filter_2.dat		
						filter_2.dat.met		
						filter_3.dat		
						filter_3.dat.met		
						filter_3B.dat		
						filter_3B.dat.met		
						filter_4.dat		
						filter_4.dat.met		
						filter_5.dat		
						filter_5.dat.met		
						filter_6.dat		
						filter_6.dat.met		

Table 3.2-1. Data, PGEs, and ESDTs for the August Demo (3 of 4)

Scenario Name PGE Names)	ESDTs	Input/Output Files	Size	Path for Files	File Names	POC	Comments
					filter_7.dat filter_7.dat.met		
					filter_8.dat filter_8.dat.met		
					filter_9.dat filter_9.dat.met		
					uftape.dat uftape.dat.met		
					usstd76Support.dat usstd76Support.dat.met		
					usstd76h2o.ti usstd76h2o.ti.met		
					usstd76h2o_.bfm usstd76h2o_.bfm.met		
					usstd76press.ti usstd76press.ti.met		
					usstd76press_.bfm usstd76press_.bfm.met		
					usstd76temp.ti usstd76temp.ti.met		
					usstd76temp_.bfm usstd76temp_.bfm.met		
	PGEEXE	ACT PGE		/home/PDPS/RCCLAB2OPS /CUSTOM/data/DPS/ODL/113/ACT/data/input	ACT#113.tar ACT#113.tar.met		
	AST_L1BT	L1B Data TIR	5 MB	/home/mtheobal/AUGdemo_data.dir	Niger-L1B-4.hdf Niger-L1B-4.met Niger-L1B≠4.MTA		
					tahoe-north-middle.hdf tahoe-north-middle.met tahoe-north-middle.MTA		
	GDAS_0ZF	NCEP Ancillary Data	34 MB	/home/mtheobal/AUGdemo_data.dir	gdas1.T00Z.PGrbF00.hdf gdas1.T00Z.PGrbF00.hdf.met		Compatible with DPREP?
BTS	AST_04	L2 Brightness Temperature	4.6 MB	Dynamic, produced by BTS			
	AST_L1BT	L1B Data TIR	5 MB	/home/mtheobal/AUGdemo_data.dir	Niger-L1B-4.hdf Niger-L1B-4.met Niger-L1B≠4.MTA		
					tahoe-north-middle.hdf tahoe-north-middle.met tahoe-north-middle.MTA		
	AST_ANC	ASTER Ancillary Data Sets	4 MB	/home/mtheobal/ASTER≠static	Bright-Temp-LUT-V2.hdf Bright-Temp-LUT-V2.hdf.met		
	PGEEXE	BTS PGE		/home/PDPS/RCCLAB2OPS /CUSTOM/data/DPS/ODL/113/BTS/data/input	BTS#113.tar BTS#113.tar.met		
ETS	AST_05	L2 Surface Emissivity	6.6 MB	Dynamic, produced by ETS			
	AST_08	L2 Surface Temperature	2.3 MB	Dynamic, produced by ETS			
	AST_ANC	ASTER Ancillary Data Sets	4 MB	/home/mtheobal/ASTER≠static	Bright-Temp-LUT-V2.hdf Bright-Temp-LUT-V2.hdf.met		
	PGEEXE	ETS PGE		/home/PDPS/RCCLAB2OPS /CUSTOM/data/DPS/ODL/113/ETS/data/input	ETS#113.tar ETS#113.tar.met		

Table 3.2-1. Data, PGEs, and ESDTs for the August Demo (4 of 4)

Scenario	Name	PGE Names)	ESDTs	Input/Output Files	Size	Path for Files	File Names	POC	Comments
3. Landsat 7				LPS Level-0R Format-1	732 MB	(on RAVEN) /dss_amass/testdata/instrument_data/Landsat_7/ETM/Aug_demo/Stage_2/Format_1		Jordan	See README for details and heritage of individual files.
				LPS Level-0R Format-2	387 MB	(on RAVEN) /dss_amass/testdata/instrument_data/Landsat_7/ETM/Aug_demo/Stage_2/Format_2			See README for details and heritage of individual files.
			L70R						Generated during ingest (from combination of Format-1 and Format-2 subinterval Data and subinterval-level Metadata).
			L70RF1	Level-0R Format 1					Generated during ingest (temporary holder for Format-1 subinterval-level Metadata).
			L70RF2	Level-0R Format 2					Generated during ingest (temporary holder for Format-2 subinterval-level Metadata).
			L70RWRS						Generated during ingest (from combination of Format-1 and Format-2 scene-level Metadata).
			L70RWRS1						Generated during ingest (temporary holder for Format-1 scene-level Metadata).
			L70RWRS2						Generated during ingest (temporary holder for Format-2 scene-level Metadata).
			L7CPF	IAS Calibration Parameter File (CPF)	155 KB	(on RAVEN) /dss_amass/testdata/instrument_data/Landsat_7/IAS/cpf2_v3			See README for details and heritage of this version of the sample CPF file.

4. Deployment of Hardware at Mini-DAAC

4.1 Hardware Summary

The August Demo is installed and configured at the Mini-DAAC in Landover. The following sections survey the Infrastructure, Hardware and COTS that is installed and configured as part of the Demo. Part of the Landsat7 Scenario is run out of the EDF in Landover.

4.2 Infrastructure and Network Architecture

A single DCE cell architecture configuration is used for the August Demo in the Mini-DAAC. The cell services and administration is controlled from the SMC CSS server. The August Demo reuses the network already installed and configured at the Mini-DAAC. Figure 4.2-1 shows the August Demo configuration.

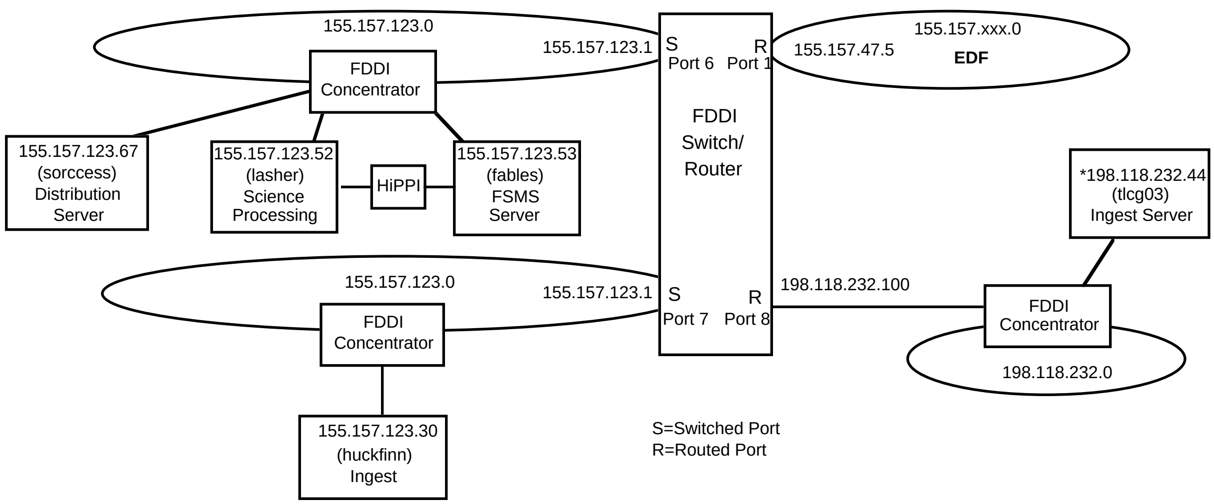


Figure 4.2-1. Mini-DAAC Network Architecture

4.3 Hardware Allocation to DAAC Sites

Table 4.3-1 illustrates the August Demo hardware at the Mini-DAAC. The table also shows the hardware function with COTS and custom software on each platform.

Table 4.3-1. Mini-DAAC Hardware and Software Allocation

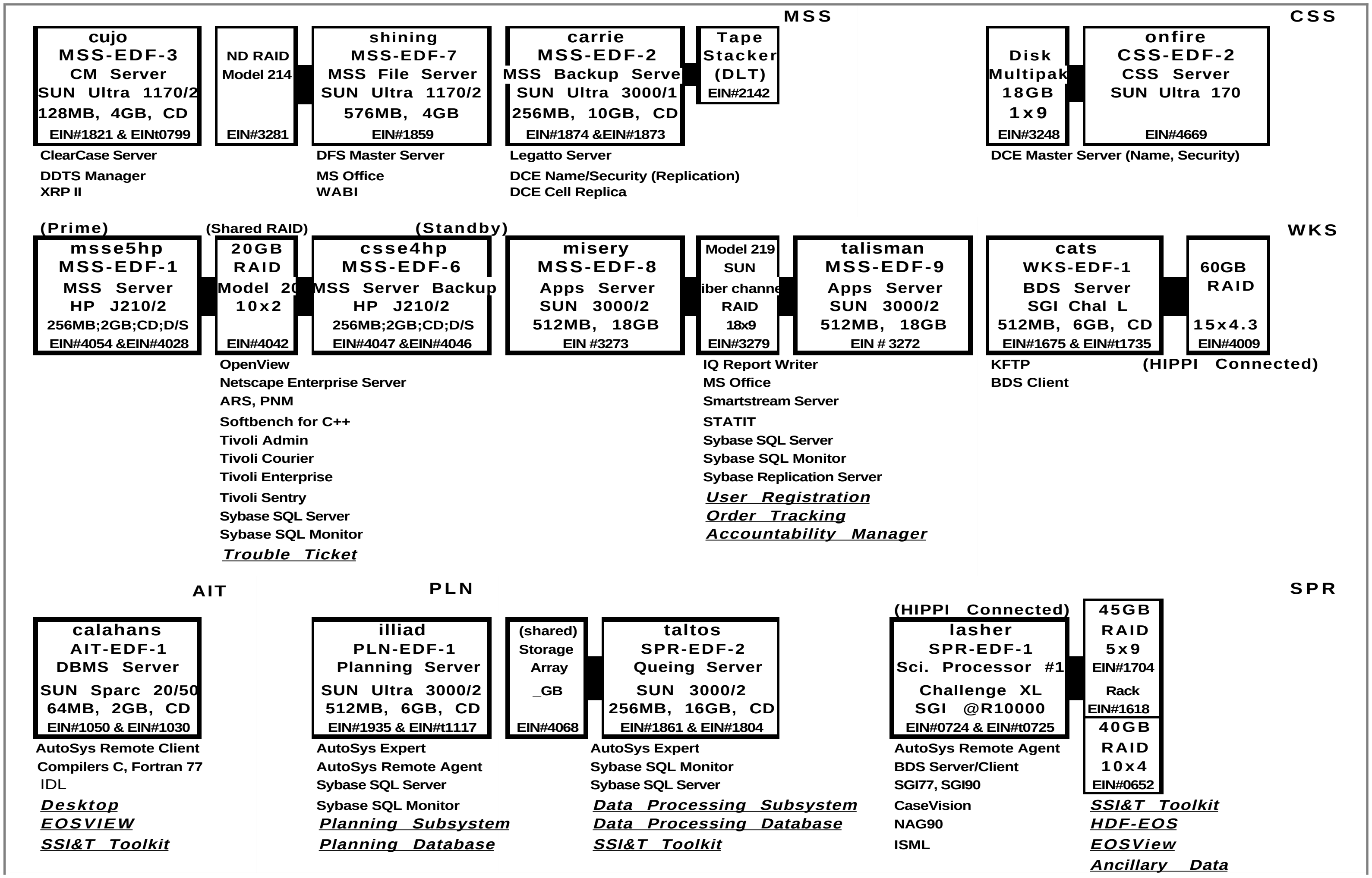
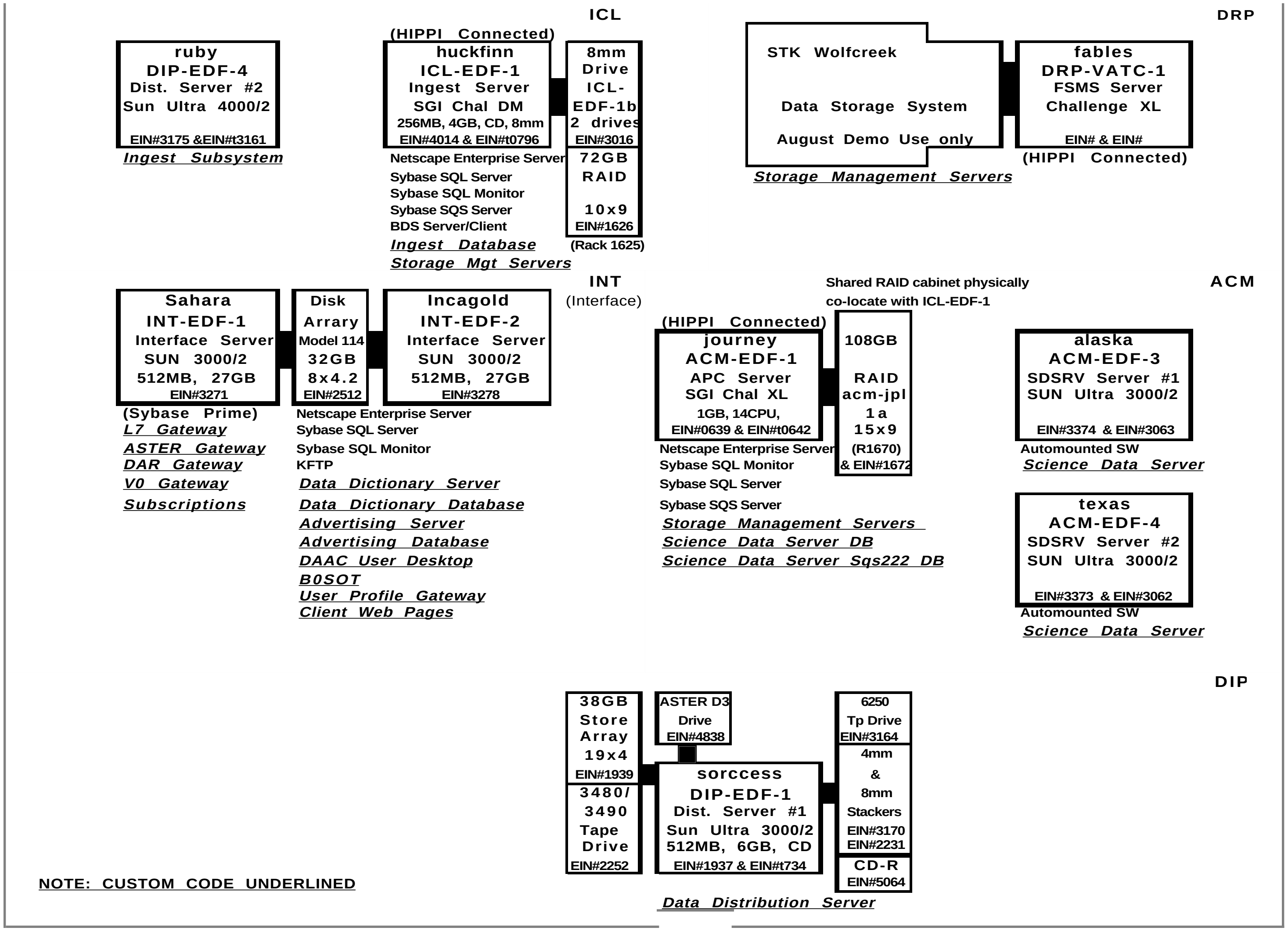


Table 4.3-1. Mini-DAAC Hardware and Software Allocation (cont.)



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Appendix A. August Demo Presentations

Welcome and Introduction - Dawn Lowe

August Demo Overview - Joe Senftle

System Functionality Overview - Mike Burnett

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Appendix B. Detailed Scenario Presentations

ASTER

MODIS

Landsat-7

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Abbreviations and Acronyms

ASCII	American Standard Code for Information Interchange
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
CI	Configuration Item
CM	Configuration Management
COTS	Commercial Off-The-Shelf (hardware or software)
CSDT	Computer Science Data Type
DAAC	Distributed Active Archive Center
DAP	Delivered Algorithm Package
DB	Database
DDTs	Distributed Defect Tracking System
DEM	Digital Elevation Model
DLL	Dynamic Link Library
DPR	Data Processing Request
ECS	EOSDIS Core System
EDC	EROS Data Center (DAAC)
EOSDIS	Earth Observing System Data and Information System
EROS	Earth Resources Observation System
ESDIS	Earth Science Data and Information System
ESDT	Earth Science Data Type
FTP	File Transfer Protocol
GSFC	Goddard Space Flight Center (DAAC)
GUI	Graphical User Interface
HDF	Hierarchical Data Format (NCSA)
HTML	Hypertext Markup Language
I&T	Integration and Test
IDL	Interactive Data Language
I/F	Interface

IT	Instrument Team
LaRC	Langley Research Center (DAAC)
M&O	Maintenance and Operations
MCF	Metadata Configuration File
MISR	Multi-Angle Imaging Spectroradiometer
MODIS	Moderate Resolution Imaging Spectroradiometer
MOPITT	Measurements of Pollution in the Troposphere
MS	Microsoft®
NCR	Non-Conformance Report
NSIDC	National Snow and Ice Data Center (DAAC)
ODL	Object Description Language
PDF	Portable Document Format
PDPS	Planning and Data Processing System
PGE	Product Generation Executive
PH	Production History
PLANG	Planning subsystem (CI)
PR	Production Request
PRONG	Processing subsystem (CI)
QA	Quality Assurance
SAGE III	Stratospheric Aerosols and Gas Experiment III
SCF	Science Computing Facility
SDE	Science Data Engineering (ECS)
SDP	Science Data Processing
SEO	Sustaining Engineering Organization
SGI	Silicon Graphics, Inc.
SSI&T	Science Software Integration and Test
TBD	To be determined
TT	Trouble Ticket, Trouble Ticketing