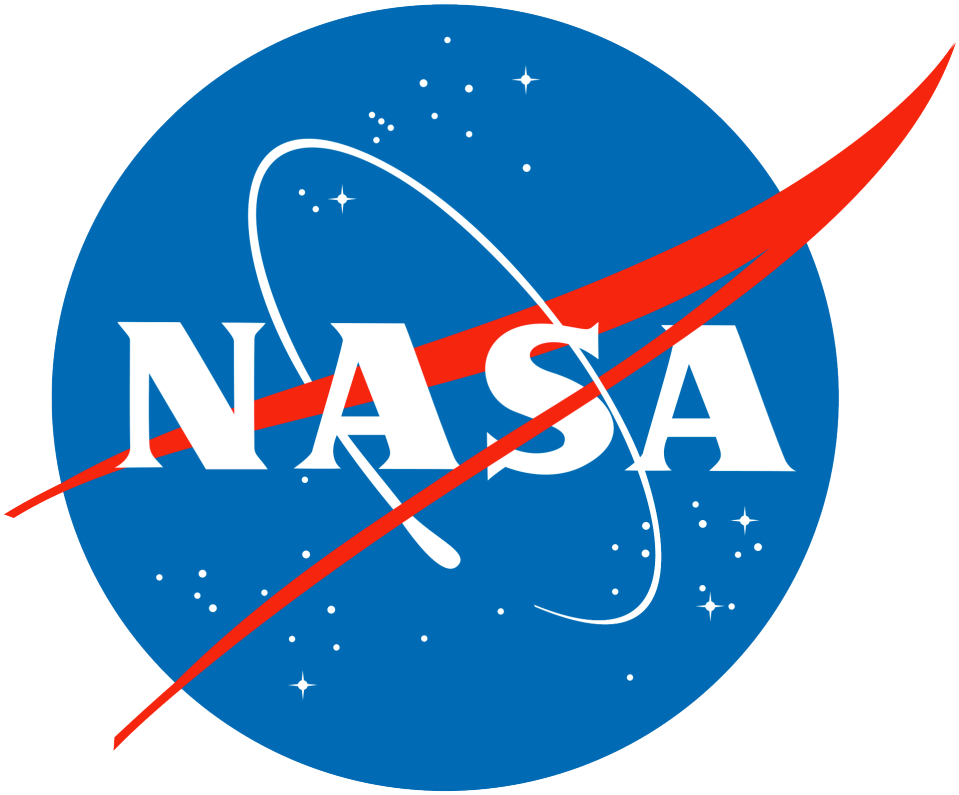
Plan Document

NASA Planetary Data System
PDS4 System Build 3b
Node Testing Procedures & Report



Change Log

Revision	Date	Description	Author
Draft		Initial draft release.	
1	Sept 14, 2013	Initial release	Richard Chen, Emily Law

Contents

1 Introduction

1.1 Purpose and Scope

This document includes specific test procedures and reports test steps and results of tests that demonstrate the PDS4 Build 3b system deployed at the PDS Discipline Nodes by EN. It verifies that PDS4 system Build 3b has no critical defects and as planned in the PDS4 Build 3b Node Testing Plan (posted on http://pds.nasa.gov/pds4/orr0913/build3bTestPlanNodes.pdf), in which the Test Traceability Matrix can be found in its Section 3.

For PDS4 Build 3b, the following software have been deployed at the Discipline Nodes:

- Ingest: Harvest
- Preparation: Design, Validate
- Registry
- Search: Service

Detailed release description documents facilitate and detail the deployment activities.

1.2 Document Revision

Revisions of this document will be held in the PDS Engineering Node website through the use of its document history functionality. Previous versions of this document can be accessed through the use of that tool.

1.3 Applicable Documents

1.3.1 Controlling Documents

[1] Planetary Data System Strategic Roadmap 2006 - 2016, February 2006.

[2] Planetary Data System Level 1, 2 and 3 Requirements, August 2006.

1.3.2 Referenced Documents

[3] PDS4 Project Plan, July 2013.

[4] PDS4 Operations Concept, September 2013.

[4] System Architecture Specification, September 2013.

[5] General System Requirements, September 2013.

[6] Software Requirements and Design, 2013

[7] PDS4 Standards Documents, 2013

2 Executive Summary

2.1 Assessment

The tools and services tested here work with the versions specified.

2.2 Major Findings

All tested tools and services worked as described in the Service Software Requirements and Design documents.

2.3 Success

Tools and services performed as documented.

2.4 Metrics

This section provides a summary of the test metrics

# of tests performed	# of tests passed	# of tests failed	# of high priority anomalies
4	4	0	0

3 Test Procedures

The following section lists procedures and results for the test cases identified in Section 3 of the PDS4 System Build 3b Node Testing Plan Section 3. These tests will be run as necessary to re-test the system after software changes.

Section 3.2 below contains a sequence of tests that demonstrates how a bundle of products passes through the PDS4 software. The tests were performed using analogous MAVEN and LADEE data products

3.1 Setup

The tests in section 3.2 require the installation of the following PDS4 software:

- **Harvest**, http://pds-engineering.jpl.nasa.gov/pds2010/development/3.1.1/ingest/harvest
- **Validate**, http://pds-engineering.jpl.nasa.gov/pds2010/development/3.1.1/preparation/validate
- an **XML editor**, e.g. Oxygen. This can be skipped, though not recommended.
- an XML-friendly web **browser**, e.g. firefox

The tester might install and configure a registry if 1) no registry is available for testing, or 2) the tester wants more control over the registry, e.g. after a test step fails, the tester may wish to reset the registry. However, installation and configuration of that software and of the required Apache Tomcat server might be difficult. If so desired, install:

- **Registry**, http://pds-engineering.jpl.nasa.gov/pds2010/development/3.1.1/registry/registry-service
- **Registry UI**, http://pds-engineering.jpl.nasa.gov/pds2010/development/3.1.1/registry/registry-ui

Please follow the installation instructions carefully. For more help, the file NOTES.txt, included in PDS4test.build3b.tgz (see SETUP below), details one tester's configuration experience, particularly regarding the registry.

In the tests in the rest of this document, replace

testDir	directory where input files are extracted
binDir	directory where the PDS4 software are installed
Harvest	If the registry is uncontrolled (a choice made during installation), do not replace. Else: harvest –u*username* –p*password* Also add "-k *keystorePassword*" depending on the registry configuration, especially if Harvest gives error "Keystore password must be specified"
http://localhost:8080	the URL of the registry
http://pdsbeta.jpl.nasa.gov	the URL of the search service working off the EN's registry

Note that the tests are written for Unix, but running on other platforms requires simple changes.

The tests require this:

Test Case ID	SETUP
Description	This is not a test. This sets up test data.
Test Steps	• mkdir *testDir* • cd *testDir* • In browser: http://pds-engineering.jpl.nasa.gov/index.cfm?pid=145&cid=187 • Download "Test Data (.tgz)" • tar xzf PDS4test.build3b.tgz PDS4test.build3b/harvest-policy-master.xml • mv PDS4test.build3b/harvest-policy-master.xml . The ATMOS node provides this sample bundle, with context products: • In browser: http://atmos.nmsu.edu/pub/PDS4/Version_1.0.0.0 • Download "met_bundle_1000.tar.gz" • tar xzf met_bundle_1000.tar.gz • mv met_bundle_1000 *testDir* The Data Provider's Handbook provides sample products that utilize the types needed for LADEE and MAVEN: • In browser: http://pds-engineering.jpl.nasa.gov/index.cfm?pid=145&cid=187 • Download "PDS4 Example Products - (.zip)" • unzip dph_example_products.zip • mv dph_example_products *testDir*

Many test sequences in this document assume a local registry, which may get corrupted during testing. The following step resets the registry:

Test Case ID	RESETREGISTRY
Description	This is not a test. This wipes the database and the search indices clean. *dbDir* is the directory for the database, set during the initialization of Tomcat.
Test Steps	$CATALINA_HOME/bin/shutdown.sh rm -f -r *dbDir* mkdir *dbDir* cd *binDir*/registry-service-1.4.1 java -Djava.ext.dirs=lib/ org.apache.derby.tools.ij connect 'jdbc:derby:registry;create=true;user=registry'; run 'conf/derby-registry-schema.ddl'; exit; mv registry *dbDir*/registry rm derby.log $CATALINA_HOME/bin/startup.sh # usually a pause is needed here cd *binDir*/registry-service-1.4.1/bin; ./registry-config
Test Results	startup.sh: Using CATALINA_BASE: /Library/apache-tomcat-7.0.30 Using CATALINA_HOME: /Library/apache-tomcat-7.0.30 Using CATALINA_TMPDIR: /Library/apache-tomcat-7.0.30/temp

Using JRE_HOME: /Library/Java/Home
Using CLASSPATH: :/PDS4tools/search-service/lib/saxon-9.jar:/Library/apache-tomcat-7.0.30/bin/bootstrap.jar:/Library/apache-tomcat-7.0.30/bin/tomcat-juli.jar

registry-config:

```
* About to connect() to localhost port 8080 (#0)
*   Trying ::1...
* connected
* Connected to localhost (::1) port 8080 (#0)
> POST
/registry/configure?name=Core+Objects&description=This+configures+the+core+set+of+registry+objects HTTP/1.1
> User-Agent: curl/7.24.0 (x86_64-apple-darwin12.0) libcurl/7.24.0 OpenSSL/0.9.8r zlib/1.2.5
> Host: localhost:8080
> Accept: */*
> Content-type:application/xml
> Content-Length: 6201
> Expect: 100-continue
>
< HTTP/1.1 100 Continue
< HTTP/1.1 201 Created
< Server: Apache-Coyote/1.1
< Location: http://localhost:8080/registry/packages/urn:uuid:bffd4b92-e45e-4a48-8455-683bc9585d20
< Content-Type: text/plain
< Transfer-Encoding: chunked
< Date: Sat, 14 Sep 2013 03:39:46 GMT
<
* Connection #0 to host localhost left intact
urn:uuid:bffd4b92-e45e-4a48-8455-683bc9585d20* Closing connection #0
* About to connect() to localhost port 8080 (#0)
*   Trying ::1...
* connected
* Connected to localhost (::1) port 8080 (#0)
> POST /registry/configure?name=PDS+Objects&description=This+configures+PDS+object+types
HTTP/1.1
> User-Agent: curl/7.24.0 (x86_64-apple-darwin12.0) libcurl/7.24.0 OpenSSL/0.9.8r zlib/1.2.5
> Host: localhost:8080
> Accept: */*
> Content-type:application/xml
> Content-Length: 13063
> Expect: 100-continue
>
< HTTP/1.1 100 Continue
< HTTP/1.1 201 Created
< Server: Apache-Coyote/1.1
< Location: http://localhost:8080/registry/packages/urn:uuid:c4300e02-57db-4a18-8092-6858566f8a06
< Content-Type: text/plain
< Transfer-Encoding: chunked
< Date: Sat, 14 Sep 2013 03:39:46 GMT
<
* Connection #0 to host localhost left intact
urn:uuid:c4300e02-57db-4a18-8092-6858566f8a06* Closing connection #0
* About to connect() to localhost port 8080 (#0)
*   Trying ::1...
* connected
* Connected to localhost (::1) port 8080 (#0)
> POST
/registry/configure?name=Core+Associations&description=This+configures+the+core+set+of+associations HTTP/1.1
> User-Agent: curl/7.24.0 (x86_64-apple-darwin12.0) libcurl/7.24.0 OpenSSL/0.9.8r zlib/1.2.5
> Host: localhost:8080
> Accept: */*
> Content-type:application/xml
> Content-Length: 544
>
* upload completely sent off: 544 out of 544 bytes
< HTTP/1.1 201 Created
< Server: Apache-Coyote/1.1
< Location: http://localhost:8080/registry/packages/urn:uuid:2559a22a-4797-40c5-aeb2-3584edf7c04a
< Content-Type: text/plain
< Transfer-Encoding: chunked
< Date: Sat, 14 Sep 2013 03:39:46 GMT
<
```

	* Connection #0 to host localhost left intact urn:uuid:2559a22a-4797-40c5-aeb2-3584edf7c04a* Closing connection #0 * About to connect() to localhost port 8080 (#0) * Trying ::1... * connected * Connected to localhost (::1) port 8080 (#0) > POST /registry/configure?name=PDS+Associations&description=This+configures+PDS+association+types HTTP/1.1 > User-Agent: curl/7.24.0 (x86_64-apple-darwin12.0) libcurl/7.24.0 OpenSSL/0.9.8r zlib/1.2.5 > Host: localhost:8080 > Accept: */* > Content-type:application/xml > Content-Length: 7952 > Expect: 100-continue > < HTTP/1.1 100 Continue < HTTP/1.1 201 Created < Server: Apache-Coyote/1.1 < Location: http://localhost:8080/registry/packages/urn:uuid:c332c48e-060f-40b2-8a51-14f537619b77 < Content-Type: text/plain < Transfer-Encoding: chunked < Date: Sat, 14 Sep 2013 03:39:46 GMT * Connection #0 to host localhost left intact urn:uuid:c332c48e-060f-40b2-8a51-14f537619b77* Closing connection #0

3.2 Testing of Bundle Processing

The NODESTEST sequence was performed to test the PDS4 software's handling of LADEE and MAVEN representative products from creation to registration to retrieval. Two set of data were used for this testing including

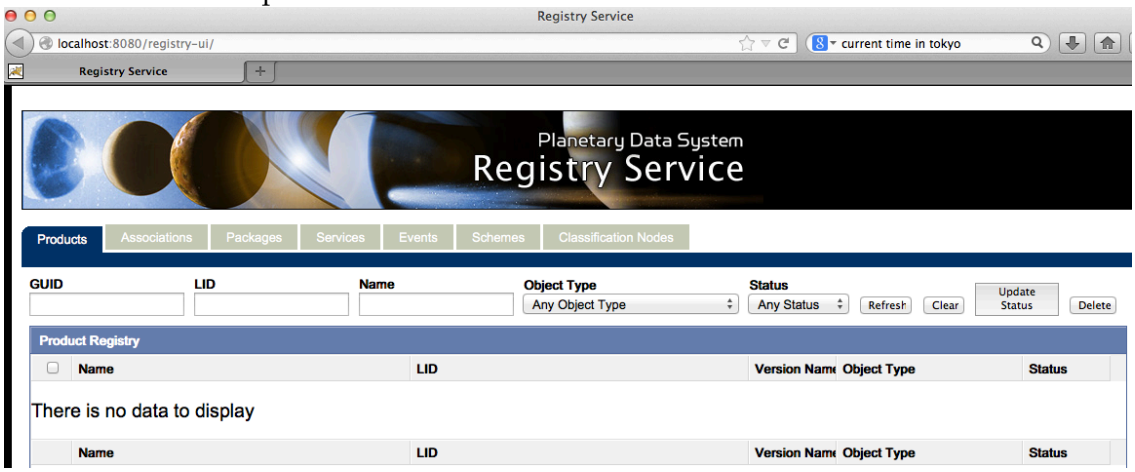
1. A PDS4 PHX product bundle (Table_character) created by ATMOS node as representative for LADEE , refer to as PHX bundle from here on.
2. A PDS4 MAVEN and LADEE analogous product bundle (Table_character, Table_Binary, Array_1D and Array_2D etc), created by EN, refer to as EN bundle from here on.

Test Case ID	NODESTEST.1
Description	Use a design tool to create PDS4 labels for products, and associated context (including bundle, collection, investigation archive webpage, investigations, resources) based on PDS's schema.
Test Steps	In general, consult Appendix D of the Data Providers' Handbook (DPH), Version 1.0.0
Test Results	Creation of one PDS4 label per product and delivery to EN test staff.
Comments	Results met test successful criteria
Date of Testing	2013.09.13
Test Personnel	Richard Chen

Test Case ID	NODESTEST.2
Description	Validate PDS4 product labels generated in NODESTEST.1 using the PDS4 Validate Tool.
Test Steps	In general: • validate *directoryOrFile* –e "*.xml" To test the PHX bundle (see step SETUP above)

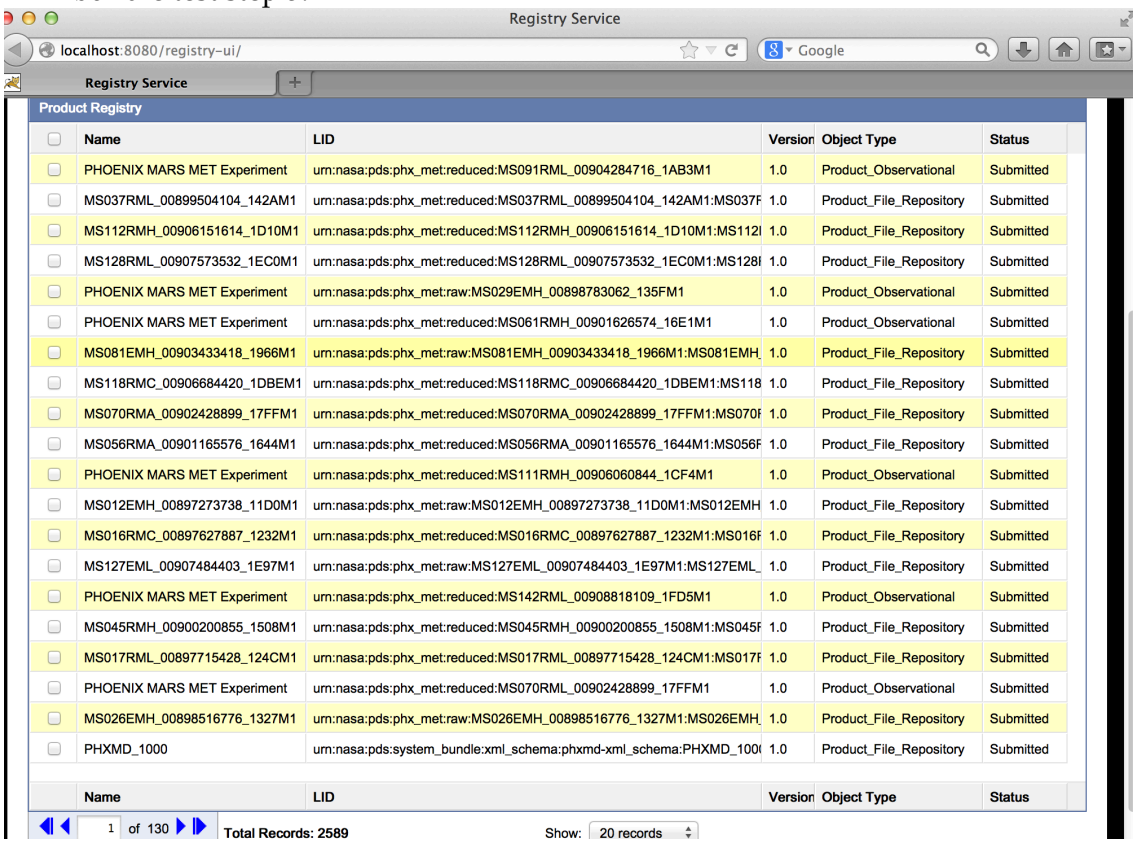
	1. cd *testDir* 2. curl http://pds.nasa.gov/pds4/schema/released/pds/v1/PDS4_PDS_1000.xsd > PDS4_PDS_1000.xsd 3. curl http://pds.nasa.gov/pds4/schema/released/pds/v1/PDS4_PDS_1000.sch > PDS4_PDS_1000.sch 4. validate met_bundle_1000 -x PDS4_PDS_1000.xsd -S PDS4_PDS_1000.sch -x met_bundle_1000/xml_schema/PHXMD_1000.xsd -e "*.xml" > v.out 5. grep -v "PASS: file" v.out | uniq To test the EN bundle (see step SETUP above) 1. cd *testDir*/dph_example_products The EN products were created using various schema and schematron files. 2. validate ingest_dd product_array_2d_image product_delimited_table product_document product_header_and_tableChar product_table_binary product_table_binary_packed product_table_character_grouped -e "*.xml" -x xml_schema/dph_example_dict_0100.xsd 3. curl http://pds.nasa.gov/repository/pds4/examples/dph_examples_1100/dph_example_products/xml_schema/PDS4_PDS_1100.sch > ../PDS4_PDS_1100.sch 4. validate xml_schema product_array_1d -e "*.xml" -x xml_schema/PDS4_PDS_1100.xsd -x xml_schema/dph_example_dict_0100.xsd -S ../PDS4_PDS_1100.sch 5. validate product_array_3d_image product_table_character_grouped -e "*.xml" -x xml_schema/dph_example_dict_0100.xsd -x product_array_3d_image/PDS4_SP_1001.xsd -S product_array_3d_image/PDS4_SP_1001.sch
Test Results	PHX bundle test step 4: v.out has 1732 lines, mostly "PASS: file:…" followed by a blank line. PHX bundle test step 5: PDS Validate Tool Report Configuration: Version 1.3.1 Time Fri, Sep 13 2013 at 08:56:31 PM Parameters: Target(s) [met_bundle_1000] User-Specified Schemas [PDS4_PDS_1000.xsd, met_bundle_1000/xml_schema/PHXMD_1000.xsd] User-Specified Schematrons [PDS4_PDS_1000.sch] Severity Level Warnings Recurse Directories true File Filter(s) Used [*.xml] Validation Details: Summary: 855 of 855 file(s) processed, 0 skipped 855 of 855 file(s) passed validation End of Report EN bundle test step 2: PDS Validate Tool Report Configuration: Version 1.3.1 Time Fri, Sep 13 2013 at 11:31:15 PM Core Schematrons [PDS4_PDS_1000.sch] Model Version 1000 Parameters: Target(s) [ingest_dd, product_array_2d_image, product_delimited_table, product_document, product_header_and_tableChar, product_table_binary, product_table_binary_packed, product_table_character] User-Specified Schemas [xml_schema/dph_example_dict_0100.xsd] Severity Level Warnings Recurse Directories true

	File Filter(s) Used [*.xml] Validation Details: PASS: file:*testDir*/dph_example_products/ingest_dd/Ingest_LDD_telemetry.xml PASS: file:*testDir*/dph_example_products/product_array_2d_image/Product_Array_2D_Image.xml PASS: file:*testDir*/dph_example_products/product_delimited_table/Product_DelimitedTable.xml PASS: file:*testDir*/dph_example_products/product_document/Product_Document.xml PASS: file:*testDir*/dph_example_products/product_header_and_tableChar/Product_Header_and_TableChar.xml PASS: file:*testDir* /dph_example_products/product_table_binary/Product_Table_Binary.xml PASS: file:*testDir*/dph_example_products/product_table_binary_packed/Product_Table_Binary_packed.xml PASS: file:*testDir*/dph_example_products/product_table_character/Product_Table_Character.xml Summary: 8 of 8 file(s) processed, 0 skipped 8 of 8 file(s) passed validation End of Report EN bundle test step 4: PDS Validate Tool Report Configuration: Version 1.3.1 Time Fri, Sep 13 2013 at 11:44:05 PM Parameters: Target(s) [xml_schema, product_array_1d] User-Specified Schemas [xml_schema/PDS4_PDS_1100.xsd, xml_schema/dph_example_dict_0100.xsd] User-Specified Schematrons [../PDS4_PDS_1100.sch] Severity Level Warnings Recurse Directories true File Filter(s) Used [*.xml] Validation Details: PASS: file:*testDir*/dph_example_products/xml_schema/PDS4_PDS_1100.xml PASS: file:*testDir*/dph_example_products/product_array_1d/Product_Array_1D.xml Summary: 2 of 2 file(s) processed, 0 skipped 2 of 2 file(s) passed validation End of Report EN bundle test step 5: PDS Validate Tool Report Configuration: Version 1.3.1 Time Sat, Sep 14 2013 at 12:07:51 AM Parameters: Target(s) [product_array_3d_image, product_table_character_grouped] User-Specified Schemas [xml_schema/dph_example_dict_0100.xsd, product_array_3d_image/PDS4_SP_1001.xsd] User-Specified Schematrons [product_array_3d_image/PDS4_SP_1001.sch] Severity Level Warnings Recurse Directories true File Filter(s) Used [*.xml] Validation Details: PASS: file:*testDir*/dph_example_products/product_array_3d_image/catalog_1001.xml PASS: file:*testDir*/dph_example_products/product_array_3d_image/PDS4_SP_1001.xml PASS: file:*testDir*/dph_example_products/product_array_3d_image/sample_qube_5_bands.xml PASS: file:*testDir*/dph_example_products/product_table_character_grouped/Product_Table_Character_Grouped.xml Summary: 4 of 4 file(s) processed, 0 skipped 4 of 4 file(s) passed validation End of Report
Comments	Results met test successful criteria.
Date of Testing	2013.09.13
Test Personnel	Richard Chen

Test Case ID	NODESTEST.3
Description	Use Harvest Tool to register PDS4 product labels, bundles, and collections generated in NODESTEST.1. Context products will be registered by EN.
Test Steps	In general: 1. In browser, http://localhost:8080/registry-ui/to see no registrations 2. harvest *directoryOrFile* -e "*.xml" -c *testDir*/harvest-policy-master.xml 3. In browser, http://localhost:8080/registry-ui/. You may enter one product's LID (wildcards accepted) to verify the registration and hit "Refresh" To test the PHX bundle: 1. cd *testDir* 2. In browser, http://localhost:8080/registry-ui/to see no registrations 3. harvest met_bundle_1000 -e "*.xml" -c harvest-policy-master.xml -l h.out 4. grep -v "SUCCESS:\ |INFO:" h.out 5. In browser, http://localhost:8080/registry-ui/ To test the EN products: 1. cd *testDir* 2. In browser, http://localhost:8080/registry-ui/to see no registrations 3. harvest dph_example_products -e "*.xml" -c harvest-policy-master.xml -l h.out 4. grep -v "SUCCESS:\ |INFO:" h.out 5. In browser, http://localhost:8080/registry-ui/
Test Results	Merge the two sequences above, i.e. the bundle to harvest is test LADEE PHX bundle test step 2:  PHX bundle test step 3: h.out has 27393 lines, mostly "SUCCESS:…" or "INFO:…" PHX bundle test step 4: PDS Harvest Tool Log Version Version 1.4.1 Time Fri, Sep 13 2013 at 09:10:03 PM Target(s) [met_bundle_1000] File Inclusions [*.xml] Severity Level INFO Registry Location http://localhost:8080/registry Registry Package Name The standard harvest policy file, I think Registration Package GUID urn:uuid:7b44a2dd-f2e4-4b5f-9017-f355cb8e80bb WARNING: [met_bundle_1000/xml_schema/collection_xml_schema.xml] Product not found in registry for reference: urn:nasa:pds:system_bundle:xml_schema:pds-xml_schema::1.0. LIDVID will be used as the target reference for the association. WARNING: [met_bundle_1000/context/collection_met_context.xml] Product not found in registry for reference: urn:nasa:pds:context:investigation:mission.phoenix::1.0. LIDVID will be used as the target reference for the association. WARNING: [met_bundle_1000/context/collection_met_context.xml] Product not found in registry for reference: urn:nasa:pds:context:instrument_host:instrument_host.phx::1.0. LIDVID will be used as the target reference for the association. WARNING: [met_bundle_1000/context/collection_met_context.xml] Product not found in registry for reference: urn:nasa:pds:context:target:planet.mars::1.0. LIDVID will be used as the target reference for the

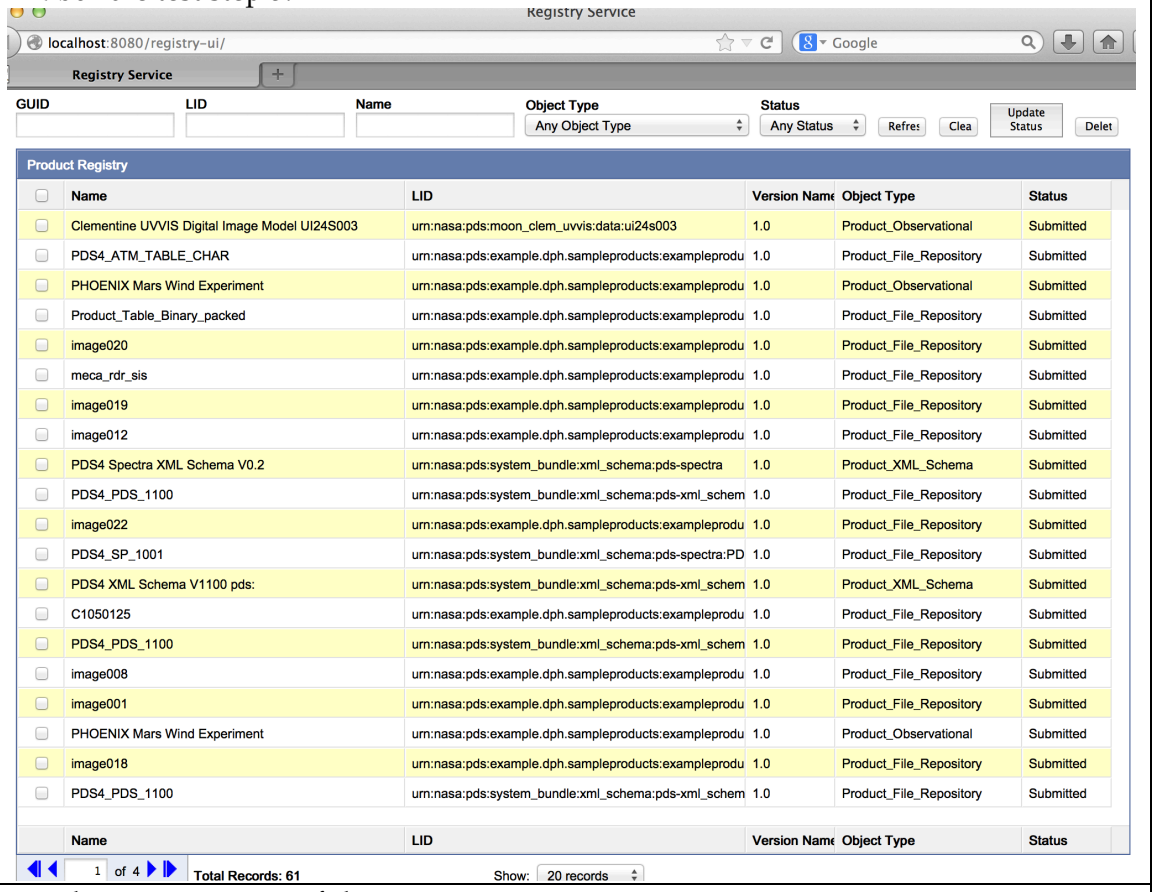
association.
WARNING: [met_bundle_1000/context/collection_met_context.xml] Product not found in registry for reference: urn:nasa:pds:context:instrument:instrument.met__phx::1.0. LIDVID will be used as the target reference for the association.
Summary:
855 of 855 file(s) processed, 0 other file(s) skipped
0 error(s), 5 warning(s)
855 of 855 products registered.
1734 of 1734 ancillary products registered.
Product Types Registered:
5 Product_Document
843 Product_Observational
1 Product_XML_Schema
1 Product_Bundle
5 Product_Collection
1734 Product_File_Repository
2588 of 2588 associations registered.
End of Log

PHX bundle test step 5:



EN bundle test step 2 is the same as PHX bundle test step 2
EN bundle test step 3: h.out has 510 lines, mostly “SUCCESS:…” or “INFO:…”
EN bundle test step 4:

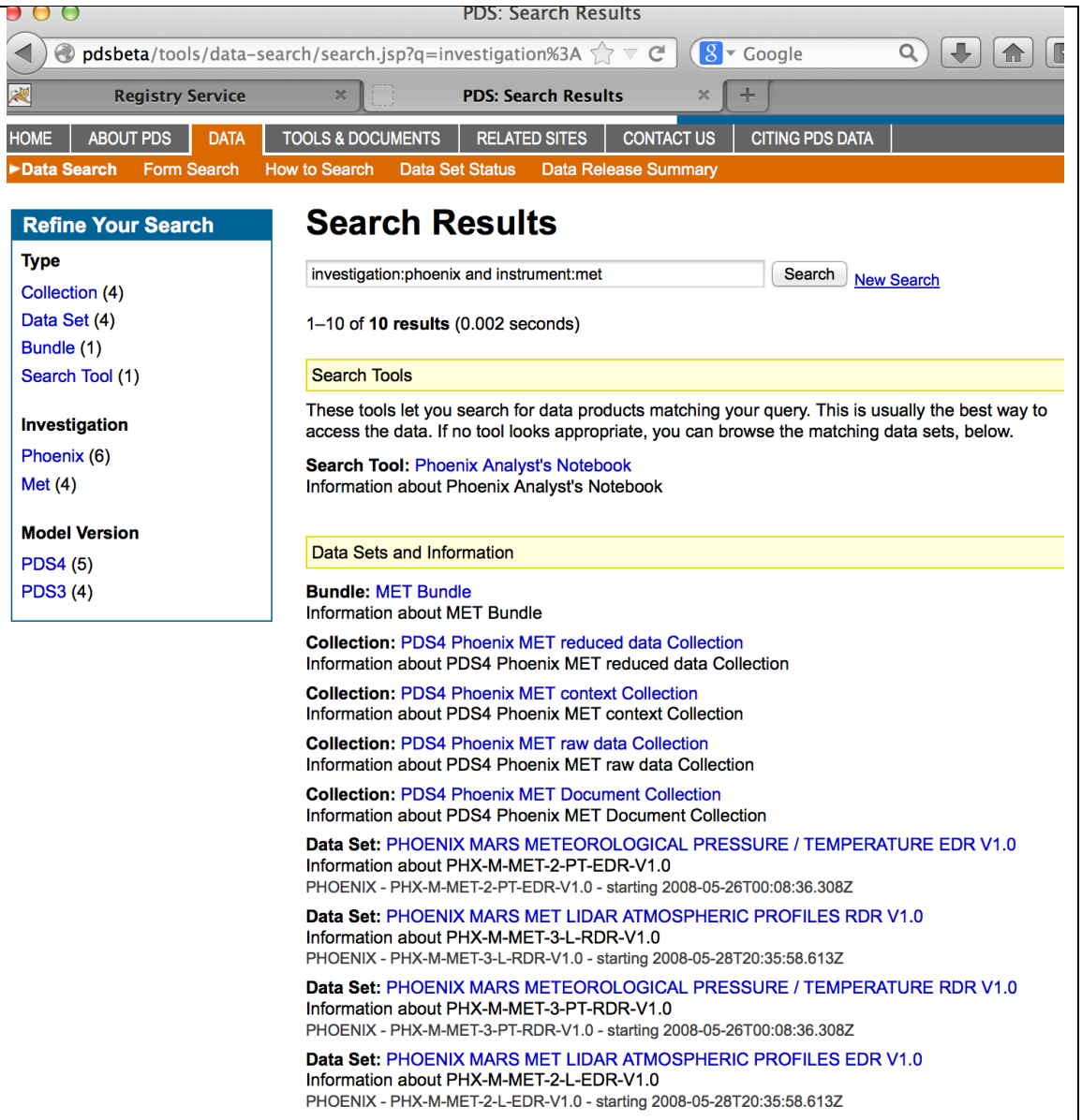
PDS Harvest Tool Log
Version Version 1.4.1
Time Sat, Sep 14 2013 at 12:36:11 AM
Target(s) [dph_example_products]
File Inclusions [*.xml]
Severity Level INFO
Registry Location http://localhost:8080/registry
Registry Package Name The standard harvest policy file, I think
Registration Package GUID urn:uuid:65911659-7dad-4d55-9331-583bd6d56fe7
SKIP:
[dph_example_products/product_table_character_grouped/PDS4_AFM_D_HEADER_TABLE.xml] No product_class element found.
SKIP: [dph_example_products/product_array_3d_image/catalog_1001.xml] No product_class element found.
SKIP: [dph_example_products/ingest_dd/Ingest_LDD_telemetry.xml] No product_class element found.
Summary:

	12 of 12 file(s) processed, 3 other file(s) skipped 0 error(s), 0 warning(s) 12 of 12 products registered. 49 of 49 ancillary products registered. Product Types Registered: 1 Product_Document 9 Product_Observational 2 Product_XML_Schema 49 Product_File_Repository 49 of 49 associations registered. End of Log EN bundle test step 5: 
Comments	Results met test successful criteria. PHX bundle test step 4: the 5 warnings indicate that the collections have secondary members that are not yet registered as primary members. That is correct, for those products (the schema for pds, the mission phoenix, the instrument host phoenix, the target mars, and the instrument phoenix/met) would be primary elsewhere. Therefore they are not issues. EN bundle test step 4: the 3 skipped files are .xml files but are not labels for products. They are, in order, a file to be merged, a catalog file, and a local data dictionary file. Therefore, they are not issues.
Date of Testing	2013.09.13
Test Personnel	Richard Chen

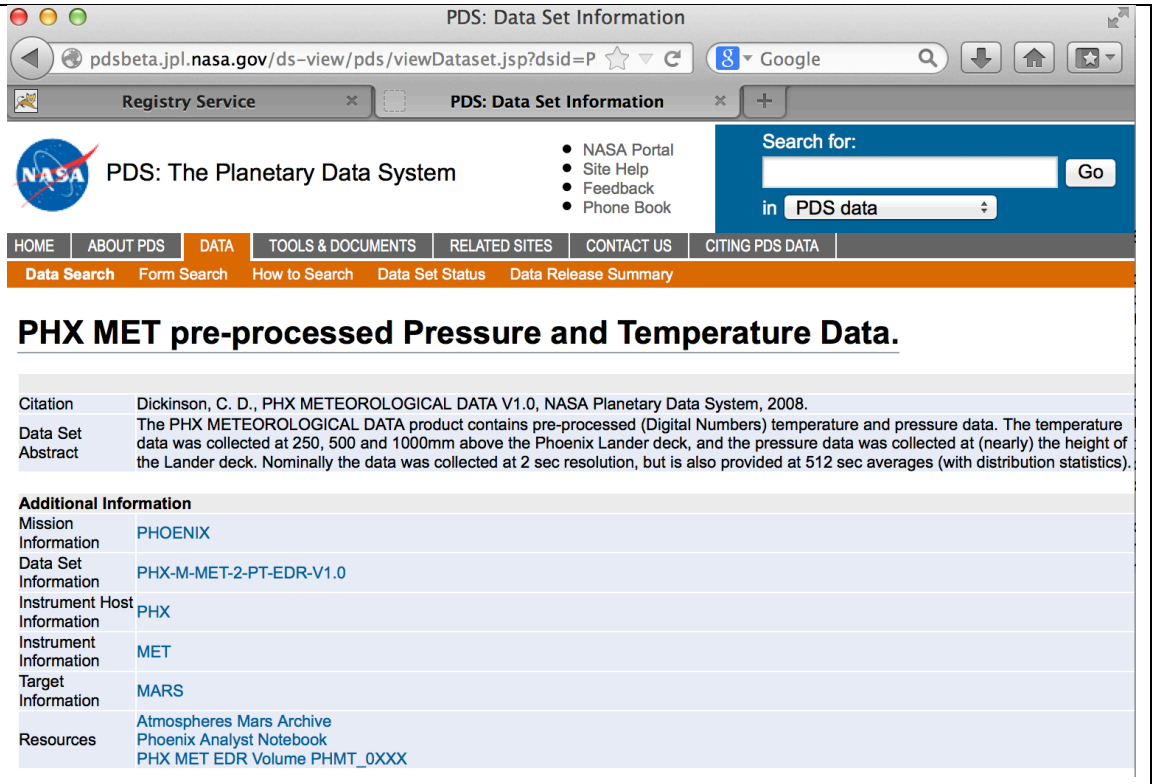
Upon completition of NODETEST.3 above, wait for EN to register context products (including investigation archive webpage), synchronize registries, and rebuild search indices before proceeding to next Node test step below.

Separate testing of these EN activites is documented in the PDS4 Build 3b Test Procedures and Report http://pds.nasa.gov/pds4/orr0913/build3bProceduresReportEN.pdf.

Test Case ID	NODESTEST.4
Description	Find registered products using PDS Home Page Data Search and download products from the Node.
Test Steps	In general: 1. In browser, http://pdsbeta.jpl.nasa.gov 2. Click "DATA" tab. 3. In the main text box, search for archive pages for investigations, other information (including instrument, instrument_host, target, investigation), and/or any bundles or collections registered in NODESTEST.3 4. Click a search result to get more information. Downloading of To test the PHX bundle: 1. same as above 2. same as above 3. In the main text box: investigation:phoenix and instrument:met 4. Click the first Data Set, PHOENIX MARS METEOROLOGICAL PRESSURE / TEMPERATURE EDR V1.0
Test Results	PHX bundle test step 3:



PHX bundle test step 4:



Comments	Results met test successful criteria
Date of Testing	2013.09.13
Test Personnel	Richard Chen

4 Anomalies

The JIRA tracking system (http://www.atlassian.com/software/jira) is being used to capture discrepancies found during testing.

No JIRA issue was created for this test.

For the full JIRA list, http://oodt.jpl.nasa.gov/jira/browse/PDS

4.1 Major Issues

None

4.2 Open anomalies

None

5 Test Data

Test data used can be downloaded from:

http://pds.nasa.gov/pds4/orr0913/nodeTestData.tgz

Appendix A: Acronyms

CM – Configuration Management
DN – PDS Discipline or Data Node
GUI – Graphical User Interface
EN – PDS Engineering Node
I&T – Integration and Test
NASA – National Aeronautics and Space Administration
OS – Operating System
PDS – Planetary Data System
PDS3 – Version 3.8 of the PDS Data Standards
PDS4 – Version 4.0 of the PDS Data Standards
PDS4 – PDS4 Project
PDS MC – PDS Management Council
SDD – Software Design Document
SRD – Software Requirements Document