



LARGE SYNOPTIC SURVEY TELESCOPE

Large Synoptic Survey Telescope (LSST)
Data Management

LDM-503-09a (Science Pipelines Fall 2018 Release) Test Plan and Report

John D. Swinbank

DMTR-111

Latest Revision: 2019-04-12

Abstract

This is the test plan and report for LDM-503-09a (Science Pipelines Fall 2018 Release), an LSST level 2 milestone pertaining to the Data Management Subsystem.

Change Record

Version	Date	Description	Owner name
	2018-11-19	First Draft	Swinbank, Comoretto
	2019-04-12	Final version, accepted on DM-17121	Swinbank, Comoretto

Document curator: John Swinbank

Document source location: <https://github.com/lstt-dm/DMTR-111>

Version from source repository: 22b2bf5



Contents

1 Introduction	1
1.1 Objectives	1
1.2 Scope	2
1.3 System Overview	2
1.4 Applicable Documents	2
1.5 Document Overview	2
1.6 References	3
2 Test Configuration	3
2.1 Data Collection	3
2.2 Verification Environment	3
3 Personnel	4
4 Overview of the Test Results	5
4.1 Summary	5
4.2 Overall Assessment	5
4.3 Recommended Improvements	5
5 Detailed Test Results	6
5.1 Test Cycle LVV-C18	6
5.1.1 Software Version/Baseline	6
5.1.2 Configuration	6
5.1.3 Test Cases in LVV-C18 Test Cycle	6

LDM-503-09a (Science Pipelines Fall 2018 Release) Test Plan and Report

1 Introduction

1.1 Objectives

This test plan checks for the successful release of the Fall 2018 release of the LSST Science Pipelines (Pipelines release version 17.0).

It will demonstrate that:

- The release has been tagged, built and made available through standard distribution channels;
- Release documentation, including release notes and a characterization report, are available on the LSST Pipelines documentation website (<https://pipelines.lsst.io/>);
- An end-user can follow standard instructions to install the release onto some representative system;
- The release is installed into the “shared stack” on the lsst-dev shared developer systems and the Verification Cluster at the LSST Data Facility;
- The `lsst_dm_stack_demo` test package executes successfully in the context of the release.

This test plan does not, in itself, verify the scientific integrity or algorithmic correctness of the release, beyond checking that defined procedures for checking basic correctness and characterizing algorithmic performance have been followed.

1.2 Scope

The overall strategy for testing and verification within LSST Data Management is described in LDM-503.

This test plan specifically verifies successful completion of milestone LDM-503-09a, which refers to the Fall 2018 release of the LSST Science Pipelines.

1.3 System Overview

The LSST Science Pipelines comprise the scientific algorithms which will be used to process LSST data, arranged into executable pipelines by means of the LSST “task” framework. They also include execution middleware which is common across execution environment (for example, the “Data Butler” I/O abstraction is included, but schedulers or workflow management for specific clusters is not), and “camera packages” which adapt and configure the algorithms for use with specific instrumentation.

1.4 Applicable Documents

LDM-503 Data Management Test Plan
LDM-151 Data Management Science Pipelines Design
LSE-61 Data Management System Requirements

1.5 Document Overview

This document was generated from Jira, obtaining the relevant information from the LVV-P15 Jira Test Plan and related Test Cycles (LVV-C18).

Section 1 provides an overview of the test campaign, the system under test (Science Pipelines SW), the applicable documentation, and explains how this document is organized. Section 2 describes the configuration used for this test. Section 3 describes the necessary roles and lists the individuals assigned to them.

Section 4 provides a summary of the test results, including an overview in Table 1, an over-

all assessment statement and suggestions for possible improvements. Section 5 provides detailed results for each step in each test case.

The current status of test plan LVV-P15 in Jira is Completed.

1.6 References

- [1] **[LSE-61]**, Dubois-Felsmann, G., Jenness, T., 2018, *LSST Data Management Subsystem Requirements*, LSE-61, URL <https://ls.st/LSE-61>
- [2] **[LDM-503]**, O'Mullane, W., Swinbank, J., Jurić, M., Economou, F., 2018, *Data Management Test Plan*, LDM-503, URL <https://ls.st/LDM-503>
- [3] **[LDM-151]**, Swinbank, J.D., et al., 2017, *Data Management Science Pipelines Design*, LDM-151, URL <https://ls.st/LDM-151>

2 Test Configuration

2.1 Data Collection

Observing is not required for this test campaign.

2.2 Verification Environment

Several of the tests described in this plan are agnostic of environment: they involve checking that certain content has been properly published. This can be performed from any internet-connected system with a web browser, and will, in this case, likely be executed from the tester's laptop.

Where tests require installation or execution of specific Science Pipelines components, this will be carried out on the "lsst-dev" shared developer infrastructure at the LSST Data Facility. This infrastructure provides a number of powerful (high core count, high RAM) systems accessible to LSST developers. At time of writing, they are running CentOS 7.5.1804; in practice, any version of CentOS (or a similar operating system) is appropriate for this test plan, as long

as it complies with the published installation prerequisites of the LSST pipelines.

3 Personnel

The following personnel are involved in this test activity:

- Test Plan (LVV-P15) owner: John Swinbank
- Test Cycles:
 - LVV-C18 owner: John Swinbank
 - * Test case LVV-T362 tester: John Swinbank
 - * Test case LVV-T363 tester: John Swinbank
- Additional Test Personnel involved: None

4 Overview of the Test Results

4.1 Summary

Test Cycle LVV-C18: LDM-503-09a: Science Pipelines Fall 2018 Release

test case	status	comment	issues
LVV-T362	Pass	This test case was executed successfully, with no issues arising.	
LVV-T363	Pass	This test case was executed successfully, with no issues arising.	

Table 1: Test Results Summary

4.2 Overall Assessment

This test plan was executed successfully; no issues were encountered.

4.3 Recommended Improvements

Contrary to the test plan description, none of the test cases actually demonstrated that the shared stack environment on the shared LSST developer systems or the Verification Cluster had been updated with the new stack. A further test case could be added to future executions of similar plan to check this.

5 Detailed Test Results

5.1 Test Cycle LVV-C18

Open test cycle *LDM-503-09a: Science Pipelines Fall 2018 Release* in Jira.

LDM-503-09a: Science Pipelines Fall 2018 Release

Status: Done

This test cycle describes tests performed on the Science Pipelines Fall 2018 (v17.0) release, ensuring that the release is properly identified, documented, distributed, installable and tested.

5.1.1 Software Version/Baseline

A web browser is required for inspecting release artifacts published to the web.

Testing the software installation procedures, and demonstrating that the release's integration tests can be executed successfully, require a supported operating system with the documented prerequisites of the release installed. This will be carried out on the "lsst-dev" shared developer systems at the LSST Data Facility. At time of writing, these systems run CentOS Linux release 7.5.1804, and it is anticipated that this will be a supported platform for the Science Pipelines release. Science Pipelines prerequisites are currently documented at <https://pipelines.lsst.io/> and all of these must be installed. It is possible that the software release will involve a reorganization of documentation describing prerequisites; in this case, the documentation corresponding to the new release must be consulted.

5.1.2 Configuration

No specific configuration is required beyond the availability of test systems with the prerequisite software, described above, installed.

5.1.3 Test Cases in LVV-C18 Test Cycle

5.1.3.1 Test Case LVV-T362

Open *LW-T362* test case in Jira.

This test will check that:

- The Alert Production Pipeline payload is available for installation from documented channels;
- The Data Release Production Pipeline payload is available for installation from documented channels;
- The Calibration Products Production Pipeline payload is available for installation from documented channels;
- These payloads can be installed on systems at the LSST Data Facility following available documentation;
- The installed pipeline payloads are capable of successfully executing basic integration tests.

Note that this test assumes a 2018-era packaging of the Science Pipelines software, in which all the above payloads are represented by a single “meta-package”, `lsst_distrib`.

Preconditions:

Execution status: **Pass**

Final comment:

This test case was executed successfully, with no issues arising.

Detailed step results:

Step	Description, Results and Status	
1	Description	The LSST Science Pipelines, described by the <code>lsst_distrib</code> meta-package, should be installed following the documentation available at https://pipelines.lsst.io/ . The suggested Conda environment will be used to ensure that a supported execution environment is available.
	Expected Result	Detailed output will depend on the installation method chosen, but will confirm the successful installation of the Science Pipelines.

Actual Result The output ends with:

[128/128] lsst_distrib 17.0.1 (DarwinX86) done.

The LSST Science Pipelines are successfully installed.

Status Pass

2 Description The lsst_distrib top-level metapackage will be enabled. Assuming that the software has been installed at `LSST_DIR`:

```
source LSST_DIR/loadLSST.bash
setup lsst_distrib
```

Expected Result Nothing is printed. The command

```
eups list -s lsst_distrib
```

may be used to confirm that the correct version of the codebase has been installed.

Actual Result `$ eups list -s lsst_distrib`
17.0.1 current v17_0_1 o_latest setup

Status Pass

3 Description The "LSST Stack Demo" package will be downloaded onto the test system from https://github.com/lsst/lsst_dm_stack_demo/releases. The version corresponding to to the version of the Science Pipelines under test should be chosen.

Expected Result Depends on the tool selected by the user for downloading.

Actual Result Downloaded successfully.

Status Pass

4 Description The stack demo package is uncompressed into a directory `DEMO_DIR`.

	Expected Result	Depends on options given to the tar command. Should confirm the availability of the stack demo source.
	Actual Result	Source uncompressed successfully.
	Status	Pass
5	Description	The demo package will be executed by following the instructions in its README file.
	Expected Result	Successful execution will result in the string "Ok" being returned.
	Actual Result	<code>\$.bin/compare detected-sources.txt</code> Ok.
	Status	Pass

5.1.3.2 Test Case LVV-T363

Open *LVV-T363* test case in Jira.

This test will check:

- That a particular Science Pipelines release is adequately described by documentation at the <https://pipelines.lsst.io/> site;
- That the Science Pipelines release is accompanied by a characterization report which describes its scientific performance.

Preconditions:

Execution status: **Pass**

Final comment:

This test case was executed successfully, with no issues arising.

Detailed step results:

Step	Description, Results and Status	
1	Description	Load the Science Pipelines website at https://pipelines.lsst.io/ .
	Expected Result	The website is displayed.
	Actual Result	Site loaded.
	Status	Pass
2	Description	Identify documentation for the release under test. This should be clearly labelled on the documentation site. If the latest release is being tested, the default page loaded when visiting https://pipelines.lsst.io/ should be the documentation required. If this test is for another release, the site should present clear instructions for changing the edition (or version) of the documentation being examined, and documentation for the release under test should be available.
	Expected Result	The documentation for the release under test is displayed.
	Actual Result	Documentation for the release under test is clearly labelled on the front page of https://pipelines.lsst.io/ .
	Status	Pass
3	Description	Inspect the documentation to ensure that it refers to the release under test, and that it provides: <ul style="list-style-type: none"> • Release notes, describing changes in this release relative to the previous; • Installation instructions, together with a list of supported platforms and prerequisites; • Getting started information.
	Expected Result	The user is satisfied that the required information is available.

	Actual Result	All information described is present.
	Status	Pass
4	Description	Locate the Characterization Metric Report corresponding to this release. It should be linked from the main release documentation.
	Expected Result	The user is satisfied that the report is available.
	Actual Result	Characterization metric report DMTR-131 clearly labelled and downloaded.
	Status	Pass
5	Description	Verify that the characterization metric report describes the scientific performance of the release in terms of metrics referring to high-level requirements documentation (the Science Requirements Document, LPM-17; the LSST System Requirements, LSE-29; and/or the Observatory System Specifications, LSE-30).
	Expected Result	The user is satisfied with the contents of the report.
	Actual Result	Verification report is as described.
	Status	Pass
