LARGE SYNOPTIC SURVEY TELESCOPE

Large Synoptic Survey Telescope (LSST)
Data Management

LDM-503-11b Science Pipelines Fall 2019 Release Test Plan and Report

John Swinbank

DMTN-182

Latest Revision: 2019-11-22

DRAFT

Abstract

This is the test plan and report for LDM-503-11b (Science Pipelines Fall 2019 Release), an LSST level 2 milestone pertaining to the Data Management Subsystem.

Change Record

Version	Date	Description	Owner name
	2019-11-21	First Draft	John Swinbank

Document curator: John Swinbank
Document source location: `https://github.com/lsst-dm/DMTR-192`
Version from source repository: 0ce3ab8

Contents

LDM-503-11b Science Pipelines Fall 2019 Release Test Plan and Report

1 Introduction

1.1 Objectives

This test plan checks for the successful release of the Fall 2019 release of the LSST Science Pipelines (Pipelines release version 19.0.0).

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-503-11b, which refers to the Fall 2019 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-P62 Jira Test Plan and related Test Cycles (LVV-C113).

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 overall 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-P62 in Jira is **Draft** .

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 7.6.1810; 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 Science Pipelines.

3 Personnel

The following personnel are involved in this test activity:

- Test Plan (LVV-P62) owner: John Swinbank
- Test Cycles:
  - LVV-C113 owner: John Swinbank
    * Test case LVV-T362 tester:
    * Test case LVV-T1601 tester:
    * Test case LVV-T363 tester:
- Additional Test Personnel involved:
  - Test case LVV-T362:
  - Test case LVV-T363:
  - Test case LVV-T1601:

4 Overview of the Test Results

4.1 Summary

Test Cycle **LVV-C113: LDM-503-11b: Science Pipelines Fall 2019 Release**			
test case	**status**	**comment**	**issues**
LVV-T362	Not Executed		
LVV-T1601	Not Executed		
LVV-T363	Not Executed		

Table 1: Test Results Summary

4.2 Overall Assessment

Not yet available.

4.3 Recommended Improvements

Not yet available.

5 Detailed Test Results

5.1 Test Cycle LVV-C113

Open test cycle *LDM-503-11b: Science Pipelines Fall 2019 Release* in Jira.

LDM-503-11b: Science Pipelines Fall 2019 Release
Status: Not Executed

This test cycle describes tests performed on the Science Pipelines Fall 2019 (v19.0.0) 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 7.6.1810, 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/i 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-C113 Test Cycle

5.1.3.1 Test Case LVV-T362 - Installation of the LSST Science Pipelines Payloads

Open *LVV-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: **Not Executed**

Final comment:

Detailed step results:

Step	Description, Results and Status

1	Description	The LSST Science Pipelines, described by the lsst_distrib 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	
	Status	Not Executed

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	
	Status	Not Executed
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	

	Status	Not Executed
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	
	Status	Not Executed
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	
	Status	Not Executed

5.1.3.2 Test Case LVV-T1601 - Science Pipelines available on developer hardware

Open *LVV-T1601* test case in Jira.

This test will check that a given release of the LSST Science Pipelines is available for use in a “shared stack” on developer infrastructure.

Preconditions:

Execution status: **Not Executed**

Final comment:

Detailed step results:

Step		Description, Results and Status
1	Description	Consult the LSST Developer Guide (http://developer.lsst.io/) to establish: • An appropriate hostname and login instructions for the shared developer infrastructure at the LSST Data Facility; • Instructions for initializing the shared stack on the developer infrastructure.
	Expected Result	The Developer Guide clearly presents information about connecting to and using shared infrastructure.
	Actual Result	
	Status	Not Executed
2	Description	Connect to the shared infrastructure following the Developer Guide instructions.
	Expected Result	A shell prompt on a shared machine.
	Actual Result	
	Status	Not Executed
3	Description	Initialize the LSST environment following the Developer Guide instructions.
	Expected Result	No errors are shown.
	Actual Result	
	Status	Not Executed
4	Description	List available software products using EUPS, and check that the release under test is available.

Expected Result	The provided version number should be available in the shared stack.
Actual Result	
Status	Not Executed

5.1.3.3 Test Case LVV-T363 - Science Pipelines Release Documentation

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: **Not Executed**

Final comment:

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	
	Status	Not Executed
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	
	Status	Not Executed
3	Description	Inspect the documentation to ensure that it refers to the release under test, and that it provides: • 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	

	Status	Not Executed
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	
	Status	Not Executed
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	
	Status	Not Executed

A Acronyms used in this document

Acronym	Description
DM	Data Management
DMTN	DM Technical Note
EUPS	Extended Unix Product System
LDM	LSST Data Management (Document Handle)
LPM	LSST Project Management (Document Handle)
LSE	LSST Systems Engineering (Document Handle)
LSST	Large Synoptic Survey Telescope
RAM	Random Access Memory