Vera C. Rubin Observatory
Data Management

LVV-P128: LDM-503-19 (All P1a and 1b DM requirements verified) Test Plan

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DMTR-441

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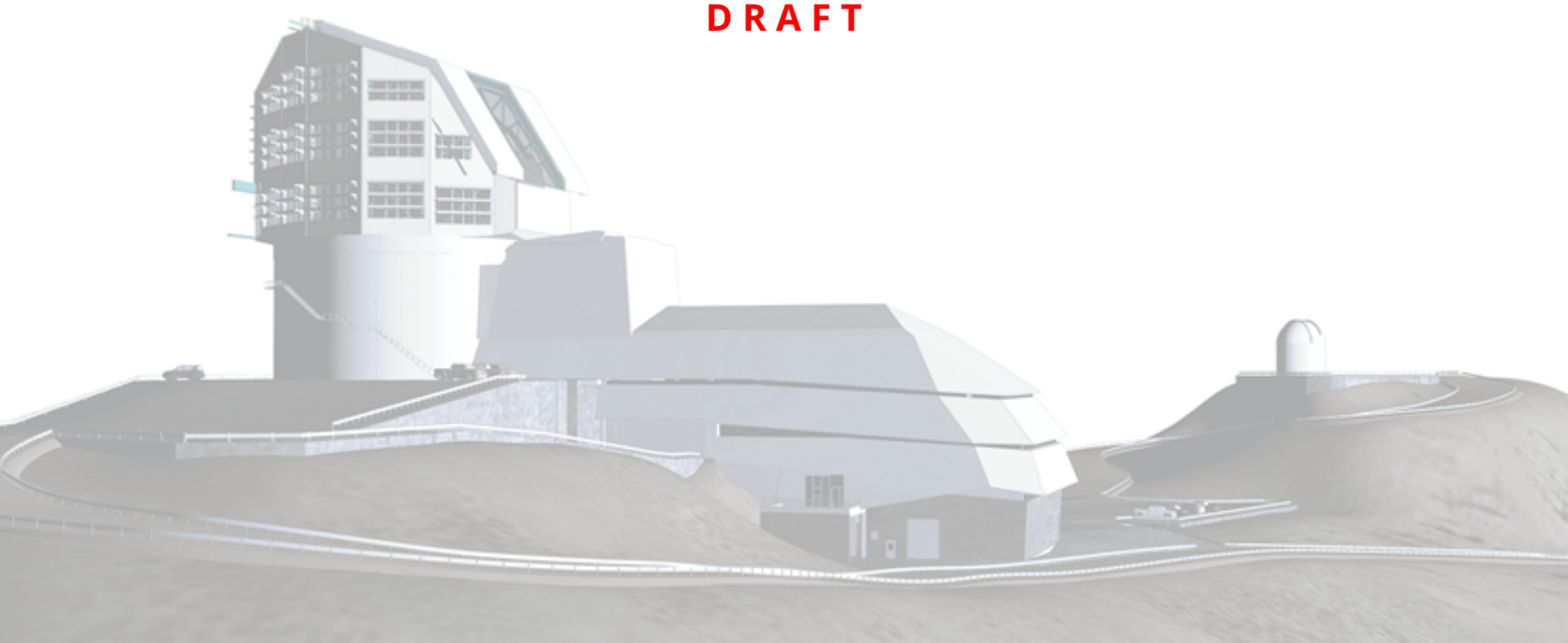
DRAFT



Abstract

This is the test plan for **LDM-503-19 (All P1a and 1b DM requirements verified)**, an LSST milestone pertaining to the Data Management Subsystem.
This document is based on content automatically extracted from the Jira test database on 2025-10-13 . The most recent change to the document repository was on 2025-10-13.

Change Record

Version	Date	Description	Owner name
	2024-11-08	First draft	Jeffrey Carlin

Document curator: Jeffrey Carlin
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Version from source repository: 56f70cf

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1 Introduction

1.1 Objectives

This DM acceptance test campaign will verify all DM priority 1a and 1b requirements that have not been verified as part of prior testing and milestones.

1.2 System Overview

This test campaign is intended to verify that the DM system satisfies all of the priority 1a and 1b requirements outlined in the Data Management System Requirements (DMSR; LSE-61), ensuring that we are progressing toward readiness for LSSTCam on-sky observing. Additional DMSR requirements (priorities 2 and 3) will be verified in later Acceptance Test Campaigns.

Applicable Documents:
LSE-61: Data Management System (DMS) Requirements
LDM-503 Data Management Test Plan
LDM-639: Data Management Acceptance Test Specification

Tests in this campaign will use data products and artifacts from Data Preview 0.2, which consists of DESC Data Challenge 2 (DC2) simulated data reprocessed using the LSST Science Pipelines, on-sky data from auxTel and LSSTComCam imaging campaigns, precursor data from Subaru+HyperSuprime-Cam (HSC), and camera test-stand data, when appropriate.

1.3 Document Overview

This document was generated from Jira, obtaining the relevant information from the LVV-P128 Jira Test Plan and related Test Cycles (LVV-R293).

Section 1 provides an overview of the test campaign, the system under test (Acceptance), the applicable documentation, and explains how this document is organized. Section 2 provides

additional information about the test plan, like for example the configuration used for this test or related documentation. 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 2, an overall assessment statement and suggestions for possible improvements. Section **??** provides detailed results for each step in each test case.

The current status of test plan LVV-P128 in Jira is **Approved** .

1.4 References

[1] **[DMTN-140]**, Comoretto, G., 2021, *Documentation Automation for the Verification and Validation of Rubin Observatory Software*, Data Management Technical Note DMTN-140, NSF-DOE Vera C. Rubin Observatory, URL https://dmtn-140.lsst.io/

[2] **[DMTN-178]**, Comoretto, G., 2021, *Docsteady Usecases for Rubin Observatory Constructions*, Data Management Technical Note DMTN-178, NSF-DOE Vera C. Rubin Observatory, URL https://dmtn-178.lsst.io/

[3] **[LSE-61]**, Dubois-Felsmann, G., Jenness, T., 2019, *Data Management System (DMS) Requirements*, Systems Engineering Controlled Document LSE-61, NSF-DOE Vera C. Rubin Observatory, URL https://lse-61.lsst.io/, doi:10.71929/rubin/2587200

[4] **[LDM-639]**, Guy, L., Wood-Vasey, W., Bellm, E., et al., 2022, *LSST Data Management Acceptance Test Specification*, Data Management Controlled Document LDM-639, NSF-DOE Vera C. Rubin Observatory, URL https://ldm-639.lsst.io/

[5] **[LDM-142]**, Kantor, J., 2017, *Network Sizing Model*, Data Management Controlled Document LDM-142, NSF-DOE Vera C. Rubin Observatory, URL https://ls.st/LDM-142

[6] **[LDM-503]**, O'Mullane, W., Swinbank, J., Juric, M., et al., 2023, *Data Management Test Plan*, Data Management Controlled Document LDM-503, NSF-DOE Vera C. Rubin Observatory, URL https://ldm-503.lsst.io/

[7] **[LSE-160]**, Selvy, B., 2013, *Verification and Validation Process*, Systems Engineering Con-

trolled Document LSE-160, NSF-DOE Vera C. Rubin Observatory, URL https://ls.st/LSE-160

2 Test Plan Details

2.1 Data Collection

Observing is not required for this test campaign.

2.2 Verification Environment

Most testing will be performed using the Rubin Science Platform (RSP) and the development cluster at the USDF. All tests will use the most recent available version of the Pipelines.

2.3 Entry Criteria

None

2.4 Exit Criteria

None

2.5 Related Documentation

Docushare collection where additional relevant documentation can be found:

- None

2.6 PMCS Activity

Primavera milestones related to the test campaign: None

3 Personnel

The personnel involved in the test campaign is shown in the following table.

	T. Plan LVV-P128 owner:	**Jeffrey Carlin**	
	T. Cycle LVV-R293 owner:	**Jeffrey Carlin**	
Test Cases	**Assigned to**	**Executed by**	**Additional Test Personnel**
LVV-E3833	Jeffrey Kantor	Cristián Silva	Josh Hoblitt (Rubin Obs), Renata Frez (FIU/AmLight), Matt Kollross (NCSA)
LVV-E3834	Jeffrey Kantor	Cristián Silva	Josh Hoblitt (Rubin Obs), Renata Frez (FIU/AmLight), Matt Kollross (NCSA)
LVV-E3835	Jeffrey Kantor	Cristián Silva	Jeff Kantor (LSST)
LVV-E3837	Jeffrey Kantor	Cristián Silva	Ron Lambert (LSST), Guido Maulen (LSST)
LVV-E3838	Jeffrey Kantor	Cristián Silva	Ron Lambert (LSST)

4 Test Campaign Overview

4.1 Summary

T. Plan LVV-P128:	**LDM-503-19 (All P1a and 1b DM requirements verified)**	Approved
T. Cycle LVV-R293:	**LDM-503-19 (All P1a and 1b DM requirements verified)**	In Progress

Test Cases	**Ver.**
LVV-E3833	1.0(d)
LVV-E3834	1.0(d)
LVV-E3835	1.0(d)
LVV-E3837	1.0(d)
LVV-E3838	1.0(d)

Table 2: Test Campaign Summary

4.2 Overall Assessment

None

4.3 Recommended Improvements

5 Detailed Tests

5.1 Test Cycle LVV-R293

Open test cycle *LDM-503-19 (All P1a and 1b DM requirements verified)* in Jira.

Test Cycle name: LDM-503-19 (All P1a and 1b DM requirements verified)
Status: In Progress

Test campaign supporting milestone LDM-503-19 -- all P1a and 1b requirements verified.

5.1.1 Software Version/Baseline

Not provided.

5.1.2 Configuration

Not provided.

5.1.3 Test Cases in LVV-R293 Test Cycle

5.1.3.1 LVV-E3833 - Verify implementation of Base to Archive Network Availability

Version **1.0(d)**. Open *LVV-E3833* test case in Jira.

Verify the availability of the Base to Archive Network communications by demonstrating that it meets or exceeds a mean time between failures, measured over a 1-yr period of MTBF > baseToArchNetMTBF (180[day])

Preconditions:

1. Archiver/Forwarders are configured at Base, connected to REUNA DWDM, loaded with

simulated or pre-cursor data, running on end node computers that are the production hardware or equivalent to it.
2. Archiver/Forwarder receivers or other capability is on configured at LDF, connected to Base - Archive Network, running on end node computers that are the production hardware or equivalent to it.
3. At least 6 months of historical monitoring data on this link is available.
4. As-built documentation for all of the above is available.

NOTE: This test will be repeated at increasing data volumes as additional observatory capabilities (e.g. ComCAM, FullCam) become available. Final verification will be tested at full operational volume. After the initial test, the corresponding verification elements will be flagged as "Requires Monitoring" such that those requirements will be closed out as having been verified but will continue to be monitored throughout commissioning to ensure they do not drop out of compliance. This will also be monitored for end to end Summit - Data Facility transfers during Commissioning.

Final comment:
None

Detailed steps :

5.1.3.2 LVV-E3834 - Verify implementation of Base to Archive Network

Version **1.0(d)**. Open *LVV-E3834* test case in Jira.

Verify that the data acquired by a DAQ can be transferred within the required time, i.e. verify that link is capable of transferring image for prompt processing in oArchiveMaxTransferTime = 5[second], i.e. at or exceeding rates specified in LDM-142.

Preconditions:

1. Archiver/Forwarders are configured at Base, connected to REUNA DWDM, loaded with

simulated or pre-cursor data, running on end node computers that are the production hardware or equivalent to it.
2. Archiver/Forwarder receivers or other capability is on configured at LDF, connected to Base - Archive Network, running on end node computers that are the production hardware or equivalent to it.
3. As-built documentation for all of the above is available.

NOTE: This test will be repeated at increasing data volumes as additional observatory capabilities (e.g. ComCAM, FullCam) become available. Final verification will be tested at full operational volume. After the initial test, the corresponding verification elements will be flagged as "Requires Monitoring" such that those requirements will be closed out as having been verified but will continue to be monitored throughout commissioning to ensure they do not drop out of compliance. This will also be monitored for end to end Summit - Data Facility transfers during Commissioning.

Final comment:
None

Detailed steps :

5.1.3.3 LVV-E3835 - Verify implementation of Summit to Base Network Ownership and Operation

Version **1.0(d)**. Open *LVV-E3835* test case in Jira.

Verify Summit to Base Network Ownership and Operation by LSST and/or the operations entity by inspection of construction and operations contracts and Indefeasible Rights.

Preconditions:

1. As-built documentation for all of the above contracts and IRUs is available.

Final comment:
None

Detailed steps :

5.1.3.4 LVV-E3837 - Verify implementation of Summit to Base Network Reliability

Version **1.0(d)**. Open *LVV-E3837* test case in Jira.

Verify the reliability of the summit to base network by demonstrating reconnection and recovery to transfer of data at or exceeding rates specified in LDM-142 following a cut in network connection, within MTTR specification. The network operator will provide MTTR data on links during commissioning and operations.

Preconditions:

1. PMCS DMTC-7400-2400 Complete
2. As-built documentation for Summit - Base Network is available.

NOTE: After the initial test, the corresponding verification elements will be flagged as "Requires Monitoring" such that those requirements will be closed out as having been verified but will continue to be monitored throughout commissioning to ensure they do not drop out of compliance. This will also be monitored for end to end Summit - Data Facility transfers during Commissioning.

Final comment:
None

Detailed steps :

5.1.3.5 LVV-E3838 - Verify implementation of Summit to Base Network Availability

Version **1.0(d)**. Open *LVV-E3838* test case in Jira.

Verify the availability of Summit to Base Network by demonstrating that the mean time between failures is less than summToBaseNetMTBF (90 days) over 1 year.

Preconditions:

1. PMCS DMTC-7400-2400 Complete.
2. 6 months of historical availability data for this link is available.
3. perSonar installed in Summit and publishing statistics to MadDash.
4. As-built documentation for all of the above is available.

NOTE: After the initial test, the corresponding verification elements will be flagged as "Requires Monitoring" such that those requirements will be closed out as having been verified but will continue to be monitored throughout commissioning to ensure they do not drop out of compliance. This will also be monitored for end to end Summit - Data Facility transfers during Commissioning.

Final comment:
None

Detailed steps :

A Documentation

The verification process is defined in LSE-160. The use of Docsteady to format Jira information in various test and planing documents is described in DMTN-140 and practical commands are given in DMTN-178.

B Acronyms used in this document

Acronym	Description
AURA	Association of Universities for Research in Astronomy
DAQ	Data Acquisition System
DC2	Data Challenge 2 (DESC)
DESC	Dark Energy Science Collaboration
DM	Data Management
DMS	Data Management Subsystem
DMSR	DM System Requirements; LSE-61
DMTN	DM Technical Note
DWDM	Dense Wave Division Multiplex
FIU	Florida International University
GMT	Giant Magellan Telescope
HSC	Hyper Suprime-Cam
IRU	indefeasible right to use
LATISS	LSST Atmospheric Transmission Imager and Slitless Spectrograph
LDF	LSST Data Facility
LDM	LSST Data Management (Document Handle)
LHN	long haul network
LSE	LSST Systems Engineering (Document Handle)
LSST	Legacy Survey of Space and Time (formerly Large Synoptic Survey Telescope)
LSSTCam	LSST Science Camera
LSSTComCam	Rubin Commissioning Camera
LVV	LSST Verification and Validation
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair

NCSA	National Center for Supercomputing Applications
PM	Project Manager
PMCS	Project Management Controls System
REUNA	Red Universitaria Nacional
RSP	Rubin Science Platform
SLAC	SLAC National Accelerator Laboratory
USDF	United States Data Facility