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Data Management

LDM-503-10: DAQ Validation Test Plan and Report

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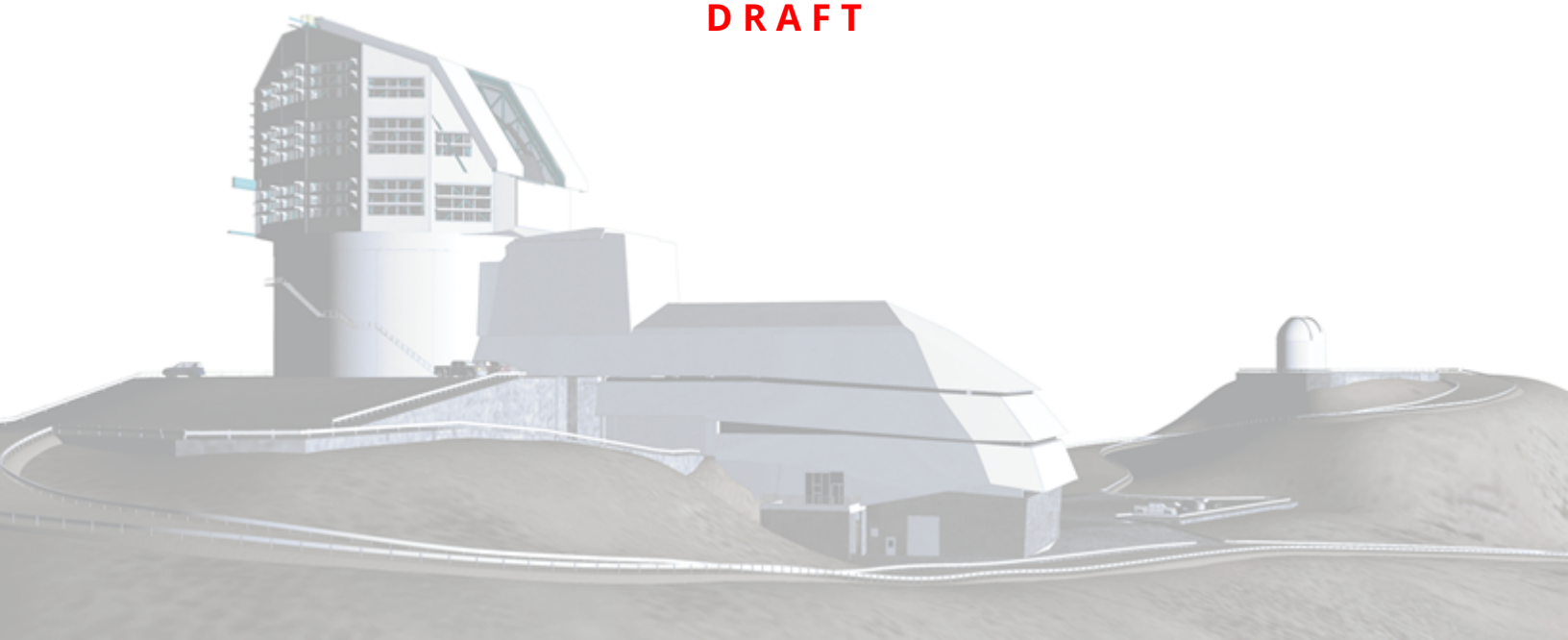
DMTR-181

Latest Revision: 2020-09-18

DRAFT



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Abstract

This is the test plan and report for **DAQ Validation** (LDM-503-10), an LSST milestone pertaining to the Data Management Subsystem.

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Change Record

Version	Date	Description	Owner name
	2019-10-22	Draft	Michelle Butler
1.0	2019-12-02	Test plan approved. DM-16193.	Michelle Butler
2.0	2020-09-18	Test campaign completed and prooved. DM-17122.	Michelle Butler

Document curator: Michelle Butler
Document source location: `https://github.com/lsst-dm/DMTR-181`
Version from source repository: 3166324

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Contents

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LDM-503-10: DAQ Validation Test Plan and Report

1 Introduction

1.1 Objectives

This milestone verifies the DAQ network from the summit to the base ensuring that systems at the base can receive communications from the DAQ.

1.2 System Overview

This milestone verifies simulated data from the DAQ at the Summit and use the DWDM network environment to place data on DM machines at Base Data Center (BDC), essentially extending the DAQ extended network to the BDC. The test machines at the BDC will be a L1 handoff environment and a single forwarder

1.3 Applicable Documents

LDM-294 Data Management Organization and Management
LDM-503 DM Test Plan
LDM-148 Data Management System Design
LDM-639 Data Management Acceptance Test Specification

1.4 Document Overview

This document was generated from Jira, obtaining the relevant information from the LVV-P54 Jira Test Plan and related Test Cycles (LVV-C107).

Section 1 provides an overview of the test campaign, the system under test (Data Management), 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 5 provides detailed results for each step in each test case.

The current status of test plan LVV-P54 in Jira is **Completed** .

1.5 References

[1] **[LDM-639]**, Guy, L., 2018, *DM Acceptance Test Specification*, LDM-639, URL https://ls.st/LDM-639

[2] **[LDM-148]**, Lim, K.T., Bosch, J., Dubois-Felsmann, G., et al., 2018, *Data Management System Design*, LDM-148, URL https://ls.st/LDM-148

[3] **[LDM-294]**, O'Mullane, W., Swinbank, J., Jurić, M., DMLT, 2018, *Data Management Organization and Management*, LDM-294, URL https://ls.st/LDM-294

[4] **[LDM-503]**, O'Mullane, W., Swinbank, J., Jurić, M., Economou, F., 2018, *Data Management Test Plan*, LDM-503, URL https://ls.st/LDM-503

2 Test Plan Details

2.1 Data Collection

Observing is not required for this test campaign.

2.2 Verification Environment

DAQ machines at the summit and forwarder machine at the base data center (BDC) on networks extending the DAQ network from the summit to the base and BDC 10GigE networks.

2.3 Entry Criteria

DAQ at the summit and test machines at BDC all have been installed and are in working order with all networks configured.

2.4 Exit Criteria

Files and other communications can take place from the summit machines and the BDC systems for the DAQ network.

2.5 Related Documentation

No additional documentation provided.

2.6 PMCS Activity

Primavera milestones related to the test campaign:

- LDM-503-10

3 Personnel

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

	T. Plan LVV-P54 owner:	**Michelle Butler**	
	T. Cycle LVV-C107 owner:	**Michelle Butler**	
Test Cases	**Assigned to**	**Executed by**	**Additional Test Personnel**
LVV-T1550	Michelle Butler		

4 Test Campaign Overview

4.1 Summary

T. Plan LVV-P54:	**LDM-503-10: DAQ Validation**			Completed
T. Cycle LVV-C107:	**LDM-503-10 DAQ verification**			Done
Test Cases	**Ver.**	**Status**	**Comment**	**Issues**
LVV-T1550	1	Pass	The "machines" are the archiver and the forwarder. These systems are at the BDC which is where the comcam system was for this test. The DWDM network will not be used with this configuration due to re-design of comcam at the base and that the MTcam support systems will be at the summit with everything else. Testing the DWDM is no longer necessary for DAQ effectiveness.	

Table 2: Test Campaign Summary

4.2 Overall Assessment

The milestone passed well, but the DWDM network will no longer be used for ComCam or Main Telescope Camera (MTCam) There is no need to separate the forwarders and archiver systems from the DAQ at a long distance.

4.3 Recommended Improvements

No improvements other than the Main Telescope Camera will not use the archiver system, and the image will be taken directly from the DAQ. In the future the DAQ needs to now build fits files, so there is no reason to have the archiver fits files AND DAQ fits files. We will in the future cut out the archiver function's of build of the fits files.

5 Detailed Test Results

5.1 Test Cycle LVV-C107

Open test cycle *LDM-503-10 DAQ verification* in Jira.

Test Cycle name: LDM-503-10 DAQ verification
Status: Done

Verify that the BDC systems on the DAQ DWDM network can communicate with the Summit DAQ system.

5.1.1 Software Version/Baseline

Not provided.

5.1.2 Configuration

Not provided.

5.1.3 Test Cases in LVV-C107 Test Cycle

5.1.3.1 LVV-T1550 - LDM-503-10 DAQ Validation

Version **1**. Open *LVV-T1550* test case in Jira.

Verify that the DAQ can talk to test machines at the BDC through the DWDM network.

Preconditions:
DAQ at the Summit and machines on networks at the base.

Execution status: **Pass**

Final comment:
The “machines” are the archiver and the forwarder. These systems are at the BDC which is where the comcam system was for this test. The DWDM network will not be used with this configuration due to re-design of comcam at the base and that the MTcam support systems will be at the summit with everything else. Testing the DWDM is no longer necessary for DAQ effectiveness.

Detailed steps results:

Step	Step Details
1	Description have DAQ produce image at the summit Expected Result Image on At-archiver Actual Result Images found on archiver in correct place. Image is full 9 CCD. Status: **Pass**
2	Description The forwarder at the BDC should be able to have communication with the DAQ that the image was taken, and be able to see the file. Expected Result Image available for the forwarder at the base. Actual Result EFD and SAL messages all show that the archiver has the image, and forwarder communicated with archiver that the image was built and good. Header service produced good headers so a intact FITS file was produced. Status: **Pass**
3	Description Communication between the forwarder and the DAQ are in place with messages being exchanged. Expected Result

if messages can be exchanged, the communication has been established.

Actual Result

communication for images taken and “grabbed” from DAQ took place.

Status: **Pass**

A Acronyms used in this document

Acronym	Description
BDC	Base Data Center
CCD	Charge-Coupled Device
ComCam	The commissioning camera is a single-raft, 9-CCD camera that will be installed in LSST during commissioning, before the final camera is ready.
DAQ	Data Acquisition System
DM	Data Management
DMS	Data Management Subsystem
DMS-REQ	Data Management System Requirements prefix
DMTR	DM Test Report
DWDM	Dense Wave Division Multiplex
EFD	Engineering and Facility Database
FITS	Flexible Image Transport System
L1	Lens 1
LDM	LSST Data Management (Document Handle)
LSST	Legacy Survey of Space and Time (formerly Large Synoptic Survey Telescope)
PMCS	Project Management Controls System
SAL	Service Abstraction Layer
VE	Verification Element

B Traceability

Test Case	VE Key	VE Summary
LVV-T1550	LVV-8	DMS-REQ-0018-V-01: Raw Science Image Data Acquisition
	LVV-28	DMS-REQ-0068-V-01: Raw Science Image Metadata
	LVV-11	DMS-REQ-0024-V-01: Raw Image Assembly