2019-04-18 Network Engineering Team Meeting notes

Date/Time

18 Apr 2019(all-day Face to Face Meeting in Santiago, Chile)

Agenda

https://www.amlight.net/?p=3362

(SAACC agenda on same page)

Meeting Notes

REUNA, Albert Astudillo

Current Implementation

- Fiber link route with no protection, at the moment.
- LSST is using AURA's DWDM for Internet, email, Web, etc. access and other services.
- Aux Tel data will use AURA temporarily.
- 10G ports will connect from LS to SCL.

October Goal

- REUNA will deliver service to Century Link (CL) DC.
- Aluizio - 2x100G will be delivered to CLARA at the Silica DC. Dedicated 100G and shared 100G.
- REUNA has the next infrastructure to the Silica DC. Transponders need to be added to extend the LSST link to Silica.
- Question: who will be responsible for extending the network service to either CL or Silica? JB commented that it should RNP-CLARA.
- JK: (ACTION) diagrams from Albert and Ron need to be merged into one diagram.
- JB: focus on what components (transponders) LSST requires.
- Fibers from REUNA DWDM system to AmLight switch: REUNA will provide fibers.
- AmLight needs to provide transceivers.
- Matt: proposed definitions and glossary. Matt volunteered to lead this effort.
- JK: Diagrams shown by JB will be used to the documentation. NET is to use stencils used by JB based on draw.io.
- JK described three different context involving LSST and AURA. AURA used by AURA is not our job. LSST can only influence LSST used by LSST, LSST-AURA used by LSST.
- Dave Wheeler (DW): Asked about layers. JK: replied in the affirmative about layers.
- Aluizio Hazin

RNP, Aluizio

100G channel for LSST thru RNP network

- 3 different DWDM systems, back to back transponders.

LSST through RNP network: Equinix SP4 - POP-SP

- Juniper router purchased by RNP. Transceivers LR4 or CWDM-4?
- JB: need to purchase the same or compatible technology.

LSST through RNP network: Equinix SP4 - POP-SP

- See Diagram in presentation

POP-SP to POP-PR

- See presentation

POP-PR to POP-RS

- See presentation

Infrastructure for LSST outside RNP network (1)

- PA/RS - BA/AR (Bella-T Project)
- BA/AR - SCL
- No x-connects.
- Connection from Silica to CL.

- Patch cords?
- Status of LSST Network, Ron Lambert

Base to Summit Optical circuits - Ron Lambert

- LSST 40G secondary path does not connect to DWDM system. The 40G secondary path connects to a router and uses a Telefonica link.
- JK does not want performance of network to be constrained by taps used. Policy decision. Need to get network correct.
- When Com Cam comes on board, July 2020, JK wants to be in the 100G capacity transponders. $50K from now and next year, JK will find the funds.
- Price needed to move to 100G with transponders. JK will follow up with NCSA for cost of taps.
- JB: have to consider router, transponders and transceivers. Believes cost should not reach $100K.
- Will proceed with the rest of this meeting doing 100G.
- Phases:
  - Aux Tel that starts later 2019. Will use AURA infrastructure initially.
  - Oct 2019 will open up US links
  - Real volume when Com Cam starts, early to mid 2020.

AURA La Serena - Ron Lambert

- Focusing only on bottom of diagram, i.e. LSST dedicated paths, not AURA shared paths.
- There will be 2 border routers for LSST.

July Transfer Path - Ron Lambert

- 50MB every 15 seconds
- Network design for Aux Tel.

LHN Transfer Path

- Oct. Start to use LSST border routers.
- AmLight has no Actions at this time.
- RL: How many vlans will LSST require? Currently using vlans to get to AMPATH.

AmLIght, Jeronimo

SP3 to MI3 - AMLIGHT - wet network

SP3 to SP4 - RNP and ANSP

Patch cords, switch, transceivers - ANSP

MI3 to MI1 - dark fiber - dry network

Goal is to activate 400G.

Next Steps: Going North

2019:

- Boca will be a photonic site.

2020/2021:

NCSA, Matt Kolross

ICCN

Optical protected waves is possible. Can support 200G and 400G waves in the future.

WAN Connections

ESnet 600 W. Chicago Level 3

MREN 710 N. Lakeshore Dr. - StarLight

- 100G connection to MREN Ciena

NPCF

Green is 40G. Red is 100G.

This is today.

Action: What is NPCF diagram going to look like when ESnet circuits come in.

JB: ESnet circuits will be new ports. By 2020 ESnet will provide physical ports, directly from the optical device.

Action: Depict what ESnet circuits will look like.

Action: Paul Wefel: diagram that shows connections into the NPCF diagram.

JB: ESnet will pay only for their side of the connection.

Action: Matt and Paul: Confirm what will the actual config look like inside W. Chicgao and 710 N. Lakeshore, in fy20 and fy21.

Need the interconnection config - connections between ESnet and NCSA.

Other

Futures

IN2P3

Baseline plan requires IN2P3 to provide at least 10G. Not documented in a signed agreement.

Diagrams from Sessions 1 and 2:

Action: Consolidate diagrams from each operator into a single physical network diagram. If there are details in a particular network, its representative to diagram the details in a separate diagram using the templates provided by Jeronimo.

Session 3: Logical Topology

Refer to By Oct 1, 2019 diagram in Jeronimo's slides.

Diagram 1:

Diagram 2:

Refer to questions in diagram.

Diagram 3:

Clarify ! (single points of failure)

JK comment: Do not have to be fully redundant until last milestone on the milestone spreadsheet.

Session 3: Planning the logical topology

LSST and NCSA will manage end points

- BFD plus loopback BGP?
- Ron: pure Layer3.

Ron's concern: so many vlans.

MK: imagining 2 vlans.

AA: today: 3 sets of vlans today from the AURA router to the AMPATH router.

JB: would be good to have 3 vlans e2e.

JB: Do we want predictability?

Who is preparing the IP plan for the receivers and forwarders?

Will IP blocks be public or private?

REcommendation: Stick to the plan.

Static vlans across two routers, and loopback BGP session between two routers.

Action: LHN IP Plan to be completed by Ron. Confirm plan with Luis Coral.

Outcome: Update table from the 2017 report.

Session 5 - Establishing LSST Virtual NOC, Jeff Kantor

VNOC Vision

Customer experience is a single network, not 5 networks.

.5 FTE network eng at FIU and REUNA. 1.0 FTE at NCSA and La Serena.

LSST Help Desk could be first PoC. Can generate a ticket.

LSST Help Desk should be able to interact with the VNOC.

How much can LSST burden the LSST HD?

Monitoring and alarming should be 24/7. What is the LSST engineer staffing support model?

SLA for LSST Ops has not yet been written.

Goal: Integrated view of the complete network status.

Action: Define a data schema of all the data object that's required.

Weather map for LSST users to see health of the network.

Consolidate data. Identify trends.

Action: By end of 2019 fy a budgeted, costed, scheduled plan of steps and implementation of plan will run with a capability in place by 2021.

Actions:

- Identify the players. JK
- Identify a team of people for a template or draft SLA for each of the providers, envision what they will be.
- Team of people to develop use cases and workflows for support.
- Team of people to work on elements for the data to share among the networks.

3 FTE engineering total. Can we get 24x7x365 coverage?

All the operators have 24x7x365 NOCs.

Session 4: E2E Test Plan, Pescador

LSST E2E Test plan document.

Action To NCSA: Necessary to upgrade pS node operational system.

Test Specifications:

OWAMP

What is the packet size?

Bandwidth:

pS provides both passive and active measurements.

Tests must eventually use the available path between LS and NCSA.

I2 has a Performance Assurance Methodology. JB asked if I2 would share their methodology. John Hicks said yes.

Action: Andres Villalobos to talk to JB about NetSage.

Next Steps:

Goal is to have a few nodes for testing and troubleshooting.

GridFTP test is used by NRP and I2. Helpful to determine capabilities of DTN and to troubleshoot network.

Action: Demonstration session: Add to next monthly meeting.

Review milestone sheet

Action: Craft updates to LSE-78.

Should schedule the next F2F meeting within a year or 6 months.

Publish results.

Le Bistro.cl

Action items

- ☑ Julio Ibarra , Aluizio Hazin - Define where back to back transponders will be, describe abbreviations, addresses, etc. on RNP terrestrial Santiago - Sao Paolo 21 May 2019

- ☑ Julio Ibarra , Aluizio Hazin - Provide physical address, who is responsible for cross connects for infrastructure for LSST outside RNP network 21 May 2019

- ☑ Jeronimo Bezerra Unknown User (rlambert) Albert Astudillo Come up with plan and cost that gets 100G e2e by July of 2020, sooner if possible. 07 May 2019

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