

LSST Networks Construction and Commissioning

Jeffrey Kantor South American Astronomy Coordination Committee (SAACC) Meeting April 17, 2019

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Networks and Path Diversity between Sites and Centers





South American Astronomical Coordination Committee (SAACC) Meeting - April 17, 2019



LSST Long Haul Network Links (Baseline FY21)





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ESNet for LSST





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- Following up on the first successful transfer of digital data over LSST/AURA fiber optic networks from the Summit Site on Cerro Pachon, Chile to the Base Site in La Serena, Chile and on to the Archive Site at NCSA in Champaign in December 2017, that achieved 44 Gbps sustained data rate.
- 100 Gbps demonstration from La Serena NCSA November 14, during Supercomputing 2018. Data set is 10 TB of DECam public data. Using SCInet connections from Miami – Dallas – Chicago. DM-provided "watch" JupyterHub application will be used to monitor transfer from Data Transfer Node (DTN) to GPFS file-system/disk.







BASELINE	PROJECTED	END-TO-END B/W, Cerro Pachon -	END-TO-END B/W, La Serena	Bandwidth Achieved
FINISH	FINISH	La Serena	- NCSA	through Demonstration
6/11/15	6/11/15	0.5 Gbps	Max: 1G Best Effort	0.5 Gbps (operational)
				46Gbps (LSST First Light
3/27/18	6/30/18	2 x 100 (shared AURA DWDM)	Max: 20G Best Effort	demo)
11/30/18,		6 x 100 (dedicated LSST DWDM) + 2		80Gbps (LSST SC18
7/3/19	7/3/19	x 100 (shared AURA DWDM)	Max: 20G Best Effort	demo)
		6 x 100 (dedicated LSST DWDM) + 2		
7/3/19	1/1/20	x 100 (shared AURA DWDM)	Max: 40G Best Effort	0
		6 x 100 (dedicated LSST DWDM) + 2		
7/6/20	7/6/20	x 100 (shared AURA DWDM)	Max: 140G Best Effort	0
			Max Dedicated: 200G	
		6 x 100 (dedicated LSST DWDM) + 2	dedicated up to NCSA. 300G	
7/2/21	7/2/21	x 100 (shared AURA DWDM)	at NCSA. Burst: 100G	0



Summit – Base Fiber Post Improvements















Base Data Center FY19









- Base LDF 100 Gbps Demonstration at Supercomputing 2018
- Started Base Facility
 - Installation of racks, PDUs, etc.
 - Move of existing LSST, CISS, Gemini equipment
 - Installation of new LSST equipment
 - Cabling, wired/wireless networks, VOIP in offices, etc.
- Installed fiber for Auxiliary Telescope (start of observing end of FY19)
- Completed repairs on Summit Base Fiber posts (interrupted by earthquake)
- Finalized agreement for ESnet service
 - Atlanta Chicago
 - FY20 2 x 20 Gbps, FY21 2 x 100 Gbps





- Complete Summit Network cabling, access switches, Wi-Fi, VOIP (all FY)
- Summit server installations (Aux Tel, EFD, MW, ESAS/ECS, TMA, Camera rooms, ...) (all FY)
- Install LSST DWDM Summit Base (May)
- Install Base Data Center racks, move existing equipment, install new network switches and servers (May)
- DWDM purchase and activation of Spectrum Link (May)
- Cable offices, rooms, install access switches, Wi-Fi, VOIP (June)
- Implementation of FY20 2 x 20 Gbps ESNet (September)