Polish LSST Consortium
lsst-astro.pl

IDAC PL STATUS

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Light IDAC - Installation Site

- NCBJ infrastructure for IDAC PL is located at Poznań Supercomputing and Networking Center (PSNC) (Poznań/Poland)
- Light IDAC implemented as a part of a larger system KMD3 / PraceLab2 - in total:
  - 25PB storage
  - ~ 6k CPU physical cores system + some GPU
- KMD3 (National Data Repository)/PraceLab2 are run by consortium of Polish supercomputing centres (including NCBJ)

Specification of Light-IDAC (POL-NCB S1)

Specification of light IDAC-PL

- 500 CPU cores
    - 20-30 cores for system/db
    - 470-480 cores for users
- 5 PB of storage
- 2 x 0.25 FTE support stuff
- proposed center could serve 500-1000 users in total and 250 users using center concurrently
- QServ as the catalogue database

As specified in guidelines: https://rtn-003.lsst.io/

Specification of Light-IDAC (POL-NCB S1) +

Specification of Light IDAC-PL +

- present plan: storage of (lite) catalog data
- new present-day needs: images
  (at least co-adds)

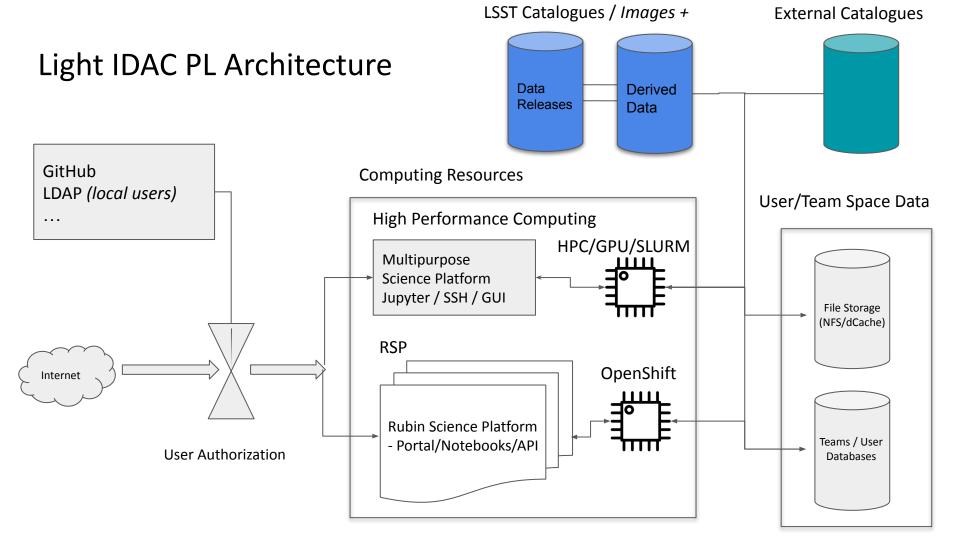**Under consideration @'23 => Must have @'25+**

- additional storage (double+)
- access to GPUs for ML
- access to more CPUs
- → funding project for extra storage, CPU
  and GPU accepted and ongoing (for now
  out of scope of the Light IDAC - an
  addition)

Light IDAC PL Architecture

LSST Catalogues / *Images +*

External Catalogues

Data Releases

Derived Data

GitHub
LDAP *(local users)*
...

Computing Resources

User/Team Space Data

High Performance Computing

Multipurpose
Science Platform
Jupyter / SSH / GUI

HPC/GPU/SLURM

File Storage
(NFS/dCache)

Internet

RSP

OpenShift

Rubin Science Platform
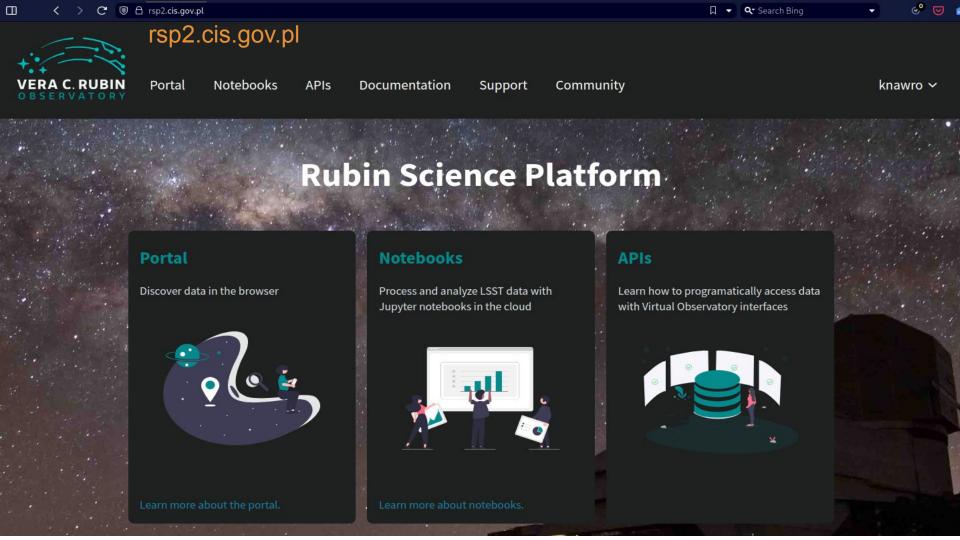- Portal/Notebooks/API

Teams / User
Databases

User Authorization

Current status

Light IDAC PL

- installed @PSNC
  - ~1/3 (a few PB) of the storage up and running (NFS appliance with fast SSD cache)
    - the rest is to be set-up and configured (as dCache instance) - ongoing
  - no hard problems during installation
    - some more work needed for running on OKD (OpenShift Community Distribution), which is more security-strict by default compared to pure Kubernetes
- the latest RSP is running on hardware @PSNC (currently requires NCBJ VPN to access)
- successful tests of data transfers using RUCIO (SLAC -> IDAC-PL) achieved
- tests (functional / scalability / etc) of Light IDAC-PL RSP using real life scenarios (LSB) on DP1 data if possible - underway
(estimated time: 2-3 weeks)
- we are technically ready to download and securely process DP1 and DRn data
  - the procedure to securely provide LSST data to users
(for IDAC tests only for limited subset of our local DRHs) has been developed
  - final version of Authentication & Authorization Plan Policy document being prepared, to be send for acceptance this week

(Not so Light) IDAC-PL+

- new project to double+ our storage resources, add CPUs and GPUs for enabling image analyses - ongoing
- access to GPU Slurm based cluster is being prepared with PCNS

VERA C. RUBIN
OBSERVATORY

Portal   Notebooks   APIs   Documentation   Support   Community   knawro ⌄

Rubin Science Platform

Portal

Discover data in the browser

Learn more about the portal.

Notebooks

Process and analyze LSST data with Jupyter notebooks in the cloud

Learn more about notebooks.

APIs

Learn how to programatically access data with Virtual Observatory interfaces

In-kind software effort and the main science cases

- Science Pipeline Development in the LSST
    - Galaxies Science Collaboration
    - Dark Energy Science Collaboration
    - AGN Collaboration
- Ongoing, but signed MoA needed to successfully apply for budget for more FTEs to complete (in progress).

Rack layout spreadsheet

Summary (bottom rows)

	Rack 1	Rack 2	Rack 3	Rack 4	Rack 5	Rack 6
Power	16.95 kW	12.6 kW	13.20 kW	13.20 kW	11.45 kW	11.32 kW
Weight	1170.0 kg	990.62 kg	883.3 kg	883.3 kg	807.3 kg	710.41 kg
C13	28	32	34	34	32	32
C19	0	0	0	0	0	0

Rack 1

C13	C19	Weight	U	Item	Power
2		13.0 kg	47	Leaf backend CE8851	0.97 kW
2		13.0 kg	46	Leaf backend CE8851	0.97 kW
			45		
			44		
			43		
			42		
			41		
			40		
			39		
			38	Project Data: HDD node Pacific 9550	
			37		
			36		
			35		
			34		
4		164.0 kg	33		2.5 kW
			32		
			31	Project Data: HDD node Pacific 9550	
			30		
			29		
4		164.0 kg	28		2.5 kW
			27		
			26	Project Data: HDD node Pacific 9550	
			25		
			24		
4		164.0 kg	22	Project Data: HDD node Pacific 9550	2.5 kW
			21		
			20		
			19		
			18	Project Data: HDD node Pacific 9550	
			17		
4		164.0 kg	17		2.5 kW
			16		
			15		
			14		
			13		
			12	Project Data: HDD node Pacific 9550	
4		164.0 kg	11		2.5 kW
			10		
			9		
			8		
			7		
4		164.0 kg	6	Project Data: HDD node Pacific 9550	2.5 kW
			5		
			4		
			3		
			2		
			1		
		100.0 kg			

Rack 2

C13	C19	Weight	U	Item	Power
2		8.0 kg	47	IPMI CE5882	0.13 kW
2		8.0 kg	46	SSH CE5882	0.13 kW
			45		
2		67.5 kg	44	iMaster NCE 2288X V5	0.94 kW
			43		
2		67.5 kg	42	iMaster NCE 2288X V5	0.94 kW
			41		
2		67.5 kg	40	iMaster NCE 2288X V5	0.94 kW
			39		
			38	Project Data: SSD node Pacific 9550	
			37		
			36		
			35		
4		115.0 kg	39		3.5 kW
			38		
			37		
			36		
			35		
			41		
2		40.23 kg	28		
			27		
2		40.23 kg	26		
			25		
2		40.23 kg	24		
			23		
2		40.23 kg	22	NVMe server 2288H V6	0.75 kW
			21		
2		08.44 kg	20	Ceph server 2288H V6	0.75 kW
			19		
			18	Ceph server 2288H V6	0.75 kW
			17		
2		08.44 kg	16	FAT server 5288 V6	0.94 kW
			15		
			14		
			13		
2		08.44 kg	12	FAT server 5288 V6	0.94 kW
			11		
			10		
			9		
2		08.44 kg	8	FAT server 5288 V6	0.94 kW
			7		
			6		
			5		
2		08.44 kg	4	FAT server 5288 V6	0.94 kW
			3		
			2		
			1		
		100.0 kg			

Rack 3

C13	C19	Weight	U	Item	Power
2		13.0 kg	47	Leaf Frontend CE8851	0.97 kW
2		13.0 kg	46	Leaf backend CE8851	0.97 kW
			45		
2		8.0 kg	44	SSH CE5882	0.13 kW
2		30.18 kg	28		
2		30.18 kg	28	Service server 2288H V0	0.66 kW
2		30.18 kg	28	Service server 2288H V0	0.66 kW
2		32.55 kg	30	Service server 2288H V0	0.66 kW
2		32.55 kg	30	NVMe server 2288H V0	0.75 kW
2		32.55 kg	30	NVMe server 2288H V0	0.75 kW
2		40.23 kg	28	Ceph server 2288H V0	0.75 kW
2		40.23 kg	26	Ceph server 2288H V0	0.75 kW
2		40.23 kg	24	Ceph server 2288H V0	0.75 kW
2		40.23 kg	22	Ceph server 2288H V0	0.75 kW
2		08.44 kg	20	FAT server 5288 V0	0.94 kW
2		08.44 kg	16	FAT server 5288 V0	0.94 kW
2		08.44 kg	12	FAT server 5288 V0	0.94 kW
2		08.44 kg	8	FAT server 5288 V0	0.94 kW
2		08.44 kg	4	FAT server 5288 V0	0.94 kW
		100.0 kg			

Rack 4

C13	C19	Weight	U	Item	Power
2		13.0 kg	47	Leaf Frontend CE8851	0.97 kW
2		13.0 kg	46	Leaf backend CE8851	0.97 kW
2		8.0 kg	44	SSH CE5882	0.13 kW
2		30.18 kg	28	Service server 2288H V0	0.66 kW
2		30.18 kg	28	Service server 2288H V0	0.66 kW
2		32.55 kg	30	Service server 2288H V0	0.66 kW
2		32.55 kg	30	NVMe server 2288H V0	0.75 kW
2		32.55 kg	30	NVMe server 2288H V0	0.75 kW
2		40.23 kg	28	Ceph server 2288H V0	0.75 kW
2		40.23 kg	26	Ceph server 2288H V0	0.75 kW
2		40.23 kg	24	Ceph server 2288H V0	0.75 kW
2		40.23 kg	22	Ceph server 2288H V0	0.75 kW
2		08.44 kg	20	FAT server 5288 V0	0.94 kW
2		08.44 kg	16	FAT server 5288 V0	0.94 kW
2		08.44 kg	12	FAT server 5288 V0	0.94 kW
2		08.44 kg	8	FAT server 5288 V0	0.94 kW
2		08.44 kg	4	FAT server 5288 V0	0.94 kW
		100.0 kg			

Rack 5

C13	C19	Weight	U	Item	Power
2		8.0 kg	47	IPMI CE5882	0.13 kW
			46	SSH CE5882	
			45		
2		8.0 kg	44	SSH CE5882	0.13 kW
2		30.18 kg	28	Service server 2288H V0	0.66 kW
2		30.18 kg	28	Service server 2288H V0	0.66 kW
2		32.55 kg	30	Service server 2288H V0	0.66 kW
2		32.55 kg	30	NVMe server 2288H V0	0.75 kW
2		32.55 kg	30	NVMe server 2288H V0	0.75 kW
2		40.23 kg	28	Ceph server 2288H V0	0.75 kW
2		40.23 kg	26	Ceph server 2288H V0	0.75 kW
2		40.23 kg	24	Ceph server 2288H V0	0.75 kW
2		40.23 kg	22	Ceph server 2288H V0	0.75 kW
2		08.44 kg	20	FAT server 5288 V0	0.94 kW
2		08.44 kg	16	FAT server 5288 V0	0.94 kW
2		08.44 kg	12	FAT server 5288 V0	0.94 kW
2		08.44 kg	8	FAT server 5288 V0	0.94 kW
2		08.44 kg	4	FAT server 5288 V0	0.94 kW
		100.0 kg			

Rack 6

C13	C19	Weight	U	Item	Power
2		8.0 kg	47	SSH CE5882	0.13 kW
			46		
			45		
			20		
			20		
			19		
			20		
			19		
2			38	Service server 2288H V0	0.66 kW
2			37	Service server 2288H V0	0.66 kW
2			36	Service server 2288H V0	0.66 kW
2			35	Service server 2288H V0	0.66 kW
2			34	Service server 2288H V0	0.66 kW
2			33	Service server 2288H V0	
2		30.18 kg	32	NVMe server 2288H V0	0.75 kW
2		30.18 kg	31	NVMe server 2288H V0	
2		30.18 kg	30	NVMe server 2288H V0	0.75 kW
2		30.18 kg	28	Ceph server 2288H V0	0.75 kW
2		32.55 kg	30	Ceph server 2288H V0	
2		32.55 kg	28	Ceph server 2288H V0	0.75 kW
2		32.55 kg	22	Ceph server 2288H V0	0.75 kW
2		40.23 kg	20	FAT server 5288 V0	0.94 kW
2		40.23 kg	19		
2		08.44 kg	16	FAT server 5288 V0	0.94 kW
2		08.44 kg	12	FAT server 5288 V0	0.94 kW
2		08.44 kg	8	FAT server 5288 V0	0.94 kW
2		08.44 kg	4	FAT server 5288 V0	0.94 kW
		100.0 kg			

In-row Cooling columns separate each pair of racks.