

HNSciCloud

What is it? What are they doing?
Why it is so complicated/difficult?

James Adams

2018-04-11

GridPP40 Pitlochry

Disclaimers

- These are my personal opinions
 - Took over from Andrew Lahiff late in the project
 - Only following a single work package (WP5)
- Much of real detail is commercially sensitive
 - Some numbers in this talk may be misinformation (but should still be representative)

HNSciCloud

HelixNSciCloud

HelixNebulaSciCloud

HelixNebulaScienceCloud

The
Helix Nebula Science Cloud

What is HNSciCloud?

- HNSciCloud is not a Cloud

What is HNSciCloud?

- HNSciCloud is an EU PCP Project
 - Pre-commercial procurement tender project
 - Co-funded Horizon 2020 project
 - Finishes at end of 2018
- Will hopefully be followed by a PPI project
 - Public Procurement of Innovative Solutions
 - To actually buy some RealCloud™

What are they doing?

- Ostensibly developing a public cloud procurement method that is compatible with the funding models of European Science.
- Maybe building foundations of a future EOSC.

What are they doing?

- Trying to procure public clouds that provide:
 - AAI single-sign-on
 - Integrated with existing institutional infrastructure
 - IaaS compute
 - Plain old on-demand VMs
 - PaaS hybrid storage
 - POSIX-ish data access seamlessly integrated with existing on-premises storage systems

What are they doing?

- WLCG
 - Access for the LHC experiments will be provided by CERN through its existing OpenStack interfaces and supported via the WLCG operational structures.
- ELIXIR
 - Access to the ELIXIR research community will be managed by EMBL-EBI and made accessible via the ELIXIR compute platform.
- EGI Fed Cloud
 - Access for the research communities working with the ESFRI Research Infrastructures, the long-tail of science (i.e. small and medium size science: SMS) group and citizen scientists will be made via the OCCI interfaces and supported via the EGI competence centres.
- Local users
 - Access will be provided via the buyers in-house IT support services building on the OpenStack, OCCI or web GUI interfaces.

Who are the providers?

- None of the “big players” are left in the game
 - Why? **Reasons...**
- Final pilot stage contracts awarded to:
 - **T-Systems**
 - SubContracting: Huawei, **Cyfronet**, Divia
 - **RHEA Group**
 - SubContracting: **T-Systems**, exoscale, SixSq, **Cyfronet**

What are the risks?

- Both contractors have sub-contracted (and sub-sub-contracted) various parts of their offerings, some overlap:
 - Both involve T-Systems for compute
 - Both rely on Cyfronet to support OneData*

* OneData was developed as part of INDIGO - DataCloud

How hard can it be?

It's public cloud right?

Surely it's just a matter of...

But wait... what is the API?

Hang on, they've put EduGAIN in front of it?

APIs

T-Systems

- Web UI
- CLI
- OpenStack APIs

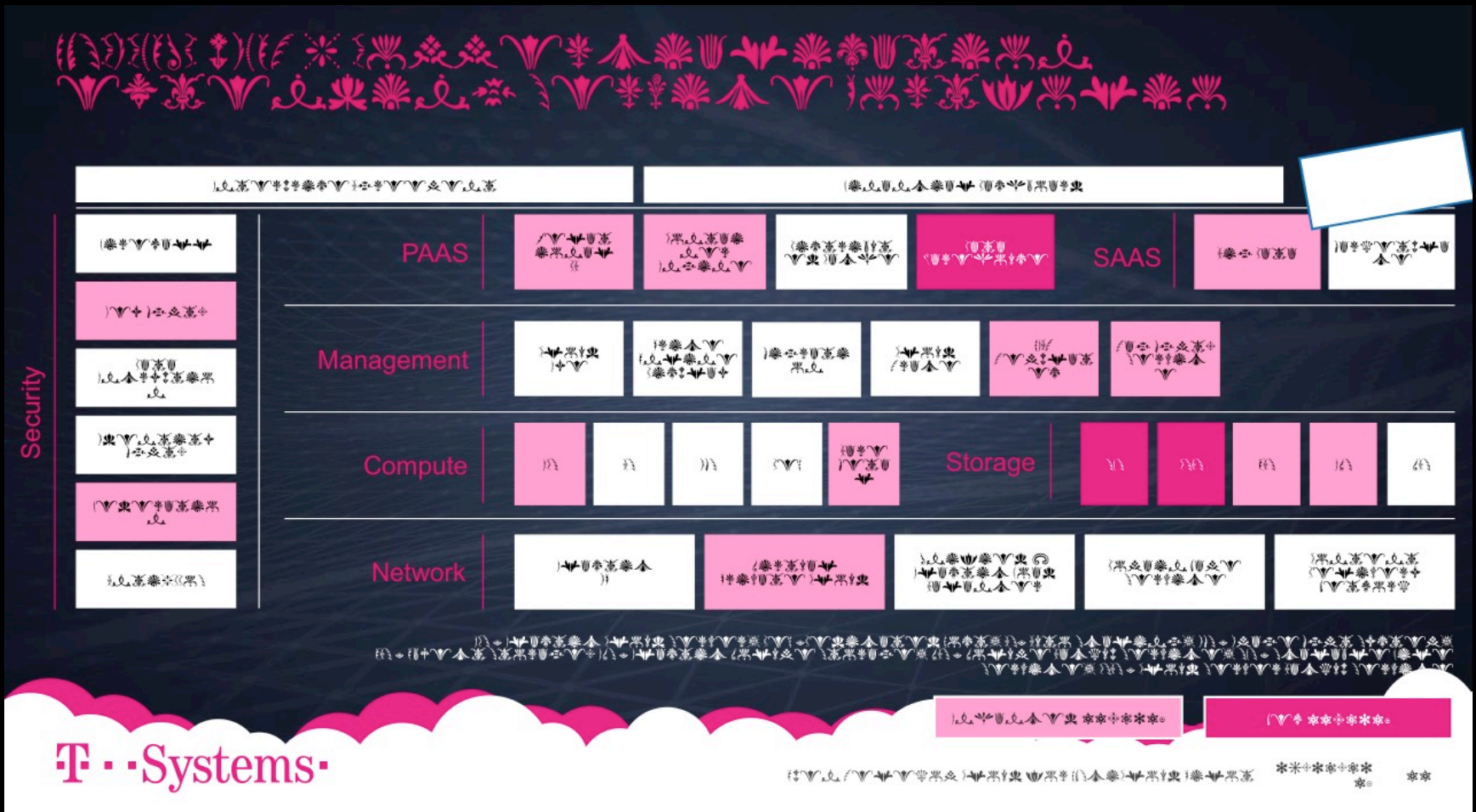
RHEA

- Nuvla direct
- libcloud
- Jcloud
- Terraform
- OpenStack APIs
 - Providers A & B
- CloudStack API
 - Provider C

Why is it so complicated?

- Simply procuring IaaS compute off-the-shelf would not have been an interesting project.
- A wide range of use cases from potential buyers led to complex requirements.
 - Huge disparity between HTC-like robot access and HPC-like direct local-user access.
 - HPC, Infiniband, GPUs...
- Asked for things which didn't exist.

Why is it so complicated?



Is it well connected? (to GÉANT)

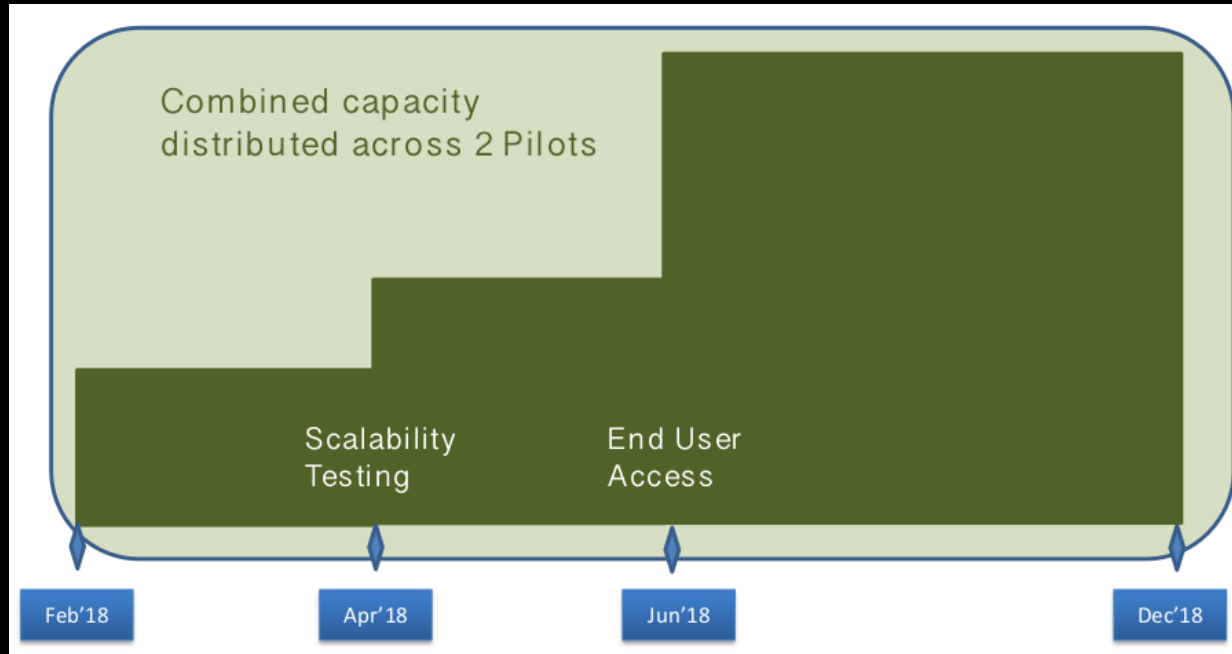
T-Systems

- 6×10 Gbps

RHEA

- 2×20 Gbps
- $20 + 10 + 10$ Gbps
- 10 Gbps (real soon now)

How big is it?



- Final phase to provide:
 - 20,000 cores compute
 - 2PB storage

Why aren't we using it?

- We (wLCG) are
 - CERN are bursting a cross section of wLCG jobs via their OpenStack infrastructure
- We (STFC) can't
 - Still do not have an EduGAIN compliant IdP
 - Our quota has been donated to community
 - Mostly used by another Tier1
 - Reclaim when EduGAIN works (if before 2019)

Conclusions

- HNSciCloud is a testing environment
 - Not a general purpose cloud
- A huge variety of use cases are being tested
 - Many of these have conflicting requirements
 - Lots of teething problems
- May produce a Real Cloud in the future

Fin.

Questions?