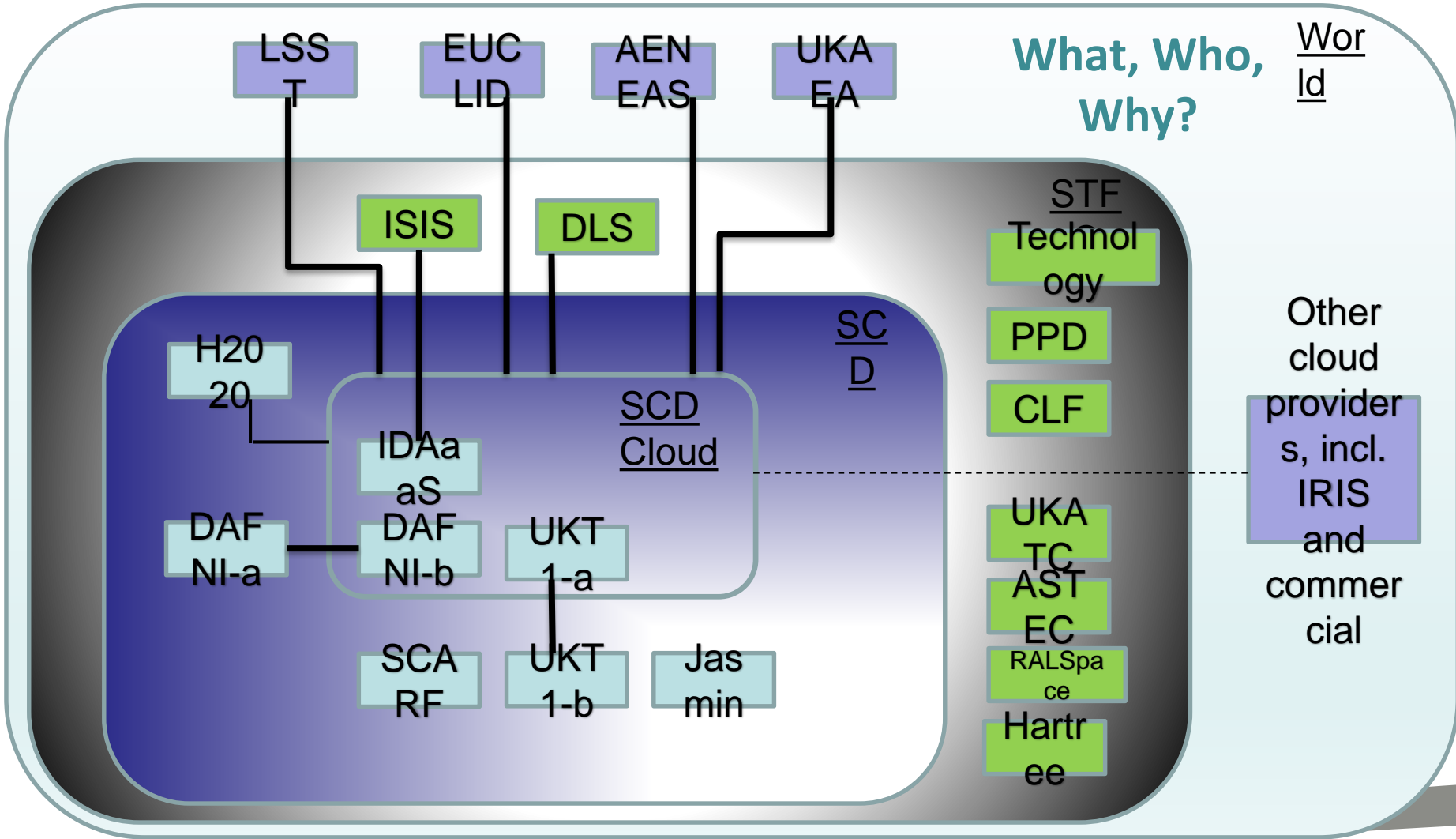# STFC Cloud Introduction

Alexander Dibbo

STFC Cloud

- Delivers dynamic compute resources to scientists across STFC and externally

- Works closely with other services run by SCD, in particular the Storage team, the WLCG Tier 1 and the facilities programme
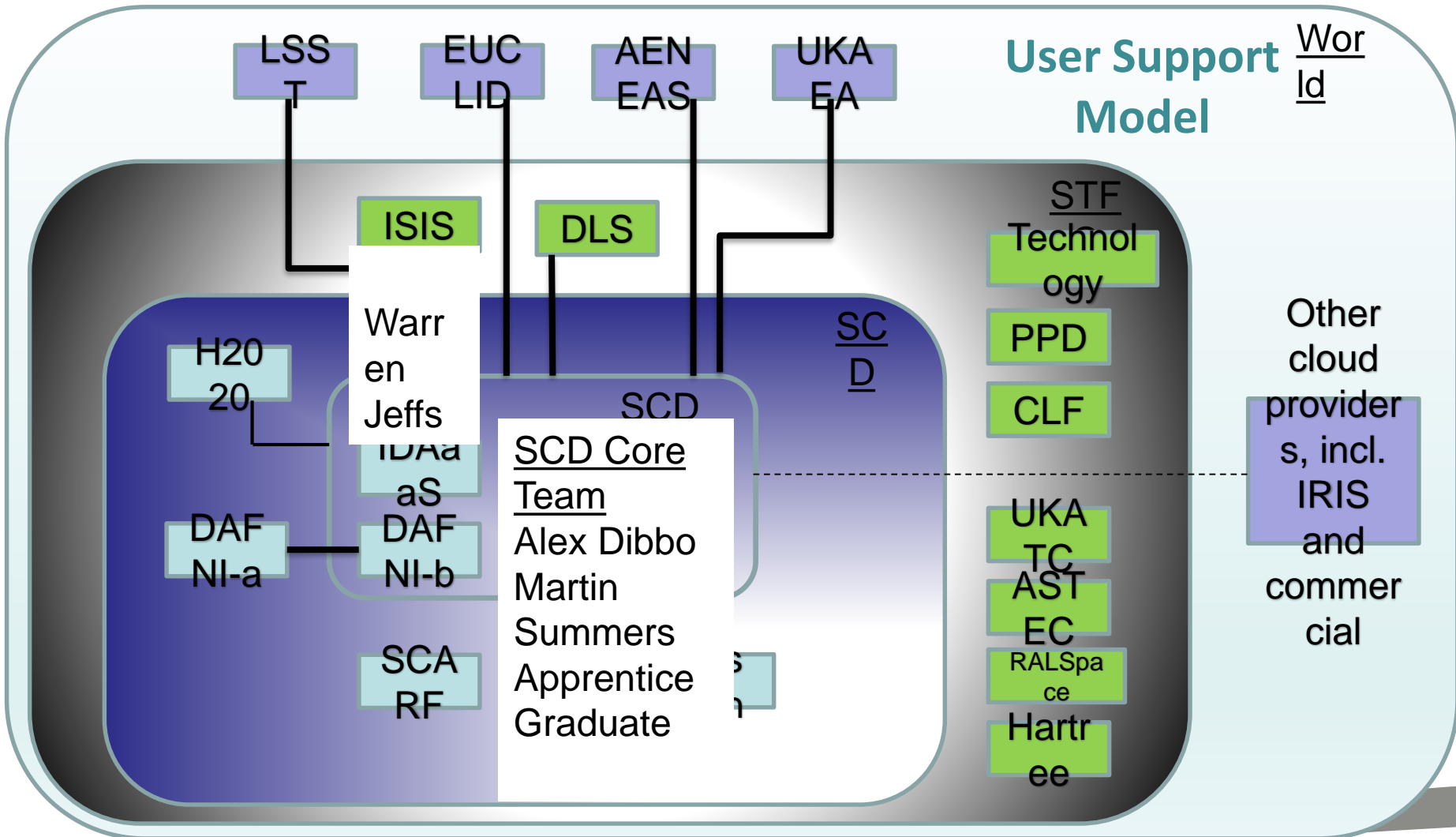
The Core (SCD) Cloud team

- Architect/Team Leader - Alex Dibbo

- Production/Fabric - Martin Summers

- Image management and development – Apprentice

- Operational Software - Graduate
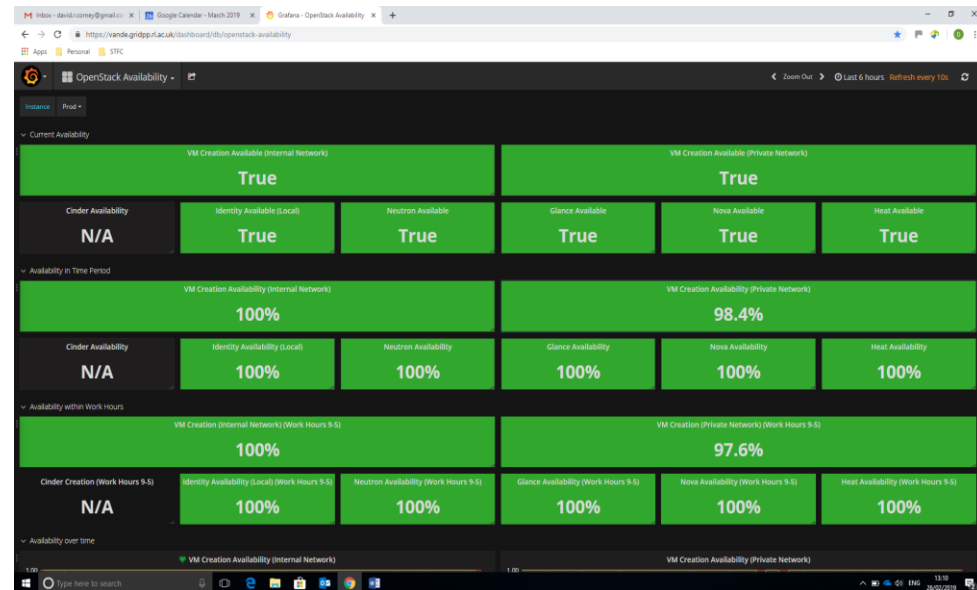
User Support

- User ticketing system
- Jiscmail mailing list: https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=STFC-CLOUD
- STFC Cloud slack: https://Stfc-cloud.slack.com
- Regular user forum
  - SCD Cloud core team + all community/dept. expert "Cloud Sysadmins"
  - Also open to all interested end users
  - Key, two way communication channel
- Scalable user support model
  - Requires (appropriate fraction of an) expert "cloud Sysadmin" for each dept. or user community. Each "cloud Sysadmin":
    - Is provided or funded by joining user community (training provided if required)
    - An essential local expert who understands their community (and speaks their language)
    - A single POC for small SCD Cloud core team
    - A key two-way communication channel between users and cloud team

Science & Technology
Facilities Council

UK Research
and Innovation

User Support Model

LSST

EUCLID

AENEAS

UKAEA

World

STF

ISIS

DLS

Technology

PPD

CLF

SCD

Warren Jeffs

H2020

SCD

IDAaaS

DAF NI-a

DAF NI-b

SCD Core Team
Alex Dibbo
Martin Summers
Apprentice
Graduate

SCARF

UKATC

ASTEC

RALSpace

Hartree

Other cloud providers, incl. IRIS and commercial

Science & Technology Facilities Council

UK Research and Innovation

Technical Summary

- The Cloud is an infrastructure as a service platform based on OpenStack

- Provides ~ 4000 cores of compute capacity (increasing to ~ 8000 in Q2).

- Offers ~ 150TB of useable storage for VMs and scratch space (increasing to 750TB in Q3)

- Up to 25gb networking is available to VMs

- VMs can be created in various sizes depending on requirements.
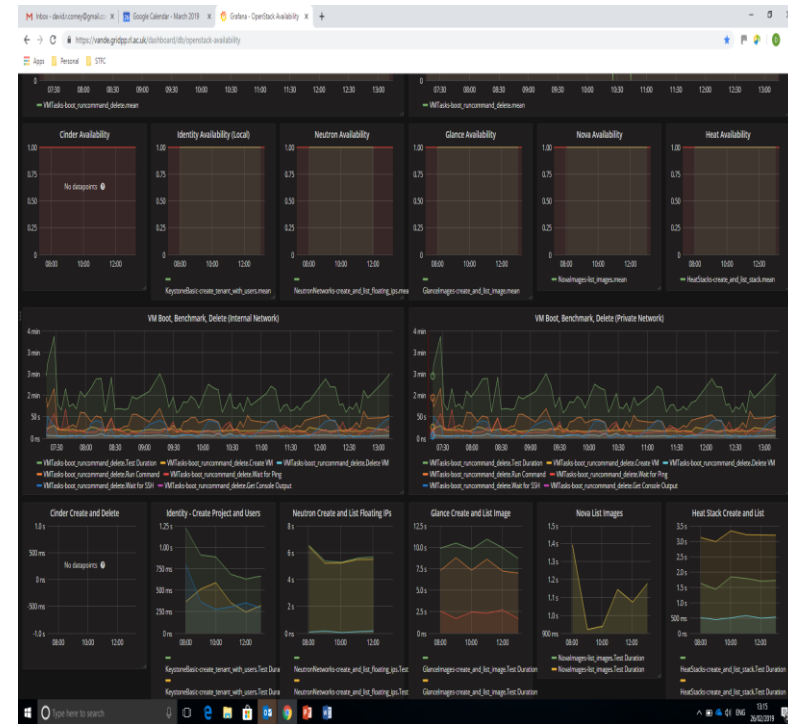
Cloud Architecture

- Endpoints sit behind a pair of load balancers with at least three instances of each service

- 3 node Galera MariaDB cluster

- 3 node RabbitMQ cluster

- KVM/QEMU tuned as far as possible without compromising manageability

- Underlay network is a routed leaf-spine network

- Ceph for Virtual Machine storage and volumes.

- Flat and project networks are available

  - DVR is used for VM connectivity

- GPUs are in use

Components Deployed

- Keystone

- Nova

- Neutron (currently six instances on neutron-server to support DVR load)

- Glance

- Cinder

- Heat

- Rally

Future plans

- Additional capacity deployment in the next couple of months (brings total to ~8000 cores)

- Procurement later this year for further capacity

- About to buy physical DB cluster, network nodes and physical service nodes

- Deployment of Manilla (led by storage team), deployment of Magnum, LBaaSv2, Aodh and Gnocci (or monasca), Murano

Any Questions?