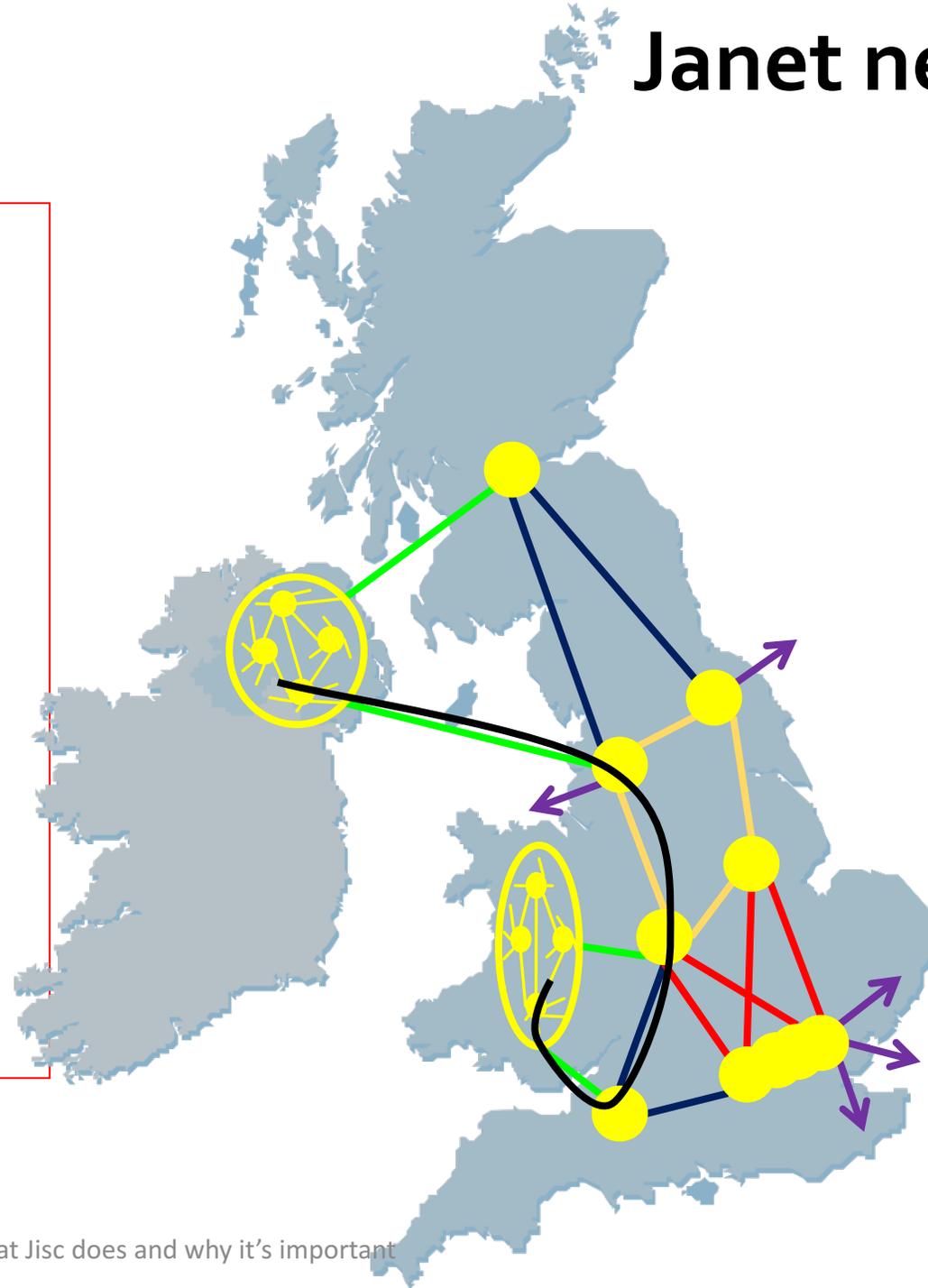


# GridPP & Jisc networking report

Duncan Rand  
Imperial College London and Jisc

- » Ten core points of presence across the UK
- » A fibre core across the UK running at 100, 200 and 400 Gbit/s
- » 19 regional distribution areas
- » Multiple connections for resilience
- » ~900 organisations connected
- » Point to point “light path” connections for research
- » >1Tbit/s external connectivity



# Janet network

- The fibre core is being upgraded: 200 Gbit/s to Glasgow and Bristol, 400 Gbit/s on the Northern part, 600 Gbit/s on the Southern part
- Jisc has taken over the regions and is aiming to rationalise the architecture between backbone and regions
- Jisc has set up an End to End Performance Initiative
  - actively engaging with UK site network staff both to understand and learn from existing arrangements - ongoing programme of visits to GridPP sites
  - facilitating discussions - recently held a workshop on campus network engineering for data-intensive science in London (<http://tinyurl.com/zlzd1vd>)

# RAL Tier-1 feedback

- LHCOPN upgraded from 10 Gbps active/passive failover pair to 2 x 10 Gbps active-active – now two links average I/O of 3.6/4.6 and 2.8/1.7 Gbps
- R&E connection increased from 10Gbps to 40Gbps – see average I/O of 2.6/4.8 Gbps
- LAN is organised so host NICs are the bottleneck. See WN activity spikes to 75Gbps and internal network spikes up to 150 Gbps.
- LAN upgraded as required. Will monitor recently upgraded links and assess if need to upgrade again.
- IPv6: should achieve WLCG management board's requested timetable

# Tier-2 feedback

- LAN usage: ‘a few Gbps’, ‘a few percent of capacity’, ‘about 5%’
- WAN usage: ‘a few Gpbs, but with significant bursts’, ‘WAN usage sometimes reaches capacity, but on average it is well below’, ‘on average 2%, brief spikes up to 80%’
- Upgrades: ‘LAN recently upgraded, WAN upgrade planned’, ‘Nothing currently planned’, ‘No planned upgrades’
- What are you waiting for to upgrade (Money, Increased traffic, Guidance): ‘Not applicable’, ‘all three’, ‘all three’.
- IPv6: ‘already done’, technical knowledge’, ‘manpower’

# IPv6 status

- Several GridPP members on HEPIX IPv6 working group
- Brunel, Imperial, QMUL have been predominantly dual-stack, including storage, for some time
- Manchester, Sheffield, Durham, Edinburgh, Oxford, Liverpool and Lancaster have IPv6 perfSONAR hosts
- RAL Tier-1 have a testbed with a perfSONAR host
  - Have now removed UK light router and should be able to proceed with IPv6 roll-out
  - Should make the WLCG April 2017 deadline for a basic IPv6 service
- Hope more UK Tier-2s will provide dual-stack storage in 2017
- [https://www.gridpp.ac.uk/wiki/IPv6\\_site\\_status](https://www.gridpp.ac.uk/wiki/IPv6_site_status)



# UK Config - IPv6 Bandwidth Tests



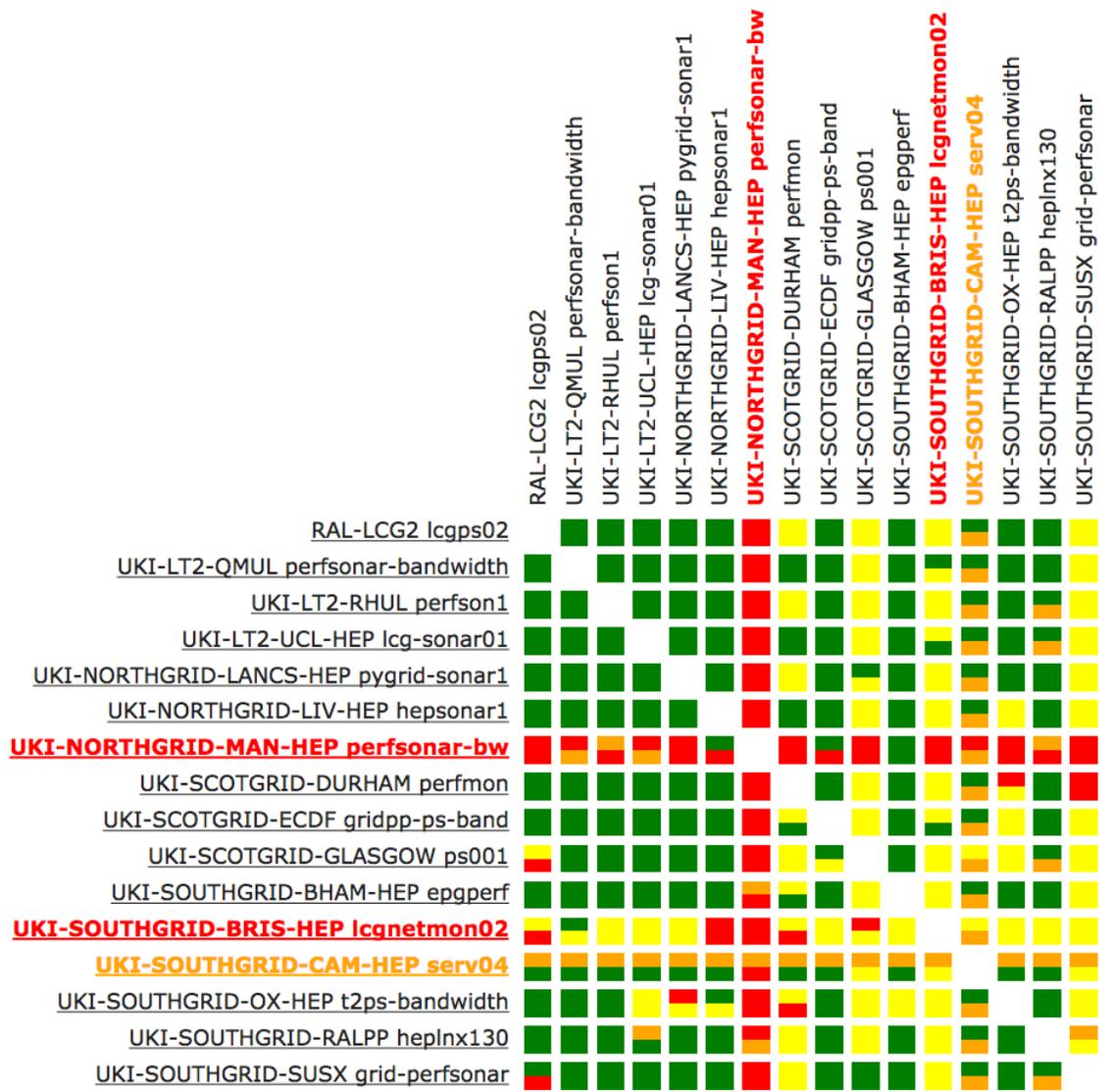
! Found a total of 5 problems involving 3 hosts in the grid



# UK Config - IPv4 Bandwidth Tests



! Found a total of 4 problems involving 3 hosts in the grid



# Summary

- The Janet core network is well-provisioned
- Jisc has the End-to-End Performance Initiative actively engaging with site network staff
- The Tier-1 has recently upgraded both LHCOPN and R&E links
- GridPP IPv6 progress is good
- We are aware of the large increase in data anticipated with the HL-LHC and think advance planning, such as this meeting, will be important to allow time for sites to upgrade their WAN links if need be