

Research Networking Infrastructure

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Jisc – Head of Research and e-Infrastructure support

Janet & network support for research

- Perspectives for e2e performance meeting
- Janet capabilities, development & evolution
- Implications for supporting large-scale data-movement
- Supporting research



A new Janet Access Infrastructure

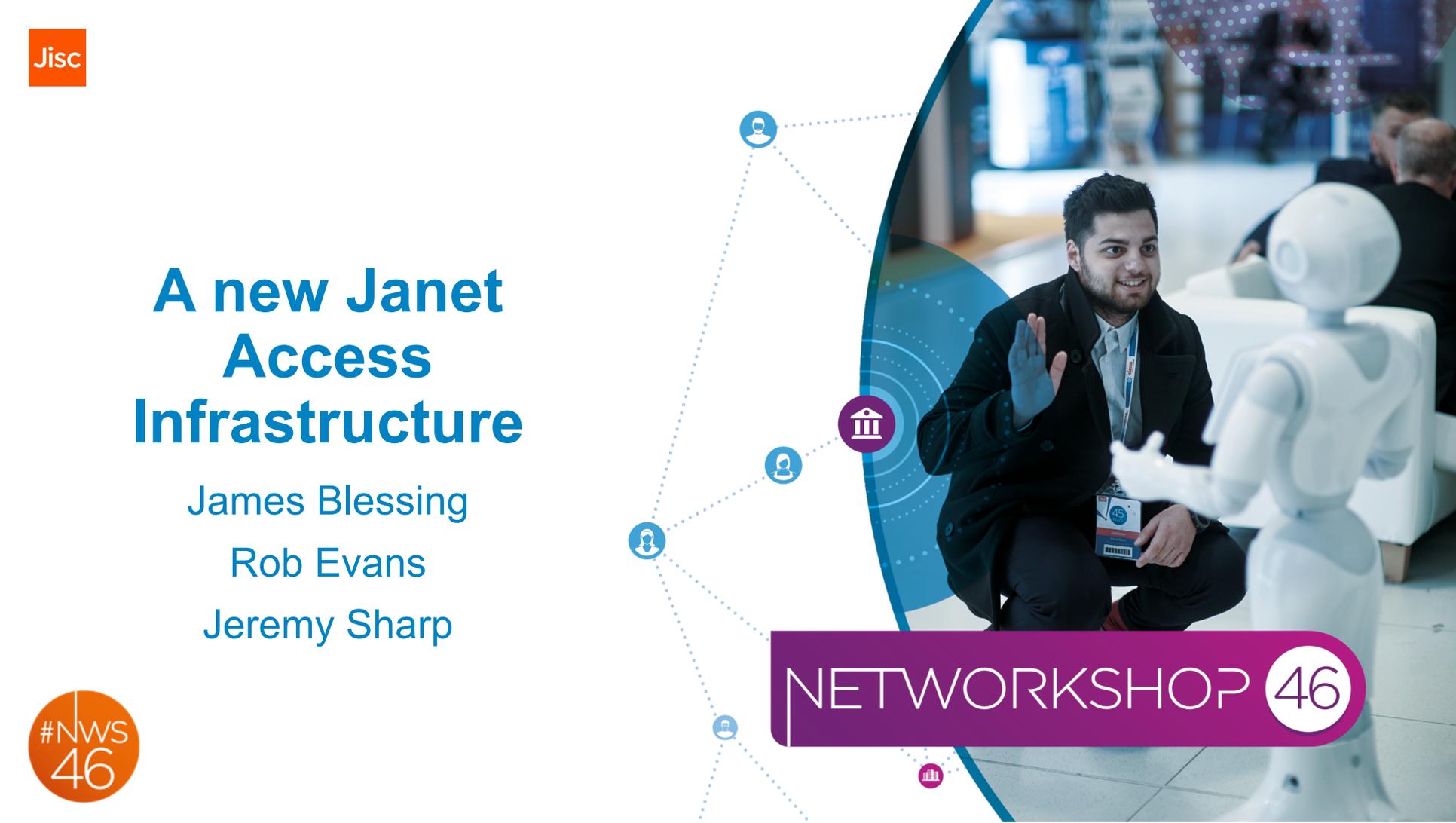
James Blessing

Rob Evans

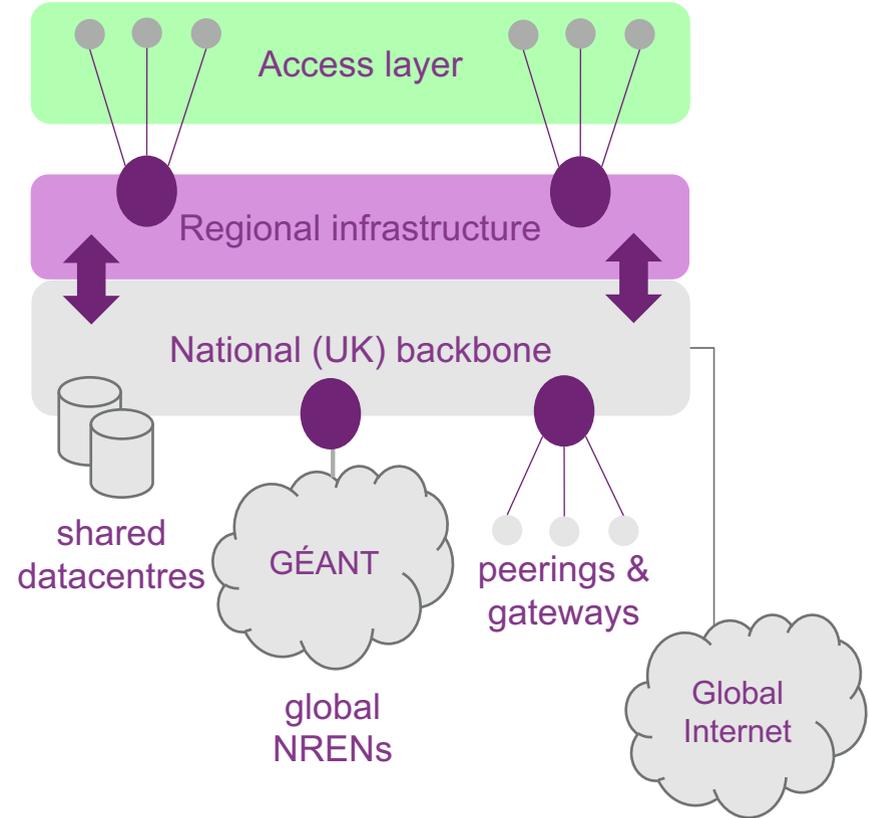
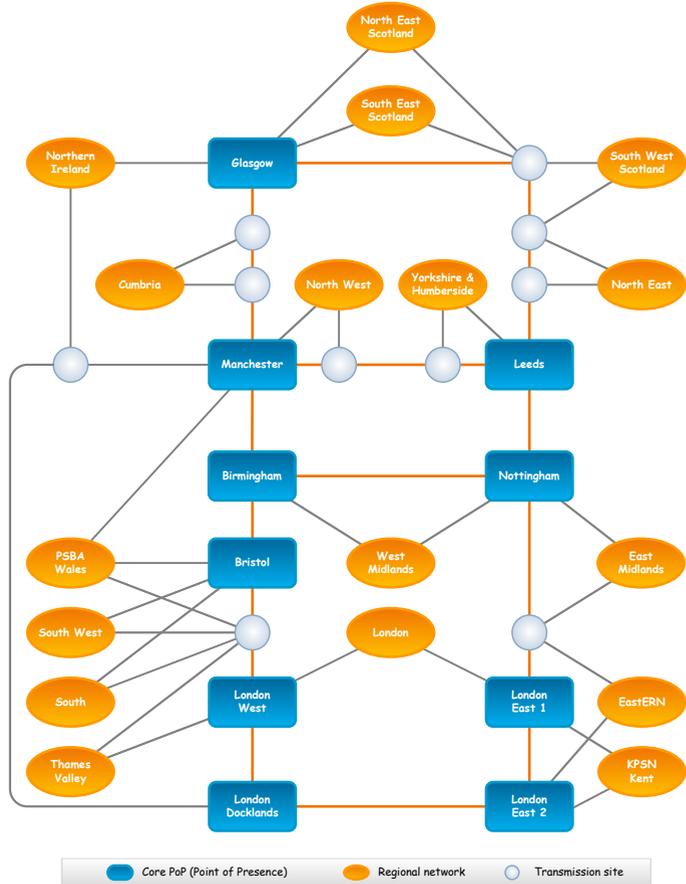
Jeremy Sharp

#NWS
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NETWORKSHOP 46

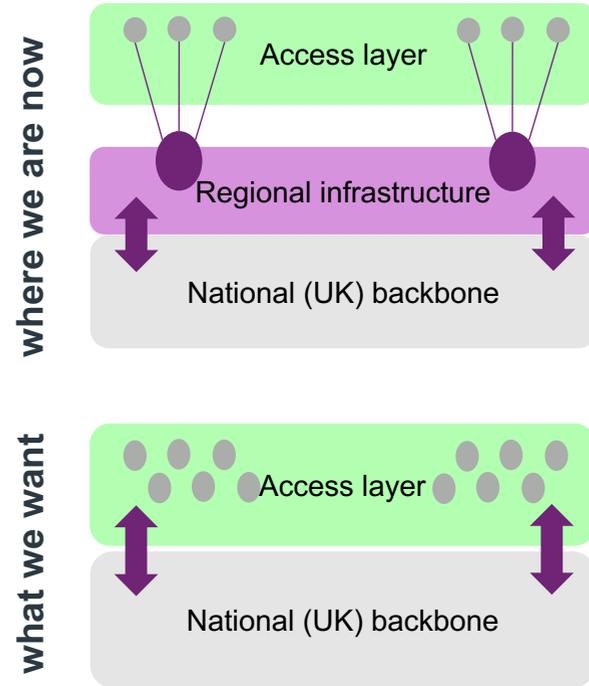


Current Janet architecture



A new Janet Access infrastructure

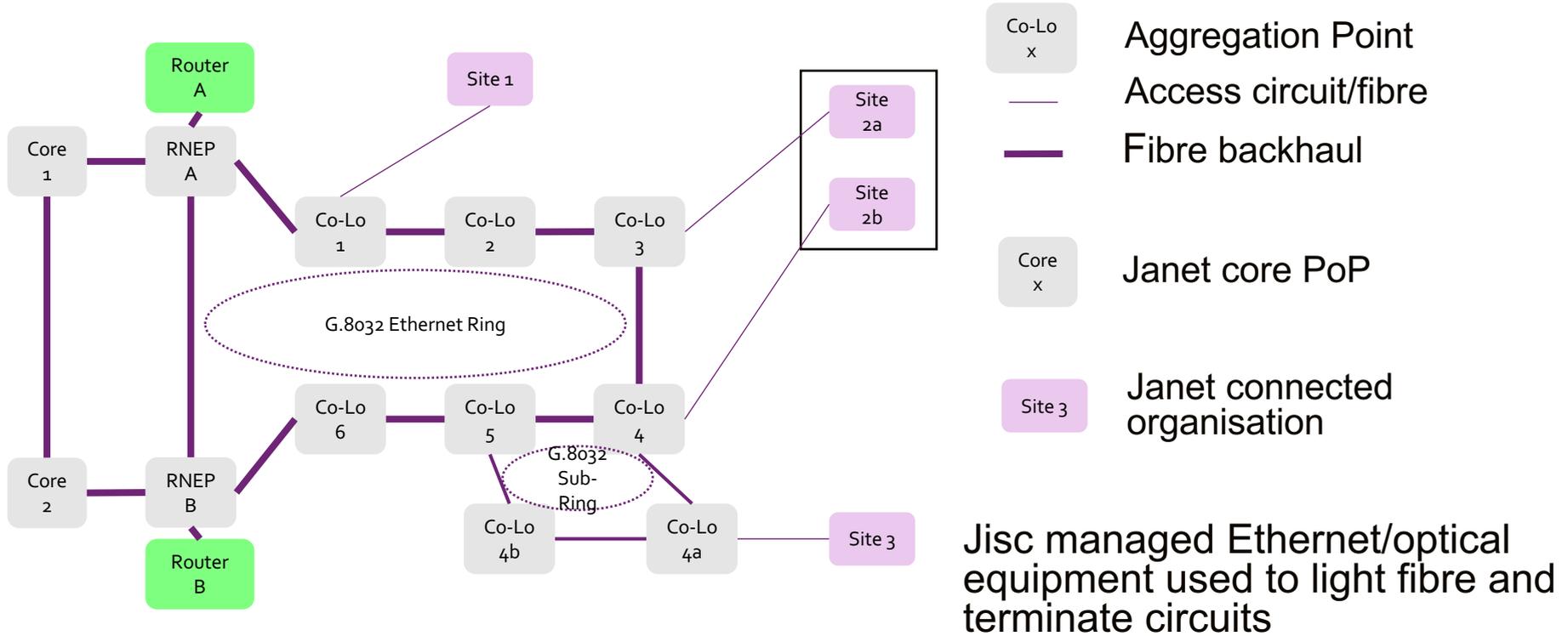
- > Overall aim: to reduce complexity of Janet access infrastructure, including:
 - > Standardise equipment
 - > Overarching management platform
 - > Some estate rationalisation
 - > More use of fibre
 - Including future Openreach products
 - Increase self-provisioning
 - > ...and break the cycle of re-procuring regional network telco contracts every 4-6 years



Steps towards a new Janet Access infrastructure

- > 2017-Q2/3: Procurement for access provisioning strategy
 - > Competitive dialogue
 - > Range of approaches invited
 - > Proposals mainly based around suppliers' existing network infrastructures
 - > Expensive - lacking flexibility & agility around provisioning & upgrade
 - > Compared against Jisc build and operate approach (as with Janet6 backbone)
 - Self-build better meets overall aims

Access infrastructure – generic approach



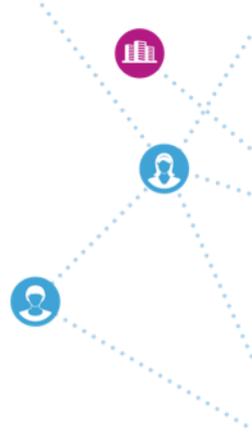
Building the new Janet Access infrastructure

> Components:

- > Regulated Openreach products (EAD, OSA, OSA Filter Connect, DFA, Exchange space)
 - > Other telco fibre & col-lo: DPS framework
 - > Optical/Ethernet switching equipment, support services: New Ciena framework
 - > Other transmission requirements: Renew Janet telco framework (summer 2018)
- > New access infrastructure introduced as regional network contractual arrangements expire over next 3-4 years.

Implications

- > Janet network services and infrastructure presentation to customers and members
- > NB this will progress steadily as the Janet access changes are rolled out.
- > Termination on an optical platform
 - > Scale and device type varies as appropriate
 - > More flexibility and increased service mix options
 - Janet IP service
 - Point-to-point services (L2-Ethernet)
 - > 100Gbit/s to edge – capability foreseen
 - NB already have first single-channel 400Gbit/s backbone path operating – central backbone at 6*100Gbit/s +
- > Covers all national facilities and research and data-intensive universities



Implications 2

- > Interface between Janet and connected organization
 - > Service mix
 - > Good WAN – LAN matching
 - maintain service qualities
 - Factor & separate services where appropriate
 - > LAN context and engineering
 - E.g. embedding RDTZ facilities
 - Hosting significant facilities – e.g. UKRI (RC) funded
 - Local – Regional – National scale
 - > UK RDTZ ensemble – standard (sub ?)set of data transfer-applications
 - Newcomers can join the ensemble when they are ready



Thinking about connecting at the 100Gbit/s scale

- > This is huge capacity – how to structure & present it ? (mix IP, L2...)
- > RAL is now operational at 100Gbit/s resilient IP
 - > plus the 10Gbit/s paths RAL-CERN etc.
- > May now be appropriate for some University sites
 - > Imperial...others to come..
 - > DiRAC – Cambridge, Leicester, Durham – Edinburgh in due course – may be a mix of 100G and 40 G
 - > Help to build research case & Jisc/Janet technical and funding implications
 - Involve Infrastructure teams and research group representatives
 - > Look at implications – not a trivial upgrade
 - Funding, new equipment, appropriate LAN architecture



Janet WAN perspective wrap-up

- > Should be no technical impediment to large-scale persistent data flows.
- > Greater access to large-scale WAN capacity
 - > More flexibility in provisioning
- > Will need careful matching to the local environments
 - > LANs & hosted systems
- > Will need planning
 - > Greater understanding of scale of research requirements
 - > Input to building a financial / business case.



Research Engagement – working with members

- > Jisc to customer and membership relationship
 - > Formal axis – management to management
 - Membership subscriptions
 - Jisc services schedule including Janet network connections
 - > “Grass-roots”
 - Jisc interaction with research communities
 - Today is an example, many others
 - People like myself, Tim, and other Jisc colleagues including account managers undertake aspects of this
- > Organisation (University) internal outreach to its research communities
 - > Mechanisms ?
- > How can we better connect these relationships ?
 - > Joint understanding of research requirements and matching to supporting services



Research Engagement in Europe and beyond

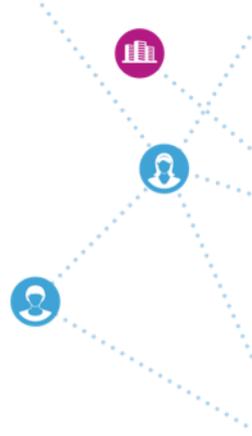
- > GÉANT TF-RED
- > Task force on Research Engagement Development
- > I now chair this
- > Janet/Jisc, Surfnet, DFN, ESNET, Internet2.....
- > Interested in how this is done within your Universities
 - > Internal outreach – communicating with real users..
 - > NRENs, EU Projects (EOSC etc...)



Jisc in the UK e-Infrastructure context

- > HEFCE – gone
- > UKRI (.ukri.org) – Research England (RE)
- > OfS (.officeforstudents.org.uk) – independent public body reporting to parliament
- > Jisc governance.....

- > Detail not for this meeting..
- > But - strategic links to UKRI and future e-Infrastructure discussions
 - > UKRI e-Infrastructure advisory group...



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