



JANET Lightpath Service

“Managed Bandwidth on SuperJANET5”

David Salmon
JANET(UK)

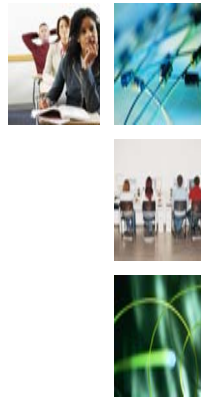


ja.net Overview

- Infrastructure background
- Policy & Charging
- Processes
- Practicalities



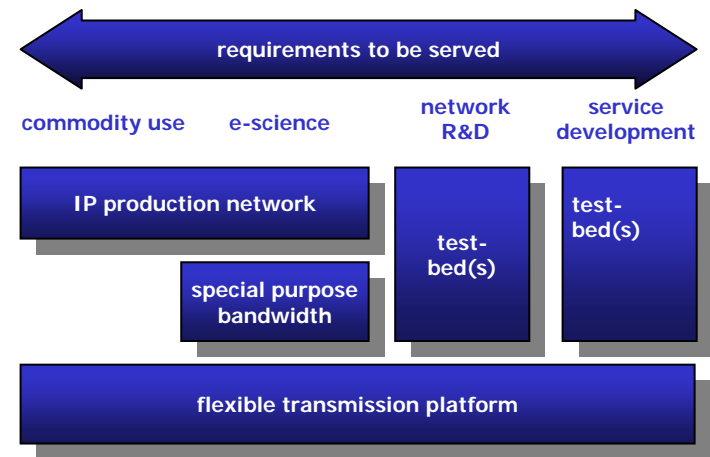
ja.net SuperJANET5



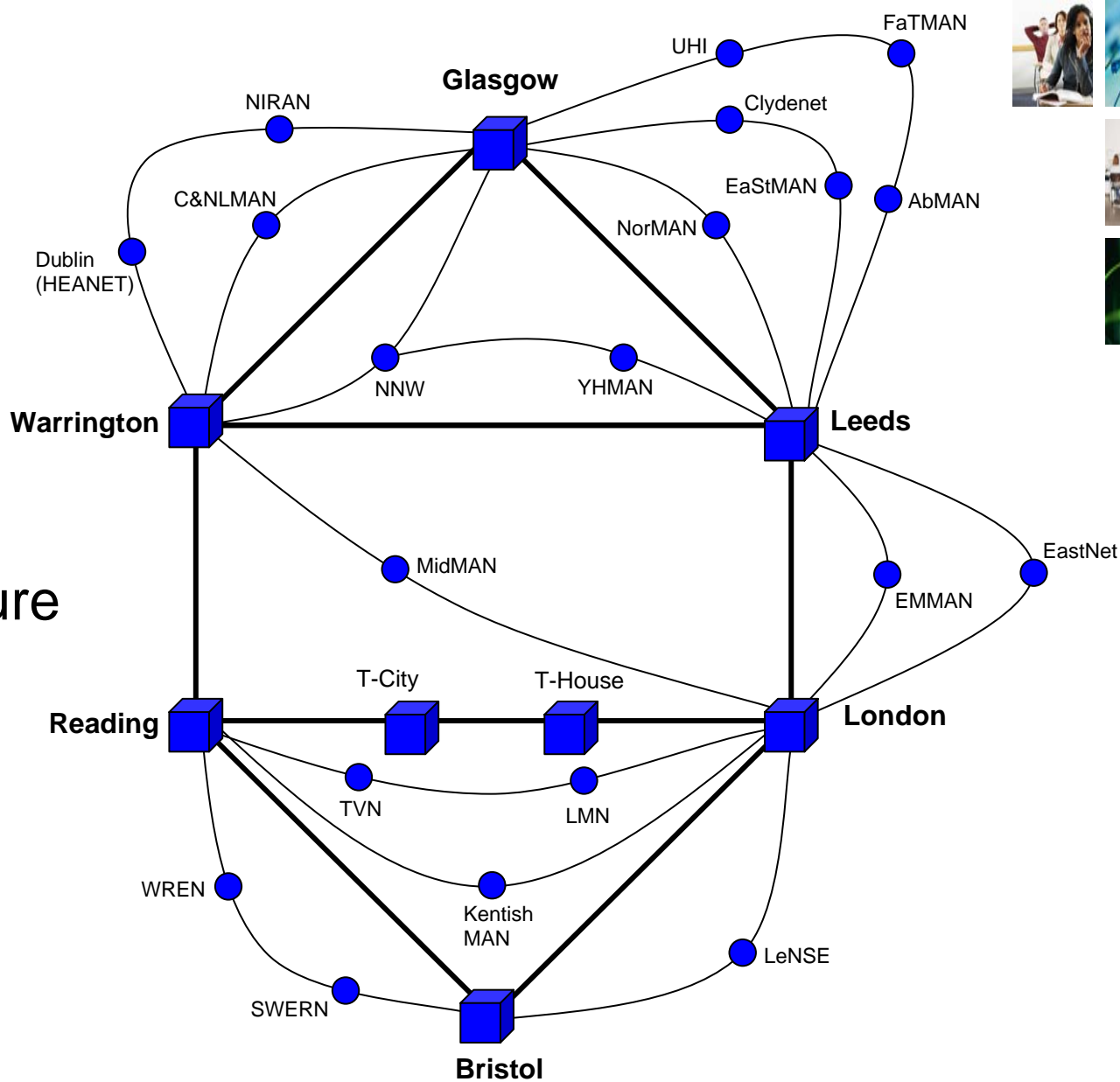
Requirements

Reliability	improve by building in more resilience
Scalability	ability to increase bandwidth at controllable cost
Separability	protection of interests of teaching & learning and research sectors
Flexibility	responsiveness to additional network service requirements
Visibility	controlled access to network monitoring and measurement information by end users

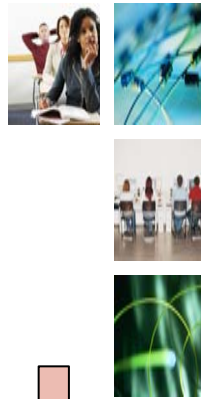
SuperJANET5 Architecture



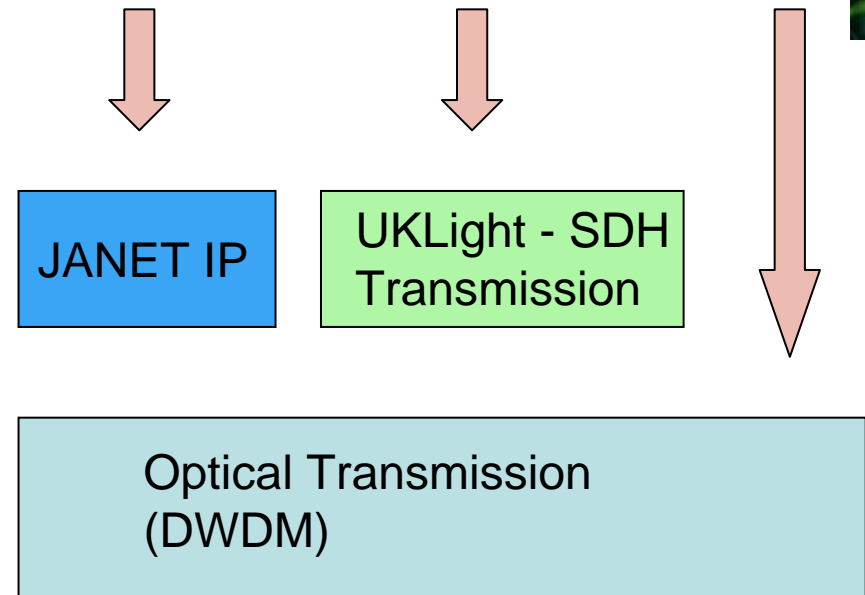
SuperJANET5 Fibre Infrastructure (simplified)



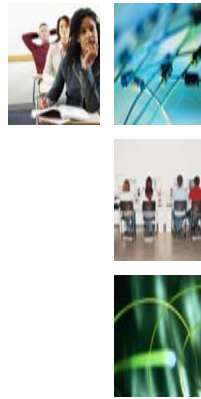
ja.net SuperJANET5 Network Services



- JANET IP service
 - High capacity
 - Resilient engineering
 - Dual connection to each Regional Network
- Point to point circuits (wavelengths / lightpaths / lambdas...)
 - UKLight style
 - 50Mb/s – 2.5Gb/s
 - Optical layer
 - 1GE, 2.5 Gb/s, 10Gb/s

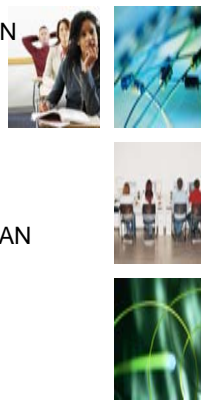
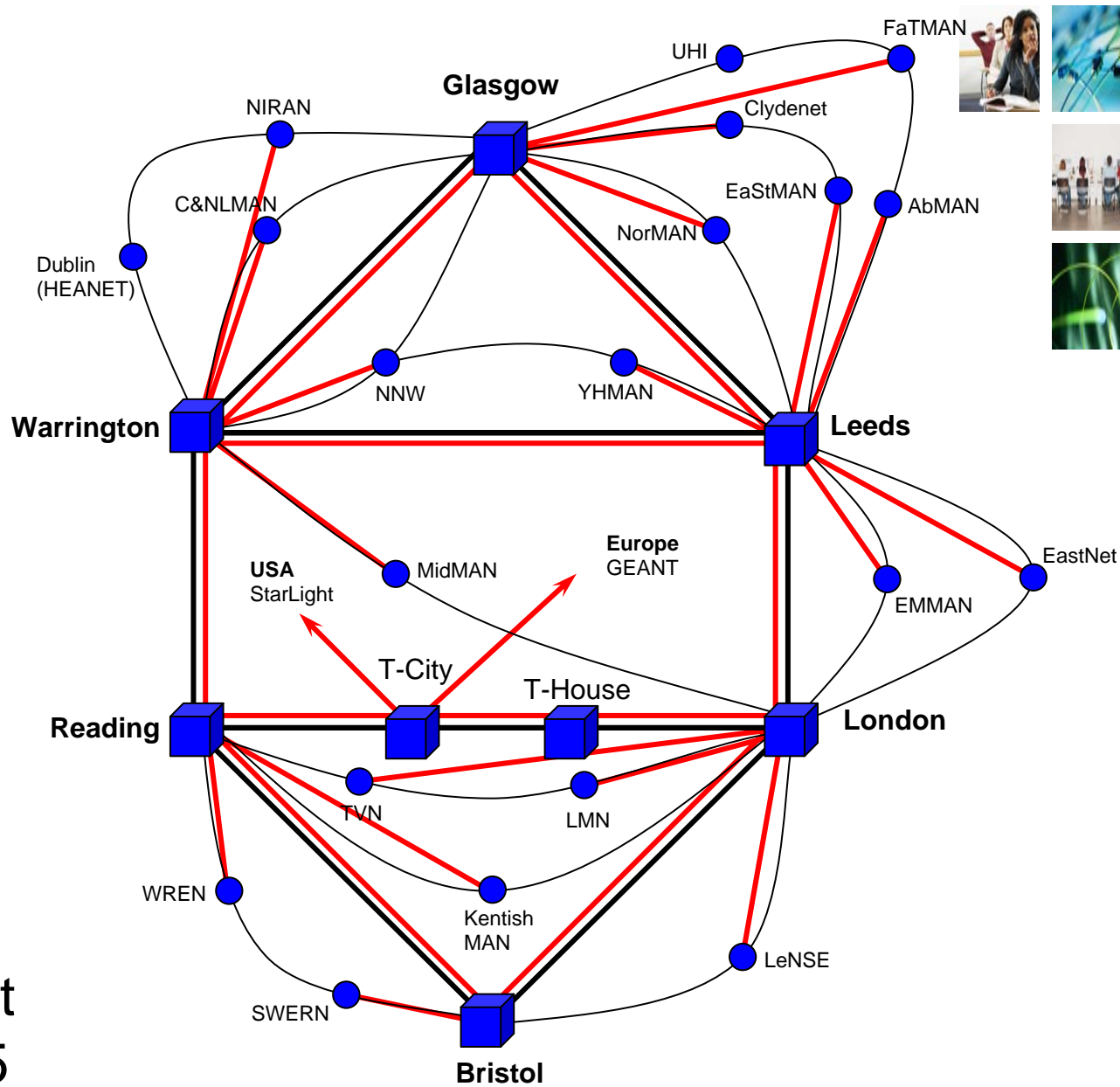


ja.net Research Capacity



- 10 Gb/s for each Regional Network
- Delivered to **ONE** of the Regional Network Entry Points (RNEPs) – some flexibility, position will evolve
- Model is for UNPROTECTED capacity (single paths)
- Unlike the JANET IP service which is protected (dual paths)
- UKLight network has been migrated to SuperJANET5 using this capacity

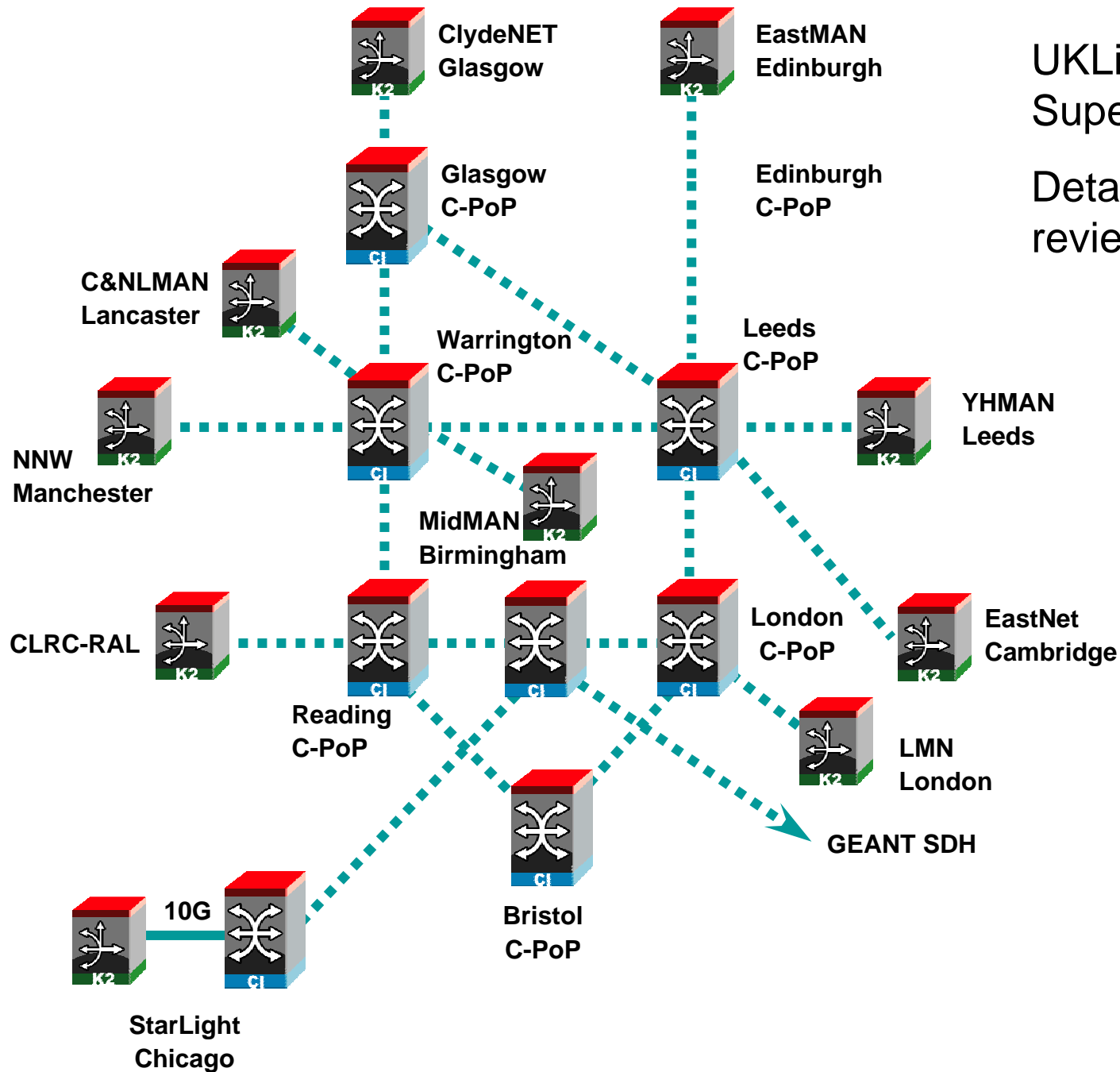




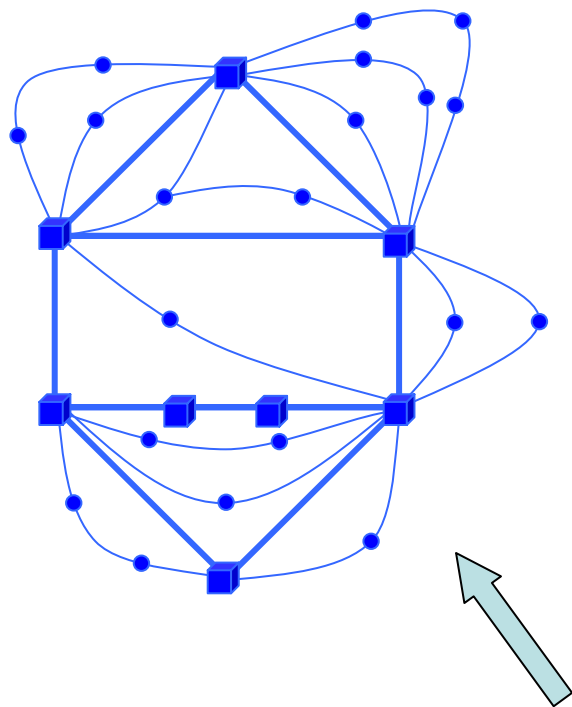
SuperJANET5
Research capacity
Integrating UKLight
with SuperJANET5

UKLight on SuperJANET5

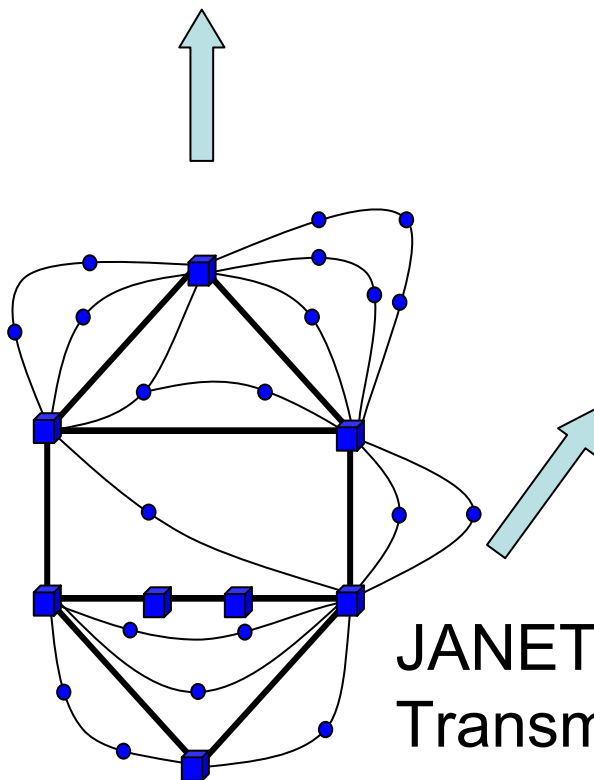
Details being reviewed



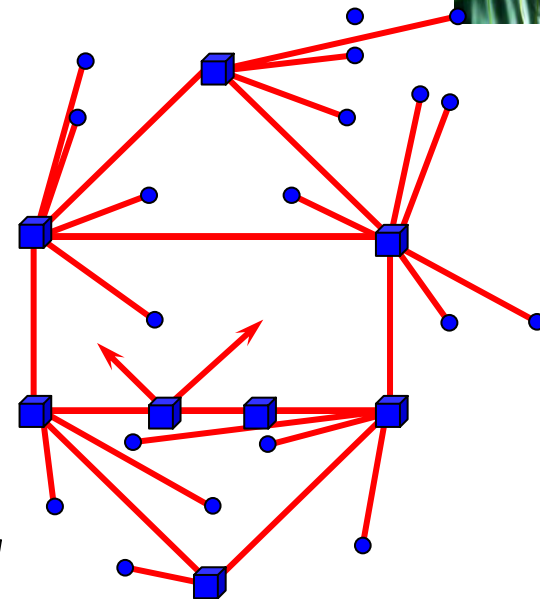
JANET IP



Additional Wavelengths



Research capacity UKLight



JANET Optical Transmission





Service Details

Policy & Process



ja.net Policy & Cost Model



- JISC Committee for Networking
 - agreed the following general approach
- UKLight capacity as common pool for scheduled circuits in to 50Mb/s to 1Gb/s (or more) region
- Dedicated cross-JANET capacity (wavelengths) at 1, 2.5 or 10Gb/s for persistent static connections. Above 1Gb/s, connections will generally be charged to projects – some discretion permitted.
- UKERNA has a budget to provide 1Gb/s wavelengths to projects
 - End-to-end – work with RNOs to deliver



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- JANET Lightpath Manual
- Informal Discussions
 - JANET(UK), colleagues...
- Complete proforma application
- Submit to JANET Service Desk
- JANET(UK) will assess
 - Feasibility, fit with policy
 - Feedback to all domain contacts – Y/N
- Implementation
 - JANET Operations

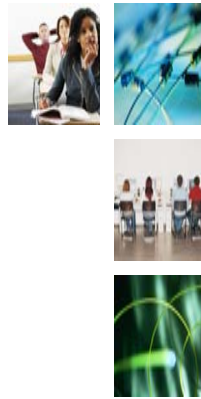


ja.net Application Proforma



- Brief Science case
- Organisations/Locations involved
 - End-sites
- Network Capacities requested
 - Needs some thought
 - many projects seem to find this difficult !
- Project Principal Investigator/s
- Domains
 - Local Organisation/s (Institution)
 - Regional, national, International
- Domain contact details (phone, email)
 - Project (Science)
 - Network - Technical
 - Network - Authority





- Circuits are generally reliable
 - They are raw resources
 - don't overdrive them - they will drop traffic !
 - Limited buffering
 - Projects may need to do traffic shaping on local equipment
- E.g.
 - Physical presentation 1GE
 - Capacity provisioned 300Mb/s
 - Capacity to project will be rather less
 - Encapsulation & protocol/framing overheads
 - (SDH (GFP (Ethernet (IP (TCP/UDP (payload))))))
 - details offline (☺)



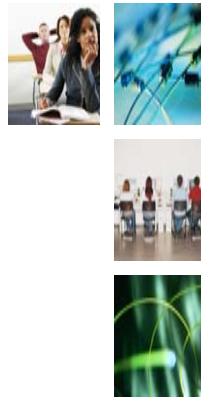
ja.net Use of point-to-point circuits



- Technical and policy issues of connecting to Organisations' LANs (bilateral)
 - Firewalls/security, routing...
- Project systems may need tuning to achieve good throughput
 - Particularly for higher-capacity circuits
- Evolving “best practice”



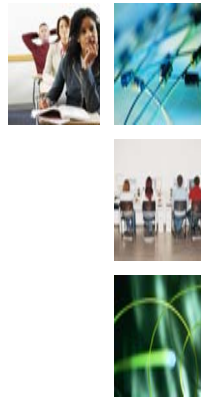
ja.net Lightpaths



- Some 25 in operation
 - Another 5/6 in application process
 - Other groups thinking...
- LMN
 - UCL
 - 2 * 1Gb/s – GENIUS project
 - 1 * 300Mb/s – Genius Project
 - Another 5 * 1Gb/s being processed
 - Imperial College
 - 155 Mb/s – Collaboration with Georgia Tech



ja.net Summary



- JANET Network Services
 - IP Service
 - High capacity, availability, reliability
 - JANET Lightpaths (Point to point circuits)
 - Switched circuits (UKLight style) – 50Mb/s to 1Gb/s (or more...)
 - Wavelengths - 1, 2.5, 10Gb/s
- Policy & Process
- Examples.. (if time)

