



UKLIGHT

<http://www.cs.ucl.ac.uk/research/uklight/>

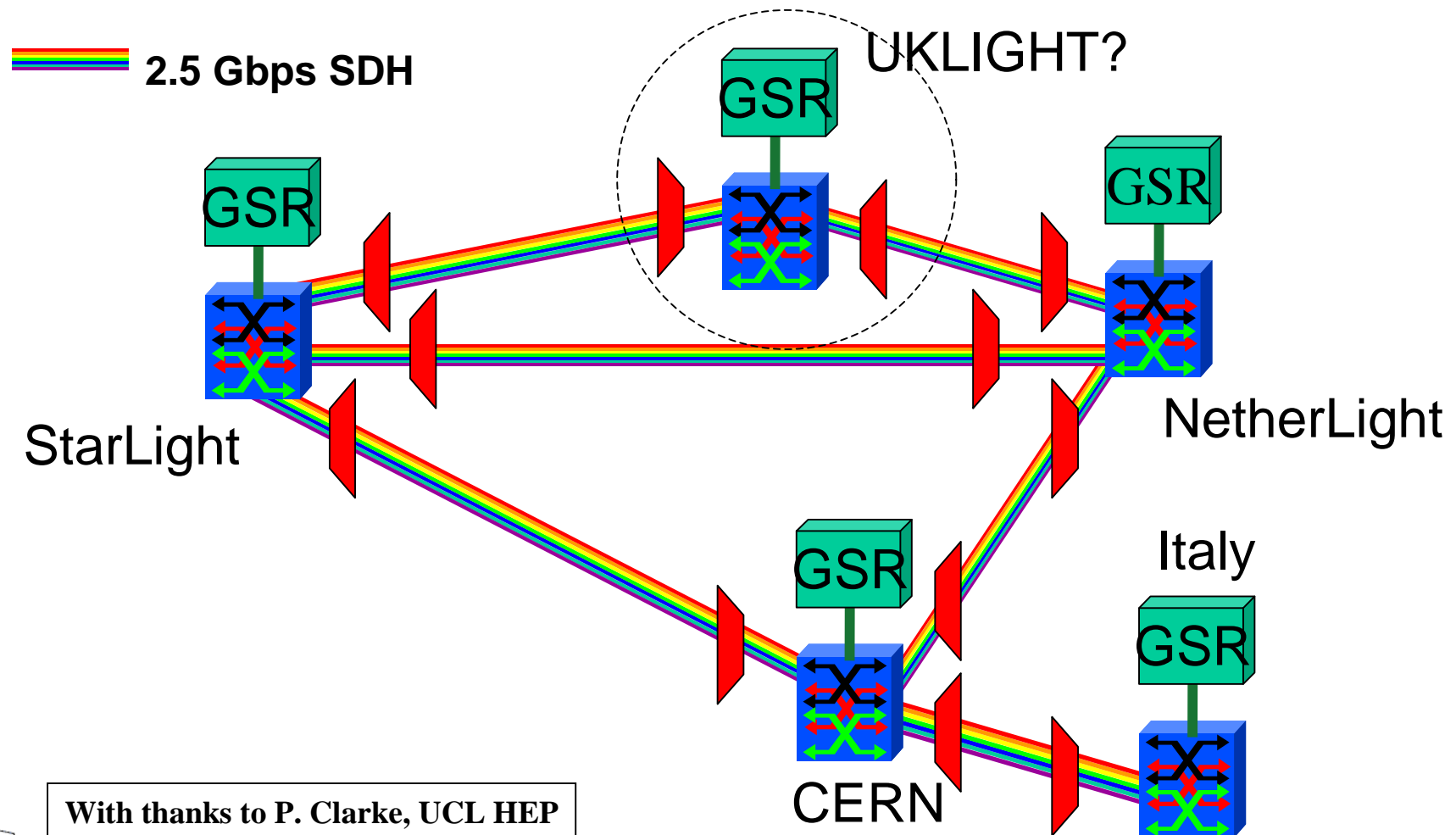
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Computer Science, UCL
on behalf of
UKLIGHT

UKLIGHT in a nutshell

- **Provide an optical networking infrastructure for network systems research in the UK**
- Very-high speed (multi-gigabits)
- International connectivity
- Current gang is:
 - UKERNA: *C. Cooper, D. Salmon, J. Sharp*
 - UCL: *S. Bhatti, P. Clarke, P. Kirstein, A. Kerl, T. Michalareas, L. Sacks, A. Seeds, S-A. Sørensen*
 - Cambridge: *J. Crowcroft*
 - Brighton: *G. Fayers*
 - Manchester: *R. Hughes-Jones*
 - Southampton: *T. Chown*
 - Lancaster: *D. Hutchison*



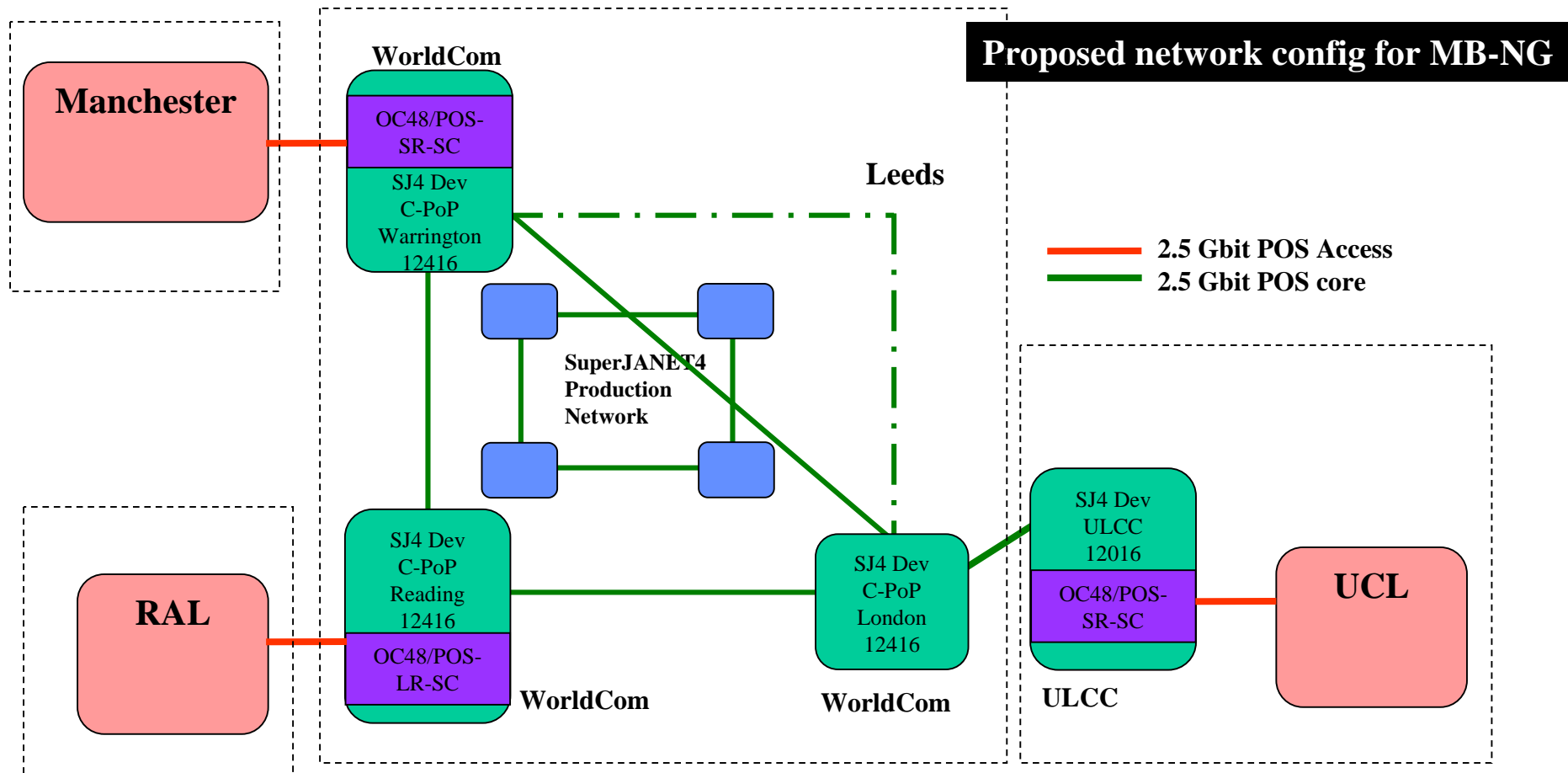
Possible international connectivity?



With thanks to P. Clarke, UCL HEP



Possible UK connectivity?



With thanks to R. Hughes-Jones, Manchester HEP



Why?

- Changing networking landscape:
 - access speeds vs. core speeds
 - over-provisioning may not cut it in the future
- Changing research usage:
 - Grid users: HEP, bio-informatics, radio-astronomy, etc.
- Learning experience:
 - next generation HE connectivity (SJ5, SJ6 ...)
 - systems-oriented research
- Collaboration:
 - international
 - industrial

Stream 1: Traditional research areas

- Revisit some traditional areas:
 - how do these need to be adapted?
 - network systems, components, services and applications
- Some areas of interest:
 - QoS mechanisms and traffic engineering
 - AAA and accounting
 - transport protocols
 - routing
 - measurement, monitoring and performance analysis
 - security mechanisms

Stream 2: New research areas

- High-speed, optical infrastructure → new areas
- Investigate and incorporate into infrastructure
- Some areas of interest:
 - virtual networks and virtual organisations
 - active and adaptable network components and systems
 - adaptable transport protocols and applications
 - lambda control mechanisms (optical control plane)
 - optical BoD (near-real time provisioning)
 - resilience/protection and fast failovers
 - optical-level QoS metrics and parameters in routing

Stream 3: Photonics-related research

- New areas of (cross-disciplinary) research:
 - photonics \leftrightarrow networking \leftrightarrow computer science
- Some areas of interest:
 - optical packet processing (optical logic and computing)
 - high-speed mechanisms for security (optical level)
 - optical switching (e.g. burst switching)
 - devices (e.g. tuneable lasers)
 - routing
 - measurement systems
 - link technologies and multiplexing (e.g. DWDM)

Where are we now?

- Work in progress:
 - scientific case (nearing completion)
 - gauging industrial interest
 - workplan for activities
- **Show me the money:**
 - need to get this funded!
 - aiming for kick-off Q4/2002

Questions?

A good way to get answers ... 