UKLIGHT

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

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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?

Proposed network config for MB-NG

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 ⇔ networking ⇔ 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 … 🍺🍺