

Exploitation of Switched Lightpaths for e-Health

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Outline

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- Real time visualisation
- Distributed simulation
- Status & Conclusions

Introduction

- ESLEA project aims to pioneer the use of the UKLight switched lightpath network with high-demand applications from a number of e-Science domains
- e-Health, given its strength within the e-Science community, is an important domain
- e-Health includes non-functional concerns (e.g. security, QoS) making it an appropriate candidate for validating and demonstrating the benefits of such networks

Switched Lightpaths

- When all the packets in a large flow go to the same end point, circuit switching is economically favourable to packet switching
- Switched lightpaths provide hard QoS guarantees
- Applications need to make reservations in advance

Simple data transfer

- Simulation runs produce TBs of data
- Computation facility is HPCx

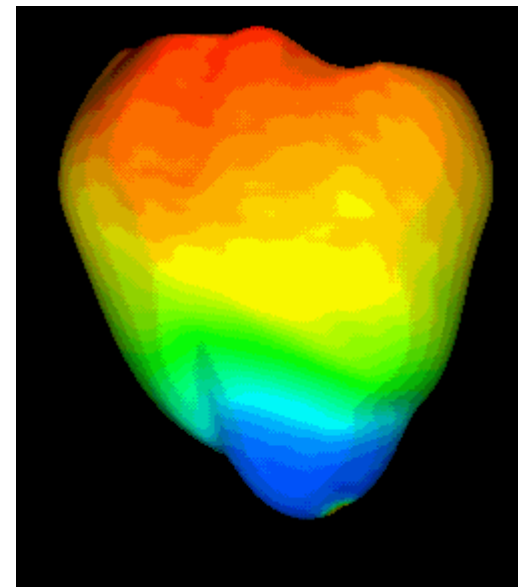


- Data storage facility is RAL-NGS
- Potential for 50-fold increase in throughput with UKLight compared to JANET



Real-time visualisation

- Visualisation geometry also computed at RAL
- Real time visualisation made feasible by streaming data over UKLight due to bandwidth guarantees
- And hence allow computational steering for more efficient use of computational resources



Distributed simulation

- Equations governing the electrical activity are coupled to those governing the mechanical pumping action
- Whereas the former are best solved on an MPI architecture, OpenMP is best for the latter
- UKLight could provide a sufficiently low latency link between MPI and OpenMP facilities e.g. HPCx and CSAR to investigate this approach
- Requires co-scheduling of all 3 resources

Status and Conclusions

- Feasibility of data transfer use case established
 - The many parties required to achieve implementation have given go-ahead
 - Lightpath between RAL and DL provisioned
 - Techies at RAL and DL completing config changes
- Feasibility of other use cases not yet established
 - But show the potential of switched lightpaths within eHealth domain