

Multipath transport workshop

From theory about resource pooling to the MPTCP protocol - and beyond

**A joint workshop between the Trilogy project,
Cambridge Computer Lab and Microsoft Research.**

Philip Eardley, BT, Trilogy Technical Manager

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Multipath TCP

- Enable a single TCP connection to use multiple paths simultaneously
- Possible scenarios
 - A mobile node with 3G and WiFi
 - A campus with 2 providers
 - Inside a data centre
- Potential benefits
 - A form of mobility
 - Resilience
 - Handle localised traffic surges
 - Increase utilisation



Overall themes

- How to balance transmission on each path so as to be stable and fair to ordinary TCP (one of the key challenges)
 - moving from the theoretical work of Frank Kelly, Richard Gibbens and Peter Key to a practical protocol that the Trilogy project is now standardising at the IETF.
 - What were the challenges and what compromises have been made?
- Open issues and challenges, future directions ...
 - where is Multipath TCP most useful and how can it best be deployed?



Agenda

- Introduction
- Theoretical background for resource pooling & Connections with multipath TCP - Richard Gibbens
- Resource pooling and systemic risk - Frank Kelly
- Tea
- Poolability scores – Damon Wischik
- Protocol design challenges for MPTCP, How we moved from the theory (as just outlined by Richard & Frank) to something practical – Mark Handley
- Lunch
- Very brief IETF status - Philip Eardley
- Congestion control algorithm Demo – Costin Raicu
- Application of MPTCP in data centres - Costin Raiciu
- Camcube project and its needs for an efficient multipath transport layer - Anthony Rowston
- Tea
- Multipath - Peter Key

