

# Use Cases

# Summary

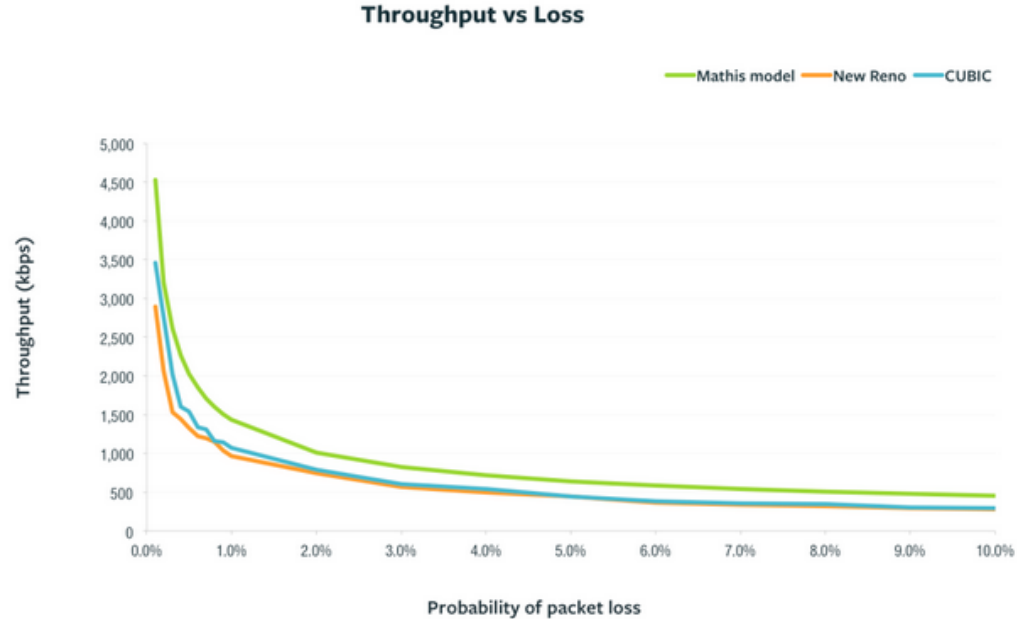
- Define and understand slow transfers
  - Identify weak links, narrow down the source
  - Understand what perfSONAR measurements mean wrt. transfer systems concepts (throughput)
- Uniform way to access and integrate existing network measurements
  - Define topology in a common way (map to sites, map storage to sonars)
  - Make it possible to create a cost matrix (from multiple sources)
  - Integration with experiment's tools/systems
- Coordinated response to the network performance issues (ATLAS)
  - Define procedure to assign ownership and responsibility for throughput issues
- Baseline existing links (full mesh), help commission new ones
- Details at:
  - <https://docs.google.com/document/d/1OcggHH4DM6vhe1ydJteYazwc0WgOLcHU31H1X5vbq3l/edit>

# TCP throughput

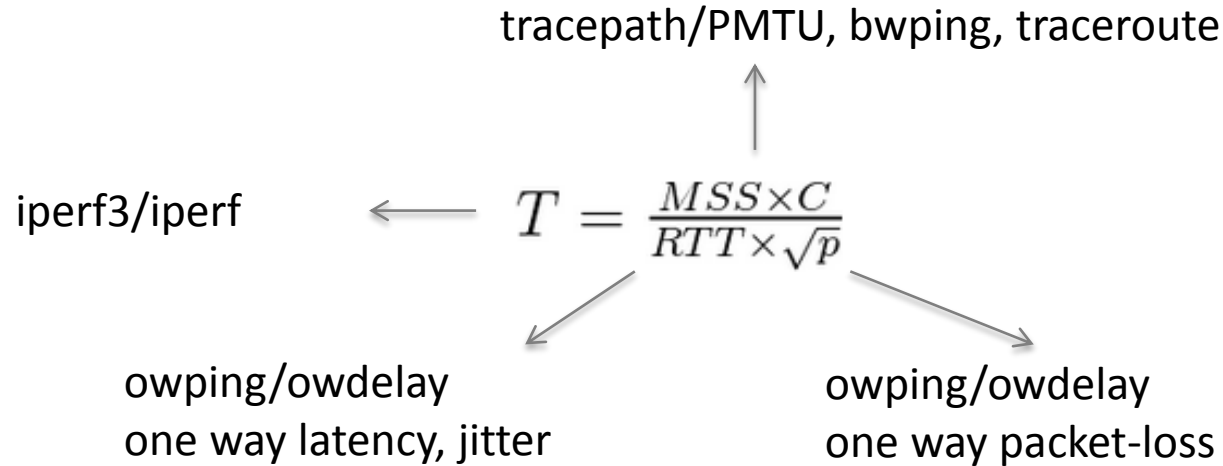
- following Mathis, et al (1997)

$$T = \frac{MSS \times C}{RTT \times \sqrt{p}}$$

- where,
- MSS – maximum segment size
- C – constant – lumpsum for several terms (TCP implementation, ACK strategy, loss mechanism)
- RTT – round-trip time (latency)
- p – packet-loss



# TCP throughput and perfSONAR



# WG structure

- Define and understand slow transfers
  - perfSONAR commissioning: support unit, follow up with sites, debugging issues (submitting bug reports to ESNNet)
  - perfSONAR central configuration and mesh management
  - Training
  - FTS performance study (Saul)
- Uniform way to access and integrate existing network measurements
  - Define topology in a common way – proximity service
  - Common API – OSG Datastore, publishing results to MQ
  - Integration – LHCb perfSONAR to DIRAC pilot project
- Coordinated response to the network performance issues (ATLAS)
  - WLCG Network Throughput SU and underlying procedure
- Baseline existing links (full mesh), help commission new ones
  - Establishing WLCG-wide meshes
  - Running core networking meshes (LHCOPN/LHCONE) to help debug/test new sites
- Status report for each topic at every meeting, minutes sent to all WG members

# Status

- Define and understand slow transfers
  - perfSONAR commissioning: support unit, follow up with sites, debugging – Done
  - perfSONAR central configuration and mesh management - Done
  - Training - official one available, one session as part of the WG in March, another one planned
  - FTS performance study (Saul) – on-going - more details today
- Uniform way to access and integrate existing network measurements
  - Define topology in a common way – proximity service - prototype available
  - Common API – OSG Datastore, publishing results to MQ - OSG Datastore status today, MQ publisher works fine in testing
  - Integration – LHCb perfSONAR to DIRAC pilot project (started) - ATLAS, CMS, ALICE TBD
- Coordinated response to the network performance issues (ATLAS)
  - WLCG Network Throughput SU and underlying procedure - Done, some cases already investigated – RAL, SARA, but we need to get more cases from experiments
- Baseline existing links (full mesh), help commission new ones
  - Establishing WLCG-wide meshes (started)
  - Running core networking meshes (LHCOPN/LHCONE) to help debug/test new sites (Done)

# Next steps

- WG review in Sept/Oct
- Define and understand slow transfers
  - perfSONAR commissioning – validate 3.5RC
  - perfSONAR central configuration and mesh management (Done)
  - Training – common session with ESNNet (as pre-GDB)
  - FTS performance study (Saul) – TBD today
- Uniform way to access and integrate existing network measurements
  - Define topology in a common way – proximity service – evolve to production service
  - Common API –OSG Datastore TBD today, MQ publishing – discuss SLA with OSG and move it to ITB and then production service
  - Integration – LHCb: perfSONAR to DIRAC pilot project, TBD for ATLAS, CMS, ALICE
- Coordinated response to the network performance issues (ATLAS)
  - WLCG Network Throughput SU and underlying procedure - need to get more cases from experiments; review contacts in the SU
- Baseline existing links (full mesh), help commission new ones
  - Establishing WLCG-wide meshes
  - Running core networking meshes (LHCOPN/LHCONE) to help debug/test new sites (Done)