Network Performance

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engineer

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Agenda

- Objective (3 slides)
- Solutions (3)
- Solution details (4)
- Results network dependent (2)
- Results network independent (4)

Objective (1/3)

- subject: network performance w.r.t. Inmarsat Mobile Packet Data System (Global Area Network – MPDS: 64kbit/s shared channel)
- simulate, analyze, refine
- trial on-air

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Objective
(2/3)

- … simulate: create base band representation of packet data satellite network
- why? to examine BOD/application interactions
- … e2etb …

objective:
Two prime areas under examination: protocol and application layers (3/3)

- Network Dependent –
  - Protocol engineering: yields for
    - application performance
    - resource utilization
    - protocol correctness
- Network Independent –
  - Application analysis, based on measurements for TCP

(results graphs for all these follow later in the presentation)

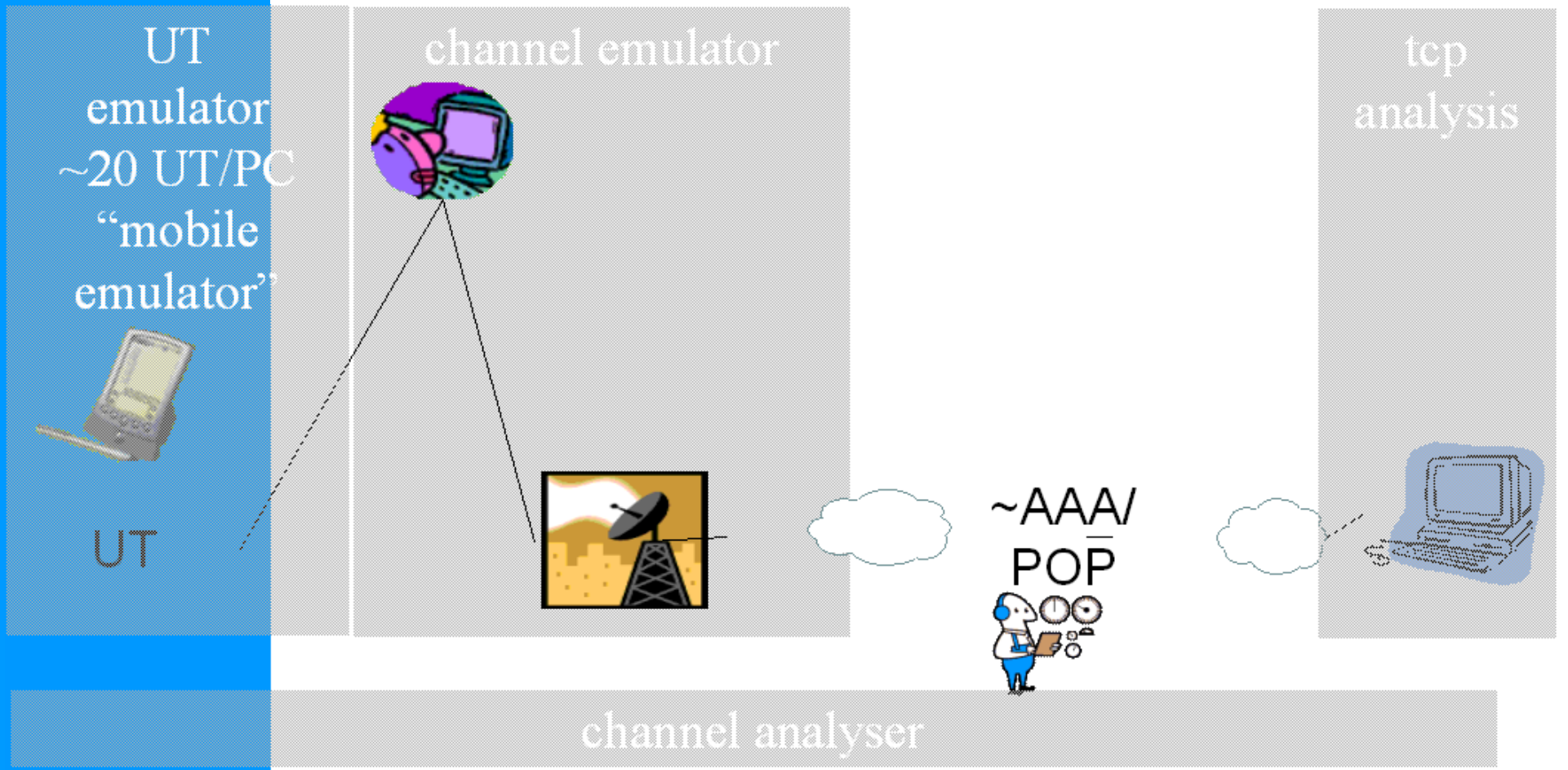
solutions (1/3): the truth is out there, and it begins with … simulation

- Simulation (where necessary)
  - simulated satellite channel (so …
  - simulated channel protocols

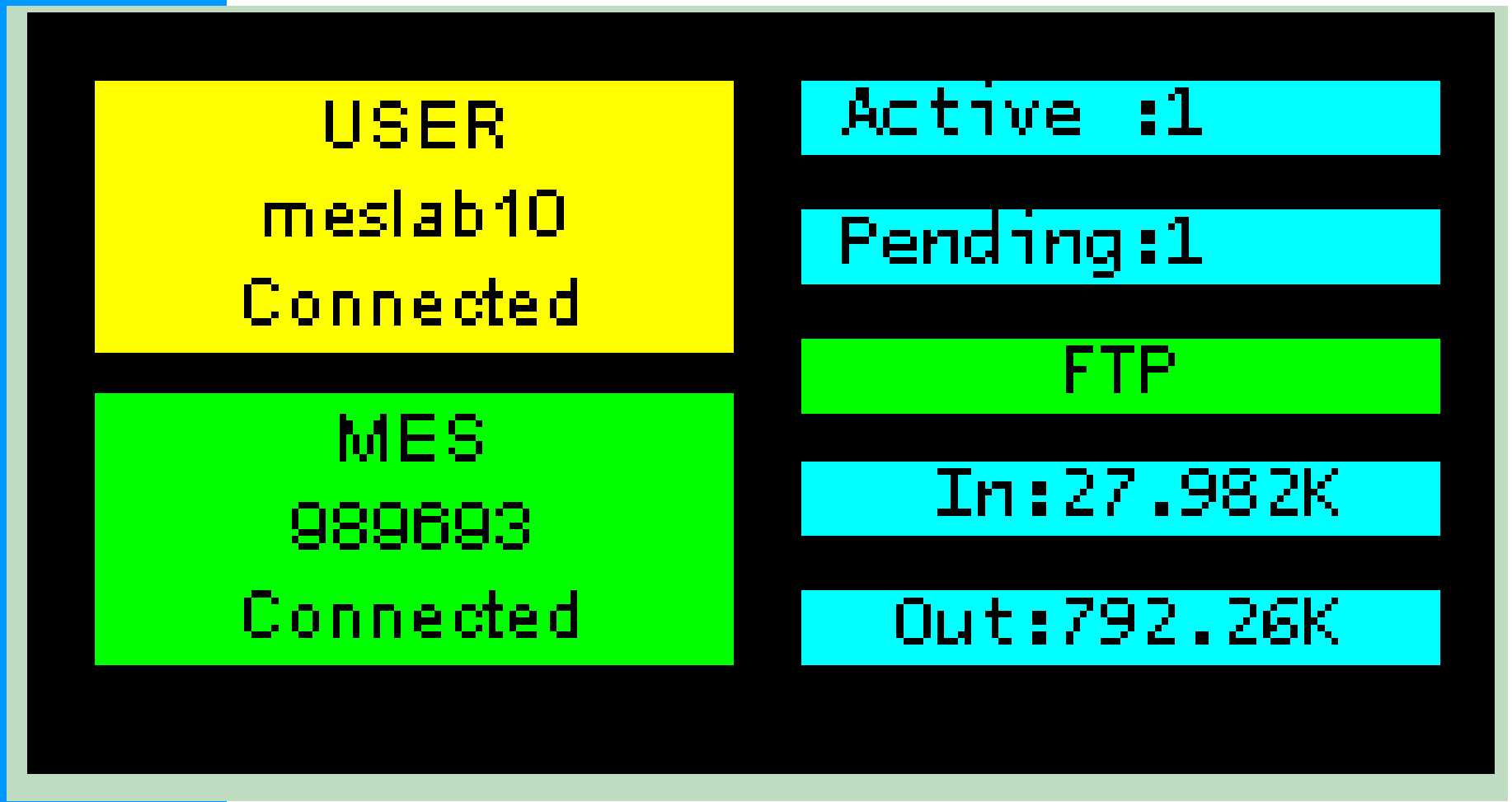
solutions (2/3): ... and analysis

- Analysis: network dependent protocol engineering
  - protocol analyser (not just your average da de da), and
  - diagnostic tools at each stage

solution (3/3) – e2etb: overview



soln. details (1/4) - e2etb: mobile emulator



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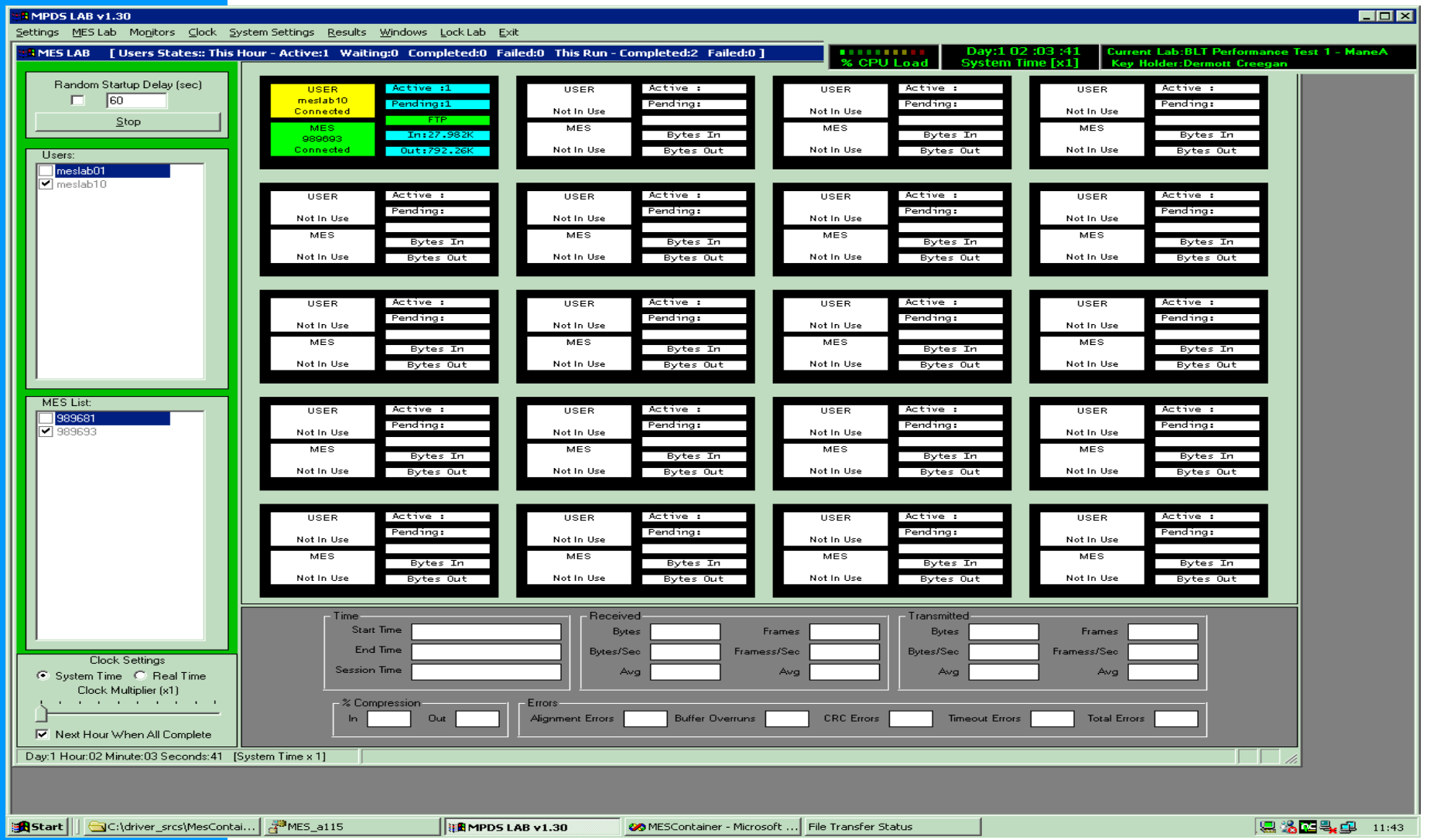
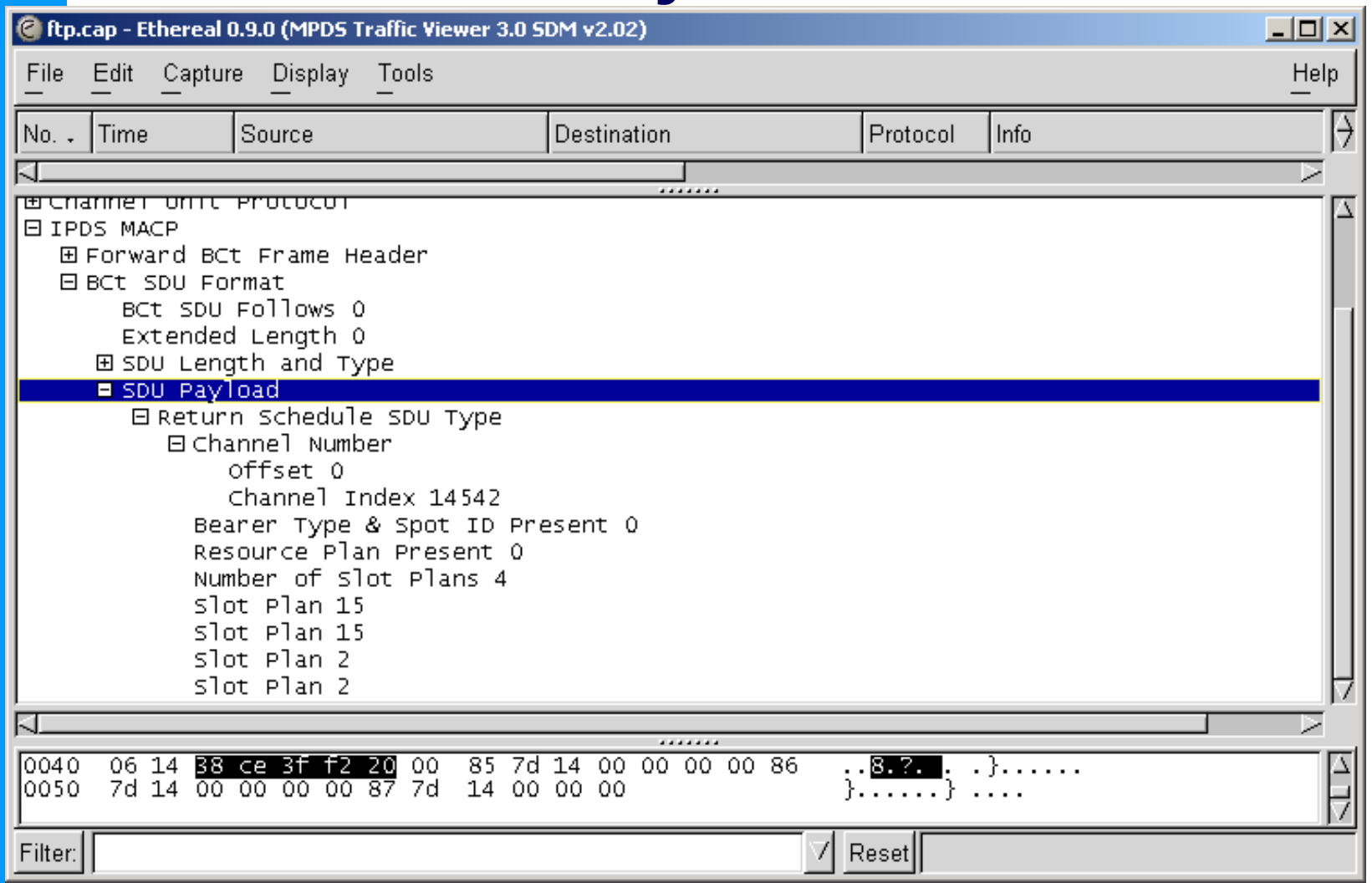
soln. details (2/4) - e2etb: mobile emulator – 20 mobiles on one pc



soln. details (3/4) - e2etb: Channel Analyser (intro)

- based on free ethereal software
- “dissectors” built for MAC layer
- for each PCO in the topology

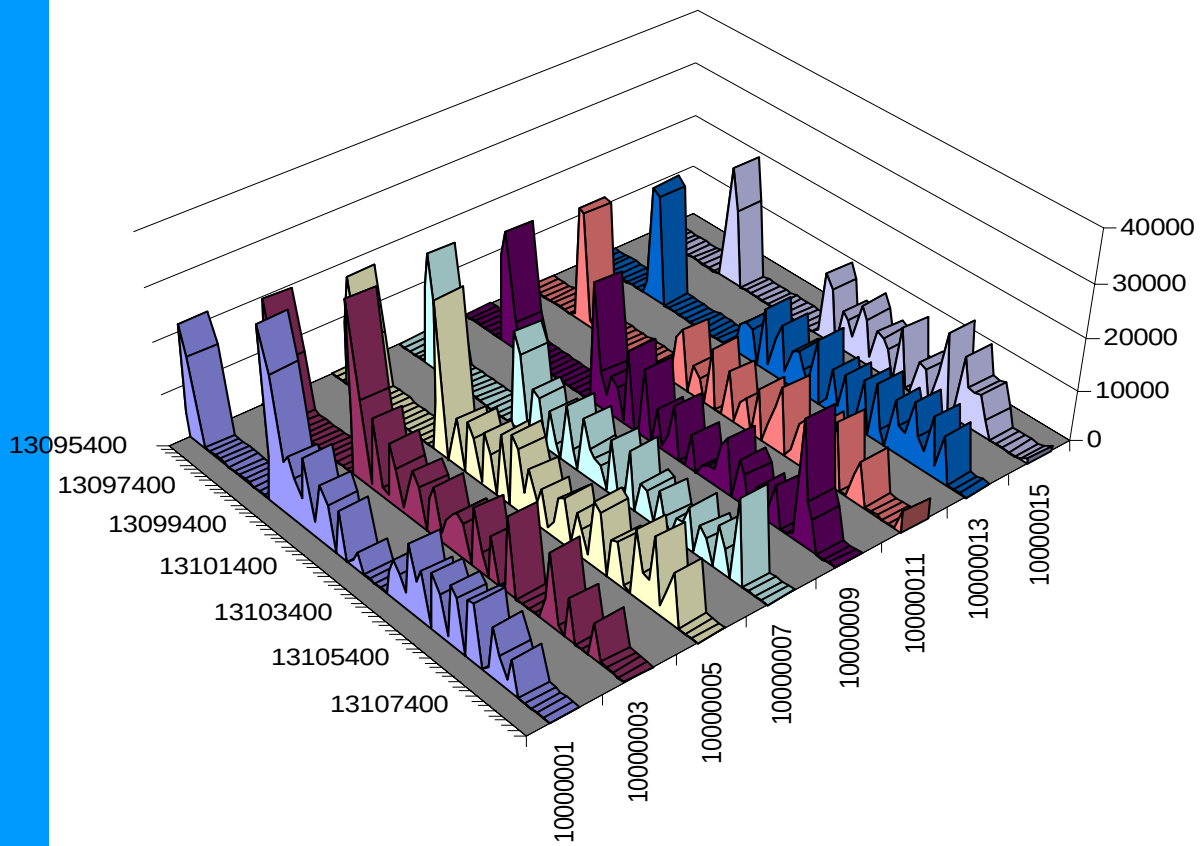
soln. details (4/4) - e2etb: Channel Analyser



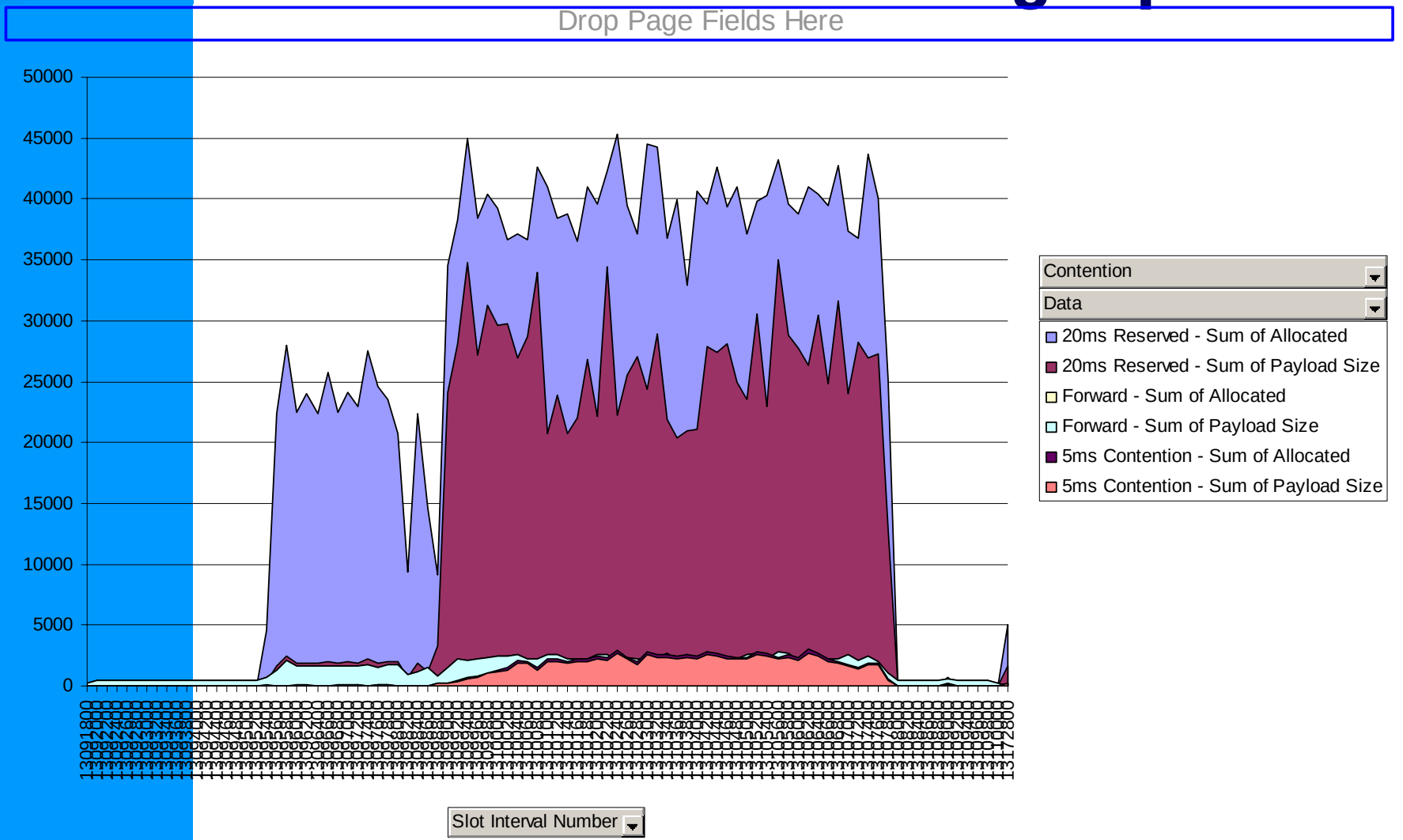
results: network dependent(1/2): channel utilisation graph

Contention | 20ms Reserved

Sum of Allocated



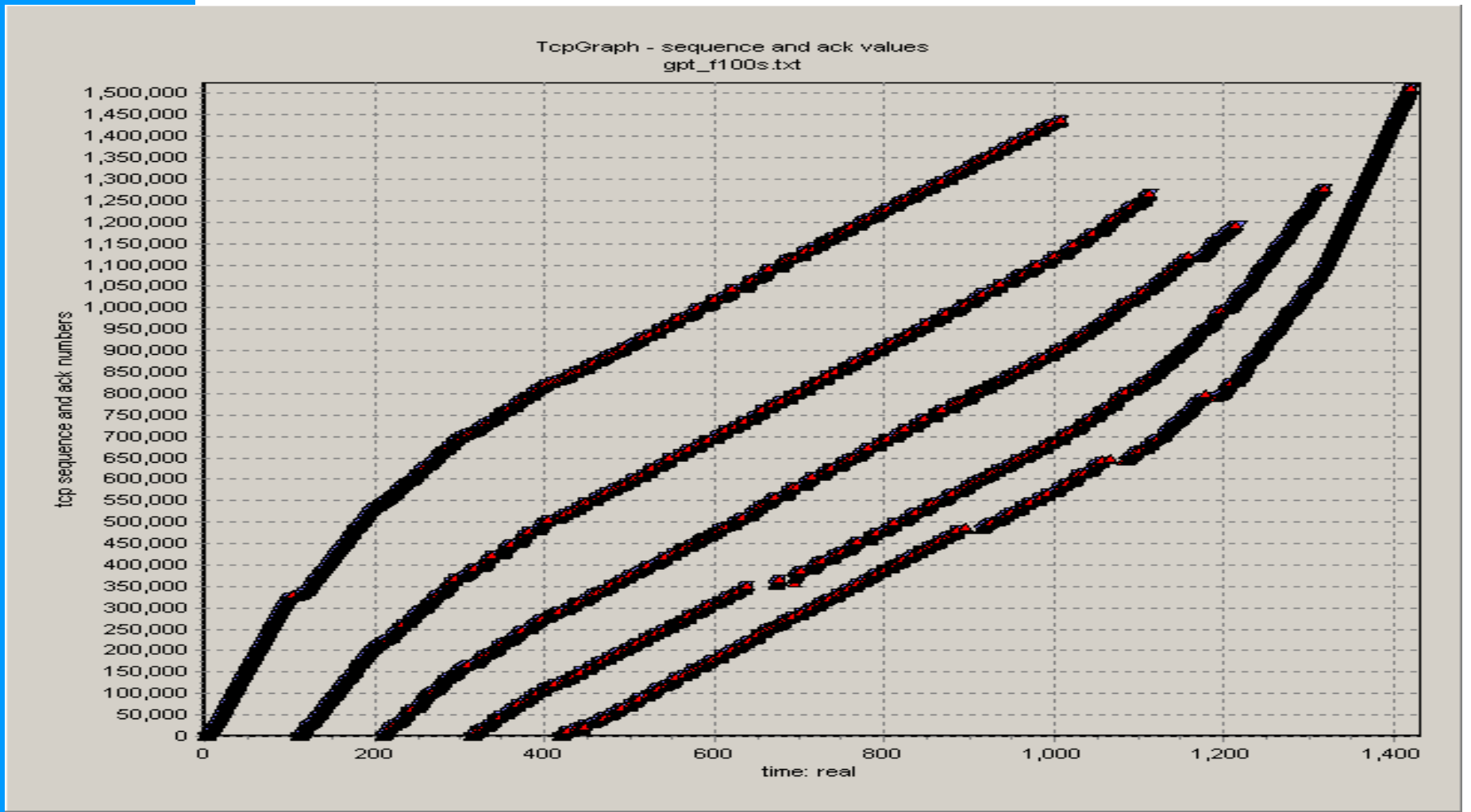
network dependent(2/2): resource utilization graph



network independent(1/4): tcpgraphs

- application demo
- Application Note - WTcpGraph.pdf
- software currently available from
  http://apps.inmarsat.com/tom/tcpgraph.htm

network independent(2/4):
tcpgraphs: 5 mobiles/one channel



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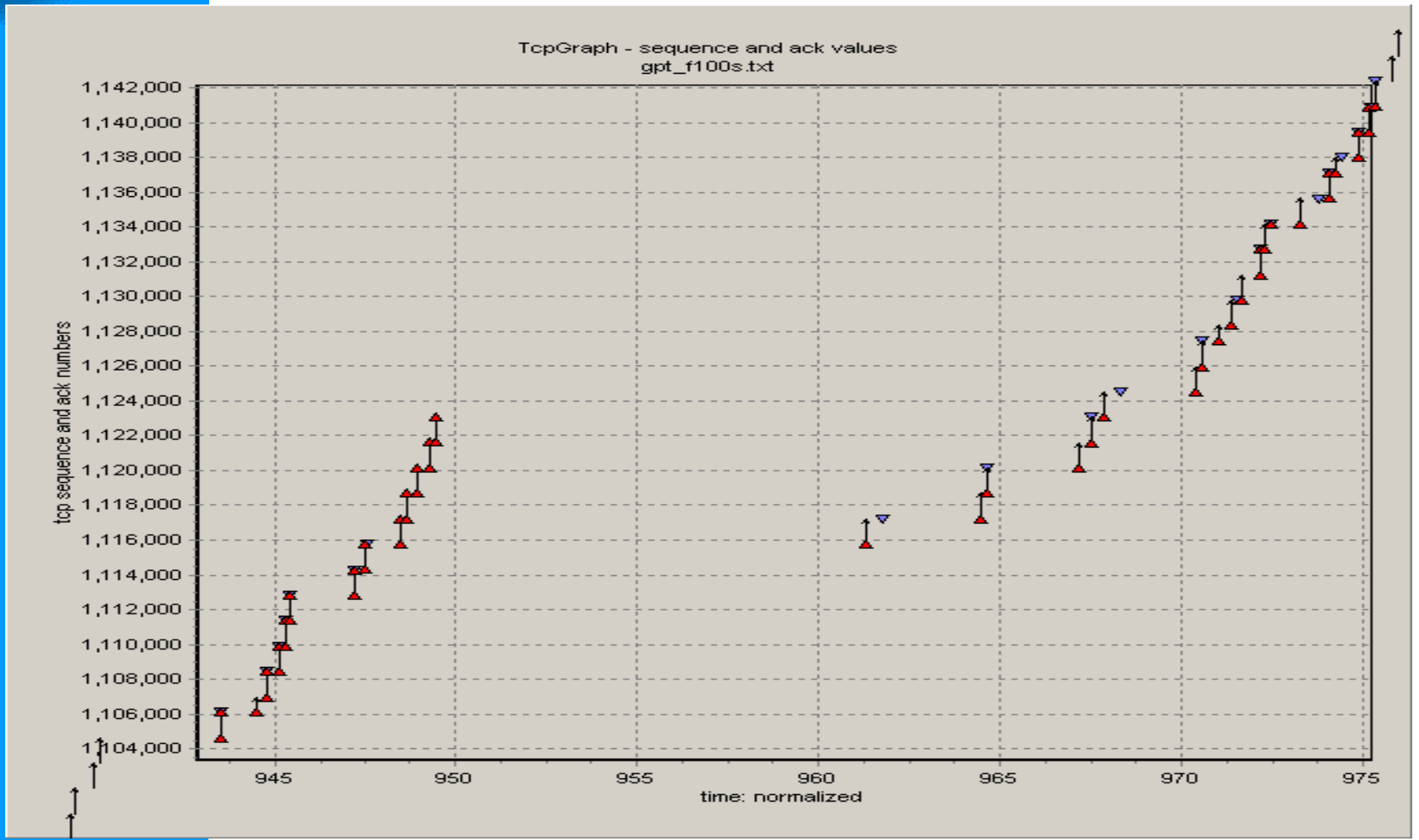
network independent(3/4):
tcpgraphs: TCP retransmissions



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network independent(4/4):

tcpgraphs: seq/ack good for retx, also need goodput indication