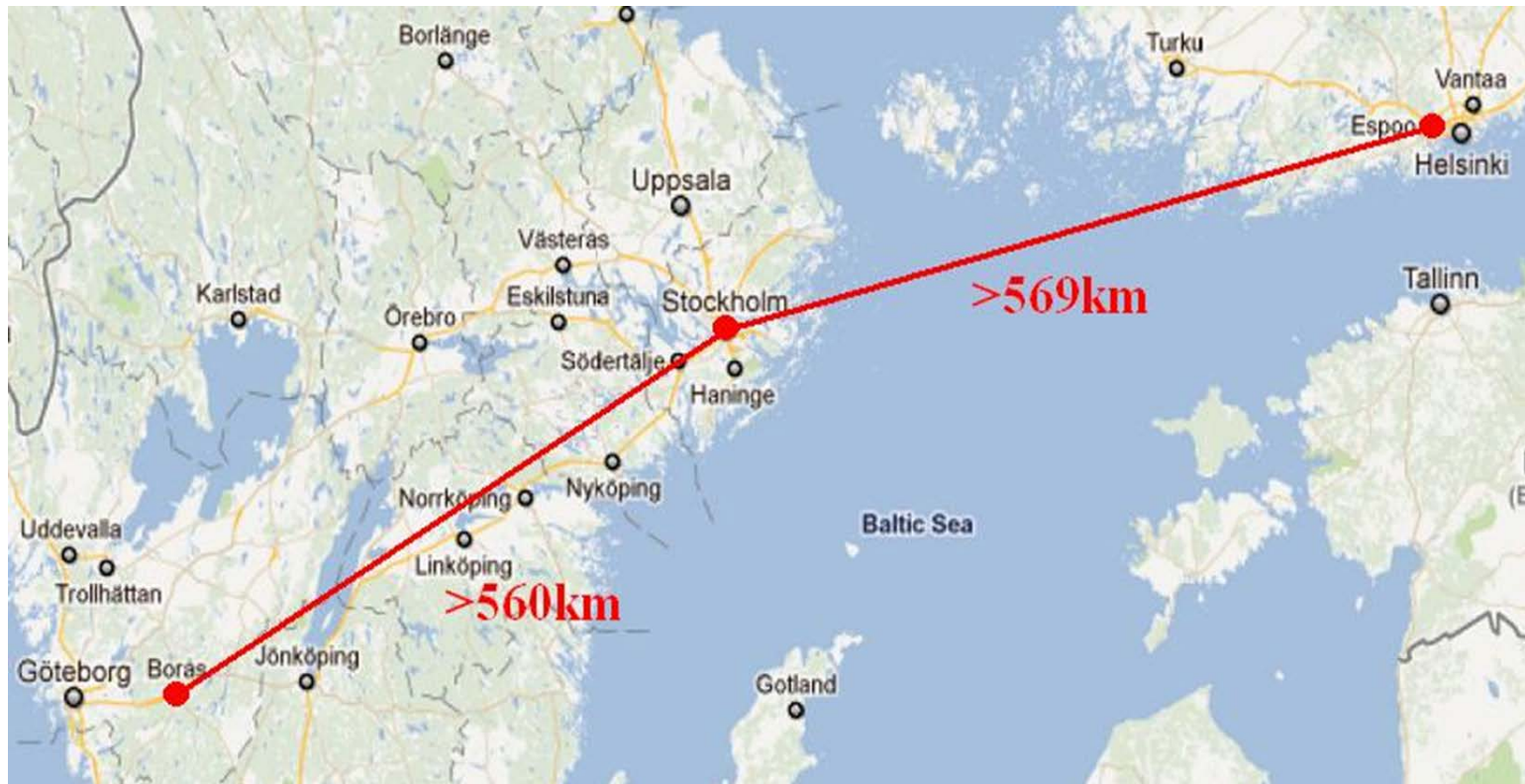


Report on SP-MIKES fibre link

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19th CCTF, BIPM
13-14 September 2012

SP – MIKES link

- Three sites involved: SP, MIKES, and intermediate site STUPI
- Three networks involved: SUNET, FUNET, and NORDUNET

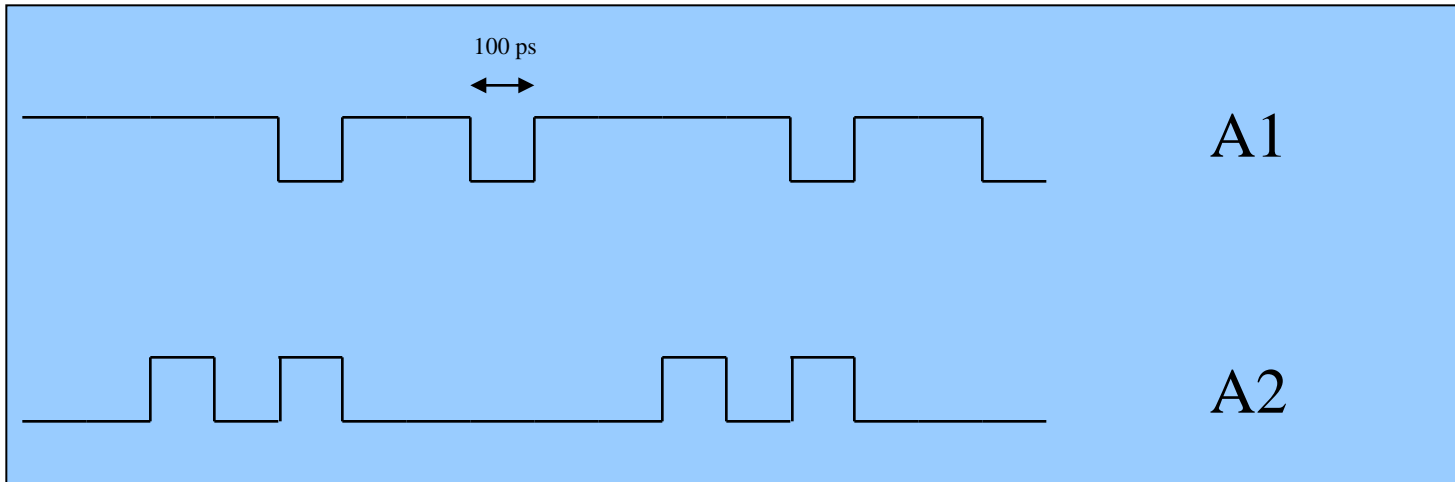


Description of method

- The method is based on passive listening and detection of SDH frame headers
- Presently using an OC-192/STM-64 connection between core IP-routers at a nominal bit rate of 9953 Mbit/s
- In practice with minor adjustments applicable to any STM line rate or packet-based data transmission network

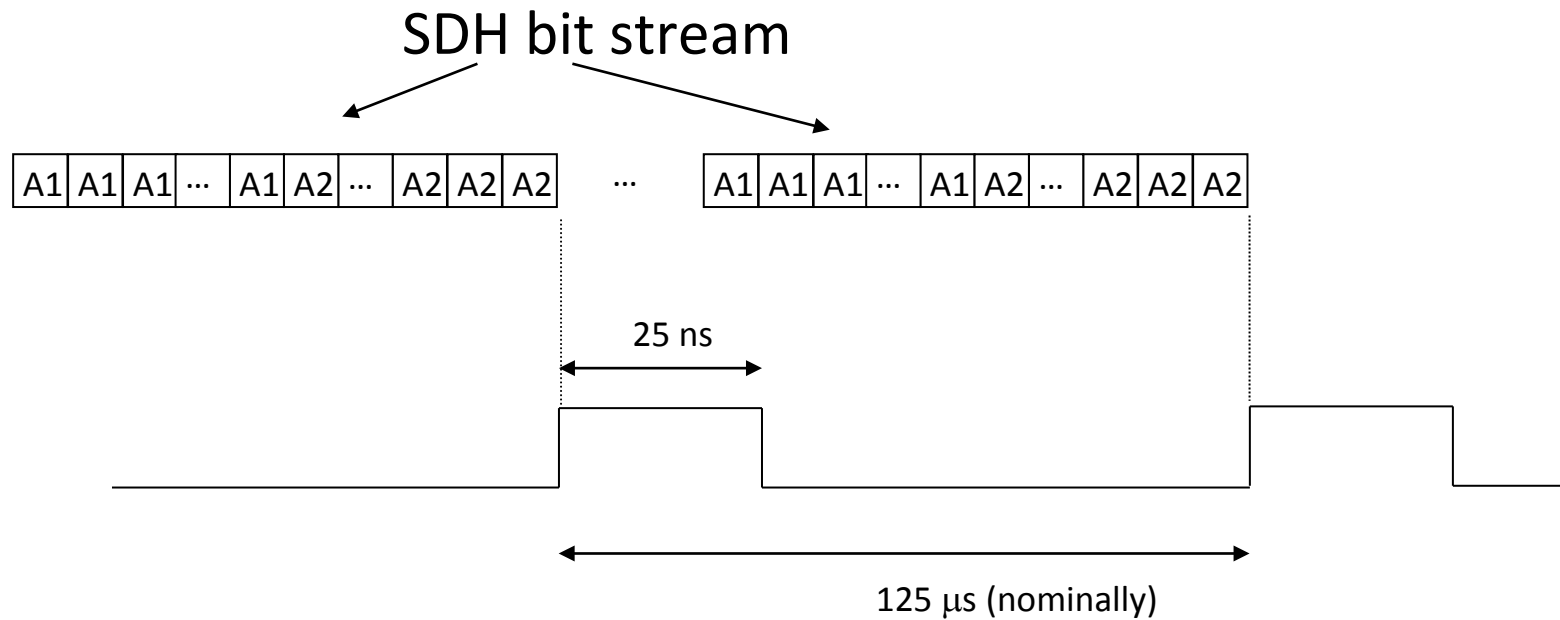
SDH – Physical layer

- Built on frames, each 125 μ s long (nominal)
 - Local oscillator (OCXO) in Router
- Each frame consists of header and payload
- Each header starts with unique binary sequence (frame alignment bytes)
 - In STM-64 (10 Gbit/s):
192 A1 bytes (11110110) followed by 192 A2 bytes (00101000)

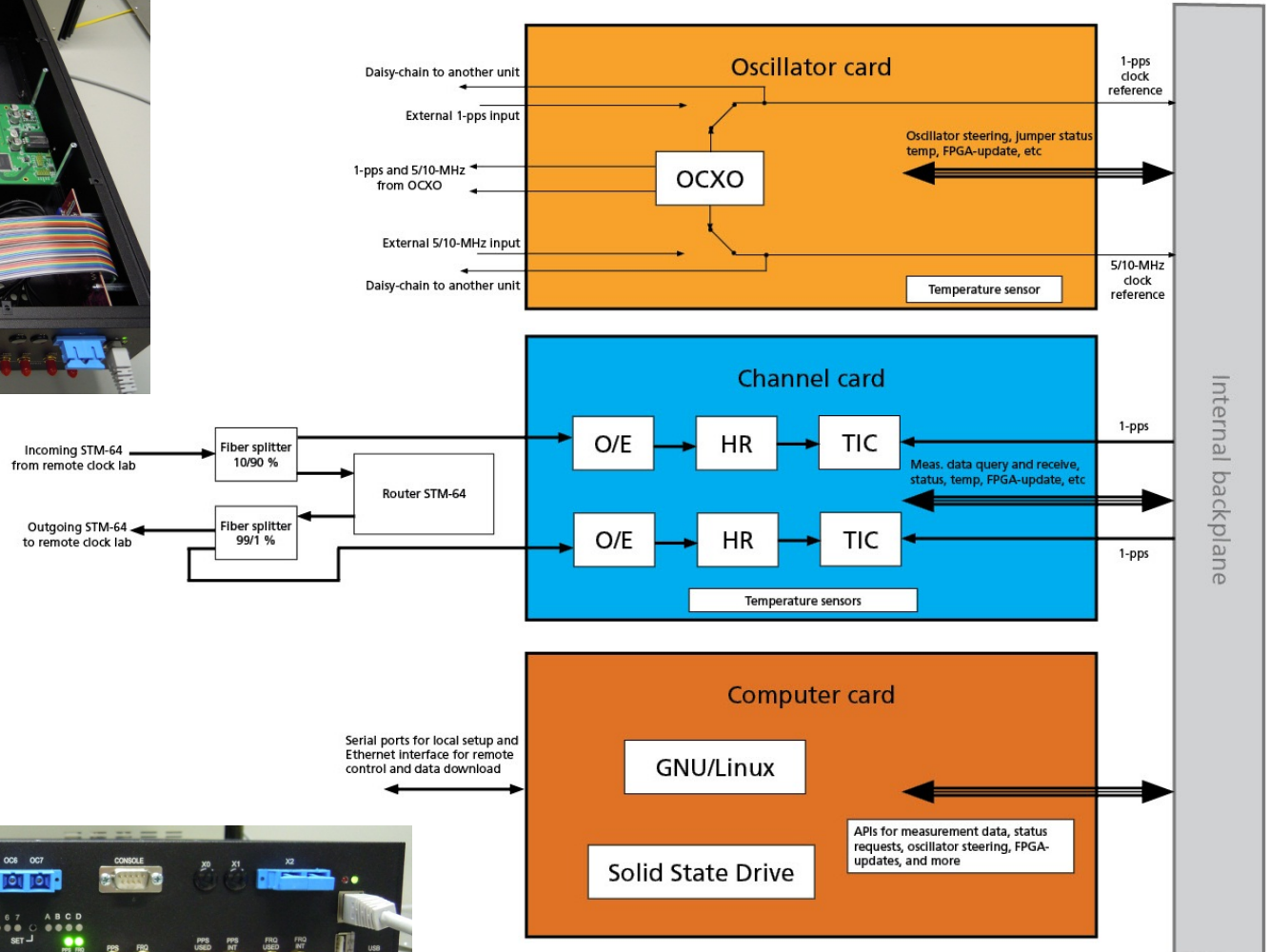


Pulse generation

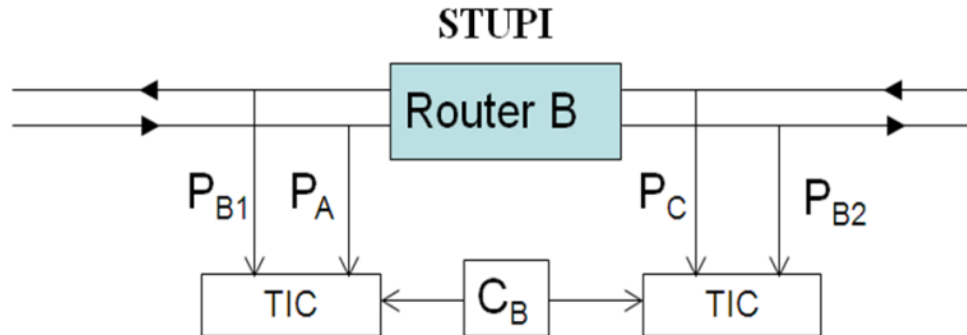
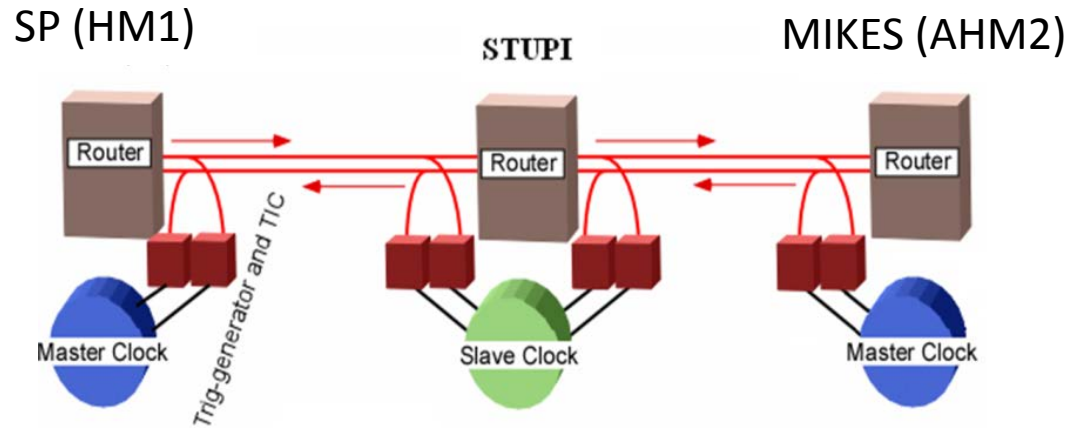
- Electrical pulse generated after each sequence of A1 and A2 bytes using “header recognizer”



Hardware - TTU

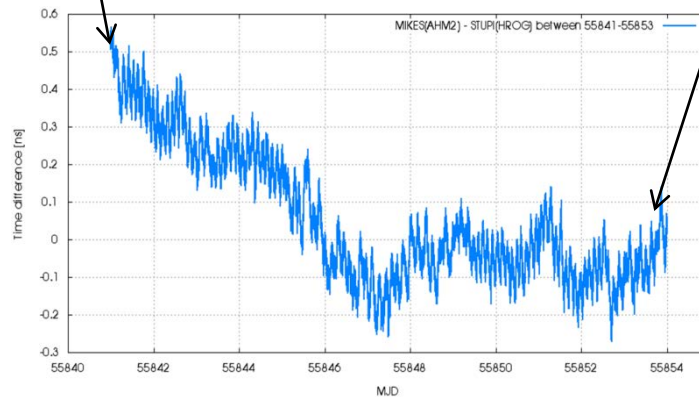
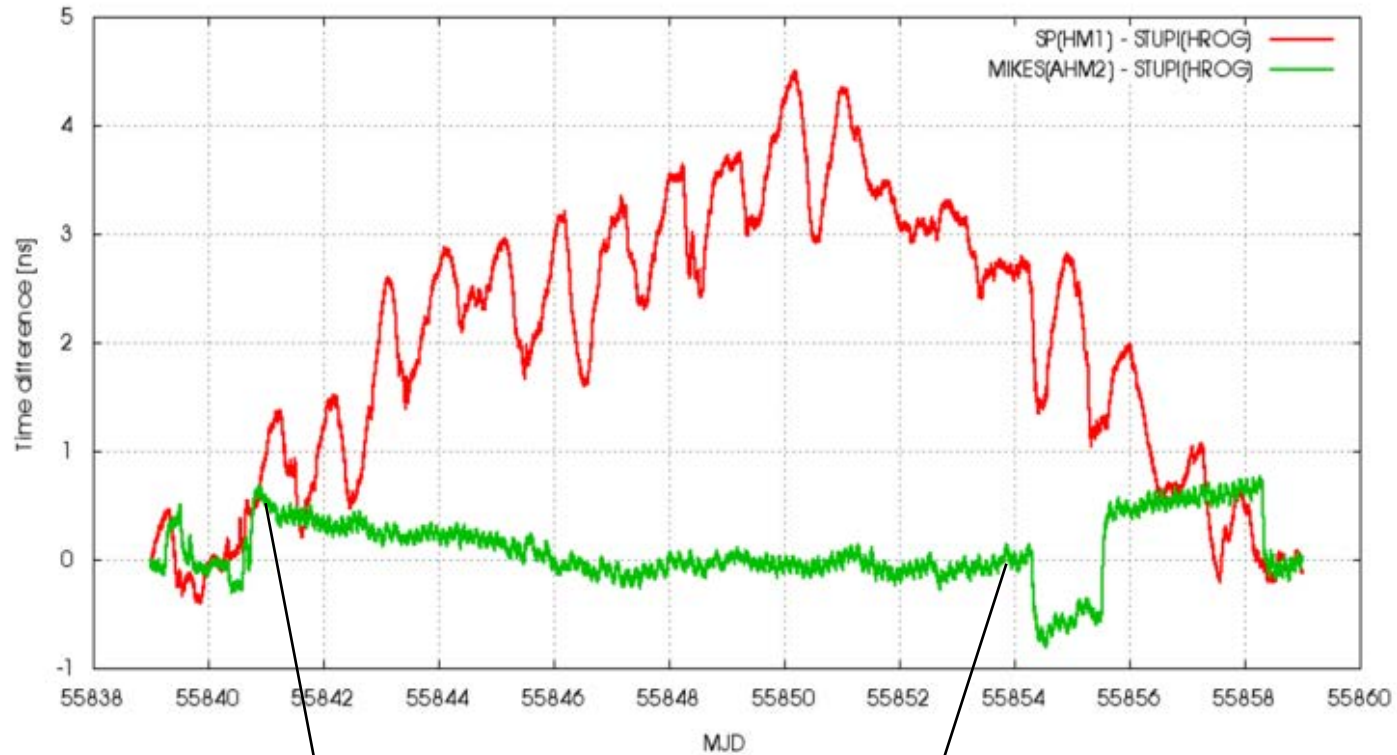


SP – STUPI – MIKES link



Calculate time delays $(P_A - P_{B2})$ and $(P_C - P_{B1})$ using slave clock C_B

Some results: Time difference



Stability analysis

