



New technologies for eVLBI

Jouko Ritakari
Metsähovi Radio Observatory



Background

Metsähovi developed a data acquisition system in year 2002





10 Gbit/s Ethernet

- Easily available, see shop.yahoo.com
- Low-cost producers for 10G switches: SMC, HP
- Price for 10G-only switch typically 4000 dollars
- n * 1Gbit/s to 10Gbit/s switches from Extreme Networks and Cisco, price typically 7000-10000 dollars



10 Gbit/s Ethernet optics

- 10Gbase-ER (up to 40 km) modules for 7000-10.000 dollars
- 10Gbase-ZR (up to 80 km) for 30.000 dollars
- Longer connections need SDH transmission systems (expensive)



Caveats

- Bottlenecks remain: Microcomputer and PCI bus speed
- 10 Gbit/s NICs costly and not readily available
 - PCI express will help, chips will arrive in 2006
- Microcomputers too slow for realtime software correlation
 - The Cell processor (Sony Playstation 3) will arrive in 2006

SATA2 and port multipliers

- First products have arrived
- Linux driver support still missing





New protocol developments

- New features for the Tsunami protocol
 - Csiro: several bug fixes, wildcard filenames
 - Metsähovi: Realtime 512 Mbit/s version of protocol
 - Metsähovi: eVLBI filename convention
 - Metsähovi: Distributed transfer for software correlation



Metsähovi connectivity

- Reasonable offer for dark fiber received
- Can get direct link to Funet hub in Otaniemi
- 42 km fiber length, no problems
- Directly to 10 Gbit/s speed?
 - Only a little more expensive than legacy 1 Gbit/s
 - Funet can only offer 1 Gbit/s connections this year