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17 August 2005

TO: Distribution

FROM: Alan Whitney

SUBJECT: 15 August 2005 e-VLBI telecon summary

Attendees:
Bill Fink, Lee Foster, Chuck Kodak, Paul Lang, Mary Shugrue – GSFC
Tom Lehman – ISI-E
Jerry Sobieski, Chris Tracy – MAX
Kevin Dudevoir, Hans Hinteregger, Arthur Niell, Jason SooHoo, Alan Whitney – Haystack Observatory

This telecon is one of an ongoing series of telecons to prepare for 10 gigabit/sec e-VLBI demonstrations between NASA GSFC and MIT Haystack Observatory using a combination of network facilities including all or part of Glownet, Bossnet, ISI-E, SuperNet, Max and GSFC/HECN.

ACTION ITEMS ARE HIGHLIGHTED IN RED.

Haystack update

Kevin reported that only a single Dell switch is now attached to the Juniper M10. The Dell switch distributes data to the Mark 5 units on the correlator.

Real-time correlation between Westford and GGAO at 512 Mbps/station was accomplished late last week, but without the availability of the antenna themselves so there were no fringes. However, Kevin is confident that fringes will be obtained once the antennas are available.

Problems with cheap GigE NICs

Kevin reported that "a $100 NIC is not like a $400 NIC". This is based on experience with two SysKonnect NICs with the $400 (Model 9821 Version 1) having 4 times as much on-board memory as the $100 NIC (Model 9821 Version 2). Though the $100 NIC performs well in memory-to-memory testing (980 Mbps sustained), it does not perform well under heavy PCI traffic conditions, such as Mark 5, where it is unable to buffer as much data. Though it may be possible to do some tuning to improve performance with the $100 card, it has so far not been possible to sustain 512 Mbps transfer rate and it is clear that indeed "a $100 NIC is not like a $400 NIC".

Problems with Mark 5 power supplies

Kevin also indicated that some of the Mark 5 power supplies seem to be marginal and have been

unable to provide proper 5V to NIC cards, which monitor the voltage levels. Kevin has observed several instances of low-voltage conditions. Measures are being taken to correct this problem.

Bossnet

Bossnet has been stable for the past few weeks.

iGRID preparations

Tom reported some re-engineering of GSFC, DRAGON and path to Haystack. Want to add more Layer 2 circuits between DRAGON and Haystack, and also extend them to HOPI and to Europe. Some new optical switching elements for DRAGON at Arlington and Eckington – network will be up and down over next few days; end result should be same connectivity between GGAO and Haystack, but more flexibility in paths.

For iGRID, working with Juniper to get some more CCC-capable GigE PICs for the M40 at Arlington and M10 at Haystack, but may not be available until 14 September, which may be a problem. The goal is to be able to dynamically configure iGRID signal paths as necessary.

The target station configuration for real-time e-VLBI for the iGRID demo are Kashima, Onsala, Westerbork, and Westford, of which the first three would be transmitted over Bossnet (Westford is a local transfer at Haystack).

The proposed iGRID network configuration is shown in the four attached figures.

GSFC update

Bill reported the 10Gig link from GSFC to McLean has been successfully tested.

Tsukuba e-VLBI transfers

Jason reported the transfers are going smoothly. Next transfer is scheduled for next week.

Wettzell e-VLBI transfers

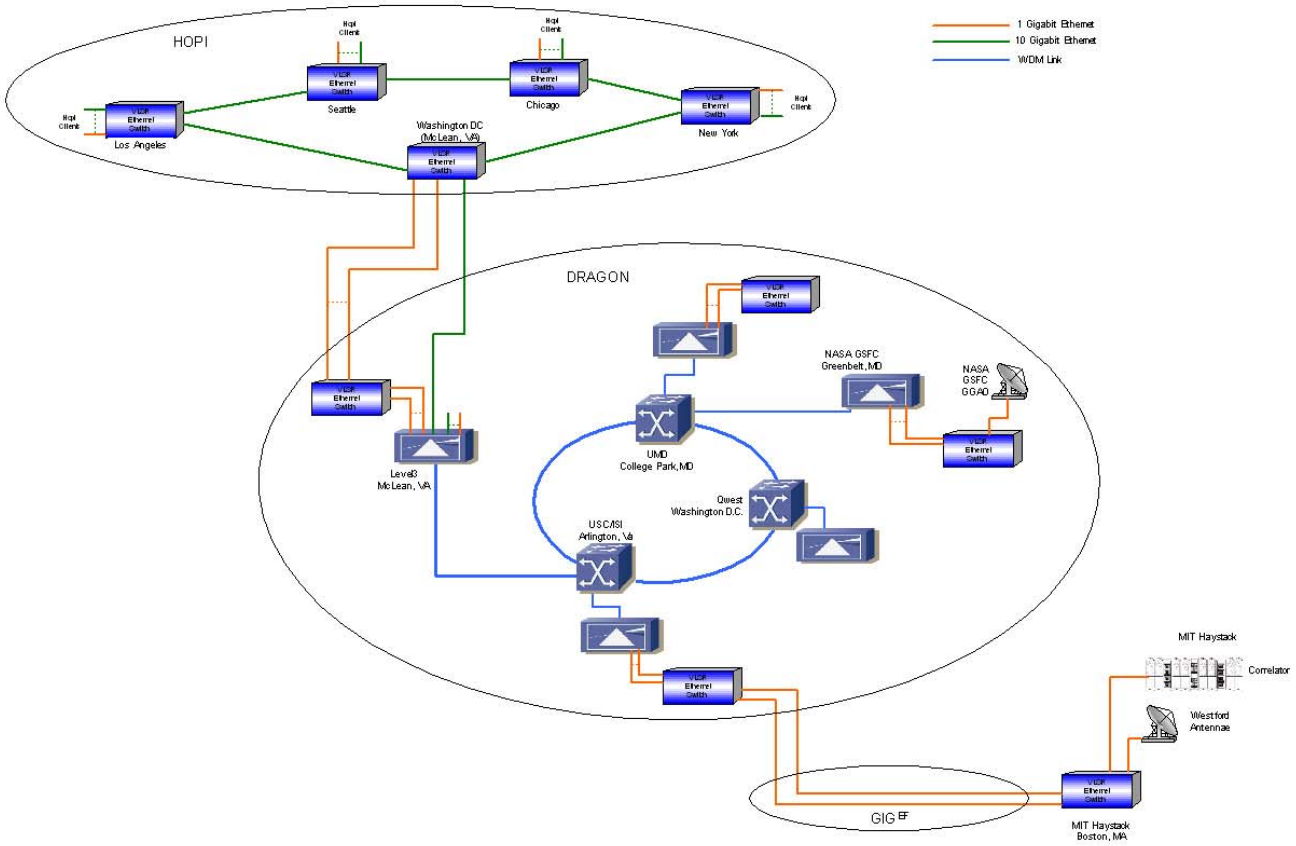
Apart from some minor problems related to the external disks that are used to move data from ISI-E to USNO, all is working well and the e-VLBI transfers from Wettzell are being used as the primary data source from Wettzell.

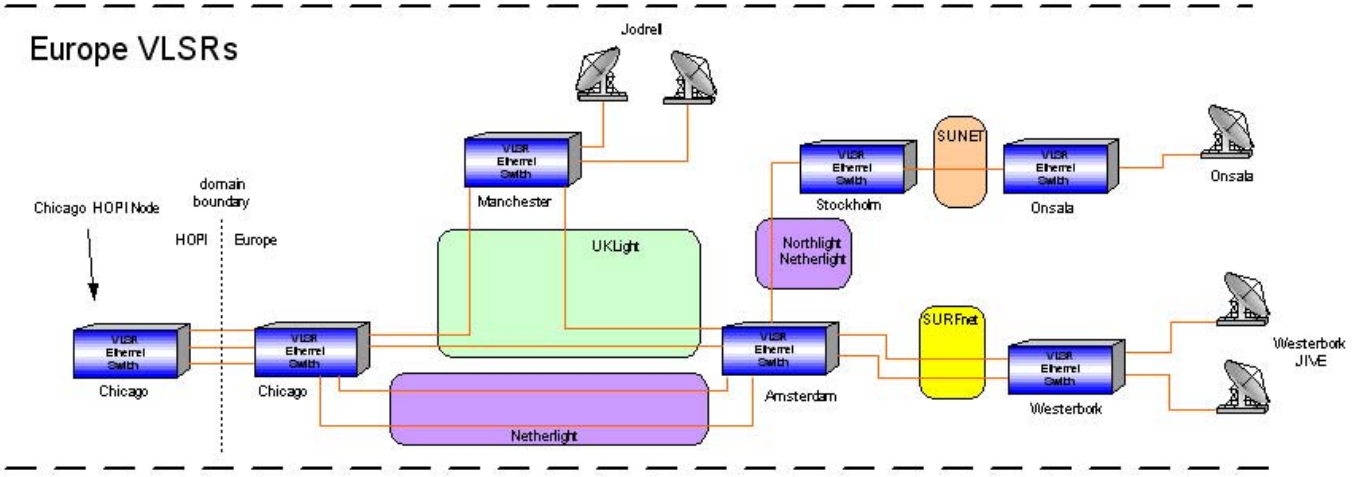
Proposed 10Gig link to Haystack

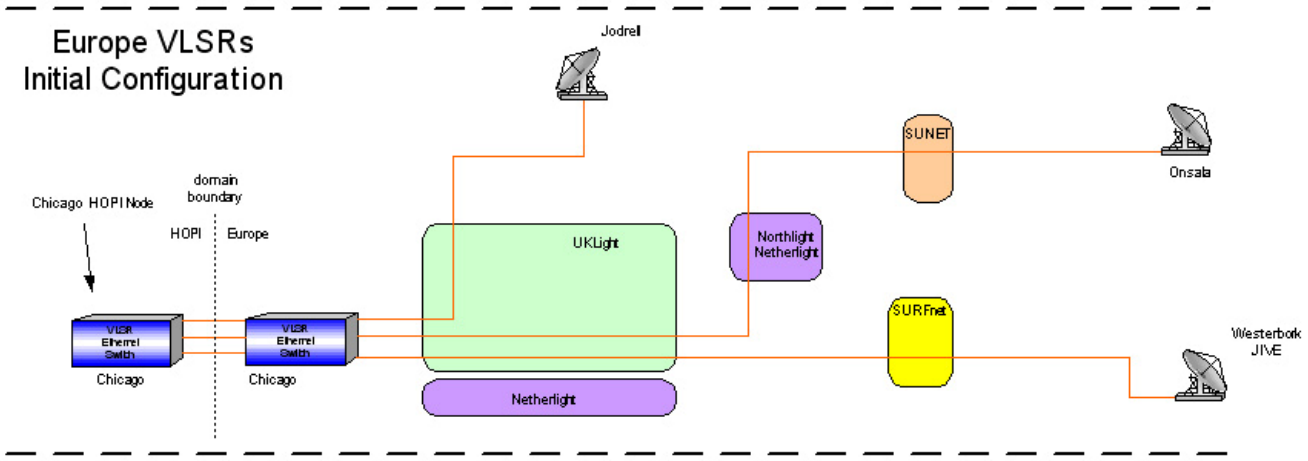
No progress. Next step is to propose engineering solution to bypass (or otherwise workaround the Cisco 1500's at both ends of Glownet. iGRID is now consuming time, so this project is temporarily on the table.

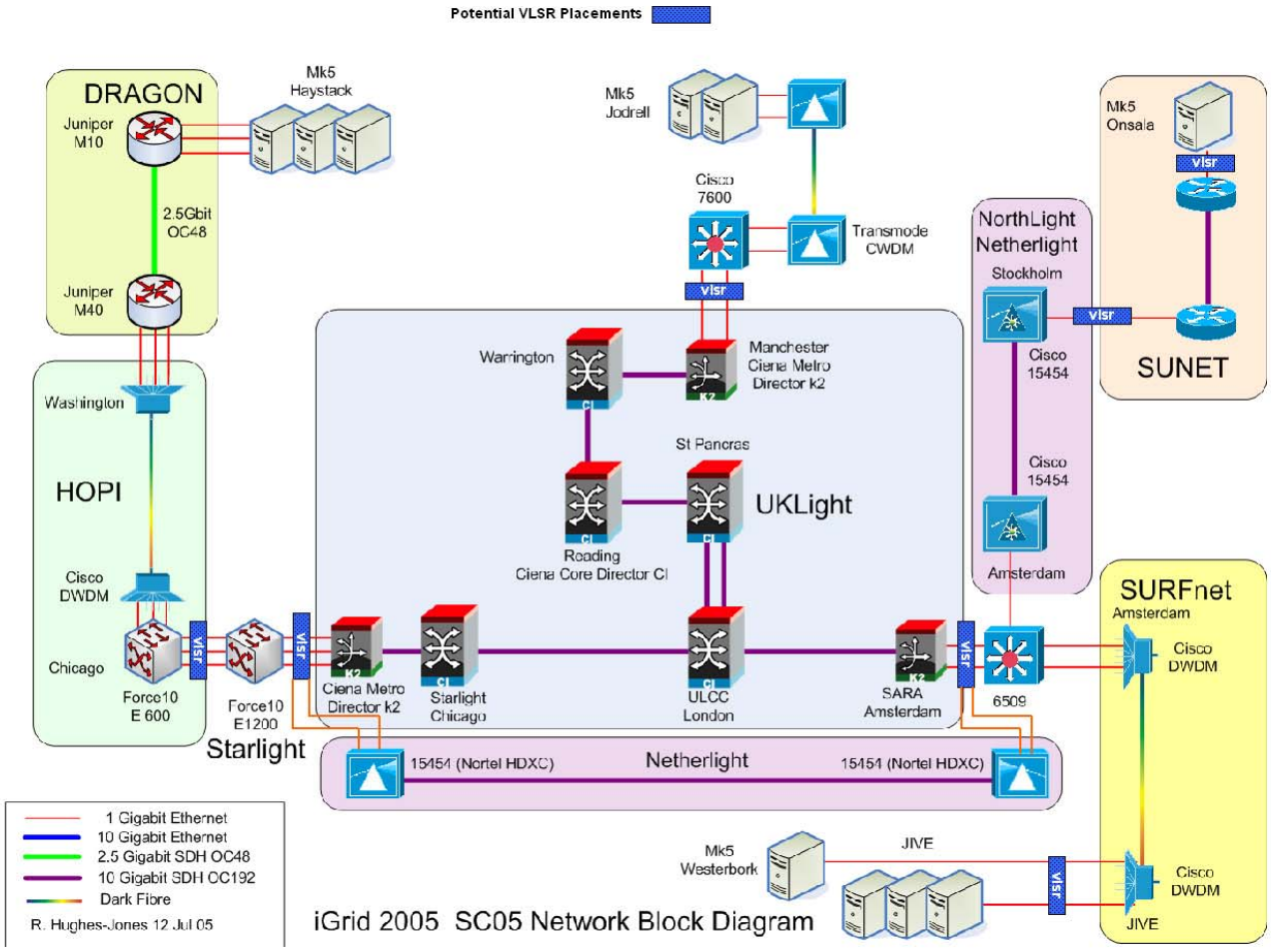
Next telecon

Next telecon is scheduled for Tuesday, 6 September 2005 at 2pm EST.


1 Gigabit Ethernet
10 Gigabit Ethernet
WDM Link
HOPI
Seattle
Chicago
Los Angeles
New York
Washington DC
(McLean, VA)
DRAGON
NASA GSFC
Greenbelt, MD
NASA
GSFC
GGAO
UMD
College Park, MD
Level3
McLean, VA
Qwest
Washington D.C.
USC/ISI
Arlington, VA
MIT Haystack
Correlator
Westford
Antennae
GIGPF
MIT Haystack
Boston, MA


Europe VLSRs
Jodrell
Manchester
Stockholm
SUNET
Onsala
Onsala
Chicago HOPI Node
domain
boundary
HOPI
Europe
UKLight
Northlight
Netherlight
SURFnet
Chicago
Chicago
Amsterdam
Westerbork
Westerbork
JIVE
Netherlight


Europe VLSRs
Initial Configuration
Jodrell
SUNET
Onsala
domain
boundary
Chicago HOPI Node
HOPI
Europe
UKLight
Northlight
Netherlight
SURFnet
Westerbork
JIVE
VLSR
Ethernet
Switch
Chicago
Chicago
Netherlight


Potential VLSR Placements
DRAGON
Juniper
M10
Mk5
Haystack
2.5Gbit
OC48
Juniper
M40
Washington
HOPI
Cisco
DWDM
Chicago
Force10
E 600
Force10
E1200
Starlight
Mk5
Jodrell
Cisco
7600
Transmode
CWDM
vlsr
Warrington
Manchester
Ciena Metro
Director k2
St Pancras
UKLight
Reading
Ciena Core Director CI
Ciena Metro
Director k2
Starlight
Chicago
ULCC
London
SARA
Amsterdam
6509
NorthLight
Netherlight
Stockholm
Cisco
15454
Cisco
15454
Amsterdam
Mk5
Onsala
SUNET
SURFnet
Amsterdam
Cisco
DWDM
Cisco
DWDM
JIVE
15454 (Nortel HDXC)
Netherlight
15454 (Nortel HDXC)
Mk5
Westerbork
JIVE
1 Gigabit Ethernet
10 Gigabit Ethernet
2.5 Gigabit SDH OC48
10 Gigabit SDH OC192
Dark Fibre
R. Hughes-Jones 12 Jul 05
iGrid 2005 SC05 Network Block Diagram

cc: Steve Bernstein, LL
Jim Calvin, LL
Rick Larkin, LL
Lorraine Prior, LL
Peter Schulz, LL
Leslie Weiner, LL
Herbert Durbeck, GSFC
Bill Fink, GSFC
Lee Foster, GSFC
Pat Gary, GSFC
Andy Germain, GSFC
Chuck Kodak, GSFC
Kevin Kranacs, GSFC
Paul Lang, GSFC
Aruna Muppalla,GSFC
Mary Shugrue, GSFC/ADNET
Bill Wildes, GSFC
Steve Bailey, GSFC
Dan Magorian, UMCP
Tom Lehman, ISI-E
Jerry Sobieski, MAX
Chris Tracy, MAX
Guy Almes, Internet2
Charles Yun, Internet2
Richard Crowley, Haystack
Kevin Dudevoir, Haystack
Hans Hinteregger, Haystack
Arthur Niell, Haystack
Chet Ruszczyk, Haystack
Joe Salah, Haystack