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19 October 2001

TO: Distribution

FROM: Alan R. Whitney

SUBJECT: Notes on 15 Oct 2001 e-VLBI telecon

Attendees:
Steve Bernstein, Lorraine Prior - Lincoln Laboratory
Pat Gary, Lee Foster, Bill Wildes – GSFC
Tom Lehman – ISI
Kevin Dudevoir, Hans Hinteregger, Arthur Niell, Alan Whitney – Haystack.

This telecon is one of an ongoing series of telecons to prepare for 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 GSGC/HECN.

Update on network end-to-end requirements (A. Whitney)

Alan indicated that a careful review of latency requirements at Haystack has led to the conclusion that a network latency delay of up to 2 seconds can be accommodated by the available equipment, considerably more relaxed that the earlier assessment of ~50 msec.

Lincoln Lab Update

Lorraine indicated that Lincoln has GigE switches which can be loaned to Haystack, one each for Haystack and Westford, to connect to Glownet. Lincoln and Haystack will work together to bring up the necessary Haystack to Bossnet connection over the next few weeks. This will be coordinated with Hans.

Steve reminded that current use of Glownet will be shared with LL and will require scheduling. In order to facilitate this sharing, Haystack/Westford e-VLBI fibers and LL sensors-project fibers will both come to a switch in the RPE (Remote Peripheral Equipment) building at Haystack. RPE building also contains Cisco final multiplexing and WDM equipment.

ISI-E Update

Tom reported that LL-ISI connection will be upgraded from GigE to OC48 (packet over SONET) next week; will also probably include OC-48 connection to MIT campus (should check on this). Also, an OC-48 connection is now in place between SuperNet Juniper M40 and Max Juniper M160 routers at ISI, completing the connection between SuperNet to Max (to which UMCP is connected); this connection is expected to be permanent, but it may be necessary to address

scheduling and usage issues with the Max people (Jerry Sobieski).

ATDNet is expected to be up for at least three months, but is in transition as it is moved to another fiber.

Tom is planning to accompany Mary Maeda (pronounced like 'Myda') on visit to LL and Haystack on Friday, 19 October.

Tom will check into jumbo packet support on M160 router.

GigE Performance Tests

Haystack is getting equipment together and should be ready to start GigE performance testing within next few weeks. First tests will be local at Haystack, then will expand to include LL and Bossnet. Steve reminded Haystack that part of the path to Bossnet will be shared with MIT campus traffic; may not be an issue after path is upgraded to OC-48, but GigE applications are increasing and could be an issue.

Tom suggested that for best GigE performance over WAN, it is sometimes useful to kick off multiple TCP streams. Haystack will look into this, though they plan initially only to use a single TCP stream.

Pat asked whether some non-privileged accounts could be set up at LL for performance testing from GSFC; GSFC would be happy to reciprocate. Steve will investigate.

Pat suggested nttcp as a GigE good performance test tool.

GSFC/UMCP Update

PR's are being prepared by Bill Wildes for an Extreme Summit 5i switch for GGAO, which will have one each of TX (for Mac test station), SX and LX ports.

1600' of fiber from GGAO LAN (Bldg 201) to antenna control trailer is also being ordered and will be laid by the 'mid-night riders' crew when it arrives.

Pat reported Bldg 28 GigE switch will be upgraded soon to Extreme Summit 5i. Also, LuxN for 2-λ optical multiplexer has been received for the GSFC/UMCP connection, which will allow two GigE connections from GSFC to UMCP; second λ will be mostly for testing. Still working out details of whether connection at UMCP will go into GigE switch or directly into a port on the UMCP Juniper M160. May be desirable to added 3rd λ for e-VLBI use.

Tornado at UMCP has broken GSFC/UMCP fiber connection (connection actually broken post-tornado by clean-up equipment!). Qwest has loaned UMCP two fiber pairs until repairs can be made.

Scheduling Issues

Both LL and GSFC/UMCP connections will have to be scheduled. We all need to think more about these issues and discuss at next telecon.

Action Items

Tom: Check on M160 jumbo frame support.

Bill: Pursue purchase of fiber-use from GSFC to GGAO (get in touch with Scott Douglas).

Pat: Check into jumbo frame support through UMCP.

Steve: Will investigate possibility of setting up LL non-privileged accounts for testing from GSFC.

Steve: Does OC-48 Bossnet upgrade include OC-48 LL/MIT campus connection as well?

All: Start conducting performance tests where possible.

All: Think about scheduling issues. Be prepared to discuss at next telecon.

Next telecon

Next telecon will be Monday, 5 Nov at 2 pm.

xc: Steve Bernstein, LL
Jim Calvin, LL
Lorraine Prior, LL
Leslie Weiner, LL
Herbert Durbeck, GSFC
Lee Foster, GSFC
Pat Gary, GSFC
Paul Lang, GSFC
Aruna Muppalla, GSFC
Bill Wildes, GSFC
Dan Magorian, UMCP
Tom Lehman, ISI
Jerry Sobieski, Mid-Atlantic Crossroads (MAX)
Richard Crowley, Haystack
Kevin Dudevoir, Haystack
Hans Hinteregger, Haystack
Arthur Niell, Haystack
Joe Salah, Haystack