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8 July 2003

TO: Distribution

FROM: Alan R. Whitney

SUBJECT: 7 July 2003 e-VLBI telecon summary

Attendees:
Bill Fink, Lee Foster, Pat Gary, Chuck Kodak, Kevin Kranacs– GSFC
Tom Lehman – ISI-E
Jerry Sobieski - MAX
Rick Larkin, Peter Schulz – MIT Lincoln Lab
Charles Yun – Internet2
Kevin Dudevoir, David Lapsley, Arthur Niell, Mike Titus, Alan Whitney – Haystack Observatory

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 GSFC/HECN.

ACTION ITEMS ARE HIGHLIGHTED IN RED.

Glownet/Bossnet

Rick re-iterated that the fuding future of Bossnet look very promising for the next four years.

Peter reported that the OC-48 status is still the same as last report. Peter and Tom plan to do tests soon.

GigE has been stable on Bossnet.

NASA/GSFC

The link between GSFC and MAX has been upgraded to include an aggregated 2xGigE link (links H11 and K3).

Bill reported four new 10GigE NIC's have been received; testing hopefully to begin soon.

GGAO has received Mark 5A and is ready to resume testing.

GigE switch testing

Switch testing is continuing, but neither Paul Lang (who has been testing the SMC 8624T switch) nor Russ Roberge (who has been testing the Dell 5224) were available to give us a complete update. Bill Fink reported that he understood that testing of the SMC switch was successful in pushing full data-rate simultaneously through all 24 ports. Rick indicated that the problems with the Dell switch reported by Russ in an earlier telecon are still outstanding as far as he knows.

Japan, Hawaii and German Connections

David reported on a successful e-VLBI experiment using Kashima and Westford antennas on 28 June. After a 2-hour experiment, ~80 GB of data were transferred, correlated, and then reduced for earth-rotation results within less than 24 hours; there were a number of little hitches, and we think we can easily reduce the turnaround time to <8 hours in the future. The trans-Pacific link was Super-Sinet, which was made available especially for this experiment; average transfer speeds were about 47 Mbps Haystack-to-Kashima and 107 Mbps Kashima-to-Haystack, which is much better than we have been getting in the past, but still nowhere near what we should be getting (Super-Sinet is OC-48, with a known bottleneck of OC-12). UDP transfer rates were measured with iperf to be 200-300 Mbps with ~1% packet loss. Post-experiment test with 'high-speed' TCP/IP ('HSTCP', from Sally Floyd at ICIR; see http://www.icir.org/floyd/papers.html) showed essentially no speed gain, apparently because the packet loss rate was too high to allow the high-speed algorithms in HSTCP to kick in.

The trans-Pacific connection has been re-established through GEMnet, but plans are underway to connect via TransPAC. David is working with Chris Robb at Indiana U. and Hirabaru-san of CRL (who has a server on the Japanese end of TransPAC) to do testing with Haystack, Abilene and Japan. Hirbaru-san is working toward getting Kashima connected to TransPAC at high speed.

Kevin D. reported that the problems in the Hawaii connection are finally being looked at by the PMRF people; the problem is believed to be in the 3xDS3 microwave link from PMRF to Kokee controlled by PMRF. No significant change in observed rates: ~5Mbps TCP and ~20Mbps UDP in both directions, but with always a rate-independent ~25% packet loss in Kokee-to-Haystack direction. Hopefully there will be good news and improvements within the next week. Kevin will work with Tom to create a detailed path diagram to Hawaii.

There has been little progress on the German connection, though Wettzel is seeking funding of a direct 34 Mbps link to Wettzell which, if funding is secured, could be in place within a few months. Server at U. of Regensburg should become available again this week to resume some testing.

Performance Monitoring

Andy Germain has been with Pat, Tom and Kevin with regard to installing his performance-monitoring software on various test workstations, including 'kame' at ISI-E, 'superglide' at LL and 'evlbihay' at Haystack. Scheduling of Bossnet may preclude Haystack from regular testing for the near term, but testing should begin on others where possible.

Charles reported his plan for a deployment of performance-monitoring software and hardware, which has many parallels. These will include WEB100 testing, including distribution of some I2 'cakeboxes' which are test workstations specially configured for performance testing and monitoring (though not capable of Gigabit/sec speeds). Charles has been coordinating with Steve Parsley at JIVE, ?? in Chile and David at Haystack. Because Haystack is dependent on scheduling of Bossnet, making it difficult to do on a regular basis, Charles suggested that perhaps testing could perhaps be moved further upstream to some place like ISI-E; Charles and Tom will consult about the possibilities of installing a cakebox at ISI-E. Charles said I2 will process and post the data for web access, and use the data for determining what further testing strategies should be pursued.

Charles is seeking contacts in Japan to allow similar testing to Japan.

Some coordination of these two testing programs will need to take place so that they don't collide and produce spurious results. Tom and Charles will coordinate; Pat Gary will forward Andy Germain's to Charles so Andy can be included in the coordination efforts.
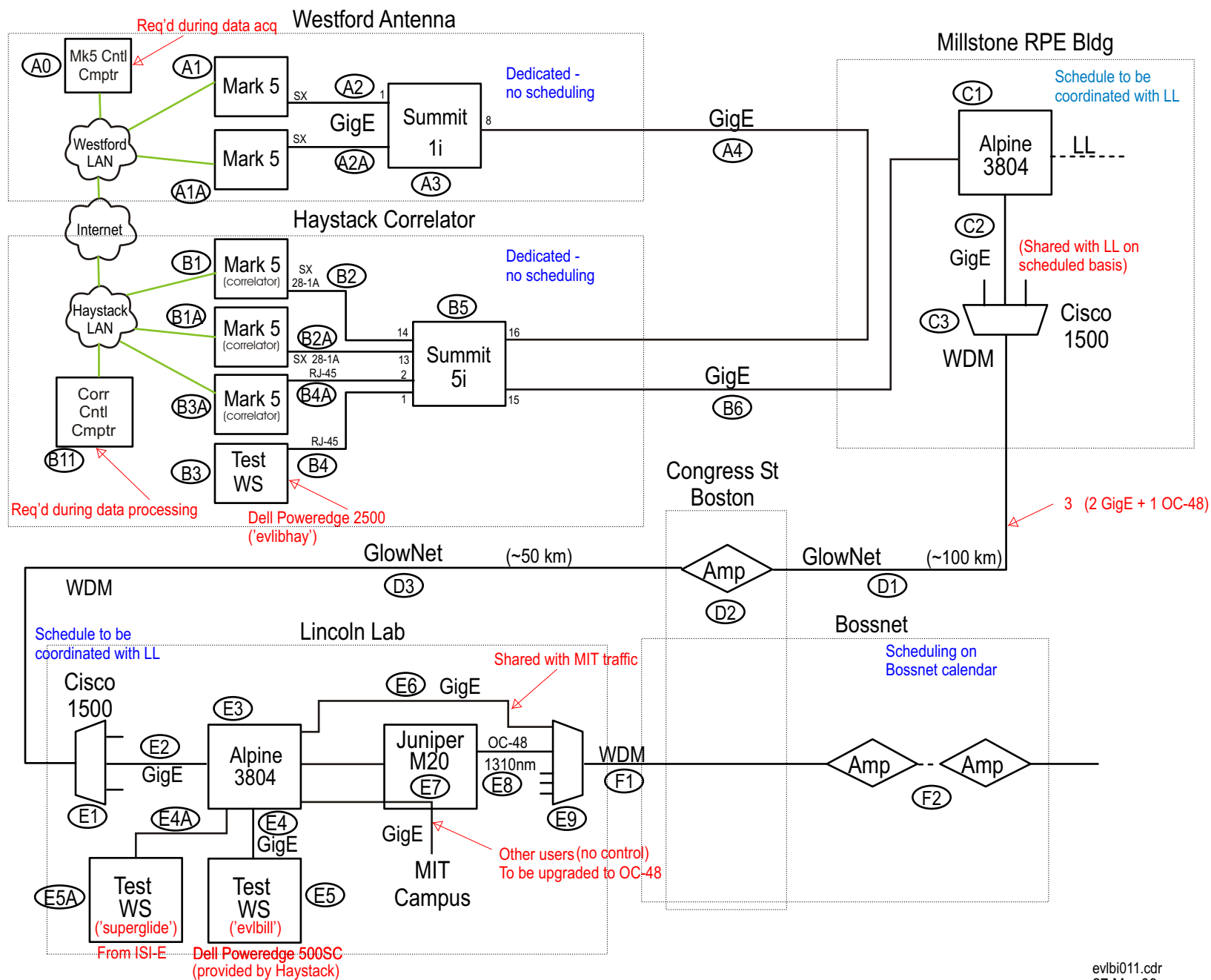
Newest version of iperf allows for 2-way tests, so all tests may be initiated from the server side alone.

Bill Fink has suggested a network delay simulator with controllable loss rates would be a good tool for performance testing; he is working on one. Kevin Dudevoir and David Lapsley are also working on a similar simulator.

<u>Next telecon</u>

Next telecon is scheduled for Mon, 28 July 2003 at 3 pm EDT (note: 3 pm, not 2 pm)

xc: 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
       Chuck Kodak, GSFC
       Kevin Kranacs, GSFC
       Paul Lang, GSFC
       Aruna Muppalla, GSFC
       Bill Wildes, GSFC
       Dan Magorian, UMCP
       Tom Lehman, ISI-E
       Jerry Sobieski, MAX
       Guy Almes, Internet2
       Charles Yun, Internet2
       Richard Crowley, Haystack
       Kevin Dudevoir, Haystack
       Hans Hinteregger, Haystack
       David Lapsley, Haystack
       Arthur Niell, Haystack
       Joe Salah, Haystack

Figure 1: e-VLBI Path - Haystack to ISI-E

evlbi011.cdr
27 Mar 03

Figure 2: e-VLBI Path - ISI-E to GSFC/GGAO

evlbi012.cdr
8 July 03