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TO: Distribution
FROM: Alan R. Whitney
SUBJECT: 1 October 2003 e-VLBI telecon summary

Attendees:

Pat Gary, Chuck Kodak – GSFC

Tom Lehman – ISI-E

Kevin Dudevoir, Hans Hinteregger, David Lapsley, Arthur Niell, 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

Tom reported continued Bossnet OC-48 testing. There is still uncertainty regarding Bossnet connectivity to D.C. area networks. Tom expects there will be some configuration changes in a couple of months, with perhaps some corresponding connectivity disruptions.

NASA/GSFC

No changes to e-VLBI path; things seem to be pretty stable.

National Lambda Rail

Pat raised the subject of NLR, which is a new organization that has committed something like \$80M over 5 years to fund a new nationwide lambda-based test network structure. Internet2 has reportedly bought two board seats at ~\$5M/yr each for 5 years and will be a major player in NLR. Tom suggests that it will be necessary to connect NLR to various local resources, and that is where an organization such as NSF is likely to be active; we should keep alert for NSF announcements of opportunity. Tom mentioned that DRAGON is geared towards tying into NLR at some point.

International Connections

Kokee: Kevin D. reported that the Kris Blackstad, network administrator at PMRF, has left PMRF with no replacement yet. Currently Kevin is working with Roger Hall, an ITT contractor at PMRF. Roger suggests that heavy competing constant-bit-rate (CBR) traffic on the PMRF-to-Kokee links is most likely the root cause of the high Ethernet packet-loss rate we observe; he is not surprised at the throughput of ~5 Mbps rate we observe. PMRF is trying to fix the problem. It is likely that fiber will

be run from PMRF to Kokee, though the \$7M project is probably a year away. In the meantime, the plan is to provide an independent OC-3 radio link from PMRF to Kokee; should be ready for testing by end October 03; Roger estimates we should be able to sustain 20-30 Mbps on this new link. Also suggested that with some coordination we could schedule transfers of ~100 Mbps during low-usage periods. Kevin is continuing to pursue these options.

Germany: Wetzell installation of new fiber is complete and 34 Mbps link is nearly operational.

Performance Monitoring

David has run a couple more FAST tests to servers in Tokyo over TransPAC. Maximum transfer rate was ~496 Mbps, sustained for a couple of minutes. A couple of days later a transfer rate of ~200-300 Mbps was observed. Expect TransPAC to be upgraded from OC-12 to OC-48 plus two 1 GigE's in near future.

Charles Yun at I2 has an intern to development performance monitoring software. David is consulting with Charles to help guide the work of the intern.

In preparation for the e-VLBI demonstration at the Indianapolis Internet2 meeting, David is developing a real-time Java application which shows instantaneous transfer rates. Also is developing software to log and display logged performance data to web browser.

GigE Switch Performance

Pat reported that testing of link aggregation with inexpensive SMC switches has not been entirely satisfactory. While manufacturer claims support of link aggregation, when link aggregation is attempted with any channels except the 'default' channels, there is at least occasional trouble; when trying to gang four links together to create a bigger pipe, the switches went 'bonkers' in the middle of the night. Link aggregation works well in higher-end switches such as the Extreme 5i. Pat noted that currently it is cheaper to aggregate ten 1 GigE links to 10 Gbps than to purchase a 10 Gbps link, but that the situation should change fairly rapidly as 10 Gbps becomes more prevalent, perhaps settling at a crossover point somewhere about 4 GigE links for the cost of one 10 Gbps link.

SAN tests

Pat reported the first SAN tests with the San Diego Supercomputer Center using a Nissan unit. Were able to get 20 MB/sec write rate from GSFC to San Diego, but only ~3 MB/sec read rate. There are some tricks in setting up properly. Tests are continuing; will include tests with jumbo frames.

VSI-E

Alan reported that a preliminary VSI-E draft has been ready for several weeks, but it has not yet been released as we try to resolve how to manage time and rate-shifted data with the RTP protocol in a way that is natural for both the application and the protocol. Consultation with John Wroclawski at MIT LCS is ongoing to try to resolve this problem.

Next telecon

Next telecon is scheduled for Mon, 20 October 2003 at 2 pm EDT

cc: Steve Bernstein, LL
Jim Calvin, LL
Terry Gibbons, LL
Rick Larkin, LL
Russ Roberge, LL

Peter Schulz, LL
Herbert Durbeck, GSFC
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Guy Almes, Internet2
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