Computer Networking BTR Bullets for May 2004 through June 2004

o Even though the ITPWG's IRAD funding only started 2Mar04, PI Pat Gary (930), assisted by the High End Computer Network (HECN) Team, provided the requested mid-year progress report identifying the following key accomplishments: identified and began readiness preparation for the initial top five science applications to use the planned 10 gigabit per second (Gbps) "Lambda Network" (L-Net) between GSFC and UCSD/Scripps Institute of Oceanography; planned obligations for all new hardware/software acquisitions for the L-Net by 30Jun04; and planned all hardware/software installations and initial use of the L-Net to start in Sep/Oct04 if the procurements proceed well. Within GSFC the L-Net will host and interconnect 10 Gigabit Ethernet interfaces for 12 separate systems.

o In support of GSFC's L-Net and through new contracts and/or contract mods established by the ARC-based NASA Research and Education Network (NREN) Project, P. Gary arranged both for GSFC membership in the Virginia Polytechnic Institute and State University-led Mid-Atlantic Terascale Partnership (MATP) through which GSFC would obtain rights as defined for Class A members to use the assets and services of the National LambdaRail (NLR) and for leasing new Level3 Communications-provided dark fiber-pairs extending the Dynamic Resource Allocation via GMPLS Optical Networks (DRAGON) to, and co-location space in, the Level3 Communications POP at McLean, VA, for connecting there with the NLR.

o Bill Fink and Paul Lang (ADnet) tested one new 10-Gbps wavelength created with LunX course wave division multiplexing (WDM) optical add/drop multiplexers (OADM's) by transferring in standard TCP/IP-packets 1.2 petabytes of data in 6 days on the HECN-leased fiber-pair between GSFC and UMCP while concurrently operating with two existing 1-Gbps wavelengths on that fiber; Aruna Muppalla (ADnet), George Uhl (SWALES) and Steve Booth (SWALES) tested two new 2.4-Gbps wavelengths created with Marconi dense WDM OADM's on a fiber-pair between the HECN lab in 28/W220 and the ENPL in 32/N231; and Jerry Sobieski (UMCP) and Jeff Martz (CSC) tested three new 2.4-Gbps wavelengths created with Movaz dense WDM OADM's on a new HECN-leased fiber-pair between GSFC and UMCP to support the L-Net and its connection with the DRAGON.

o To enable network access for ~30 NCCS-related personnel

while the NCCS facility was off line, Kevin Kranacs and Wei-Li Liu (ADnet) extended the HECN wireless local area network further into building 28's south wing, this time using wireless repeater techniques.

o With assistance from A. Muppalla and P. Lang, K. Kranacs oversaw the transition of the SEN's intervening link with GISS, and its interfaces at both GSFC and GISS, from OC-3c/155 megabits per second (Mbps) to DS-3/45 Mbps.

o W. Liu completed a series of tests of iSCSI-based storage data transfers on IP networks using multiple hardware and software configurations and off-load schemes to examine their respective network throughput performance and CPU consumption reliefs. The three off-load scenarios included a standard NIC with iSCSI software, a NIC with a TCP Off-load Engine, and an iSCSI NIC with both TCP and iSCSI off-loaded. The client hosts included two PC's with different CPU and PCIbus speeds, and three different operating systems, i.e., Win2K Pro, WinXP Pro, and Red Hat Linux version 9.

o P. Gary provided the section on "Lunar Surface Network Infrastructure" for inclusion in "A Lunar Cyberinfrastructure for Human-Robotic Collaboration and Interfaces: A White Paper From the IT Pathfinder Working Group (M. Halem, M.Seablom, G.McConaughy, H. Ramapriyan, P. Gary, G. Uhl, V. Lumelsky, I. Akyildiz, etc.)" submitted in response to Code T's Project Constellation: Crew Exploration Vehicle RFC.