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November 1999 Monthly Status Report

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A. Summary of Technical Activities

A.1. Euro-Link Network Status and Institutions

A.1.a. CERN

No status change to report since last month. For CERN peering information, see Appendix.

A.1.b. IUCC

NISN, which currently shares a connection to STAR TAP with ESnet and NREN, is in the process of designing and implementing a separate Chicago (AADS) connection. Israel is eager to peer with NISN once this connection is established, which is expected to happen by the end of the year. For IUCC peering information, see Appendix.

A.1.c. NORDUnet

NASA was involved in various demonstrations at the CEOS'99 conference in Stockholm in early November. NORDUnet facilitated network connectivity for NASA by peering with NREN using the STAR TAP Router. For NORDUnet peering information, see Appendix.

A.1.d. RENATER2

No status change to report since last month. We are still waiting to receive RENATER2 peering information (data is unavailable in Appendix).

A.1.e. SURFnet

No status change to report since last month. For SURFnet peering information, see Appendix.

A.2. Engineering Services

A.2.a. STAR TAP Router

On November 3, we brought up the STAR TAP Router to facilitate peering among the 20 National Research Networks (NRNs) connected to STAR TAP. Due to individual policy restrictions, the vBNS, Abilene, and ESnet are currently not planning to peer with the STAR TAP Router. All the other networks will be connected by the end of the year; currently peering are: CA*net 2, NREN, MREN (Argonne, Northwestern), APAN, SingAREN, TANet2, CERN, UICC, NORDUnet and SURFnet.

A.2.b. STAR TAP DiffServ Router

The UIC DOE/NGI EMERGE project [http://www.evl.uic.edu/cavern/EMERGE/], initially targeting MREN sites, will be extended internationally over the next several months to Russia, Singapore and Amsterdam. The STAR TAP Cisco 7507 DiffServ router, to be used for EMERGE experiments, will be installed at Ameritech on December 14.

A.2.c. 6TAP

ESnet is currently purchasing an additional router and two PCs for the 6TAP project [www.6tap.net], to support IPv6 over IPv4 tunnels and IPv6 measurement and statistics. Once ESnet acquires and configures all the equipment, we will install it in STAR TAP rack space at the Ameritech NAP.

A.2.d. STAR TAP Web Caches

*NLANR Caching project…*Duane Wessels has built and tested a Web Cache, running the Squid caching software, for STAR TAP. Installation at Ameritech is scheduled for December 14. Once installed, Duane will integrate the cache into NLANR's Global Caching Hierarchy.

*Internet2 Distributed Storage Initiative/Novell…*We are working with Jamshid Mahdavi of Novell and Micha Beck of Internet2 to deploy an Internet2/Novell Cache system at STAR TAP. We expect to receive a status update from Jamshid and Micha at the NLANR/Internet2 Tech Meetings in early December in Miami.

A.2.e. A.2.e. STAR TAP Performance Measurement Systems

*NLANR AMP (Active Measurement Platform) box…*Information from the AMP box is accessible from the STAR TAP web pages (click on "Engineering" and then "Performance Measurements.")

*Advanced Network & Services' Surveyor box…*At present, the Surveyor-required GPS feed is not available within the Ameritech NAP. We are working with both Advanced Network & Services and AADS to explore other options.

A.2.f. Routing Registry

There are plans to eventually use the Internet2 Routing Registry (RR) to configure the STAR TAP Router's routing filter. The Internet2 Routing Registry Project has not been very active lately. We hope to get an update and possibly contribute towards progress on this project at the NLANR/Internet2 Tech Meetings in early December.

A.2.g. Renting Co-Location Space at Ameritech

The STAR TAP project currently has access to 1-1/2 racks, which are co-located at the Ameritech NAP and leased by Indiana University and Merit. Along with MREN, we are in the process of leasing two additional racks to handle the additional equipment we plan to install at the NAP.

A.2.j. SC'99

We worked with several SC'99 participants to help them set up routing between SC'99 in Portland, Oregon, and sites attached to Euro-Link networks.

A.3. Euro-Link Performance Analysis Tools

A.3.a. Network QoS of Real-Time Multimedia

A QoSIMoTo (QoS Internet Monitoring Tool) web site is being set up. It is expected to launch in February, 2000.

A.3.b. Petri-Net Network Modeling

No status change to report since last month.

A.3.c. Network Monitoring

There are no results at this time. Performance monitoring is being postponed until Netlogger is re-integrated into the next-generation CAVERNsoft code, to be distributed next year.

A.4. NOC Services

Indiana University has made progress setting up the Euro-Link and STAR TAP NOCs; their goal is to achieve a level of service equal to what they provide for TransPAC. Internal documentation and Euro-Link and STAR TAP NOC web pages are being generated, and we hope to have them online in December.

B. Accomplishments

B.1. Meetings Attended

November 29-30, 1999. CANARIE's 5th Annual Advanced Networks Workshop, "Optical Internet: From Information Highway to Information Main Street" [http://www.canarie.ca/frames/workshop.html]. Tom DeFanti and John Jamison attended. DeFanti gave presentations "The EMERGE QoS Testbed" and "STAR TAP Progress Report." Over 300 people attended; European attendees included:

- Kees Neggers, SURFnet
- Jeremy Sharp, UKERNA
- Roland Trice, UKERNA
- Dirk Hetzer, Deutsche Telekom
- Monika Jaeger, Deutsche Telekom
- J.P. Lavado, Deutsche Telekom

November 15-19, 1999. Supercomputing '99 (SC'99), Portland, Oregon. Tom DeFanti, Maxine Brown, Jason Leigh, Andy Johnson and four EVL students attended. EVL did CAVERNsoft demos in the Alliance, Argonne, DOE ASCI, and UIC National Center for Data Mining booths. STAR TAP blinkie pins were distributed by the Alliance and NLANR.

November 1-2, 1999. Industrial Virtual Reality Symposium, sponsored by the National Institute of Standards and Technology (NIST), UIC and the American Society of Mechanical Engineers (ASME), held at UIC, Chicago, IL. Tom DeFanti was keynote speaker. This conference attracted an international audience of virtual-reality/mechanical engineering users. International attendees included:

- Ceri Pritchard, British Aerospace PLC, Bristol, England
- The Tuan Ann, Temasek Polytechnic, Singapore
- Brian Corrie, National Research Council/Integrated Manufacturing Technology Institute, Ontario, Canada
- Benoît Ozell, Centre de Recherche en Calcul Appliqué (CERCA) Montreal, Canada
- Jae Won Lee, INHA University, Korea

B.2. Publications

Steven N. Goldstein, Maxine D. Brown, Thomas A. DeFanti, "The Science, Technology and Research Transit Access Point (STAR TAP)," La Recherche, Paris, France, February 2000 (to appear). [See http://www.startap.net/PUBLICATIONS/pubs.html#Application Papers].

C. Summary of Award Expenditures (November)

The spending rate is within budget. We are continuing to work with Indiana University to complete paperwork in order to execute the UIC subcontract.

D. Appendix: STAR TAP Direct Peering Matrices

D.1. STAR TAP/International Direct Peering Matrix

Even if an NRN is not peering directly with other STAR TAP-connected networks, they can exchange routes and traffic with one another via the STAR TAP Router. NRNs, except for vBNS, Abilene, and ESnet, will peer with the STAR TAP Router. Direct peering between networks that exchange large amounts of traffic is encouraged.

STAR TAP/International Direct Peering Matrix

Networks	North America										Europe						Asia			
	Abilene	CA*net 2/3	DREN	ESnet	6TAP-IPv6 Router	MREN	NISN	NREN	STAR TAP Router	vBNS/vBNS+	CERN	Israel IUCC	NORDUnet	MIRnet	RENATER2	SURFnet	APAN	SINET	SingAREN	TANet2
North America																				
Abilene		●	●	●	0	*	●	●		●	●	●	●		●	●	●	●	●	●
CA*net 2/3	●				●	*	●	●	●	●	●	●	●			●	●		●	●
DREN	●					*	2	●		●						●				
ESnet	●				●	*	2	●		●	●	●	●	0		●	●	●	●	●
6TAP-IPv6 Router	0	●		●		*				●	0					0	●		0	
MREN	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*
NISN	●	●	2	2		*		2		●			4	●			●	0		
NREN	●	●	●	●		*	2		●	●	●		●	●		●	●			
STAR TAP Router		●				*		●			●	●	●			●	●		●	●
vBNS/vBNS+	●	●	●	●	●	*	●	●			●	●	●	●	●	●	●		●	●
Europe																				
CERN	●	●		●	0	*		●	●	●		1	1		2	1	0			
Israel IUCC	●	●		●		*			●	●	1		1		1	1	●			●
NORDUnet	●	●		●		*	4	●	●	●	1	1		5	1	1	●	●	●	
MIRnet				0		*	●	●		●			5				0			
RENATER2	●					*				●	2	1	1							
SURFnet	●	●	●	●	0	*		●	●	●	1	1	1				●	●	●	●
Asia																				
APAN	●	●		●	●	*	●	●	●	●	0	●	●	0		●			3	0
SINET	●			●		*	0						●			●				
SingAREN	●	●		●	0	*			●	●			●			●	3			●
TANet2	●	●		●		*			●	●		●				●	0		●	

* MREN institution direct peering information detailed below.
0 Planned or under consideration
1 European "peering" via TEN-155
2 Direct peering at a location other than STAR TAP
3 Peering with APAN via a direct physical link to Japan and Korea
4 Temporary
5 Exchange traffic via a commercial European IPS

D.2. STAR TAP/MREN Direct Peering Matrix

Even if an NRN is not directly peering with these MREN institutions, they can receive their routes via US peers, such as ESnet and vBNS.

The MREN institutions all peer with one another because they are each part of a full PVC mesh. See MREN Peering Information: http://www-fp.mcs.anl.gov/mren/mren-peers.html

STAR TAP/MREN Direct Peering Matrix															
	MREN														
	Argonne Lab	U Chicago	Fermi Lab	Indiana U	UIC	UIUC/NCSA	U Iowa	Iowa State U	Merit, Michigan, Michigan State	U Minnesota	Northwestern U	U Notre Dame	Ohio State U (OARnet)	U Wisconsin Madison	U Wisconsin Milwaukee
North America															
Abilene	●	●			●	●			●						●
CA*net 2/3															
DREN															
ESnet															
6TAP-IPv6 Router															
MREN	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
NISN														●	●
NREN	●	●				●			●	●	●			●	
STAR TAP Router	●										●				
vBNS/vBNS+	●	●	●	●	●	●	●	●		●	●	●		●	●
Europe															
CERN			●								●				
IUCC															
NORDUnet	●										●				
MIRnet	●														
RENATER2															
SURFnet					●	●					●				
Asia															
APAN	●														
SINET															
SingAREN															
TANet2															