

Megaconference II

Post-Mortem Participation Report from The WNY-HPNVI

James O. Whitlock, November 2, 2000

Qualitative Experience

During the morning sessions, there were more problems with the cascade than seen at any time other than early rehearsals, and more problems in general than at any other time -- poor or frozen video from the cascade, poor or absent audio from the cascade, application failures of unknown origin on our highest reliability Zydacron endpoints on the local MCU, and evidence of local MCU failure necessitating power-cycle reset. Afternoon sessions were, however, as good as the final rehearsals. Local correlation with morning failures is possible with a new VCON "appliance" endpoint, the Falcon IP, that was present for morning sessions but not afternoon. Rehearsals with that endpoint had been fine but there had been evidence of some unusual audio problems in more limited local testing that suggested possible VCON implementation issues. It will take more time and testing with the Accord to determine whether the Falcon IP was the problem for us. The MCU managers' chat suggested that there may have been more widespread audio/video problems and issues in the morning. Most probably, we'll never determine the origin. General experience suggested that we might have been operating on the thin edge of what is practical today for event scale in a heterogeneous H.323 environment -- an impressive and practical finding in itself.

Our experience with the Megaconference II this year highlighted back-office logistic support requirements for large-scale events, which I suspect grow non-linearly with scale. We found the numerous non-integrated communications back-channels (email, text chats, telephone audio conferences) difficult to track in real-time and often rather cumbersome to use; commercial-grade support service would have required 3-4 FTE of local support on the day of the event (one dedicated to the MCU managers' back-channel, one dedicated to the local site operators' back-channel, and one or more managing real-time streaming and capture facilities, monitoring MCU health, etc.). Coordinating schedules for certification and tests/rehearsals also became exponentially more difficult with scale. In my opinion, the single most valuable contribution to the successes achieved was the nearly continuous ubiquitous presence of Arif Khan and Andy Shapira on the OARNet MCU and MCU Managers email list. Their presence and patient willingness to help out at all times made it possible for us, at least, to capitalize on local site availability for continued testing whenever the local sites became available.

As a final qualitative note, we were refreshed and inspired to always find interested, willing, and helpful colleagues on-line at any time or day or night. It seemed that there was always someone somewhere willing to help when the need arose, an experience I personally have not known since the early days of computing and network development.

Participation Details

The WNY High Performance Networked Video Initiative, a Public Service project at the University at Buffalo, operates a small but growing collection of high performance networked video infrastructure components and servers for public access trials, application development, and demonstrations throughout the WNY region. These include a RADVision NGK-100 H.323 Gatekeeper, a Cisco 3510 H.323 Multipoint Control Unit, a RADVision L2W-323 H.320/H.323 Gateway with both single BRI (ISDN) access and 3xBRI access through an attached Adtran ISU-512 Inverse Multiplexer, an assortment of H.323 test and development endpoints (Zydacron, VCON, Polycom) often equipped with DVD or other sound/motion sources, tightly coupled Cisco IP/TV encoding, broadcast and on-demand streaming media servers, and a number of IP path impairment measurement test endpoints. With these assets and approximately 1.1 FTE of staff, the WNY-HPNVI is committed to assisting regional early adopters of high performance networked video technologies in education, healthcare and government.

The permanent asset collection is supplemented for events like the Megaconference with additional facilities provided by business partners as part of their own networked video technology development programs. In this case, Buffalo Computer Graphics, Veraview Division, added and operated a developmental Windows Media Player real-time encoder and Streaming Server, operating at 300Kbps downward, in addition to the existing IP/TV Encoder/Server operating at 1.3 Mbps. Dial-up users were therefore provided reasonable high-quality stream views.

The WNY-HPNVI team, which included staff support from business partners, provided technical and procedural certification for all local endpoints before the conference, managed the graceful migration of a number of them to other facilities for the event itself, and supported participants on the local MCU during the event. Presentation sites were moved to the central Accord MCU once the presenter conference was in stable operation, and a two local campus sites were moved to the Internet2/UCAID MCU to free capacity on the local MCU. In addition, we provided an audio conference bridge to support local site coordination, for both presenter and participant sites, throughout the rehearsals and the event itself.

This year, for the first time, we were able to couple our H.323 real-time content with regional private fiber networks interconnecting over 100 public schools and a few institutional offices throughout WNY. Those networks employ 39 Mbps MJPEG CODEC's in extremely well-equipped purpose-built distance learning rooms to support inter-school classes with up to four bi-directional connections and any number of receive-only sites for any single event. ERIE1-BOCES (Board of Cooperative Education Services) operated a Polycom H.323 endpoint in the regional Network Operations Control facility and cross-connected it to the fiber networks. Three regional fiber network sites were afforded bi-directional connections to the Megaconference in that manner.

Two of our sites, SUNY Central Administration and KALEIDA Healthcare, completed certifications but had to cancel by the day of the event or experienced problems that could not be resolved in time. Several other local H.323 sites expressed interest but were unable to secure support staff resources in time.

We switched our regional asset collection from a completely public to a locked-down mode prior to the last rehearsal on 10/27 to reduce the likelihood of interference with the event. Only those sites that had satisfactorily completed certification and cascade testing with us were permitted access.

A complete list of actual participant sites follows.

Sites Supported directly on WNY-HPNVI facilities on 10/31:

- 1) Buffalo Computer Graphics/Veraview
Corporate HQ
Principal: Tino Bellanca, <tbellanca@buffalocomputergraphics.com>
Tech. Supt.: Ken Szczepanski, <kes@buffalo.edu>
Endpoint: Zydacron Z360

- 2) Erie Community College
Principal: Joe Stewart, CIO, <stewart@ecc.edu>
Tech. Supt.: Joe Lundin, <lundin@ecc.edu>
Endpoint: VCON Falcon IP

- 3) UB Computing & Information Technology
Instructional Technology Services
Health Science Library Public DL Site
Principal: Mark Woodard, <mwoodard@buffalo.edu>
Tech. Supt.: Martha Greatrix, <greatrix@acsu.buffalo.edu>
Endpoint: Zydacron Z350

- 4) ERIE1-BOCES
Network Operations Control Center
Principal: Ted Ertl, <tertl@ERIE1.WNYRIC.ORG>
Tech. Supt.: Ted Ertl, <tertl@ERIE1.WNYRIC.ORG>
Endpoint: Polycom ViewStation 512

- 5) UB WNY High Performance Networked Video Initiative
Conference Operations Control Facility
Principal: James Whitlock, <whitlock@buffalo.edu>
Tech. Supt.: James Whitlock, <whitlock@buffalo.edu>
Tech. Supt.: Ken Szczepanski, BCG/Veraview, <kes@buffalo.edu>
Endpoint: Zydacron Z350, Cisco 3510 MCU, cross-coupled streaming servers

**Sites Supported via ERIE1-BOCES NOC Cross-Connects to Regional 39 Mbps
MJPEG Private Fiber Networks on 10/31:**

- 1) Daemen College/ERIE1-BOCES CityNet
Buffalo, NY
Fiber Network DL Site
Principal: Tony Klejna, <tklejna@daemen.edu>
Tech. Supt.: Tony Klejna, <tklejna@daemen.edu>
- 2) Olean High School/Cattaraugus Allegany County BOCES
Olean, NY
Fiber Network DL Site
Principal: Richard Rivers, <richard_rivers@CABO.WNYRIC.ORG>
Tech. Supt.: John Barry, <John_Barry@cabo.wnyric.org>
- 3) Turner-Carroll High School/ERIE1-BOCES CityNet
Buffalo, NY
Fiber Network DL Site
Principal: Carol Kostyniak, BISSNET, <kostynct@buffnet.net>
Tech. Supt.: Christine Chelus, CATE, <ctchelus@buffalo.edu>

**Sites Certified with WNY-HPNVI but Supported on the OARNet Accord
Presenter Conference on 10/31:**

- 1) UB Millard Fillmore College
Baldy Hall Distance Learning Site
Principal: Lisa Stephens, <stephens@buffalo.edu>
Tech. Supt.: Beth Fellendorf, <eof@buffalo.edu>
Endpoint: WNY-HPNVI Z350 on-loan due to problems w/ VTel
Galaxy in cascade
- 2) Erie County Medical Center
Emergency Services Regional Trauma Center
Principal: Prof. David G. Ellis, MD, <dellis@ecmc.edu>
Tech. Supt.: James Mayrose, Ph.D., <mayrose@acsu.buffalo.edu>
Endpoint: Rollabout Clinical Zydacron Z360 on RF-LAN
- 3) Clarkson University
Distance Learning Site
Principal: Dan Dullea, <ded@clarkson.edu>
Tech. Supt.: Dan Dullea, <ded@clarkson.edu>
Endpoint: PictureTel 4000EX H.320 system

Sites Certified with WNY-HPNVI but moved to Internet2/UCAID MCU on 10/31:

- 1) UB School of Engineering
Department of Civil Engineering
Multidisciplinary Center for Earthquake Engineering Research
Principal: Prof. Andrei Reinhorn, <reinhorn@buffalo.edu>
Tech. Supt.: Jason Hanley, <jphanley@buffalo.edu>
Endpoint: Zydacron Z340

- 2) UB Computing & Information Technology
Instructional Technology Services
Advanced Educational Technology Skunkworks
Principal: Peter Jörgensen, <peter@jorg2.cit.buffalo.edu>
Tech. Supt.: Peter Jörgensen, <peter@jorg2.cit.buffalo.edu>
Endpoint: VCON Escort