



The bigvideo group

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Who are we?

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Internet2/ResearchChannel®
Working Group

Internet2/ResearchChannel Working Group

- The Internet2/ResearchChannel Working Group provides a **testbed** for the exploration of high-quality demand and streaming video applications across Internet2 backbones and associated campus networks.

BigVideo Project

- A subcommittee of the Internet2-ResearchChannel Working Group interested in using affordable and widely available cameras, PC's, software, and hardware. Began testing DV as an affordable bandwidth option between typical streaming products and the atypical High Definition Television capabilities.

- **DVTS**
 - *The DVGuide*
 - *Comet PMC*
 - *3D DVTS*
 - *KNOPPIX / Mac-mini*
 - *AG integration*
- **HDV**
- **ConferenceXP**
- **Handhelds**

DVTS current Status

software - WIDE

- DVTS updates, new features, new platforms
- Mac-mini DVTS “appliance”
- DVGuide, DVTuner, IPV6 multicast Demo
- Stereoscopic DVTS - 10:30 High-End Video

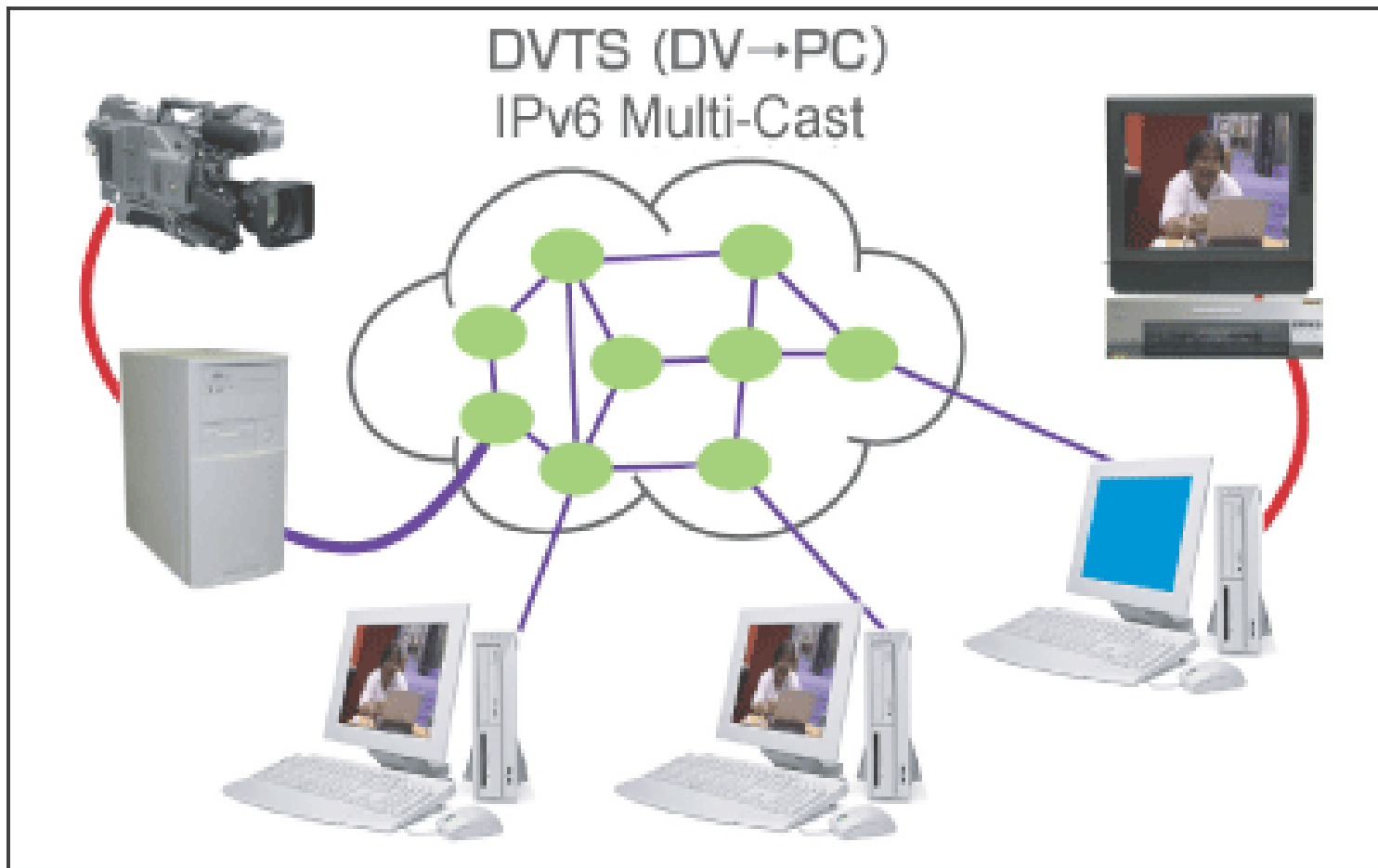
hardware - Fujitsu

- Comet PCI cards - for your Intel box
- Comet PMC box
 - DVTS support provided
 - HDV test between Ann Arbor & Japan



Digital Video Transport System

It looks something like this



Who is using this?

- Musicians – master classes
- Campus TV – multicast to dorms
- Video conferencing – high quality, low latency
- USHS – medical instruction
- UPENN – collaboration of pathologists
- ICU – St. Francis work



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What is the “DVGuide”?

Imagine that ...

- you could tune your computer into a series of “**educational**” channels the same way you tune your television into satellite channels
- you could send & receive DV quality video across the internet with the same ease as sending & receiving **email**
- you could expand the borders of the campus, reaching alumni, colleagues, students, and potential students through an institutional television channel
- you could do all this without any significant capital expenditure by taking advantage of resources that currently exist on your campus

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The DVGuide looks a lot like this:

ResearchChannel
www.researchchannel.org
DVTS-233.45.17.50/8000
VLC-233.22.21.20/1234

USF CVPA Multicast Channel
University of South Florida
DVTS-233.22.29.128/8000

Internet2 DVTS test Channel
ResearchChannel Working Group
DVTS-233.45.17.50/8000
VLC-233.45.17.247/4444

Special Events Channel 1

CHANNEL	ResearchChannel	USF CVPA Multicast Channel	Internet2 DVTS test Channel	Special Events Channel 1
MIDN	CORNEAL TRANSPLANT SURGERY close up look at eye surgery	Thank You, Eddie Hart Midnite - 2am	Late Night Jazz blank	
12:30				
1:00	The Healthy-U Sport Psychology: Keys to Peak Performance			
1:30				
2:00	From the National Institutes of Health: Research on Health Disparities Sickle Cell Disease - Recent Advances	A Movie about Movies 2am - 4am		
2:30				
3:00	Cosmetic and Ophthalmic Surgery Refractive Surgery: Patient Information			
3:30				

Done

<http://db.arts.usf.edu/dvguide/listings.asp>

- Network ***Researchers***
 - What happens when # of multicast flows grows?
 - What happens when multicast flows > 1 gbps?
 - How do you deploy such flows using SSM?
 - How do you “help” multicast-challenged users?
- Universities – an opportunity to:
 - to ***increase visibility*** (campus radio/TV)
 - to ***connect*** with remote alumni, faculty, students
 - to ***expand*** the borders of your campus
 - to provide DV quality content AV at almost ***zero cost***

How do I get a DVGuide channel?

- **Multicast** network capability is required
 - this is not “traditional webcasting”
- Internet2 “network” **capability** is required
 - DV requires 30 mbps per stream
 - MPEG2 requires 4-15 mbps per stream
 - Compressed HDTV requires 20 - 270 mbps
 - Uncompressed HDTV requires 1 – 1.5 gbps
- Advanced Applications are required
 - DV – DVTS, Fujitsu Comet PMC, etc.
 - MPEG2 – VLC, VBrick, etc.
 - HDTV – still in the “roll your own” stage

Why do I need multicast?

- Why can't I use something like Real?
 - Do the math – 30 mbps of DV traffic
 - i.e. **Victoria Secrets** webcast
 - More than 1 million web hits during 1st hour
 - 283% increase in web traffic during event
 - Unicast delivery doesn't cheaply scale!
- think of multicast as “Broadcast TV”
 - If you have a “tuner” and your “antenna” is pointed in the right direction, just tune in the “channel”
 - If you're on a Internet2 backbone, you're ready! (well, almost ready ...)

Here's what you can see

- **DVTS channels**

- Research Channel 233.0.73.25
- University of South Florida 233.22.29.128
- UM/TV 233.45.17.51
- Internet2 Test Channel 233.45.17.50

- **MPEG2 channels**

- Research Channel 233.0.73.28/1234
- UPR 233.53.228.251/4444
- Netherlands – Channel1 233.4.79.18/5000
- Mote Marine Aquarium 233.84.208.1/4444

- **Radio Stations**

- USF Jazz Radio (Media Player)
- WUOT VLC - 233.13.122.247:1234

Mac-mini DVTS Appliance

is a \$500 DVTS appliance possible?

- Mac-mini - limit to a single firewire port
- No muss, no fuss
 - No monitor, keyboard, mouse required
 - Configure, plug it in, then phone-home
- Web browser used for control
 - example

What else is going on with DVTS?

- **3D DVTS**
 - Stereoscopic work done for the medical community
- **KNOPPIX**
 - Standalone, bootable “DVTS” machines
- **GA Tech**



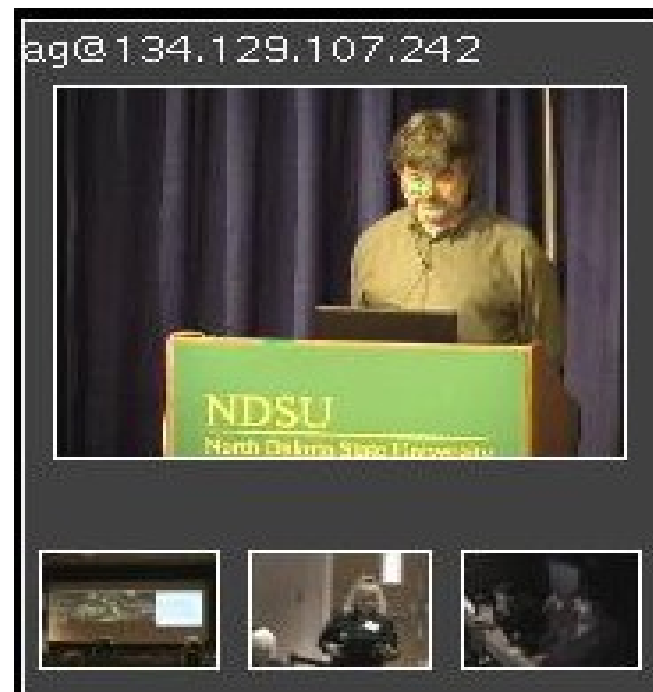
- ***Comet PMC***
 - ***Standalone box***



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DV in the Access Grid

- **Access Grid integration**
 - ANU DV video now available
 - Korean Work
 - DV & HDV



Some related links

- <http://db.arts.usf.edu/dvguide>
- <http://researchchannel.org/projects/i2wg/>
- <http://researchchannel.org/projects/hdvod/>
- <http://www.sfc.wide.ad.jp/DVTS/>
- <http://hdtv.nm.gist.ac.kr/KOREAv6/>
- <http://people.internet2.edu/~bdr/dvts/>
- <http://people.internet2.edu/~bdr/CometDVIP/>

Other interesting projects

- HD Video on Demand
- Interactive HD
- Handhelds
- ConferenceXP

- From our friends at Microsoft Research
- IMHO - ready for deployment
- IPV6 supported(!)
 - see IPv6 multicast demo
- Multicast challenged users supported
 - Additional cameras now supported
- ... and here is Chris Moffat!

INTERNET2 You can join the “party”!

- **Join the bigvideo@internet2.edu project**
 - wellings@cac.washington.edu
 - bdr@internet2.edu
 - bigvideo@internet2.edu mailing list
- **Join the DVTS Consortium**
 - <http://www.dvts.jp/en/>
- **Buy a Comet PMC standalone box**
 - bdr@internet2.edu

So ... what's new?

- **The DVGuide**
 - <http://db.arts.usf.edu/dvguide/listings.asp>
- **Comet PMC**
- **3D DVTS**
 - <http://people.internet2.edu/~bdr/dvts/dvts-3d.pdf>
- **KNOPPIX**
 - http://people.internet2.edu/~bdr/dvts/knoppix_dvts_20040917.iso
 - http://people.internet2.edu/~bdr/dvts/GT_DVTS_GUI.jpg
- **AG integration**
 - <http://if.anu.edu.au/SW/VP.html>

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2

