

# VBRICK and IP Multicast

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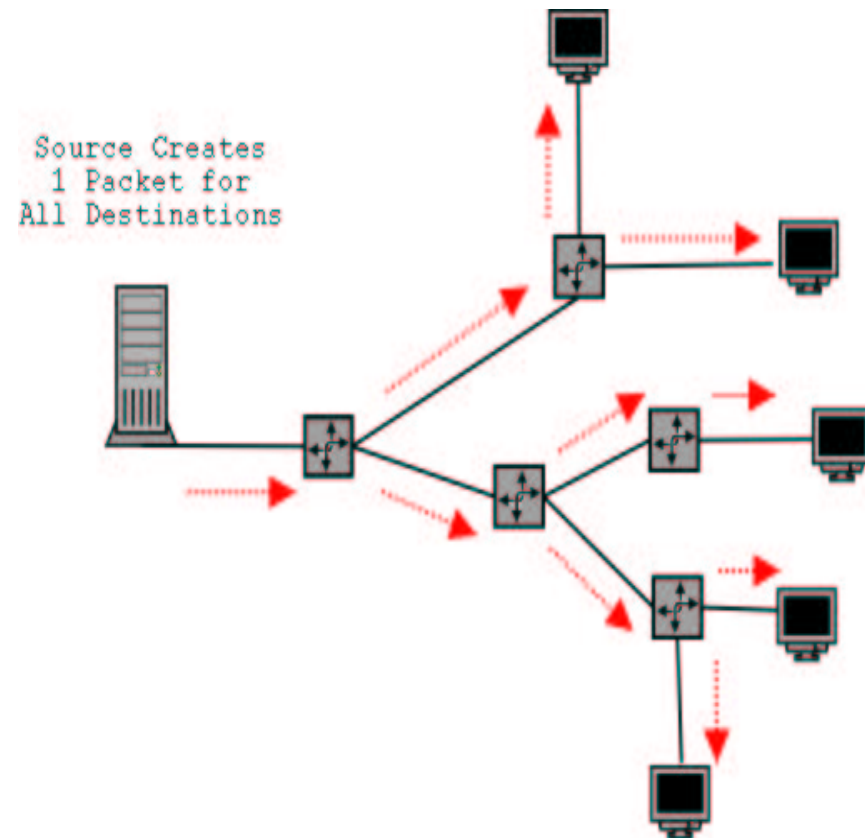
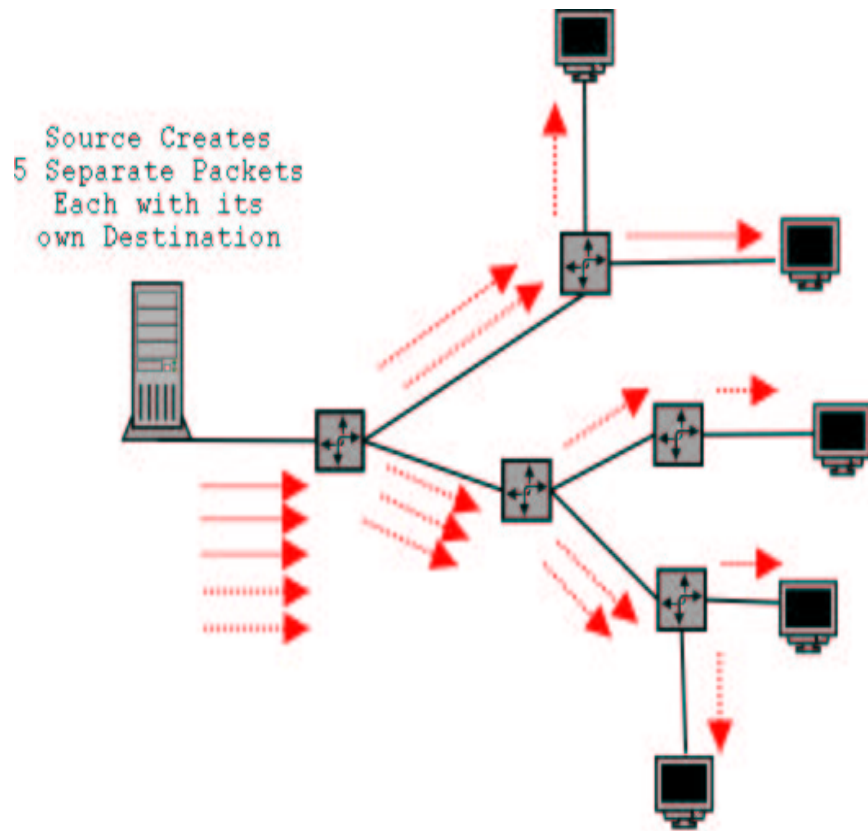
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# Agenda

- Introduction to IP multicast
- DePaul IP multicast design
- VBRICK overview
- DePaul VBRICK deployment
- Futures

# Visualizing IP multicast



# IP multicast addressing

- Destination IP address is a *group* address
  - 224.0.0.0/4 or
  - 224.0.0.0 to 239.255.255.255
- Do NOT select a group address at random!
  - Some addresses are reserved
  - Some addresses may not go far (*scoped*)
  - Some addresses may not go anywhere (*filtered*)
- How do you select a group address?
  - Best thing is to come talk to us (N&T - jtk)

# Advertising multicast sessions

- The old way - decreasing in popularity
  - Apps send an announcement (*SAP*) everywhere
  - Receivers take *SAPs* and build viewing guide
  - Not a very scaleable model
- The new way
  - Users learn of sessions via email/web
  - Click a link to launch app and view content
- Static addressing also works, but often not practical

# IP multicast concerns

- Relatively complex to understand and troubleshoot
- Various scaling problems (protocol related)
- Not widely implemented on the public Internet
- Increases network attack vectors (DoS, state)

# So why IP multicast?

To scale certain types of applications!

# DePaul IP multicast design

- IP multicast is enabled everywhere
- Noisy/bogus/invalid stuff filtered at edge/border
- Total IP multicast available capacity rate limited
- Internal-only applications scoped at our border
- Capacity-usage and availability monitoring
- Group membership and forwarding state monitoring
- Border routers act as rendezvous points (RPs)

# VBRICK overview

- Appliance based MPEG streaming solution
- Works very well for one-to-many MPEG broadcasts
- Relatively simple to setup and operate
- End users on PCs can view streams
  - Note: MPEG-2/MPEG-4 may require licenses
  - VBRICK sells viewing and editing software also
- FYI... Internet2 has loaners we/you can use
- Let's check some stuff out...

# DePaul VBRICK deployment

- 6 Mb/s streaming MPEG-2 units located at:
  - Barat
  - Lewis 1311
  - Naperville 1-south
  - O'Hare 2-north
  - LPC Student Center auditorium
  - LPC Student Center room 329
- Jointly installed/supported by SNL/CTS/N&T
- N&T/R&D also acquiring its own MPEG-1 unit

# Deployment issues

- Infrastructure must support constant 6 Mb/s rate
  - Dedicated 10/100 switch port required
  - 10 Mb/s shared and wireless are problem areas
- MPEG-2 licensing issues
  - Typically only PCs with DVDs include license
  - Windows wins for best supported platform again
- VBRICK/multicast security potentially looming
- Need better overall monitoring and management
- Host firewall needs to allow IP multicast and SAPs

# Futures

- More IP multicast network monitoring
- Encourage video/multicast for DePaul events
  - Explore video-conferencing using H.323
  - Explore broadcasting using MPEG-1/2
- Partnership with external groups like CSO/NAC
- Research MPEG-4 technology and applicability
- Let's see where success/interest takes us

# References

<http://ntg.depaul.edu/rd/>

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<http://detective.internet2.edu>

<http://www.northwestern.edu/nutv/>

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