Using AppleTV for Classrooms
and other Interesting things

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Lightning Talk
Why do you care?

• IOS 5 on iPad 2 or iPhone 4S can screen share
• Professors want to use their iPads to present in the classroom
• Professors want the students to show what is on their iPads to the rest of the class

• Most important its just a COOL TOY!!!!
AppleTV

- Literally a little black box
AppleTV Ports

- HDMI
- Optical Digital Audio
- 10/100 Base-T Ethernet
- AC Power
- Micro-USB for services and support
AppleTV WiFi

• WiFi Support
  – 802.11 a/b/g/n
  – WEP or WPA/WPA2 PSK Security only

• So You CAN’T connect it to many campus wireless infrastructures
  – No WPA/WPA2 Enterprise Security
  – Embedded with no web browser
  – Maybe can to MAC auth if you support that
AirPlay

• Screen Sharing uses AirPlay
  – Originally for streaming Music over the Network
  – Extended to streaming Video over the Network
  – Now Extended for Screen Sharing over the Network
AirPlay and Bonjour

- AirPlay uses Bonjour
  - A.K.A. ZeroConf, Multicast DNS, DNS Service discovery
  - Only supports .local domain discovery and not full Wide-Area DNS Service Discovery
What does this mean?

• WiFi network must support Link-Local Multicast
• AppleTV need to be in same broadcast domain as iPads or iPhones
• Or, need something to Proxy or Reflect Multicast DNS-SD
DNS-SD between Subnets

• Mac OS DNS-SD
  – There is a Mac OS command “dns-sd –P .....” that will make proxy DNS-SD announcements

• Avahi
  – Avahi is a LINUX implementation of DNS-SD (Zeroconf)
  – The Avahi Daemon includes a Reflector function (disabled by default) that will reflect DNS-SD requests and responses between subnets
MAC OS DNS-SD Example

dns-sd –P AppleTV _airplay._tcp . 7000 AppleTV.local 134.84.116.113 "deviceid=28:CF:DA:10:A3:A6" "features=0x39f7" "model=AppleTV2,1" "srcvers=120.2"
dns-sd -P 28CFDA10A3A6@AppleTV _raop._tcp . 49152 AppleTV.local 134.84.116.113 "am=AppleTV2,1" "ch=2" "cn=0,1,2,3" "da=true" "et=0,3" "md=0,1,2" "pw=false" "sf=0x4" "sr=44100" "ss=16" "sv=false" "tp=UDP" "txtvers=1" "vn=65537" "vs=120.2"
Other Tidbits

• Mac iTunes uses a TTL of 2 for AirPlay packets
• iOS 5 uses a TTL of 64 for AirPlay Packets
• See www.hdfury.com for a excellent HDMI to VGA converter
  – Full Digital to Analog and HDCP deciphering
DEMO

• Hopefully this was a live demo
• Also, an AppleTV will be setup downstairs if you want to play with your iPad or iPhone 4S following the session