



**CalPlug Workshop**  
**Thursday November 6th, 2014**

# **Energy Efficiency Opportunities**

## **Entertainment Centers – Home Automation**

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# Pay TV Energy Efficiency Opportunities:

## STB Energy Voluntary Agreement:

- 4.4% national energy reduction - 2013 STB purchases
- All providers moving to Whole Home DVR or Network DVR
- VA Tier 1 started on 1/1/2014 - 90% STB purchases

## HDMI-CEC (Consumer Electronics Control):

- Energy saved by keeping component “OFF” unless needed
- Implemented by several Pay TV providers
- Success with simple configurations – STB direct to TV
- Not so much success with complex entertainment centers!

# HDMI-CEC Challenges:

## Everyone wants to be connected to “TV Input A”:

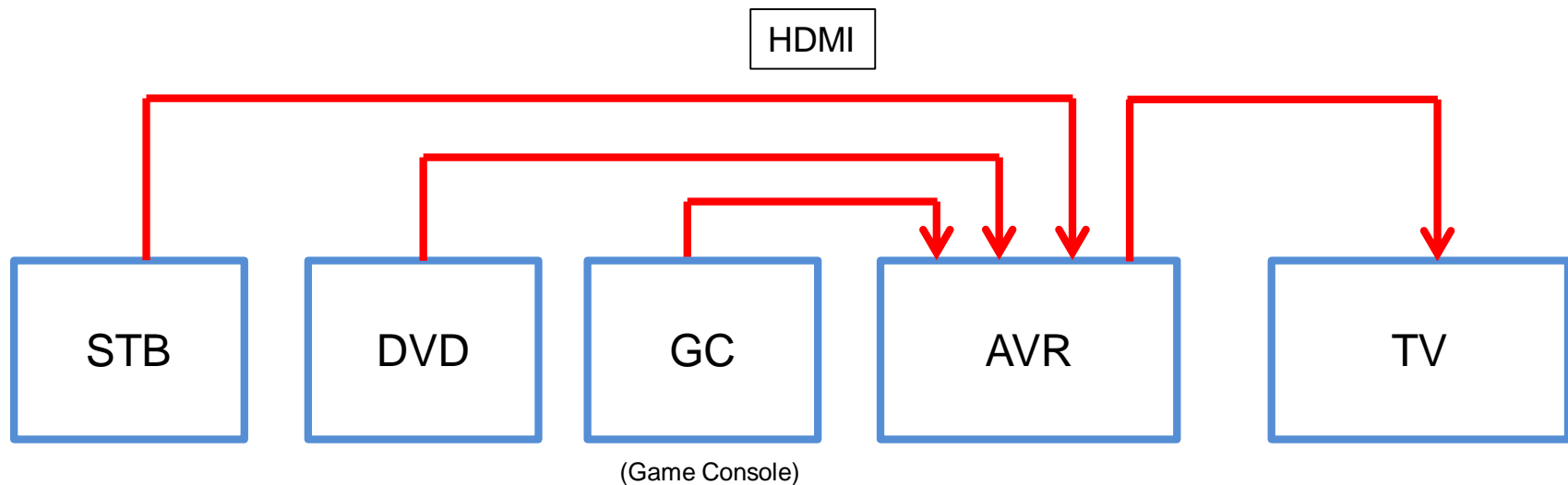
- Desire to be the users primary interface (brand awareness)
- Results in “daisy chained” configurations
- Requires HDMI pass-through function always available
  - Increases standby power levels
- Examples – X-Box, PS4, Sling-Box, AVRs, DVDs ...

## Many use cases are not accommodated:

- Optical audio connections?
- Smart TV IP streamed content?

# HDMI-CEC Challenges:

HDMI AVR as primary interface:

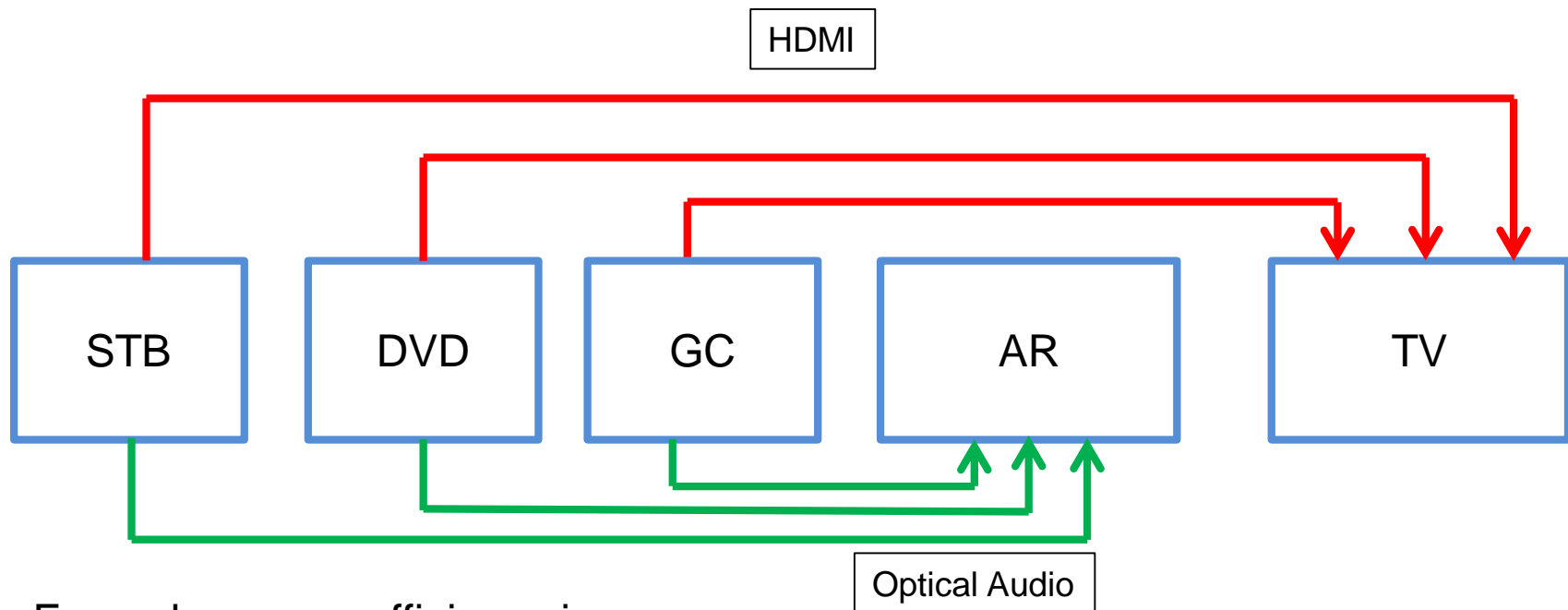


Example energy efficiency issues:

- AVR must maintain HDMI (forward) pass-thru mode to use STB, DVD, or GS without AVR
- AVR must support HDMI (reverse) pass-thru mode to keep STB, DVD or GS devices OFF
- STB, DVD, and GS must behave properly – request TV control when “Play”, not “On”

# HDMI-CEC Challenges:

TV as primary interface:

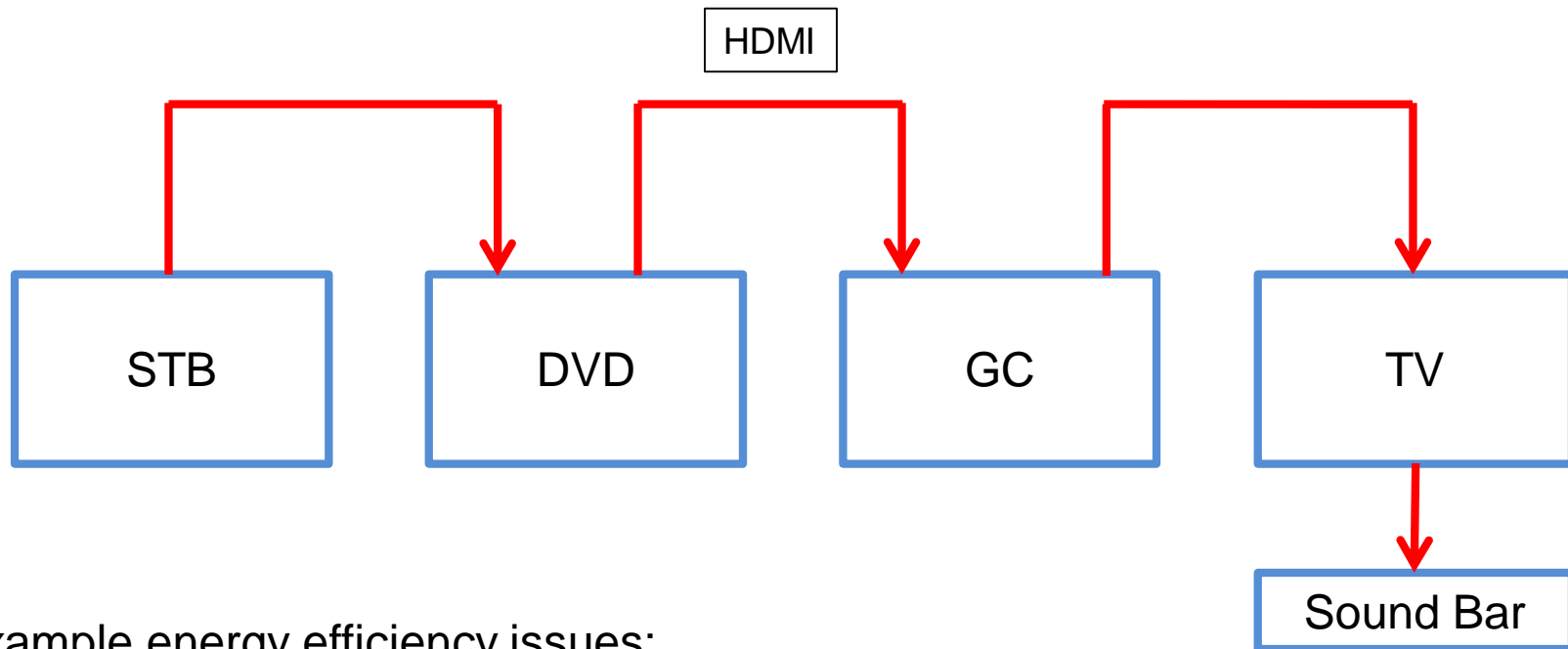


Example energy efficiency issues:

- TV cannot control AR via HDMI (maybe via programmable remote control)
- TV must support HDMI-CEC properly to keep STB, DVD or GS devices OFF if not in use
- STB, DVD, and GS must behave properly – request control when “Play”, not “On”

# HDMI-CEC Challenges:

Game Console as primary interface:



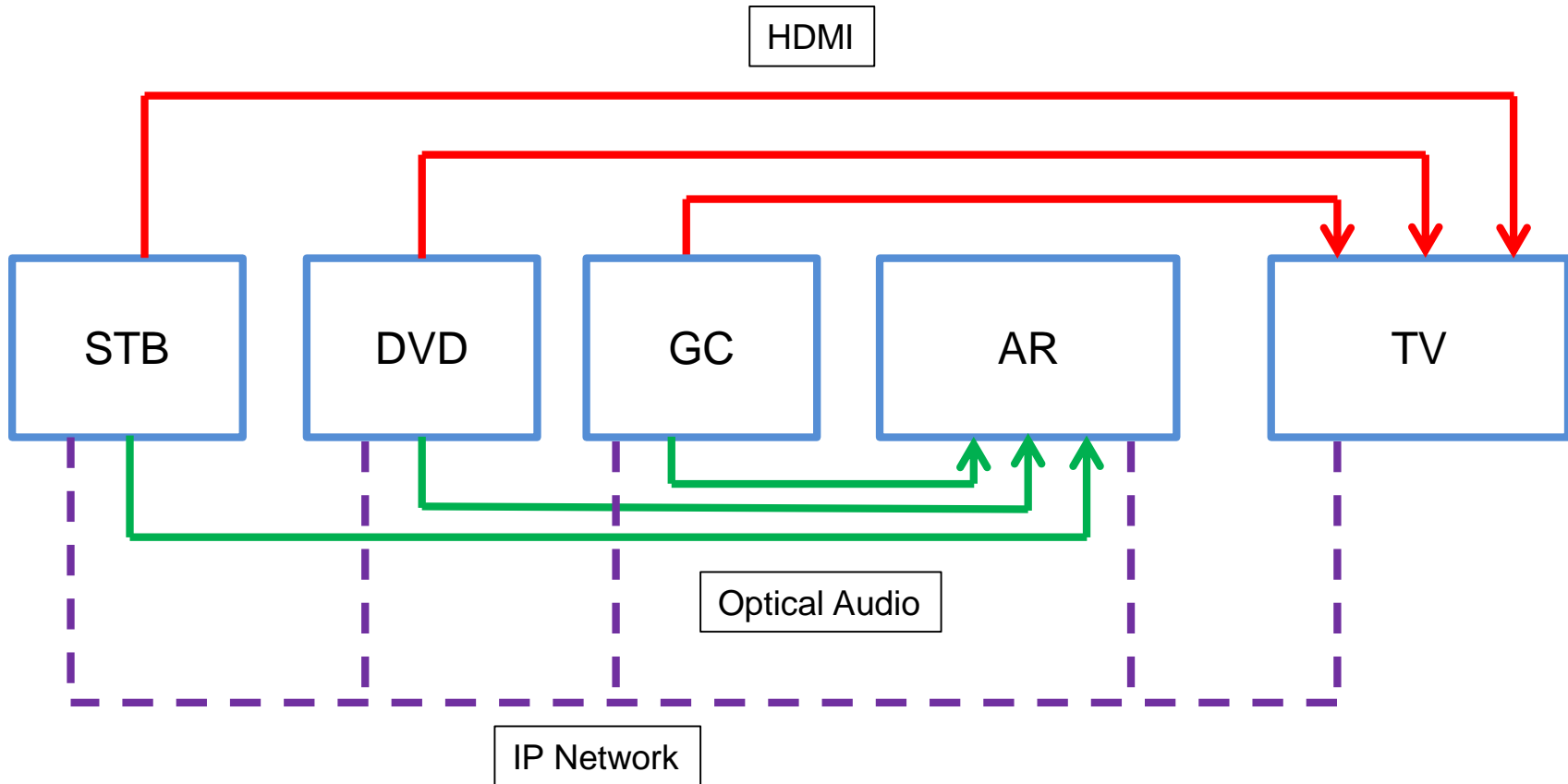
Example energy efficiency issues:

- DVD and GC must maintain HDMI (forward) pass-thru mode to use STB or DVD
- DVD and GC must maintain HDMI (reverse) pass-thru mode to turn STB and DVD to “Off”
- STB, DVD, and GS must behave properly – request control when “Play”, not “On”

# HDMI-CEC Challenges:

A better solution...

Intelligent Energy Application using IP Control



# Secure Home Automation

*Demonstrated by EchoStar at IBC 2014 – Standalone or DVR STB based*



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# Secure Home Automation

*Demonstrated by EchoStar at IBC 2014 – Standalone or DVR STB based*



**SAGE** Motion Detected  
Press OK to view full-screen.  
Press BACK to close window.

# Secure Home Automation

*Demonstrated by EchoStar at IBC 2014 – Standalone or DVR STB based*



## IFTTT-like Interface:

*IF This, Then That!*

## Standards Based:

*ZigBee, Z-Wave, Wi-Fi, BT*

# Secure Home Automation

*Demonstrated by EchoStar at IBC 2014 – Standalone or DVR STB based*



Any Device,  
Anywhere

# Thank You