

# High Definition and Digital TV

## Captions and Subtitles



- Digital and HD Available Today!
- Soon (one year from now) Analog Broadcasts Cease
- What Does This Mean To Us?
  - Why Do You Care?
  - What Do I Need?
  - What Will Happen to My Captions?

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Note, this is the short version suitable for a 1 hour presentation. There's a longer, more detailed version that needs closer to 2 hours available at [www.ncheatingloss.org/programs.htm](http://www.ncheatingloss.org/programs.htm)

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# What's Changing

## It Used to Be Simple!



- Originally TVs Only Received "Over the Air" Analog
- Then came Cable
- And Satellite
- Then came VCRs
- And DVDs
- And TiVos and DVRs
- And the Internet
- And Computers
- And Digital and Video Cameras
- And High Definition and Digital TV
- Then (Feb 17, 2009) Analog Broadcasts Cease

And Things Started to Get complicated.

More Things to Connect and (until Feb next year) both digital and analog broadcast signals.

No More Analog broadcasts!

# Why is it Changing?

## Digital is Better



- No snow, no static, no ghosts
- Higher resolution images, and Sound
- Additional channels
- Frees up Bandwidth for Other Important Needs
- More Options
  - Improved captions (but not without pain)
  - Interactive TV
  - TV to your Cell Phone or PDA? (maybe later)

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# Subtitles and Captions

## Subtle Differences



- Types Vary
  - Subtitles (from silent movies to DVDs)
  - Closed Captions (Encoded in broadcast and recorded TV)
    - CEA-608 (US Analog Standard)
    - CEA-708 (US Digital Standard)
  - Open Captions (Visible by all ... Foreign films, A few movies)
  - Subtitles for the Hearing Impaired (SDH) (DVDs)
- Standards Vary Around the World
- Support for Multiple Languages

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# Need to Understand

## Going Digital



- What Will Work With What?
- What Will I Need?
- How to Connect your TV
  - Primary Source
  - DVDs and Tapes
- Controlling Captioning Options
  - Where Decoded
  - Appearance
  - Turning on/off
  - CC vs. Subtitles

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# What Will Work With What?

## Only Analog Broadcasts Stop



- Analog TV Will Continue To Work with
  - Cable Set Top Box (STB)
  - Satellite STB
  - Digital/Analog Converter (receive digital broadcasts via antenna)
  - Antenna will also receive analog broadcasts (until next year)
  - Current VCRs and DVDs will work (with some limitations)
- Digital HD TVs Will Work with
  - Cable (with or without STB)
  - Satellite STB
  - Antenna (if nearby digital stations exist)
  - Current and Future VCRs and DVDs (with some limitations)

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# For a Digital TV

## What Will I need?



- Monitor vs. TV (some older models don't have a tuner)
- Plasma vs. LCD
- Projection vs. non-projection and DLP
- 720 vs. 1080 (vertical pixel count)
- "i" vs. "p"
- Refresh Rates
- Contrast Ratios
- But you WON'T need a Digital/Analog Converter
- Cable, or Satellite, or Antenna (if nearby digital broadcasts)
- STB for Satellite and (maybe) for Cable
- Connectors
- Optional: DVDs, VCRs, DVRs

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# For an Analog TV



## What Will I need?

- Must have at least one:
  - Cable (with STB)
  - Satellite (with STB)
  - Digital/Analog Converter and Antenna (and nearby digital stations)
- TV will still work from VCR or DVD even without those
- Picture may be quite a bit better, but it won't be HD
  - Depends on your TV
  - Depends on your connectors (S-Video is better than composite)
- Current and Future VCRs, DVDs and DVRs (with some limitations)

Your Cable or Satellite provider will give, sell or rent you the STB.

If you want a D/A converter, you'll have to buy one.

# Digital/Analog Converters



## What You Need to Know

- **What?: A Box that converts a digital signal to analog**
- **Why?: So analog TVs can display digital broadcasts**
- **Do I Really Need a D/A Converter?**
  - No: If you have Cable or Satellite or if all your TVs are digital (with tuners)
  - Yes: to receive Over the Air on an Analog TV after 17 Feb 2009
- **Reasons You May Want to Get a D/A Converter for Your Analog TVs**
  - Pictures on some analog TVs may actually look better than they do now.
  - Captions may look better on some programs
  - Using analog TVs as extra TVs without cable/satellite
  - Using analog TVs for emergencies or cable/satellite outages
  - Some local multi-casts may not be on cable/satellite
- **When?: Becoming Available Now**
- **How Much?: \$40 - \$80**
- **Coupons Available from FCC:**
  - 2/household worth \$40 Each
  - Must use within 90 Days of Mailing
  - Limited Supply of coupons

Coupon Eligible Converter Boxes, CECBs, have limited functions; there are more feature-rich converter boxes available, but don't allow you to use the coupon.

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# D/A Converters Coupons

## How do I request a coupon?



- Between January 1, 2008 and March 31, 2009, you can request a coupon while supplies last in one of four ways:
  - [Apply online](https://www.dtv2009.gov/ApplyCoupon.aspx) at <https://www.dtv2009.gov/ApplyCoupon.aspx>
  - Call the Coupon Program 24-hour hotline **1-888-DTV-2009 (1-888-388-2009)**. Hearing-impaired consumers can use our TTY service by calling: 1-877-530-2634 (English/TTY) or 1-866-495-1161 (Spanish/TTY)
  - Mail a coupon application to: PO BOX 2000, Portland, OR 97208-2000. Download a Coupon Application from [https://www.dtv2009.gov/docs/Coupon\\_Program\\_App\\_en.pdf](https://www.dtv2009.gov/docs/Coupon_Program_App_en.pdf).
  - Fax a coupon application to  
1-877-DTV-4ME2 (1-877-388-4632)

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# Connector Overview

## Common Connectors



- Coaxial Cable



From Cable, Satellite or Antenna to set top box or TV

- Composite



Yellow is video + Red and White for Audio

- S-Video



Carries Video with improved Quality

- Component



Red, Blue, Green (RGB) is Video, + Red and White for Audio  
Digital quality and does captions

- HDMI



Newest, Best all digital Video and audio,  
but doesn't do encoded captions

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# Connector Overview

## Other Connectors

- Antenna



Old connector for over the air; often now have Coax for Antenna

- Optical



No electronic interference, uses light (Audio Only)

- Firewire



For Computers and Video Cams but doesn't do captions

- DVI



DVI-D and DVI-I: Good all digital Video, but doesn't do captions

- VGA



Use your TV as a computer monitor

- USB



Commonly used to plug in digital cameras and see videos or slide shows

- Flash

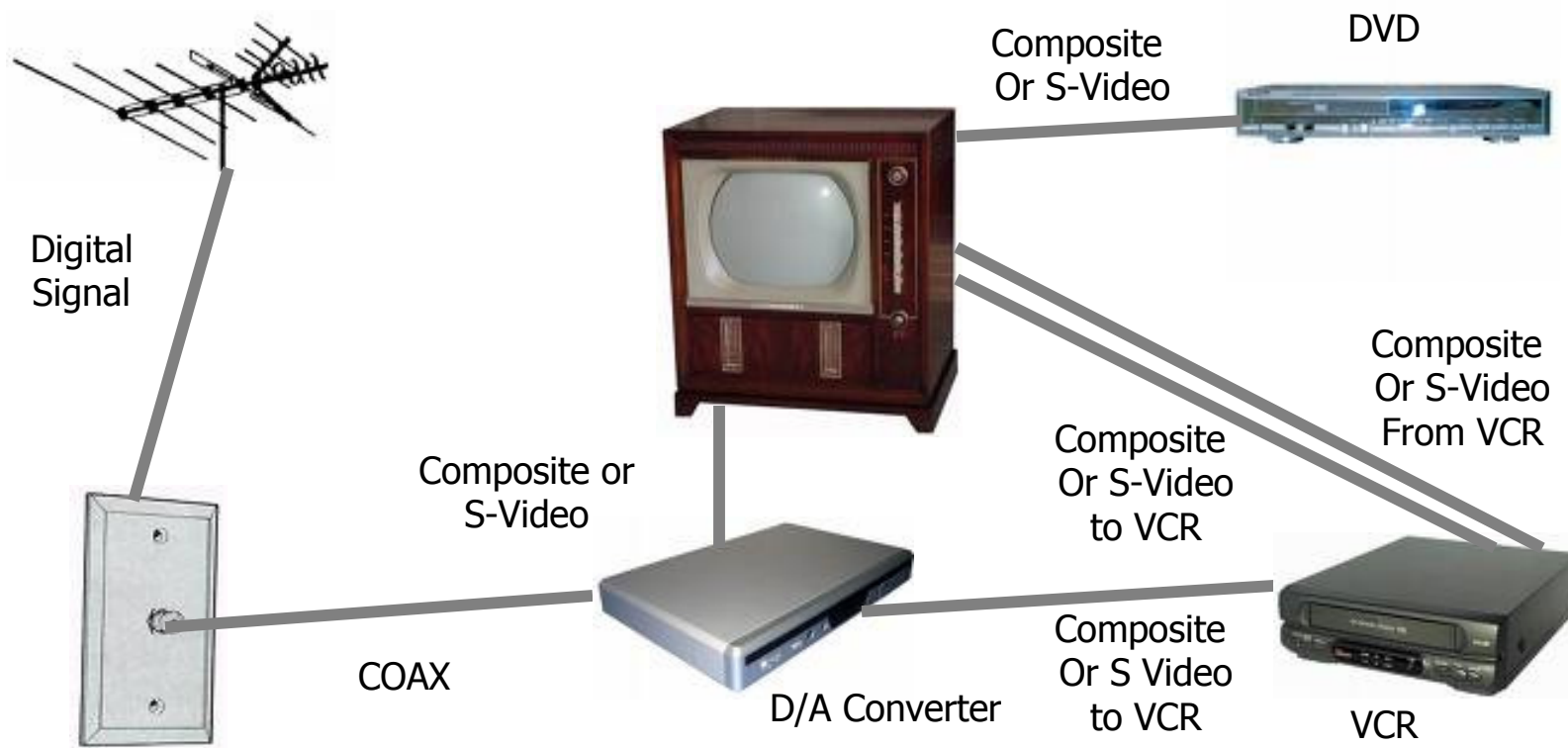


Some TVs may have slots for these for viewing photos or video clips

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# Connecting To Analog TV

## Digital Signal Over the Air

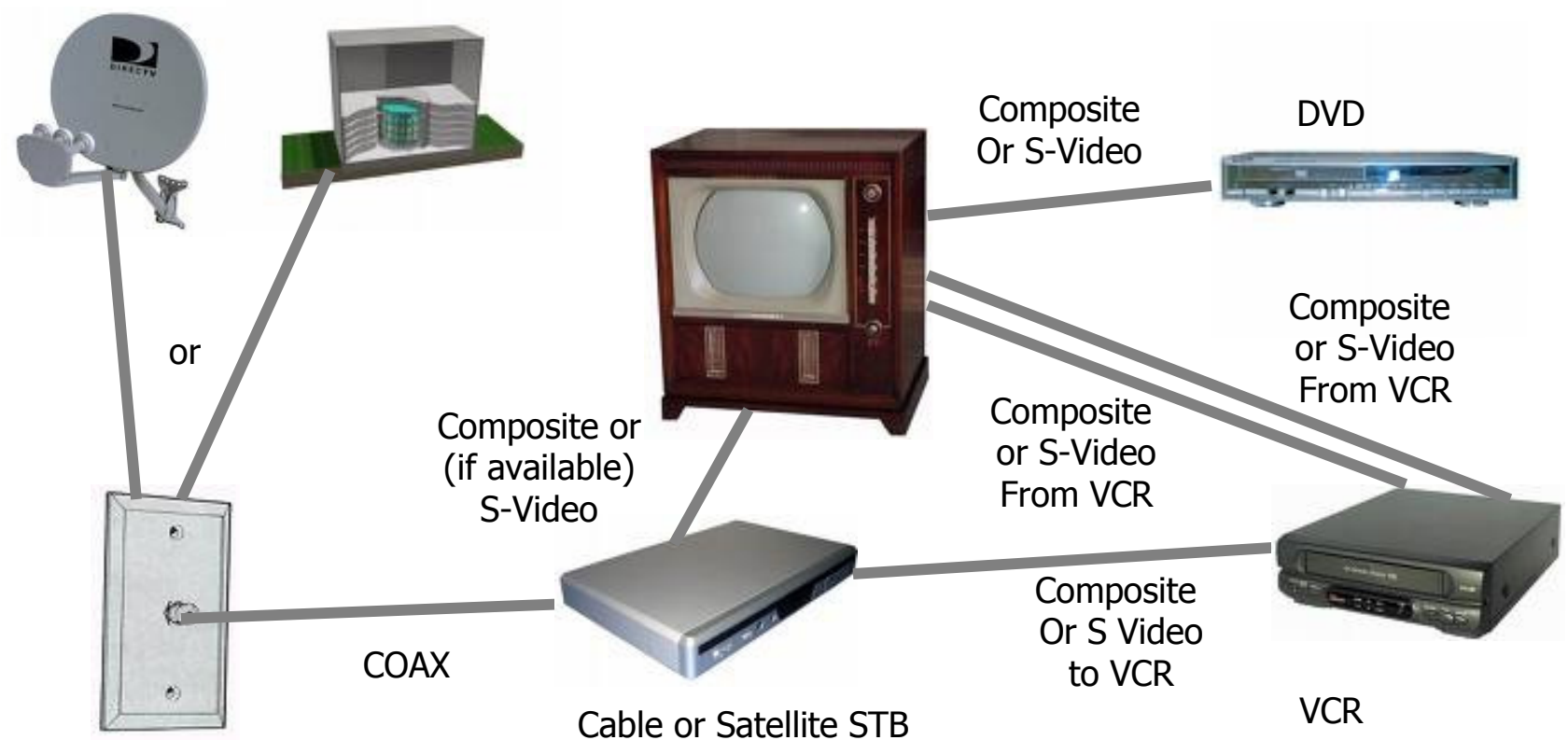


**Must have D/A Converter Box**

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# Connecting To Analog TV

**Digital Signal from Cable or Satellite**

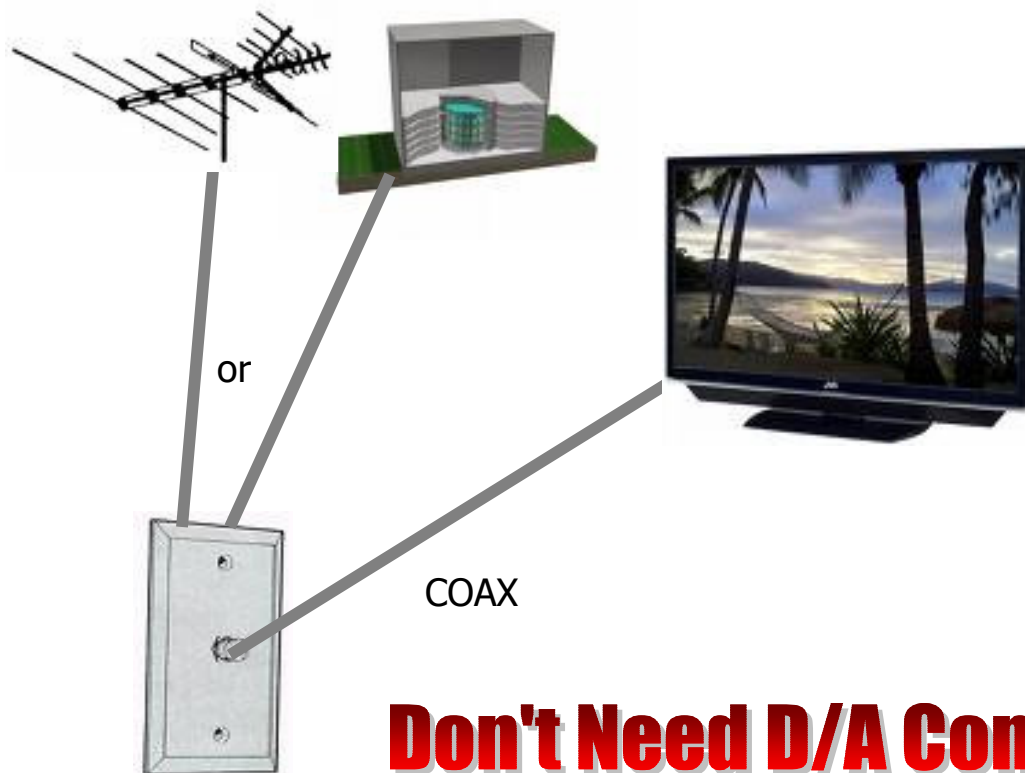


**Don't Need D/A Converter Box**

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# Connecting To Digital TV

## Simple Digital Signal Configuration



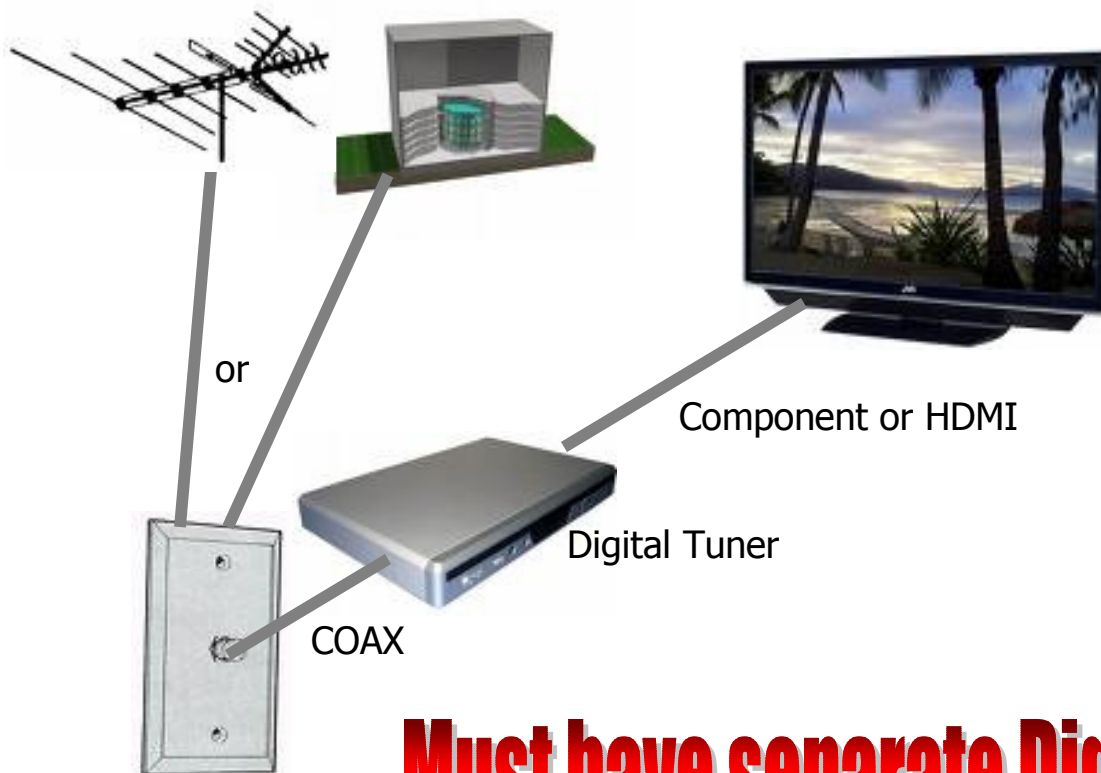
- Digital TV with tuner (not just a "monitor" or "HD Ready" TV) can receive directly from antenna.
- Digital TV with QAM input can receive limited cable options without a Set Top Box

**Don't Need D/A Converter Box  
Or Cable STB**

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# Connecting To Digital Monitor

HD Ready Sets Don't Have a Tuner

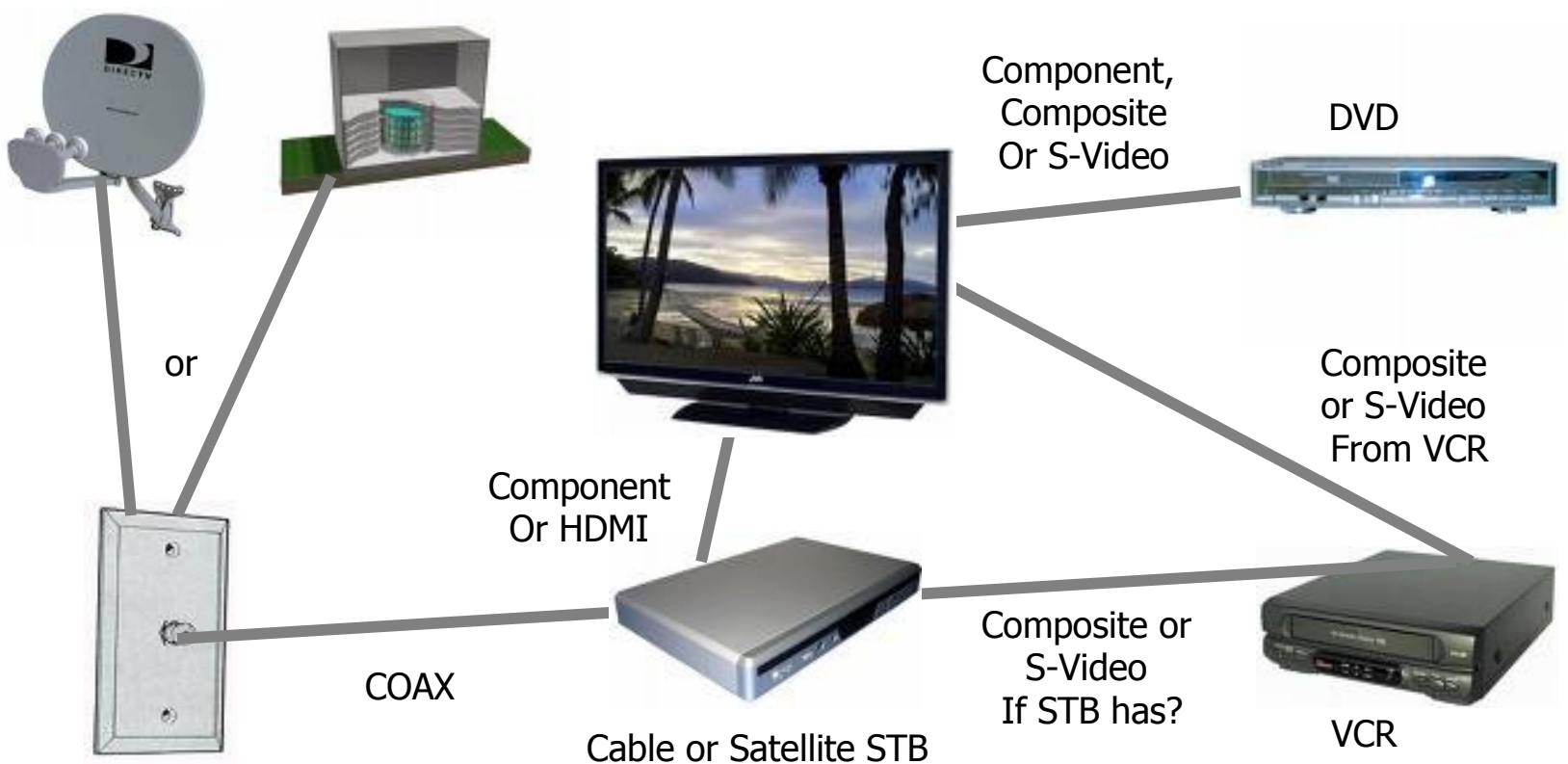


- Digital TVs without a Tuner (sometimes called "HD Ready" or a "Monitor") must have a digital tuner to receive digital signals.
- Indoor antenna may be enough in areas near a lot of digital stations.

**Must have separate Digital Tuner**

# Connecting To Digital TV

## Digital Signal from Cable or Satellite



**Don't Need D/A Converter Box**

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# Captions

## How They Are Stored



- DVDs
  - Subtitles (if available) are stored digitally, but encoded differently from CC.
  - 608 Closed Captions often but not always available on DVDs.
  - Sometimes both are available.
  - 708 digital closed captions on Blue Ray disks, maybe?
  - Maybe all three on some?, but expect trend toward Subtitles or SDH
  - Complications from newer high definition DVDs (Blue Ray) can be expected
- Video Cassettes
  - VCRs store the recorded program as an analog stream
  - The recording includes the analog captions (if they exist).
  - Programs recorded on VCRs will not support digital captions
- TiVos, DVRs, Computers etc
  - 608 but for now, probably no 708. Maybe later?
  - Prerecorded may be stored differently and may not be recordable as CC.
  - Expect some problems and shakeout.

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# Captions and Subtitles

## How They Get Displayed



- Analog Standard (CTA-608)
  - Old analog TVs need an analog CC Decoder Box
  - Since 1993, TVs over 13" have an analog CC Decoder Chip
  - New STB and D/A Converters may have analog Decoder Chip
- Digital Standard (CTA-708)
  - TVs with Tuners will have Digital Decoders
  - Cable and Satellite Box will have Decoders
  - D/A Converters will have Decoders (but may not do fancy stuff)
- DVD Subtitles
  - DVD Players decode subtitles and make them "Open Captions"
  - Some DVD Recorders also can decode Closed Captions.

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# Closed Captions and Subtitles

## Activation



- Analog TVs (for an analog signal)
  - TV Remote Control CC button and/or Display button (if available)
  - TV Setup Menu
- Analog TVs (for a Digital signal)
  - TV Or Converter Box's Remote Control (if button available)
  - TV or Converter Box Menu
  - Must not have both active (your system may vary)
- Digital TV (Over the Air or QAM Cable)
  - TV Remote Control CC button and/or Display button (if available)
  - TV Setup Menu
- Digital TV (non-QAM Cable, Satellite, or DVD Recorder)
  - HDMI: STB Remote Control button or Menu or box set-up
  - Non-HDMI: With TV or STB Remote Control, Menu or at TV or STB Set-up (depends on what buttons, menus or setup options you have)

DVD Subtitles or SDH:  
•Turn off CC  
•Use DVD Menu

# Things to Look Out For

## Expect Problems



- Decide whether to do captions or subtitles (for DVDs)
- Need to choose where to get captions or subtitles
  - At TV
  - At STB or D/A Converter
  - VCR or DVD (with Tuner)
- Need to have only one caption/subtitle source active at a time
- Connector Types Matter (Some won't carry encoded captions)
- Some Caption Technology Problems
  - Misaligned, double or overlapping captions
  - Synchronization with video
  - Automatic detection of caption type
  - Size matters -- some can overhang video -- some too small
  - Inconvenient controls (toggles, confusing menus etc)
  - "Hot Potato" Problem Responsibility

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# Web Links

## Learn All About the Transition



- About DTV Transition (some including CC stuff)
  - <https://www.dtv2009.gov/> (good consumer info about DTV)
  - [http://www.atsc.org/faq/faq\\_closed.html](http://www.atsc.org/faq/faq_closed.html) (FAQ about Digital CC)
  - <http://en.wikipedia.org/wiki/EIA-708> (General information about Digital CC)
  - <http://www.antennaweb.org> (Find out about coverage and antennas)
  - [https://www.ntiadtv.gov/cecb\\_list.cfm](https://www.ntiadtv.gov/cecb_list.cfm) (list of D/A Converter Boxes)
  - <http://www.hearusnow.org/tvradio/12> (DTV Info - links to Consumers' Report)
  - <http://www.dtv.gov> (general info about digital transition)
  - <https://www.ntiadtv.gov/home.cfm> (information about Converter Boxes)
  - [http://www.ezdigitaltv.com/Additional\\_Features\\_Matrix.html](http://www.ezdigitaltv.com/Additional_Features_Matrix.html) (good list of Converter Boxes and the features each has)
- General CC stuff
  - <http://www.fcc.gov/cgb/consumerfacts/closedcaption.html> (General CC Info)
  - <http://www.fcc.gov/cgb/dro/ccrules.html> (General CC Rules/Regulations)
  - [http://www.fcc.gov/cgb/dro/captioning\\_regs.html](http://www.fcc.gov/cgb/dro/captioning_regs.html) (More CC Rules/Regulations)

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# Discussion Groups and Forums

Ask Questions and Share Information



- <http://groups.yahoo.com/group/Beyond-Hearing/> (Beyond-Hearing)
- <http://health.groups.yahoo.com/group/bhNEWS/> (Better Hearing News)
- <http://groups.yahoo.com/group/Captioning/> (Captioning)
- <http://www.avforum.com/avs-vb/showthread.php?t=997022> (AVS Forum)

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# Summary

## Be Prepared



- Feb 17, 2009: Analog Broadcasts Stop
- Digital TVs Should be Fine
  - High Definition Video and Audio
  - Some Requirements to Get Captions
    - Learn where captions will be decoded
    - Learn how to control
    - Use the right connectors
  - More Options for Captions
    - Color
    - Font size and style
    - Opacity
- Analog TVs Will Still Work With Digital/Analog Converter
  - Cable and Satellite Subscribers (May have to trade in STB)
  - Cable and Satellite Subscribers may still want a D/A Converter for emergencies
  - Must Buy Converter Box To View Over The Air Signal on Analog TV
    - Wait until you know what you need
    - Don't wait until the coupons are gone
    - Only have 90 days after you receive coupon
- Expect Problems and Learning Curve on Captions

**Check out the features and convenience of  
TVs, STBs, converters, cables etc.  
Some can be very inconvenient.**

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