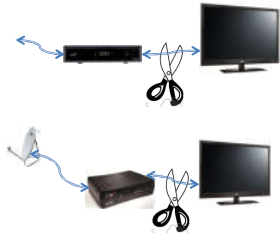


“Cutting the Cord” on Cable & Satellite TV



Orv Jordahl
UWRA ETC Member
Nov 14, 2019

What’s it mean to “cut the cord”?

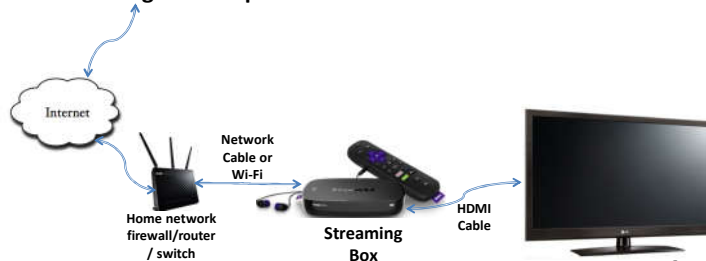
Answer: All of the following:

1. Stop using cable, fiber, and satellite TV and instead use “Over the Air” and/or “Internet Streaming” TV services.
2. Lower the cost of watching TV.
3. Tailor channel selection to more closely align with what you really want to watch.

2

What are the “Elements” of Streaming TV

- Your television
- HDMI cable to streaming box
- Streaming box
- Network cable to connect to network switch/router
- Internet connection
- Streaming content providers



3

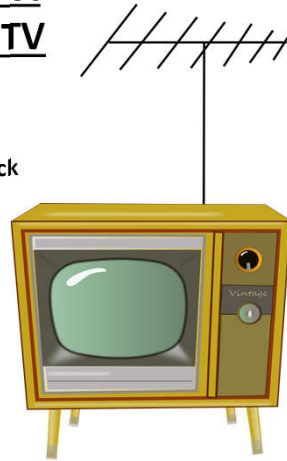
First, lets define some terms

- ... i.e, get to know the “lingo”
- ... get everybody on the same plane of understanding

4

“Back in the day” we just had Over the Air (OTA) TV

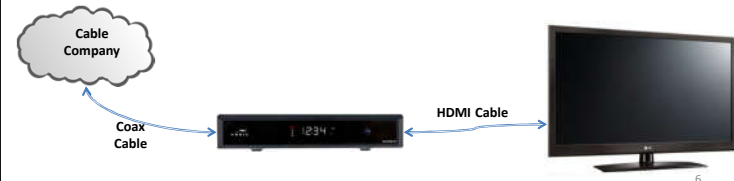
- TV set connected to indoor or outdoor antenna
 - This is how TV started out way back when...
 - No “set top box” tuner,
 - No recording of programs



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Then came... “Cable TV”

- Provided by Cable TV provider (Spectrum - Charter)
- TV signal delivered to homes via coaxial cable
- “Set-top-box” converts signal for display on TV
 - + Often includes Digital Video Recorder (DVR)
 - + Single remote controls both TV and set-top-box.



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Next came... Satellite TV

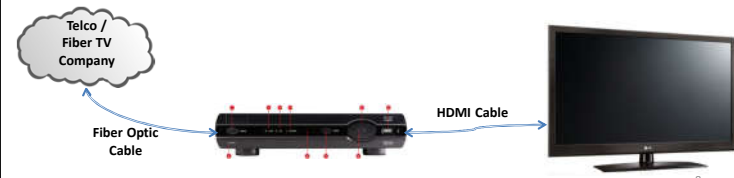
- Requires a satellite dish on or near home
- TV signal comes from a distant satellite
- Providers: DirecTV, DISH
- Set-top-box converts signal for display on TV
 - + Often includes DVR capability
 - + Single remote for both TV and set-top-box
- Satellite signal can be affected by bad weather



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Fiber Optic TV

- Similar to Cable TV
- Provided by Telco (TDS or AT&T)
- Digital TV signal delivered to homes via fiber optic cable
- “Set-top-box” converts digital signal for display on TV
 - + Often includes Digital Video Recorder (DVR)
 - + Single remote controls both TV and set-top-box.



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OTA TV Tuners with DVR

- **Examples: TIVO and Tablo**
- **Multiple Tuners (usually 2 or 4)**
- **Guide Subscription required**
 - Tivo guide: \$15/mo
 - Tablo guide: \$5/mo

Madison Area OTA Channels

3-1	WISC	1080i	27-1	WKOWABC	720p
3-2	TVW	480i	27-2	WKOW-ME	480i
3-3	DABL	480i	27-3	WKOWDEC	480i
8-1	WZCK-LD	480i	27-4	CourtTV	720p
8-2	WZCK-LD	480i	27-5	Justice	480i
8-3	WZCK-LD	480i	47-1	WMSNFOX	720p
8-4	WZCK-LD	480i	47-2	Comet	480i
8-5	WZCK-LD	480i	47-3	Charge!	480i
8-6	WZCK-LD	720p	47-4	TBD	480i
8-7	WZCK-LD	480i	57-1	IONPLUS	480i
15-1	WMTVNBC	1080i	57-2	MOVIES!	480i
15-2	WMTV-CW	720p	57-3	H&J	480i
15-3	ANT-TV	480i	57-4	STADIUM	480i
15-4	WMTV-WX	480i	57-5	QVC	480i
21-1	WHA-HD	720p	57-6	LAFF	480i
21-2	WPT2	720p	57-7	ESCAPE	480i
21-3	WPT3	480i	57-8	GRIT	480i
21-4	WPT4	480i	57-9	IONHD	720p
23-1	W23BW-D	480i			

Streaming TV

- **TV via Internet connection**
- **Requires a streaming box**
- Examples:**
 - Roku
 - Amazon Fire TV
 - Android TV
 - Apple TV
- **Some TV sets come with Roku or Android TV built into the TV set**
- **Many DVD/Blu-Ray players have streaming capability (not easy to change apps)**

Roku

- **One of the first streaming systems**
**** also most popular**
- **Apps for Tablo Tuner, YouTube TV, Sling TV, AT&T TV, Playstation Vue, Hulu, Netflix, Apple TV+, Disney+ ...**
- **Simple remote control (also smartphone apps)**

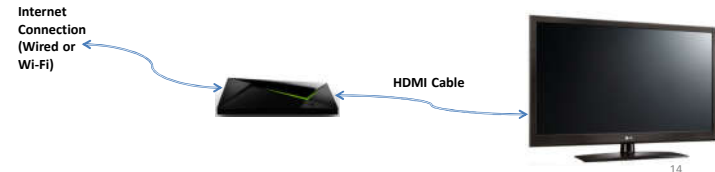
Amazon Fire TV

- Great for Amazon video
(Lots of free movies & TV shows with Amazon Prime)
- Both specialty & original content channels
- Numerous apps (Tablo Tuner, Sling TV, DirecTV Now, ~~Playstation Vue~~, Hulu, Netflix...)
- Some models support 4K Ultra High Definition TV



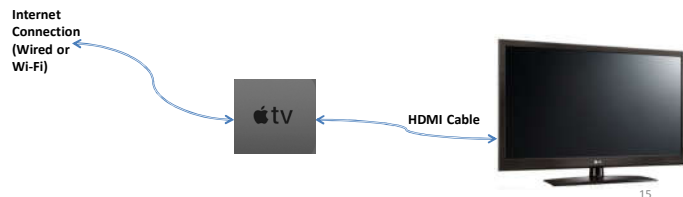
Android TV

- Many vendors/models to choose from
 - + NVIDIA Shield arguably the best Android TV box
 - + Other choices: Am. Fire TV, Xiaomi Mi Box, Leelbox T95Z
- Lots of Apps/Channels
 - + YouTube TV, Tablo OTA Tuner, Sling TV, AT&T TV Now, Hulu, Netflix, HBO Go, ~~Playstation Vue~~, ...
- Numerous video games also supported



Apple TV

- Great for people invested in the Apple ecosystem
- Lots of specialty channels
- Apps for YouTube TV, Tablo Tuner, Sling TV, AT&T TV Now, Hulu, Netflix, ~~Playstation Vue~~, ...
- Current model supports 4K Ultra High Definition TV
- Apple TV+ streaming service starting Nov 2019



Streaming Services for "Common Cable Channels"

- YouTube TV
- Philo TV
- AT&T TV Now (DirecTV derivative)
- Sling TV (Dish Network derivative)
- Also:
 - ❖ NBC on demand (Peacock)
 - ❖ ABC on demand
 - ❖ CBS all access
 - ❖ PBS
- ... and the list goes on...

Tablo OTA Tuner/DVR

- Strictly for "Over The Air" HDTV
- Shows TV programs through streaming app on most major streaming devices (Roku, Fire TV, Android TV, PC, Mac, Smartphones, Tablets, etc.)
- Can provide your home area local TV shows anywhere you have an Internet connection!



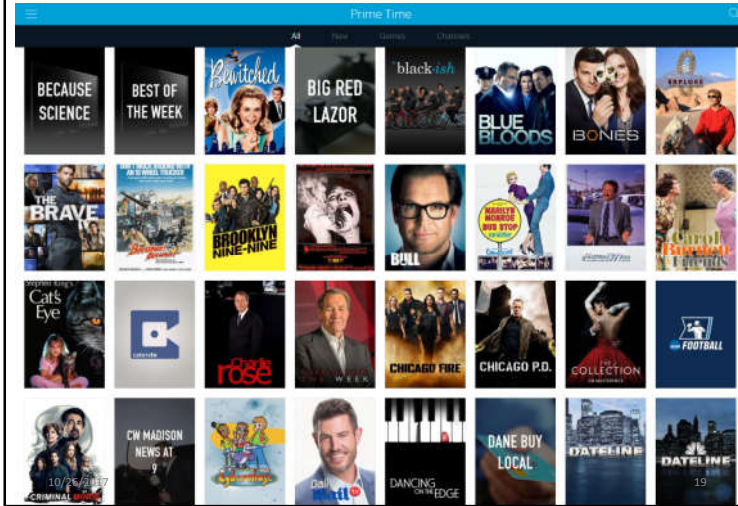
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Tablo Live Channel Guide (Example)

	9:30 PM	10:00 PM	10:30 PM	11:00 PM	11:30 PM
3-1 CBS	48 Hours NEW	News 3 at Ten	M*A*S*H	Seinfeld	The G
3-2 MNF	Blue Bloods	Rookie Blue		Murdoch Mysteries	
3-3 FOX	Law & Order: Special Victims Unit	Law & Order: Special Victims Unit		Law & Order: Special Victims Unit	
15-1 NBC	Saturday Night Live NEW	NBC 15 News at 10	Saturday Night Live NEW LIVE		
15-2 CW	MomsEveryday	Family Guy	Family Guy	Dateline	
15-3 ANTENNA	The Tonight Show		One Day at a Time	The Jeffersons	All in the F
15-4 WMTV-WX	Weather Headlines w/ Four Corners, West, Northwest	Weather Headlines w/Northeast, Southeast, Upper Midwest		Weather Headlines w/ Central, South Plains	
21-1 PBS	Jericho	Luther		30 Minute Music Hour NEW	The Lower

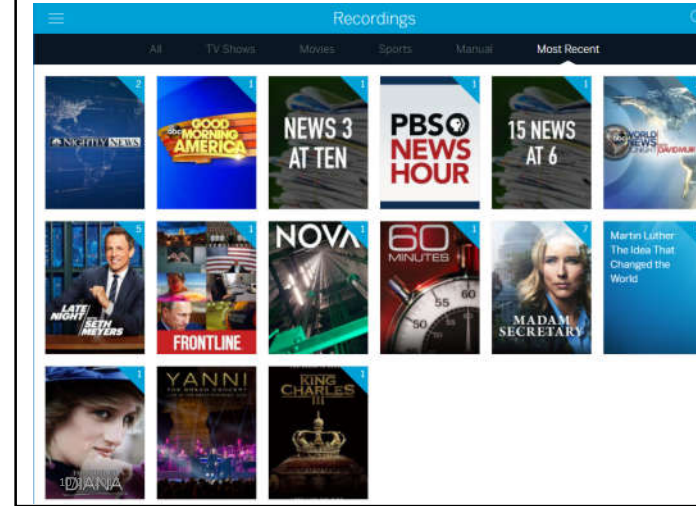
18

Tablo Prime Time Programs Guide (Example)



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Tablo Recorded Programs View (Example)



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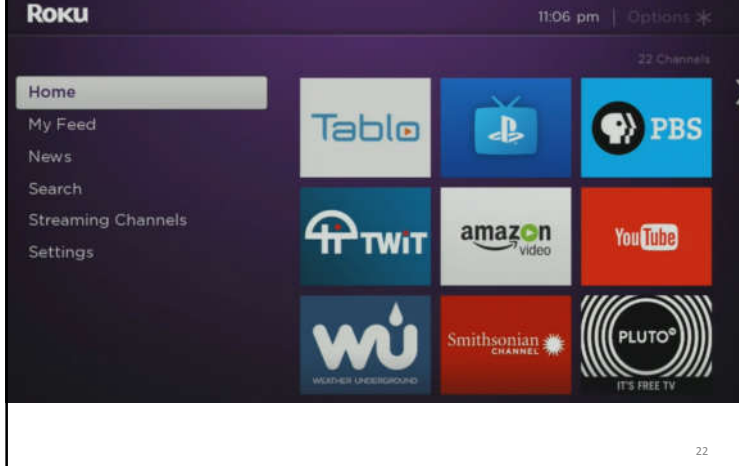
The Roku Line of Streaming Devices

- Prices range from \$25 to \$90
- Best is Roku Ultra (2019 model) -- Recommended

<p>Roku TV™</p>  <p>Feature-packed smart TV. Hundreds of models from top brands.</p>	<p>Roku Express</p>  <p>So much powerful HD streaming.</p> <p>\$25</p>	<p>Roku Express+</p>  <p>Turn your older TV into a smart TV — works with HDMI or composite.</p> <p>\$35</p>	<p>Roku® Streaming Stick®</p>  <p>Powerful & portable.</p> <p>\$30</p>
<p>Roku® Streaming Stick+®</p>  <p>Exceptional wireless performance. Brilliant picture quality.</p> <p>\$49</p>	<p>Roku Ultra</p>  <p>Our ultimate player. Powerful quad-core & our best wireless performance.</p> <p>\$90</p>	<p>Accessories</p> 	<p>Roku Premier+ HD</p>  <p>HD and 4K UHD</p> <p>\$75</p>

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Roku Streaming Player "Home" Screen



The Roku home screen displays a grid of streaming services including Tablo, PlayStation, PBS, TWIT, Amazon Video, YouTube, WU (Weather Underground), Smithsonian Channel, and Pluto. The interface includes a search bar, navigation options like Home, My Feed, News, Search, Streaming Channels, and Settings, and a top status bar showing the time (11:06 pm) and an options menu.

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Amazon Fire TV

- Heavily customized version of Android TV
- Great for Amazon Prime Video
- Thousands of apps for games & streaming TV content
- Remote has Alexa support
- Ethernet Adapter for Amazon Fire TV Devices (\$15)
- ** I don't recommend running streaming TV over Wi-Fi




Fire TV Stick
\$40



Fire TV Cube
\$120

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Amazon Fire TV Home Screen



The Amazon Fire TV home screen features a large banner for an NFL game: "EAGLES vs PANTHERS" on "THURSDAY NIGHT FOOTBALL" on "OCT 12" at "8:25PM ET". Below the banner is a grid of streaming services including PlayStation, Tablo, NBC News, Pluto, Smithsonian Channel, Netflix, Amazon Music, Prime Photos, Hulu, and Sling Television. The interface includes a search bar and navigation options like Home, Your Videos, Movies, TV Shows, Apps, and Settings.

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Leading Cable TV Alternatives as of Nov 2019

- YouTube TV
- Sling TV
- AT&T TV Now (formerly DirecTV Now)
- Philo
- Hulu with Live TV
- ~~Playstation Vue~~ (Sony shutting down PSvue)
- ... More being announced all the time

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YouTube TV Streaming “Cable Channels”

- Most usual cable channels
- Content streamed over the Internet
- No cable or satellite TV box needed
- Unlimited cloud DVR (recordings kept 9 months)
- Cable channels without:
 - Charter/Spectrum (cable)
 - AT&T U-Verse (fiber)
 - TDS TV (fiber)
 - DirecTV (satellite)
 - Dish Network (satellite)

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YouTube TV “Cable” Channels (Base price: \$53/mo incl tax)

ABC	Fox	NBCSN	Universo	
BBC America	Fox Business Network	NECN	USA Network	
BBC World News	Fox News Channel	NESN Regional	WE tv	
Big Ten Network	Fox Regional Sports Networks	Newsy	YES Network	
Bravo	Fox Sports 1	Olympic Channel	YouTube Originals	
Cartoon Network/Adult Swim	Fox Sports 2	Orlando City SC		
CBS	Freeform	Oxygen	Acorn (\$6)	
CBS Sports Network	FX	Pop	AMC Premier (\$5)	STARZ (\$9)
Cheddar	FX Movie Channel	Seattle Sounders	CuriosityStream (\$3)	STARZ Comedy
Cheddar Big News	FXN	SEC Network	Fox Soccer Plus (\$15)	STARZ Edge
CNBC	Golf Channel	Smithsonian Channel	Shudder (\$6)	STARZ ENCORE Action
CNN	HLN	SNY	Sundance Now (\$7)	STARZ ENCORE Black
COMET TV	IFC	SundanceTV	UMC (\$5)	STARZ ENCORE Classic
CW	Local Now	Syfy		STARZ ENCORE
Decades	Los Angeles Football Club	Tastemade	Showtime (\$7)	STARZ ENCORE West
Disney Channel	MLB Network	TBS	Showtime 2	STARZ ENCORE Espatol
Disney Junior	MSNBC	TCM	Showtime Beyond	STARZ ENCORE Family
Disney XD	MyNetworkTV	Telemundo	Showtime Extreme	STARZ ENCORE Suspense
E!	Nat Geo WILD	Tennis Channel	Showtime Family	STARZ ENCORE West
ESPN	National Geographic	TNT	Showtime Next	STARZ ENCORE Westerns
ESPN2	NBA TV	TruTV	Showtime Showcase	STARZ in Black
ESPNNEWS	NBC	TYT	Showtime West	STARZ Kids & Family
ESPNU	NBC Regional Sports	Universal Kids	Showtime Women	STARZ West

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Sling TV Streaming “Cable Channels”

- Most cable channels, streamed over the Internet
- Lower priced starting point
- Lots of add-on ala-carte personalization options
- Limited DVR
 - 50 hours/mo
 - Numerous channels excluded
- **Sling Orange** (\$25/mo – single stream – 30 channels)
- **Sling Blue** (\$25/mo – up to 3 streams – 45 channels)
- **Sling Orange + Blue** (\$40/mo, 3 streams, 50 channels)
- And then there’s the added cost Sling extras...

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AT&T TV Now

- Formerly DirecTV Now
- Usual cable channels, streamed over the Internet
- Lots of add-on personalization/ala-carte options (so many it makes your head spin)
- Confusing pricing
- Complaints about streaming quality (pauses)

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Other Streaming TV Services - 2019

- Netflix Standard (\$12.99/mo)
- Hulu w/ Live TV (\$44.99/mo)
- Disney+ (\$6.99/mo)
- Apple TV+ (\$4.99/mo)
- DC Universe (\$7.99/mo)
- HBO Max (\$15/mo)
- YouTube Premium (\$11.99/mo)
- CBS All Access (\$9.99/mo)
- NBC Peacock (coming April 2020)

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Example Financial Analysis -TDS TV vs OTA & Streaming TV

One Time Equipment Cost	
Tablo OTA DVR	\$200
HD Indoor Antenna	\$25
External Disk for OTA DVR	\$120
Roku Ultra Media Player	\$90
Misc Cables	\$50
Total One Time:	\$485
Streaming & OTA DVR Monthly Service	
YouTube TV	55.00
Tablo Guide	5.00
Total Monthly	60.00
TDS TV Monthly Service	110.00
Monthly Savings:	50.00
Months to break even:	10

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Questions & Discussion

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