TiVo Product Support Handbook

for MSOs

v9.0

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About This Document

The *TiVo Product Support Handbook for MSOs* is an all-purpose reference providing detailed information about all TiVo devices and associated features that are delivered and supported by CableCo.

CableCo is the generic name used to represent any domestic Multi-System Operator (MSO).

This document addresses a wide variety of TiVo products, all of which can be networked to provide the Whole Home solution. The Whole Home solution allows you to enjoy MSO content from anywhere in the home. With the new TiVo Web Portal, you can also enjoy a MSO TiVo experience via a web browser.

Audience for this document

The audience for the *TiVo Product Support Handbook for MSOs* is:

- MSO and TiVo Technical Support (Tiers 1, 2, and 3 personnel)
- Network Operations Center (NOC) or System Operations Center (SOC) Tier 4
- Trainers and instructional designers who are developing training
- Installers (both those doing provisioning and field installers)

How to use this document

Depending on the offerings of specific MSOs, applications and features might be offered to the subscriber that differ from those described below:

- Basic DVR features—Controls Live TV or recorded shows with pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.

  See *TiVo Remote Control* on page 93.

- Advanced DVR features—Includes unified search, browse, Guide displays, as well as authored collections and broadband content.

  See *UI Walkthrough* on page 105.

- Discovery Bar—A graphic lineup of content that appears across the top of the HD menus. This display gives helpful recommendations for movies and TV shows that are similar to ones you already enjoy, as well as titles that are currently popular in the TiVo community.

  See *Discovery Bar* on page 112.

- TiVo Suggestions—Builds a history of your favorite channels and shows. Providing personal ratings feedback is as simple as pressing **Thumbs Up** and **Thumbs Down** with the TiVo remote control. By tracking your preferences, TiVo learns your likes and dislikes over time and provides increasingly on-the-mark programming suggestions.

  See *TiVo Suggestions* on page 122.

- OnePass—Finds and organizes content from all providers, such as linear TV, CableCo VOD, and over-the-top applications, into My Shows and allows you to watch your favorite shows in a unified experience across devices. In addition to automatically recording each episode of your favorite TV series, you can find and consume streaming videos from CableCo VOD and over-the-top applications (such as Amazon and Vudu) all directly from the My Shows list.

  Note: OnePass replaces the Season Pass feature, and existing Season Passes are now "Recordings Only" OnePasses.

  See *Recording a TV series (OnePass)* on page 126.

- Search and Browse—Browses recommendations based on personal ratings, WishList Searches, and authored CableCo collections.

  See *Search and Browse* on page 145.

- Keyword search—Searches broadcast TV, VOD, and the Internet for millions of titles to help you find exactly what you want to watch.

  See *To perform a keyword search* on page 146.

- TiVo Collections—Highlights the best that the CableCo content library and the web have to offer, grouped into categories. Explores topical collections, event-driven collections, seasonal collections, and groups of shows related to something new, interesting, or popular.

  See *Collections browsing* on page 148.

- WishList Search—Searches for an actor, keyword, or category to find more shows from your content library. By default, the DVR will record a program matching your criteria as soon as it airs.

  See *WishList Searches* on page 150.

- Parental Controls—Locks channels and sets rating limits on movies, television shows, and Video on Demand (VOD) content to make sure that only approved content is watched or recorded.

  See *Parental Controls* on page 155.

- Video on Demand—Accesses the CableCo VOD catalog as well as the standard TiVo VOD assets from the third-party content providers (such as Netflix, Vudu, and so on) that CableCo chooses to make available.

  See *Video on Demand* on page 165.

- Impulse Pay Per View—Accesses a broad range of programming that is available as iPPV, including movies and other entertainment.

  See *Impulse Pay Per View* on page 177.

- MoCA—Multimedia over Coax Alliance support with its Ethernet to Coax Bridge (ECB) allows the TiVo DVR to act as a MoCA-Ethernet bridge to use the MoCA network with other non-MoCA devices, such as a cable modem/router.

  See *MoCA* on page 83.

- Streaming—When more than one TiVo device is connected to the Whole Home network through broadband or MoCA, you can stream or transfer non-copy-protected HD shows between them. Enjoy your favorite HD shows in up to four rooms at a time from a single TiVo T6 DVR.

  See *Multi-Room Features* on page 189.

- Music—You no longer need to access your computer's personal music library through the computer's speakers or headphones. With TiVo Desktop Plus, you can stream the tunes you love the most to a TV or home entertainment system. You can also create your own radio stations based on a favorite song or artist with built-in services such as iHeartRadio and Pandora. (Additional fees might apply from third-party content providers.)

  See *Music & Photos* on page 139.

- Photos—View your photos and home videos on the big screen and display your personal photo library and home videos from your computer on the biggest screen in the house. With TiVo Desktop Plus, you can view and manage your personal media. You can also publish photos to an online Plex account and view them from your TV.

  See *Music & Photos* on page 139.

- TiVo App for Apple iOS or Android—Automatically discovers your MSO-branded TiVo device and brings the best of what TiVo and CableCo have to offer on a second mobile screen. You can explore your On Demand and TV content, view guides, schedule and manage recordings, get recommendations, or investigate a particular actor's entire résumé (all without interrupting your program).

  See *TiVo App* on page 229.

- Mobile devices—Use TiVo Desktop Plus to transfer your DVR recordings and load them onto Apple iOS or Android devices.

  See *TiVo Desktop Plus for PC* on page 263.

- TiVo Web Portal—Delivers a MSO-branded TiVo experience via a web browser.

  See *TiVo Web Portal* on page 275.

- Account management—Gives you access from the web or from a mobile device, and lets you search for shows, browse air times and channels, and schedule recordings online.

  See *Managing My Account* on page 311.

- Diagnostics—Provides a set of diagnostic tools, tips, and information to help you diagnose problems with a TiVo device.

  See *Diagnostics* on page 325.

- Troubleshooting—Describes some of the tools that are available for troubleshooting issues with TiVo devices, and provides information on resolving issues.

  See *Troubleshooting* on page 349.

Additional resources

- *TiVo Warehouse Staging Guide for MSOs*
- *TiVo Onsite Installation Guide for MSOs*
- *API User Guide for TiVo Services*
- Support articles on the TiVo Support website

TiVo Hardware

TiVo T6 DVR

The TiVo T6 DVR is designed to play high-definition (HD) content locally and to simultaneously stream content to up to four other TiVo devices. It is a key component of the TiVo Whole Home solution. The TiVo T6 DVR does *not* support WiFi.

This chapter covers the following topics:

- *Device features* on page 23
- *Device specifications* on page 24
- *Front panel* on page 25
- *Back panel* on page 26
- *Accessories* on page 27

For complete instructions on installing the TiVo T6 DVR, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Has six tuners that allow recording up to six shows at once. The CableCARD installed in the DVR must support six tuners. If CableCo requires a tuning adapter for the DVR to receive all channels in a subscriber's package, the tuning adapter must also support six tuners.
- Supports a total of four streams to other TiVo devices (which includes Multi-Room Viewing configurations), or mobile devices. For example, if there are two mobile devices and two TiVo Minis streaming content from the DVR, and a fifth stream on either a mobile device or the DVR is initiated, this fifth stream is not supported.
- Connects subscribers to the CableCo headend and serves as the cable box.
- Records favorite shows and helps subscribers find new ones with the TiVo HD interface.
- Lets subscribers search through TV and web content simultaneously, and provides suggestions based on their viewing preferences.
- Provides access to CableCo Video on Demand (VOD) content, including movies, TV shows, YouTube videos, and more.
- Lets subscribers schedule recordings remotely and play them on a laptop or mobile device.
- Streams music and photos from any home network and the web.
- Controls Live TV with pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.
- Includes 1 TB (1000 GB) of internal storage, allowing subscribers to record up to 150 hours of HD or 1,000 hours of standard-definition (SD) programming.
- Provides full HD support, including 720p, 1080i, and 1080p HD formats.

Device specifications

Device specifications

Table 2–1 provides detailed specifications and environmental requirements for the TiVo T6 DVR.

Table 2–1: TiVo T6 DVR specifications and environmental requirements

Specification	Details
Physical dimensions	• Width: 16.5" • Depth: 9.7" • Height: 2.4"
Weight	6.5 lbs.
Processor	3000+ Dhrystone MIPS processor
Tuners	Includes four 1GHz QAM tuners to access both linear and on demand content. Supports the use of a Switched Digital Video (SDV) tuning adapter to access SDV content.
Internal storage	1 TB HDD
DRAM	1 GB
Capacity	• 150 hrs HD video, or • 1,000 hrs SD video Also supports the DVR expander, if support is included in the MSO agreement with TiVo. TiVo Service has the ability to turn support for the DVR expander on and off.
System-on-Chip (SoC)	BCM 7241
Video output	• HDMI 1.4b (combined audio/video) (1) • Component RCA (1) • Composite A/V (1)
Video modes	480i, 480p, 720p, 1080i, and 1080p
Audio output	• HDMI (combined audio/video) (1) • Optical audio (1) • Stereo L/R RCA (1 pair) • THX-certified
Transcoder	4xTranscoder ZN200
Remote control support	• RF: RF4CE • IR: Front panel receiver

Table 2–1: TiVo T6 DVR specifications and environmental requirements (continued)

Specification	Details
I/O ports	• USB 2.0 (2) • Ethernet 10/100/1000 Mbps (1) • eSATA (1)—for a TiVo-verified external hard drive • MoCA 2.0 (1)
MoCA LAN interface	• Version 2.0 • Integrated Ethernet to Coax Bridge (ECB)
Ambient (external) operating temperature	15° C to 35° C
Operating humidity	5% to 80%

Front panel

This section details the location of the LEDs and buttons on the front panel of the TiVo T6 DVR.

Number	LED/button	Details
1	Green LED	Power LED. Lit when power is on.
2	Capacitive (touch) button in center of the green Power LED	Press the button in the center of the LED to initiate and exit Standby mode.
3	Amber LED	Flashes when receiving a command from a TiVo remote control.
4	Capacitive (touch) button in center of the amber LED	The button within the amber LED is used for finding the TiVo remote control. When pressed, the DVR signals the remote control to chime, making it easier to locate it. The sound turns off after fifteen seconds, or when any button on the TiVo remote control is pressed.

Number	LED/button	Details
5	Blue LED	Lit while a download or transfer is in progress.
6	Red LEDs	Six circles are shown; each represents a tuner. Six red LEDs indicate up to six tuners recording. Red indicators build up symmetrically from the left to the right as the number of recordings increases. A particular LED is not always mapped to the same tuner.

Back panel

This section details the location of the items on the back panel of the TiVo T6 DVR.
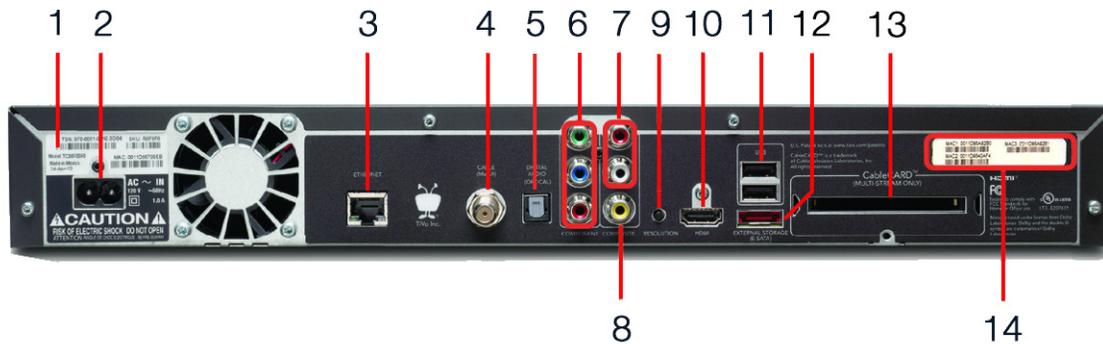
Number	Item
1	TiVo Service Number (TSN)
2	Power connector: 110V AC
3	Ethernet 10/100/1000 Base-T
4	Digital Cable/MoCA coaxial input (QAM) jack
5	Optical digital audio output
6	Component RCA output (green)
7	Analog audio output (red, white)
8	Composite A/V output (yellow)
9	Resolution button—If the screen is black and the TiVo menus are inaccessible, press the button to change the video output format. The available formats are: 480i / 480p / 720p / 1080i / 1080p / 1080p24 / 1080p60 passthrough.
10	HDMI 1.4b output
11	USB 2.0 (two ports)
12	eSATA port for the DVR expander

Number	Item
13	CableCARD (M-Card) slot
14	MAC Address Label, containing: • Ethernet/MoCA interface • Built-in transcoder (TiVo Stream) **Note:** If the subscriber's router is using MAC address filtering, the MSO must add both TiVo T6 DVR MAC addresses to the MAC address filter to control access.

Accessories

- TiVo remote control (RF-enabled and IR-enabled)
- DVR expander, if support is included in the MSO agreement with TiVo
- Switched Digital Video (SDV) tuning adapter (for SDV applications)
- Multi-stream CableCARD (M-Card)

TiVo Roamio DVR

<div style="text-align: right">**3**</div>

The TiVo Roamio DVR combines all your over-the-air and cable channels with endless streaming content from Netflix, Amazon, Hulu, and more.

This chapter covers the following topics:

- *Device features* on page 29
- *Device specifications* on page 29
- *Front panel* on page 31
- *Back panel* on page 32
- *Accessories* on page 32

For complete instructions on installing the TiVo Roamio DVR, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Built-in WiFi.
- Works with digital cable or HD antenna.
- Has four tuners that allow recording up to four shows at once.
- Records favorite shows and helps subscribers find new ones with the TiVo HD interface.
- Lets subscribers search through TV and web content simultaneously, and provides suggestions based on their viewing preferences.
- Streams music and photos from any home network and the web.
- Controls Live TV with pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.
- Includes 500 GB of internal storage, allowing subscribers to record up to 75 hours of HD or 500 hours of standard-definition (SD) programming.
- Provides full HD support, including 720p, 1080i, and 1080p HD formats.

Device specifications

Table 3–2 provides detailed specifications and environmental requirements for the TiVo Roamio DVR.

Table 3–2: TiVo Roamio DVR specifications and environmental requirements

Specification	Details
Physical dimensions	• Width: 14.2" • Depth: 7.4" • Height: 1.9"
Weight	3.7 lbs.
Processor	3000+ Dhrystone MIPS processor
Tuners	Includes four 9VSB (ATSC) tuners
Internal storage	500 GB HDD
DRAM	1 GB
Capacity	• 75 hrs HD video, or • 500 hrs SD video Also supports the DVR expander, if support is included in the MSO agreement with TiVo. TiVo Service has the ability to turn support for the DVR expander on and off.
System-on-Chip (SoC)	BCM 7241
Video output	• HDMI 1.4b (combined audio/video) (1) • Composite A/V (1)
Video modes	480i, 480p, 720p, 1080i, and 1080p
Audio output	• HDMI (combined audio/video) (1) • Optical audio (1) • Composite A/V (1)
Remote control support	• RF: RF4CE • IR: Front panel receiver
I/O ports	• USB 2.0 (2) • Ethernet 10/100 Mbps (1) • eSATA (1)—for a TiVo-verified external hard drive
Integrated networking	Built-in WiFi
Ambient (external) operating temperature	15° C to 35° C
Operating humidity	5% to 80%

Front panel

This section details the location of the LEDs on the front panel of the TiVo Roamio DVR.

Number	LED	Details
1	Green LED	Power LED. Lit when power is on.
2	Amber LED	Flashes when receiving a command from a TiVo remote control.
3	Blue LED	Lit while a download or transfer is in progress.
4	Red LEDs	Four circles are shown; each represents a tuner. Four red LEDs indicate up to four tuners recording. Red indicators build up symmetrically from the left to the right as the number of recordings increases. A particular LED is not always mapped to the same tuner.

Back panel

This section details the location of the items on the back panel of the TiVo Roamio DVR.

(Underside of TiVo Roamio)
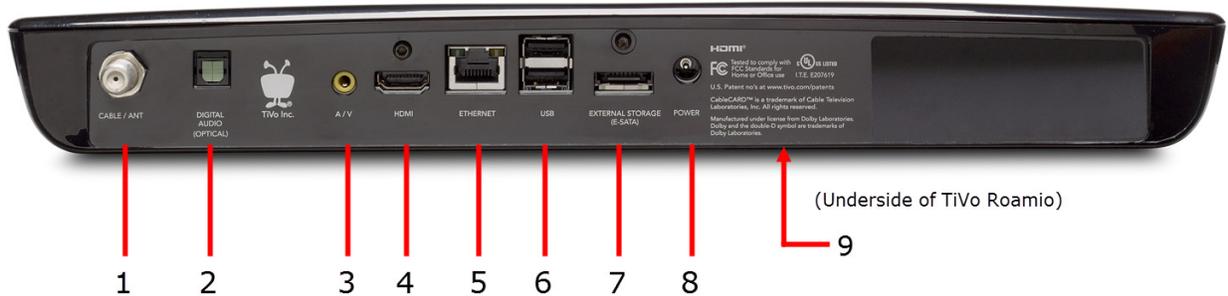
Number	Item
1	Cable/antenna coaxial input
2	Optical digital audio output
3	Composite A/V output (yellow)
4	HDMI 1.4b output
5	Ethernet 10/100 Mbps
6	USB 2.0 (two ports)
7	eSATA port for the DVR expander
8	Power connector: 12V DC
9	CableCARD (M-Card) slot

Accessories

- TiVo remote control (RF-enabled and IR-enabled)
- DVR expander, if support is included in the MSO agreement with TiVo

TiVo-Pace MG1 DVR

<div style="text-align: right">**4**</div>

The TiVo-Pace MG1 DVR is a hardware platform developed by Pace PLC. TiVo partnered with Pace to provide the TiVo DVR software on the Pace MG1 platform. The TiVo-Pace MG1 DVR runs standard TiVo set-top box software.

The TiVo-Pace MG1 DVR enables MSOs to support new services and entertainment offerings by creating a hardware platform that can run various software suites.

This chapter covers the following topics:

For complete instructions on installing the TiVo-Pace MG1 DVR, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Has six tuners that allow recording up to six shows at once.
- Is a versatile whole-home hybrid QAM (Digital Cable)/IP device capable of supporting local video decoding and multiple connected IP clients. Content sharing and home networking are supported by Ethernet and MoCA 2.0 interfaces. A removable hard disk drive is supported for content storage.
- Incorporates a 3000+ Dhrystone MIPS processor supported by 256 MB of flash memory and 1 GB of SDRAM. A CableCARD conditional access system provides decryption of up to six QAM streams.
- Also includes a removable, replaceable hard disk drive that can be sized from 500 GB to 2 TB to suit MSO needs. In addition, an eSATA port provides for network hard disk drive expansion.
- Stream and sideload copy-freely television content to your Apple iOS mobile device.
- Works with TiVo Stream, TiVo Mini, and TiVo-Pace Mi3.

Device specifications

This section lists the following specifications for the TiVo-Pace MG1 DVR:

Hardware specifications

Specification	Details
Physical dimensions	• Width: 13.3" • Depth: 9.9" • Height: 2.7"
Weight	6.4 lbs.
Processor	• 3000+ Dhrystone MIPS processor • BRCM 7425 Dual Core SOC
Memory	1 GB DRAM
Tuners	6 x SCTE (0-1GHz)
Tuner video decode	MPEG-2 and MPEG-4 over QAM
Internal storage	• 500 GB HDD • 5400 RPM • 8 MB cache
Capacity	75 hrs HD (MPEG-2, 18 Mbps)
External storage	eSATA port
Power supply	12V DC out, 3A, Center, Positive Polarity
Out–of-band tuning	SCTE 55-1/2
CableCARD	Multi-Stream host 2.0 interface (M-Card)
Conditional access	CableCARD and DVB-CA
Remote control support	• RF: RF4CE • IR: Front panel receiver
RF interfaces	• 1 x Full Band Capture tuner with 1 GHz support • 1 x OOB Agile tuner • 1 x RF return, 5-85MHz QAM, QPSK modulator • 1 x RF out Ch. 3/4 remod (not enabled) • 1 x MoCA 2.0 transceiver
F-connector (Cable In)	SCTE Input + MoCA 2.0
USB 2.0 ports	• 2 each • 2.5W each (maximum)

Networking specifications

Specification	Details
DOCSIS WAN interface	• DOCSIS 3.0 cable modem • 8 downstream bonded channels • 4 upstream bonded channels
Ethernet LAN interface	• 10/100 Ethernet • RJ-45 connector
MoCA LAN interface	• Version 2.0 • Integrated Ethernet to Coax Bridge (ECB)

Video and audio I/O specifications

Specification	Details
HDMI	• Version: 1.4A • Input: 2 ports (not enabled) • Output: 1 port
HDMI audio output	• PCM • Dolby Digital (AC3) • Dolby Digital Plus
Video output	• Component RCA (1)omposite A/V (1) • RF video output (not enabled) • S-video output
Video modes	Video decode up to 1080p60
Optical digital audio output	• PCM • Dolby Digital (AC3) • Dolby Digital Plus
Audio D/A converter	• 96 kHz • 24-bit
Audio decode	• MP3 • MPEG-1 layer 2 • Dolby Digital (AC3)
Audio analog output	Analog stereo output
Transcoder	Broadcom 7425 SoC

Front panel

This section details the location of the LEDs on the front panel of the TiVo-Pace MG1 DVR.
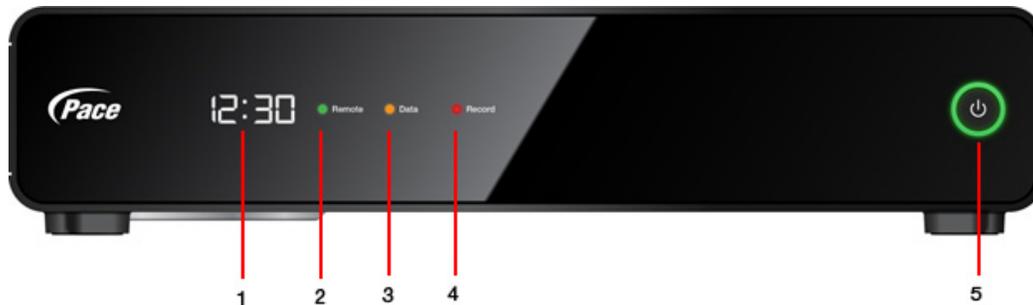
Number	LED	Details
1	Panel display	A seven-segment display, including an LED clock.
2	Remote LED	Displays green for remote control activity.
3	Data LED	Displays amber when downloads or transfers are taking place.
4	Record LED	Displays red when a recording is being made.
5	Power LED	Green = Power On. **Note:** The physical Power button currently has no functionality.

Back panel

This section details the location of the items on the back panel of the TiVo-Pace MG1 DVR.
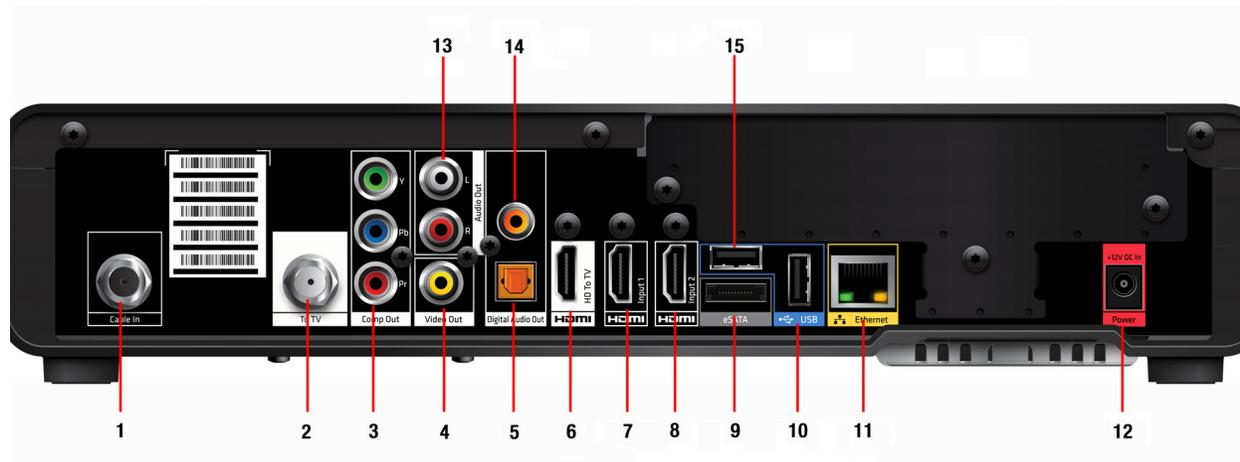
Number	Item	Number	Item
1	Digital Cable/MoCA coaxial Input (QAM) jack	9	eSATA port (external HDD support)
2	To TV	10	USB 2.0 port
3	Component RCA output (green)	11	10/100 Ethernet
4	Composite A/V output (yellow)	12	Power connector: 12V DC input
5	Optical digital audio output	13	Analog audio output (red, white)
6	HDMI 1.4: HD To TV	14	Coaxial Digital audio output
7	HDMI 1.4: input 1 (not enabled)	15	USB 2.0 port
8	HDMI 1.4: input 2 (not enabled)		

TiVo Premiere Q DVR

The TiVo Premiere Q DVR is designed to play high-definition (HD) content locally and to simultaneously stream content to up to three other TiVo devices. It is a key component of the TiVo Whole Home solution.

This chapter covers the following topics:

For complete instructions on installing the TiVo Premiere Q DVR, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Has four tuners that allow recording up to four shows at once.
- Provides multi-room support with three HD streams plus local viewing.
- Connects subscribers to the CableCo headend and serves as the cable box.
- Streams music and photos from any home network and the web.
- Records favorite shows and helps subscribers find new ones with the TiVo HD interface.
- Provides access to CableCo Video on Demand (VOD) content, including movies, TV shows, YouTube videos, and more.
- Lets subscribers schedule recordings remotely and play them on a laptop or mobile device.
- Controls Live TV with pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.
- Records up to 150 hours of HD or 1,000 hours of standard-definition (SD) programming.
- Provides full HD support, including 720p, 1080i, and 1080p HD formats.

Device specifications

Table 5–1 provides detailed specifications and environmental requirements for the TiVo Premiere Q DVR.

Device specifications

Table 5–1: TiVo Premiere Q DVR specifications and environmental requirements

Specification	Details
Physical dimensions	• Width: 16.5" • Depth: 9.7" • Height: 2.4"
Weight	6.8 lbs.
Processor	BRCM 7413 400MHz Dual Core
Tuners	Includes four 1GHz QAM tuners to access both linear and on demand content. **Note:** The TiVo Premiere Q DVR does not support analog tuning. Supports the use of a Switched Digital Video (SDV) tuning adapter to access SDV content.
Internal storage	1 TB HDD
Capacity	• 150 hrs HD video, or • 1,000 hrs SD video Also supports the DVR expander, if support is included in the MSO agreement with TiVo. TiVo Service has the ability to turn support for the DVR expander on and off.
Video output	• HDMI 1.3 (combined audio/video) (1) • Component RCA (1) • Composite A/V (1) • Optical and analog audio
Video modes	480i, 480p, 720p, 1080i, and 1080p
Audio output	• HDMI (combined audio/video) (1) • Digital Audio (OpticalS/PDIF TOSLINK) (1) • Stereo L/R RCA (1 pair)
RF input	Cable/MoCA (1)
I/O ports	• USB 2.0 (2) • Ethernet 10/100 Base-T (1) • eSATA (1)—for a TiVo-verified external hard drive • MoCA (1)

Table 5–1: TiVo Premiere Q DVR specifications and environmental requirements (continued)

Specification	Details
MoCA LAN interface	• Version 2.0 • Integrated Ethernet to Coax Bridge (ECB)
Power supply	120V AC, 60Hz, 1.0A
Ambient (external) operating temperature	15° C to 35° C
Operating humidity	5% to 80%

Front panel

This section details the location of the LEDs on the front panel of the TiVo Premiere Q DVR.
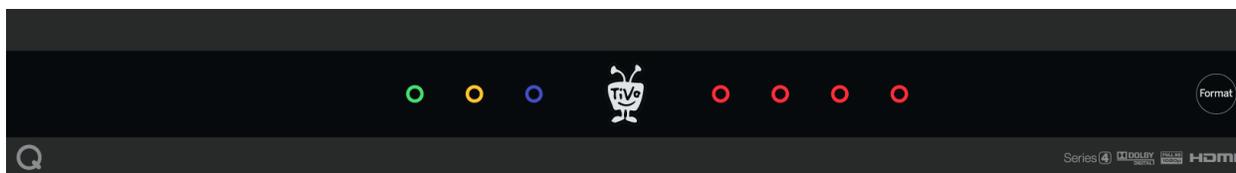
LED	Details
Green LED	Lit when power is on.
Amber LED	Flashes when receiving a command from a TiVo remote control.
Blue LED	Lit while a download or transfer is in progress.
Red LEDs	Lit while a recording is in progress. Each LED represents one tuner.
Format button	If the screen is black and the TiVo menus are inaccessible, press the button to change the video output format. The available formats are: 480i / 480p / 720p / 1080i / 1080p.

Back panel

This section details the location of the items on the back panel of the TiVo Premiere Q DVR.
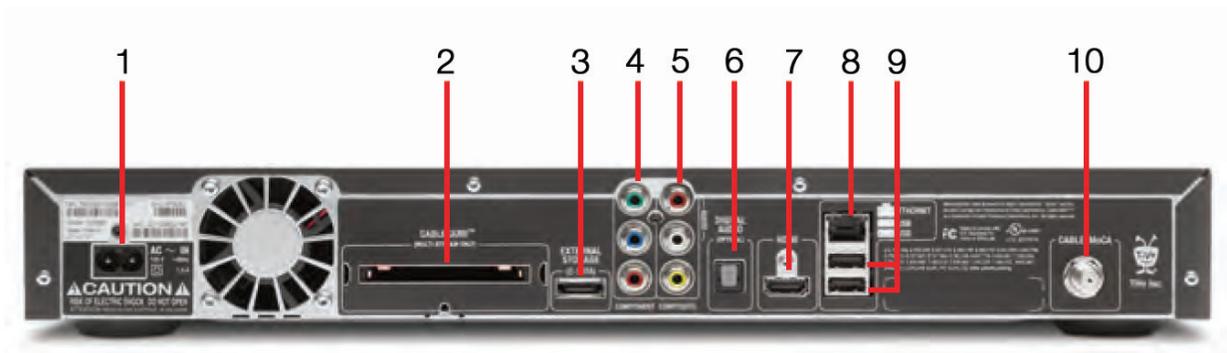
Number	Item	Number	Item
1	Power connector: 110V AC	6	Optical digital audio output
2	CableCARD (M-Card) slot	7	HDMI port
3	External storage (eSATA)	8	10/100/1000 Mbps Ethernet
4	Component RCA output (green)	9	USB 2.0 (two ports)
5	Composite A/V output (yellow)	10	Digital Cable/MoCA coaxial input (QAM) jack

Accessories

- TiVo Wireless N network adapter (not supported for Multi-Room Streaming and Live TV Streaming)
- TiVo Wireless G network adapter (not supported for Multi-Room Streaming and Live TV Streaming)
- DVR expander, if support is included in the MSO agreement with TiVo
- Switched Digital Video (SDV) tuning adapter (for SDV applications)
- Multi-stream CableCARD (M-Card)

Note: Only Ethernet and MoCA connections are supported for Multi-Room Streaming and Live TV Streaming.

TiVo Preview

6

TiVo Preview is a single-tuner, high-definition (HD) set-top box designed to stream content from a TiVo DVR and to support the CableCARD (M-Card) conditional access system. It is intended to be used as a stand-alone device with no recording capabilities, or as a low-cost client device in a multi-room DVR household. It is a key component of the TiVo Whole Home solution.

TiVo Preview is *not* a DVR. There is no hard drive for recording TV or downloading content, nor does it provide a buffer for TrickPlay in Live TV. However, the subscriber can use TrickPlay when streaming content from a host DVR because the content is buffered on the hard drive of the host DVR.

This chapter covers the following topics:

For complete instructions on installing TiVo Preview, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Allows for local viewing of Live TV, and can also be used as a client in a DVR household where it can view streamed content from a host DVR via Multi-Room Streaming functionality.
- Has full access to TiVo broadband services, including Video on Demand (VOD), music, photos, and games via broadband.
- Connects subscribers to the CableCo headend and serves as the cable box.
- Provides access to CableCo Video on Demand (VOD) content, including movies, TV shows, YouTube videos, and more.
- Controls recorded programs streamed from a TiVo DVR using full TrickPlay functionality: pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.
- Provides full HD support, including 720p, 1080i, and 1080p HD formats.

Device specifications

provides detailed specifications and environmental requirements for TiVo Preview.

Table 6–1: TiVo Preview specifications and environmental requirements

Specification	Details
Physical dimensions	• Width: 11" • Depth: 6.25" • Height: 1.80"
Weight	1.55 lbs.
Tuner	Includes a 1 GHz Digital QAM tuner to access both linear and on demand content. Supports the use of a Switched Digital Video (SDV) tuning adapter to access SDV content.
Capacity	Leverages the internal and external storage capacity of the host DVR in a multi-room environment.
Video output	• HDMI (combined audio/video) (1) • Component RCA (1) • Composite A/V (1)
Video input	• Digital cable input • M-Card slot
Video modes	480i, 480p, 720p, 1080i, 1080p
Audio output	• HDMI • Stereo L/R RCA
RF input	Digital cable/MoCA coaxial input (QAM)
I/O ports	• USB 2.0 (2) • Ethernet 10/100 Base-T • MoCA (1)
Power supply	120V AC, 60Hz, 600mA
Ambient (external) operating temperature	15° C to 35° C
Operating humidity	5% to 80%

Front panel

This section details the front panel of TiVo Preview.

LED

LED Indicator

- When the LED is green, the power is on.
- When the LED is flashing amber, a command is being received from a TiVo remote control.

Back panel

This section details the location of the items on the back panel of TiVo Preview.
.
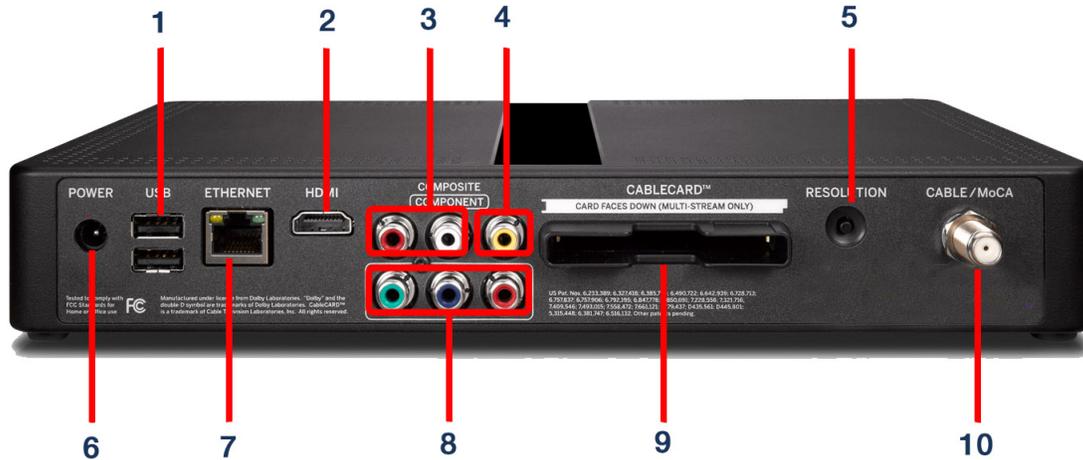
Number	Item	Details
1	USB	Two external USB 2.0 ports for TiVo wireless network and Bluetooth adapters.
2	HDMI port	Connects to a TV, A/V receiver, or home theater system. HDMI provides a pure digital connection for HD video and digital audio in one cable.
3	Composite ports	Analog audio output (red, white).
4		Composite A/V output (yellow).
5	Resolution button	If the screen is black and the TiVo menus are inaccessible, press the button to change the video output format. The available formats are: 480i / 480p / 720p / 1080i / 1080p.
6	Power connector (12V DC)	Connects to A/C power.
7	Ethernet 10/100 Base-T jack	Connects TiVo Preview to your home network by using an Ethernet cable.
8	Component ports	Component (RGB) video output.
9	CableCARD (M-Card) slot	Supports a single M-Card CableCARD; S-Cards are not supported.
10	Digital Cable/MoCA coaxial input (QAM) jack	In a MoCA home network, connects TiVo Preview to your home network. Connect the coaxial RF cable coming from the wall to this jack.

Accessories

- TiVo Wireless N network adapter (not supported for Multi-Room Streaming)
- TiVo Wireless G network adapter (not supported for Multi-Room Streaming)
- Switched Digital Video (SDV) tuning adapter (for SDV applications)
- Multi-stream CableCARD (M-Card)

Note: Approved eSATA hard drive extensions are supported in a multi-room environment through a host DVR.

Comparison of the TiVo DVR and TiVo Preview

Table 6–2 indicates which TiVo features are available on a TiVo DVR and which are available on TiVo Preview.

Table 6–2: DVR/TiVo Preview feature comparison

Feature	TiVo DVR	TiVo Preview	Feature	TiVo DVR	TiVo Preview
HDUI	Yes	Yes	Streams from third-party VOD services such as Netflix, Vudu, and so on.	Yes	No
Digital Live TV	Yes	Yes	IPVOD and Flash applications	Yes	Yes
Analog Live TV	Yes	No	MoCA support	Yes	Yes
Record TV	Yes	No	Multi-Room Viewing (transferring shows)	Yes	No
Program Guide Data (PGD)	Yes	Yes	Multi-Room Streaming	Yes	Yes
Discovery Bar	Yes	Yes	Manage DVR recordings	Yes	No
Browse	Yes	Yes	Access through Tivo.com	Yes	Yes
Stream CableCo VOD	Yes	Yes			

Comparison of TiVo Preview stand-alone versus multi-room

Some functionality is only accessible by TiVo Preview if it is connected to a host DVR in a multi-room environment (Whole Home solution). Table 6–3 highlights the differences between stand-alone and multi-room functionalities for a TiVo Preview.

Table 6–3: Tivo Preview: multi-room (DVR connected) vs. stand-alone functions

Feature	Available multi-room	Available stand-alone
TiVo Central	Yes	Yes
TrickPlay	Yes	No
My Shows	Yes	DirectssubscribertoVOD
Manage Recordings	No	No
Music & Photos	Yes	Yes
Digital Live TV	Yes	Yes
Recorded TV	Yes	No
Multi-Room Streaming	Yes	No
CableCo VOD	Yes	Yes
Third-party services	Yes	Yes

Note: The search and browse function automatically adjusts for the new content sources, and displays additional results when TiVo Preview accesses a host DVR.

TiVo-Evolution Digital IP Hybrid STB **7**

The TiVo-Evolution Digital IP Hybrid set-top box is a hardware platform developed by Evolution Digital, LLC. TiVo partnered with Evolution to provide the software on the IP Hybrid set-top box.

The TiVo-Evolution IP Hybrid set-top box is a multi-mode, single tuner, non-CableCARD-based TiVo high-definition (HD) set-top box that runs standard TiVo software. It is intended to be used as a stand-alone device with no recording capabilities, or as a low-cost client device in a multi-room DVR household. It is a component of the TiVo Whole Home solution.

The TiVo-Evolution IP Hybrid set-top box is *not* a DVR. There is no hard drive for recording TV or downloading content, nor does it provide a buffer for TrickPlay in Live TV. It is similar to TiVo Preview with no CableCARD, but with CAL conditional access instead. It consumes linear TV over a built-in QAM tuner. The TiVo-Evolution IP Hybrid set-top box can be used with 4:3-aspect-ratio TVs by using a scaled-down version of the HDUI.

This chapter covers the following topics:

- *Device features* on page 49
- *Device specifications* on page 50
- *Front panel* on page 51
- *Back panel* on page 52

For complete instructions on installing the TiVo-Evolution IP Hybrid set-top box, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Designed to work with existing MSO processes, such as resetting and staging.
- Utilizes standard TiVo software with substantially the same features as other TiVo non-DVR (Preview) and client (Mini) products.
- Provides full HD support, including 720p, 1080i, and 1080p HD formats.

Device specifications

Table 7–1 provides detailed specifications and environmental requirements for the TiVo-Evolution IP Hybrid set-top box.

Table 7–1: TiVo-Evolution IP Hybrid set-top box specifications and environmental requirements

Specification	Details
Physical dimensions	• Width:7.32" • Depth: 4.65" • Height: 1.77"
Weight	0.75 lbs.
Processor	BCM 7437
Tuners	QAM
DRAM	1 GB RAM
NAND	4 GB Flash
Conditional access	CAL
Video output	• HDMI 1.4a (combined audio/video) (1) • Composite A/V (1)
Video modes	480i, 480p, 720p, 1080i, and 1080p
Audio output	• HDMI 1.4a (combined audio/video) (1) • Analog audio output (L and R) • Optical audio (1)
Remote control support	• RF: RF4CE • IR: Front panel receiver
I/O ports	• USB 2.0 (1) • MoCA 2.0 (1) • Ethernet 10/100 Mbps (1)
Power supply	5V DC
Integrated networking	Integrated MoCA 2.0
Ambient (external) operating temperature	15° C to 35° C
Operating humidity	5% to 80%

Front panel

This section details the location of the LEDs on the front panel of the TiVo-Evolution IP Hybrid set-top box.

Number	LED	Details
1	Green LED	FlashesamberwhenreceivingacommandfromaTiVo-compatible remote control.
2	Amber LED	Power LED. Lit when power is on.

Back panel

This section details the location of the items on the back panel of the TiVo-Evolution IP Hybrid set-top box.
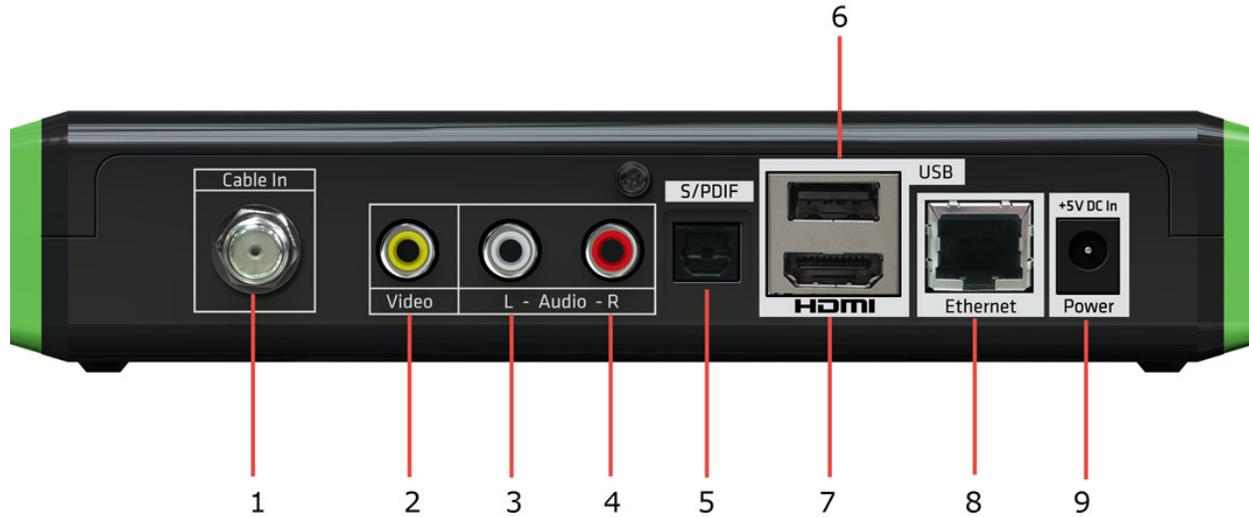
Number	Item
1	Digital Cable/MoCA coaxial input (QAM) jack
2	Composite A/V output (yellow)
3	Analog audio output (white)
4	Analog audio output (red)
5	S/PDIF optical digital audio output
6	USB 2.0 port
7	HDMI 1.4a output
8	Ethernet 10/100 Mbps
9	Power connector: 5V DC input

TiVo Mini

8

TiVo Mini is an IP set-top box that functions as a client to a host TiVo DVR for Live TV Streaming, as well as for watching CableCo Video on Demand (VOD) and recorded programs.

TiVo Mini is *not* a DVR. It does not include a tuner, CableCARD, or recordable hard drive. TiVo Mini can be used with 4:3-aspect-ratio TVs by using a scaled-down version of the HDUI. TiVo Mini does *not* support WiFi.

This chapter covers the following topics:

- *Device features* on page 53
- *Device specifications* on page 53
- *Front panel* on page 55
- *Back panel* on page 56
- *Using TiVo Mini* on page 57

For complete instructions on installing TiVo Mini, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Wired access to a host DVR and other TiVo DVRs to stream Live TV and to access CableCo VOD and recorded content on connected DVRs
- Direct access to TiVo broadband features, including over-the-top content that does not require a hard disk, such as YouTube, music, and photos
- Support for radio frequency (RF) remotes for TSNs with prefix A93

Device specifications

Table 8–1 provides detailed specifications and environmental requirements for TiVo Mini.

Table 8–1: TiVo Mini specifications and environmental requirements

Specification	Details
Physical dimensions	• Width: 6.1" • Depth: 6.1" • Height: 1.25"
DRAM	512 MB
NAND	4 GB for TSNs with prefix A93

Table 8–1: TiVo Mini specifications and environmental requirements (continued)

Specification	Details
Video output	• HDMI 1.4b (combined audio/video) (1) • Component RCA (1) • Composite A/V (1)
Audio output	• HDMI (combined audio/video) 1.4b (1) • Stereo L/R RCA (1 pair)
Remote control support	• RF: RF4CE (for TSNs with prefix A93)
I/O ports	• USB 2.0 (1) • Ethernet (1) • MoCA (1)
Power supply	Input: 120VAC, 60Hz, 1.0A Output: 12V, 2A (24W) maximum
Ambient (external) operating temperature	15° C to 35° C
Operating humidity	5% to 80%
UPC (Universal Product Code)	851342000957
Model number	TCDA92000

Hardware and software requirements

- TiVo Mini and a TiVo DVR, both on the same TiVo account
- TiVo software version 20.2.2.x or later

Emergency Alert System support

Emergency Alert System (EAS) support on TiVo Mini relies on the TiVo Mini connection to the host DVR. When TiVo Mini and a TiVo DVR are connected and an EAS message arrives, TiVo Mini ceases any streaming or other activity and switches to Live TV in order to display the video message and text of the EAS message.

If the DVR has no available tuner for live streaming to TiVo Mini, a blank screen appears showing the text of the EAS message but no video display.

Front panel

This section details the front panel of TiVo Mini.

.

Bottom components   **Front LED**
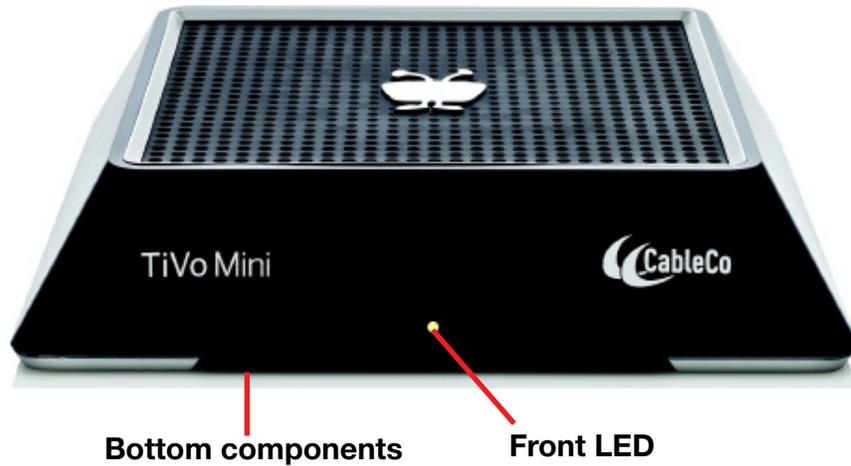
Front—The front LED (white and amber) is visible on the front of TiVo Mini.

Bottom—The following items are located on the bottom of TiVo Mini:

- Serial number
- Wall-mount holes
- Resolution button

Back panel

This section details the location of the items on the back panel of TiVo Mini.
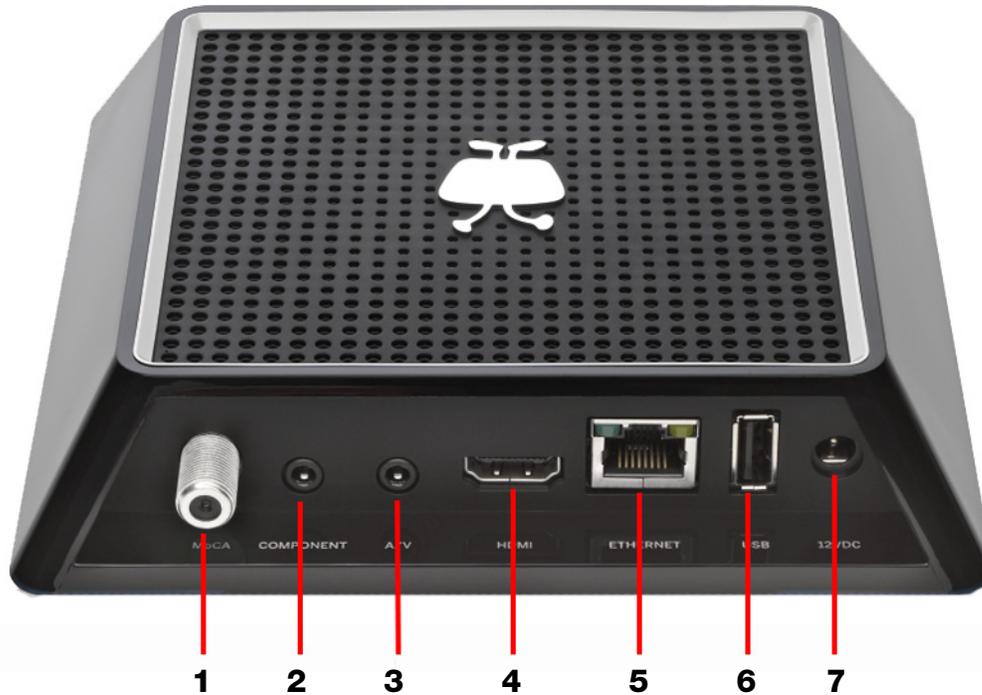
Number	Item	Details
1	MoCA coaxial input jack	In a MoCA home network, connects TiVo Mini to your home network. Connect the coaxial cable coming from the wall to this jack.
2	Component RCA output (green)	Connects to a TV or A/V system. Component video provides a high-definition (HD) picture using a component video cable.
3	Composite A/V output (yellow)	Connects to a TV or A/V system. Composite video provides very good standard-definition (SD) picture quality. It does not provide HD video.
4	HDMI port	Connects to a TV, A/V receiver, or home theater. The HDMI port provides a pure digital connection for HD video and digital audio all in one cable.
5	Ethernet jack	Connects a TiVo Mini to your home network using an Ethernet cable.
6	USB	Reserved for future use.
7	Power connector (12V DC)	Connects to A/C power.

Using TiVo Mini

Despite the fact that it doesn't have a resident tuner, TiVo Mini is still a versatile device with which you can perform a number of functions. TiVo Mini serves as a *client* to a *host* TiVo DVR to support Live TV Streaming. It also lets you watch CableCo VOD and recorded programs, schedule or delete recordings on the host device, and rate the programs that you watch.

This section covers the following topics:

- *Streaming Live TV from the host DVR* on page 57
- *Watching VOD from the host DVR* on page 57
- *Watching recorded content from any DVR* on page 58
- *Scheduling a recording on the host DVR* on page 58
- *Deleting content from a DVR* on page 58
- *Rating shows with TiVo Mini* on page 58
- *Setting up Parental Controls, movie rating limits, and channel locks* on page 58
- *Using broadband services directly on TiVo Mini* on page 59

Streaming Live TV from the host DVR

To stream Live TV from the host DVR, press **Live TV** on the TiVo remote control.

You might notice a slight delay when watching Live TV via TiVo Mini—this is normal behavior.

- If there are multiple TiVo devices in a household, the use of the tuners on the host DVR is on a first-come, first-serve basis.
- Up to four tuners can be allocated to TiVo Mini devices on the host DVR.
- Unless you explicitly exit, a tuner is allocated to TiVo Mini for 4 hours, at which time the tuner will automatically return to the pool for other TiVo Mini devices to access.

Watching VOD from the host DVR

To watch VOD from the host DVR, press **On Demand** on the TiVo remote control.

To access VOD from TiVo Central, choose **Find TV, Movies, & Videos > Video on Demand**.

Note: When you watch VOD, you are actually using a Live TV tuner. Although up to four tuners can be allocated, a host DVR can play only one VOD stream at a time.

Watching recorded content from any DVR

You can watch recorded shows from any DVR in the home using TiVo Mini.

- Shows from the host DVR appear in My Shows and are accessed from TiVo Central.
- You can access shows from other DVRs by pressing the down arrow on the TiVo remote control. When the name of another DVR is displayed, follow these steps:
    a. Highlight the name of the DVR.
    b. To see My Shows for that DVR, press **Select**.
    c. To return to the host DVR, press the **TiVo** button and choose **My Shows**.

    Note: Selecting a show from a DVR other than the default host DVR does not reassign the default host DVR. For instructions on reassigning the default host DVR to another DVR, see the *TiVo Onsite Installation Guide for MSOs*.

- To watch a selected show, select the show in My Shows and press **Play**.

    You can watch the show from the point it was stopped on the other DVR (if applicable), or go back to the beginning.

Scheduling a recording on the host DVR

TiVo Mini lets you set up a recording on the host DVR by using the host DVR scheduling options (basically, telling the host DVR to use a tuner to record a show to the host disk).

Deleting content from a DVR

You can delete recorded shows on any DVR in your home using a TiVo Mini by highlighting the show or folder name, and pressing **Clear**.

Warning: This erases the show from the DVR.

Rating shows with TiVo Mini

You can use TiVo Mini to give **Thumbs Up** and **Thumbs Down** ratings. These ratings apply only to TiVo Mini. The information is stored on the host DVR specifically for TiVo Mini through which the rating was made.

Setting up Parental Controls, movie rating limits, and channel locks

TiVo Mini has its own Parental Controls, which can be set separately, and differently, from the host DVR. You can also establish the rating limits for movies originally released in theaters.

TiVo Mini inherits the Channel Locks set on the host DVR.

Using broadband services directly on TiVo Mini

You can access broadband services directly from TiVo Mini.

YouTube

To watch YouTube on TiVo Mini, from TiVo Central, choose **Find TV, Movies, & Videos >
YouTube**.

Photos, music, and other applications

Depending on CableCo selections, the photo, music, and applications might differ from the following:

- To see music and photo viewing options, from TiVo Central, choose **Music & Photos**.

  Some of the options usually available include:

  - Plex
  - Spotify
  - iHeartRadio
  - Pandora Internet Radio
  - Streaming music from your computer using TiVo Desktop Plus
  - Photos and slide shows from your computer or online web photo account

- To see additional applications, from TiVo Central, choose **Apps**.

  Some of the options usually available include:

  - Buying movie tickets online
  - Huffington Post

TiVo-Pace Mi3

TiVo-Pace Mi3 is a high-performance IP set-top box developed by Pace PLC. TiVo partnered with Pace to provide the TiVo Mini software on the Pace MG1 platform. The TiVo-Pace Mi3 runs standard TiVo set-top box software.

TiVo-Pace Mi3 functions as a client to a host DVR for Live TV Streaming, as well as for watching CableCo Video on Demand (VOD) and recorded programs.

TiVo-Pace Mi3 is *not* a DVR. It does not include a tuner, CableCARD, or recordable hard drive. TiVo-Pace Mi3 can be used with 4:3-aspect-ratio TVs by using a scaled-down version of the HDUI. TiVo-Pace Mi3 does *not* support WiFi.

This chapter covers the following topics:

- *Device features* on page 61
- *Device specifications* on page 61
- *Front panel* on page 63
- *Back panel* on page 64
- *Using TiVo-Pace Mi3* on page 65

For complete instructions on installing TiVo-Pace Mi3, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Wired access to a host TiVo-Pace MG1 DVR and other TiVo DVRs to stream Live TV and to access CableCo VOD and recorded content on connected DVRs
- Direct access to TiVo broadband features, including over-the-top content that does not require a hard disk, such as YouTube, music, and photos

Device specifications

Table 9–1 provides detailed specifications and environmental requirements for TiVo-Pace Mi3.

Table 9–1: TiVo-Pace Mi3 specifications and environmental requirements

Specification	Details
Physical dimensions	• Width: 7.1" • Depth: 5.32" • Height: 1.75"
DRAM	1 GB

Table 9–1: TiVo-Pace Mi3 specifications and environmental requirements (continued)

Specification	Details
NAND	4 GB
Video output	• HDMI 1.4a (combined audio/video) (1) • Component RCA (1) • Composite A/V (1) • Ch 3/4 RF re-modulator
Audio output	• HDMI (combined audio/video) 1.4a (1) • S/PDIF optical digital audio output • Stereo L/R RCA (1 pair) • Ch 3/4 RF re-modulator
I/O ports	• USB 2.0 (1) • Ethernet (1) • MoCA (1)
Power supply	Input: 120VAC, 60Hz, max 0.4A Output: 5V, 3A (15W) maximum
Ambient (external) operating temperature	32° F to 104° F
Operating humidity	5% to 80%
Model number	IPW9001

Hardware and software requirements

- TiVo-Pace Mi3 and a TiVo DVR or TiVo-Pace MG1 DVR, both on the same TiVo account
- TiVo software version 20.4.4.x or later

Emergency Alert System support

Emergency Alert System (EAS) support on TiVo-Pace Mi3 relies on the TiVo-Pace Mi3 connection to the host DVR. When TiVo-Pace Mi3 and a DVR are connected and an EAS message arrives, TiVo-Pace Mi3 ceases any streaming or other activity and switches to Live TV in order to display the video message and text of the EAS message.

If the DVR has no available tuner for live streaming to TiVo-Pace Mi3, a blank screen appears showing the text of the EAS message but no video display.

Front panel

This section details the front panel of TiVo-Pace Mi3.

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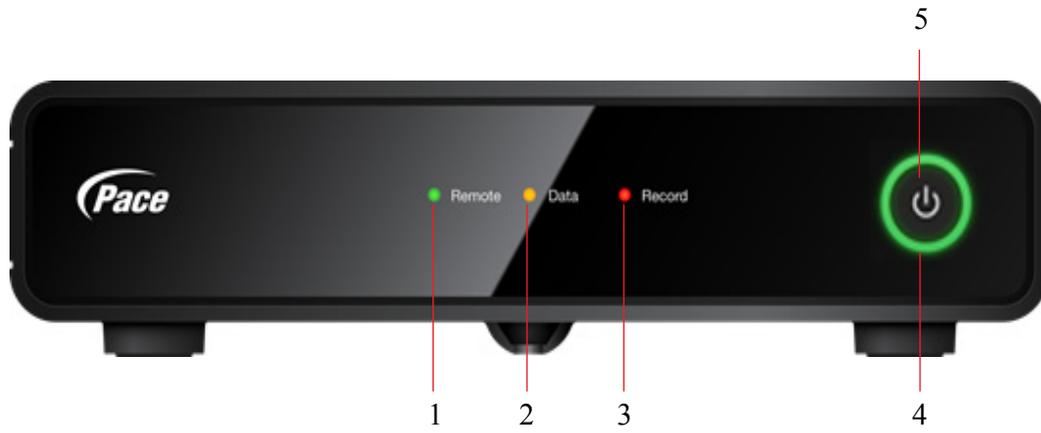
Number	LED	Details
1	Remote LED	Displays green for remote control activity.
2	Data LED	Displays amber when downloads or transfers are taking place.
3	Record LED	Displays red when a recording is being made.
4	Power LED	Green = Power On; Red = Standby mode.
5	Power button	Turns your TiVo-Pace Mi3 on or off.

Back panel

This section details the location of the items on the back panel of TiVo-Pace Mi3.
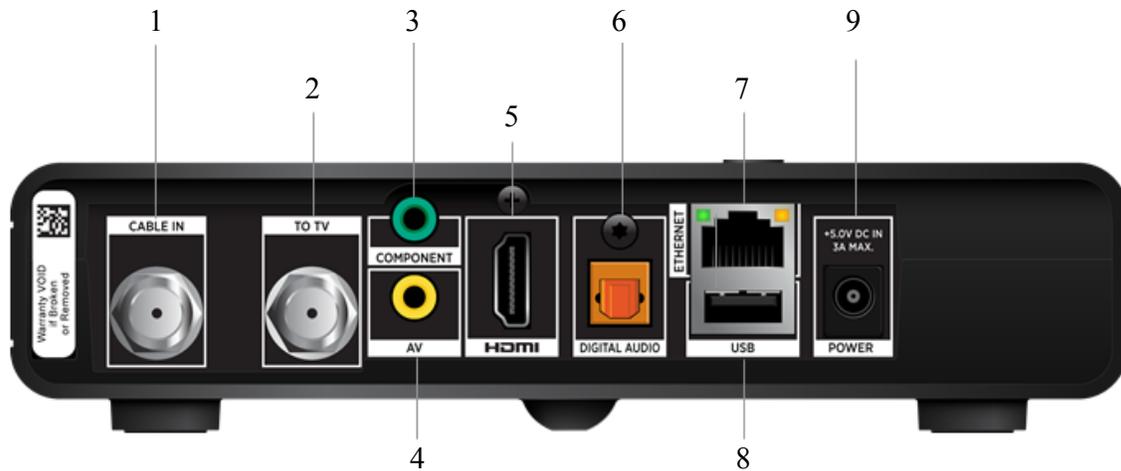
Number	Item	Details
1	Coaxial input jack	The Cable In connector is designed to connect the TiVo-Pace Mi3 to your cable network. Connect the coaxial cable coming from the wall to this jack. You must not connect any other equipment, such as a VCR, to this input.
2	To TV	Coaxial RF cable output to TV.
3	Component RCA output (green)	Connects to a TV or A/V system. Component video provides a high-definition (HD) picture using a component video cable. If your HDTV does not have an HDMI connector, but has component video (YPbPr) inputs, connect your HDTV here.
4	Composite A/V output (yellow)	Connects to a TV or A/V system. Composite video provides very good standard-definition (SD) picture quality. It does not provide HD video. Connect to the composite video and analog audio inputs on your SDTV.
5	HDMI port	Connects to a TV, A/V receiver, or home theater. The HDMI port provides a pure digital connection for HD video and digital audio all in one cable. Connect to the HDMI input on your TV.
6	Optical digital audio output	S/PDIF output. Connect to the optical digital audio equipment, such as an audio decoder or home theater receiver.
7	Ethernet jack	Connects a TiVo Mini to your home network using an Ethernet cable.
8	USB	Reserved for future use.
9	Power connector (5V DC)	Connects to A/C power.

Using TiVo-Pace Mi3

Despite the fact that it doesn't have a resident tuner, TiVo-Pace Mi3 is still a versatile device with which you can perform a number of functions. TiVo-Pace Mi3 serves as a *client* to a *host* TiVo DVR to support Live TV Streaming. It also lets you watch CableCo VOD and recorded programs, schedule or delete recordings on the host device, and rate the programs that you watch.

This section covers the following topics:

Streaming Live TV from the host DVR

To stream Live TV from the host DVR, press **Live TV** on the TiVo remote control.

You might notice a slight delay when watching Live TV via TiVo-Pace Mi3—this is normal behavior.

- If there are multiple TiVo devices in a household, the use of the tuners on the host DVR is on a first-come, first-serve basis.
- Up to four tuners can be allocated to TiVo-Pace Mi3 devices on the host DVR.
- Unless you explicitly exit, a tuner is allocated to TiVo-Pace Mi3 for 4 hours, at which time the tuner will automatically return to the pool for other TiVo-Pace Mi3 devices to access.

Watching VOD from the host DVR

To watch VOD from the host DVR, press **On Demand** on the TiVo remote control.

To access VOD from TiVo Central, choose **Find TV, Movies, & Videos > Video on Demand**.

Note: When you watch VOD, you are actually using a Live TV tuner. Although up to four tuners can be allocated, a host DVR can play only one VOD stream at a time.

Watching recorded content from any DVR

You can watch recorded shows from any DVR in the home using TiVo-Pace Mi3.

- Shows from the host DVR appear in My Shows and are accessed from TiVo Central.
- You can access shows from other DVRs by pressing the down arrow on the TiVo remote control. When the name of another DVR is displayed, follow these steps:

  a. Highlight the name of the DVR.

  b. To see My Shows for that DVR, press **Select**.

  c. To return to the host DVR, press the **TiVo** button and choose **My Shows**.

  Note: Selecting a show from a DVR other than the default host DVR does not reassign the default host DVR. For instructions on reassigning the default host DVR to another DVR, see the *TiVo Onsite Installation Guide for MSOs*.

- To watch a selected show, select the show in My Shows and press **Play**.

  You can watch the show from the point it was stopped on the other DVR (if applicable), or go back to the beginning.

Scheduling a recording on the host DVR

TiVo-Pace Mi3 lets you set up a recording on the host DVR by using the host DVR scheduling options (basically, telling the host DVR to use a tuner to record a show to the host disk).

Deleting content from a DVR

You can delete recorded shows on any DVR in your home using a TiVo-Pace Mi3 by highlighting the show or folder name, and pressing **Clear**.

Warning: This erases the show from the DVR.

Rating shows with TiVo-Pace Mi3

You can use TiVo-Pace Mi3 to give **Thumbs Up** and **Thumbs Down** ratings. These ratings apply only to TiVo-Pace Mi3. The information is stored on the host DVR specifically for TiVo-Pace Mi3 through which the rating was made.

Setting up Parental Controls, movie rating limits, and channel locks

TiVo-Pace Mi3 has its own Parental Controls, which can be set separately, and differently, from the host DVR. You can also establish the rating limits for movies originally released in theaters.

TiVo-Pace Mi3 inherits the Channel Locks set on the host DVR.

Using broadband services directly on TiVo-Pace Mi3

You can access broadband services directly from TiVo-Pace Mi3.

YouTube

To watch YouTube on TiVo-Pace Mi3, from TiVo Central, choose **Find TV, Movies, & Videos > YouTube**.

Photos, music, and other applications

Depending on CableCo selections, the photo, music, and applications might differ from the following:

- To see music and photo viewing options, from TiVo Central, choose **Music & Photos**.

  Some of the options usually available include:

  - Plex
  - Spotify
  - iHeartRadio
  - Pandora Internet Radio
  - Streaming music from your computer using TiVo Desktop Plus
  - Photos and slide shows from your computer or online web photo account

- To see additional applications, from TiVo Central, choose **Apps**.

  Some of the options usually available include:

  - Buying movie tickets online
  - Huffington Post

TiVo Stream

TiVo Stream is a network (Ethernet) attached transcoding device that permits the streaming of MPEG-2 and MPEG-4/h.264 content to mobile devices.

TiVo Stream is *not* a DVR. It does not include a tuner, CableCARD, or recordable hard drive.

Note: This content is based on TiVo Stream software version 20.4.6.

This chapter covers the following topics:

- *Device features* on page 69
- *Device specifications* on page 70
- *Limitations* on page 71
- *Front panel* on page 71
- *Back panel* on page 72
- *Functional architecture* on page 73

For complete instructions on installing TiVo Stream, see the *TiVo Onsite Installation Guide for MSOs*.

Device features

- Streams to multiple mobile devices simultaneously—TiVo Stream can only stream recordings of linear copy-once and copy-freely television content (including in-progress recordings) to up to four mobile devices simultaneously.

  Streams from one or more Premiere series (or later) DVRs on the home network, and can use TrickPlay functionality: pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.

- Downloads to mobile devices at 4x speed—You can download copy-freely television content to mobile devices up to 4x real time (for example, you can download a one-hour show in 15 minutes). Downloading a program allows you to view the program on the mobile device anywhere and at any time.

- Record and Watch—The TiVo App feature allows you to start recording a show onto your DVR and immediately stream the recording to a mobile device by pressing a single button, allowing you to watch nearly-Live TV.

- HDMI and AirPlay output is enabled on the Apple iOS mobile device during video playback while in-home and on the same network and subnet.

Device specifications

Table 10–1 provides detailed specifications and environmental requirements for TiVo Stream.

Table 10–1: TiVo Stream specifications and environmental requirement

Specification	Details
Physical dimensions	• Width: 4.0" • Depth: 4.0" • Height: 1.05"
Weight	0.3 lbs.
I/O ports	Ethernet (1)
Power supply	12V DC
Ambient (external) operating temperature	15° C to 35° C
Operating humidity	5% to 80%
SKU Model	RA9400BU/TCDA94000
UPC (Universal Product Code)	851342000971
Model number	TCDA94000

System requirements

- At least one TiVo Premiere Series (or later) DVR connected via a hardwired connection (Ethernet or MoCA) to the home wireless router

  Note: The wireless connection applies only to mobile devices.

- TiVo App version 3.0 or later
- DHCP enabled on the router

Compatible host DVRs

TiVo Stream is compatible with the following DVRs running software release 20.2.1 or later:

- TiVo T6
- TiVo Roamio
- TiVo-Pace MG1
- TiVo Premiere Q

If a TiVo Stream is available in the household, it is set as the best transcoder for any DVR in the household.

If a TiVo T6 DVR or TiVo-Pace MG1 DVR is available in the household, the built-in transcoder in that DVR is set as the best transcoder.

Limitations

- Achieving four streams simultaneously depends on the resolution and bitrate of the source content. Performance might degrade when streaming four high bitrate (1080p) HD programs.
- At least two DVRs are required to achieve four simultaneous streams to mobile devices because each DVR has a limit of three simultaneous multi-room or transcoded streams.
- Copy-never content, such as Pay Per View shows, cannot be streamed to mobile devices.
- Downloading is allowed for copy-freely television content only.
- Downloaded content such as Amazon Instant Video, Music Choice downloads, and video podcasts is not supported.

Front panel

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Back panel

This section details the location of the items on the back panel of TiVo Stream.

The TiVo Stream back panel includes:

- Power/status (main) LED
- Gigabit Ethernet connector with link activity and link status LEDs
- 12V DC power supply

The behavior for the Ethernet connector LEDs is shown in Table 10–2.

Table 10–2: Ethernet link LED states

Ethernet LED	LED state	Description
Left (link activity)	• Off • Flashing green	• No link activity • Flashing green on packet RX (receive) and TX (transmit)
Right (link status)	• Off • Green • Yellow	• No link • Megabit half/full duplex • Gigabit half/full duplex

The main LED on the back of TiVo Stream can be either amber or white, indicating the overall status of TiVo Stream, as described in Table 10–3.

Table 10–3: States indicated by the TiVo Stream status LED

Status LED state	Description
Off	No power. TiVo Stream is off.
Solid amber	TiVo Stream has powered up.
Flashing amber	TiVo Stream is applying a firmware update.
Flashing white	TiVo Stream is powering up.
Solid white	TiVo Stream is up and ready. DHCP lease and the IP address are obtained, connected, and discoverable.

The time it takes to power up TiVo Stream is usually less than three minutes. The process might be repeated if a critical software update is needed, which typically occurs only the first time TiVo Stream is set up. All other software updates occur late at night when TiVo Stream is idle.

The TiVo Stream status LED goes through the following sequence during a normal power up process:

Solid Amber > Flashing White > Solid White

After TiVo Stream downloads the new software, if the TiVo App is in the TiVo Stream Guided Setup, TiVo Stream automatically restarts, which takes a few minutes.

The TiVo Stream status LED goes through the following sequence as TiVo Stream powers on and installs the new software:

Off > Solid Amber > Flashing White > Flashing Amber > Off > Solid Amber > Flashing White > Solid White

Therefore, the time required for initial setup is longer than normal.

Functional architecture

This section describes how TiVo Stream components—TiVo Stream, TiVo Premiere series (or later) DVR, and mobile devices—interact with each other in the home.

Home network and account requirements

- TiVo Stream must be on the same TiVo account as the source DVR.
- All devices must be on the same network and subnet.
- All device accounts must be activated and in good standing.
- The host DVR must be connected to the home router via a high-bandwidth hardwired connection (Ethernet or MoCA).
- No more than 12 devices (with a TSN) can be associated with a user account.

How TiVo Stream components interact in the home

When fully installed and set up in the home, TiVo Stream communicates and interacts in the following way:

- The TiVo Premiere series (or later) DVR sends high bit-rate MPEG-2 content to TiVo Stream via the Ethernet connection.
- TiVo Stream transcodes high bit-rate MPEG-2 into a low bit-rate MPEG-4 format.
- Wireless router sends the low bit-rate MPEG-4 video content to the mobile devices.

Network communication path

The components are connected to the local network as follows:

- TiVo Stream—Hardwired to the wireless router.
- TiVo Premiere series (or later) DVR—Hardwired to the wireless router.
- Mobile devices—Connected to the router wirelessly.

Figure 10–1 illustrates the TiVo Stream network communication path, from the TiVo Premiere series (or later) DVR to the wireless router via an Ethernet or MoCA connection, and then from the router to TiVo Stream.

An Ethernet to Coax Bridge (ECB) might be necessary to connect the TiVo DVR via MoCA.
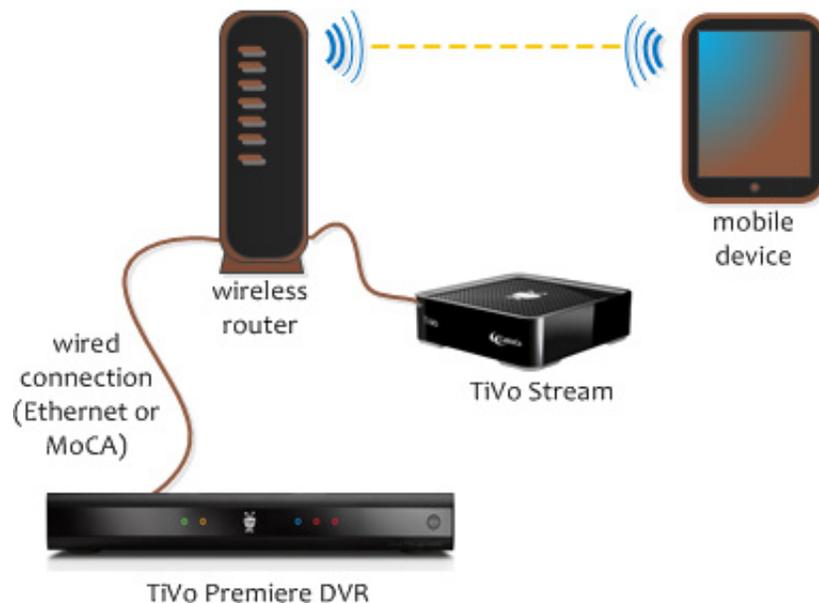
Figure 10–1: TiVo Stream network communication path

Accessories

This chapter discusses the accessories that can be used with TiVo devices.

DVR expander

The DVR expander lets you store more programs on your TiVo DVR. When you set it up, the DVR expander is paired with the TiVo DVR and the additional storage is seamless. The DVR expander provides 1 TB of additional storage, that is, approximately 150 hours HD recording space or 1,000 hours of SD recording space.

The WD My DVR expander is manufactured by Western Digital and is available in retail channels and direct from TiVo or Western Digital. Figure 11–1 shows the front and back panels of the My DVR expander.

Figure 11–1: Front and back panels of the DVR expander

Limitations

- The WD My DVR expander is the *only* expander that works with TiVo DVRs. If you attempt to attach an unsupported drive, an error screen appears.
- The DVR expander cannot be used as a mobile storage device and cannot physically transport programs from one TiVo device to another.
- After the DVR expander is paired with the TiVo DVR, the TiVo DVR stores programs across both the internal and external drives. If the DVR expander is permanently removed, all recorded programming is lost.
- The DVR expander is not intended for use with a computer. If it is connected to a computer, the programs will not be accessible and the computer might format the drive. TiVo does not support this configuration.
- The DVR expander cannot be used in a daisy-chain with other expanders. A TiVo DVR can only support one DVR expander.

Using the DVR expander

For instructions on adding and removing the DVR expander, for pairing the TiVo DVR and the DVR expander, and for troubleshooting problems with the DVR expander, see the Support articles on the TiVo Support website.

To resolve loss of power

To expand your storage capability, the DVR expander is paired with the TiVo DVR. This means that the internal and external drives function as a single drive. After pairing, if the DVR expander loses power or the eSATA cable is disconnected, it might take a few moments for the TiVo DVR to discover that the DVR expander is no longer there. After the DVR discovers that the DVR expander is missing, the DVR automatically restarts and then looks for the DVR expander.

If the DVR expander is still disconnected or without power, you must reconnect the DVR expander and then restart the TiVo DVR by unplugging the DVR and plugging it back in.

Note: Power cycling does *not* harm the TiVo DVR or its data.

Warning: If the pairing between the DVR expander and the TiVo DVR is severed, everything they recorded together is lost. Any programs that were recorded *before* the pairing remain on the TiVo DVR, but everything else is gone and cannot be restored, even if you try to pair the original DVR expander back with the original TiVo DVR.

Troubleshooting issues with the DVR expander

On the TiVo Support website, the following DVR expander issues are covered:

- Checking the hard drives
- Confirming cable connections are correct and secure
- DVR expander is making unusual sounds or too much noise
- DVR expander is scratched or damaged
- General performance issues
- Unsupported Device message when adding a DVR expander

The **External Storage** field on the System Information screen should show the make and model and firmware version of the drive if it has been detected. If not, the screen displays "`Not attached.`"

IR adapter

The TiVo IR adapter lets you control TiVo devices that do not have a direct line of sight to the TiVo remote control, such as being located in a cabinet or closet. The IR adapter connects via USB and extends IR coverage on any TiVo device without compromising remote control functions. Figure 11–2 shows the IR extender.

Figure 11–2: IR extender

The IR adapter has a USB plug on one end of its cable, and a USB sensor on the other end. To use the IR adapter, plug the USB connector into one of the USB ports on the back of the DVR, and position the IR adapter end in a location that is within line-of-sight of the TiVo remote control.

For additional information on the IR adapter, see the Support articles on the TiVo Support website.

Wireless G adapter for TiVo Preview

The Wireless G adapter is used to connect TiVo Preview to a wireless network.

- Supports the 802.11g or 802.11b wireless home networks.
- Allows the TiVo Preview to be connected to a home wireless network. It is slower than the Wireless N adapter.
- Connects via a USB cable to the USB connection on the back of TiVo Preview, and is configured during Guided Setup.
- Can be used on networks that have the following types of encryption to keep information private and to provide secure access: WEP security, WPA security, or WPA-2 (personal) security.

Figure 11–3 shows the Wireless G adapter.

Figure 11–3: Wireless G adapter

Limitations

The Wireless G adapter works with TiVo Preview only. However, it does *not* support TiVo Preview in Live TV Streaming or Multi-Room Streaming scenarios.

Using the Wireless G adapter

For instructions on setting up a Wireless G adapter, see the Support articles on the TiVo Support website.

Troubleshooting issues with the Wireless G adapter

On the TiVo Support website, the following Wireless G adapter issues are covered:

- No connection to wireless network.
- Adapter does not power up.
- Adapter is damaged.

Wireless N adapter for TiVo Preview

The Wireless N adapter provides a fast, secure 802.11n connection between a TiVo Preview and a wireless N, G, or B router on a home network.

- The Wireless N adapter provides Multi-Room Viewing.
- To make setup easier, the Wireless N adapter supports WiFi Protected Setup (WPS), which is a secure and almost automatic way to set up a connection between the TiVo device and a WPS-enabled router.
- The Wireless N adapter can be used on networks that have the following types of encryption to keep information private and to provide secure access: WEP security, WPA security, or WPA-2 (personal) security.

Figure 11–4 shows the Wireless N adapter.

Figure 11–4: Wireless N adapter

Data transfer speeds

The Wireless N adapter transfers from 11 Mbps up to 100 Mbps, depending on the router. Even with a B or G router, you can download at N speeds when you use two N adapters in bridge mode.

The Wireless N adapter operates with each adapter at up to the indicated speeds:

- 802.11b (up to 11 Mbps).
- 802.11g (up to 54 Mbps).
- 802.11n (over 100 Mbps). Limited by 10/100 Ethernet port.

The Wireless N adapter operates at 2.4 GHz and 5 GHz. The router must support 5 GHz to achieve this speed.

- The 2.4 GHz spectrum is subject to interference from microwaves, baby monitors, cordless phones, and other WiFi networks.
- The 5 GHz spectrum is relatively clean with very little interference, making it easier to obtain connections that enable faster speeds and longer ranges.

Limitations

- Although the Wireless N adapter provides Multi-Room Viewing, not all programs can be transferred using the Multi-Room Viewing feature due to the use of copy protection mechanisms assigned by the program provider and permitted under the FCC encoding rules (47 C.F.R. 76.1904). These programs are usually marked with a $\varnothing$ symbol.
- The Wireless N adapter works with TiVo Preview only. However, it does *not* support TiVo Preview in Live TV Streaming or Multi-Room Streaming scenarios.

Connecting the Wireless N adapter

This section describes two scenarios: how to connect the Wireless N adapter to an N router that supports WPS, and how to connect to an N router that does *not* support WPS (that is, a wireless G or wireless B router). WPS is a simplified method of wireless network configuration. It enables a wireless network configuration at the touch of a button.

Note: Not all routers support WPS. If you are not sure whether your router supports WPS, refer to the manufacturer's instructions for the router. If WPS setup is not supported, the TiVo Wireless N adapter includes a Setup Wizard that walks you through the steps to get your adapter connected to the router. Or, you can use two TiVo wireless adapters to establish a fast bridge connection between TiVo Preview and the home network.

To set up the Wireless N adapter with an N router that supports WPS

The Wireless N adapter provides a fast, secure connection between your TiVo Preview and a wireless N, G, or B router on your home network. To make setup easier, the Wireless N adapter supports WPS. Figure 11–5 shows this setup.
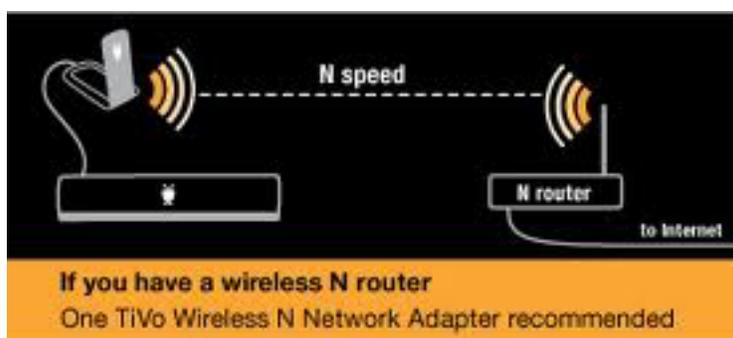
Figure 11–5: Wireless N router network setup

There are two ways to set up the connection:

- If the router has a WPS button, push the **WPS** button on both the router and the Wireless N adapter. Typically, N routers with WPS have a WPS button on the top or side.
- If there is no WPS button, connect the Wireless N adapter to the subscriber's computer, and then use a web browser to access the setup wizard and enter the router's PIN.

    The router's PIN is often on a label somewhere on the device. If not, log on to the router configuration pages to locate the router PIN. (See the router manual for instructions.)

If you have a wireless N router with a WPS button, use the command button method to establish communications between the Wireless N Adapter and the router. By pressing the buttons in the correct sequence, you can set up a secure wireless connection between the adapter and router in seconds.

Some routers with WPS do not have a physical WPS button but instead are pre-programmed with a PIN that serves as a virtual button for enabling one-click setup. If you have this type of router, you can enter the PIN into the TiVo wireless adapter configuration by using your computer to set up the connection to the router, and then installing the adapter on TiVo Preview to connect it to the network.

Note: If you do not know what router you have, typically you can find out by looking on the bottom of the router. If you use an N router with a Wireless G adapter, you will continue to get G or B speed downloads.

To set up the Wireless N Adapter with a G or B router or an N router that does not support WPS

If you have a wireless G or B router or an N router that does not support WPS, there are three ways to set up the TiVo Wireless N adapter to communicate with the router:

- Setup Wizard—Connect the adapter to your computer and use the adapter's Setup Wizard to guide you through the steps to configure network settings.
- Manual setup—Assign a static IP address to the TiVo Preview, if the network has a hidden SSID, or if the Setup Wizard cannot find the network SSID, configure the network settings manually from your computer.
- Bridge setup—Use two TiVo wireless adapters and easy WPS setup to create a fast N-band connection between the TiVo Preview and the router.

Figure 11–6 shows this setup.
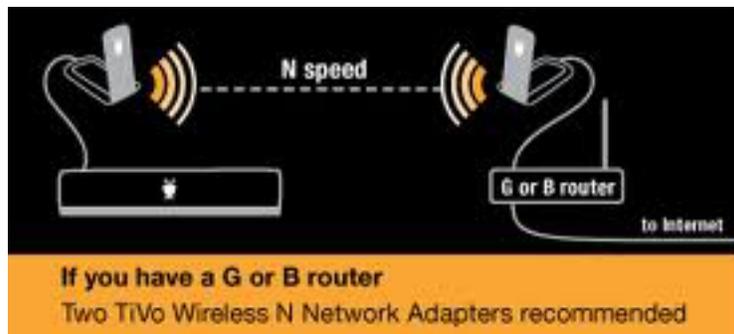
Figure 11–6: B or G router network setup

Troubleshooting issues with the Wireless N adapter

On the TiVo Support website, the following Wireless N adapter issues are covered:

- Adapter is physically damaged.
- Adapter is very hot.
- Can't view configuration screens.
- Can't connect to network during setup.
- Adapter does not work when connected to the TiVo device.
- Restarting and resetting the adapter.
- Updating the adapter's firmware.

To learn about the power, WPS, and signal strength LED settings, see the Support articles on the TiVo Support website.

Setting up your WiFi network

1. Before you begin, disconnect the Ethernet port by unplugging any Ethernet cables that are connected to the DVR.

2. From TiVo Central, choose **Settings & Messages > Settings > Network > Change network settings > Connect using wireless**.

3. Press **Select** to continue.

4. Press **Enter** on the Wireless Network Name screen.

   The Visible Wireless Network screen appears, which shows the type of security, the wireless signal channel name, and the wireless signal strength.

5. Choose a network name from the list.

   Note: Software version 20.3.6 does not support hidden SSIDs.

6. Enter your network password.

   Note: Even though a wireless network has been created, the network connection type displays as "Ethernet connection," and doesn't display the information pertinent to the wireless connection (such as signal strength, and so on.)

MoCA

Multimedia over Coax Alliance (MoCA) delivers the same high-speed network connection you get through an Ethernet cable, and delivers it through your existing coaxial cable (the wire you use to receive cable TV) to any room in your home. MoCA creates a meshed network—which means that MoCA devices can communicate with each other directly, allowing TiVo devices to stream from any TiVo MoCA-enabled DVR in the network. MoCA networking is especially useful for carrying audio and video traffic because of its high speed and reliability (limited interference), convenience, and range in the home. MoCA networking enhances the cable experience, particularly for Multi-Room Viewing DVR environments. MoCA networking does not require an Ethernet cable.   The MoCA standard supports all three pay TV segments: cable, satellite, and IPTV.

Note: Some homes might have satellite and cable installed and running on the same coaxial cable. This type of installation will interfere with the proper operation of the TiVo device. Since TiVo devices only support cable installations, use a separate coaxial cable to run MoCA to TiVo devices if the home has both satellite and cable.

MoCA devices should automatically form a MoCA network after two or more MoCA devices power up. They also need a MoCA router or an Ethernet to Coax Bridge (ECB) attached to the router to communicate outside the local MoCA network (that is, to the TiVo Service).

Note: The TiVo T6 DVR, TiVo-Pace MG1 DVR, and TiVo Premiere Q DVR have MoCA bridge capabilities, while the TiVo Roamio DVR, TiVo Preview, TiVo Mini, or TiVo-Pace Mi3 all have client capabilities. Check the hardware documentation for details.

This chapter covers the following topics:

- *MoCA standard components* on page 83
- *Setting up the MoCA environment* on page 85
- *Setting up TiVo Preview as a MoCA client* on page 89 (from Preview chapter)
- *Troubleshooting issues with MoCA* on page 91

MoCA standard components

You can use a MoCA network adapter, MoCA router, and Point of entry (POE) filter when setting up TiVo devices in a MoCA environment.

MoCA network adapter

Also called an Ethernet to Coax Bridge (ECB), a MoCA network adapter (Figure 12–1) can enable a non-MoCA device to connect to a MoCA network. This adapter takes the input of the combined video and IP signals, and splits them back out to video-only coaxial with IP Ethernet as an output to the non-MoCA device.

Figure 12–1: Ethernet to Coax Bridge

MoCA router

A MoCA router (Figure 12–2) allows the MoCA-connected devices on the network to share the same network with non-MoCA devices, such as a wireless laptop.

Figure 12–2: MoCA router

Point of Entry filter

The Point of Entry (POE) filter (Figure 12–3) is installed at the cable point of entry to the house and keeps the MoCA signals from leaking out of the home's interconnected coaxial infrastructure. The filter reflects MoCA signals back into the home, which might boost the signal strength and improve performance.

In a multi-household building, the POE filter can keep neighboring MoCA devices from being detected, and keeps neighbors from being able to view or access any devices behind the POE filter.

Figure 12–3: Point of Entry filter

Setting up the MoCA environment

The following scenarios show how a MoCA network can be set up.

Note: You can connect any of your Ethernet or MoCA devices to a TiVo MoCA network. Like tuning adapters, these devices need not be TiVo devices.

Equipment required

- Cable modem
- Cable splitter with at least four cable-out ports for the following:
  - Cable modem
  - TiVo MoCA-enabled DVR, such as TiVo T6 DVR, TiVo-Pace MG1 DVR, or TiVo Premiere Q DVR
  - TiVo Preview, TiVo Mini, TiVo-Pace Mi3, or a TV
  - Cable router
- Coaxial cables—at least five
- Ethernet cables—two
- MoCA router
- MoCA network adapter (ECB)—Only needed when setting up a new MoCA network where the TiVo T6 DVR cannot be connected to the modem/router by Ethernet.

Scenario 1—DVR as a bridge

Figure 12–4 shows a typical MoCA cable TV home setup. TiVo and the TiVo T6 DVR are able to communicate directly with each other via Ethernet. TiVo Mini and TiVo-Pace Mi3 have their own MoCA capability, like the TiVo T6 DVR. However, TiVo Mini and TiVo-Pace Mi3 are MoCA clients and cannot be the sole MoCA device in a network.

The POE filter is located close to the tap (main cable drop point the house) and at the coaxial side of the modem.

- In the living room, the TiVo T6 DVR acts as the single bridge for MoCA capability.
- The living room shows how the modem and router are set up.
- The bedroom contains a TiVo Mini or TiVo-Pace Mi3, which has client MoCA capability.
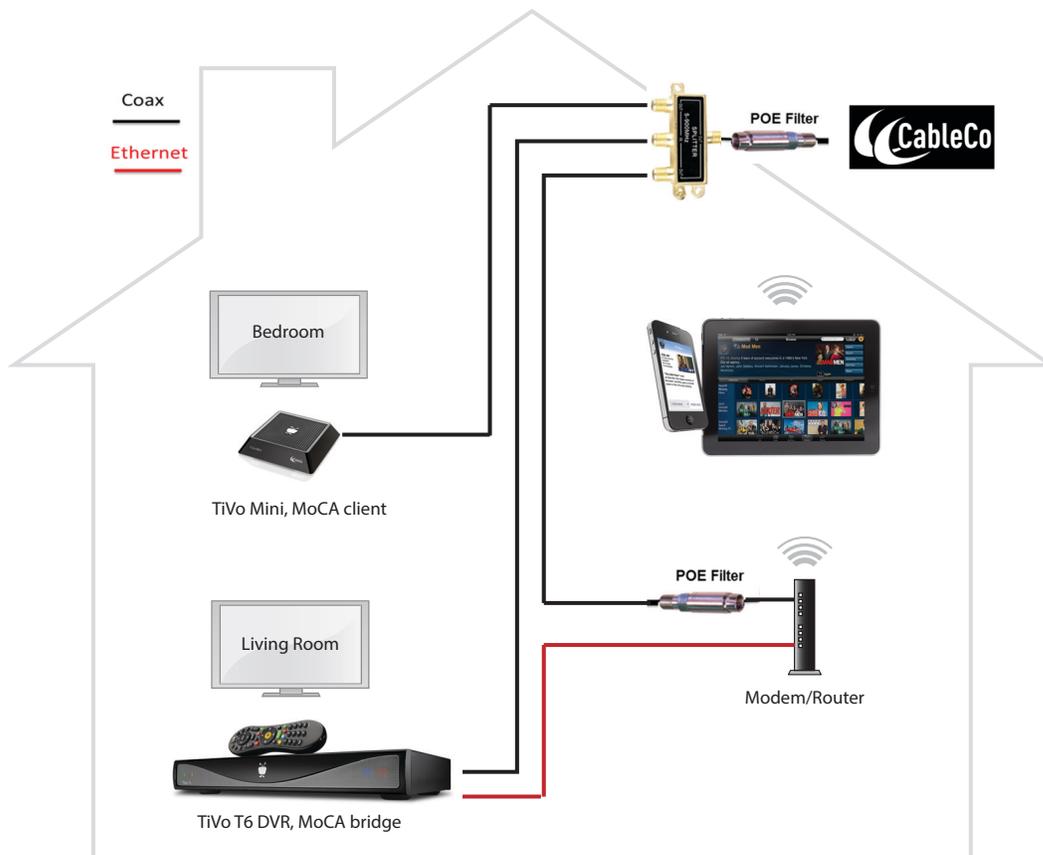
Figure 12–4: DVR as a bridge

Scenario 2—ECB as a bridge

Sometimes it is not possible to locate the TiVo T6 DVR where it can be connected to the modem/router by Ethernet. In this case, a MoCA network adapter (ECB) would be used.

In Figure 12–5, an ECB connects with the router and modem (via Ethernet and coaxial cable respectively), and has its own coaxial outlet. The ECB is the bridge for the coaxial connections.
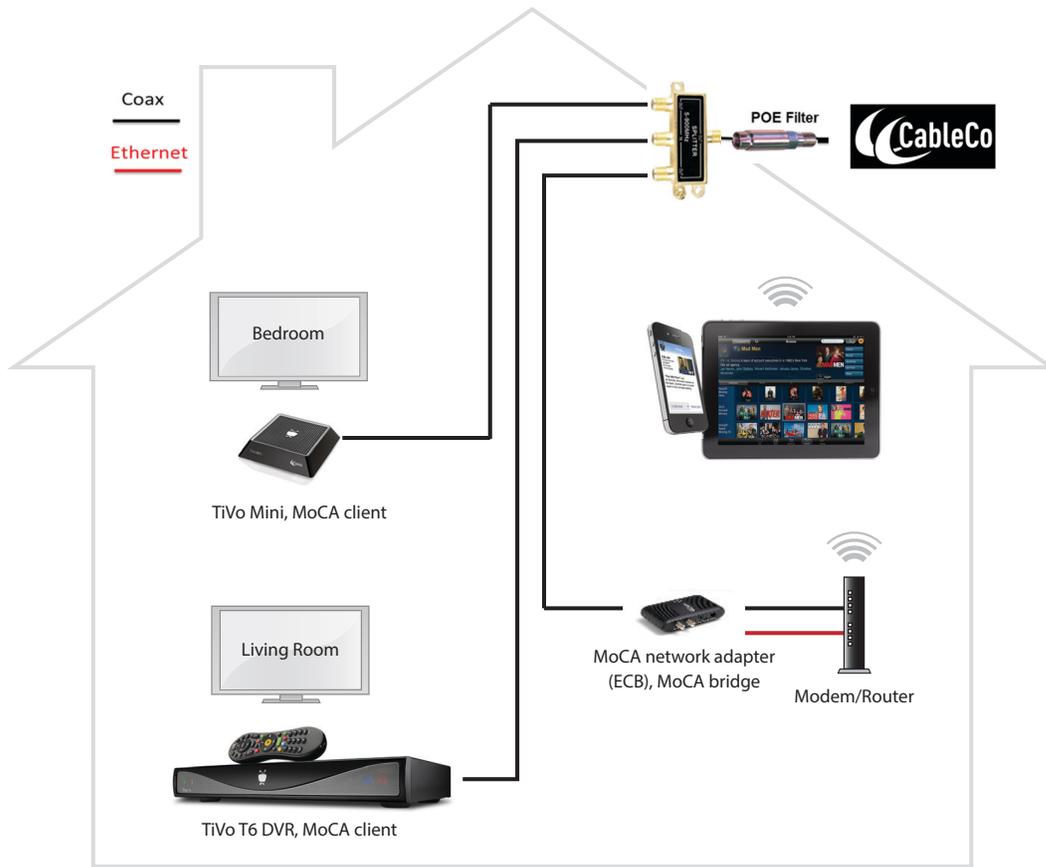
Figure 12–5: ECB as a bridge

Figure 12–6 shows a more detailed picture of the MoCA network adapter connections with the cable modem and router.
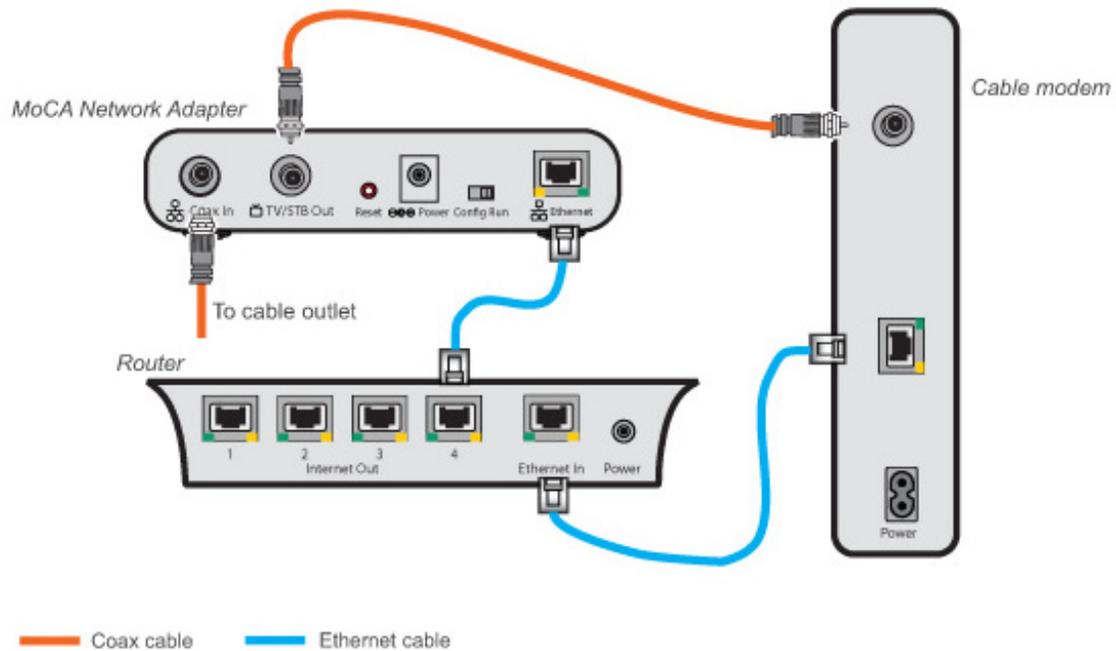
Figure 12–6: MoCA connection close-up

If you have a Switched Digital Video (SDV) tuning adapter attached to a TiVo DVR, you can still use the TiVo DVR in a MoCA network. To do so, you must use a splitter on the coaxial cable (Figure 12–7). There is no need to change the USB connection between the tuning adapter and the TiVo DVR.
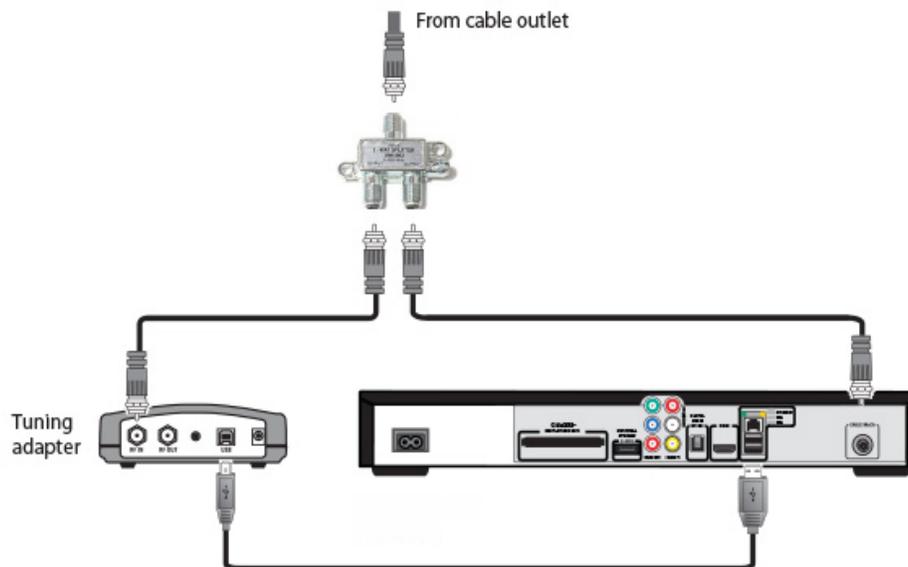
Figure 12–7: MoCA setup with tuning adapter

Limitations

- Don't install a MoCA network in a multi-family dwelling. Doing so might interfere with your reception and even block it. Secondly, others might be able to use your cable connection.

- Don't use an amplifier in a MoCA network. If you do, the network might not work.

Setting up TiVo Preview as a MoCA client

Set up TiVo Preview to use a network connection with a coaxial cable, rather than an Ethernet cable (Figure 12–8).

To add TiVo Preview to a MoCA network

1. Connect the coaxial cable that comes into the home to the Cable In port of a cable splitter.

2. Connect a coaxial cable from one of the splitter's Cable Out ports to the Cable In port on TiVo Preview.

3. Connect a coaxial cable from one of the splitter's Cable Out ports to the Cable In port on the existing MoCA network.

4. Continue connecting coaxial cables from the remaining ports on the splitter to other TiVo devices or TVs in the home. If any of the TiVo devices have integrated MoCA capabilities, enable MoCA on them as well.

5. Make sure the MoCA network is powered up.

6. Plug the TiVo Preview video cable into the TV.

7. Plug the TiVo Preview power cord into a wall outlet.
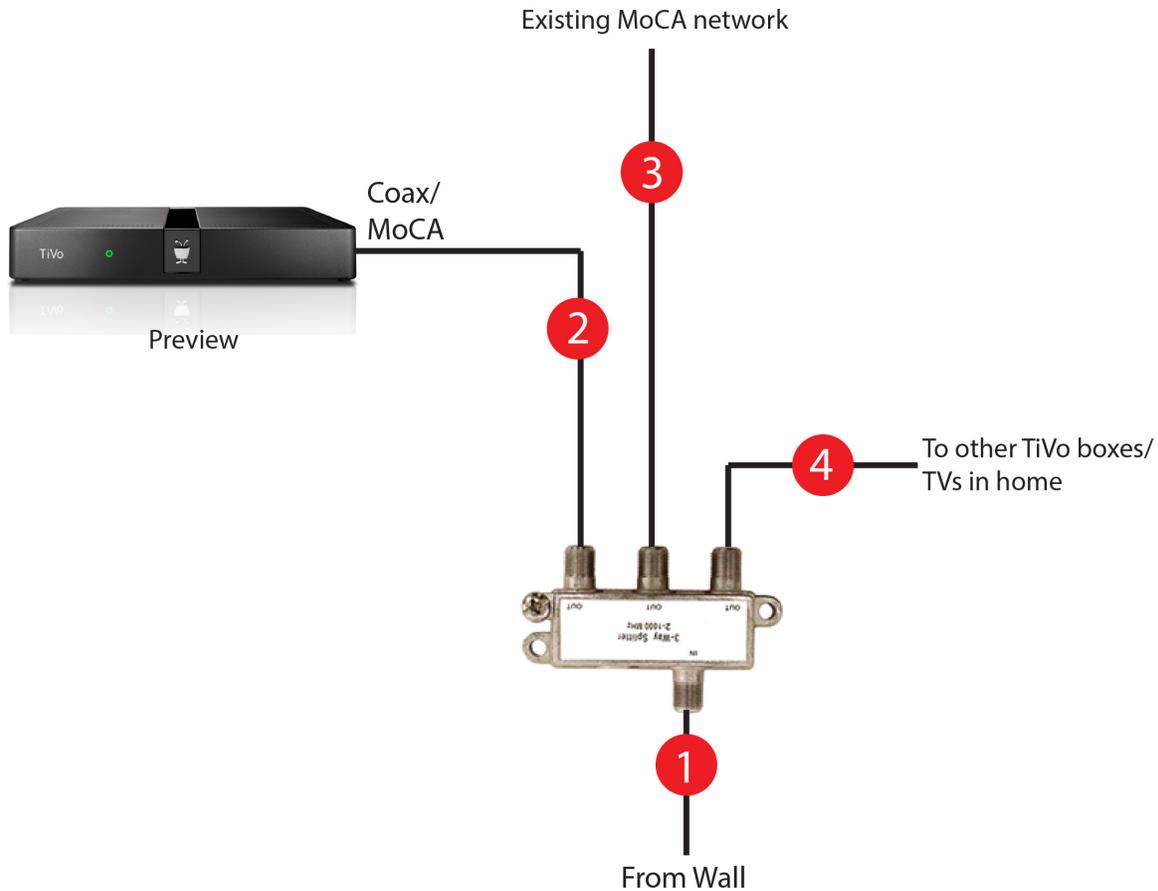
Figure 12–8: TiVo Preview-to-MoCA network connection

8. When setting up TiVo Preview for the first time, the system prompts you to complete Guided Setup. On the Network (MoCA) Connection screen during Guided Setup, choose **Change MoCA Settings**. Proceed to step 10.

9. If the TiVo Preview is already running and using a connection method other than MoCA, disconnect the Ethernet cable or wireless adapter (if applicable), and then from TiVo Central, choose **Settings & Messages > Settings > Network > Change network settings > Change MoCA settings**.

10. Use the following settings:
    - MoCA Enabled: **Yes**
    - MoCA Channel: **[auto]**
    - Encryption Key: **[none]**

11. If the system prompts for a DHCP address, select **Get automatically from a DHCP server (typical)**.

Troubleshooting issues with MoCA

There should only be one MoCA-enabled device deployed in a household to act as the bridge between the MoCA and IP networks. For example, a TiVo T6 DVR (which has a built-in ECB) can act as the bridge using a router that connects to the TiVo T6 DVR. More than one bridge in a network causes MoCA loops. To allow Internet access, the MoCA bridge (whether it is a TiVo MoCA-enabled DVR, a MoCA router, or an ECB) *must* be connected to the Internet gateway, typically a router.

Note: Some routers might have a built-in POE filter that can create issues in the MoCA network.

There are a number of error messages you might see while setting up or changing your MoCA/ Ethernet network. For troubleshooting problems with MoCA, see the Support articles on the TiVo Support website.

TiVo Remote Control

The TiVo DVR ships with a CableCo-branded TiVo remote control that provides additional functionality beyond that provided by standard television remote controls.

This chapter covers the following topics:

Remote control features

- TrickPlay features allow you to control what you are watching by using buttons on the TiVo remote control, including pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.

- The **On Demand** button goes directly to the CableCo VOD system or menus. The image on this button might vary. For further information, see *Video on Demand* on page 165.

- The standard TiVo remote control supports both radio frequency (RF) and infrared (IR) transmission (for backwards compatibility). For additional information, see *Remote control RF and IR frequencies* on page 98.

- With the TiVo App, you can use a mobile device, such as a phone or a tablet, as a TiVo remote control. For additional information, see *TiVo App* on page 229.

Figure 13–1 shows the standard TiVo remote control. The callout numbers on the figure are explained in Table 13–1.
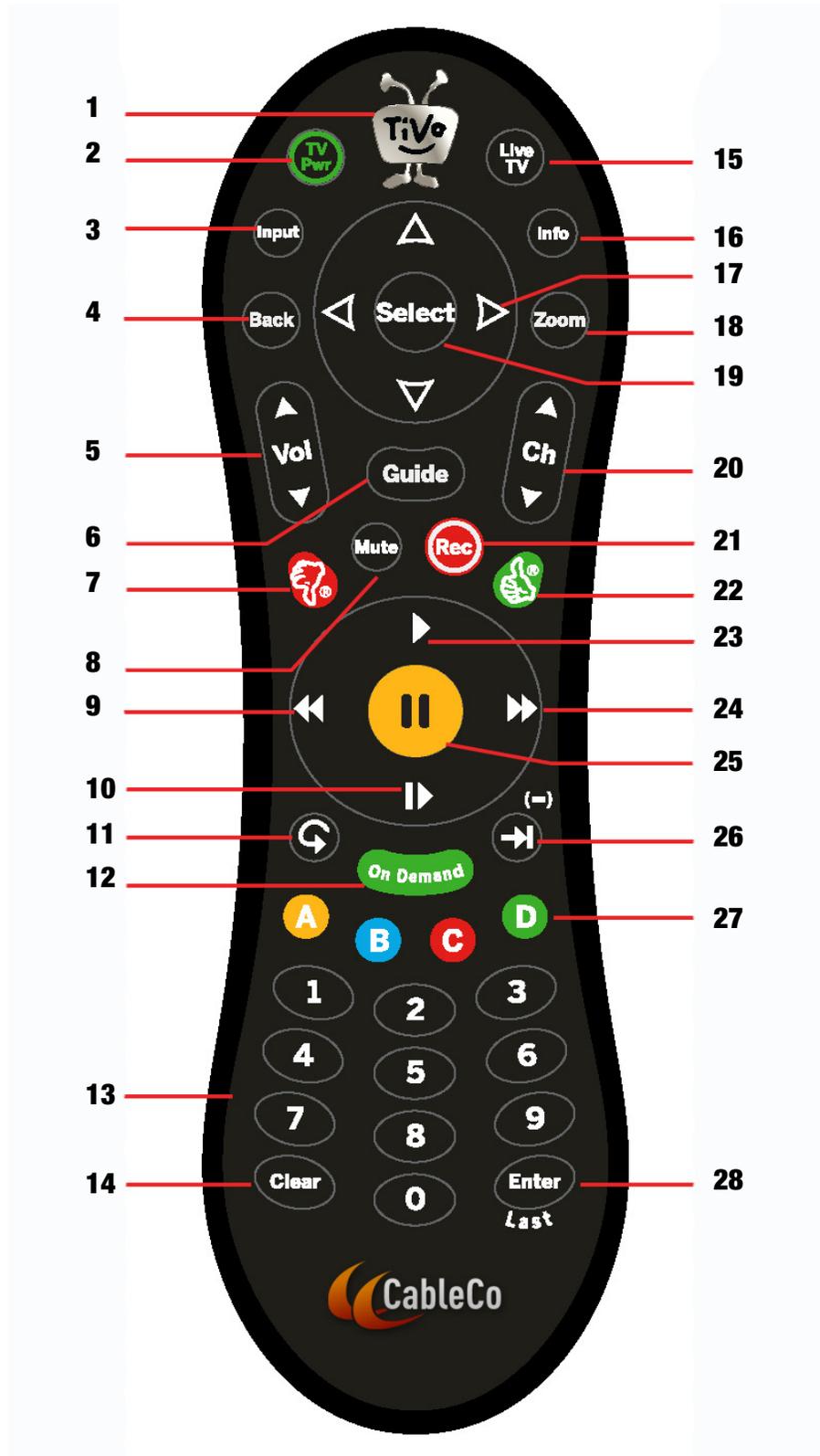
Figure 13–1: Standard TiVo remote control

The numbers in the left column of Table 13–1 correspond to the callout numbers in Figure 13–1.

Table 13–1: TiVo remote control actions

Number	Button	Action
1	**TiVo**	Goes to TiVo Central screen, the starting point of all TiVo features and settings.
2	**TV Pwr**	(If already set up) Turns the TV on or off.
3	**Input**	(If already set up) Selects the input that the TV will display, such as DVD player or game system.
4	**Back**	Goes back to the previous screen (in certain applications).
5	**Volume**	(If already set up) Controls the volume on the TV or A/V receiver.
6	**Guide**	Goes to the Guide, where you can find shows to watch or record. Press Guide again to see filtered views.
7	**Thumbs Down (red thumb)**	Gives a negative rating to a show, collection, or video provider. These ratings are used for TiVo Suggestions.
8	**Mute**	(If already set up) Mutes the volume on the TV or A/V receiver.
9	**Rewind**	Rewinds a show. Press up to three times for faster rewind speeds.
10	**Slow Motion**	Plays a show in slow motion. Toggles the Video Window on and off.
11	**Instant Replay**	Repeats the last eight seconds of the show. Press and hold to jump to the beginning of a show.
12	**On Demand**	Goes to the VOD Options screen.
13	**Numbers**	Uses the number keys to enter channel numbers or numbers in the online keyboard.
14	**Clear**	Removes the display of the Info banner or Guide, and deletes titles from the My Shows or To Do List.
15	**Live TV**	Goes to Live TV. While watching TV, uses the **Live TV** button to swap to another tuner.
16	**Info**	Displays the Info banner while watching Live TV. Press **Info** again to make the banner disappear.
17	**Arrows**	Navigates the TiVo menus and Guide.
18	**Zoom**	Changes the aspect ratio of shows on the TV.
19	**Select**	Chooses menu items or, when watching Live TV, brings up the Mini Guide.
20	**Channel Up/Down**	Changes the channel and pages up or down while in the Guide or TiVo menus.
21	**Record**	Starts recording the show you're watching, or sets up a recording for a show selected in the Guide.

Table 13–1: TiVo remote control actions (continued)

Number	Button	Action
22	**Thumbs Up (green thumb)**	Gives a positive rating to a show, collection, or video provider. These ratings are used for TiVo Suggestions.
23	**Play**	Plays a show from My Shows.
24	**Fast Forward**	Moves forward rapidly through a show. Press up three times for faster forwarding speeds.
25	**Pause**	Freezes a show. Press again to resume playing the show.
26	**Advance**	Moves forward through a show in 30-second increments. Press and hold to jump to the end of the show. When fast forwarding or rewinding, press Advance to jump to the next tick mark.
27	**A, B, C, D**	Sorts and filters views. Look for the on-screen tips.
28	**Enter/Last**	Returns to the last channel tuned to in Live TV.

TrickPlay

TrickPlay is a set of features that provide the means to control what you are watching by using buttons on the TiVo remote control. Basic TrickPlay features have the following effects on recorded TV content or videos:

- Play
- Pause
- Rewind
- Fast forward
- Instant Replay
- Slow Motion
- Advance

There is additional functionality for some of the TrickPlay buttons.

- **Fast forward** (>>) and **Rewind** (<<) have three levels: 3x, 20x, and 60x the speed of normal TV. All **Fast forward** and **Rewind** speeds have auto correction.

    Note: Overshoot correction predicts the place in a show where you expect to be when you stop fast forwarding or rewinding.

- **QuickMode**—When you press **Play** and then **Select**, QuickMode allows you to playback any recording 30% faster with pitch-corrected audio so you can watch your favorite programs in less time.

    QuickMode does not change the existing TrickPlay functionality. Subscribers can use TrickPlay actions, and then resume playing the recording 30% faster.

- **Instant Replay**—Replays the last eight seconds.

- **Slow Motion**—Plays at one-fifth real time.

- **Advance**—Skips ahead 30 seconds.

  You can queue as many as ten minutes worth of 30-second advances for quick browsing through portions of a program without needing to fast forward and press **Play**. **Advance** goes to the end or beginning if you hold the button for two seconds.

- **Skip-to-tick**—When you press **Fast forward** or **Rewind**, skip-to-tick allows you to jump to each of the tick marks that TiVo marks every 15 minutes (for the video buffer). Overshoot correction is applied.
  - When fast forwarding a recorded program, press **Advance** to skip to the next tick mark.
  - When rewinding a recorded program, press **Advance** to skip to the previous tick mark.

  When you press **Play**, the program stops immediately. There is no overshoot correction.

Favorites

Marking a favorite is as simple as pressing **Thumbs Up** on the TiVo remote control. For example, you can rate the following as favorites: video providers, categories (such as Sports or Cooking), collections (such as Academy Award Winning films), and channels.

By tracking **Thumbs Up** and **Thumbs Down** preferences, TiVo learns your likes and dislikes over time and provides increasingly useful suggestions.

Remote control shortcuts

Table 13–2 shows the shortcuts you can use with the TiVo remote control.

Table 13–2: Remote control shortcuts

Button/key	Go to
TiVo	• Press the **TiVo** button once to go to TiVo Central. • Press the **TiVo** button twice to go to My Shows.
1	OnePass Manager
2	To Do List
3	WishList Searches
4	Search
5	Browse TV and Movies
6	History

Using the Remote Finder

The TiVo T6 DVR has a handy feature that allows you to find a misplaced TiVo remote control (as long as it is within earshot).

If you misplace your TiVo remote control, press the button within the amber LED on the left side of the TiVo T6 DVR front panel (Figure 13–2). The remote control will emit a chiming sound, making it easier to locate it.

To stop the chiming, press any button on the remote control.

Remote Finder button
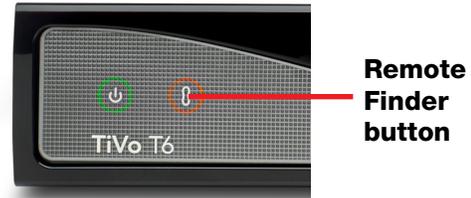
Figure 13–2: Remote Finder location

Remote control RF and IR frequencies

The standard TiVo remote control supports both radio frequency (RF) and infrared (IR) transmission (for backwards compatibility).

RF mode

An RF remote control can communicate with the TiVo device's RF sensor whether the line of sight is clear or obstructed. Each TiVo RF-enabled device can only hold up to two RF remote control frequencies, which means it can only be paired with up to two RF remote controls.

By default, the standard TiVo remote control is in RF mode. If it is not in this mode, press and hold the **TiVo+Green D** buttons until the remote control activity indicator (the TiVo character's antenna on the **TiVo** button of the remote control) flashes amber.

Once an RF remote control has been paired with a TiVo DVR, it will only work in RF mode with that particular TiVo DVR.

IR mode

An IR remote control can only communicate with the TiVo device's IR sensor when there is a clear line of sight. If the DVR is in a closed cabinet or behind an obstacle, you can use an optional IR adapter (see *Accessories* on page 75). There can be an unlimited number of IR remote controls and TiVo devices configured to specific IR channels.

You can switch the TiVo remote control from RF mode to IR mode. Press and hold the **TiVo+Red C** buttons until the activity indicator flashes red.

Pairing the TiVo remote control to a DVR to enable RF transmission

The TiVo remote control must be paired to a DVR to enable radio frequency (RF) transmission. This pairing prevents the remote control from controlling all of the DVRs in the area simultaneously.

Unlike an IR remote control, an RF remote control doesn't require line-of-sight positioning. An RF remote control works through walls and furniture, providing more flexibility in controlling your TV experience.

Note: A TiVo remote control can be paired *only* to one DVR at a time.

Note: RF transmission is only supported on the TiVo T6 DVR, TiVo Roamio DVR, and TiVo-Pace MG1 DVR.

Pairing methods

The TiVo remote control supports two methods of pairing:

- **New Pairing mode**—Allows a new DVR and a new remote control to automatically pair with each other during setup. This pairing mode is for initial use, and doesn't require subscriber intervention.

  In New Pairing mode, the remote control is initially unpaired, and it sends pairing requests looking for an unpaired DVR whenever a button is pressed. The remote control activity indicator flashes red when it sends the RF command, then the activity indicator flashes amber while it attempts to find and pair with a DVR.

  The TiVo remote control in New Pairing Mode usually pairs in less than a second after the first button press.

- **Allow Pairing mode**—Used for adding a new TiVo remote control or transferring a remote control from one DVR to another.

  To enter Allow Pairing mode, press and hold the **TiVo+Back** buttons until the activity indicator lights red. The remote control enters Allow Pairing mode and sends pairing requests for 30 seconds (as indicated by the flashing of the amber activity indicator after you release the buttons). The remote control will pair with any DVR that is accepting pairing requests during that time. If unsuccessful, the remote control reverts to its original paired or unpaired state.

Unpairing the TiVo remote control from a DVR

Unpair all RF pairings to a DVR, and then perform a Global Reset.

To unpair all RF pairings to a DVR

1. Press the **Live TV** button to go to Live TV.

2. Press **Clear+Enter+Clear+221+Clear**.

The TiVo DVR is now in New Pairing mode.

To perform a Global Reset

The Global Reset feature unpairs the paired TiVo remote control from the paired DVR, and then clears all of its settings, including programmed IR codes for your TV and other A/V devices. The Global Reset puts the TiVo remote control into New Pairing mode.

1. Press and hold the **TiVo+TV Pwr** buttons until the activity indicator lights red.

2. Press **Thumbs Down** three times, and then press **Enter**.

   The activity indicator flashes red three times if the global reset is successful.

Note: You will need both the paired TiVo remote control and the paired TiVo DVR to perform a global reset. If your paired remote control has been lost or damaged, you will need to use a new TiVo remote control in IR mode to put the DVR in a pairing state, and then pair the new remote control to the TiVo DVR.

Remote control LED behavior

When the TiVo remote control is available for pairing, it slowly flashes the remote control activity indicator (the TiVo character's antenna on the **TiVo** button of the remote control). When the remote control pairs, the activity indicator flashes quickly five times and then it stops.

The activity indicator flashes different colors with each button press to indicate what mode it is operating in:

- If the activity indicator flashes red, it is unpaired and is sending IR commands to the DVR.
- If the activity indicator flashes amber, it is paired and is sending RF commands to the DVR.

The TiVo T6 DVR can be paired with to up to ten TiVo remote controls.

Customizing the TiVo remote control

You can customize the TiVo remote control to control TV power, volume, mute, and input by using the TiVo menus.

1. From TiVo Central, choose **Settings & Messages > Settings > Remote, CableCARD & Devices > Remote Control Setup**.

2. In the order specified on the menu, set up the TV functions to work through the TiVo remote control.

Note: Program the TV functions *before* attempting to program audio-visual options.

You can set up the TiVo remote control to control a particular brand of TV, and optionally, a particular A/V receiver.

1. Press and hold the **TiVo+TV Pwr** buttons and enter **0999**.

2. To test one code at a time, press **Channel Up**.

3. To lock the code, press **Enter**.

Troubleshooting issues with the TiVo remote control

This section discusses issues that might arise when using the TiVo remote control.

The TiVo remote control does not work

If the TiVo remote control does not work, press any button on the remote control and check whether the amber light above the **TiVo** button flashes.

- If the amber light does not flash, make sure the batteries are positioned correctly in the remote control. If they are correctly positioned, try a new set of batteries.

- If the amber light on the remote control does flash, but the lights on the front of the TiVo device do not respond to the remote control, restart the device by unplugging it, waiting 15 seconds, and then plugging it back in.

The On Demand button on the TiVo remote control does not work

If you change the URL of the VOD server, you might be taken to the old VOD server when you first press **On Demand** on the TiVo remote control. If you try again, the button takes you to the new server.

If a large number of cases arise where the VOD server is not responding, there is probably a VOD service outage.

- If the headend is using the CableCo VOD, escalate to CableCo.

- If the headend is using any other type of VOD, escalate to TiVo through your NOC or SOC.

Other TiVo remote control issues

You might think the TiVo remote control is having issues when the real problem is that the TiVo device is frozen. For information on resolving problems if the TiVo device is frozen, see *Freeze or restart issues* on page 353.

If you are having other TiVo remote control issues, check the following:

- If you have more than one TiVo remote control, try them all to confirm they are using the remote control set up for that TiVo device.

- Check the batteries and try replacing them with new batteries (especially if the responses become slow).

- Check for obstructions that might block the signal (such as the door of an entertainment unit).

- Make sure that another device does not have a remote control that is interfering with the TiVo remote control. Other devices whose remote controls might interfere include DVD players, stereos, or wireless game controllers.

- Try resetting the remote control address so that it can control any TiVo device. To reset the remote control address:
  a. Press and hold the **TiVo+Pause** buttons for five seconds, until the activity indicator lights red.

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    b. Use the number key to enter 0. A TiVo remote control that is set to remote control address 0 controls any TiVo device.

    c. Perform a global reset of the remote control. For instructions, see *To perform a Global Reset* on page 100.

TiVo Features

UI Walkthrough

14

The UI Walkthrough provides an introduction to the TiVo features, including instructions for performing common tasks.

This chapter covers the following major aspects of the TiVo UI:

Using the Guide to watch Live TV

The Guide gives you current information about TV shows that are available to watch live, as they are broadcast. You can use the Guide to browse two weeks of programming and choose shows for immediate viewing, or for recording now or later. From the Guide, you can find shows that are currently on, schedule recordings and OnePasses, and find catch-up content.

To display the Guide, press **Guide** on the TiVo remote control. There are three formats of the Guide available: Live Guide (the default), Grid Guide, and Mini Guide.

Using the Guide to watch Live TV

Figure 14–1 shows the Live Guide.
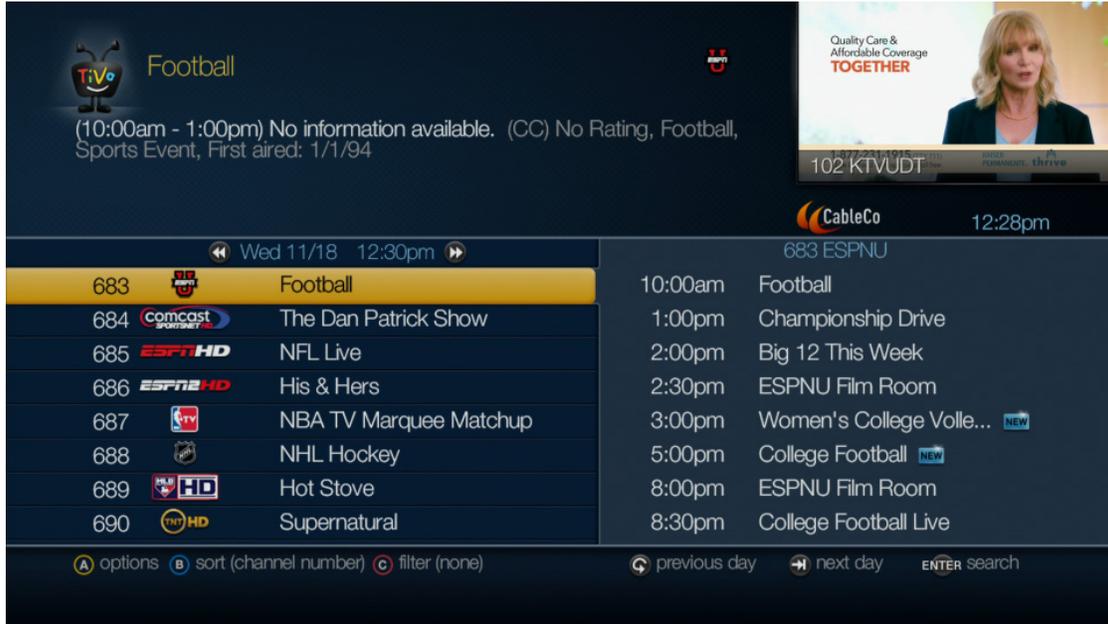
Figure 14–1: Live Guide

Figure 14–2 shows the Grid Guide.
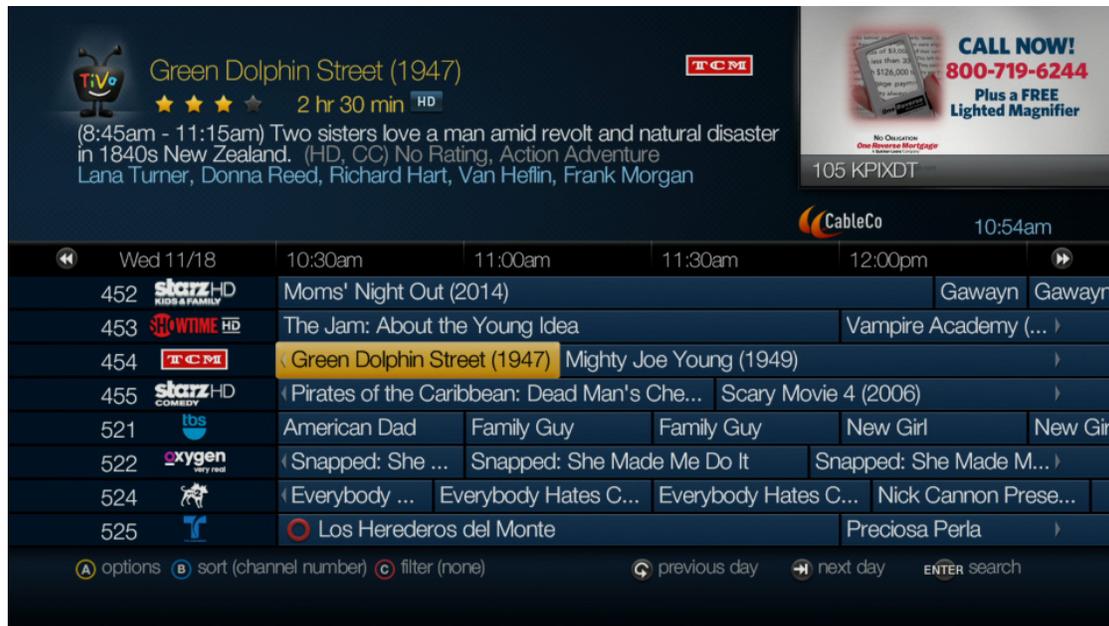
Figure 14–2: Grid Guide

To change from the Live Guide to the Grid Guide

1. While you are viewing either the Live Guide or the Grid Guide, press the **A** button.

2. On the Guide Options screen (Figure 14–3), choose the **Style** option and press the left or right arrow to switch between the styles.

Figure 14–3: Guide Options screen

3. To return to the Guide, press the **A** button again.

To designate a channel as a favorite

You can choose your favorite channels from among the channels you receive.

1. From TiVo Central, choose **Settings & Messages > Settings > Channels > Channel List**.

2. Use the arrows to choose the channel you want to mark as a favorite.

3. Press **Thumbs Up** to add the channel as a favorite, or **Thumbs Down** to remove the channel as a favorite.

Your favorite channels are now designated.

To choose the channels to display in the Guide

You can use the Guide Options screen (**A** button) to choose the channels to display in the Guide:

- **All** displays all channels in the Channel List, even channels you don't receive.
- **My Channels** displays only the channels selected in the Channel List (recommended).
- **Favorites** displays only the channels you rated as Favorites in the Channel List.

The Guide also displays channel logos, if available. Press the **A** button to toggle the logos on or off.

To move around the Guide

- To hide the Guide, press **Guide** again or **Clear**.
- To move the display up and down through the channel list, press **Channel Up** and **Channel Down**.
- To page forward and page back through the Guide times, press **Fast forward** and **Rewind**.
- To jump 24 hours ahead, press **Advance**. To jump 24 hours back, press **Instant Replay**.
- Press **Select** on a show in progress to change the channel to that show. To record it, press **Record**.
- Press **Select** on an upcoming show, and you'll see a screen with recording options. Set up your recording options or press the left arrow to go back to the Guide.
- Press the **B** button to change the Guide's sorting either by channel number or by channel name.
- Don't see what you're looking for? To jump directly to the Search screen, press **Enter** while viewing the Guide.

To filter the Guide by show category

Press the **C** button to filter the Guide by show category. Choose from one of the predetermined categories (Figure 14–4), or create a custom Guide List from the set of categories and subcategories provided.
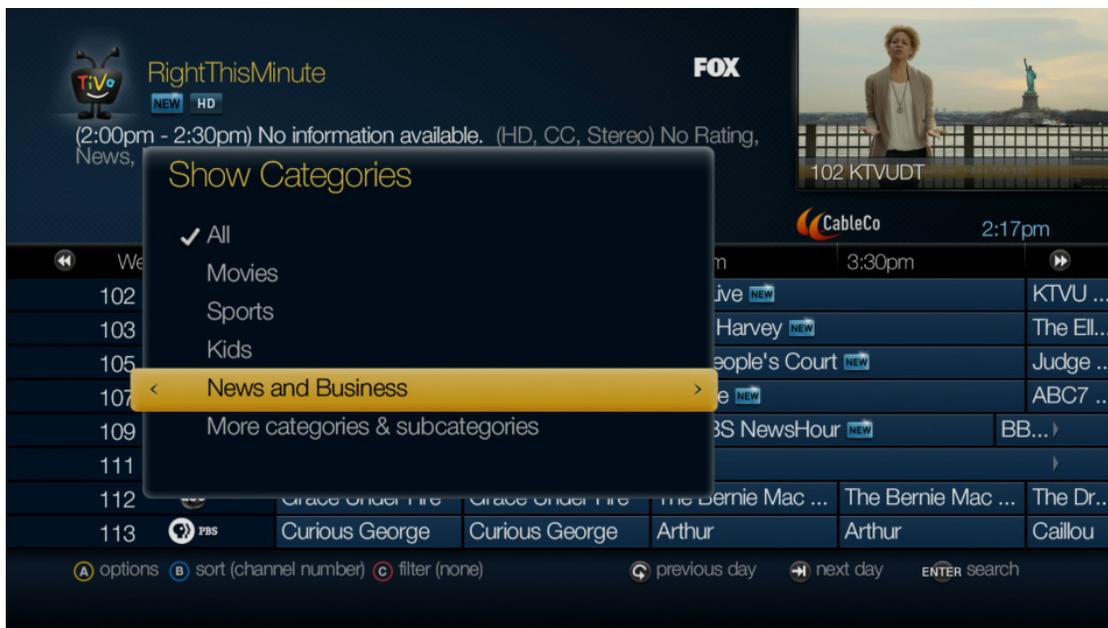
Figure 14–4: Show Categories option

The next time you invoke the Guide, it will display using the category you selected (Figure 14–5).
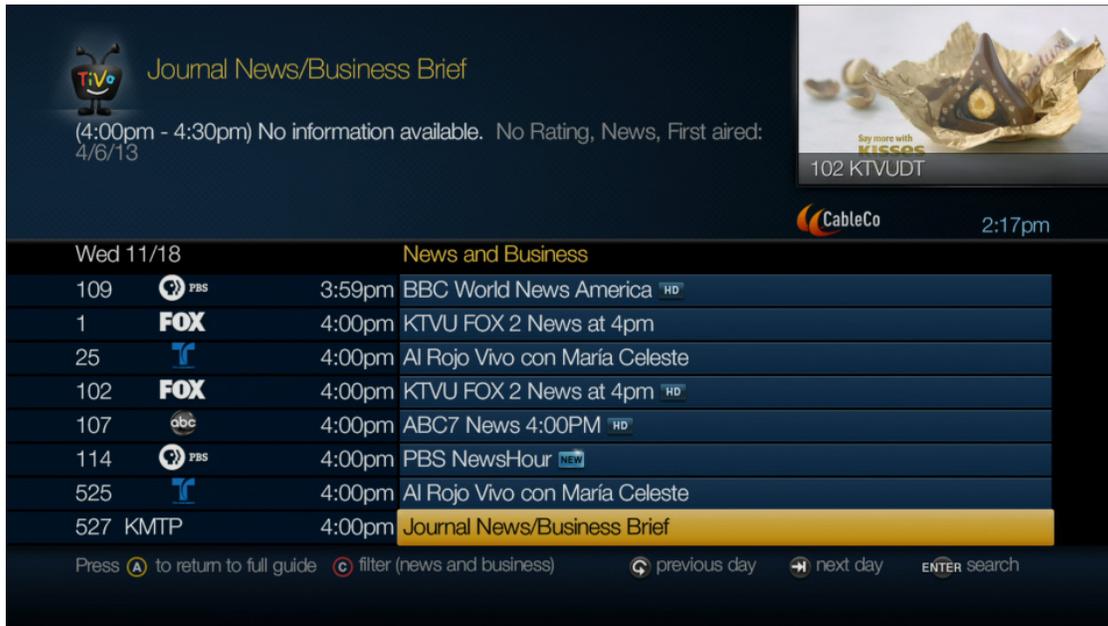
Figure 14–5: Guide category display

To tune to an HD channel while watching an SD channel

While you are watching Live TV on an SD channel, press the **D** button to tune to the HD channel (Figure 14–6).
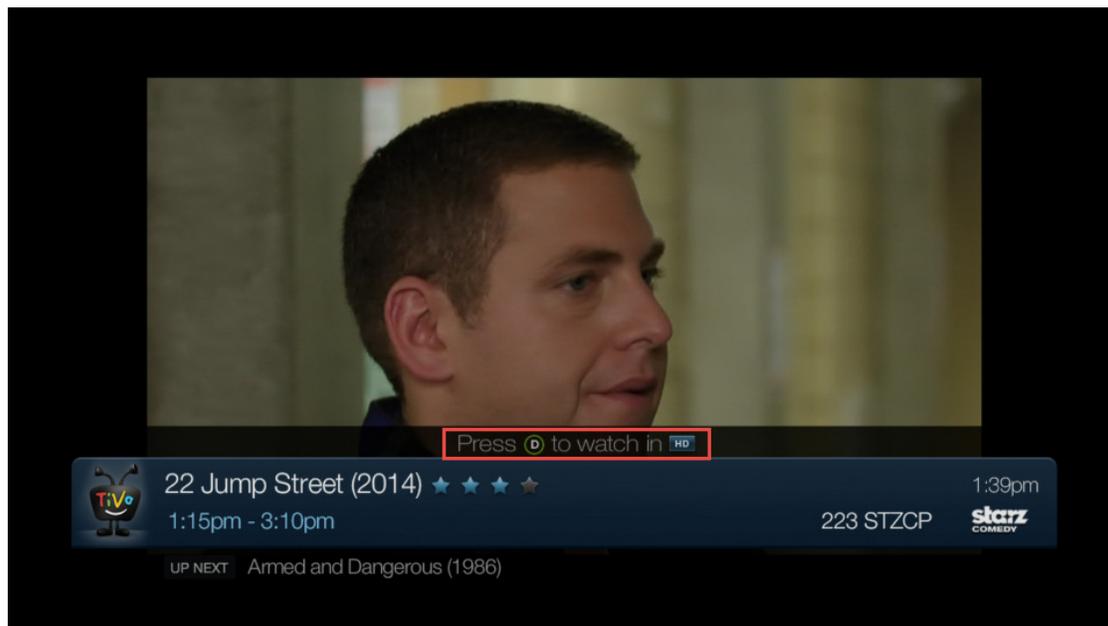
Figure 14–6: HD channel notification

To list all upcoming episodes of a show

1. In the Guide, go to the show, and press **Select**.

2. Choose **Explore this show**, and then choose **Upcoming**.

   You can use this list to choose a showing to record.

To record programs from Live TV

At any time, you can record the show you are watching by pressing **Record**. On the screen that appears, choose **Record this episode**.

Note: Depending on how many tuners you have, you can record up to six shows at the same time.

To use the Mini Guide

The Mini Guide (Figure 14–7) is a small version of either the Live Guide or the Grid Guide, whichever you are using. The Mini Guide displays on top of the show you are watching but does not obscure your view of the show.

To display the Mini Guide, press **Select** while watching Live TV.

Figure 14–7: Mini Guide

- To collapse or expand the Mini Guide, press **Select** again.
- To move the display up and down through the channel list, press **Channel Up** and **Channel Down**.
- To page forward and page back through the Guide times, press **Fast forward** and **Rewind**.
- To hide the Mini Guide, press **Clear**.

To use the Info banner

The Info banner (Figure 14–8) displays the show's title, description, ratings, and other information. It appears whenever you change the channel.

- To view the Info banner while watching Live TV, press **Info**. Press the down arrow to navigate through the various options.
- To hide the Info banner, press the left arrow or **Clear**.

Figure 14–8: Info banner

TiVo Central

TiVo Central (Figure 14–9) is the main TiVo menu. TiVo Central provides access to all of the TiVo device features. Use it to search for shows or events, to adjust settings, and more.

To access TiVo Central, press the **TiVo** button, which is branded with the TiVo logo.

Discovery Bar   **Video Window**
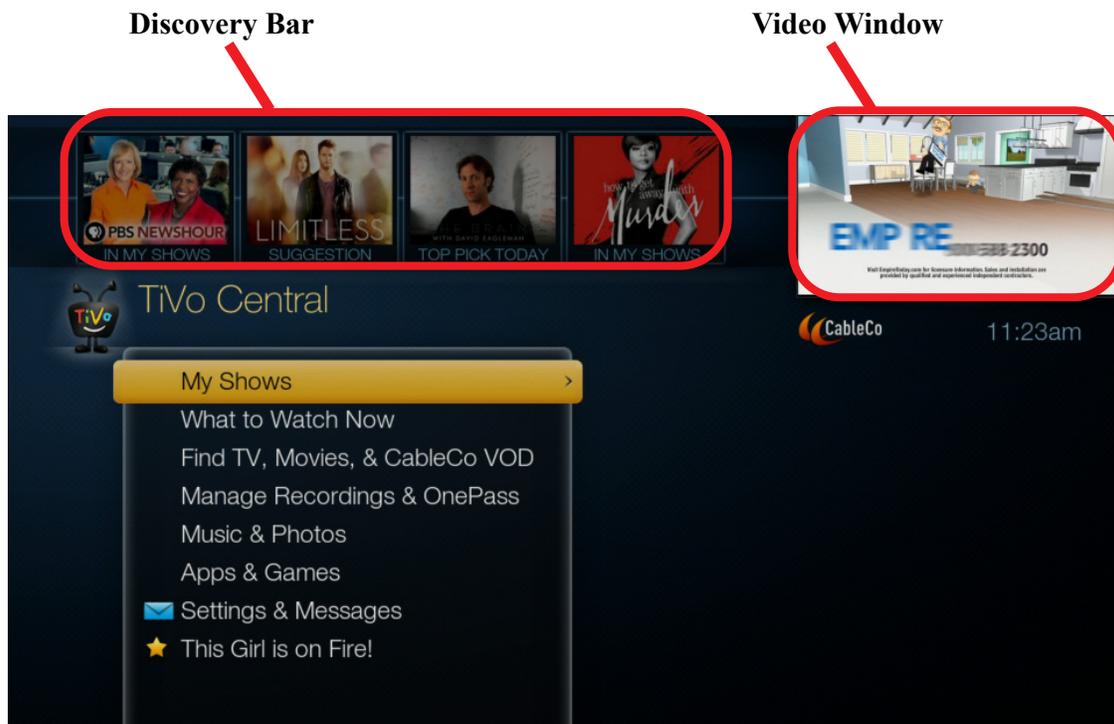
Figure 14–9: TiVo Central screen

Discovery Bar

The Discovery Bar (Figure 14–10) is a great way to find new programs based on what your TiVo device has "learned" about what kind of programs you like, based on your viewing history and what shows you mark as your favorites by pressing **Thumbs Up**.

Figure 14–10: Discovery Bar

The Discovery Bar does not display any adult content.

To use the Discovery Bar

From TiVo Central, press the up arrow to move up to the Discovery Bar, and then the left and right arrows to move across the items in the Discovery Bar. To open an information screen about an item, press **Select**. You can set up a recording, order a program download, or set up a OnePass.

As you navigate through **My Shows** or **Find TV, Movies, & Videos,** the Discovery Bar content changes to reflect what you choose. For example, if you choose a recording of Top Chef from My Shows, the Discovery Bar displays other cooking-related shows that you might also like.

To customize the Discovery Bar

By default, all Discovery Bar options are enabled. If you want to change the items that appear in your Discovery Bar:

1. From TiVo Central, choose **Settings & Messages > Settings > Displays > Customize Discovery Bar** (Figure 14–11).

2. To remove any item that is currently enabled, choose the item and press **Select**.

   The checkmark is removed.

3. To add any item that is not enabled, choose the item and press **Select**.
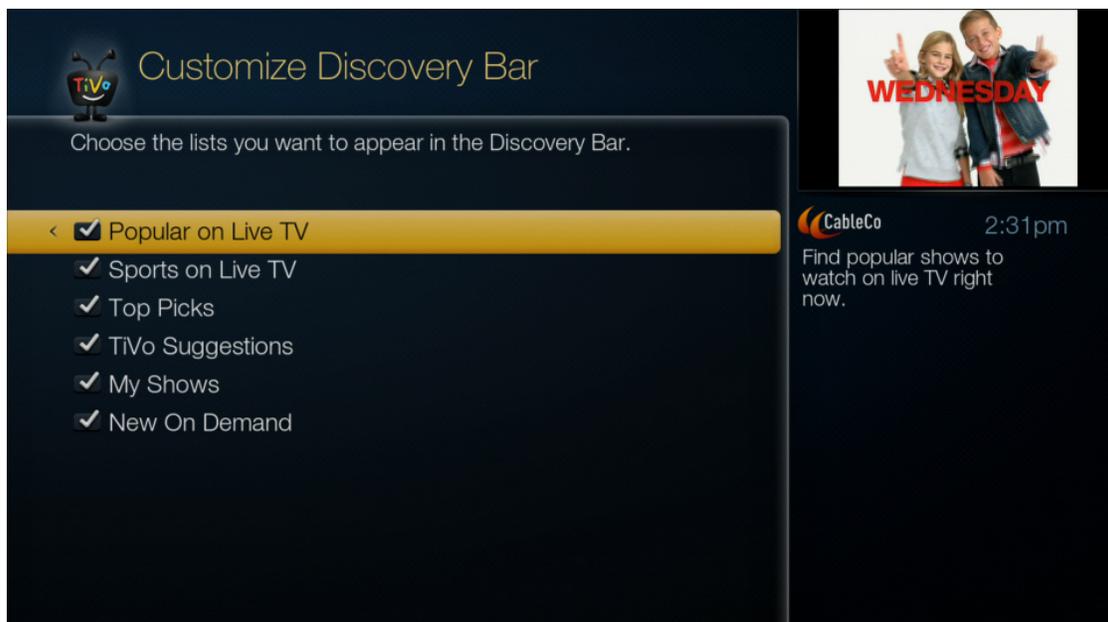
Figure 14–11: Customize Discovery Bar screen

Video Window

The Video Window (Figure 14–12) is located in the upper-right corner of TiVo Central and all other HD menu screens, unless you choose to temporarily hide it or to turn it off.
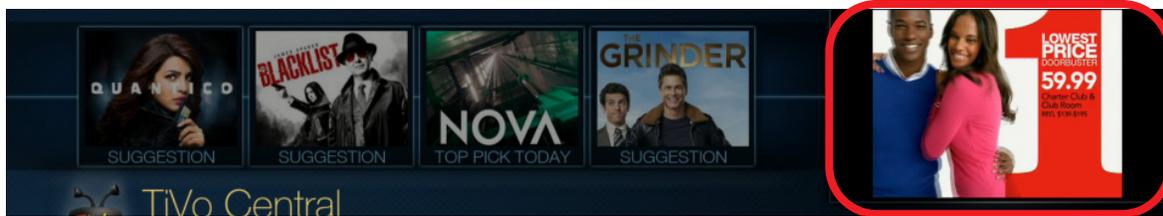
Figure 14–12: Video Window

The Video Window continues playing the show you were watching when you entered TiVo Central.

To use the Video Window

- To pause the Video Window, press **Pause**. Press **Pause** again to resume playing.
- To temporarily hide the Video Window, press **Slow**. Press **Slow** again to restore the Video Window.
- To go from TiVo Central to Live TV or to a recording, press **Zoom**.

To turn off the Video Window

1. From TiVo Central, choose **Settings & Messages > Settings > Displays > Video Window**.
2. Press the down arrow and choose **Off**.

My Shows

From TiVo Central, choose **My Shows**.

My Shows (Figure 14–13) displays a list of consumable content:

- Recordings from linear TV or Video on Demand (VOD)
- Streaming videos from CableCo VOD and third-party VOD providers (based on OnePasses)
- Stand-alone streaming videos from CableCo VOD and third-party VOD providers
- Auto-recorded WishList Searches
- TiVo Suggestions
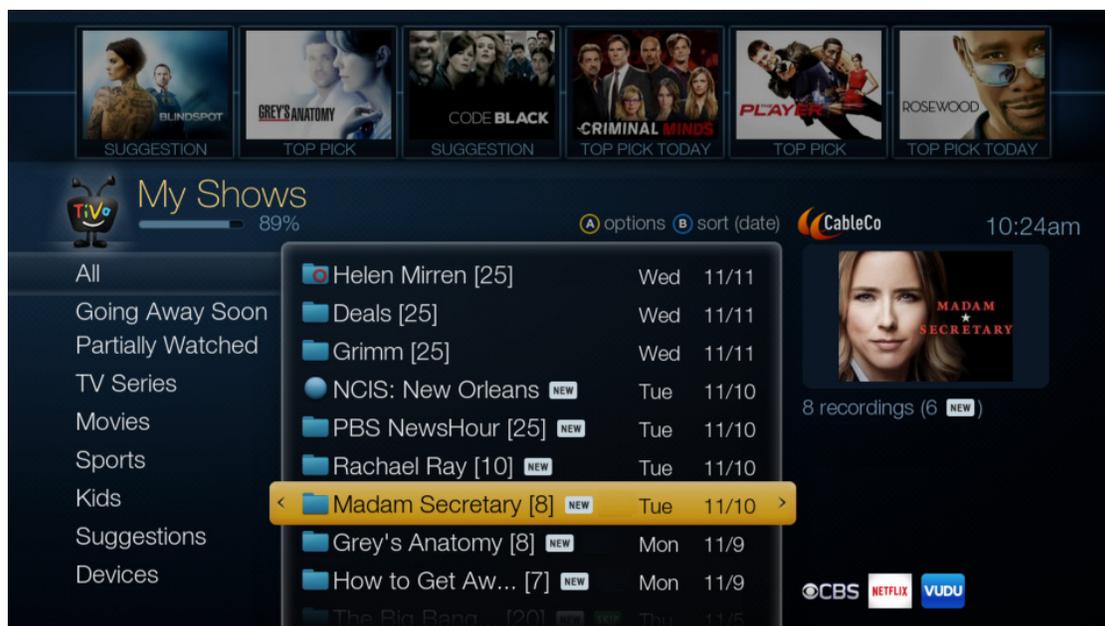
Figure 14–13: My Shows screen

All episodes (recordings, streaming videos from OnePass, and stand-alone streaming videos) of a TV show are organized in one folder for that series. The series folder date is based on the date that a recording or streaming video was added or became available. Non-episodic content (movies) and single episodes of different series are displayed as separate items in My Shows. The preview pane displays video provider icons if streaming videos are available for a series or a movie.

The My Shows list also displays your Streaming Movies, TiVo Suggestions, and Recently Deleted folders, as well as What to Watch Now, VOD choices, and the list of all the TiVo devices on your account. (Figure 14–13 does not show the entire My Shows list. Press the down arrow to view the entire list.)

- Streaming Movies—Provides a list of available stand-alone streaming videos for movies that can be watched directly from My Shows later. For more information, see *Streaming movies and TV shows* on page 129.

- TiVo Suggestions—Contains programs that are similar to programs you most enjoy, based on your viewing habits and your **Thumbs Up**/**Thumbs Down** selections. For more information, see *TiVo Suggestions* on page 122.

- Not Currently Available—Provides a list of stand-alone streaming videos that are not currently available from any video provider. It does not include unavailable streaming videos that are part of a OnePass.

- Recently Deleted Recordings—Provides a list of shows that have been recently deleted. Shows remain in the Recently Deleted folder until the space is needed for new recordings (at that point, the shows in the Recently Deleted folder are permanently deleted).

- What to Watch Now—Links to programs that are currently playing on Live TV. For more information, see *What to Watch Now* on page 123.

- VOD choices—Lists the available video providers (CableCo VOD, Netflix, Vudu, YouTube, Hulu, and so on), based on your video provider list settings.

- At the bottom of My Shows are any other TiVo devices that are on the same subnet.

    Note: If those TiVo devices are also on the same account (and therefore, the same Sharing group), you can do Multi-Room Streaming from your TiVo device. For more information, see *Multi-Room Features* on page 189.

To filter your My Shows content based on categories

The 3-column My Shows format (Figure 14–14) allows you to filter content based on categories, allowing you to find content faster. Use the up and down arrows to move from one category to the next.

Figure 14–14: My Shows screen filtered

1. Press the **A** button to select which categories to display or to hide them all. The My Shows Options screen displays the available program options (Figure 14–15).
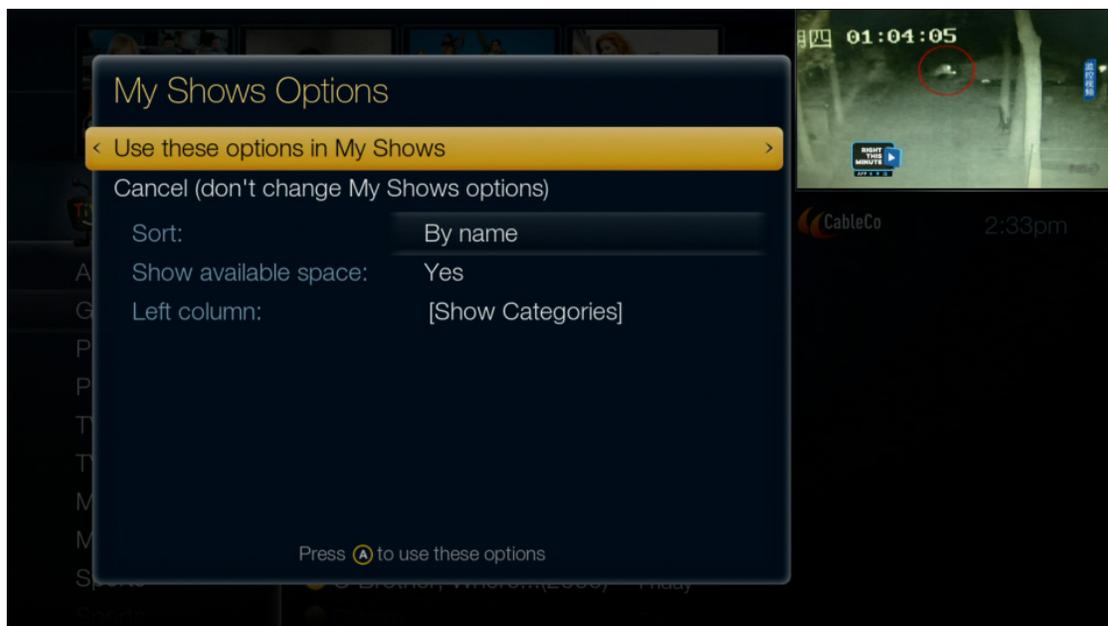
Figure 14–15: My Shows Options screen

2. Select **Show Categories** from the Left column option (Figure 14–15) to list all available categories. You can select as many as you want.
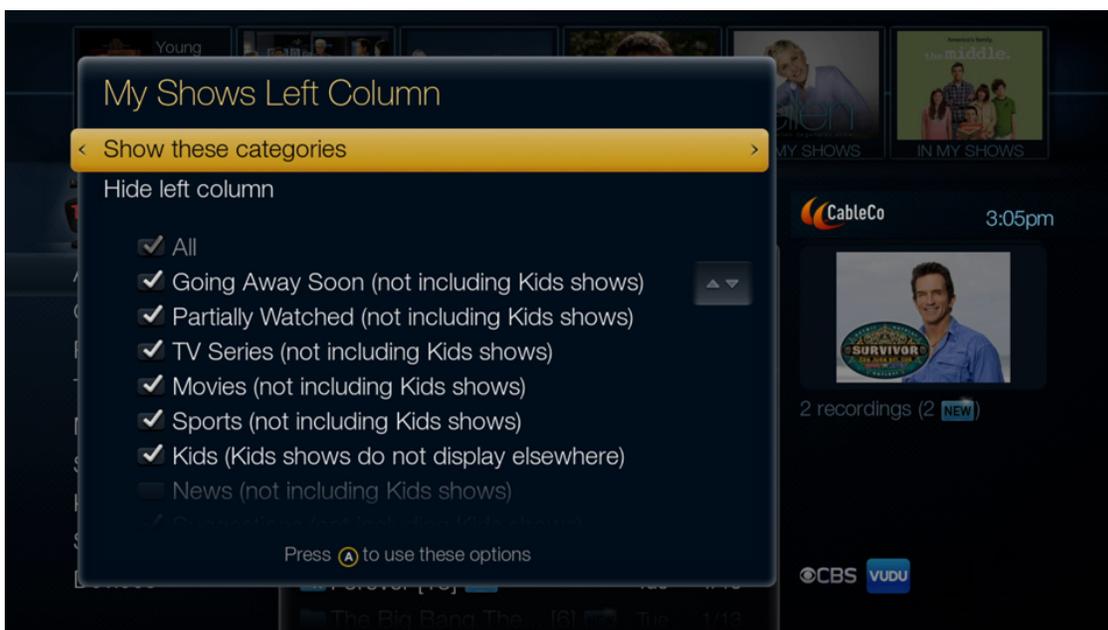
Figure 14–16: My Shows Left Column screen

3. To remove any item that is currently enabled, choose the item and press **Select**.

   The checkmark is removed.

4. To add any item that is not enabled, choose the item and press **Select**.

To sort the My Shows list

To see all My Shows display options, press the **A** button. The options available are as follows:

- **Sort**: *Date* or *Name*
- **Show available space**: *Yes* or *No*
- **Left column**: *Hide* or *show categories*

To toggle between sorting by date recorded or sorting alphabetically, press the **B** button. By default, content is sorted by date with the newest content displaying first.

To sort and view your series folders in My Shows

There are three views (My Episodes, Recordings, and All Episodes) within each series folder. TiVo remembers the last selected sort order, view, and highlighted episode for each series folder, and points you to the same episode the next time you select the same series folder.

Press the **C** button to toggle between the views.

My Episodes view (default)

The My Episodes view (Figure 14–17) is the default view when you enter a series folder for the first time. The folder displays all available episodes based on your OnePass recording options and stand-alone streaming videos.

There are three sorting options in the My Episodes view:

- Date—Episodes are sorted by date with the latest episode displaying on top.

- Newest—Episodes are sorted by season with the last available episode displaying on top.

- Season—Episodes are sorted by season with the first available episode displaying on top. A season picker might display, allowing you to switch between seasons.

  Note: By default, the My Episodes view is sorted by date if the folder only has recordings. It is sorted by season if the folder has both recordings and streaming videos available.

Press the **B** button to change the sort order.
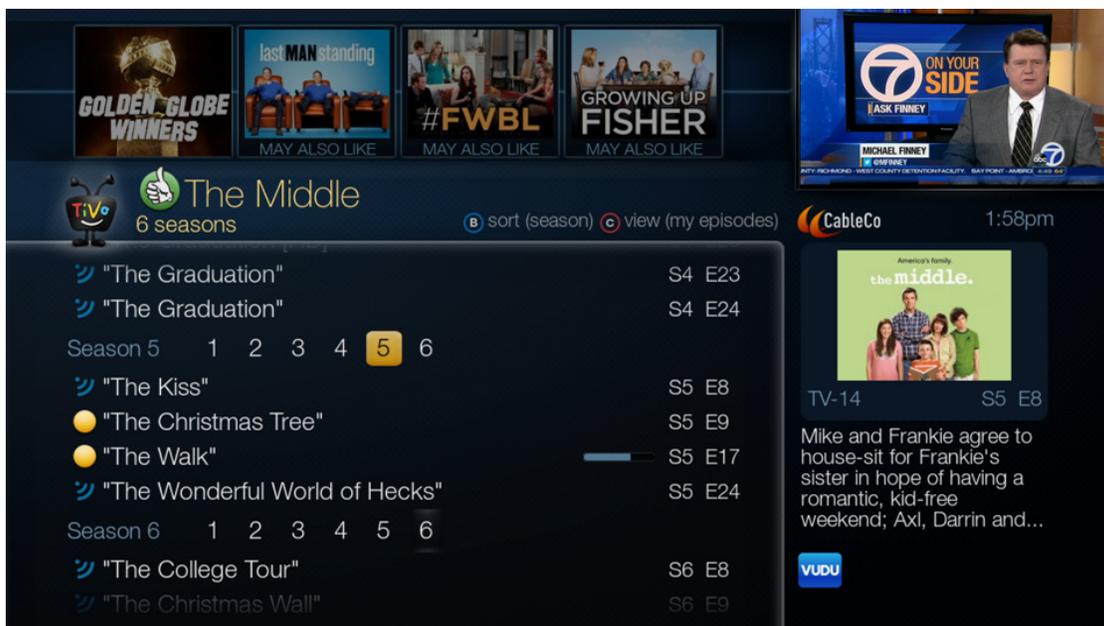
Figure 14–17: My Episodes view

Recordings view

The Recordings view (Figure 14–18) displays all recordings for a series based on your OnePass recording options. The view might be empty if there are no recordings available. By default, the Recordings view is sorted by date with the latest episode displaying on top. Press the **B** button to change the sort order.

The blue progress bar is used to indicate how much of a recording has been viewed. The absence of a progress bar means that playback has not begun yet.

Figure 14–18: Recordings view

All Episodes view

The All Episodes view (Figure 14–19) displays all episodes that are known to the TiVo Service. Unlike the My Episodes view, you can't remove episodes from the All Episodes view.

By default, the All Episodes view is sorted by season with the first available episode (that is, season 1 episode 1) displaying on top. Press the **B** button to change the sort order to newest (last episode first). You can't sort episodes by date. The blue progress bar does not show in this view.

Figure 14–19: All Episodes view

To playback recordings in QuickMode

QuickMode allows you to playback any recording 30% faster with pitch-corrected audio so you can watch your favorite programs in less time.

1. While you are viewing any recording, press **Play** and then **Select** to turn QuickMode on (Figure 14–20).
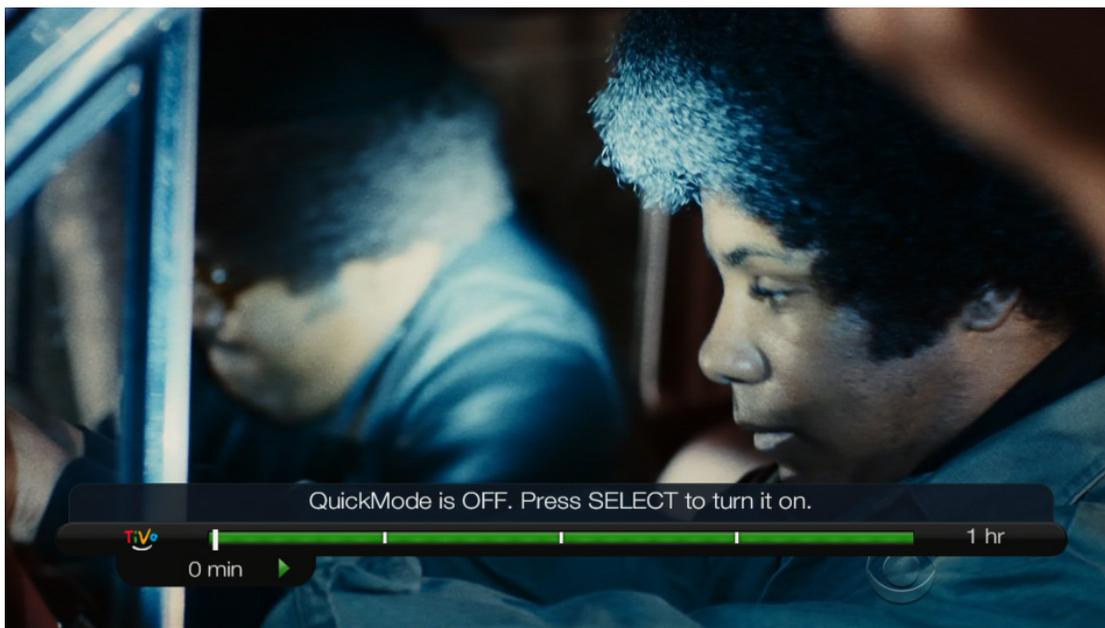
Figure 14–20: QuickMode is off

2. Press **Play** and then **Select** again to toggle QuickMode off (Figure 14–21).

Figure 14–21: QuickMode is on

Note: QuickMode is available for all recordings and live-cached content. By default, QuickMode is off. It must be enabled for each program.

To understand the icons listed in My Shows

My Shows uses different icons to distinguish between recordings and streaming videos, and to give information about the show's status. Table 14–1 shows the icons that might display in My Shows.

Table 14–1: Recording and streaming video icons

Icon	Description
	Blue circle—The show was recently recorded and is not currently a candidate for automated deletion.
	Green circle—The show was marked as "Keep Until I Delete" and is not deleted until you manually do so.
	Yellow circle with an exclamation mark—The show will be deleted within three days, but only if space is needed for a new recording.
	Streaming video is available as part of a OnePass.
	Streaming video is not available from any video provider.
No icon	The content has been deleted from the My Episodes view.

TiVo Suggestions

When a TiVo DVR has available space, it automatically records TiVo Suggestions. At first, these recordings are chosen from a generic group of popular items. To influence TiVo Suggestions, you can rate any show—whether it's live, recorded, or listed in the Guide—by pressing **Thumbs Up** or **Thumbs Down** on the TiVo remote control.

You can give a show up to three **Thumbs Up** for "great!" or three **Thumbs Down** for "terrible!". TiVo Suggestions then uses these ratings to create a list of shows you might like. The more shows you rate, the better TiVo Suggestions becomes at finding interesting shows for you. Any show that you record or create a OnePass for automatically receives one **Thumbs Up**.

The TiVo device never records TiVo Suggestions instead of content that you have chosen to record.

To turn off TiVo Suggestions

1. From TiVo Central, choose **Settings & Messages > Settings > Recording > TiVo Suggestions**.

2. Choose **No, don't record TiVo Suggestions**.

What to Watch Now

From TiVo Central, choose **What to Watch Now** (Figure 14–22) to display a menu of different collections (Popular TV, Sports, Movies, and Kids). This feature helps you discover TV content that can be watched now.
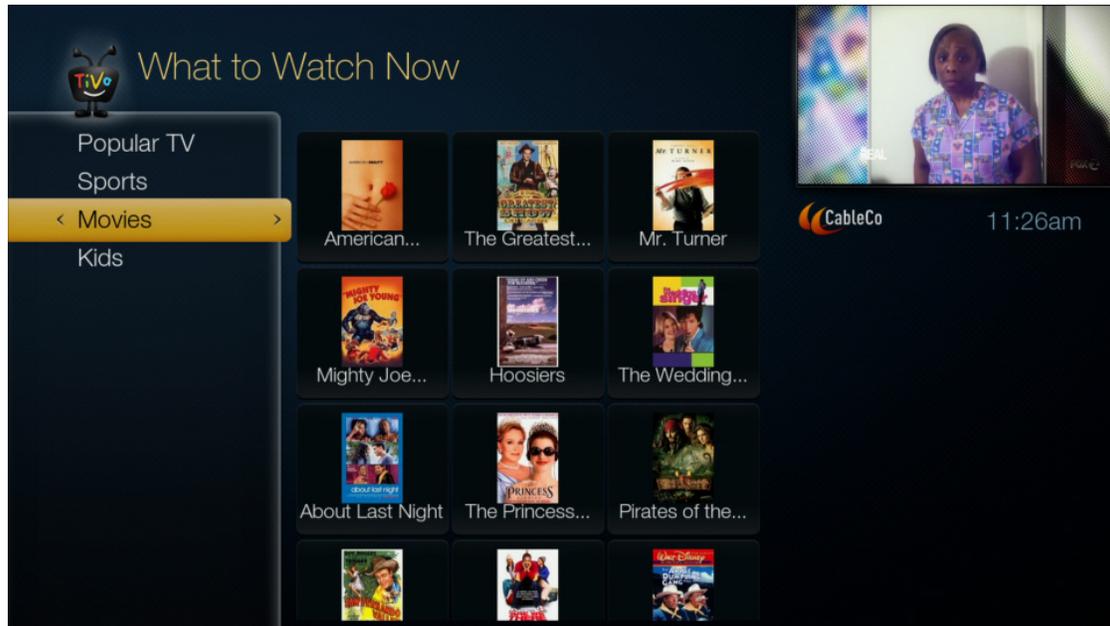
Figure 14–22: What to Watch Now screen

You can choose the programs, sporting events, or movies that appeal to you most, based on what you've viewed in the past and the programs and channels that you've selected as favorites.

What to Watch Now does not display any adult content.

Find TV, Movies, & Videos

TiVo Search allows you to find TV shows, movies, or VOD programs quickly and easily.

From TiVo Central, choose **Find TV, Movies, & Videos** > **Search** (Figure 14–23).
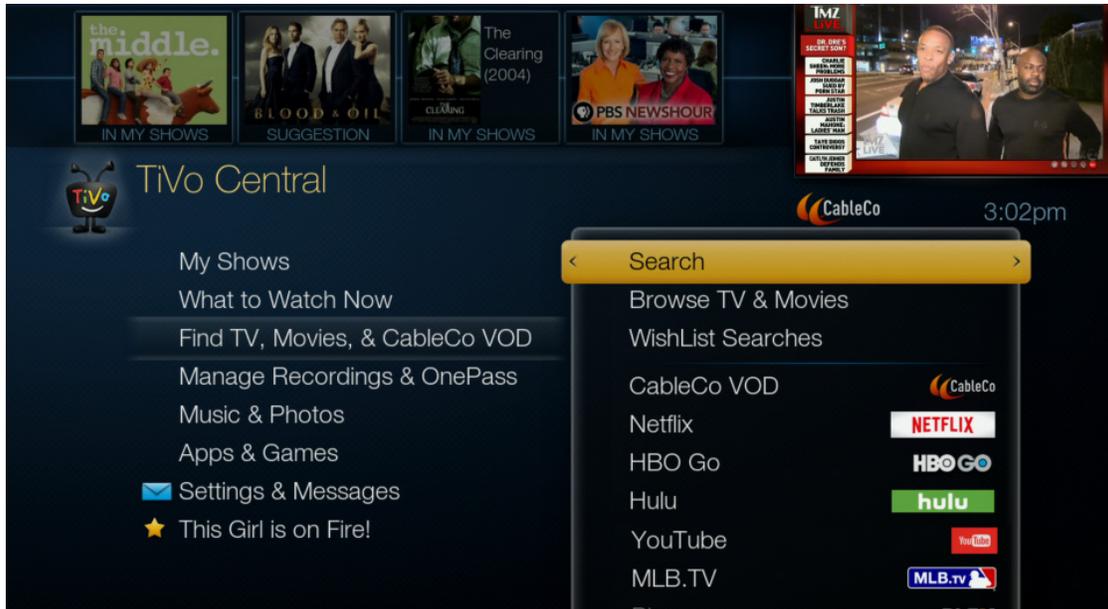
Figure 14–23: Search

You can search by show title or name (for example, actor, director) by entering keywords to find exactly what you are looking for (Figure 14–24). TiVo searches upcoming TV shows, VOD offerings, Netflix, Vudu, and more all at the same time using OneSearch. Search results are shown by popularity, not alphabetically; this minimizes the number of characters required to find what you want.

Figure 14–24: Search keyboard

You can also use **Browse TV & Movies** or the Discovery Bar to find shows to watch.

For details about searching and browsing, see *Search and Browse* on page 145.

Recording movies and individual TV shows

You can record movies, individual TV episodes, and an entire TV series (a OnePass).

To record a movie

1. From TiVo Central, choose **Find TV, Movies, & Videos > Search**.
2. On the Search keyboard, enter enough characters to display the movie name.
3. From the display of movie titles, choose the movie you want.

   The program details of the selected movie appears, along with several options.
4. Choose **Get this movie** > **Record this movie**.
5. On the Recording Options screen, choose the recording time and channel you prefer.
6. Click **OK**.

The movie is now set to be recorded.

To record the next episode of a show

1. From TiVo Central, choose **Find TV, Movies, & Videos** > **Browse TV & Movies > TV**.
2. From the display of TV program collections, find the show you want and choose **Get this show** > **Record next episode > Options**.
3. On the Recording Options screen, set the recording options you prefer, and then choose **Record episode with these options**.
4. Click **OK**.

The episode is now set to be recorded.

To set up a recording manually

You can set up a manual recording for a specific time and channel instead of searching for a particular show, which is useful for one-time events. You can also set up repeated recordings.

1. From TiVo Central, choose **Manage Recordings & OnePass > Set Up a Manual Recording** (Figure 14–25).

Figure 14–25: Manual Recording screen

2. Specify the preferred setting for each category. To move from one category to the next, press the right arrow.

- **How Often**

    Set up either a one-time or a repeating manual recording.

- **Day**

    Indicate the date when you want to record the show.

- **Channel**

    Choose the channel.

- **Start** and **Stop**

    Set up a recording for a specific time slot on a specific channel.

3. After you have set up the recording to your satisfaction, press **Select** to record, and then click **OK**.

Recording a TV series (OnePass)

The OnePass feature finds and organizes content from all providers which allows you to watch your favorite shows in a unified experience across devices (DVRs, mobile, and online). You can also create OnePasses for new TV shows and off-season TV shows before they are available in the Guide.

In addition to automatically recording each episode of your favorite TV series in linear TV, you can find and consume streaming videos from CableCo VOD and over-the-top applications (such as Netflix and Vudu) all directly from the My Shows list.

Note: OnePass replaces the Season Pass feature. Existing Season Passes are now called "Recordings only" OnePasses.

To create a OnePass

1. Choose a show from the Guide or from search results.

2. Choose **Get this show** > **Create a OnePass** (Figure 14–26).

   A OnePass is created using the default OnePass options.

Figure 14–26: Create a OnePass option

If the TiVo Service finds any conflicts in scheduling upcoming episodes of the OnePass, the OnePass Manager asks you to choose whether you want to keep the previously-scheduled recordings or to record the new show instead. If there are conflicts, the DVR might give you a list of episodes that it will not record. You can choose to accept the omission or to record all episodes, which cancels the conflicting episodes on the other OnePass. It also puts the new OnePass at a higher priority in the OnePass Manager.

If any streaming videos are available, newly-created OnePasses appear on the top of the My Shows list.

To customize the OnePass recording options

1. Choose a show to record.

2. Choose **Create a OnePass** > **Options** (Figure 14–27).

3. On the OnePass Options screen, use the arrows to adjust each option as needed.

   Note: Depending on the CableCo agreement with TiVo, the MSO might be able to customize some of these options.

Figure 14–27: OnePass Options screen

4. To include recordings and streaming videos (default), choose **Recordings & streaming videos** from the Include option.

    Note: If set to **Recordings only**, then OnePass behaves the same as Season Pass.

5. Specify the season or year from the Start from option.

6. To include content that must be rented or purchased, choose **Include** from the Rent or Buy option.

    Note: The following steps apply only to recordings and are dimmed if the Include option is **Streaming videos only**.

7. To skip reruns, choose **New only** from the Record option. To record all episodes of a show (including duplicates), choose **Everything**.

8. To record a show from any channel on which it airs, choose **All** from the Channel option.

9. To record content in HD only (if available), choose **Always** from the Get in HD option. This option is only available if the Channel option is **All**.

10. To keep all episodes in the series, choose **All recordings** from the Keep at Most option.

11. To keep recordings for as long as you want, choose **Until I delete** from the Keep until option.

12. To define an earlier recording start time or later recording stop time, modify the Start recording and Stop recording options accordingly.

13. After setting the recording options, choose **Create OnePass with these options**, and then click **OK**.

The OnePass is now set to be recorded and added to the OnePass Manager.

To cancel the recording of a OnePass episode

1. From TiVo Central, choose **Manage Recordings & OnePass > To Do List**.

2. Highlight the show title in the To Do List, and then press **Clear**.

To delete the entire OnePass or change your recording options, use the OnePass Manager (see *OnePass Manager* on page 136).

To get another OnePass for the same show

If a show runs on multiple channels (for example, first runs are on one channel and reruns are showing in syndication on another channel), the OnePass Options screen displays all the channels on which the show is offered.

To record a show from any channel on which it airs, choose **All** from the Channel option.

Streaming movies and TV shows

You can stream movies, individual TV episodes, or a single season of a TV series to be watched now or consumed directly from My Shows later. You don't have to wait for something to record before you can start watching it—you can stream it now!

Note: When a TiVo device can't connect to the TiVo Service due to either a loss of Internet connectivity in the home or to a TiVo Service outage, streaming will not work until the TiVo device reconnects to the TiVo Service.

You can also add stand-alone streaming videos even if they are not currently available from any video provider. These stand-alone streaming videos are not part of a OnePass and appear as separate items in My Shows.

To stream a movie to watch now

1. From TiVo Central, choose **Find TV, Movies, & Videos > Search**.

2. On the Search keyboard, enter enough characters to display the movie name.

3. From the display of movie titles, choose the movie you want.

    The program details of the selected movie appear, along with several options.

4. Choose **Get this movie** > **Watch now** (Figure 14–28).

Figure 14–28: Watch now option

Note: Depending on the CableCo agreement with TiVo, the MSO might be able to customize the Watch now menu to only display the CableCo VOD offering.

5.   Choose from CableCo VOD and over-the-top applications (such as Netflix and Vudu) (Figure 14–29). Content can be accessed via subscription, rental, and purchase offers.
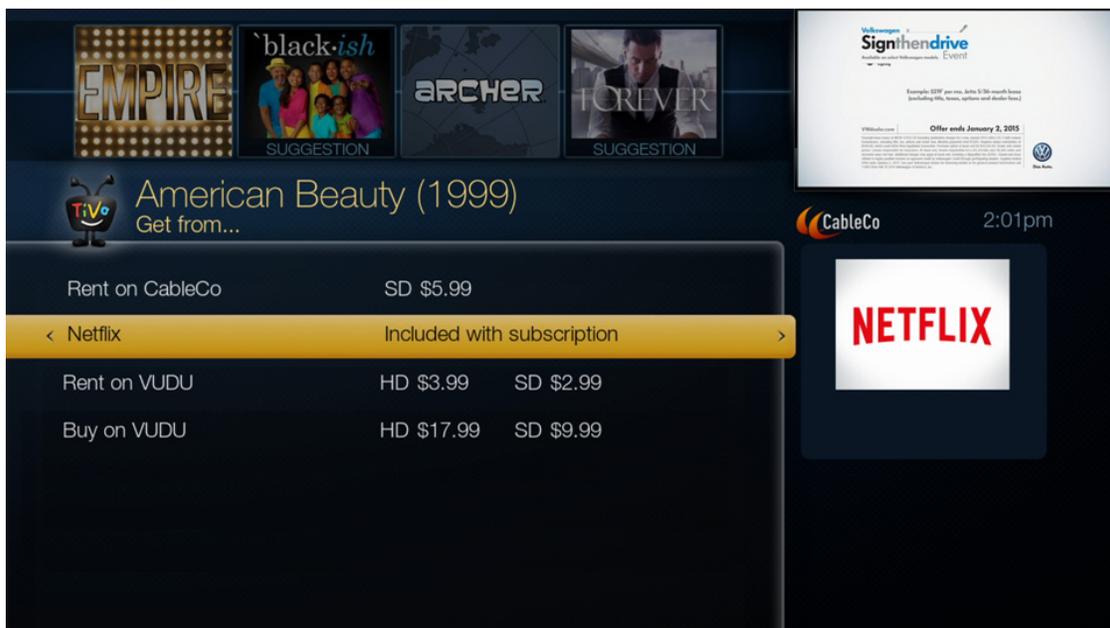
Figure 14–29: See all options list

6.   Press **Select**.

The movie can be watched now.

To add a stand-alone streaming movie to My Shows to watch later

1. From TiVo Central, choose **Find TV, Movies, & Videos > Search**.

2. On the Search keyboard, enter enough characters to display the movie name.

3. From the display of movie titles, choose the movie you want.

   The program details of the selected movie appear, along with several options.

4. Choose **Get this movie** > **Add this streaming video** (Figure 14–30).
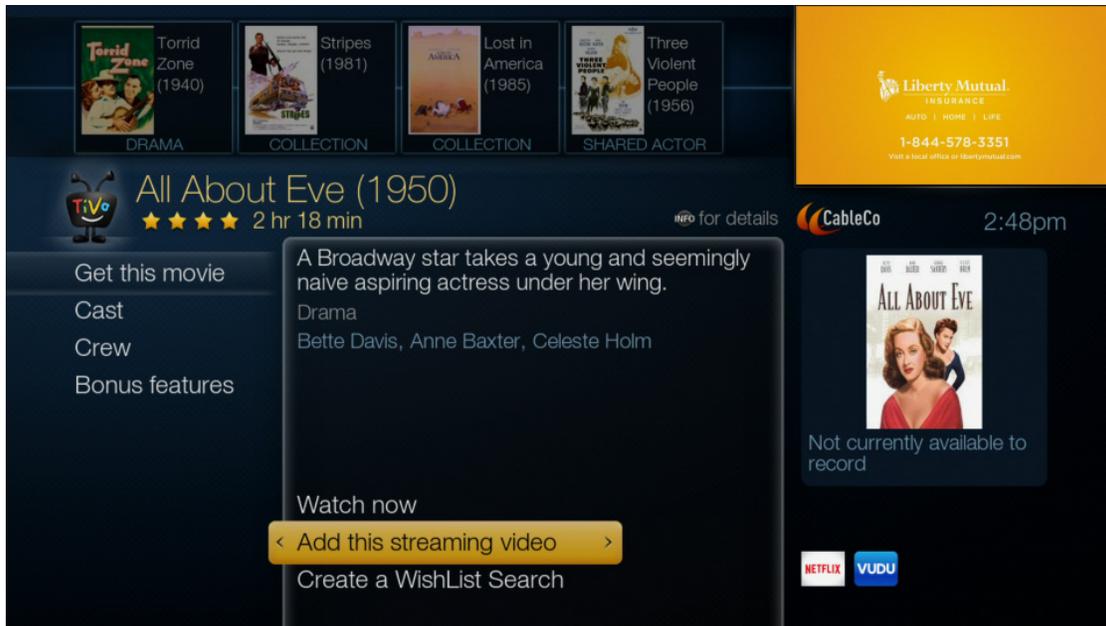
Figure 14–30: Add this streaming video option

5. Click **OK**.

If this streaming video is currently available, it appears in My Shows. Movies appear in the Streaming Movies folder. Any video that is not available appears in the Not Currently Available folder.

Note: Unlike OnePass, the stand-alone streaming video feature does not record the show on the selected TiVo DVR.

To stream an individual episode of a show to watch now

1. From TiVo Central, choose **Find TV, Movies, & Videos > Search**.

2. On the Search keyboard, enter enough characters to display the show name.

3. From the display of show titles, choose the show you want.

   The program details of the selected show appear, along with several options.

4. Choose **Episodes** (Figure 14–31).

Figure 14–31: Episodes menu

5. Choose an episode from the available seasons, and then press **Select**.

6. Choose from CableCo VOD and over-the-top applications (such as Netflix and Vudu). Content can be accessed via subscription, rental, and purchase offers.

7. Press **Select**.

The individual episode can be watched now.

To add a single season of a TV series to My Shows to watch later

1. From TiVo Central, choose **Find TV, Movies, & Videos > Search**.

2. On the Search keyboard, enter enough characters to display the show name.

3. From the display of show titles, choose the show you want.

   The program details of the selected show appear, along with several options.

4. Choose **Episodes**.

5. Choose an episode from the available seasons, and then press **Select**.

6. Choose **Add to My Shows** > **Add Season 1 streaming videos** (Figure 14–32).

Figure 14–32: Add a single season option

7. Click **OK**.

The selected season of episodes appears in My Shows.

Deleting your My Shows content

You can delete individual recordings or streaming videos, or entire series folders.

You can remove recordings and streaming videos from the My Episodes and Recordings view, so that any watched recordings and streaming videos do not clutter My Shows. You can not remove recordings and streaming videos from the All Episodes view.

After a recording or streaming video is deleted, you can still find the deleted streaming video in the All Episodes view and deleted recordings in the Recently Deleted folder. TiVo remembers previously-deleted recordings or streaming videos and will not record the content again.

To quickly delete content in My Shows

Within My Shows, choose the individual recording or streaming video you want to delete, and then press **Clear**. The content disappears from My Shows immediately without any notification.

When you delete a recording after watching, the highlighter automatically points to the next episode in the series folder. You will see the next available episode when you select the same series folder again.

Recordings might be replaced by the streaming videos if streaming videos are available from any video provider. In this case, press **Clear** again to delete the streaming videos.

To delete a series folder in My Shows

1. Within My Shows, choose the series folder you want to delete, and then press **Clear**.

2. Choose from three delete options (Figure 14–33), or cancel and don't do anything.
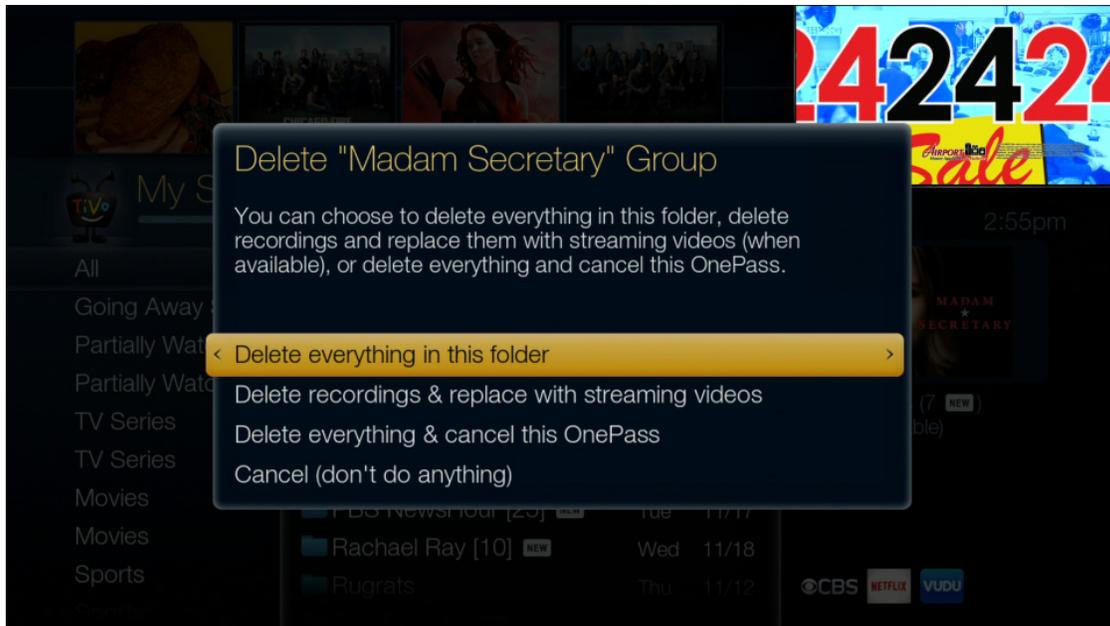
Figure 14–33: Delete a series folder

Manage Recordings & OnePass

Control how and when shows are recorded.

From TiVo Central, choose **Manage Recordings & OnePass** (Figure 14–34).
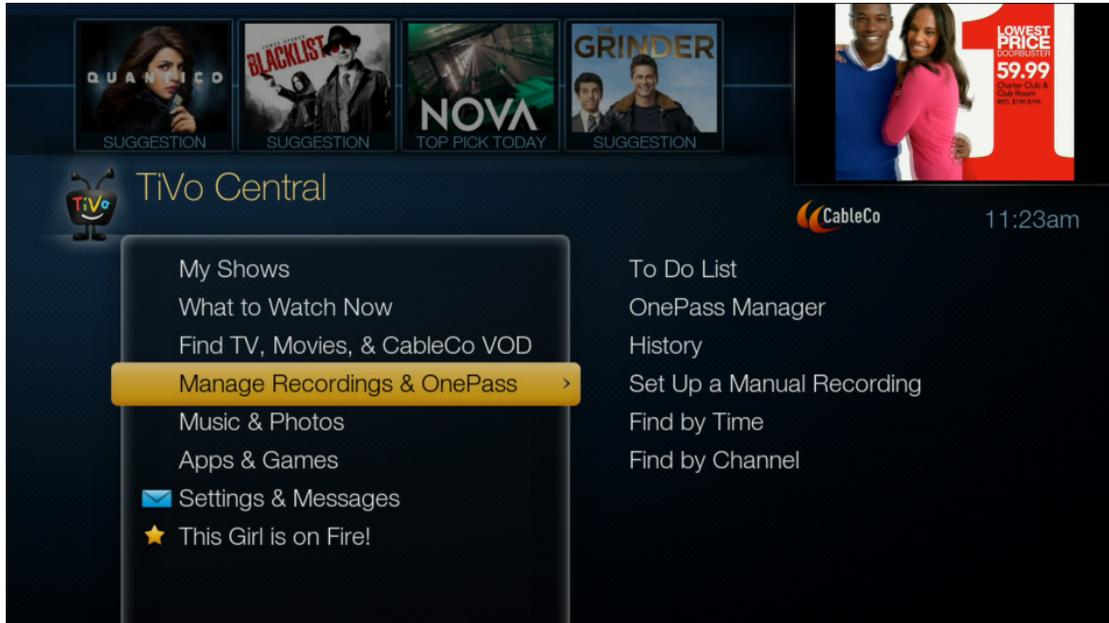
Figure 14–34: Manage Recordings & OnePass menu

To Do List

From TiVo Central, choose **Manage Recordings & OnePass > To Do List** (Figure 14–35).

Figure 14–35: To Do List screen

The To Do List shows all scheduled recordings. You can change recording options, see if there is a recording conflict, or cancel recordings.

As you are viewing the To Do List, you have the following options:

- The **C** button allows you to change the Show option to Show All, Show Will Record & Conflicts, Show Conflicts, or Show Will Record.

- When you press |**Info**, you can see why a show will not record.

- When you choose a show, the program details of the selected show appear, along with several options.

Table 14–2 shows the icons that might display in the To Do List.

Table 14–2: To Do List icons

Icon	Description
	This show is currently being recorded.
	This show is currently downloading, transferring from another TiVo DVR, or streaming from another TiVo DVR.
	Show will be recorded or downloaded as an individual download (not part of a OnePass recording or WishList Search).
	Show will be recorded or downloaded as part of a OnePass recording.
	Show will be recorded as part of a WishList Search.

OnePass Manager

You can prioritize and modify OnePasses using the OnePass Manager, including setting up recordings, replacing a OnePass, deleting a OnePass, and so on.

OnePass recordings are prioritized by the date they are set up: the oldest has the highest priority, and so on. When scheduling a show that has conflicts, shows with the highest priorities are recorded, depending on available tuners and space.

To use the OnePass Manager

1. From TiVo Central, choose **Manage Recordings & OnePass > OnePass Manager** (Figure 14–36).

Figure 14–36: OnePass Manager screen

2. To choose a OnePass or WishList Search, use the up and down arrows.

    The preview pane displays video available provider icons and information (Recording and streaming videos, Start from available season, Keep until, and so on) for the highlighted show title.

3. Press the right arrow to highlight the arrow to the right of the show title.

4. Use the up and down arrows to move the highlighted show title up or down in the list.

5. Highlight the show title and press **Select** to view the available OnePass or WishList Search options:
    *   Modify options
    *   View upcoming episodes
    *   View conflicts
    *   Cancel this OnePass
    *   Explore this show

To replace a OnePass

You might want to replace an existing OnePass with a new one for the same show. For example, you might have just replaced an old standard-definition TV with a new HDTV and now want to record the HD version of the OnePass show, which is on a different channel.

1. From TiVo Central, choose **Manage Recordings & OnePass > OnePass Manager**.

2. Make a note of each OnePass you want to change and its priority in the OnePass Manager.

3. Highlight the OnePass you want to delete, and then press **Select**.

4. Choose **OnePass Info > Cancel this OnePass** (Figure 14–37).

Figure 14–37: Cancel this OnePass option

5. To confirm, choose **Yes, cancel this OnePass**.

6. Create a new OnePass for the show.

   The new OnePass appears at the bottom of the OnePass Manager list.

7. If needed, use the up and down arrows next to the show title to move it to the preferred recording priority order.

To cancel a OnePass

1. From TiVo Central, choose **Manage Recordings & OnePass > OnePass Manager**.

2. Highlight the OnePass you want to delete, and then press **Select**.

3. Choose **OnePass Info > Cancel this OnePass**.

4. To confirm, choose **Yes, cancel this OnePass**.

The OnePass is canceled, and the OnePass Manager screen returns.

All previously-recorded episodes remain in My Shows until you choose to delete them.

To see your recording history

From TiVo Central, choose **Manage Recordings & OnePass > History** (Figure 14–38).
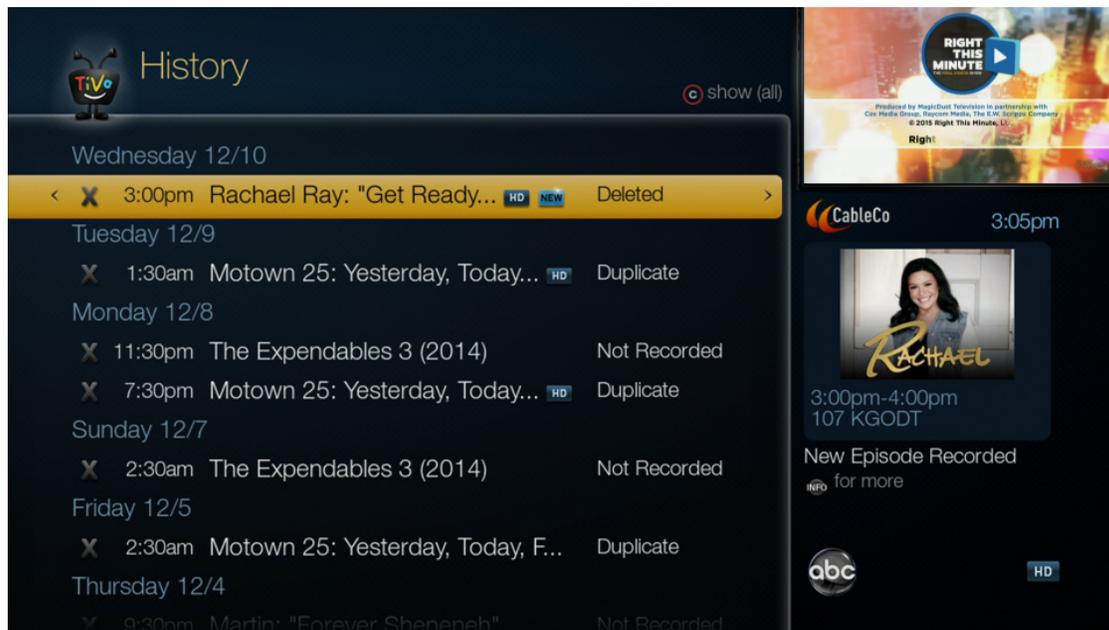
Figure 14–38: History screen

The History screen displays a list of all shows that were not recorded or were deleted. Press |**Info** for more details on why a show was not recorded.

Recordings that are not completed due to a full tuner conflict are not saved as partial recordings, but are noted as recording failures in the History screen.

Recordings that are only partially completed due to a technical failure (lost signal, power failure, or subscriber-generated failure) are noted as partial recordings in the description of the show in My Shows.

Music & Photos

From TiVo Central, choose **Music & Photos** (Figure 14–39). Your options are displayed, such as Plex, Spotify, Pandora, and so on.
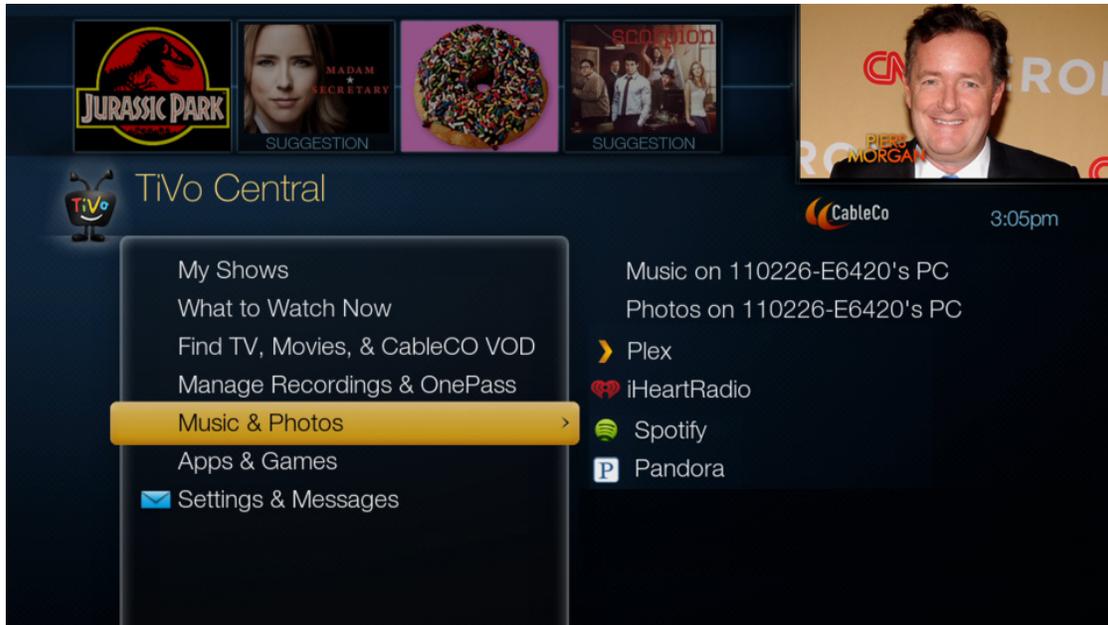
Figure 14–39: Music & Photos menu

To stream music

You can stream music from your computer or from the Internet to the TiVo device for playback through a TV or home entertainment system.

1. Install TiVo Desktop Plus on your computer; see *TiVo Desktop Plus for PC* on page 263.

2. Publish the music you want to hear.

   Note: *Publishin*g music means making MP3 files available over the home network to the TiVo device. Publishing does not copy music files to the TiVo device, so published music doesn't use any space on the TiVo device.

3. After publishing, your music library appears in a folder under **Music & Photos**.

   There are two options for how your music is named. If the computer name is My Computer and your user name is Jill, the options are called *Jill's Music on My Computer*. If the computer is not named, the options are called simply *Jill's Music*.

4. Choose the title you want to play from your music library, and then press **Play**.

   After the first song ends, the second song in the playlist or folder begins.

To stream music from the Internet, choose a service (such as Pandora) from the **Music & Photos** menu and follow the directions in the application.

To change music play options

To change music play options, choose your music, press **Play**, and then press **Enter**. The Music Play Options screen lets you change the following options:

- Shuffle—Plays songs in the selected playlist or folder in random order. When this option is off, the TiVo device plays songs in a folder alphabetically by file name, in the order shown on the screen.

- Repeat—Plays songs in the selected playlist or folder repeatedly. You can choose to repeat all songs, or just one. When this option is off, the TiVo device plays the entire playlist or folder only once.

- Include subfolders—When this option is on, the TiVo device plays:
  - All the songs in the selected folder
  - All the songs in other playlists or folders within the selected folder

  When Include subfolders is off, the TiVo device doesn't automatically play songs in other playlists or folders within the selected folder.

Note: For information about how to save files in MP3 format, refer to the instructions for the computer's music program.

To view photos

You can view slide shows of photos from your computer on a broadband-connected TiVo device.

1. Install TiVo Desktop Plus on your computer; see *TiVo Desktop Plus for PC* on page 263.

2. Publish the photos you want to see.

   Note: *Publishing* photos means making photo files available over the home network to the TiVo device. Publishing does not copy photo files to the TiVo device, so published photos doesn't use any space on the TiVo device.

3. After publishing, your photos appear in a folder under **Music & Photos**.

   There are two options for how your photos are named. If the computer name is My Computer and your user name is Jill, the options are called *Jill's Photos on My Computer*. If the computer is not named, the options are called simply *Jill's Photos*.

4. To view a slideshow, choose the folder and press **Play**.

5. To view individual photos, choose the folder, press **Select**, and then navigate to the photo and press **Select** again.

   Options for viewing the photo include rotation options and the option to view a slideshow of all photos in this folder.

You can also publish photos to an online Plex account and view them from your TV. Plex organizes your video, music, and photo collections and streams them to every TV in your house.

To change slide show options

To change slide show options, choose a photo or folder, press Play, and then press Enter. The Slide Show Options screen lets you change the following options:

- Slide Delay—Determines the time to display each photo before going to the next.
- Shuffle—Displays the contents of the selected folder in random order. When this option is off, the TiVo device displays the folder's photos alphabetically by file name, as shown in the grid on the screen.
- Repeat—Displays the contents of the selected folder repeatedly. When this option is off, the TiVo device displays the folder's photos only once.
- Include subfolders—When this option is on, the TiVo device views:
  - All the photos in the selected folder
  - All the photos in other folders within the selected folder

  When Include subfolders is off, the TiVo device doesn't automatically view photos in other folders within the selected folder.

Apps & Games

Third-party applications that appear on TiVo devices depend on the CableCo agreement with TiVo. The MSO might include applications and games such as Opera TV Store Apps, Moviefone, and TechCrunch.

Showcases are special offers supplied through the TiVo Service. From TiVo Central, choose **Apps & Games > Showcases** (Figure 14–40). Showcases that appear on TiVo devices depend on the CableCo agreement with TiVo.
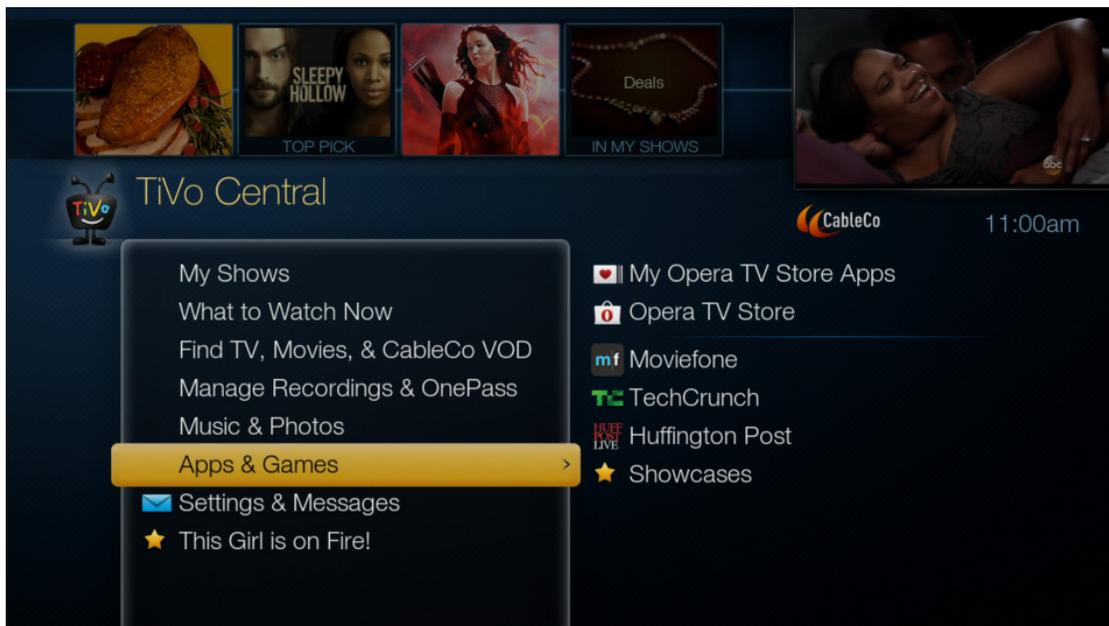
Figure 14–40: Apps & Games menu

Settings & Messages

For detailed information about settings and messages, see *Settings and Messages* on page 207.

Search and Browse

15

The Find TV, Movies, & Videos feature allows you to locate a show title or person's name or browse for shows under Gracenote categories. The TiVo Service searches TV shows, web videos, and Video on Demand (VOD) offerings for the next two weeks using a standard search interface.

This chapter covers the following topics:

- *Search* on page 145
- *Browse TV & Movies* on page 147
- *WishList Searches* on page 150
- *Customizing Search and Browse for CableCo* on page 151

Search

You can perform a keyword search by show title, person name (actor, director, and so on), or keyword. The TiVo Service searches upcoming broadcast shows, web videos, and VOD offerings all at the same time. Search results are listed by most popular to reduce the number of characters you must enter before finding what you want. Figure 15–1 shows the Search option in the **Find TV, Movies, & Videos** menu.
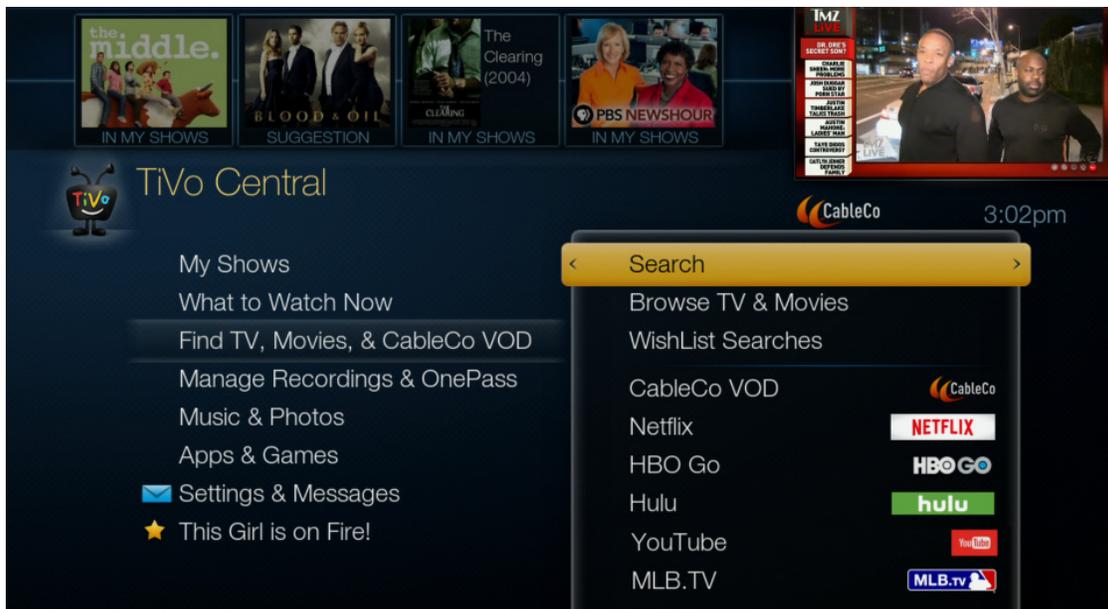
Figure 15–1: Search

Keyword guidelines

You can set up a keyword search for shows with specific words in the show or episode title, description, actor, director, year, or category.

- Replace hyphens (-), slashes (/) and periods (.) with spaces. For example, use the keyword "20 20" to search for the title "20/20."

- Any other marks, such as apostrophes (') and ampersands (&), are ignored. For example, use the keyword phrase "6 OCLOCK NEWS" to search for the title "6 O'Clock News."

To perform a keyword search

1. From TiVo Central, choose **Find TV, Movies, & Videos > Search**.

2. To spell out the word you want, use the letter grid by pressing the arrows to move around, and then press **Select** on each letter you want to enter (Figure 15–2).

Figure 15–2: Keyword search

As you select letters, a list of possible matches sorted by popularity appears on the right. Press the **A**, **B**, and **C** buttons to change how results are displayed. Use the up and down arrows to page through the results.

Note: Some actor or director names might not be listed. To search for a name that is not on the list, enter the name in the format: Last Name, First Name. Match the spelling of the name exactly.

3. Select letters until you see what you are searching for. Insert a space by pressing **Fast Forward**.

4. If you make a mistake, press **Clear** to erase everything, or **Rewind** to erase one letter at a time.

Note: Tips for entering words in a keyword search also apply to WishList Searches. For more information, see *WishList Searches* on page 150.

Browse TV & Movies

Browse TV & Movies allows you to find the programs that are of interest to you.

The content displayed in these collections generally relies on metadata brought into the TiVo Mind metadata repository from a variety of sources, such as Gracenote and selected content providers.

From TiVo Central, choose **Find TV, Movies, & Videos > Browse TV & Movies**. Figure 15–3 shows your choices on the Browse TV & Movies screen.

Figure 15–3: Browse TV & Movies screen

Browse for shows by using any of the following options:

- Collections—Browse shows that are grouped by related subject matter, such as holiday movies. Collections authored by TiVo are published to all MSO and TiVo retail devices. You can also commission TiVo-authored collections for your platforms through TiVo Professional Services (for example, *VOD – New Releases*).

- Movies—Browse movies that are available either on channels you receive or as VOD. The categories presented on this screen can be based on a combination of one or more Gracenote genres. The categories are used to filter the mapped movie catalog into the set of categories. In addition, content might be authored by TiVo or CableCo.

- TV—The categories presented on this screen are based on a combination of one or more Gracenote genres and are used to filter the mapped linear broadcast TV catalog into the set of categories.

- Sports—Browse upcoming sports shows that are available either on channels you receive or from VOD offerings.

- Kids & Family—Browse upcoming children shows that are available either on channels you receive or from VOD offerings.

A WishList Search can also be useful for finding items that you want. Instead of relying on offerings that are available in the next two weeks, a WishList Search allows you to specify movies or other events that are not yet available. For more information on WishList, see *WishList Searches* on page 150.

Collections browsing

You can browse collections, or the groups of shows on related subject matter that are recommended by the TiVo Service, CableCo, or video providers.

Collections can be collections authored for CableCo through TiVo Professional Services, for example, *VOD – Hot Releases*.

There are two types of collections: regular and nested.

- Regular collections—Displays movies and TV content in full-screen poster browsing ([Figure 15–4](#)).
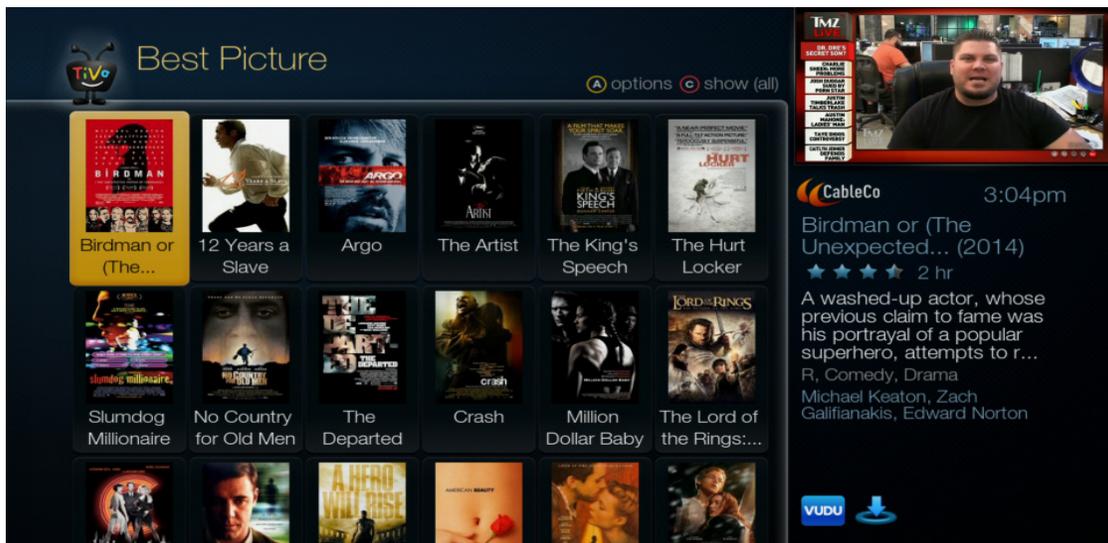
Figure 15–4: Regular collections with full-screen poster browsing

- Nested collections—Includes other collections and content, appearing in full-screen poster browsing ([Figure 15–5](#)).

Figure 15–5: Nested collections with full-screen poster browsing

To select from a collection

1. From TiVo Central, choose **Find TV, Movies, & Videos > Browse TV & Movies > Collections**.

2. You can select options for how to view the collections.
   - To see options, press the **A** button on the TiVo remote control.
   - To change how the results are displayed, press the **C** button.

3. Choose the collection you want.

   The programs in that collection appear in poster form.

4. Choose a program.

   The program description and its availability appear.

5. Choose from the options that are offered for that program, such as **Get this movie**, or **Add this streaming video**.

Movies, TV, and Sports browsing

1. From TiVo Central, choose **Find TV, Movies, & Videos > Browse TV & Movies**.

2. Choose **Movies** or **TV** or **Sports**, and then choose the collection you want to browse.

   This browsing is similar to choosing from collections.

If you choose **TV**, TiVo Suggestions appears as one of your choices. For information on TiVo Suggestions, see *TiVo Suggestions* on page 122.

WishList Searches

A WishList Search finds shows that match your search criteria on any channel that you receive. You can search for something specific by creating a WishList Search with multiple criteria. For example, you might create a WishList Search for actor *George Clooney*, category *Movies*, and sub-category *Action*. This WishList Search finds only action movies starring George Clooney.

You can also use WishList Searches to find something very specific. For example, the keyword *GIANTS* with category *Football* would find Giants football games, but not Giants baseball games.

WishList continues searching until you cancel it.

If you choose to auto-record matches from a WishList Search, these recorded matches appear in your My Shows marked with a star. If you want to be sure that all matching shows are recorded, give the auto-recording WishList Search a high priority in the OnePass Manager. OnePass Manager handles any conflicts for WishList Searches, as it does for OnePass recordings. For more information on OnePasses, see *Recording a TV series (OnePass)* on page 126.

Note: Auto-record is on by default for a WishList Search, but this recording option can be modified if it produces an unacceptable number of recordings.

To create a WishList Search

WishList Searches need to be very specific or they produce too many results, perhaps more than you expect. For example, if the keyword is CHOCOLATE, the results include cooking shows, shows about chocolate Labradors, chocolate Easter bunnies, the movies *Like Water for Chocolate*, *Willy Wonka and the Chocolate Factory*, and so on.

If you are using auto-record with WishList Search, precision is especially important, or you might record far too many shows.

If you can't find what you are searching for in the TV listings and don't want to choose a show from a VOD provider, you can create a WishList Search for the show.

1. From TiVo Central, choose **Find TV, Movies, & Videos > WishList Searches > My WishLists > Create a new WishList Search**.

   Figure 15–6 shows the options for specifying a WishList Search.
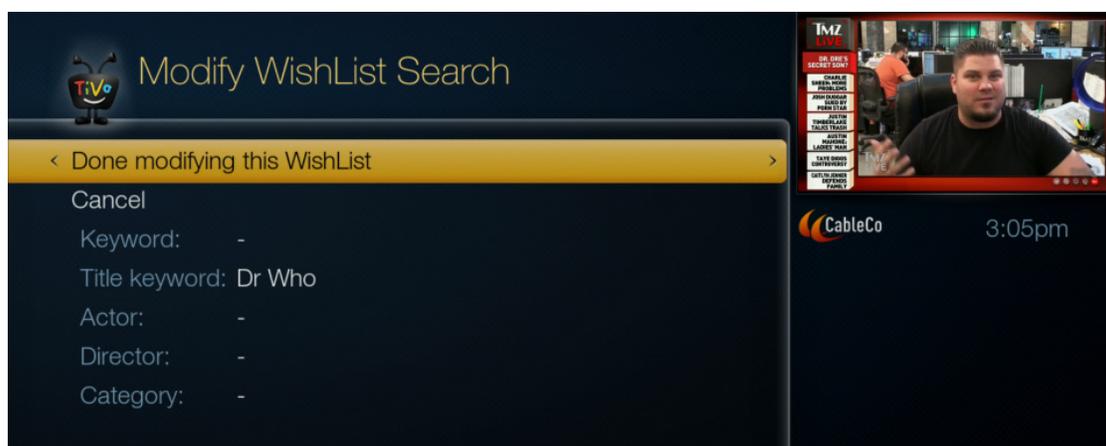
Figure 15–6: Create a WishList Search screen

2. Enter the criteria you want to search for.

   The Enter Keyword screen appears when you choose an option. For additional information on keyword searching, see *To perform a keyword search* on page 146.

3. When you have specified your search options, choose **Done creating this WishList**.

4. To see future results for an existing WishList, from TiVo Central, choose **Find TV, Movies, & Videos > WishList Searches > My WishLists**.

5. The TiVo Service automatically assigns a name to the WishList Search. To assign a different name, choose **Name this WishList**.

To delete a WishList Search

1. From TiVo Central, choose **Find TV, Movies, & Videos > WishList Searches > My WishLists**.

2. Highlight the WishList Search you want to delete and press **Clear**.

3. To confirm, press **Delete this WishList**.

The WishList Search is deleted, and you return to the WishList Searches screen.

All previously-recorded programs remain in My Shows until you delete them.

Customizing Search and Browse for CableCo

TiVo Search relies on a metadata database called the TiVo Mind, which responds to searches and unifies the search experience across all content providers (including CableCo) that are available on a particular TiVo device. The TiVo Mind catalog includes assets in VOD, for both CableCo and video providers, such as Netflix and Hulu. The TiVo Mind holds two weeks of linear Guide data and a catalog of movie and TV program metadata provided by the Gracenote.

This section covers the following topics:

- *Import policies* on page 151
- *To author in Browse TV & Movies* on page 152
- *To manage the visibility of super collections* on page 152
- *To manage the display order of collections and assets* on page 153
- *To manage the video provider list* on page 154

Import policies

The following policies control the TiVo Mind assets that CableCo can use:

- Search and browse results show only those items that are currently available in the VOD (CableCo and broadband, as available) catalog, or are available in the next two weeks on Live TV.

- When you explore programs (for example, by looking up the cast and crew), the information includes all assets that are in the Gracenote catalog, not just those that are

currently available. For example, if you look up "Daniel Day-Lewis," most of his films are listed, including those that are not available in VOD and/or linear formats.

This design allows you to create WishList Searches for assets that are not presently available. As such, all content is actionable on the DVR. For example, if *Gangs of New York* is not presently available, you can create a WishList Search for it. The next time the movie is available on TV, it is recorded. Similarly, you can create a WishList Search for "Daniel Day-Lewis" to record all his upcoming programs.

To author in Browse TV & Movies

The Browse TV & Movies interface is based on collections that contain either authored content or programmatically-generated content based on XML feeds authored by third-party sources (typically Gracenote).

Collections showing titles that are available for a particular subscriber are based on the following criteria:

- Mapped content for programmatic collections, from content sources available to the subscriber, based on CableCo video provider filtering (typically CableCo VOD, linear, and selected broadband providers).
- Both mapped and unmapped content for authored collections (the entire content catalog including CableCo VOD, linear, selected video providers, and the Gracenote catalog).

Programmatic collections are generated based on results returned by a search in the TiVo Mind catalog based on an input metadata feed (typically an XML feed from Gracenote). For example, the *Sci-fi & Fantasy Movies* collection is based on a search for assets in the TiVo Mind with the Gracenote genres of science fiction or fantasy. Unmapped assets might be awaiting mapping, or they might be too brief for mapping.

To manage the visibility of super collections

While the relative sort order of super collections is fixed, CableCo can control whether the Top Picks and Favorites super collections appear. This can be controlled in the following ways:

- By product platform—For example, DVR versus HD set-top box
- By product generation—For example, Series4 TiVo set-top box versus later generations
- By CableCo customer—For example, retail versus MSO

To manage the visibility of selected collections

The collections listed in Table 15–3 can be independently shown or hidden with the same flexibility as the two root collections *Top Picks* and *Favorites* (that is, by platform, by generation, or by MSO).

Table 15–3: Default visibility of selected collections

Super collection	Collection	Retail setting	MSO default setting	Notes
Movies	4-Star Movies this Week	On	On	Gracenote 4-star rated movies that are broadcast during the week.
Movies	Drama Movies	On	On	Gracenote published feeds.
Movies	Comedy Movies	On	On	Gracenote published feeds.
Movies	Gay & Lesbian Movies	On	On	Gracenote published feeds.
Movies	Sports Movies	On	On	Obsolete. Expected to be removed due to the lack of content matching this criterion.
TV	BestBetsThisWeek	On	On	Gracenote published feeds for TV shows that are broadcast during the week.
TV	Most Popular TV	On	On	ARM data for OnePasses.
TV	TiVo Suggestions	On	On	Link to the TiVo Suggestion UI page.
TV	News&BusinessTV	On	On	Gracenote published feeds.

To manage the display order of collections and assets

The order of collections within super collections applies to all CableCo subscribers. However, TiVo can author the visibility of customized collections created for CableCo subscribers through the TiVo authoring services, to make sure that those customized collections appear in front of any generic collection. For example, TiVo can publish two authored collections containing the VOD catalog of an MSO, such as CableCo, to appear at the top of any authored or programmatic collection. The visibility for the subscriber is then controlled by using its distribution group. CableCo subscribers would see CableCo *On Demand* before the *What's New* collection in the Collections super collection.

The order of items within a collection depends on the type of collection:

- Authored collections are published by TiVo. The content ordering is defined by the editor.
- Programmatic collections are automatically generated. Their content is typically sorted alphabetically (based on the asset title in the metadata).
- Subscribers can change the sort order of items in the collections and choose to sort by star rating, popularity, or date (air or publish date) instead of alphabetical order.

To manage the video provider list

CableCo can control the video provider list by enabling or disabling selected video providers. If a video provider is removed from the list, that catalog disappears, and the launch points disappear from the TiVo UI.

Parental Controls

Parental Controls allow parents to easily filter programs to make sure that only approved content is watched or recorded. Parental Controls let you lock channels and set rating limits on movies, television shows, and Video on Demand (VOD) content. A Personal Identification Number (PIN) is required to view, record, or delete programs that exceed limits or are on locked channels.

Note: Parental Controls only work on programs in My Shows and on channels that pass through the TiVo DVR. If you are using Multi-Room Streaming or Multi-Room Viewing, the Parental Controls settings on the host DVR dictate the behavior for the client DVR.

This chapter covers the following topics:

- *Using Parental Controls* on page 155
- *FCC TV ratings (USA)* on page 162
- *CBSC ratings (Canada)* on page 163

Using Parental Controls

TiVo provides several ways for parents to control what their children see on TV, from prohibiting specific shows to blocking out selected channels or all channels.

From TiVo Central, choose **Settings & Messages > Parental Controls**. The Parental Controls screen (Figure 16–1) offers the following options:

- *To turn on Parental Controls* or *To turn off Parental Controls*
- *To adjust the rating settings*
- *To set channel locks*
- *To change the PIN*
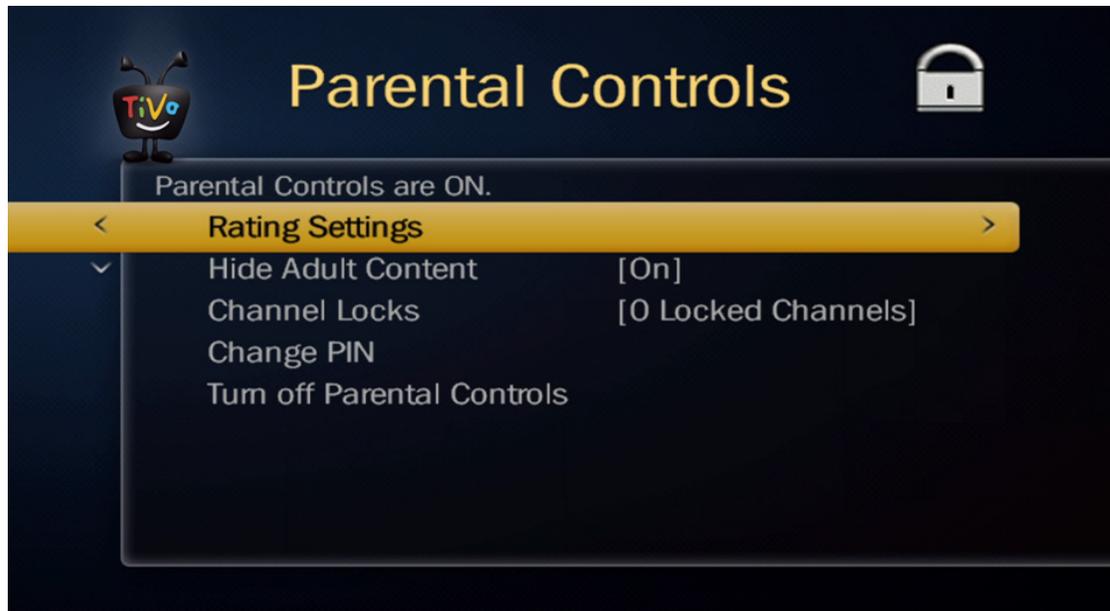
Figure 16–1: Parental Controls screen

Table 16–1 describes the Parental Controls padlock icons.

Table 16–1: Parental Controls padlock icons

Icon	Name	Description
🔒	Locked	The padlock icon is locked and bright (on). When attempting to record, view, or delete a program that exceeds Parental Controls, a screen with a Parental Controls message prompts you to enter a PIN. After you enter the correct PIN, Parental Controls are temporarily off.
🔓	Unlocked temporarily	The padlock icon is open and bright (temporarily off). Any program or channel can be viewed, but the PIN is required to change Parental Controls settings.
🔓	Unlocked	The padlock icon is open and dim (off). Anyone can view any program or watch any channel without entering a PIN. No PIN is required to change Parental Controls settings. When the TiVo DVR is first set up, Parental Controls are off. If Parental Controls are turned on and then turned off, the PIN is deleted. If you turn Parental Controls back on, you will need to select a new PIN.

You can choose whether Parental Controls automatically re-lock after being temporarily off. There are two settings:

● Auto Re-lock on—If Parental Controls are temporarily off, they will automatically re-lock if the TiVo remote control has not been used in four hours, or if the TiVo DVR is put into Standby mode. If the TiVo DVR loses power for any reason, the Parental Controls automatically re-lock when power is restored.

- Auto Re-lock off—Parental Controls do not automatically re-lock. They remain temporarily off until you turn them back on, or until the TiVo DVR is put into Standby mode.

To turn on Parental Controls

1. From TiVo Central, choose **Settings & Messages > Parental Controls**.

2. On the Parental Controls screen, choose **Turn on Parental Controls**.

   TiVo asks you to choose a four-digit PIN, and then immediately asks you to enter it again.

Viewers need to enter the PIN to watch blocked channels.

To temporarily turn off Parental Controls

If you want to watch a blocked program, you can temporarily turn off Parental Controls. Enter the PIN when prompted.

Note: If you choose a channel or program with unsuitable content while Parental Controls are on, the following message appears:
`Rating limit exceeded. Press Select to enter your PIN.`

The blocked channel or program is displayed only after you enter the PIN.

To turn off Parental Controls

1. From TiVo Central, choose **Settings & Messages > Parental Controls** > **Turn off Parental Controls**.

2. Enter the PIN when prompted.

3. To exit and save your settings, press the left arrow, or press the **TiVo** button to return to TiVo Central.

To adjust the rating settings

The Rating Settings option lets you block shows based solely on their maturity level, regardless of which channel they're on. The FCC ratings organizes TV shows and movies according to their appropriate audience, type of content, and theatrical rating.

You can choose rating limits for TV programs and movies. You can also choose how to handle unrated material.

From TiVo Central, choose **Settings & Messages > Parental Controls > Rating Settings** (Figure 16–2).
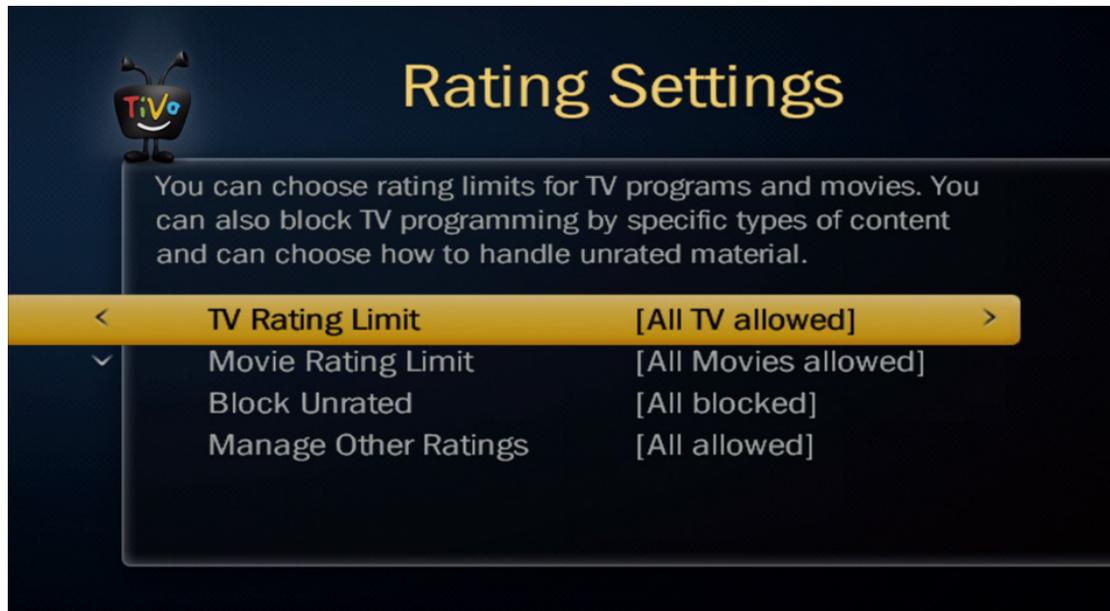
Figure 16–2: Ratings Settings screen

The Rating Settings screen offers the following options:

- **TV Rating Limit**

  The TV Rating Limit option lets you block TV programs based on their FCC TV ratings (Table 16–2) or Canadian CBSC ratings (Table 16–3). Initially, all the programs for all the TV ratings are unblocked.

  Ratings shaded in green are not locked; ratings in red are locked. Use the up and down arrows to indicated which ratings are locked. Figure 16–3 displays FCC TV ratings as an example. Functionality for Canadian CBSC ratings work the same.
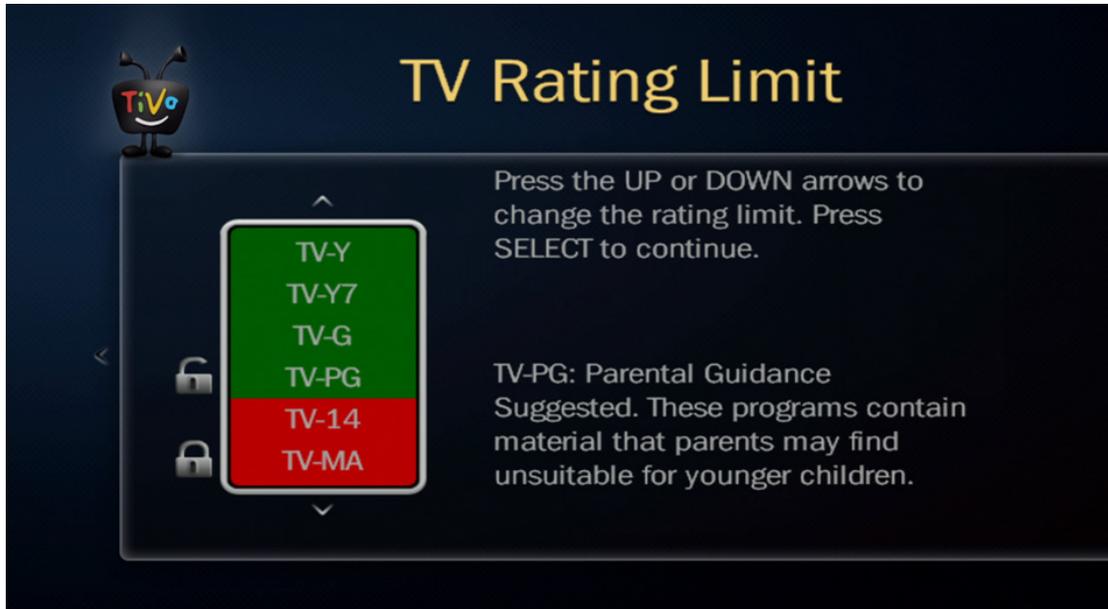
Figure 16–3: TV Rating Limit screen

Each time you press the up arrow, the TV rating category turns red, which indicates that you have blocked that particular type of programming. When you do so, a padlock icon appears next to the rating.

To remove blocking for a particular rating, press the down arrow to the rating you want to change. An unlocked icon appears.

To return to the Rating Settings screen, press **Select**.

- **Movie Rating Limit**

  The Movie Rating Limit option blocks movies according to their theatrical rating:

  - G—General Audiences. All ages admitted.
  - PG—Parental Guidance Suggested.
  - PG-13—Parents Strongly Cautioned. Some material might be inappropriate for children under 13.
  - R—Restricted. Children under 17 require accompanying parent or adult guardian.
  - NC-17—No one 17 and under admitted.
  - AO—Adults Only. Contains content that is considered unsuitable for people under 18. Cannot be bought by anyone under 18.

  Ratings shaded in green are not locked; ratings in red are locked. Use the up and down arrows to adjust the ratings that are locked.

- **Block Unrated**

  Sometimes a show description lacks a rating. You can set your TiVo to block any unrated TV show or movie. Use this setting to block all unrated movies or TV shows. When TiVo finds a TV show with no ratings, it assigns the show to a TV-MA rating (Mature Audience

Only). When TiVo encounters an unrated movie, it automatically assigns the AO (Adults Only) rating.

- **Manage Other Ratings**

  Regional ratings are rating systems defined by local and national groups. You can manage your settings for the different regional ratings here.

  When you choose **Manage Other Ratings**, if other rating systems are enabled on your TiVo (for example, Canadian Ratings), they are listed on your screen.

  Choose the rating system of interest and set it as needed.

To hide adult content

1. From TiVo Central, choose **Settings & Messages > Parental Controls**.

2. On the Parental Controls screen, choose **Hide Adult Content**, and then choose **Hide adult channels & shows**.

   If Parental Controls are on, then adult metadata will be hidden from search results, the Guide, Discovery Bar, WishList Searches, Browse TV and Movies, My Shows, and so on (Figure 16–4).

Figure 16–4: Hide Adult Content

To set channel locks

You can block any or all channels, regardless of their content.

1. From TiVo Central, choose **Settings & Messages > Parental Controls** > **Channel Locks** (Figure 16–5).
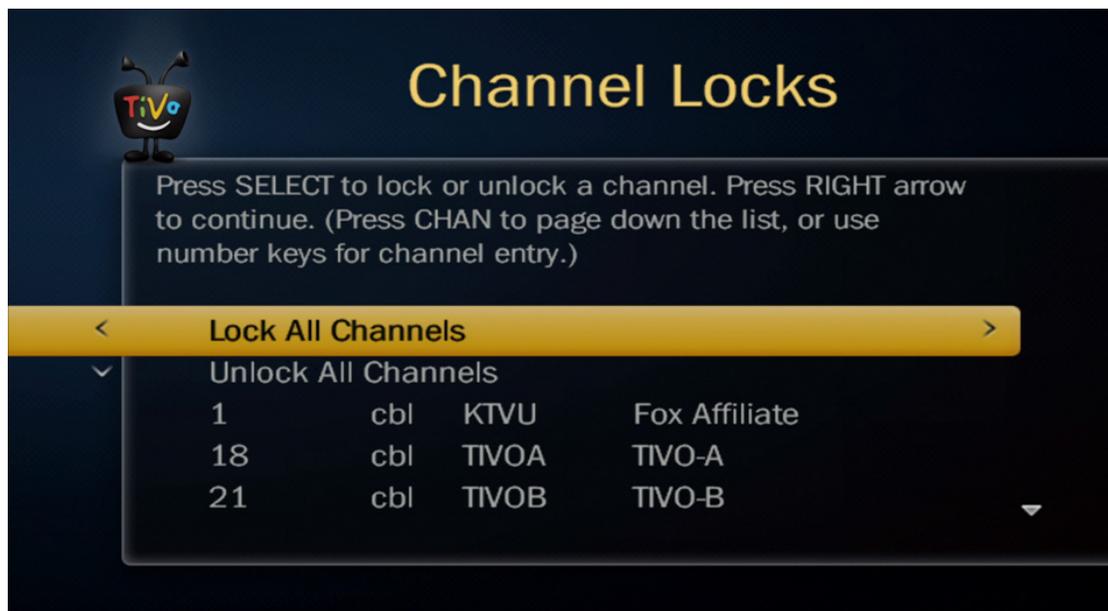
Figure 16–5: Channel Locks screen

2. Highlight the channel you want to lock or unlock and press **Select**.

3. To exit and save your settings, press the left arrow, or press the **TiVo** button to return to TiVo Central.

To change the PIN

1. From TiVo Central, choose **Settings & Messages > Parental Controls > Change PIN**.

2. Enter the old PIN.

3. Enter and confirm the Parental Controls PIN.

4. To exit and save your settings, press the left arrow, or press the **TiVo** button to return to TiVo Central.

FCC TV ratings (USA)

Table 16–2: FCC TV ratings

TV rating	Name of rating	Description
TV-Y	All Children	This program is appropriate for all children. The themes and elements in this program are specifically designed for a very young audience, including children from ages two to six.
TV-Y7	Older Children	This program is for children age seven and above. Themes and elements in this program might include mild fantasy or comedic violence, or might frighten children under the age of 7.
TV-G	General Audience	Most parents would find this program suitable for all ages.
TV-PG	Parental Guidance Suggested	Although this rating does not signify a program specifically for children, most parents might let younger children watch this program unattended. It contains little or no violence, no strong language, and little or no sexual dialog or situations.
TV-14	Parents Strongly Cautioned	This program contains material that parents might find unsuitable for younger children. Many parents might want to watch it with their younger children. The theme itself might call for parental guidance and/or the program contains one or more of the following: moderate violence (V), some sexual situations (S), infrequent coarse language (L), or some suggestive dialog (D).
TV-MA	Mature Audience Only	This program contains some material that many parents would find unsuitable for children under 14 years of age. Parents are strongly urged to exercise greater care in monitoring this program and are cautioned against letting children under the age of 14 watch unattended. This program contains one or more of the following: intense violence (V), intense sexual situations (S), strong coarse language (L), or intensely suggestive dialog (D).

CBSC ratings (Canada)

Table 16–3: CBSC ratings

Rating	VOD Rating	Name of rating	Description
C	n/a	All Children	This program is appropriate for all children.
C8	n/a	Older Children	This program is for children age eight and above.
G	TV-G	General Audience	Most parents would find this program suitable for all ages.
PG	TV-PG	Parental Guidance Suggested	This program is intended for a general audience. This program might not be suitable for younger children (under the age of 8).
14+	TV-14	Parents Strongly Cautioned	This program might not be suitable for viewers under the age of 14.
18+	TV-MA	Mature Audience Only	This program is intended for viewers over the age of 18. Parents are strongly urged to exercise greater care in monitoring this program and are cautioned against letting children under the age of 18 watch unattended.
Adult	X	Adults Only	This program is intended for viewers over the age of 18. This program contains scenes of real and explicit sexual activity.
Unrated	NR	Unrated Content	This program is not rated.

Video on Demand

The TiVo Video on Demand (VOD) feature provides access to the CableCo VOD catalog as well as to the standard TiVo VOD assets from the third-party VOD providers (such as Netflix, Vudu, and so on) that CableCo chooses to make available. You can restrict the purchase of VOD assets by enabling a Purchase Controls PIN. You can also set limits on VOD watching and recording by using Parental Controls.

This chapter covers the following topics:

Accessing VOD

There are three ways to access VOD:

- Going directly to the CableCo VOD catalog by pressing **On Demand** on the TiVo remote control
- Using the TiVo search and browse functions to find titles in collections, or to look for particular programs
- Accessing VOD from the Guide

To access a movie from the CableCo VOD catalog

1. From TiVo Central, press **On Demand** on the TiVo remote control (Figure 17–1).
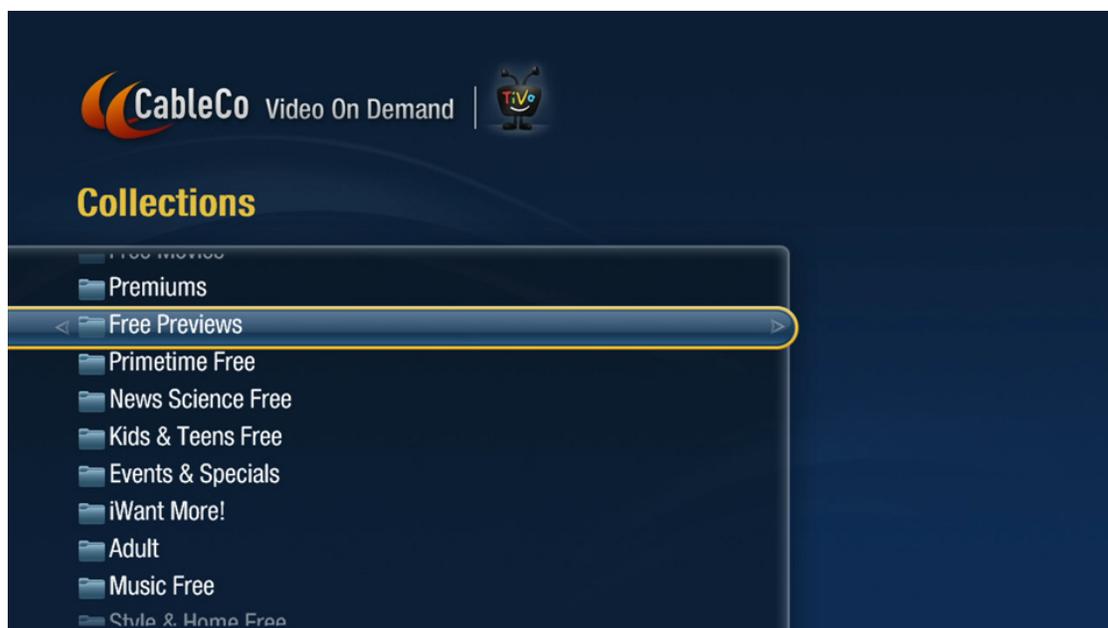
Figure 17–1: CableCo VOD catalog

2. From the menu, choose the On Demand video you want, and then press **OK**.

To access a movie using Search

1. From TiVo Central, choose **Find TV, Movies, and Videos > Search.**

   Note: If you choose **Browse TV & Movies** instead of **Search**, the process is the same after you have selected a movie.

2. On the Search keyboard (Figure 17–2), enter enough characters to display the movie name, and then select it.

Figure 17–2: Search keyboard

The program information screen displays information about the movie you selected (Figure 17–3).

Figure 17–3: Program information screen

3. If this is the movie you want, choose **Get this movie**.

You can now choose to watch, record, rent, or buy the movie depending on the options that are presented.

To access VOD from the Guide

1. Press **Guide** on the TiVo remote control.

   Figure 17–4 shows an example of a Grid Guide.
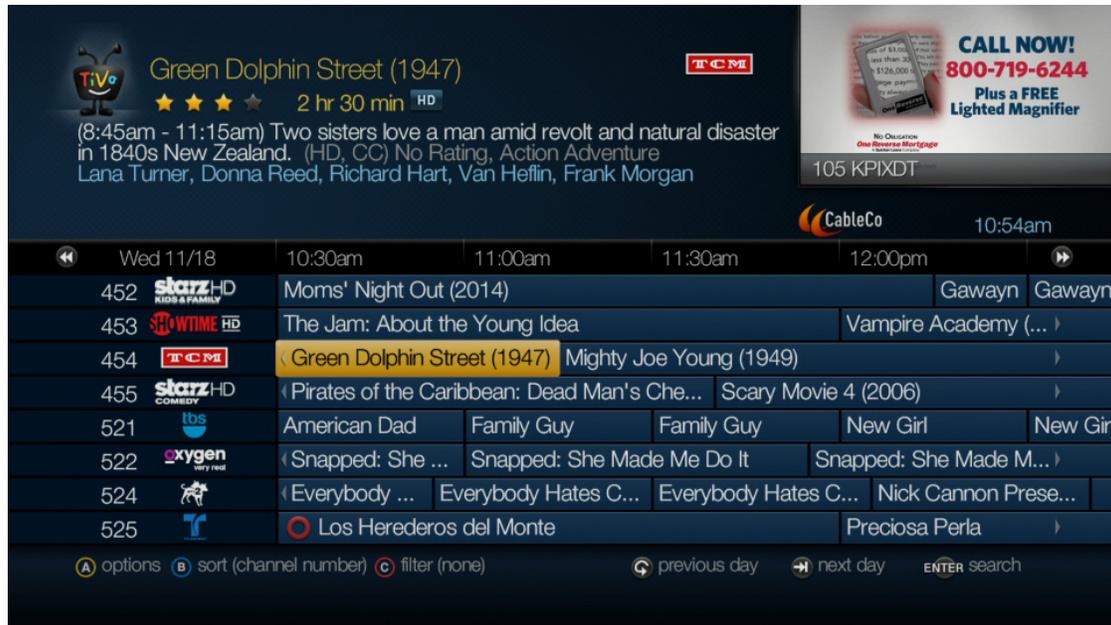
Figure 17–4: Grid Guide

Options within the Guide:

- If you select a show that is indicated in the Guide as a Catch-Up/Start Over show, you are presented with an option to **Watch from On Demand**.

- When you select **Watch from On Demand**, the VOD browser is launched and linked directly to the show.

  Note: Parental Controls and Purchase Controls, as well as entitlements, are applied to Catch Up/Start Over assets (as they are for all other VOD assets).

- Press **Record** to record a show that will air later, or press **Select** for a show that has already aired. The recording options are displayed.

The **Watch from beginning** option takes you to the VOD screen for this show. This option applies to both Start Over and Catch Up programs.

Finding a TV series

1. From TiVo Central, choose **Find TV, Movies, and Videos** > **Search**.

2. In the Search keyboard, enter enough characters to display the program name, and then select it.

3. On the program information screen, choose **Episodes**.

   The available episodes are displayed.

4. Go to the episode you want (Figure 17–5).
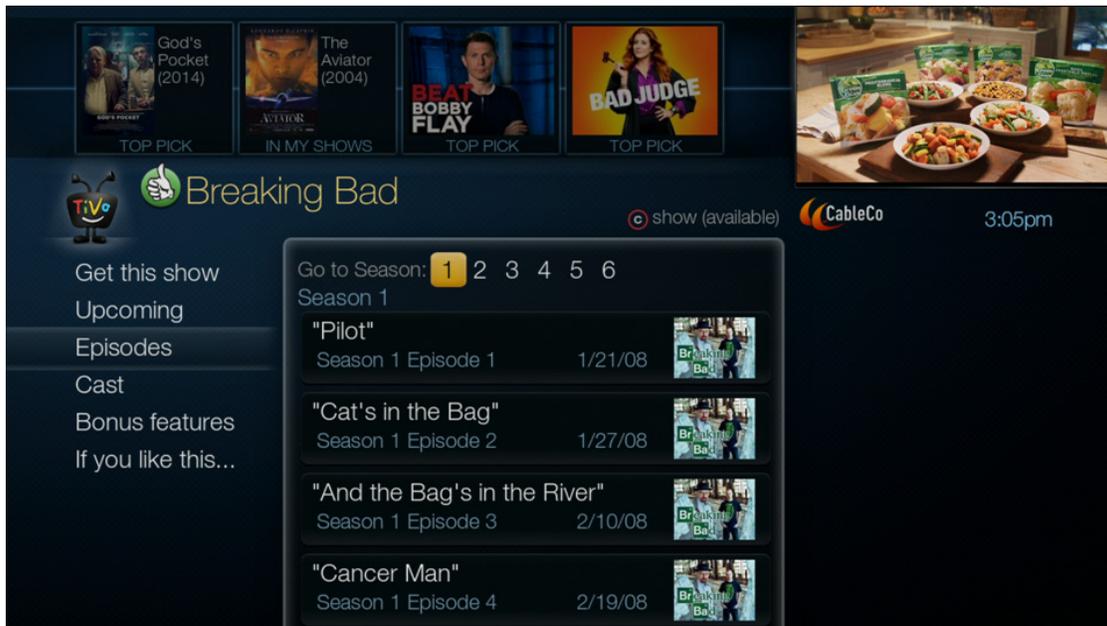
Figure 17–5: Episode selection

5. From the episode information screen, choose **Watch Now**.

> **Note:** **Watch Now** allows you to watch the program from Live TV, the CableCo VOD catalog, or a third-party VOD provider.

You can now choose to watch, record, rent, or buy the episode depending on the options that are presented.

Browsing web videos

1. From TiVo Central, choose **Find TV, Movies, and Videos**.

2. Choose one of the third-party VOD providers from the list on the right (such as Netflix, Vudu, and so on), or use the down arrow and choose **Web Video Hotlist**. Hotlist opens (Figure 17–6).
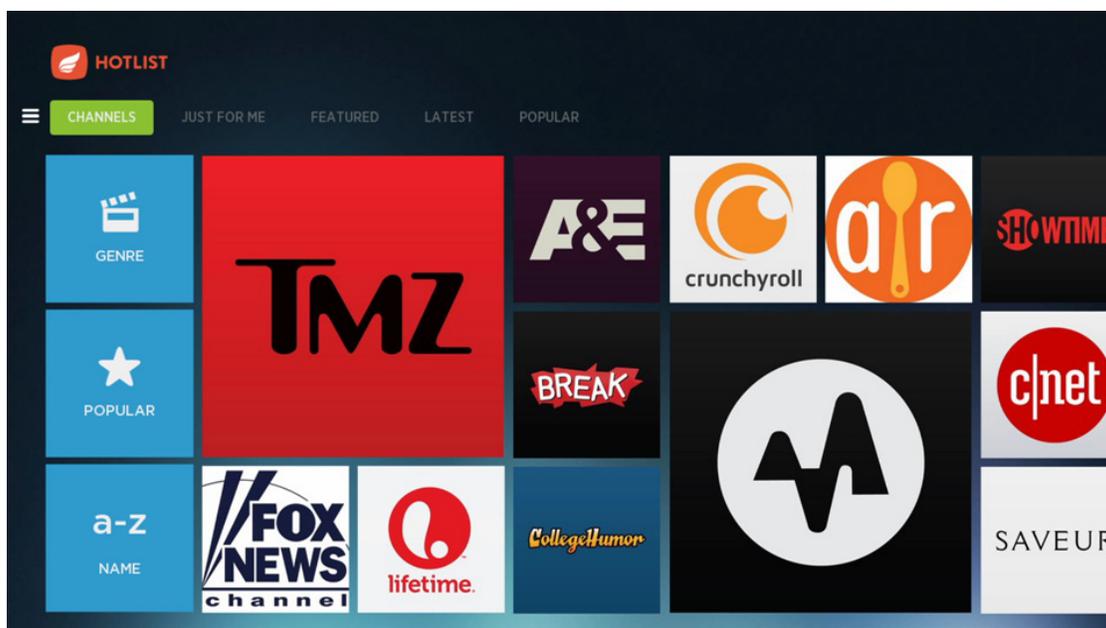
Figure 17–6: Hotlist screen

3. From the list of content categories, choose a content category and press **Select**.

   A list of subcategories or available titles in the chosen category is displayed.

4. Choose a video from the list of titles or from a subcategory.

5. To begin watching the show, press **Play**.

If you choose a past program to download, the show appears within moments. Otherwise, the show will download automatically on the date that it airs.

To access YouTube videos

You can access YouTube in any of the following ways:

- From TiVo Central, choose **My Shows > YouTube**.
- From TiVo Central, choose **Find TV, Movies, & Videos > YouTube**.
- You can also access movies on YouTube when you search or browse for a movie, and then select **Bonus Features** (Figure 17–7).
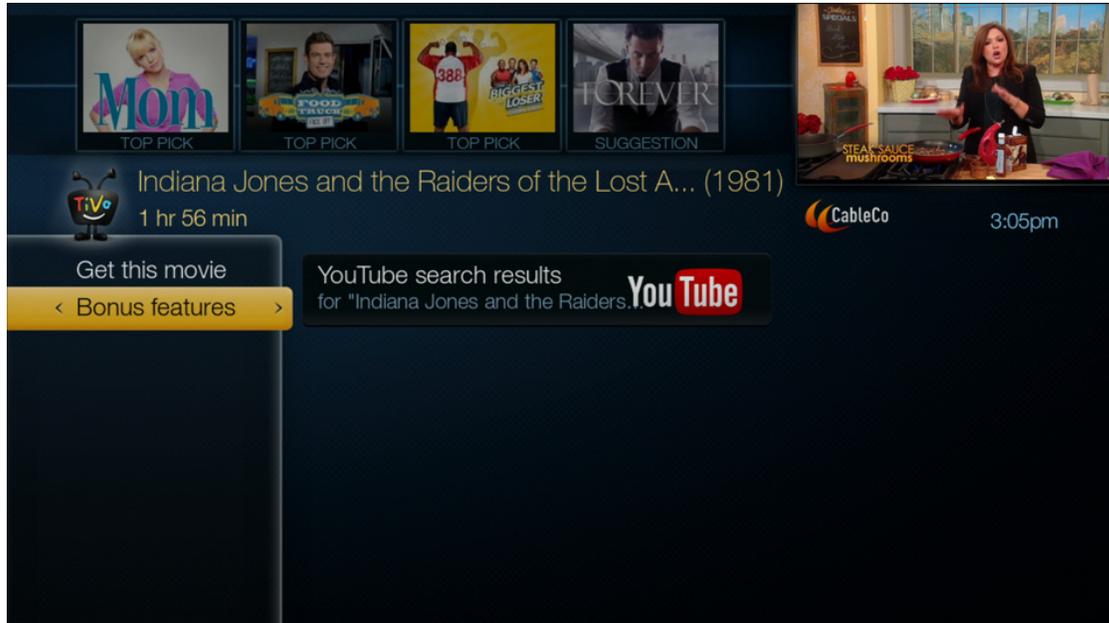
Figure 17–7: Bonus features option

YouTube videos are not stored on the TiVo device, so they do not appear on My Shows and they do not use any recording space. YouTube does use the hard drive to buffer the video during playback.

Enabling a Purchase Controls PIN

Purchase Controls for a video assets can be turned on or off. When you choose **Require a PIN to purchase**, you are prompted to specify a Purchase Controls PIN. This Purchase Controls PIN must be entered for every purchase request. A PIN challenge is invoked whenever you attempt to purchase a VOD asset that requires payment.

Note: If a Purchase Controls PIN is forgotten, see *Resetting a forgotten PIN* on page 322 for information on how support agents can help with this problem.

The Purchase Controls PIN is challenged separately from the Parental Controls PIN. To purchase an asset that exceeds the Parental Controls settings, both the Parental Controls PIN and the Purchase Controls PIN are challenged. Typically, the Parental Controls PIN is challenged first, and then the Purchase Controls PIN is challenged when you attempt to purchase the video.

Note: The Purchase Controls PIN does not have an unlocked time window like the Parental Controls PIN does.

To set a Purchase Controls PIN

1. From TiVo Central, choose **Settings & Messages > Settings** > **Purchase Controls** (Figure 17–8).
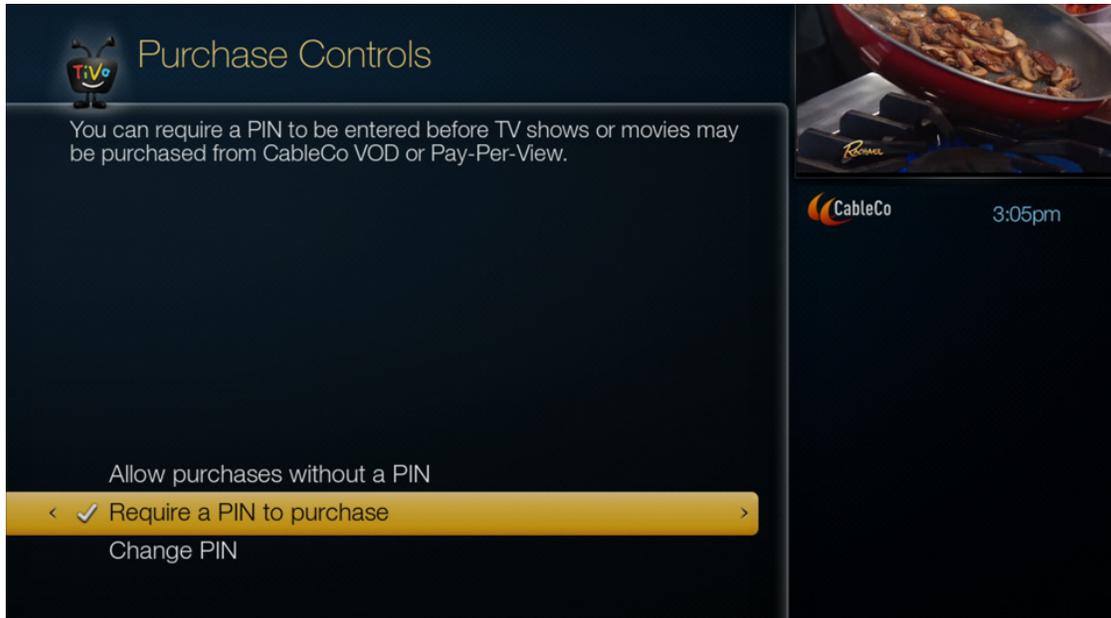
Figure 17–8: Purchase Controls screen

2. To require a PIN for all VOD purchases, choose **Require a PIN to purchase**.

    You are prompted to enter a PIN (Figure 17–9).
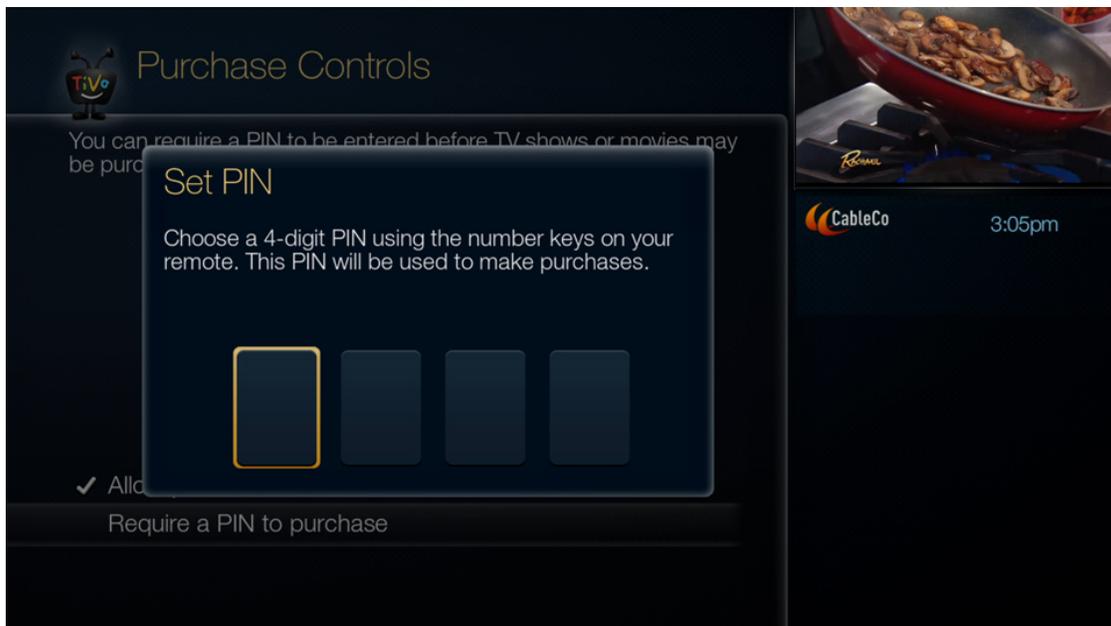
Figure 17–9: Set PIN screen

3. Enter a four-digit PIN for VOD purchases.

Using Parental Controls with VOD

Parental Controls allow parents to filter programs so that only approved content is watched or recorded. Parents can lock channels and set rating limits on movies, television shows, and VOD content. For more information, see *Parental Controls* on page 155.

To set Parental Controls for VOD

1. From TiVo Central, choose **Settings & Messages > Parental Controls**.

2. On the Parental Controls screen, choose **Turn on Parental Controls**.

3. Enter and confirm the Parental Controls PIN, and then choose the settings.

4. To block the display of adult metadata, from TiVo Central, choose **Parental Controls** > **Hide Adult Content**.

5. Enter the Parental Controls PIN.

6. To exit and save your settings, press the left arrow, or press the **TiVo** button to return to TiVo Central.

Note: If you are using Parental Controls, the behavior might be different for each third-party VOD provider. For example, a provider might challenge you to enter a PIN when you choose to watch one of their assets, while another provider might not.

Customizing VOD for CableCo

CableCo VOD movie and television asset metadata can be integrated into the TiVo Mind (a metadata database) and into TiVo's search and browse functions via the TiVo Mind.

VOD assets metadata

Original asset metadata comes from the MSO VOD system. Where possible, TiVo unifies the MSO VOD assets with the same assets from other sources (linear and over-the-top VOD) and augments the original asset metadata with Gracenote metadata.

Metadata integration of MSO assets includes:

- Exporting MSO VOD metadata (using a VOD proxy server) to the TiVo Service
- Matching MSO VOD titles to existing database entries, or creating new entries in the TiVo content database by using the VOD metadata
- Displaying search results that incorporate VOD content consistent with the TiVo retail product
- Displaying browse results consistent with the TiVo retail product that also incorporates VOD content
- Launching the MSO VOD application after selection of a VOD asset from search or browse results

Details of VOD asset updates

Metadata export is a scheduled activity that the CableCo VOD proxy server initiates. Normally, metadata extraction and export occurs once each business day. By default, the process starts at 1:00 a.m. local time (though the time is a configurable parameter). Metadata extraction and compression usually takes about an hour, depending on the size of the catalog. The file is compressed with gzip; the exported metadata file is typically five to 15 MB. Uploading the file to the TiVo Service takes about a minute, depending on the broadband network.

The TiVo Service processes the imported metadata once a day. Uploaded files should be available no later than 5:00 a.m. PST to be included in the day's processing. The TiVo Service verifies the file signature and unzips the file, and then uploads the raw file to Gracenote for metadata mapping.

The TiVo Service filters out excluded assets. Where Gracenote has provided mapping information, the assets metadata might be enriched with metadata comparable to what is available from other content sources.

Gracenote does not map assets that are shorter than 20 minutes. That means that these assets might lack rich metadata when they come up in search. The short assets might show up in more than one place, depending on the provider. When you search by actor, for example, the short subject might include the actor, but the short still does not show up in the search. The same thing happens with VODs that have not yet been mapped by Gracenote, though the effect is only temporary. In addition, for obvious reasons, Gracenote does not map shows that are unavailable on TV or at theaters—such as Internet-only content.

At 8:00 a.m. PST, the new assets are available from the TiVo search and browse functions. On the initial import, Gracenote does not map the new assets. However, they are available with the metadata exported from the MSO VOD servers.

Gracenote mapping occurs each business day, Monday through Friday, using the uploaded metadata files. For new assets, the soonest Gracenote mapping is available is one processing cycle (24 hours) after import of the initial asset. Gracenote does not map metadata on Saturdays or Sundays, but any results mapped on a Friday are available on the TiVo Service the following Monday. For example, if there is new VOD content on Thursday, TiVo uploads it to the Gracenote server on Friday morning. TiVo then imports the mapped metadata on Monday morning, making the mapped data available after 8 a.m. PST Monday morning (Figure 17–10).
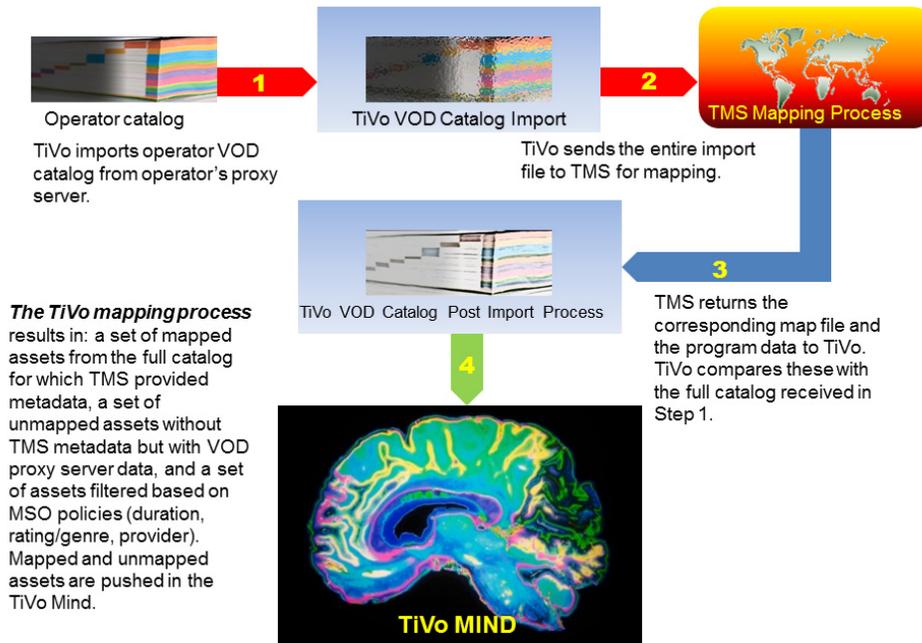
Figure 17–10: VOD import process

Note: New assets are typically available in the MSO VOD application before they are available in the TiVo search and browse functions.

If Gracenote has already mapped a given MSO asset and it has a standard asset ID, the asset doesn't have to be re-mapped for integration.

Troubleshooting issues with VOD

Table 17–1 can help you determine where to focus troubleshooting efforts for common types of problems.

Table 17–1: VOD troubleshooting issues

Feature	Network	Cable feed	CableCo billing	CableCo device	TiVo Service
Search/Browse	X				X
Third-party VOD content/Get from	X				
Purchase PIN storage				X	
Performing the purchase/rental transaction (if applicable)			X		
When you press Play		X			

Common selection and viewing issues

Possible cause. Problems with selecting and viewing programs are often associated with network connection, the coaxial connection, or the VOD content provider.

Cannot search at all (network issue)

Possible cause. After you have determined where the problem is—for example, a search/browse problem is often a network-related problem—check for other problems with the network connection.

Action to take. Follow the advice for troubleshooting network problems in *Network connection issues* on page 358.

Cannot find the VOD asset I'm looking for (not a network issue)

Action to take. Try using the VOD catalog directly (for example, pressing **On Demand** on the TiVo remote control) and then browsing the VOD catalog for that VOD asset.

Found the VOD asset from the VOD catalog, but not from within TiVo Search

Action to take. If you can find a VOD asset directly from the CableCo VOD listing, but not by using Search within the TiVo menus, escalate the problem to TiVo.

TiVo Support will need to know the particular VOD asset, when the search was done, what you did within the menus to try to find the VOD asset, and the path in the catalog to that VOD asset.

Billing issues

Possible cause. Typically the problem is one of the following:

- You are not registered for VOD services.
- You are not registered in the billing system.
- You do not have sufficient VOD purchase credits in the system.

Action to take. Check the CableCo billing system if you encounter issues during a purchase or rental.

PIN issues

You might have questions or problems with the Purchase Controls PIN or the Parental Controls PIN. For information on resetting a forgotten PIN, see *Resetting a forgotten PIN* on page 322.

Impulse Pay Per View

18

Impulse Pay Per View (iPPV) differs from Video on Demand (VOD) because the iPPV event usually occurs at the same time for all subscribers (basically it's a private telecast in linear format). iPPV is popular for live events such as boxing championships and football games. However, a broad range of programming is available as iPPV, including movies and other entertainment, not all of which occur only as live events.

This chapter covers the following topics:

About Impulse Pay Per View

iPPV allows you to find iPPV events by various criteria such as actors, by browsing the Guide, and so on. You don't need to make a phone call or access an Internet page to reserve an iPPV event. Instead, you can use your TiVo remote control to select a show and make your transaction.

iPPV offers the following flexible features, among others:

- You can directly tune into your CableCo iPPV channel.

- In some cases, you can look at a preview before the iPPV event airs.

- If you choose to buy and record, iPPV events that you have ordered appear on your To Do List. After they have expired or you have watched or canceled them, they appear on your Recording History.

- You can set up a Purchase Controls PIN to prevent unauthorized purchases of iPPV events from your TiVo device.

Requirements

The following are requirements for using iPPV:

- At least one tuner.
- TiVo Series4 DVR (or later), TiVo Mini, or TiVo-Pace Mi3.
- The iPPV channel must be selected in the TiVo device's Channel List.
- The `AP_ppv` flag must be set in the TiVo API (see the *Impulse* Pay Per View *(iPPV) API Specification*).
- The `msoServiceId` must map to a headend group; for example, `DG_he_mso_09_0`.
- The `siteID` must map to the VOD site group; for example, `DG_vod_site_mso_1000`.
- Storage, if you want to record.
- To use Gracenote, an affiliate value of Pay Per View or `(AO)` Pay Per View must be set for the iPPV channel.

Limitations

The MSO and the copyright holders might exercise some restrictions on iPPV usage:

- Copyright—Copyright holders for an event might restrict your viewing to one time.
- Security—If the MSO provides the option for a Purchase Controls PIN for your TiVo device, and you turn it on (from TiVo Central, choose **Settings & Messages > Settings > Purchase Controls**), then a four-digit PIN is required to make purchases. The Purchase Controls PIN is different from your Parental Controls PIN, if you use one.
- Credit limits—The CableCo billing system might impose credit limits that restrict how much you can spend on iPPV and other items during a given time period.
- Parental Controls—Parental Controls apply limits to iPPV events just as they do to any other shows.

Finding iPPV events

You can use any of the following methods to find iPPV events:

- Tune directly to the iPPV channels that the MSO makes available, or browse iPPV channels (Figure 18–1).
- Use the Grid Guide and Live Guide. You can also use the Discovery Bar.
- WishList Searching also works for iPPV events. Results appear on your To Do List. WishList finds programs but does *not* auto-record them, because you must actively purchase iPPV events.
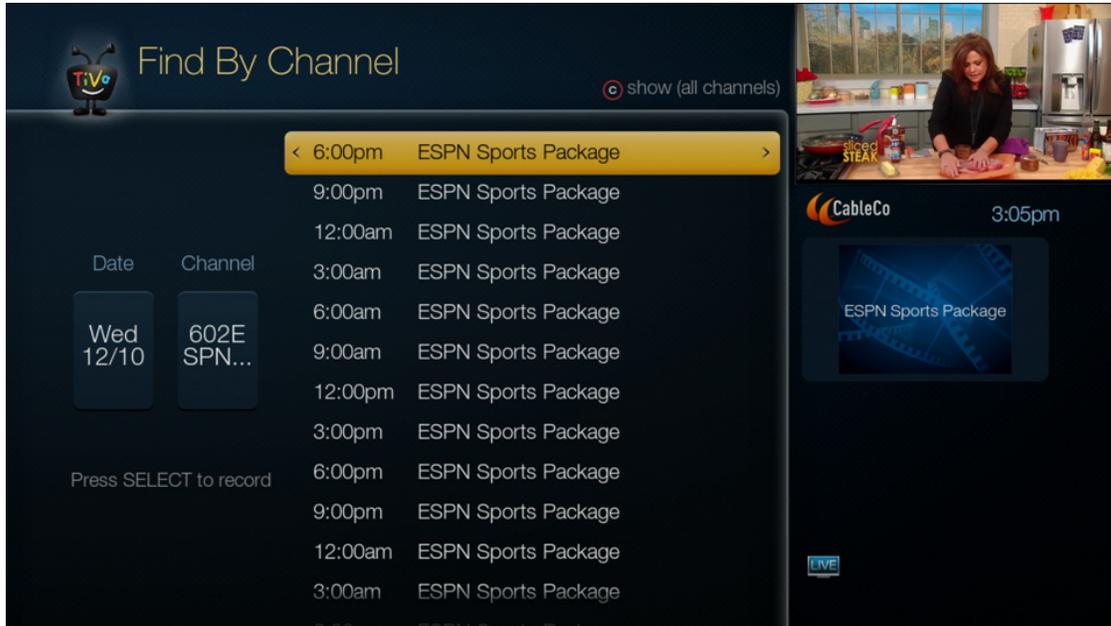
Figure 18–1: Find by Channel screen

Purchasing and recording iPPV events

Depending on the iPPV event and timing, different rental options are available.

To set up a Purchase Controls PIN for iPPV events

To prevent unauthorized purchases of iPPV events from your TiVo device, you can set up a Purchase Controls PIN in much the same way that you do for Parental Controls:

1. From TiVo Central, choose **Settings & Messages > Purchase Controls**.

2. Choose **Require a PIN to purchase** to activate (Figure 18–2).

   If a PIN is already active, choose **Change PIN** to change it.

Figure 18–2: Purchase Controls screen

3. Enter and confirm the Purchase Controls PIN.

To rent an upcoming event

1. After you access a listing for an iPPV event, choose **View upcoming showings** to see what other instances of the iPPV event are upcoming.

2. Choose the iPPV event that interests you and select it to display the details (Figure 18–3).
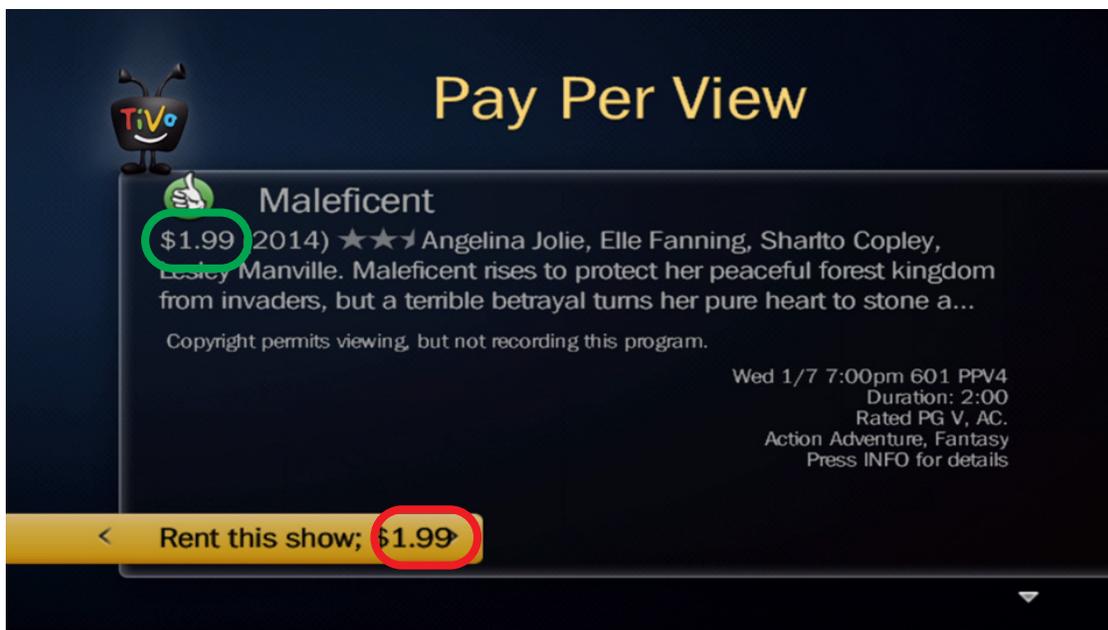
Figure 18–3: Pay Per View screen

3. From the Pay Per View screen, choose **Rent this show**.

4. If you set up a Purchase Controls PIN, enter the four-digit PIN.

Note: Credit restrictions from the CableCo billing system might limit how much you can spend on iPPV events and other purchases within a certain time period.

A confirmation screen appears (Figure 18–4).
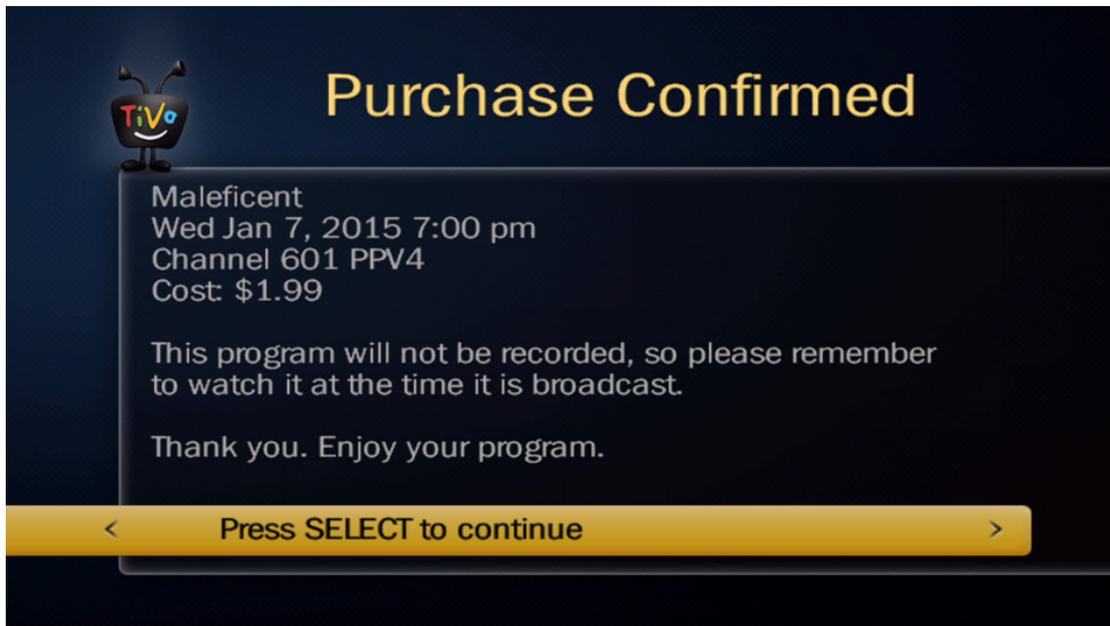
Figure 18–4: Purchase Confirmed screen

5. Choose **Press SELECT to continue**.

The iPPV event is added to your To Do List.

Note: Programming conflicts can arise when, for example, you schedule an iPPV event that occurs at the same time as a OnePass recording. In cases like this, and without your intervention, an iPPV event takes precedence and is recorded instead of the conflicting show.

Note: A price appears just below the iPPV event title, but if it differs from the price in the menu shown (Figure 18–3), the menu price is correct and reflects the latest price from the MSO. If, instead of a price, **PPV** appears in the menu, the price is unknown at this time, and a message appears:
`Cost information is not available. Please try again later.`
See *Troubleshooting issues with iPPV* on page 186 for more information about error messages.

To schedule an in-progress event

1. Find an iPPV event that interests you.

2. From the Pay Per View screen, choose **Rent this show**.

    A confirmation screen appears.

3. Choose **Watch Now**.

    When an iPPV show or event is currently in progress, you might or might not be able to watch it, depending on these conditions:

    -   If it is not within the purchase window, the following message appears:

        `This showing is no longer available.`

    -   If the purchase window is still open, proceed as you would for any iPPV event.

To cancel events

You can cancel an iPPV event even if it has started (Figure 18–5). However, after the iPPV event has started, you might be charged the full rental fee, depending on MSO policy.

Figure 18–5: Pay Per View cancellation option

Watching iPPV events

When planning for and watching iPPV events, the following features complement your experience:

- Extend recording time—Many live events last longer than planned. You can pad the recording time on the beginning, the ending, or both, to make sure you don't miss something important.

- Rent blocks of time—In addition to renting a specific iPPV event, your TiVo device can be set up so that you can rent blocks of time for an hourly charge. This is useful when you plan to watch several shows in succession.

- To Do List—Displays scheduled iPPV events. Red flags or exclamation points indicate upcoming expiration dates.

- Recording History—Displays the iPPV recordings that you scheduled and that were deleted, expired, watched, or canceled.

iPPV system architecture

iPPV provides timely reserving and recording directly from the set-top box. The architecture is an automation of Reservation Pay Per View (RPPV), in which a set of requests are sent to a PPV proxy server provided by the MSO. The PPV server then asks the billing system to authorize the iPPV event. The TiVo devices use the data network connectivity to connect with the PPV server instead of the legacy out-of-band path.

Warning: Because TiVo uses the RPPV architecture, the MSO *must* configure all TiVo iPPV events as RPPV events. Otherwise, the iPPV features on the device do not work.

The CableCARD is a one-way mechanism, and the event metadata uses a proprietary interface and path to the Cisco or Motorola headend. Therefore, the TiVo architecture provides another mechanism to allow an iPPV quick purchase, without using the CableCARD proprietary interface for the preliminary steps of a transaction.

This architecture currently relies on the PPV server and CableCo's ability to associate a TiVo Service Number (TSN) and a CableCARD identifier with a subscriber account for authorization purposes. The APIs to query PPV metadata and send the purchase requests are based on the TSNs. This model only supports leased DVRs, where the MSO is aware of the DVR-to-CableCARD address relationship.

Figure 18–6 shows the high-level system architecture for the iPPV feature.
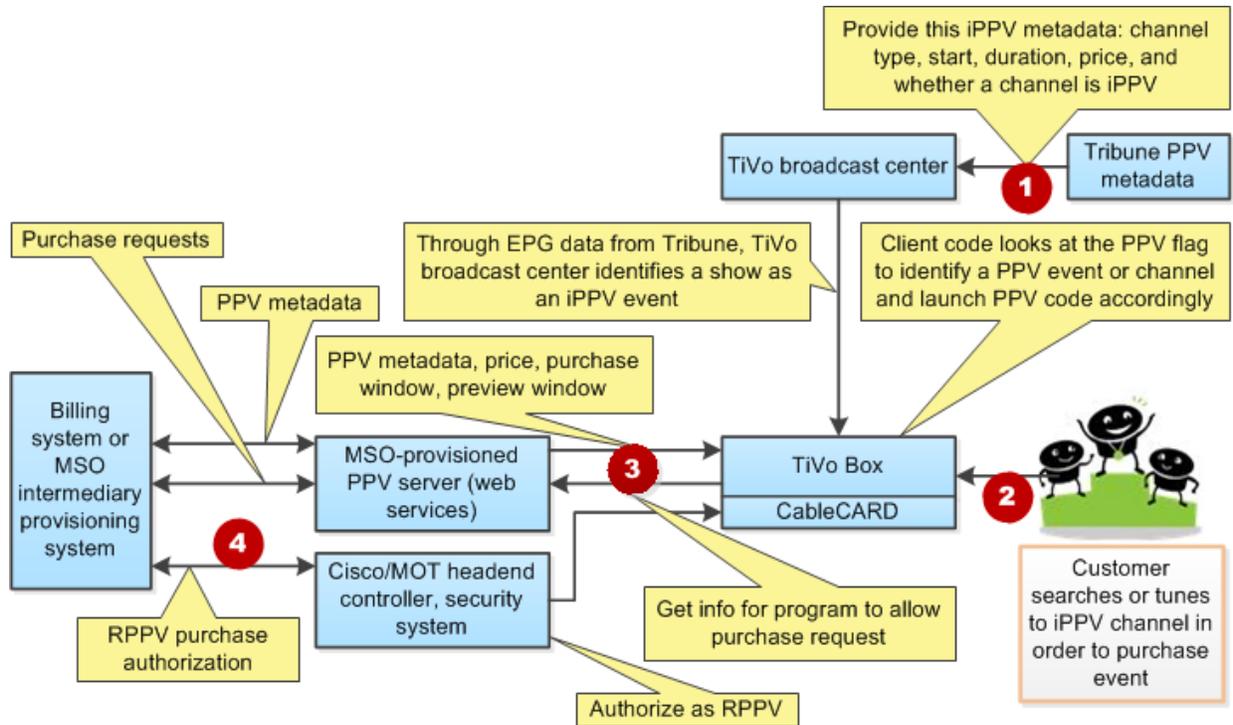
Figure 18–6: High-level iPPV system architecture

There are four primary paths between the subscriber MSO-TiVo set-top box and CableCo's components:

1. Starting from the right, the top path carries the metadata for the requested event, currently provided by Gracenote.

2. The second path is the initial purchase request that comes from the subscriber based on information from the TiVo Broadcast Center.

3. When a subscriber makes a request, the set-top box asks for information about the program (lower number 3 path). The PPV proxy server returns information from the MSO billing system: price, purchase window, preview window (see the upper number 3 path). When you are troubleshooting an issue, this is one possible fault point.

4. The fourth path originates at the billing system. The purchase is authorized via the Cisco or Motorola headend controller, which delivers the authorization to the CableCARD. If the PPV server interface to the billing system or the billing system is down, no iPPV rental is possible.

Provisioning iPPV

The iPPV service relies on the MSO to provision a PPV proxy server in the headend to support a TiVo-defined iPPV service. The PPV proxy server lets a set-top box discover information, such as current pricing for an iPPV event defined in the Guide scheduling metadata, so that the subscriber can purchase the iPPV event.

A device is required to discover its associated PPV server, but first it must locate the associated headend controller, in one of two ways. Either of these methods establishes the TiVo distribution group:

- Controller auto-discovery
- Direct provisioning through TiVo-provided APIs

At this point, the MSO-TiVo device discovers or is assigned a headend controller ID, which is then associated with a set of configuration parameters. This information includes the PPV server configuration parameters, and is delivered via a TiVo distribution group, of which there can be one per MSO headend.

To set up set-top box provisioning, TiVo requires the following parameter information:

- Each headend requires a single IP address or hostname, and the port pairs for a virtual IP PPV proxy server working with a load balancer.

  The set-top box skips PPV proxy servers that are unavailable or fail to connect because they do not support the specified protocol or have an authentication error. This allows a smooth transition when the MSO upgrades the headend PPV service configuration.

- Whether to use the HTTPS or HTTP protocol to contact the PPV proxy server.
- If HTTPS is used, TiVo-provided certificates provide the security mechanism.
- Version of the PPV proxy server protocol.
- Version of the PPV web services APIs.
- Optional base URL.

The set-top box constructs the PPV server URL from these parameters as follows:

```
<http | https>://<ip address>:<port>/<base path>
```

For each event requested by the client set-top box (with its ID), the PPV server must return the following information:

- Price (if different from the price in the request)
- Event ID
- Purchase (order) ID

To assign a channel to iPPV status

iPPV works only if the channel is selected in the TiVo device's Channel List. The channel is checked by default only if it is in the Basic Service Tier or Extended Basic Service Tier in the Gracenote data.

For a channel to be treated as an iPPV channel, Gracenote must set the affiliate value for that channel to Pay Per View.

For channels that the MSO does not want treated as iPPV channels, Gracenote sets the channel to any value except iPPV. Thus, the MSO's subscription Pay Per View channels no longer require an affiliate value of Pay Per View.

Gracenote assigns each channel a call sign. Any channel that might be used as a subscription Pay Per View channel has two call signs:

- A call sign with an affiliate value of Pay Per View
- A call sign with an affiliate value that is *not* Pay Per View

To have a channel treated as an iPPV channel, submit a request to Gracenote.

Troubleshooting issues with iPPV

Table 18–1: iPPV troubleshooting issues

Issue	Possible Cause	Action to take
Cannot find event	The iPPV channel is not available.	Review the Channel List, and make sure the iPPV channel is selected.
	Show is not available.	Place on your WishList.
The recorded MSO-TiVo iPPV event has disappeared from the To Do List and is not viewable.	The recording might not have occurred because of copyright restrictions.	Check the Recording History to understand the reason the iPPV event has disappeared. You might be able to recover it: from TiVo Central, choose **My Shows**, and then select the iPPV event.
Cannot rent event	You have already purchased it.	Check the To Do List.
	Either the MSO has requested that iPPV not be enabled on this account, or the account is past due.	Check the account to see what the cause is and inform the subscriber.
	The iPPV event has already started.	View upcoming showings.
	You have exceeded your credit limit for this period.	Check the account to see what the cause is and inform the subscriber accordingly.
	The client ID is not valid.	Verify that the TSN is correctly entered in the billing system.
	MSO-TiVo DVR cannot retrieve billing information from the server or billing system.	Try again later.

Table 18–1: iPPV troubleshooting issues (continued)

Issue	Possible Cause	Action to take
Cannot rent event (continued)	Some iPPV purchases are only available within a certain time frame, which is displayed on the screen.	View upcoming showings.
A confirmation screen appears showing a different price than was listed when requesting the purchase.	The price displayed in the confirmation screen is correct. The cost of the iPPV event changed in the interim.	The confirmation price is correct.
Cannot purchase event. Message is: `Cost information is not available. Please try again later.`	Pricing details are not available at this time. The billing system might be disconnected.	MSO: Determine whether the billing system is down or unreachable.
Cannot purchase event. Message is: `Cannot get PPV rental information. Please try again later.`	There is a disconnect with the headend's billing system.	MSO: Determine whether the billing system is down or unreachable.
An iPPV event was not recorded.	There are many possible causes, including the device being switched off, changed schedules, or priority conflicts among iPPV events.	Review the Recording History to understand the reasons, and then search for another occurrence of the missed event.
Can't record event. Message is: `Copyright permits viewing but not recording this program.`	The copyright holder does not allow recording.	You must view the iPPV event in real time. Or, there might be a disconnect with the billing system.
There is a price mismatch between the price shown in the descriptive paragraph beneath the iPPV event title and that shown in the menu selection(s).	A price change occurred in the billing system before the media services provider could reflect the change.	Rely on the price displayed in the menu selection(s). The Guide information is refreshed once per day.
Instead of the price you agreed to pay, the Purchase Confirmed screen appears: `Cost: <New_Price> (Price changed - was <Old_Price>)`	The price changed during the period that the transaction was taking place—a rare situation.	Depending on MSO policy, you can or cannot cancel the transaction.

Table 18–1: iPPV troubleshooting issues (continued)

Issue	Possible Cause	Action to take
iPPV event cannot be recorded. The Purchased Confirmed screen appears: `This program will NOT be recorded, so please remember to watch it at the time it is broadcast.`	The program is either copy-protected or has not been scheduled for recording.	Watch at the time the program is aired. The program listing appears on My Shows.
Recording options not available	Event might not be recordable because of copyright restrictions.	iPPV events, like any linear broadcast content, must conform to copyright laws. Copy-protected events can never be permanently recorded or stored.
Cannot record event	The credit limit might prevent viewing.	Check the account limit.

Multi-Room Features

19

TiVo uses the term *multi-room* to refer to features that enable the streaming and viewing of Live TV (including Video on Demand) as well as stored content, most often over a wired home network.

This chapter covers the following topics:

Multi-room terminology

The following terms are used when describing the TiVo multi-room features:

- Client—A device that receives and displays a stream from a host. A client can be another TiVo DVR, TiVo Preview, TiVo Mini, or TiVo-Pace Mi3.

- Default host—The primary host for a client, when there is more than one host DVR in a home network. The client uses the default host for features such as using My Shows remotely, remote scheduling, and Live TV Streaming. The client, by default, interacts with its default host, but it can also access DVRs other than the default host.

- Host—A TiVo T6 DVR that has the necessary TiVo client software to deliver multi-room features to a client device.

- Live cache—The buffer that a host DVR automatically creates for up to 30 minutes of programming for any tuned channel. This buffer supports TrickPlay with live programming. Live cache is emptied when the channel is changed.

- Live TV—Linear content delivered over quadrature amplitude modulation (QAM). This might include TV, Pay Per View (PPV), and QAM-based VOD.

About multi-room features

The TiVo multi-room features include Live TV Streaming, Multi-Room Viewing, and Multi-Room Streaming.

This section covers the following topics:

- *Live TV Streaming* on page 190
- *Multi-Room Viewing* on page 190
- *Multi-Room Streaming* on page 191
- *How Multi-Room Streaming and Multi-Room Viewing differ* on page 191
- *How multi-room features work* on page 191

Live TV Streaming

Live TV Streaming lets you initiate a Live TV session on a client by using an allocated tuner on the host DVR. TrickPlay is supported within the live cache, including pause, rewind, fast forward, instant replay, slow motion, and 30-second advance.

The tuner allocations for Live TV Streaming are as follows:

- Live TV Streaming is supported only on TiVo DVRs or TiVo Preview, and tuners must be pre-allocated for Live TV Streaming to TiVo Mini or TiVo-Pace Mi3. (TiVo Previews have their own tuners.)
- The TiVo T6 DVR can be configured to dedicate up to four tuners to Live TV Streaming, depending on the home configuration and the preferred number of concurrent Live TV sessions.
- More TiVo Mini or TiVo-Pace Mi3 clients can be deployed in a home than there are tuners allocated—Live TV Streaming is available on a first-come, first-serve basis.

  For example, in a home using a TiVo T6 DVR with one tuner allocated for Live TV Streaming and two TiVo Minis, if the first TiVo Mini is doing Live TV Streaming, the second TiVo Mini displays an information screen when you try to view live television. This information screen indicates that no tuner is currently available and suggests that you either "Watch a recorded show instead" by linking to My Shows remotely, or "Try again later" by linking to TiVo Central.

- Changing the number of tuners allocated to Live TV Streaming requires that all six tuners on the TiVo T6 DVR be locked. This means all current recordings and Live TV Streaming activities on that TiVo DVR must be stopped until the administrative changes are complete (which can take from 5 to 15 seconds). Multi-Room Streaming sessions for recorded content are not interrupted during such changes of tuner allocation.

Multi-Room Viewing

Multi-Room Viewing allows you to the *transfer* programs from a host to a client by making a *copy* of the program. This is the only multi-room feature that can work wirelessly. The speed of the transfer depends on a variety of factors. For example, a program recorded at a higher resolution takes longer to transfer than one recorded at a lower resolution.

Using Multi-Room Viewing, programs are transferred one at a time, in the order requested. You can start watching programs while they are being transferred, but you can watch only the portion of the recording that has been transferred to the client. Because transfer speeds vary, pauses might occur during playback if the transfer is not complete.

Multi-Room Streaming

Multi-Room Streaming allows you to *stream* stored content from a host to a client; recordings are not copied. Four simultaneous streams per DVR are possible.

When using Multi-Room Streaming, recordings make it easy to move around a home to view the same show on various TiVo devices. The show can be paused on one TiVo device and then watched on another TiVo device by navigating to the first TiVo device in the menus, selecting the show you were watching, and choosing **Watch from paused point** to quickly resume viewing.

Multi-Room Streaming has these capabilities:

- Streaming of recorded content from a host to a compatible client
- Streaming of copy-protected content marked with a ⊘ symbol in My Shows of the host TiVo device
- Using TrickPlay features, such as pause, rewind, fast forward, instant replay, slow motion, and 30-second advance
- Deleting recordings on a host from a client

How Multi-Room Streaming and Multi-Room Viewing differ

The key difference between Multi-Room Streaming and Multi-Room Viewing is that Multi-Room Streaming *streams* a recording from a host to a client so it can be viewed on the TV connected to the client (the recording is not copied at all). Multi-Room Viewing *copies* the recording to the client's device.

When there are two or more TiVo DVRs in the same home, you can either use Multi-Room Streaming (the default) or Multi-Room Viewing of recorded content that is marked as copy-freely. Only Multi-Room Streaming can be used for recorded content marked as copy-once, because the content can't be re-copied. You can determine how content is marked by consulting a Diagnostics screen (refer to *CCI Byte* in the *TiVo box diagnostics*).

Note: Multi-Room Streaming works only with wired connections (MoCA or Ethernet) because the data requires consistent, speedy, and reliable transport. Multi-Room Viewing works with wireless connections, but the transfer is generally slower than with a wired connection.

How multi-room features work

- Host DVRs with six tuners can support up to four simultaneous streams, in addition to viewing content locally.
- Up to three of the four streams can be streaming to TiVo Mini or TiVo-Pace Mi3, depending on the number of tuners allocated to Live TV Streaming on the host.

- One VOD session is supported per CableCARD, regardless of whether the VOD application is running on the host or the client. You get an error message if you try to establish a second VOD session either on the host or the client.

- The number of devices in the home can be greater than the number of simultaneous streams. A standard account might have up to ten devices in a home; up to four can simultaneously view streamed content from a single TiVo DVR.

- The TiVo T6 DVR can have up to nine concurrent disk actions: four streams to remote clients, one playback off the local disk, and four recordings from local tuners.

- Multi-room features utilize the LAN. If the network does not have adequate bandwidth for the number of streams, the video quality might degrade.

  Note: TiVo strongly recommends that multi-room setups be supported only on wired networks: either Ethernet (100Mbps or higher) or Multimedia over Coax Alliance (MoCA).

- Wireless and Ethernet over Power (EOP) are not supported configurations for multi-room features.

Content options for multi-room features

The following sections explain how content is viewed and/or streamed for TiVo multi-room features:

- *Content types* on page 192
- *Multi-room features available by content type and client type* on page 193
- *Multi-room content available by specific host and client* on page 193
- *Stored content and live content* on page 194

Content types

Content types determine the level of copy protection on the content being viewed or streamed. Possible values are copy-never, copy-once, and copy-freely.

Content type	Description
copy-never	Content can be streamed using Live TV Streaming and TrickPlay at the time of broadcasting, but cannot be recorded.
	Live cache is available. However, the cache is erased no more than 90 minutes after the program ends. For example, if the program is paused, content will be available for up to 90 minutes after broadcast.
copy-once	Content can be streamed using Live TV Streaming and TrickPlay, both at the time of broadcasting and after being recorded.
copy-freely	Content can be copied to another TiVo device (Multi-Room Viewing) and streamed (Multi-Room Streaming). TrickPlay can be used at the time of broadcasting and after being recorded.

Multi-room features available by content type and client type

	Live TV Streaming	Multi-Room Streaming	Multi-Room Viewing
Content type			
copy-freely	Yes	Yes	Yes
copy-once	Yes	Yes	No
copy-never	Yes	Yes	No
QAM-based VOD	Yes	No	No
Client type			
TiVo T6 DVR	No	Yes	Yes
TiVo Preview	No	Yes	No
TiVo Mini or TiVo-Pace Mi3	Yes	Yes	No

Multi-room content available by specific host and client

Table 19–2 shows the content available using different combinations of TiVo devices and different combinations of cable access or network access. It also indicates the features that work with Multi-Room Streaming or Multi-Room Viewing in each of these combinations.

- **Host DVR** is a TiVo T6 DVR, fully set up with CableCARD and network access, hosting recorded content.
- **Client DVR** is one of the following:
  - A TiVo T6 DVR, fully set up with CableCARD and network access, accessing recorded content from the host DVR
  - A TiVo T6 DVR (not set up to use Cable/OTA video sources) with network access, accessing recorded content from the host DVR
- **Client STB** is one of the following:
  - TiVo Preview, fully set up with CableCARD and network access, streaming recorded content from the host DVR
  - TiVo Preview (not set up to use Cable video sources) with network access, streaming recorded content from the host DVR
  - TiVo Mini or TiVo-Pace Mi3, streaming recorded content from the host DVR

Table 19–2: Specific host and client for multi-room features

	Host DVR	Client DVR – cable + network		Client DVR – network only		Client STB – cable + network	Client STB – network only	TiVo Mini or Pace Mi3
		MRV	MRS	MRV	MRS	MRS	MRS	MRS
Live TV Programming								
Watch Live TV	Yes	Yes	Yes	No	No	Yes	No	Yes
Watch VOD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
My Shows								
Stream recording— copy-freely	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stream recording— copy-once	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Transfer recording— copy-freely	Yes	Yes	No	Yes	No	No	No	No
Recordings								
Delete recordings from host	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Stored content and live content

Stored content and live content can be shared by the host to the client device, subject to client capabilities and copyright protections.

- Live TV Streaming
  - All Live TV programming
  - VOD—Only one VOD session is supported per CableCARD.
  - Stored content—Multi-Room Streaming
  - Completed and in-progress recordings
  - Copy-freely linear content
  - Copy-once linear content
  - Downloaded content

- Stored content—Multi-Room Viewing
  - Completed recordings
  - Copy-freely linear content
  - Downloaded content

Requirements

This section describes the requirements for implementing multi-room features:

- *Hardware* on page 195
- *Software* on page 195
- *Account information* on page 195
- *Streaming performance* on page 196

Hardware

The TiVo T6 DVR can be either a host or a client. TiVo Minis, TiVo-Pace Mi3s, or TiVo Previews are clients.

Software

All multi-room features are supported in TiVo software, version 20.2.2 or later, although Multi-Room Streaming and Multi-Room Viewing were supported before version 20.2.2.

Situations could arise in which there are devices at different version levels (such as during rollouts or retail/MSO environments). Multi-room features work when the version levels are different, however, the multi-room features are optimized when both host and client are running the same version of the software. As much as possible, make sure that all intended host and client TiVo devices are using the same software version.

Account information

- All TiVo devices must be on the same TiVo account. These might be MSO-TiVo devices, TiVo retail devices, or a combination of the two. TiVo devices on the same account have the same group settings to allow sharing and the same Media Access Key (MAK), which is essential for sharing shows using multi-room features.

  Note: For more information about interactions between retail and TiVo devices, including how to merge accounts, see *To combine accounts* on page 321.

- All TiVo devices must be connected to the same subnet on the network (most home networks have only one subnet).

- No more than 12 devices (with a TSN) can be associated with a user account.

- All TiVo devices must have an active TiVo Service plan.

To enable transfers

Transfers are enabled by default, but if they are disabled by the MSO or subscriber, they must be re-enabled in My Account:

1. Log into My Account on www.tivo.com.

2. Choose **Device preferences** on the left navigation pane.

3. Make sure there is a check mark in the Video Sharing column next to each device you want to transfer programs from.

4. Click **Save**.

Streaming performance

- The TiVo T6 DVR supports four simultaneous streams to clients, plus local HD viewing.

- HD stream—MPEG-2 or MPEG-4 encoded, 1080p, 30fps stream (bit rate: 20 Mbps)

Remote scheduling from client to host

A TiVo client can remotely schedule and delete recorded content on a host.

Note: If there is more than one DVR in the home, a OnePass is associated with a specific DVR. A OnePass created on a non-DVR client (with a host DVR assigned) will be associated with the host DVR.

To modify recordings within My Shows remotely

Any client DVR can modify recordings within My Shows remotely, in almost the same manner as within My Shows on a host DVR.

You can:

- Delete a show or a folder of shows.
- Modify an in-progress recording (cancel, extend, and so on).
- Modify a OnePass (if both the client DVR and the host DVR have OnePass enabled).

To schedule from the Guide

Any client DVR can remotely schedule new recordings and modify existing recordings using the Guide.

You can:

- Create a recording.
- Modify a recording (cancel, extend, and so on).
- Create a OnePass (once the host DVR has OnePass enabled).
- Modify a OnePass (cancel, add buffer, new only, and so on).

Non-DVR clients can also schedule new recordings and modify existing recordings using the Guide.

- For TiVo Mini or TiVo-Pace Mi3, the scheduling procedure is almost identical to the procedure on a TiVo DVR.
- For TiVo Preview, press **Record** to record a show. You'll see a Recording Options screen similar to scheduling from Search or from Browse TV & Movies.

To schedule from Search or from Browse TV & Movies

Any client can remotely schedule new recordings and modify existing recordings using Search, Browse TV & Movies, or the Discovery Bar.

You can:

- Create a recording.
- Modify a recording (cancel, extend, and so on).
- Create a OnePass (once the host DVR has OnePass enabled).
- Modify a OnePass (cancel, add buffer, new only, and so on).

To record from Live TV

Clients can remotely schedule recordings from Live TV as follows:

- TiVo T6 DVR—Recording from Live TV results in a local DVR scheduling.
- TiVo Preview, TiVo Mini, or TiVo-Pace Mi3 —The DVR attempts to record the program currently being streamed to the device by using a separate tuner. After resolution of any potential recording conflicts and confirmation of the recording, the host starts recording the live program from the time the recording is confirmed. The live cache is not added to the recording.

Streaming recorded content

Streaming recorded content by using a client is similar to using My Shows on any TiVo DVR. The main difference is that the name of the remote DVR appears on the top right of My Shows on the client.

Assuming the host DVR meets all the requirements described in *Requirements* on page 195, the client can view shows stored on the remote DVR and stream (play) assets subject to legal and technical restrictions, as described in *Multi-room content available by specific host and client* on page 193.

If the client is a TiVo DVR, My Shows first displays local recordings or streaming videos. At the bottom of My Shows, other TiVo DVRs on the LAN are shown and can be selected and navigated as well.

Figure 19–7 and Figure 19–8 show the remote My Shows feature, with a default host and with a non-default host, respectively. The difference between the two is the presence or absence of the Discovery Bar.
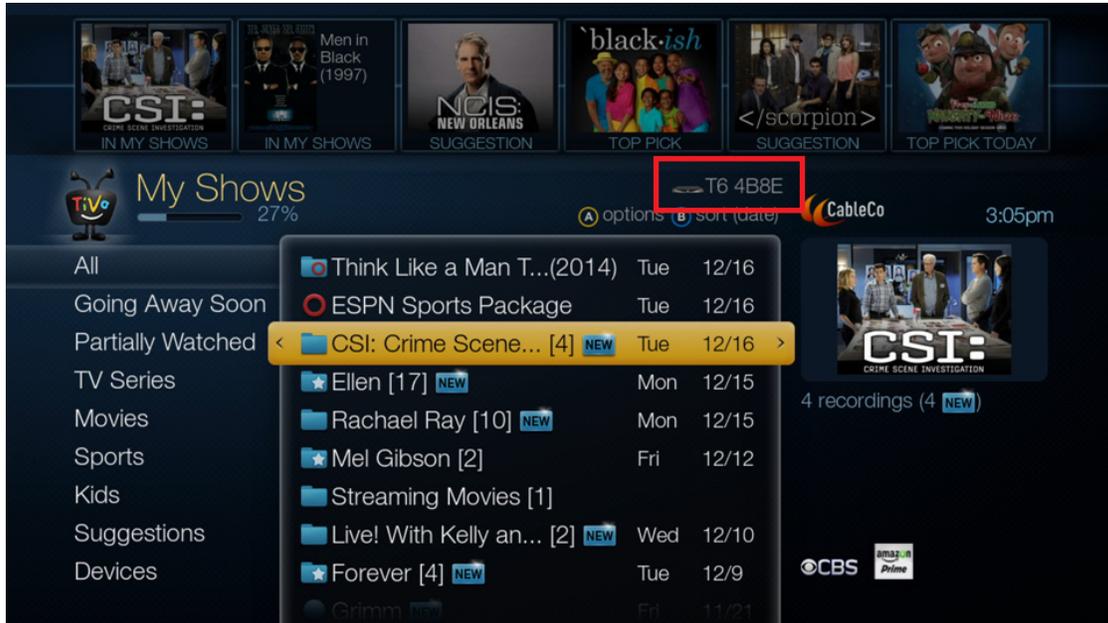
Streaming recorded content

Figure 19–7: Remote My Shows using default host (with Discovery Bar)

Figure 19–8: Remote My Shows using non-default host (no Discovery Bar)

Chapter 19 — Multi-Room Features

The following sections describe streaming recorded content in more detail:

- *Remote My Shows features* on page 199
- *To access My Shows remotely from a non-default TiVo DVR* on page 199
- *To access My Shows remotely from TiVo Mini or TiVo-Pace Mi3* on page 199
- *To change the default host DVR configuration* on page 201
- *To simultaneously view a single asset* on page 201
- *To delete shows and the Recently Deleted folder* on page 201
- *To stream in-progress recordings* on page 201

Remote My Shows features

- Browsing recorded shows and folder
- Playing back of assets from beginning or paused point
- Deleting individual shows using **Clear**
- Deleting folders of shows using **Clear**
- Viewing other DVRs within the home
- Selecting other DVRs within the home to view content
- Accessing the TiVo Suggestions folder
- Accessing the Recently Deleted folder

Note: Accessing videos stored on PCs on the LAN is not supported when using My Shows remotely.

To access My Shows remotely from a non-default TiVo DVR

Other TiVo DVRs within the home are shown at the bottom of My Shows. Each time you want to access the Multi-Room Streaming feature, you must first select the DVR that is hosting that show.

For convenience, the name of the remote DVR appears on the top right of My Shows on the client.

To access My Shows remotely from TiVo Mini or TiVo-Pace Mi3

TiVo Mini or TiVo-Pace Mi3 requires that the subscriber select a TiVo DVR as the default host during Guided Setup. This host becomes, in turn, the default My Shows host. When you select My Shows with TiVo Mini or TiVo-Pace Mi3, you automatically see the list of recordings on the host DVR (Figure 19–9).

Figure 19–9: Client accessing a recorded show stored on the host

If there is more than one DVR in the home, the other DVRs are displayed at the bottom of My Shows. You can view recordings on the other DVRs by selecting a different DVR at the bottom of My Shows (Figure 19–10).

Figure 19–10: My Shows

Each time you open My Shows, the My Shows list of the default host is shown.

To change the default host DVR configuration

In a home with two or more DVRs, you can change the client's default host at any time.

1. From TiVo Central, choose **Settings & Messages > Settings > Remote, CableCARD & Devices**.

2. Choose **TiVo DVR Connection**.

   A list of DVRs on the account is displayed with information on which DVRs are:

   - Suitable as default host (DVR name displayed with a white font).
   - Disconnected from the network (with the red forbidden icon, followed by the DVR name dimmed).
   - Not suitable as default host (exclamation mark followed by the DVR name dimmed). If a new host is selected, the client changes its default host name to match the selected host DVR.

   Note: For TiVo Mini, only a TiVo DVR is a suitable host.

   Note: For TiVo-Pace Mi3, any TiVo DVR or TiVo-Pace MG1 DVR is a suitable host.

3. Select the appropriate DVR.

To simultaneously view a single asset

TiVo DVRs are rated to allow up to four remote clients to simultaneously view the same stored content on the DVR. Each client can watch at a different viewing point.

A single paused point is supported, which it must be the last paused point created. If multiple subscribers view the recording, the paused point will always be the last paused point. If the last viewer watches the recording to the end, no paused point is set.

To delete shows and the Recently Deleted folder

Any subscriber in a Multi-Room Streaming home can delete any show. Deleted shows are moved into the Recently Deleted folder that is accessible within My Shows. A deleted show can be recovered by a subscriber from the Recently Deleted folder until the space is needed for another recording.

If a second subscriber attempts to delete a show that the first subscriber is watching, the second subscriber receives a message saying that the show cannot be deleted at this time because someone else is watching it.

To stream in-progress recordings

In-progress recordings on a DVR are available for streaming.

Live programming viewed on a DVR is not available for streaming unless it is being recorded. If a live program is being watched on the DVR, but not recorded, that program does not show in My Shows and is not available for streaming to other clients in the home.

On the TiVo DVR, unrecorded live programming can be converted to a recording by pressing **Record**, at which point the program is treated as an in-progress recording and is available for streaming. Any

caching of the live program is also converted to a recording (the TiVo DVR can cache up to 30 minutes of the program that is currently being viewed).

When you are watching a live program (for example, accessed by pressing **Live TV** through the Guide or by changing channels), if you press **Pause**, that paused point is set locally and is not available to Multi-Room Streaming clients. You can pause completed and in-progress recordings in one room and resume in another room from the paused point (Figure 19–11). To set a Multi-Room Streaming paused point, access the in-progress recording using My Shows.

Figure 19–11: Transfer from paused point option

Streaming live programming

Using TiVo Preview, TiVo Mini, or TiVo-Pace Mi3 for Live TV Streaming is almost the same as watching Live TV on any TiVo DVR.

TiVo Preview, TiVo Mini, or TiVo-Pace Mi3 can perform Live TV Streaming using any of the following entry points:

- Press **Live TV** on the TiVo remote control.
- Choose **Watch Live TV** from TiVo Central.
- Select the currently broadcasting show in the Guide.
- Select the currently-broadcasting show from the Discovery Bar, Search, or Browse TV & Movies.

From TiVo Central, choose **Watch Live TV**, or press **Live TV** on the TiVo remote control (Figure 19–12).
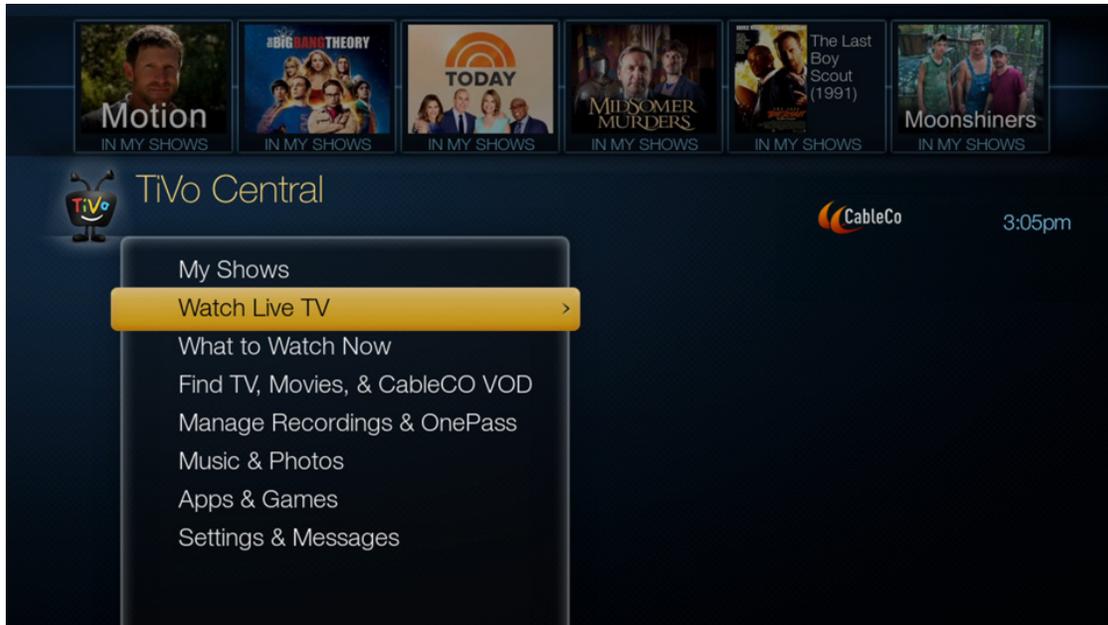
Figure 19–12: TiVo Central (with Watch Live TV but no Video Window)

Note: Live TV Streaming is not available between DVRs. TiVo DVRs use a local QAM tuner to provide local Live TV.

To use screensaver mode

TiVo Preview, TiVo Mini, and TiVo-Pace Mi3 enter screensaver mode after 15 minutes on TiVo Central with no activity, or no subscriber interaction (such as no remote control activity) after 4 hours of watching Live TV. In this case, the `Are you still watching?` message appears.

- To return to Tivo Central, press any button on the TiVo remote control.
- To see Live TV, press **Live TV**.
- To see the Guide, press **Guide**.

To release a Live TV Streaming tuner

Live TV Streaming supports both explicit and implicit release of DVR tuners because tuners are a limited resource and other subscribers might want to use them.

The tuner used for Live TV Streaming is released when:

- The **TiVo** button is pressed.

  Note: The Live TV Streaming session is maintained for 90 seconds after you enter TiVo Central, or until you choose to do something else.

- 4 hours of Live TV viewing have elapsed with no remote control activity. The `Are you still watching?` message appears.

Tuners are not released if you bring up the Guide over a playback session.

To use Emergency Alert System support

Emergency Alert System (EAS) notifications (both EAS messaging and force tune) are supported on TiVo Preview, TiVo Mini, and TiVo-Pace Mi3 during Live TV Streaming (including QAM-based VOD).

EAS notifications are not provided if there is no Live TV session between the host and TiVo client, that is, when TiVo Preview, TiVo Mini, or TiVo-Pace Mi3 is:

- In Standby mode
- Viewing IP content, for example, Pandora
- Viewing stored recordings

Troubleshooting multi-room issues

This section provides suggestions for dealing with some common problems that you might encounter with multi-room features:

- *Multi-room features aren't working* on page 204
- *Slow transfer speed* on page 205
- *Client doesn't list DVR in My Shows* on page 205
- *Host DVR isn't listed on My Shows* on page 205
- *A "Not on your account" error message appears* on page 205

Multi-room features aren't working

A MAK is generated when an account is created. Whether there is a delay depends on the frequency and timing of service updates to the devices. Under the worst circumstances, it can take more than a day for the MAK to be generated and paired with other TiVo devices on the same account. This is also true when a TiVo device is transferred to a new account.

A MAK lets your computer (or another TiVo device):

- Access My Shows of a TiVo DVR.
- Play back those shows as they are transferred.

To use multi-room features, all of the relevant TiVo devices must:

- Have the same MAK.
- Be on the same account.
- Be in the same subnet on the LAN.
- Have an active TiVo Service plan.
- Have transfers enabled in My Account.

Note: If there are special characters in the name of a TiVo device, it can interfere with multi-room features. You might need to rename that TiVo device.

Slow transfer speed

Transfer speeds depend on a variety of factors, including the signal strength of the connection, network activity, and the recording quality of the show being transferred.

To improve performance:

- While transferring programs, do not transfer other media between devices on the network.
- If the transfer stopped early or did not finish, check the recording history.

Client doesn't list DVR in My Shows

If a client doesn't display one of the DVRs in the network in My Shows:

1. Verify that both devices are connected to the network and are on the same subnet.
2. If the network setup is correct, restart both devices and restart the router.

It might take up to five minutes for a TiVo DVR to display on My Shows of another TiVo device after network changes are made.

Host DVR isn't listed on My Shows

If the network is correctly configured, the host DVR and its clients should be able to see each other. If not:

1. Verify that both devices are connected to the network and are on the same subnet.
2. If the network setup is correct, restart both devices and restart the router.

A "Not on your account" error message appears

If the client and host can see each other, but you receive the `Not on your account` error, the likely causes are a mismatched MAK, missing groups, or TiVo devices on separate accounts.

- Check the System Information screen to make sure both devices have the same MAK.
- If both devices are leased devices, combine the accounts.
- If one device is a leased device and one is a retail TiVo device, contact TiVo Customer Support.

Settings and Messages ![20]

This chapter discusses the settings that you can use to tailor how you use the TiVo features, such as what channels are displayed in the Guide, how the TiVo remote control functions, and many more. Instructions for setting up access PINs are contained here, as well as system information, diagnostics, and information about your TiVo account.

The following sections describe items in the Settings & Messages menu:

- *Settings* on page 208
- *Parental Controls* on page 214
- *Purchase Controls* on page 215
- *Messages* on page 219
- *Account & System Info* on page 221
- *Help* on page 225
- *Standby* on page 226

Note: The settings for Parental Controls and Purchase Controls are accessible on both the Settings & Messages menu and the Settings menu.

Figure 20–1 shows the Settings & Messages menu on TiVo Central.

Figure 20–1: Settings & Messages menu

Settings

To find or change the settings for a particular TiVo device, from TiVo Central, choose **Settings & Messages > Settings** (Figure 20–2).

Figure 20–2: Settings menu

The options on the Settings menu are described in the following sections.

Audio

The audio settings let you choose the default audio language for upcoming programs that have multiple language tracks. You can select Dolby Audio as your default sound system, and also specify the sound effects volume for the background sound TiVo provides while you are performing various activities.

From TiVo Central, choose **Settings & Messages > Settings > Audio** (Figure 20–3).
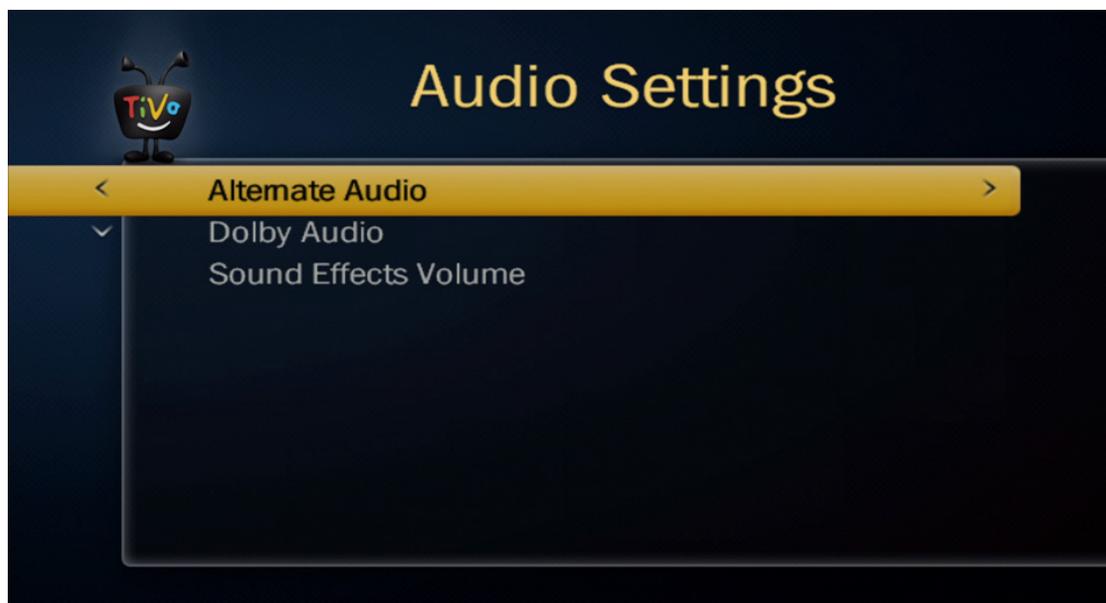
Figure 20–3: Audio Settings menu

To select the default audio language

1. From TiVo Central, choose **Settings & Messages > Settings > Audio > Alternate Audio**.

2. On the Alternate Audio Settings screen, click **Select**.

   The Default Audio Language screen shows the language choices for upcoming programs that have multiple language tracks.

3. Select the default audio language from the list.

   The Alternate Audio Settings screen displays the language you selected.

To select Dolby Audio

Before you specify Dolby Audio as your default audio setting, make sure that your A/V receiver supports Dolby Digital or Dolby Digital Plus.

1. From TiVo Central, choose **Settings & Messages > Settings > Audio > Dolby Audio** (Figure 20–4).
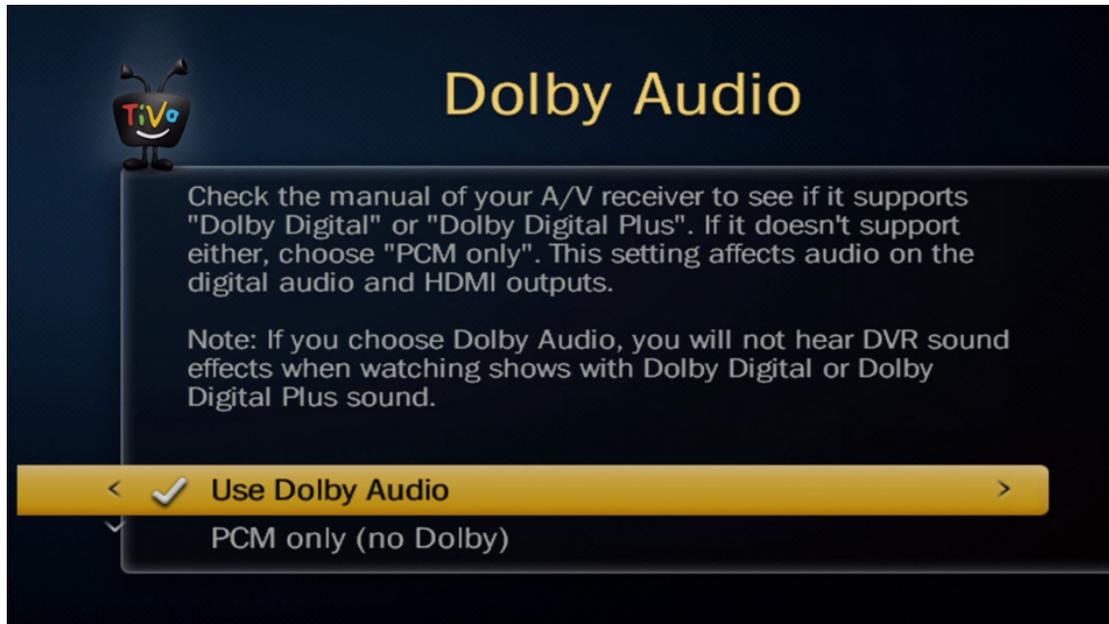
Figure 20–4: Dolby Audio menu

2. If your A/V receiver supports Dolby Digital or Dolby Digital Plus, select **Use Dolby Audio**.

3. If your A/V receiver doesn't support either option, specify **PCM only (no Dolby)**.

To specify the sound effects volume

1. From TiVo Central, choose **Settings & Messages > Settings > Audio > Sound Effects Volume**.

2. In the Sound Effects Volume screen, select the sound effects volume you prefer for your TiVo DVR (**Low**, **Medium**, or **High**).

   Alternatively, you can turn off the sound effects volume by selecting **Off**.

Channels

The channel settings allow you to control the channels that appear in the Guide, rate different channels, check signal strength, and scan for available channels.

From TiVo Central, choose **Settings & Messages > Settings > Channels** (Figure 20–5).
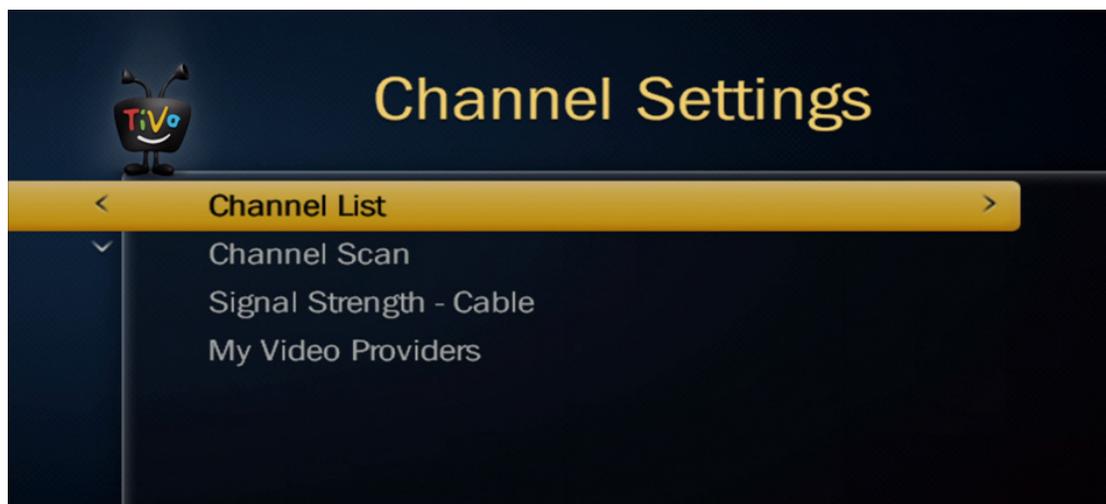
Figure 20–5: Channel Settings menu

- **Channel List**—Lets you select channels (including favorites) for your Guide lineup.
- **Channel Scan**—Lets you scan for all available channels. After the channels are scanned, the Channel Scan Complete screen lists them so you can add any of them to your Channel List.

  Note: You can also delete *all* previously scanned channels from your Channel List. Be sure this is what you want to do before pressing **Delete previously scanned channels** on the Channel Scanning screen.

- **Signal Strength - Antenna/Cable**—Lets you test the signal strength of your antenna/ digital cable channels. For more information, see *Checking the signal strength* on page 343.

  Note: Read the on-screen warning before pressing **OK, access this setting**.

- **My Video Providers**—Lets you choose from a list of third-party video providers. The list shows all available providers, and you can select as many as you want (Figure 20–6).

Settings

Figure 20–6: My Video Providers screen

Displays

The display settings allow you to set closed captioning, toggle the lights on the front of the DVR on or off, toggle the Video Window on or off, or customize the Discovery Bar.

From TiVo Central, choose **Settings & Messages > Settings > Displays** (Figure 20–7).

Figure 20–7: Display Settings menu
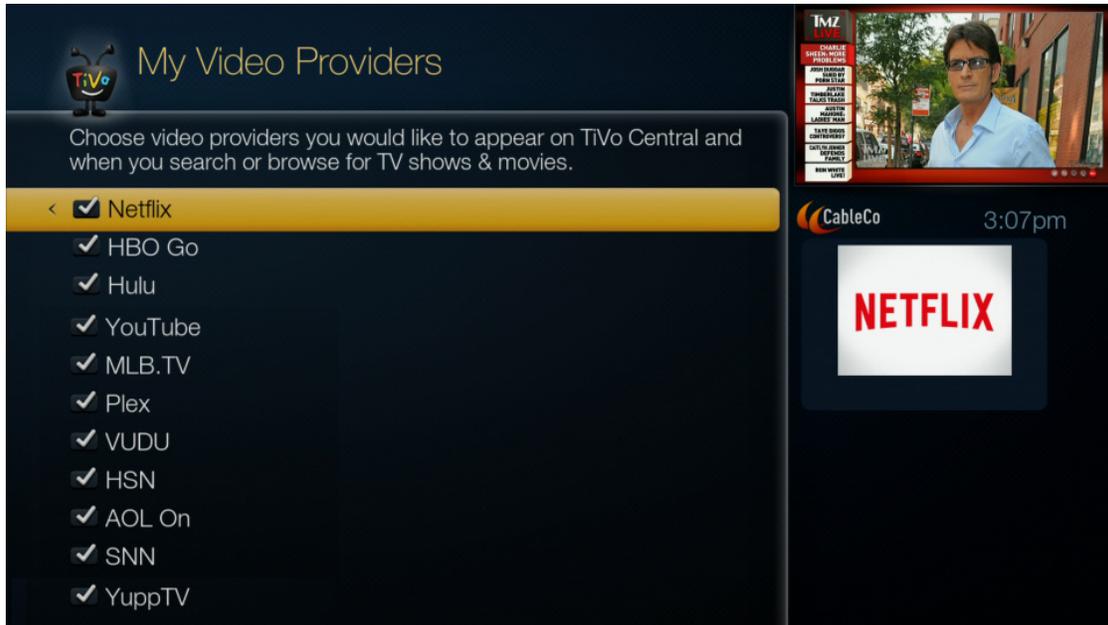
- **Caller ID**—Toggles the display of the caller's name and number when the phone rings when you are watching a program.

- **Closed Captioning**—Lets you change the Closed Captioning settings.

- **Lights on the Front of the TiVo box**—Lets you toggle the lights on the front of the DVR on or off.

- **Customize Discovery Bar**—Lets you choose the lists to show in the Discovery Bar.

- **Video Window**—Lets you toggle the Video Window on or off. Explains how to temporarily hide the Video Window.

Network

The network settings allow you to connect to the TiVo Service, change network settings, view the network status, and view network diagnostics.

From TiVo Central, choose **Settings & Messages > Settings > Network** (Figure 20–8).
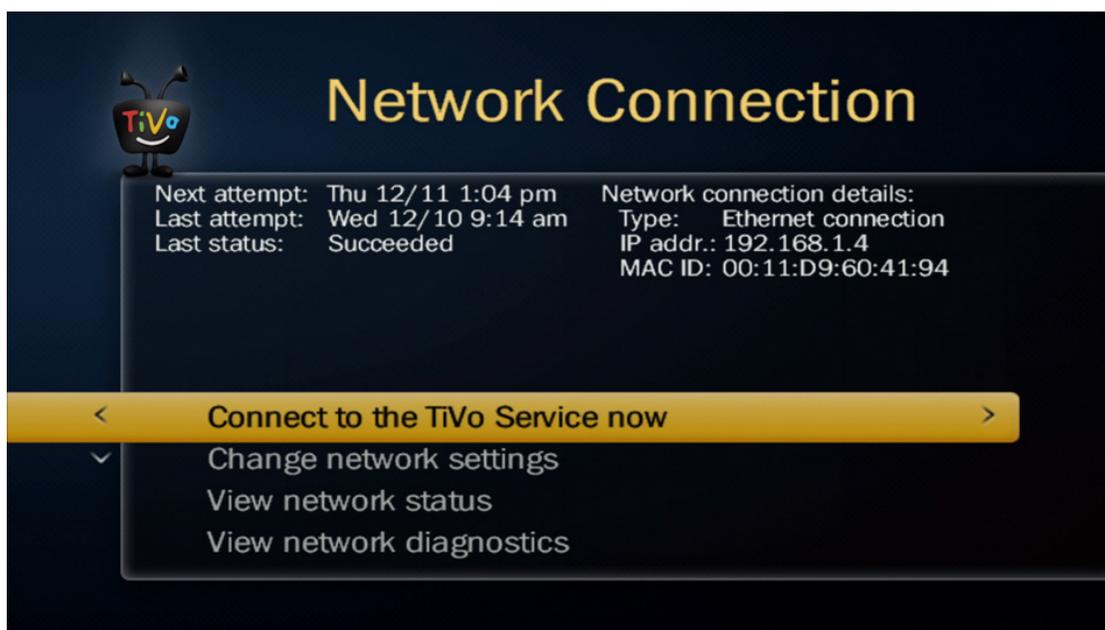
Figure 20–8: Network Connection menu

The network settings that are shown vary depending on whether you are using wired or wireless network. These settings are configured automatically, but you can edit them if needed.

- **Connect to the TiVo Service now**—Starts the connection process, which can take some time. On the Connecting screen, you can check the status by checking the completion percentage for the Loading info process, which is the last process. Press **Select** to return to the Network Connection screen at any time during the process (connection continues).

- **Change network settings**—Lets you change the following settings:
  - **Modify Ethernet settings**—Lets you choose how your device should get an IP address. The choices are:
    - Get automatically from a DHCP server (typical)

- Let me specify a static IP address
- Let the DVR assign itself an IP address
  - **Connect using MoCA**—Sets up the DVR to use MoCA as the network interface and acts as a MoCA client.
  - **Connect using wireless**—Lets you set up your device to use your wireless home network.
  - **Use this DVR to create a MoCA network**—Sets up the MoCA bridge that creates a MoCA network in your environment. In this case, the TiVo DVR uses Ethernet as the network interface.
- **View network status**—Lets you view network status details, such as Auto-config TCP/IP, MoCA details, wireless details, and so on.
- **View network diagnostics**—Provides a number of diagnostic tools
  - **Test Internet connection**—Tests the Internet connection.
  - **View transfer history**—Lists the most recent transfers since your TiVo device last started.
  - **View TCP port test details**—Indicates the result of the latest port configuration test.
  - **View DNS test details**—Indicates the result of the latest DNS resolution test.

For details about diagnostics, see *Diagnostics* on page 325.

Parental Controls

From TiVo Central, choose **Settings & Messages > Settings > Parental Controls** (Figure 20–9).

Figure 20–9: Parental Controls menu
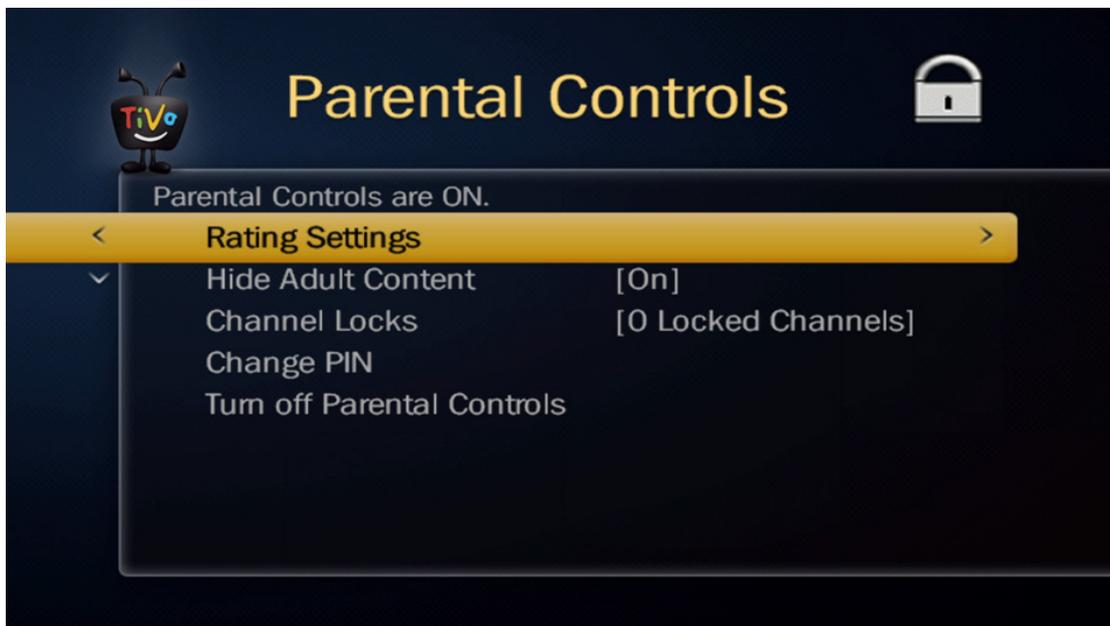
- **Turn on Parental Controls**—When you turn Parental Controls from off to on, you are required to create a 4-digit Parental Controls PIN.

- **Rating Settings**—Lets you choose rating limits for TV programs and movies, block TV programming and unrated content, and manage regional ratings.

  Requires that Parental Controls be turned on.

- **Hide Adult Content—**Lets you hide adult metadata from search results, the Guide, Discovery Bar, WishList Searches, Browse TV and Movies, My Shows, and so on.

  Requires that Parental Controls be turned on.

- **Channel Locks**—Lets you lock or unlock TV channels.

  Requires that Parental Controls be turned on.

- **Change PIN**—Lets you change the Parental Controls PIN.

- **Turn off Parental Controls**—This option only displays if Parental Controls are turned on. You are prompted to enter your Parental Controls PIN.

For details about Parental Controls and these settings, see *Parental Controls* on page 155.

Purchase Controls

You can require that a PIN be entered for purchasing VOD or Pay Per View TV shows or movies.

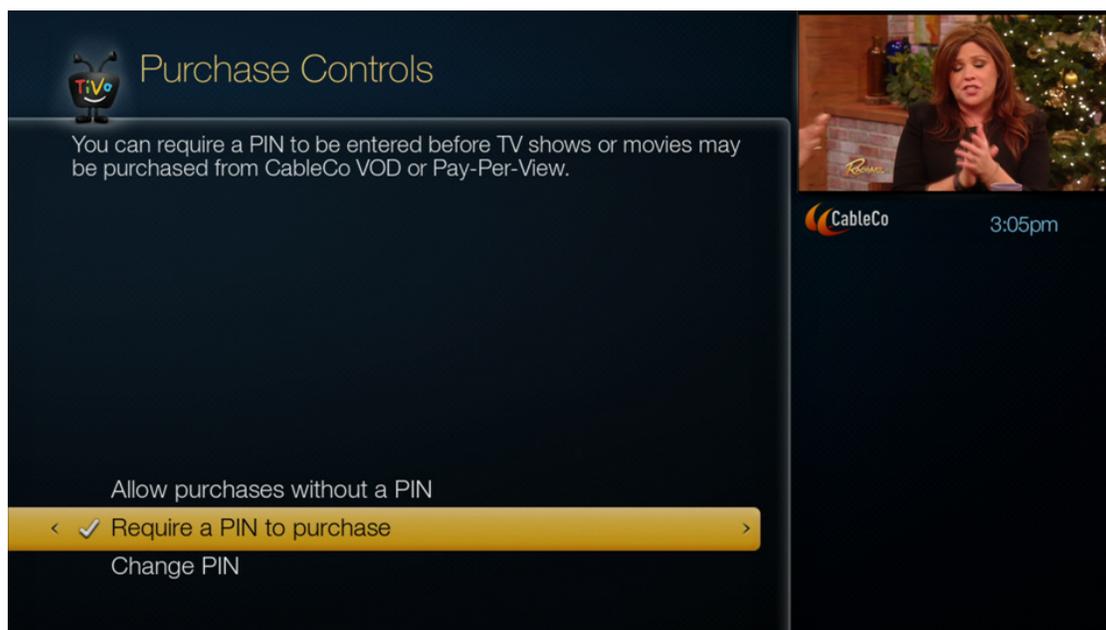From TiVo Central, choose **Settings & Messages > Settings > Purchase Controls** (Figure 20–10).

Figure 20–10: Purchase Controls screen

- **Allow purchases without a PIN**—No limits on purchasing.

- **Require a PIN to purchase**—If you select this option, you are required to create a 4-digit Parental Controls PIN.

- **Change PIN**—Lets you change the Purchase Controls PIN.

For details about Purchase Controls and these settings, see *Enabling a Purchase Controls PIN* on page 171.

Recording

From TiVo Central, choose **Settings & Messages > Settings > Recording** (Figure 20–11).

Figure 20–11: Recording Settings menu

- **OnePass and Recording Options**—Lets you set the default options for your OnePasses every time you create a OnePass. See *To customize the OnePass recording options* on page 127.

- **Overlap Protection**—Lets you decide if you want to clip (partially record) a lower priority program for an overlap of five minutes or less, or cancel the lower priority program.

- **Extend Live Recordings**—Lets you decide if you want to be reminded to add extra time in case a live event goes beyond the scheduled ending.

- **TiVo Suggestions**—Lets you decide if you want TiVo Suggestions to automatically be recorded if there is space.

Remote, CableCARD, & Devices

From TiVo Central, choose **Settings & Messages > Settings > Remote, CableCARD, & Devices** (Figure 20–12).
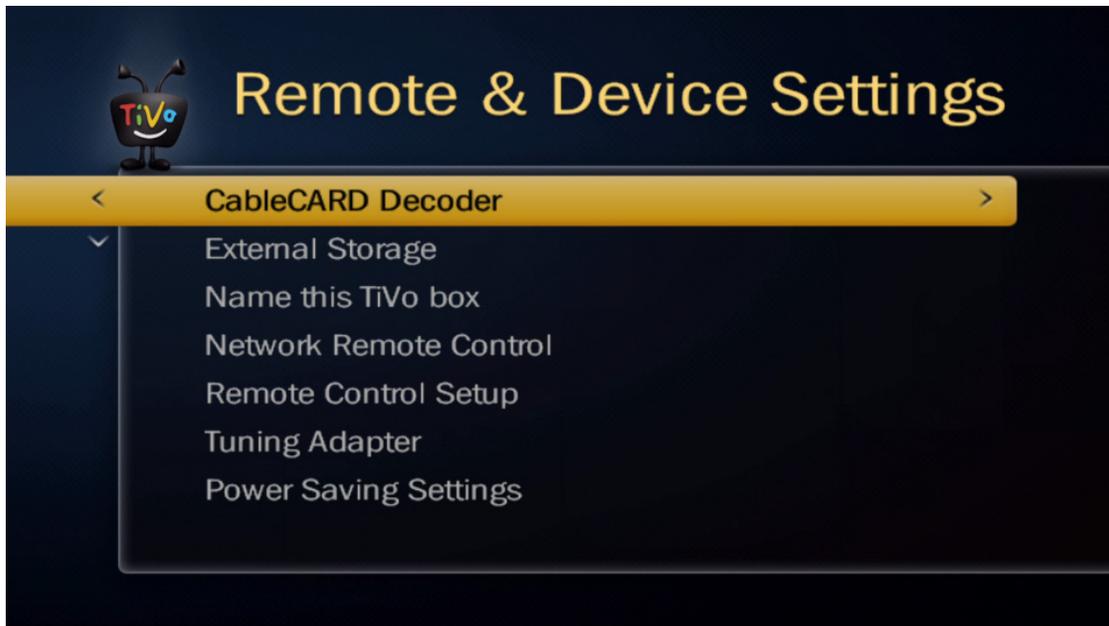
Figure 20–12: Remote & Device Settings menu

- **CableCARD Decoder**—Indicates whether or not a CableCARD Decoder (M-Card) is installed and provides the following options:
  - **Test Channels**—Lets you test the channels.

  Note: Read the on-screen warning before pressing **OK, access this setting**.

  - **CableCARD options (for Installers)**—Provides options for the installer to use.
    - **CableCARD Menu**—Provides the following read-only information:
      Conditional Access
      CableCARD™ Status
      Network Setup
      CableCARD™ Pairing
      DSG
      Interactive Info
      CANH Status
    - **Test Channels**—Lets you test the channels.
    - **TiVo box Diagnostics**—see *Diagnostics* on page 325.
- **External Storage**—Indicates if an external storage device is installed.
- **Name this TiVo box**—Lets you select a name for your DVR from the list of your network DVRs, or create a name of your choosing by using the on-screen keypad.

  Note: You can also name your DVR by using online account management. For details, see *Online Account Management* on page 311.

- **Network Remote Control**—Lets you set network-based remote controls for computers and mobile devices that are connected to your home network.

You will need to enter your Media Access Key (MAK) into the TiVo App on each device. To get your MAK, see *Account & System Info* on page 221.

- **Remote Control Setup**

  For details about using the TiVo remote control, see *TiVo Remote Control* on page 93. The following options allow you to change the set up for the TiVo remote control:

  - **Part 1: TV power, volume, and mute**—After you select the type of TV you have, follow the on-screen instructions to enable the **TV Pwr, Volume**, and **Mute** buttons on the TiVo remote control to operate your TV.

  - **Part 2: A/V volume and mute**—After you select the brand of your A/V receiver, follow the on-screen instructions to enable the **Volume** and **Mute** buttons on the TiVo remote control to operate your A/V receiver.

  - **Part 3: TV input**—After you select the type of TV you have, follow the on-screen instructions to enable the **Input** button on the TiVo remote control to change the input source on your TV.

  - **Part 4: Advance and Replay buttons**—Lets you change how the **Advance** and **Instant Replay** buttons work. You can also toggle between **scan forward 30 seconds** and **skips to tick**.

  - **Part 5: Remote control pairing**—Follow the on-screen instructions to pair your TiVo remote control with a TiVo device to use RF mode on the TiVo remote control.

- **Tuning Adapter**—Indicates whether or not a tuning adapter is installed.

- **Power Saving Settings**—Lets you choose the amount of power consumption (low, medium, or high) on your TiVo T6 DVR. Selecting a higher power saving level means that the DVR automatically enters Standby sooner, and that TiVo Suggestions might not record automatically (while the DVR is in Standby). Scheduled recordings, downloads, and transfers are not affected. By default, power saving is turned off.

Video

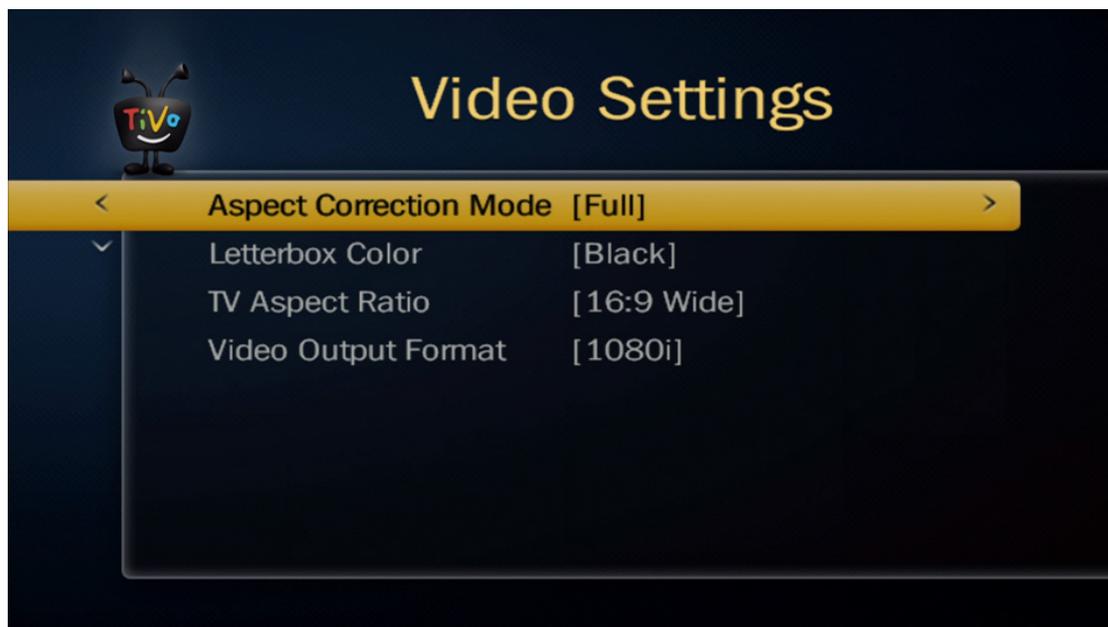From TiVo Central, choose **Settings & Messages > Settings > Video** (Figure 20–13).

Figure 20–13: Video Settings menu

- **Aspect Correction Mode [Full or Panel]**—Alters the way video is displayed. Also lets you use the **Zoom** button on the TiVo remote control to zoom in as you watch a show.

- **Letterbox Color [Black or Gray]**—Sets the color of the empty space on some televisions when the letterbox aspect ratio is used.

- **TV Aspect Ratio**—Lets you set the aspect ratio of your TV.
  - 16:9 Widescreen (most HD TVs)
  - 4:3 Classic Screen

- **Video Output Format [480i, 720p...]**—Sets the resolution of the screen. For widescreen 16:9, a minimum of 720p is required.

  Note: If you aren't sure of the supported resolution for your TV, check the manual for the TV.

Messages

Messages are sent by the TiVo Service. A typical message might be that there has been a lineup change, or Program Guide Data (PGD) has run out (for example, if you unplugged the TiVo device or left the network unplugged which prevented the daily connection to the TiVo Service).

If you have a message, an envelope appears to the left of the Settings & Messages menu item.

From TiVo Central, choose **Settings & Messages > Messages** (Figure 20–14).
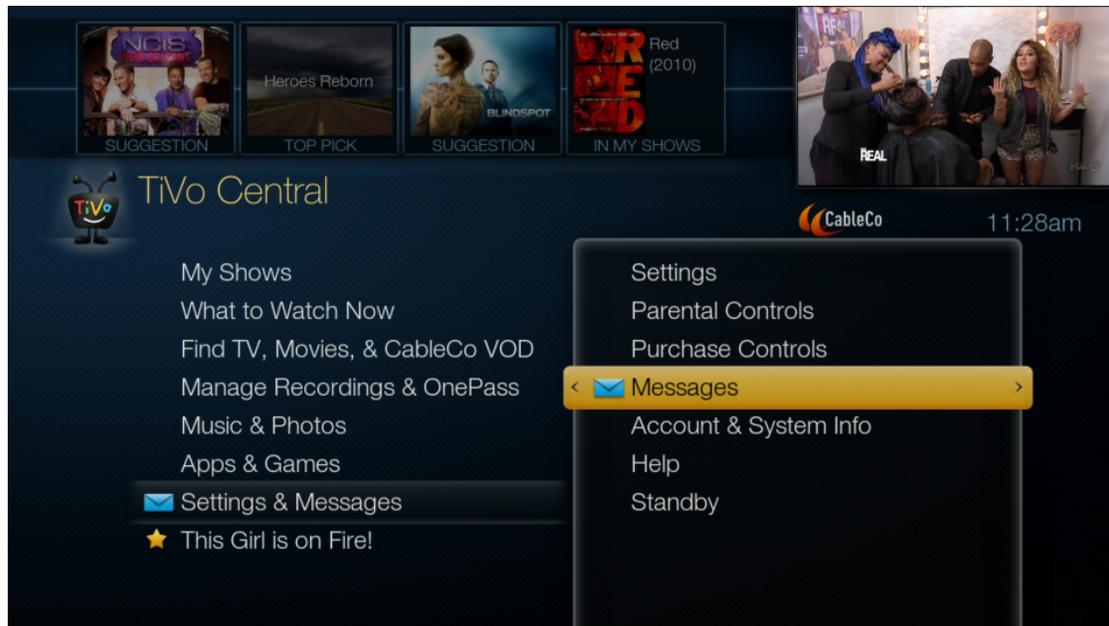
Figure 20–14: Messages envelope

Depending on the CableCo agreement with TiVo, the MSO might be able to provide message text in a specified format so TiVo can publish it through the TiVo Service. The MSO might also have the ability to publish their own messages as well, which is defined in the *API User Guide for TiVo Services*.

Account & System Info

From TiVo Central, choose **Settings & Messages > Account & System Info** (Figure 20–15).
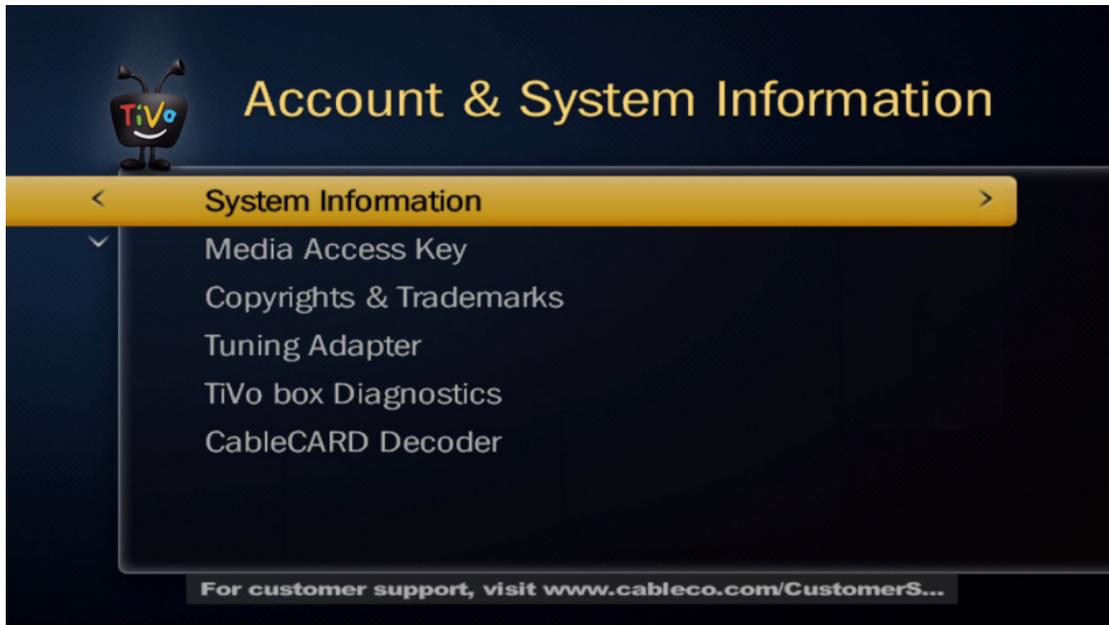

Figure 20–15: Account & System Information menu

- **System Information**—See *System information* below.
- **Media Access Key**—Displays the Media Access Key (MAK) for the device.

    If Parental Controls are on, you are prompted to enter the Parental Controls PIN.

- **Copyrights & Trademarks**—Displays the TiVo software copyright and trademark notices.
- **Tuning Adapter**—Indicates whether or not a tuning adapter is installed.
- **TiVo box Diagnostics**—The Diagnostics screens are described in *TiVo box diagnostics* on page 325.
- **CableCARD Decoder**—Indicates whether or not a CableCARD Decoder (M-Card) is installed.

System information

The System Information screens contain read-only information about the TiVo device and the TiVo Service account. You can see the TiVo Service Number (TSN), the TiVo device manufacturer, model number, software version, storage capacity, information about recent connections to the TiVo Service, and more. This reference information comes from devices, events, or settings.

From TiVo Central, choose **Settings & Messages > Account & System Info > System Information** (Figure 20–16).
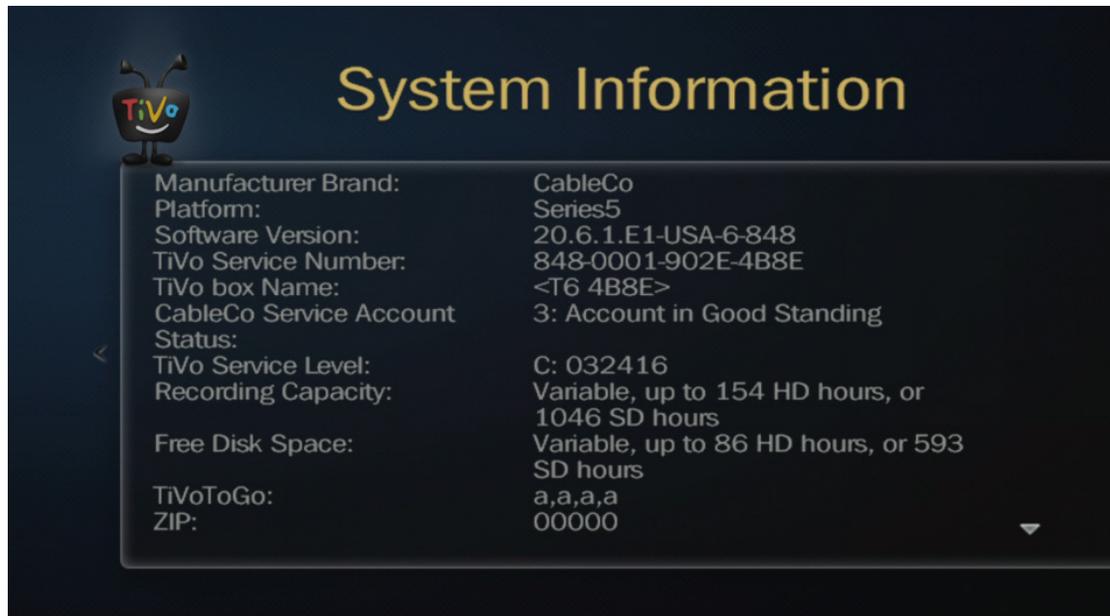
Figure 20–16: System Information screen

The System Information screen contains the following read-only information. To scroll through the System Information fields, use the **Channel Up** and **Channel Down** buttons.

- Manufacturer Brand—Usually this is TiVo. For some partnerships, the hardware might be manufactured by another company.

- Platform—Series4 or later.

- Software Version—The software version currently installed on the device.

- TiVo Service Number—A unique 15-character alphanumeric identifier for the DVR. This number is also found on the back of the TiVo DVR. The first three digits identify the model of the DVR.

- Netflix ESN—Netflix electronic serial number.

- DVR Name—The DVR has a default name based on the TSN, such as DVR5861. Choose My Account on www.tivo.com to name your TiVo DVR, or see Name this TiVo box in *Remote, CableCARD, & Devices* on page 216.

- TiVo Service Account Status—The service state the TiVo device is in, such as Active (3). If the service state changes (if the device is deactivated, for example), the device gets a new service state the next time it calls into the TiVo Service.

- TiVo Service Level—Internal TiVo Service setting.

- Recording Capacity—Both recording capacities are shown: high-definition (HD) hours, and standard-definition (SD) hours.

- Free Disk Space—Disk space capacity is shown for both HD and SD.

- TiVoToGo—*a, a, a, a* stands for *Active*, *Active*, *Active, Active*. Shows the TiVoToGo HTTP access status details. This is an internal value used by the TiVo Service.

- ZIP—The ZIP code (or Postal Code for Canada) that was entered during Guided Setup.

- Country—U.S. or Canada.

- Language—The default language is English (US). Other values include English (GB), and Spanish.

- Program Source—Such as Digital Cable. Some TiVo devices also support Antenna input.

- Source Input—Coaxial Cable In for digital cable.

- Cable Provider—Your CableCo name. The cable provider chosen during Guided Setup.

- Cable Lineup—The cable lineup chosen during Guided Setup, typically digital.

- Today's Date—Current date and time.

- Daylight Saving—Indicates whether the device is using DST or not, depending on the time of year and whether the device is in a location that has a time change (some locations, such as Arizona and Hawaii, do not observe DST).

- Program Information To—The date when the device will run out of Program Guide Data (PGD).

- Collab Slice Version—Input to the TiVo Suggestions feature implemented by the client.

- CableCARD—Indicates if an M-Card is active for TiVo T6 DVR and later DVRs.

- External Storage—Indicates if a DVR expander is connected to the eSATA port.

- HDMI Status—HDCP enabled is usually displayed. If HDCP disabled is displayed, there is an issue with the HDCP handshake/authentication of the HDMI.

- Service Connection
  - Last Successful—Day, date, and time of the last service connection.
  - Last Attempt—Day, date, and time of the last service connection attempt. If successful, this is the same as the Last Successful time.
  - Last Status—Succeeded, Pending Restart (if the device just downloaded new software), or Failed.
  - Next Scheduled—Date and time of the next scheduled service connection.

- Dial-in Configuration Code—Determines which TiVo servers the device connects to.
  - Production servers = 000
  - Staging = 225. Used for TiVo internal testing.
  - Beta = 200
  - Engineering = 707

- MBT—The internal TiVo device temperature in Celsius, for example, 35° C. Each TiVo device has a different internal temperature range, which varies by device model.

- Uptime—The amount of time since the last device restart.

- Remote Address—The TiVo remote control address that is configured on this device. It is set up to have IR codes for 0-9. 0 (zero) is a universal mode, and 1-9 is specifically paired.

- RF Remote Battery Level—Value is Unknown if you are using any TiVo remote control other than a Series 5 remote control. If a Series 5 remote control is connected, its battery level is displayed.

- Service Map Version—Internal TiVo Service setting.

- GC—Internal TiVo Service setting.

- Indexing—Day, date, and time Program Guide Data (PGD) from Gracenote was last indexed for use with the TiVo software.
- VCM Connection—Virtual Channel Manager (VCM) shows details about synchronizing internal data. TiVo uses this data for the To Do List and OnePass Manager.
    - Last Attempt—Date and time
    - Last Successful—Date and time
    - Next Scheduled—Date and time
- Opt Status—Privacy status for all devices on this account.
- HDUI Available—Yes or No. For HDUI to be available, the following must be set:
    - The DVR must be networked.
    - The TV Aspect Ratio must be set to 16:9 Widescreen.
    - The Video Output Format setting must be set to 720p or higher.
- Active UI Mode—HD or SD, depending on which TiVo menus are currently being used.
- HDUI Support—If set to Capable, indicates that the Video Output Format (720p or higher is selected) and that TV Aspect Ratio (16x9 & 4x3 smart) is available.
- Active Video Output Format—Such as 720p.
- Service Connection Type—Such as Network.
- Flash Player Version—Software version of current Flash Player.
- HD Menu Software Version—Software version for the HD Menu Flash application.

Help

The Help functions can provide information and guidance on some basic troubleshooting situations. From TiVo Central, choose **Settings & Messages > Help** (Figure 20–17).
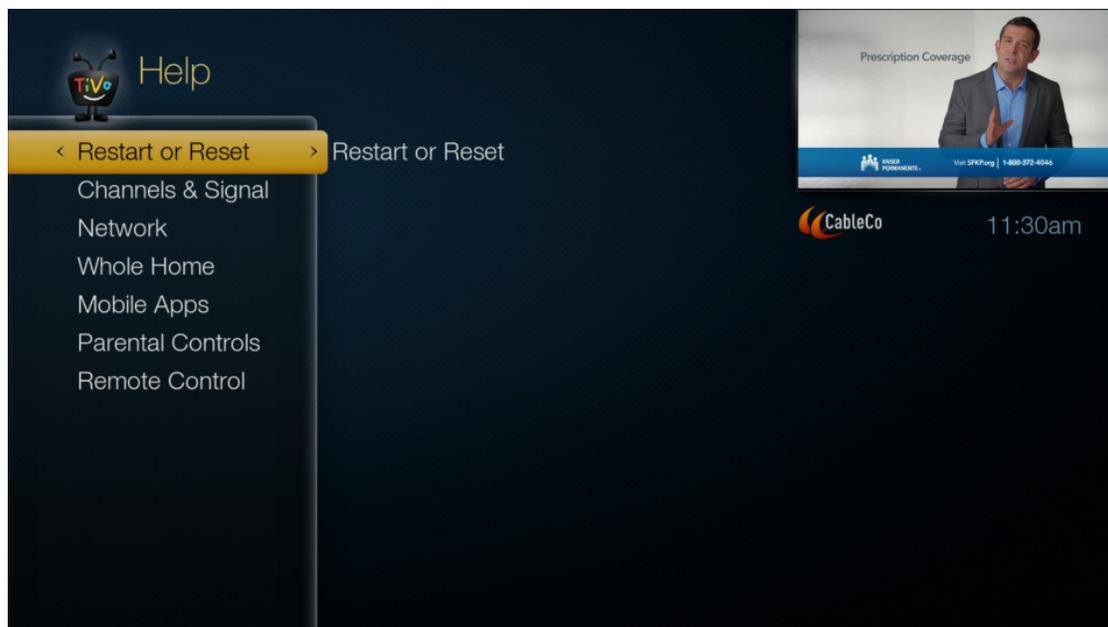

Figure 20–17: Help menu

- **Restart or Reset**—Instructions for restarting, resetting, or clearing. When you choose one of these processes, read the on-screen guidelines and warnings. Before proceeding, you are prompted to confirm that you want to continue. Some of these processes are time consuming, and you cannot use the device while in progress.
  - Restart the TiVo box—About five minutes.
  - Repeat Guided Setup—30 minutes plus.
  - Clear Thumb Ratings & Suggestions—Up to an hour.
  - Clear Program Information & To Do List—Up to an hour.
  - Clear & Delete Everything—At least an hour.
- **Channels & Signal**—Troubleshooting tips for problems with video quality or poor signal quality. Common causes are problems with:
  - CableCARD
  - Tuning Adapter
  - Switched Digital Channels
  - Channel Lineup
  - Antenna
  - Lost Signal
- **Network**—Troubleshooting tips for network connection problems. Additional information is contained in *Network diagnostics* on page 343.

- **Whole Home**—Troubleshooting tips for problems with the following Whole Home situations:
  - Account Issues
  - Streaming Between TiVo boxes
  - Transferring Between TiVo boxes
  - Transferring To/From a Computer
- **Mobile Apps**—Troubleshooting tips for problems using this DVR with the following:
  - iPAD & iPhone
  - Android Phone & Tablet
- **Parental Controls**—Instructions for doing the following:
  - Turning on Parental Controls
  - Setting Locks & Limits
- **Remote Control**—Instructions for pairing the TiVo remote control to this device.

For more information about troubleshooting, see *Troubleshooting* on page 349.

Standby

When you select Standby, the device goes into Standby mode until you press the **TiVo** button or **Live TV** on the TiVo remote control to turn on the device.

From TiVo Central, choose **Settings & Messages > Standby** (Figure 20–18).
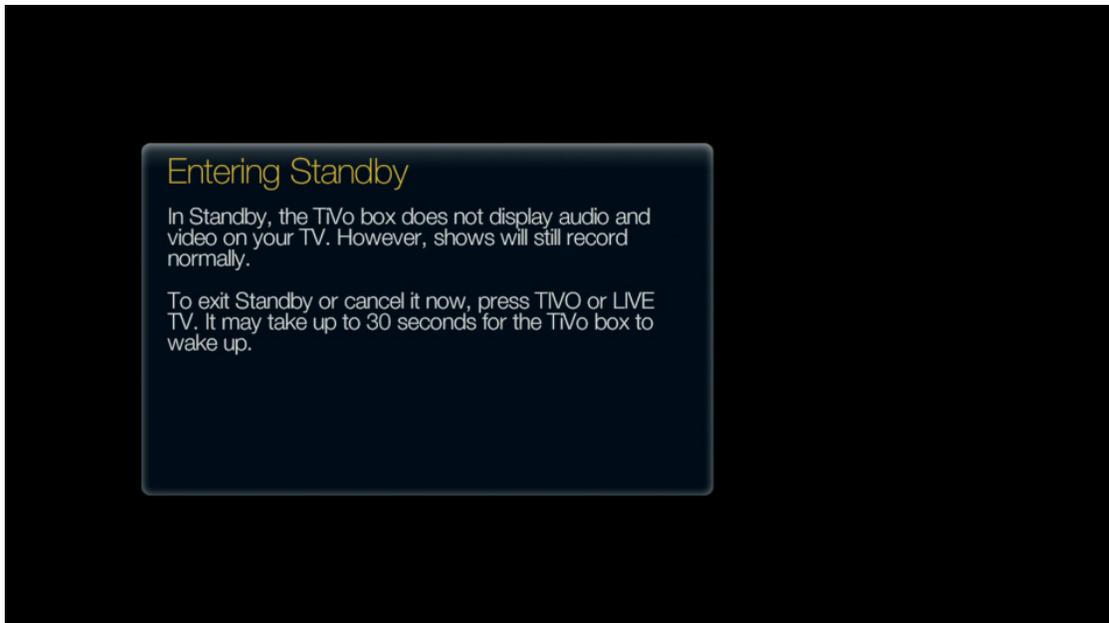

Figure 20–18: Standby screen

External Applications

TiVo App   21

As a companion for the TiVo DVR, TiVo App lets you search, browse, discover, and share programs without ever interrupting what you are watching.

Note: TiVo App is primarily designed for retail users. There are also customized versions of TiVo App for MSOs, which have the same functionality as the retail equivalent except that the SAML protocol (single sign-on) is integrated with the MSO's Identity Provider (IdP) system.

This chapter covers the following topics:

Note: This content is based on the retail TiVo App software version 3.7 (Apple iOS) and 3.2 (Android).

Features

You can use TiVo App to:

- Find new content, view guides, get recommendations, or investigate a particular actor's entire résumé.
- Browse and schedule recordings on your mobile device from wherever you happen to be.
- Use your mobile device as a remote control using intuitive, gesture-based interactions.
- Filter your searches by now, next, and tonight.
- Manage your To Do List and OnePasses.
- Personalize the order of your What to Watch feeds.
- Download your shows to your mobile device and take them on the road.
- Stream your shows to your mobile device while in-home or out-of-home.
- Use Apple AirPlay to mirror content from an Apple iOS device to an Apple TV.

Note: Not all features are available for Android devices. See Table 21–1 for a complete list of TiVo App features available by device.

Requirements

To use the TiVo App, you need either a DVR with a transcoder (TiVo T6 DVR or TiVo-Pace MG1 DVR), or a TiVo DVR (TiVo Roamio DVR or TiVo Premiere Q DVR) coupled with a TiVo Stream.

The TiVo DVR must be running software version 20.4.6 or later. To check the software version, from TiVo Central, choose **Settings & Messages** > **Account & System Info** > **System Information**.

TiVo Stream must be running software version 20.4.6 or later.

Apple iOS 7.x-9.3 is required for the Apple devices: iPad, iPhone, and iPod touch.

The Android devices have the following requirements:

- Android phone and tablets require Android 4.1 or later, and has been validated to run on Android L (version 5.0.x)
- Amazon Fire devices require Amazon Fire OS compatible with Android 4.2 later, such as Kindle Fire O/S 3.0 and later

The streaming feature on Android devices has the following requirements:

- Chipset supporting hardware decode
- ARM Chipset (or at a minimum running in ARM compatibility mode)

Note: Though the visual design is slightly different on each device (to account for different device form factors), subscribers enjoy a consistent experience across devices.

TiVo App modes

Availability of TiVo App features depends on whether the device connects to the TiVo DVR locally or remotely.

Local mode

In Local mode, the mobile device and the TiVo DVR are on the same local network and subnet. The mobile device must be using WiFi, not a 3G, 4G, or LTE connection. In Local mode, you can control Live TV, watch recordings from My Shows, record shows in real-time, get details about the shows currently airing on Live TV, and more—using your mobile device instead of the TiVo remote control.

When setting up recordings, Local mode supports conflict resolution.

Note: You must be in Local mode to enjoy all the TiVo App features that are available.

Away mode

In Away mode, the mobile device must have a data connection to the Internet (via WiFi, 3G, 4G, or LTE). You can search for shows by title or actor or director name, browse the Guide, browse by category, and set up recordings and OnePasses. You can schedule recordings up to two hours before a show airs.

Functionality is somewhat limited in Away mode because you are not directly connected to the TiVo DVR. For example, scheduling recordings in Away mode provides no conflict resolution.

Offline mode

Use Offline mode when no Internet connection is available. On the Sign in screen, select My Shows to view sideloaded content on the tablet or mobile device.

Table 21–1 summarizes what TiVo App features are available by device and mode.

Table 21–1: TiVo App features available by device and mode

Features available	iOS	Android	Local mode	Away mode	Offline mode
What to Watch	Yes	Yes	Yes	Yes	No
Customize content feeds and order	Yes	Yes	Yes	Yes	Yes
Watch Now	Yes	Yes	Yes	Yes	No
Accessing VOD	Yes	Yes	Yes	No	No
Browse the Guide	Yes	Yes	Yes	Yes	No
Browse TV & Movies	Yes	Yes	Yes	Yes	No
Search TV & Movies	Yes	Yes	Yes	Yes	No
Record shows in real time	Yes	Yes	Yes	Yes	No
Schedule recordings	Yes	Yes	Yes	Yes	No
Create a OnePass	Yes	Yes	Yes	Yes	No
Create a WishList Search	Yes	Yes	Yes	Yes	No
See list of recordings in My Shows	Yes	Yes	Yes	Yes	No
Manage To Do List or OnePasses	Yes	Yes	Yes	Yes	No
Get Info on the show currently playing	Yes	Yes	Yes	No	No
Explore cast & crew	Yes	Yes	Yes	Yes	No
Use the device as a TiVo remote control	Yes	Yes	Yes	No	No
Start playback on TV	Yes	Yes	Yes	No	No
Stream to multiple mobile devices	Yes	Yes	Yes	Yes	No
Download copy-freely content	Yes	Yes	Yes	Yes	No
Downloadpremiumcopy-oncecontent(e.g.,HBO)	Yes	No	Yes	No	No
Delete recordings, streaming videos, and folders	Yes	Yes	Yes	Yes	No
Deep link third-party mobile applications	Yes	No	Yes	Yes	No
Share via email, Facebook, and Twitter	Yes	Yes	Yes	Yes	No

Downloading and activating TiVo App

1. Download TiVo App from the App Store or from the Google Play store.

    The Amazon Kindle Fire can download the Android TiVo App from the Amazon App Store.

2. Confirm that the TiVo DVR is connected to the wireless network.

For more information, see the Support articles on the TiVo Support website.

Signing in to TiVo App

Sign in to TiVo App with your registered www.tivo.com user name and password:

1. Tap **Email** to display the keyboard and enter your user name.

2. Tap **Password** to enter your password.

3. Agree to the TiVo User Agreement.

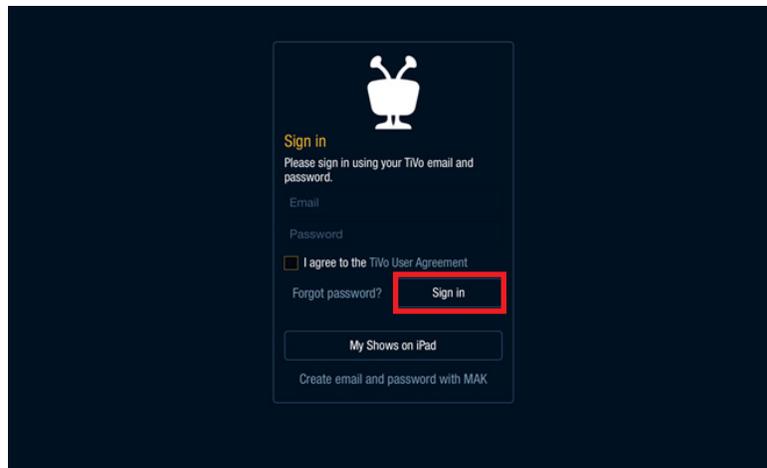4. Tap **Sign in** (Figure 21–1).

Figure 21–1: Sign in to TiVo App (iPad)

5. Select the TiVo box you want to link to (Figure 21–2).

    Note: TiVo box selection lists only boxes that are on the account.
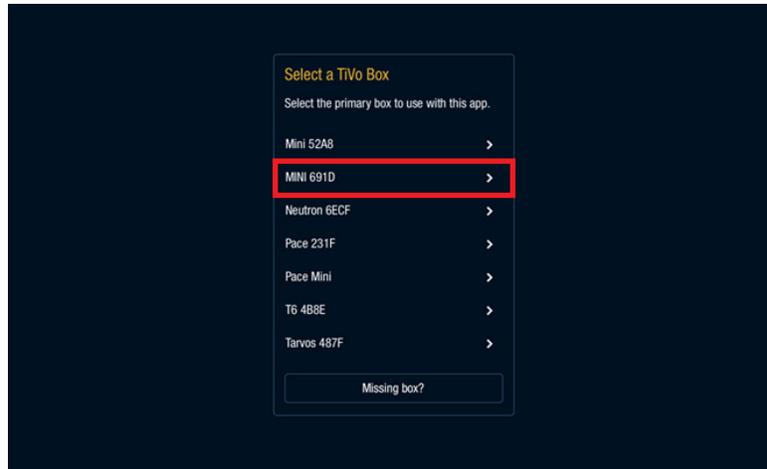
Figure 21–2: Select a TiVo Box (iPad)

Note: When signing in to the customized CableCo-branded TiVo App, your user login and password are your CableCo credentials (Figure 21–3).
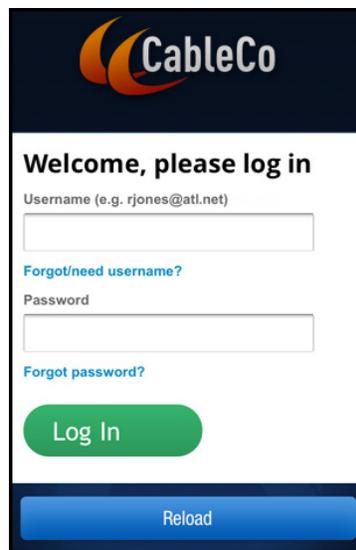

Figure 21–3: Log in to CableCo version

Signing out of TiVo App

1. Tap the **Settings** icon and then tap **Sign out** (Figure 21–4).

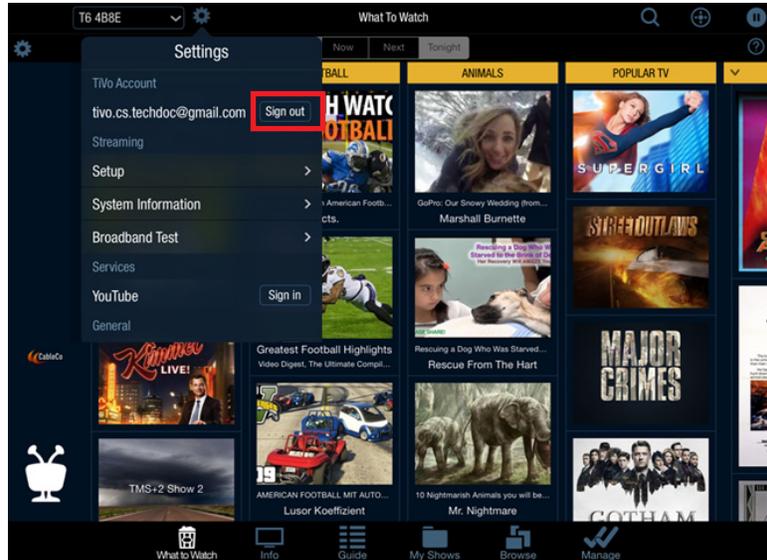   The **Sign out** button is located next to your email address.

Figure 21–4: Sign out (iPad)

2. Tap the final **Sign out** button.

Accessing settings

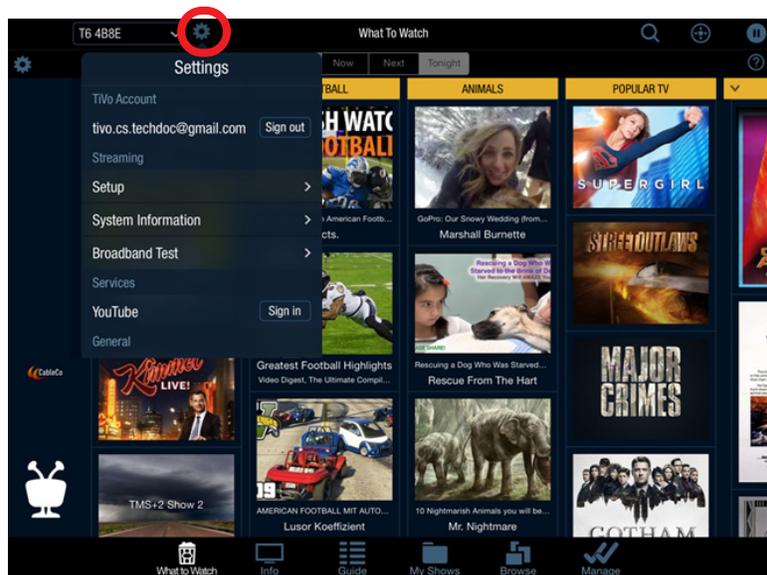1. Tap **Settings** (Figure 21–5).

Figure 21–5: Settings menu (iPad)

2. Select the setting you want to access.

- TiVo Account—Your www.tivo.com user name. To sign out, tap **Sign out**.
- Setup—Initiates the one-time out-of-home streaming setup while using Local mode.
- System Information—Information about the TiVo device and the TiVo Service account.
- Broadband Test—Tests the strength of your broadband connection.
- YouTube—To sign in, tap **Sign in**.
- Sound Effects—Turns TiVo App sound effects on or off.
- Guide Channels—Filters the Guide by all available channels from the headend, all available channels as set by the TiVo DVR, or by favorite channels.
- Tooltips—Contextual hints for using My Shows and What to Watch. Tooltips are automatically displayed on the first launch of TiVo App.
- TiVo OnePass Info—Links to the TiVo Support website.
- Version—TiVo App version number.
- About This App—Links to the TiVo web page with information about TiVo App.
- Technical Support—Links to the TiVo Support website.
- TiVo User Agreement—Displays the TiVo User Agreement.
- Privacy Policy—TiVo Privacy Policy.
- Legal Notices—Legal notices.
- Reset application—Allows you to reset all data that is stored on TiVo App. After a reset, you must re-enter your www.tivo.com credentials, Facebook credentials, and Twitter credentials.

Note: Not all settings are available for Android devices.

Setting up out-of-home video streaming

Streaming lets you watch live or recorded shows from anywhere. Streaming can be set up for in-home streaming and downloading (copy-freely and copy-once content), or out-of-home streaming (copy-freely content) which allows you to stream while away from home.

Note: MSOs can choose to enable or disable in-home or out-of-home streaming on DVRs for both Apple iOS and Android.

Note: Out-of-home streaming for Apple iOS is available only when connected to WiFi.

Note: Out-of-home streaming supports streaming to only one Android or iOS device at a time.

Initial use requires a one-time setup while using Local mode.

1. Tap **Settings**, and then tap **Setup**.

   Setup checks for streaming devices. If you have more than one streaming device on your wireless network, you must select the streaming device you want to set up.

Setting up out-of-home video streaming

2. If preferred, select **Set up out-of-home streaming** (Figure 21–6).

In-home streaming is automatically selected.
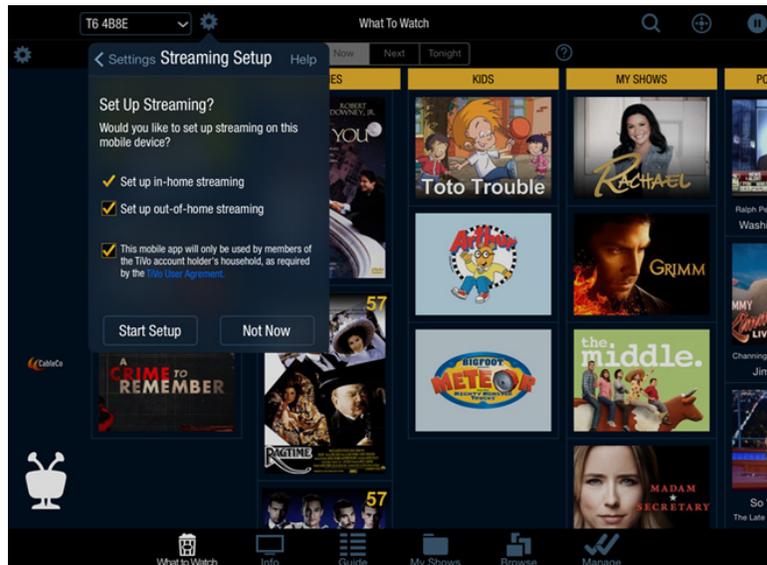

Figure 21–6: Streaming Setup (iPad)

3. Agree to the TiVo User Agreement.

4. Tap **Start Setup**, and then tap **Done** or **Tutorial** after successful completion of setup (Figure 21–7).
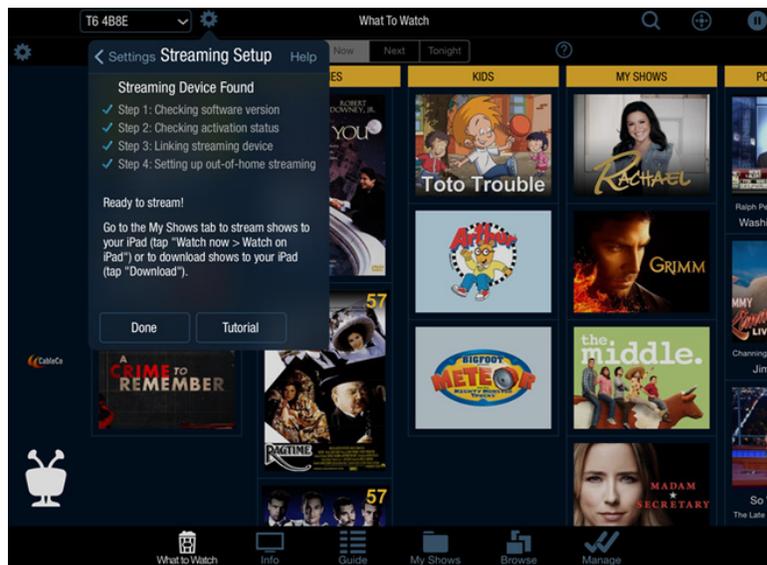

Figure 21–7: Ready to stream (iPad)

Using TiVo App

This section covers the following topics:

- *Action buttons* on page 237
- *What to Watch* on page 238
- *Info* on page 248
- *Guide* on page 249
- *My Shows* on page 249
- *Browse* on page 252
- *Manage* on page 254
- *Search* on page 256
- *Remote control* on page 259

Action buttons

The TiVo App action buttons (Table 21–2) can help you learn more about the content, watch it now, record to watch later, create a OnePass, discover upcoming episodes, post onto Facebook or Twitter, and much more.

Note: TiVo App displays only the action buttons that are applicable to the functions available for the content in the Info pane.

Note: If there is a TiVo DVR in the household, OnePass is available only in TiVo App once the selected TiVo DVR has OnePass enabled. If the selected TiVo DVR does not support OnePass, TiVo App will continue to use the Season Pass feature.

Table 21–2: TiVo App action buttons

Button	Action
Watch Now	Immediately tunes to the show.
OnePass	Sets up a OnePass.
Record	Sets up options for a single recording.
Delete	Deletes the selected recording.
Download	Sideloads the content to the device to access it offline. **Note:** Downloading is available only if streaming has been enabled by the MSO, and the content is allowed to be sideloaded based on the copy-protection rights.
Upcoming	Displays all upcoming episodes for the next two weeks.
Explore	Shows deeper information about the selected content.
More	

Table 21–2: TiVo App action buttons (continued)

Button	Action
Share	Posts comments about a specific show or movie.
Keep Until I Delete	Keeps the content until manually deleted.
Keep Until SpaceNeeded	Saves recordings until space is needed for new shows.
WishList	Saves any search query for later, with the option to record anything related to the query.

Figure 21–8 illustrates a variety of action buttons.

Figure 21–8: Action buttons (iPad)

What to Watch

What to Watch allows you to customize the UI to show what is most important to you. The visually-driven touch interface includes the following feeds:

- Popular TV—The 20 most popular shows currently airing
- Movies—20 movies that are currently airing or about to air
- Sports—All live sporting events that are currently airing or about to air
- Kids—The 20 most popular Kids shows currently airing or about to air
- My Shows—The 20 most recently-recorded items from your My Shows list, including downloads
- Favorite Channels—A list of up to 20 programs that are currently airing or about to air, filtered by the favorite channels that are set up on the TiVo DVR
- Popular YouTube—A list of the 20 most popular videos posted on YouTube

- My YouTube Channels—A list of up to 20 videos updated in the YouTube channels that you subscribe to

You can also discover content to watch now, next, and tonight with the three time navigation buttons (Figure 21–9).

- **Now**—(Default view) Highlights content currently being broadcast on your channel lineup. This content is currently airing or starts in five minutes, and does not end in the next 15 minutes.

- **Next**—Highlights content expected to start broadcasting within the next hour in the channel lineup and timezone, and does not end in the next 15 minutes.

- **Tonight**—Highlights content expected to broadcast between 8:00 P.M. EST/PST (or 7 P.M. CST/MST) and 12:00 A.M. EST/PST in the channel lineup and timezone.
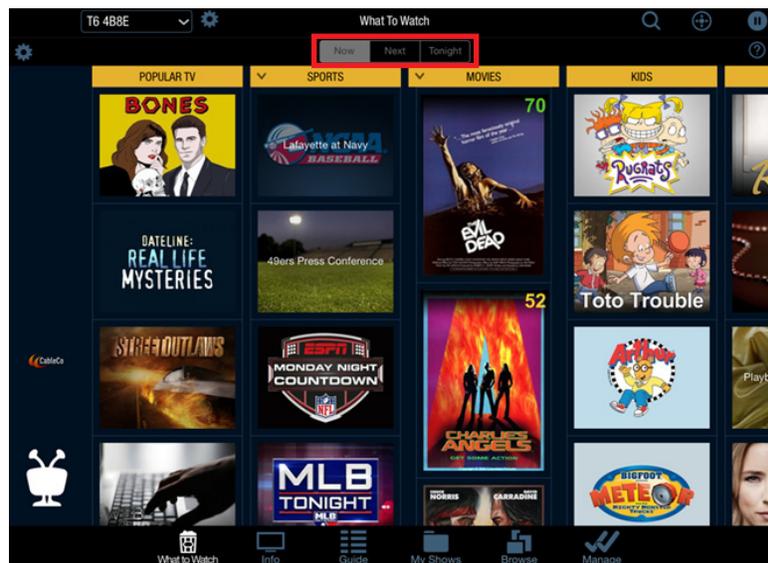

Figure 21–9: What to Watch screen (iPad)

Taping the poster art displays details about the selected content and some options to explore.

To manage What to Watch

1. Tap the What to Watch settings wheel to manage the order of the feeds displayed (Figure 21–10).

Using TiVo App

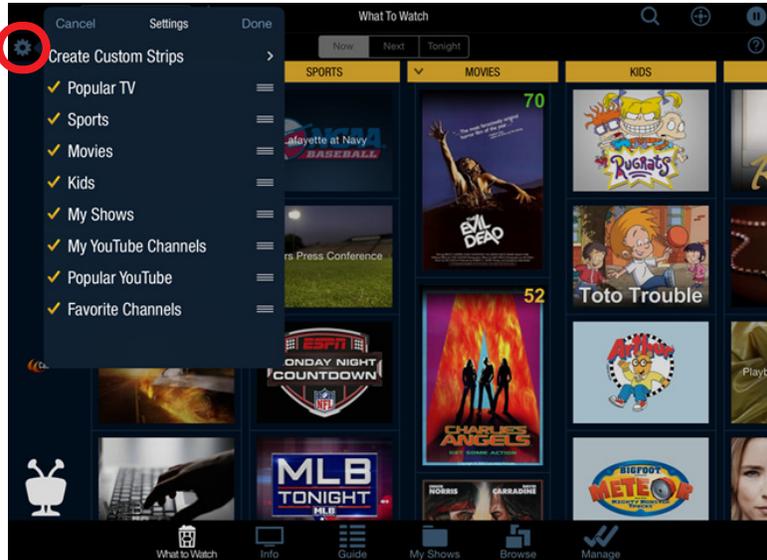Figure 21–10: What to Watch settings (iPad)

2. Drag the feeds into the order you prefer.

3. Tap **Done**.

To create custom What to Watch strips

1. Tap **Create Custom Strips** to create up to 20 custom strips in addition to the default feeds described previously.

2. Select from your favorite hobbies and interests, TV and movie genres, and more (Figure 21–11).
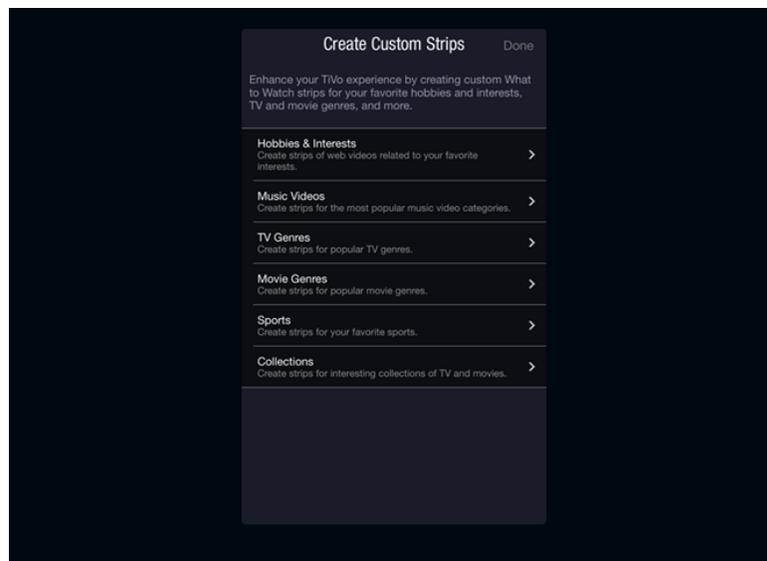
Figure 21–11: Create Custom Strips (iPad)

3. Select one or multiple genres within a given category (Figure 21–12).
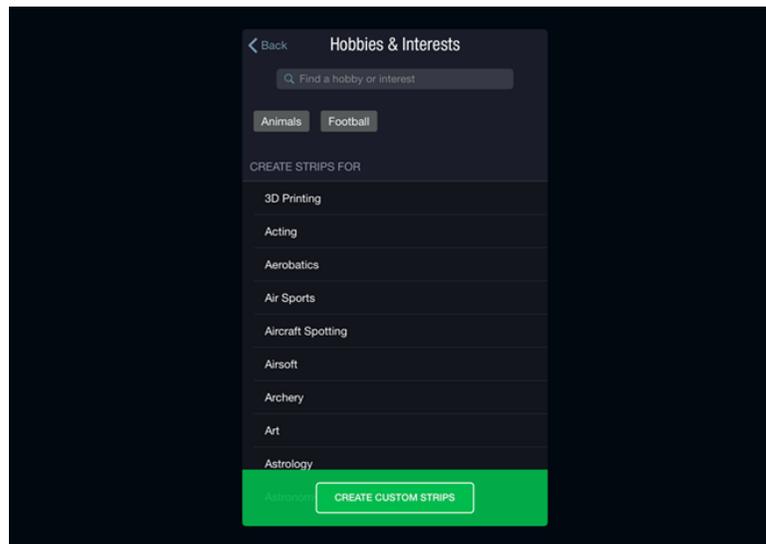
Figure 21–12: Custom strips category selection (iPad)

4. Tap **Create Custom Strips** to create feeds matching your selection.

5. Use the What to Watch settings to reorder or delete the feeds (Figure 21–13).
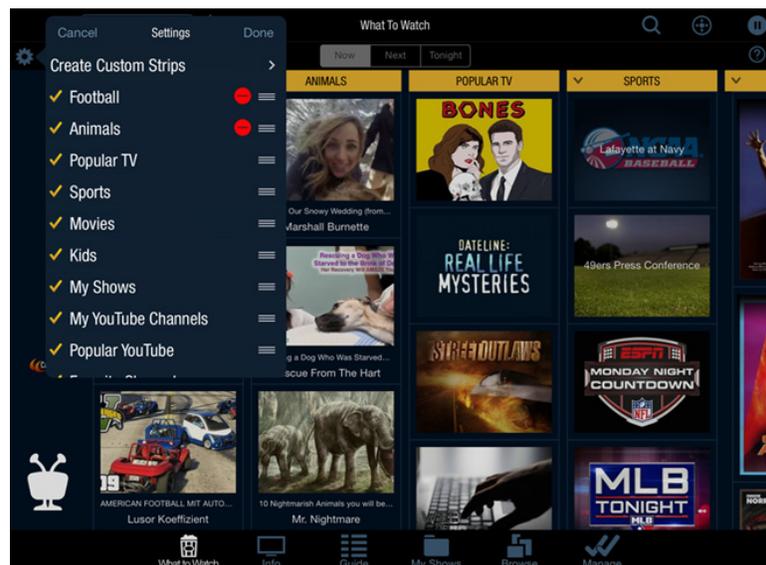
Figure 21–13: What to Watch settings (iPad)

6. Tap **Done**.

    The newly-created feeds appear to the left of the existing What to Watch feeds. These feeds are specific to the device they were created on.

To filter movies in What to Watch

Use the genre filters for the Movies feed to customize the type of movies displayed in What to Watch (Figure 21–14).

Figure 21–14: What to Watch filter (iPad)

To watch now

When using the device in Local mode and connected to the TiVo DVR, TiVo App becomes content-aware. When selecting the **Info** tab, the content currently being viewed on the foreground tuner of the TiVo DVR is displayed (Figure 21–15).
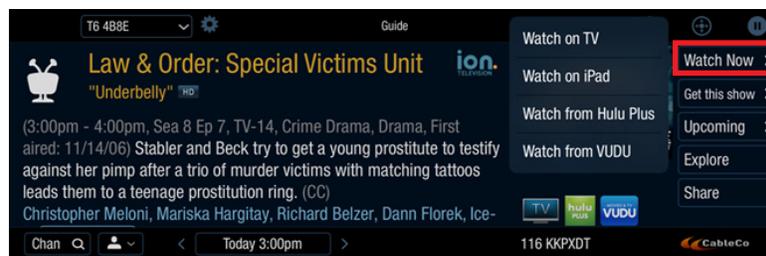
Figure 21–15: Watch Now (iPad)

To stream a recorded show

1. Tap **My Shows**. Make sure the **On DVR** tab is selected. A list of all recorded shows that are available to stream appears.

2. Tap a show title to display information about the show in the top half of the screen.

3. Tap **Watch Now** and choose the mobile device (Figure 21–16).
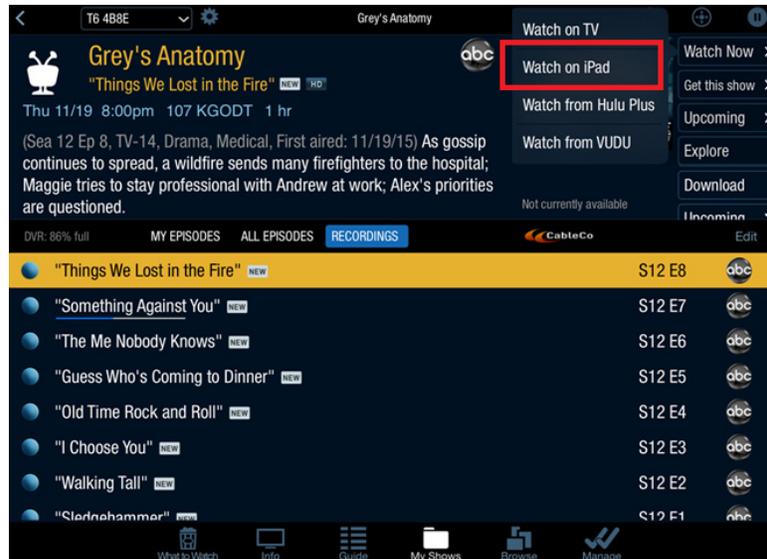
Figure 21–16: Watch on iPad

To stream Live TV

1. Tap **Guide** to browse the Guide. Scroll the Guide columns up or down to view more listings.

   Note: You can also use the numbers on the side of the screen to skip quickly to a range of channels.

2. Choose a show that is currently airing, and tap the title to select it.

3. Tap **Watch Now** and choose the mobile device.

   Your TiVo DVR starts recording the show (Figure 21–17), and the show immediately begins streaming to your mobile device.
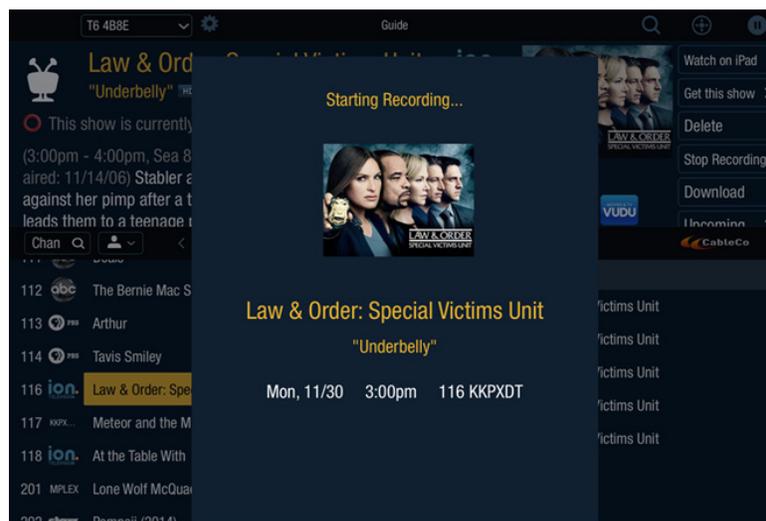
Figure 21–17: Stream Live TV (iPad)

To access CableCo VOD

You can access Video on Demand (VOD) in two ways from the TiVo App remote control:

- Tap **On Demand** to go directly to your own VOD offerings
- Use the TiVo menus to browse or search for a movie or show

Note: **Watch Now** highlights your VOD system (before third-party VOD providers) for the selected show.

Note: The third-party VOD offerings that appear on a TiVo DVR depend on the CableCo agreement with TiVo.

To access third-party VODs

Using TiVo App, you can search for content from third-party VOD providers, such as Hulu Plus, Vudu, and so on (Figure 21–18).

1. Select and launch a show.

2. Tap **Watch Now** and choose the video provider.

3. Use the TiVo remote control in TiVo App to complete any final on-screen purchasing and authorization steps, and to start playback.
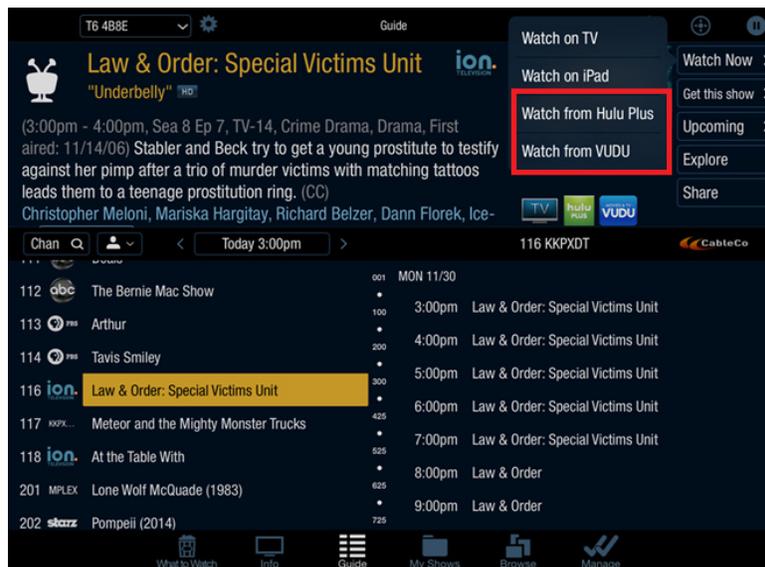
Figure 21–18: Third-party providers (iPad)

To record a show

1. Tap a show title to display information about the show in the top half of the screen.

2. Tap **Get this show**, and then tap **Record this episode** (Figure 21–19).
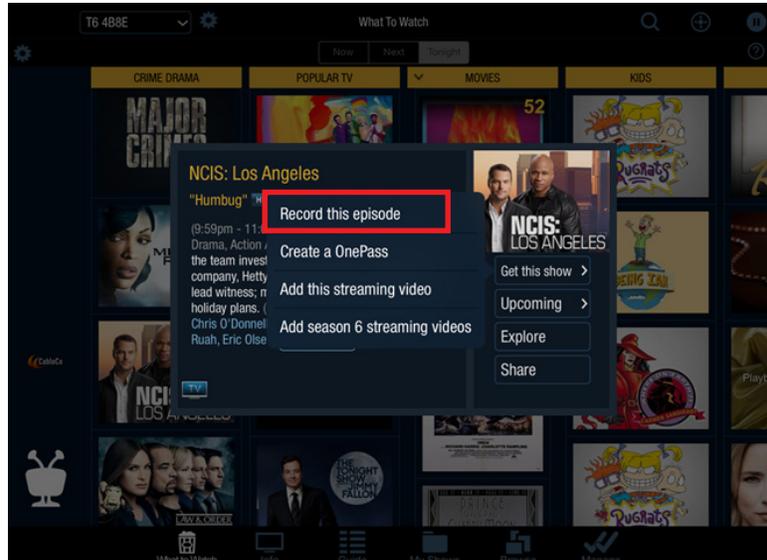
Figure 21–19: Record next episode (iPad)

3. On the Recording Options screen (Figure 21–20), set the recording options you prefer, and then choose **Record with these options**.
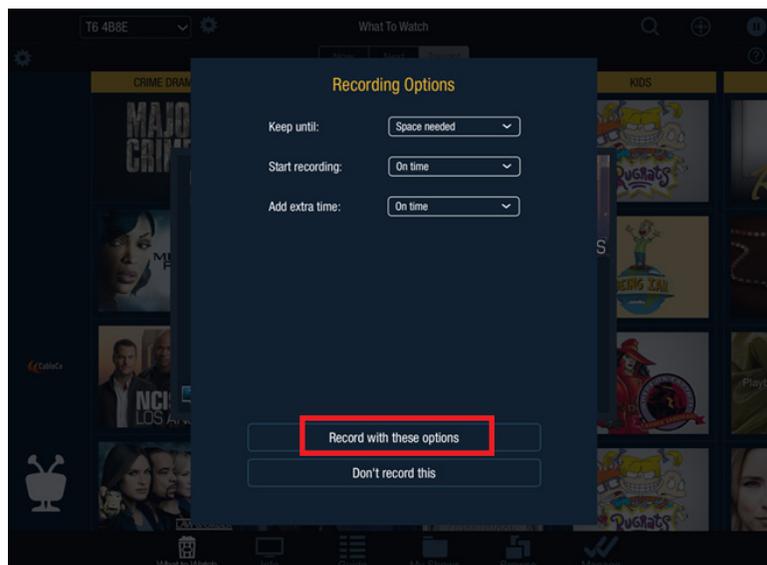
Figure 21–20: Recording Options screen (iPad)

The episode is now set to be recorded.

To create a OnePass

1. Tap a show title to display information about the show in the top half of the screen.
2. Tap **Get this show**, and then tap **Create a OnePass** (Figure 21–21).
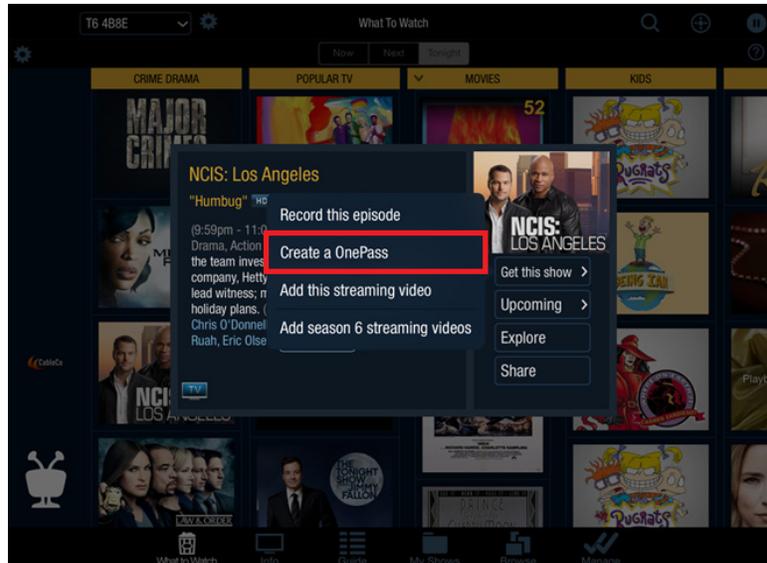
Figure 21–21: Create a OnePass (iPad)

3. On the OnePass Options screen (Figure 21–22), set the recording options you prefer, then choose **Create OnePass**.
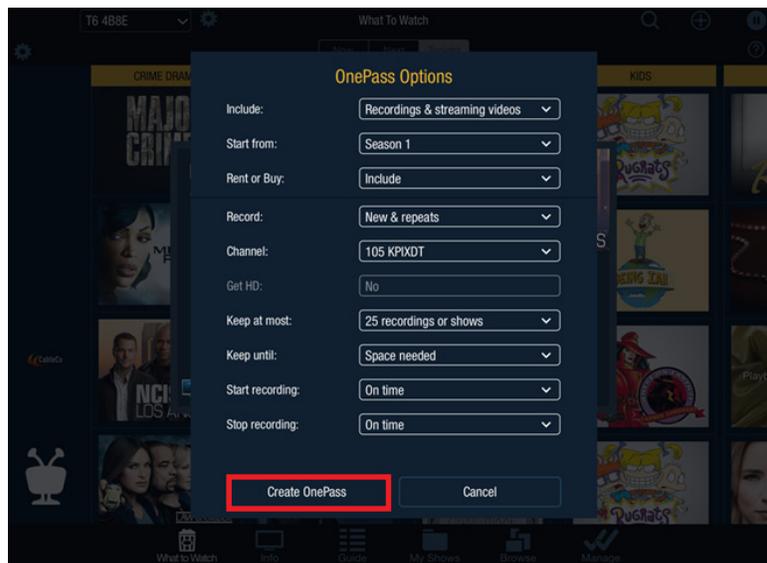
Figure 21–22: OnePass Options screen (iPad)

The OnePass feature finds and organizes content from all providers which allows you to watch your favorite shows in a unified experience across devices (DVRs, mobile, and online). You can also create OnePasses for new TV shows and off-season TV shows before they are available in the Guide.

Note: If there is a TiVo DVR in the household, OnePass is available only in TiVo App once the selected TiVo DVR has OnePass enabled. If the selected TiVo DVR does not support OnePass, TiVo App will continue to use the Season Pass feature.

To add a stand-alone streaming video to My Shows

1. Tap a show title to display information about the show in the top half of the screen.

2. Tap **Get this show**, and then tap **Add this streaming video** (Figure 21–23).
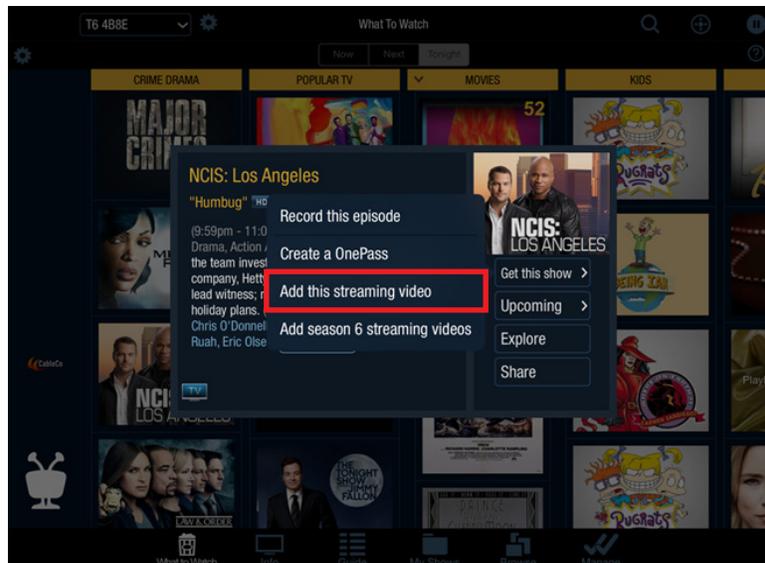
Figure 21–23: Add this streaming video (iPad)

3. Click **OK**.

If this streaming video is currently available, it appears in My Shows. Movies appear in the Streaming Movies folder. Any video that is not available appears in the Not Currently Available folder.

Note: Unlike OnePass, the stand-alone streaming video feature does not record the show on the selected TiVo DVR.

To add a single season of a TV series to My Shows

1. Tap a show title to display information about the show in the top half of the screen.

2. Tap **Get this show**, and then tap **Add season *x* streaming videos** (Figure 21–24).
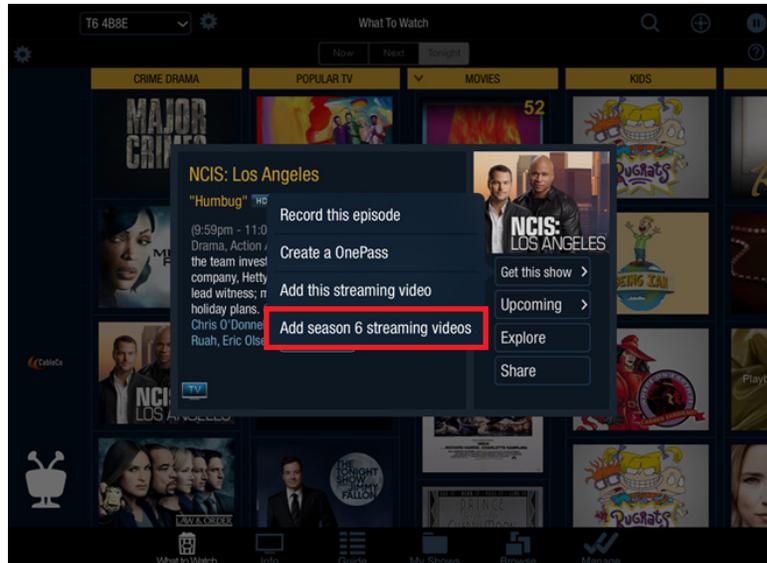
Figure 21–24: Add a single season option (iPad)

 3. Click **OK**.

The selected season of episodes appears in My Shows.

Info

The Info pane (Figure 21–25) displayed in the Guide, My Shows, and Manage sections gives basic information about what's on now or selected content that includes the title, episode name, time block (such as 10:00am - 10:30am), season #, episode #, rating, genre, and much more.

Note: **Info** is available only in Local mode.

Figure 21–25: Info pane (iPad)

Guide

The Guide is a channel-centric way to discover content. The Guide (Figure 21–26) splits the screen vertically and shows a scrollable view of the program lineup chronologically on the selected channel. When available, the Guide launches a third-party VOD provider app for the current program playing. Additionally, the Guide integrates the Info pane to display basic information about the selected content.
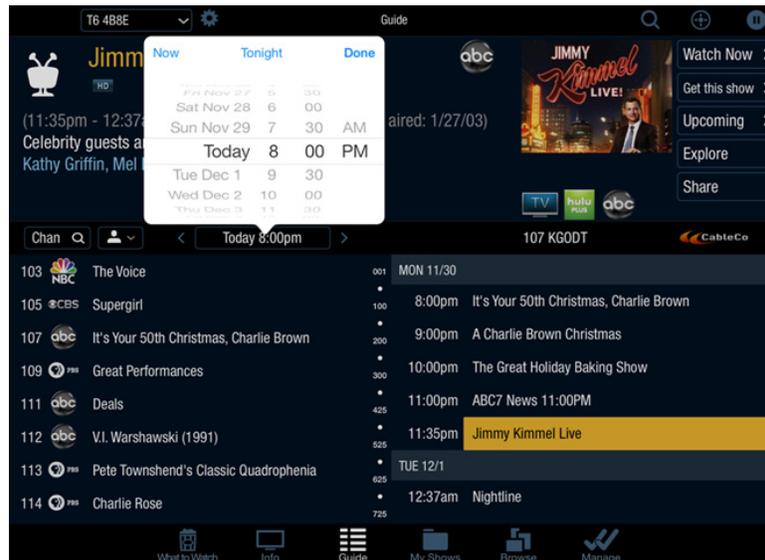
Figure 21–26: Guide (iPad)

My Shows

My Shows is where you can manage the recordings (including Recently Deleted) contained on the primary TiVo DVR. Similar to the experience on the TiVo DVR, TiVo App displays content sorted by series in folders that expand or collapse on selection. Status of the selected TiVo DVR is displayed to indicate how much storage is available on its hard disk drive.

You can also switch between shows recorded on the TiVo DVR and those that have been sideloaded to the mobile device by selecting "On DVR" or "On iPhone"/"On iPad" as applicable. Sideloading requires you to have a TiVo Stream or TiVo T6 DVR on the account, and the feature enabled by CableCo.

Tap **My Shows** to see the My Shows list from your TiVo DVR (Figure 21–27). Poster art displays in a carousel in the top half of the screen.
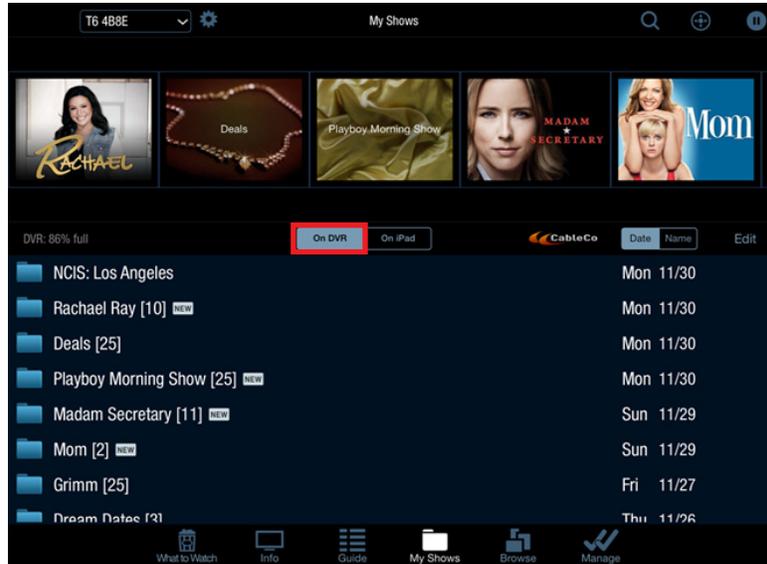
Figure 21–27: My Shows (iPad)

Tap a show title to display information about the show in the top half of the screen. From there, you can choose to watch the show on your mobile device, get or modify a OnePass, delete the show from My Shows, download an episode to your mobile device, view upcoming episodes, explore the show, or share comments via email, Facebook, or Twitter.

To sort and view your series folders in My Shows

Similar to OnePass on the TiVo DVR, there are three views (My Episodes, All Episodes, and Recordings) within each series folder. The My Episodes view (Figure 21–28) is the default view when you enter a series folder for the first time. The view selected is remembered globally for all shows.
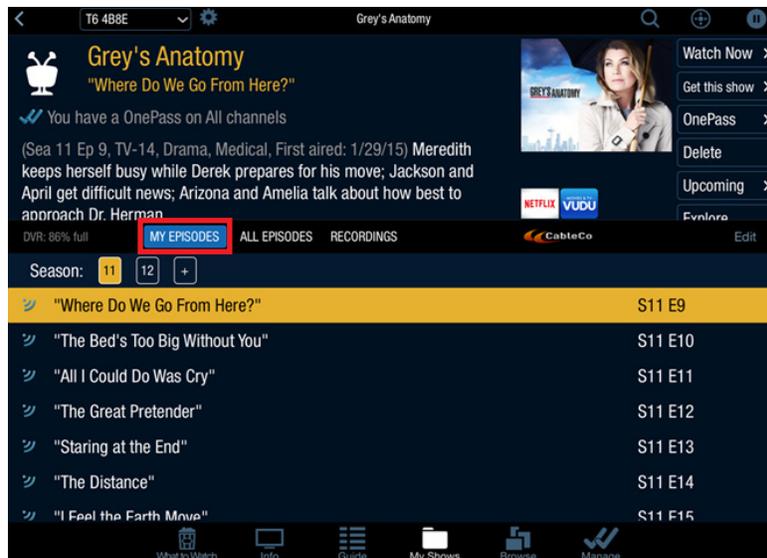
Figure 21–28: My episodes view (iPad)

There are three sorting options depending on the selected view (Figure 21–28).

- Date—Episodes are sorted by date with the latest episode displaying on top.
- Newest—Episodes are sorted by season with the last available episode displaying on top.
- Season—Episodes are sorted by season with the first available episode displaying on top. A season picker might display, allowing you to switch between seasons.
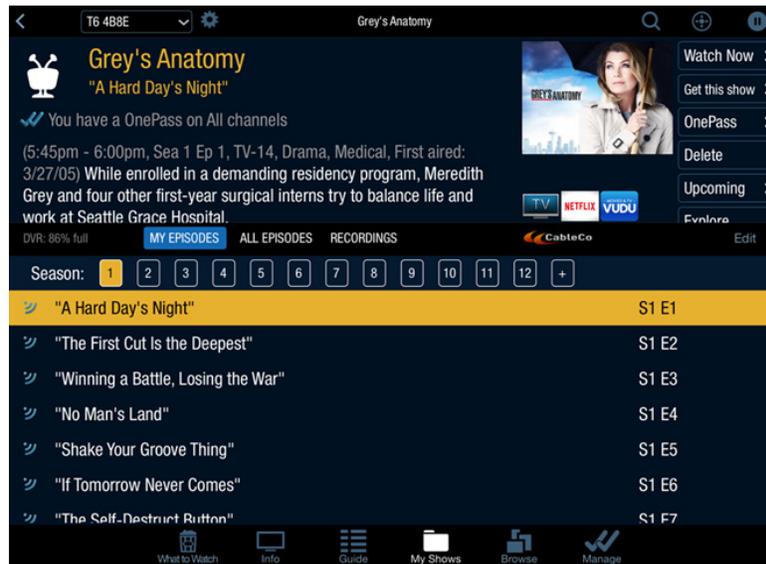
Figure 21–29: My episodes sorting options (iPad)

To download an episode to a mobile device

1. Tap a show title to display information about the show in the top half of the screen.
2. Tap **Download** to display the Download Options screen (Figure 21–30).
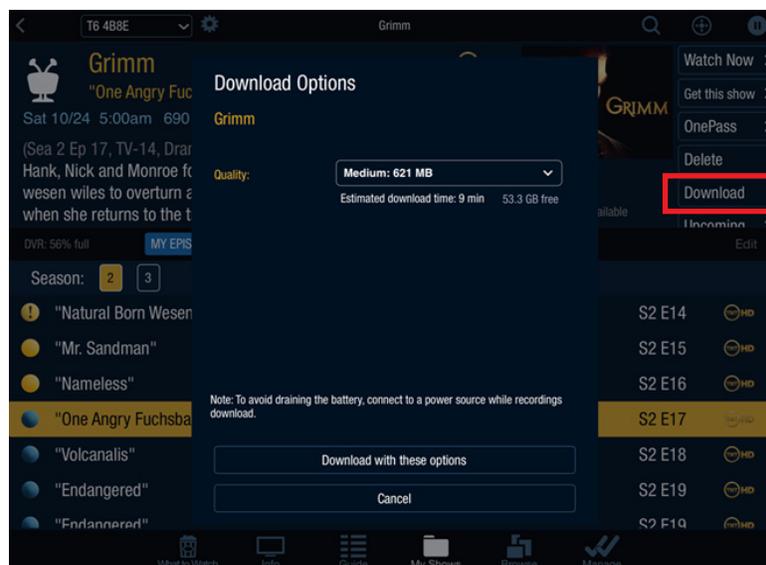
Figure 21–30: Download Options screen (iPad)

3. On the Download Options screen, set the recording options you prefer, and then choose **Download with these options**.

The episode is now set to be downloaded.

Note: Premium content sideloading allows you to move copy-once content (such as HBO programs) in-home from your TiVo DVR to your Apple iOS mobile device. Once complete, the premium content is permanently removed from the TiVo DVR and cannot be moved back. You can always download copy-freely content in-home or out-of-home when connected to WiFi.

Note: MSOs can choose to customize the streaming and sideloading policies on DVRs for both Apple iOS and Android.

Note: Premium content sideloading is available only on retail TiVo DVRs; it is not available on CableCo-branded TiVo DVRs.

Browse

Browse (Figure 21–31) allows you to find the programs that are of interest to you. You can browse by major categories and subcategories, such as best comedies or most popular TV shows.
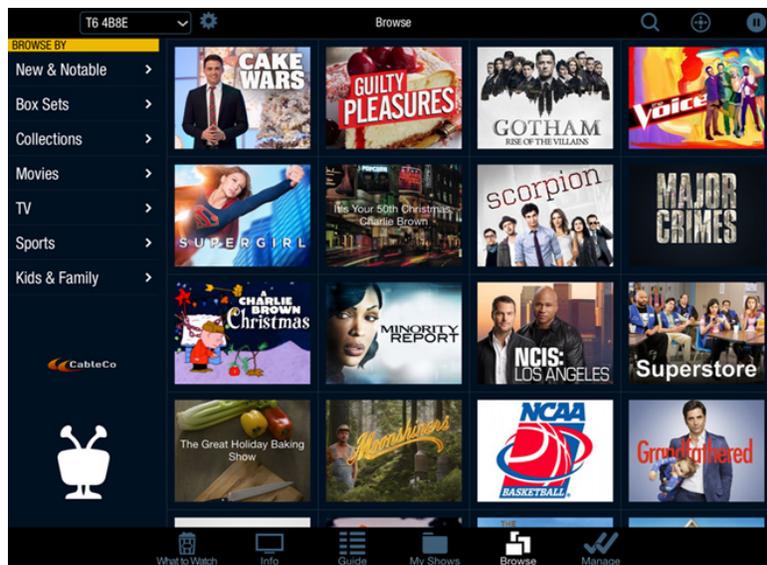
Figure 21–31: Browse (iPad)

To browse by collections

The content displayed in collections (Figure 21–32) generally relies on metadata brought into the TiVo Mind metadata repository from a variety of sources, such as Gracenote and selected content providers.
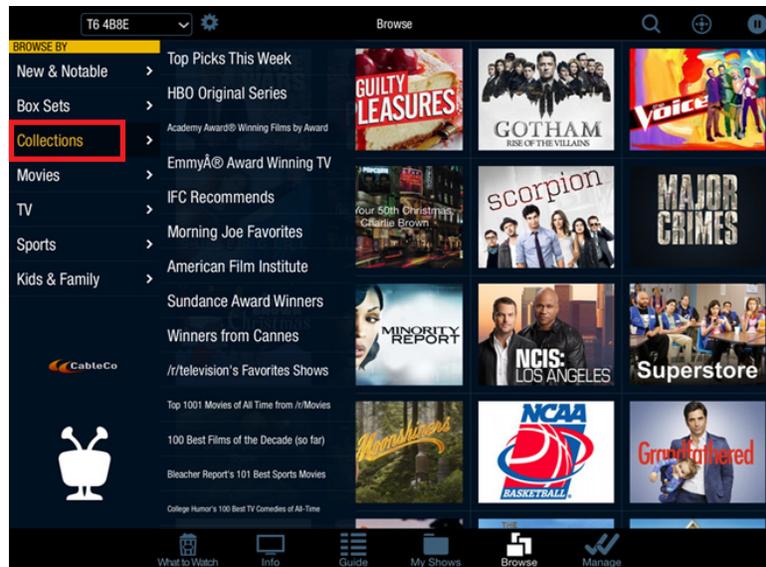
Figure 21–32: Browse by Collections (iPad)

To share via email, Facebook, or Twitter

You can post comments about a specific show or movie through the native share experience on iOS and Android.

1. Tap **Share** on a show information screen, My Shows, the Guide, or any browsing screen.

2. Select an application (Figure 21–34).
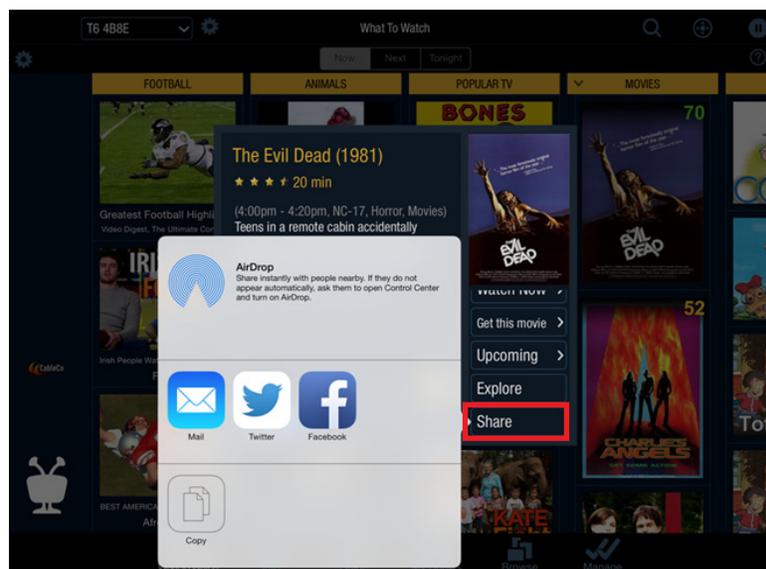
Figure 21–33: Native share experience (iPad)

3. Enter your post or tweet, and tap **Post** (Figure 21–34).
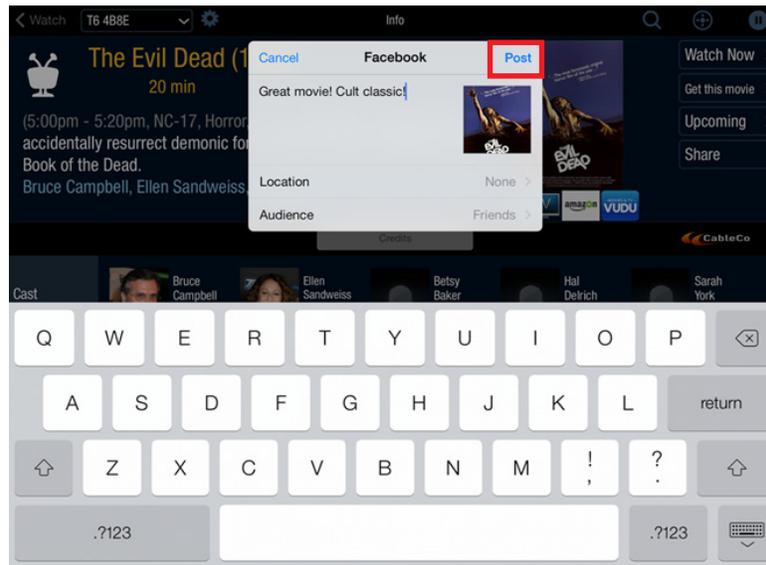
Figure 21–34: Share on Facebook (iPad)

Manage

While in Local mode, you can use TiVo App to remotely manage the To Do List and the OnePass recordings of the selected TiVo DVR. The action buttons available within the Info pane allow you to explore, manage a OnePass, view upcoming shows, and post to social media accounts. Any changes made on your mobile device are immediately reflected on the TiVo DVR.

To manage the To Do List

1. Tap **Manage** (iPad) or **More** (iPhone or iPod touch) at the bottom of the screen.

2. Tap **To Do List** (Figure 21–35).

Figure 21–35: To Do List (iPad)

3. Tap a show title to display information about the show in the top half of the screen.

To change the priority of a OnePass

1. Tap **Manage** (iPad) or **More** (iPhone or iPod touch) at the bottom of the screen.

2. Tap **OnePasses** (Figure 21–36).

Figure 21–36: OnePasses (iPad)

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3. Tap a show title to display information about the show in the top half of the screen.
   a. To change the priority of the OnePass, tap **Reorder** (iPad) or **Edit** (iPhone or iPod touch).
   b. Drag the shows into the order you prefer.
4. Tap **Done**.

Search

Sometimes you know exactly what you want to find. With the TiVo Search feature (Figure 21–37), you can find what you want easily. Advanced features such as predictive completion and sorted results by most popular queries are integrated into the TiVo Search feature to make searching easy by bringing the most relevant content to you quickly.
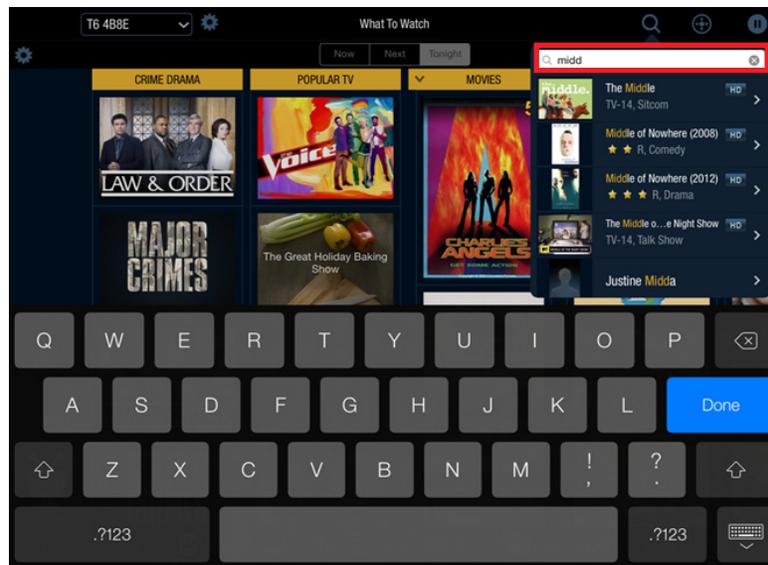
Figure 21–37: Search (iPad)

To find shows on an Android device

There are a number of methods for finding shows on an Android device:

- Tap **Search** at the top of the screen and enter the title of the show or name of the actor you're interested in. You can also search on channel number, call sign, or name.

- To browse the Guide, tap the **TiVo** icon and then tap **Guide**. Scroll the Guide up or down to view more listings. (You can also search for particular channels by tapping the **Channel Search** icon at the top of the Channel column.)
   a. Tap a show title to display information about the show in the top half of the screen.

      From there, you can choose to watch the show on TV (if it's currently airing), record the show (if it's airing now or at a later date), view upcoming episodes, explore the show, or share comments via email, Facebook, or Twitter.

- To display information about the show that's currently airing on the TiVo DVR, tap the **TiVo** icon, and then tap **Info** (Figure 21–38).

As you change channels, the Info pane updates to reflect the show you are watching.

Note: **Info** is available only in Local mode.

Figure 21–38: Info pane (Android tablet)

To find shows on an Apple device

There are a number of methods for finding shows on an Apple device:

- Tap **Search** at the top of the screen and enter the title of the show or name of the actor you're interested in. You can also search on channel number, call sign, or name.

- Tap **What to Watch** to discover content to watch now, next, and tonight.

- Tap **Guide** to browse the Guide. Scroll the Guide up or down to view more listings. (You can also search for particular channels by tapping the **Channel Search** icon at the top of the Channel column.)

  a. Tap a show title to display information about the show in the top half of the screen.

     From there, you can choose to watch the show on TV (if it's currently airing), record the show (if it's airing now or at a later date), view upcoming episodes, explore the show, or share comments via email, Facebook, or Twitter.

  b. To jump to a particular time, tap the date to bring up the date and time selector.

- Tap **Browse** to browse collections of related content (such as award winners), or to browse by category (such as TV, movies, or sports).

- Tap **Info** to display information about the show that's currently airing on the TiVo DVR (Figure 21–39).

As you change channels, the Info pane updates to reflect the show you are watching.

Note: **Info** is available only in Local mode.

Using TiVo App

Figure 21–39: Info pane (iPad)

To create a WishList Search

A WishList Search (Figure 21–40) finds shows that match your search criteria on any channel that you receive.
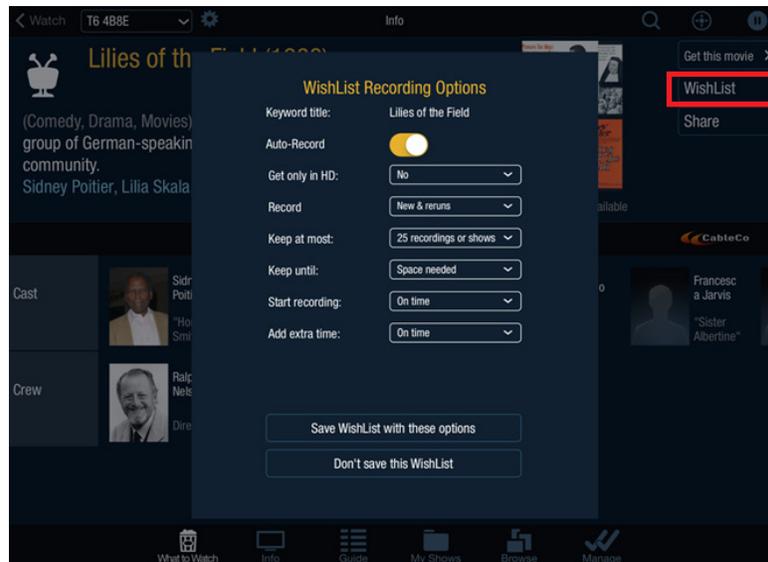
Figure 21–40: WishList Recording Options (iPad)

On the WishList Recording Options screen, set the recording options you prefer, and then choose **Save WishList with these options**.

Remote control

When using the device in Local mode while connected to a TiVo DVR, you can control Live TV and recorded shows, or navigate the TiVo menus by using a virtual remote control within TiVo App. The virtual remote control provides two modes of operation; a graphical button view and a gesture-based view. The gesture view provides two actionable surfaces where specific gestures represent keys on the physical remote control.

Note: The remote control is available only in Local mode.

To use an Android device as a remote control

This section describes how you can use your Android device as a TiVo remote control (Figure 21–41).
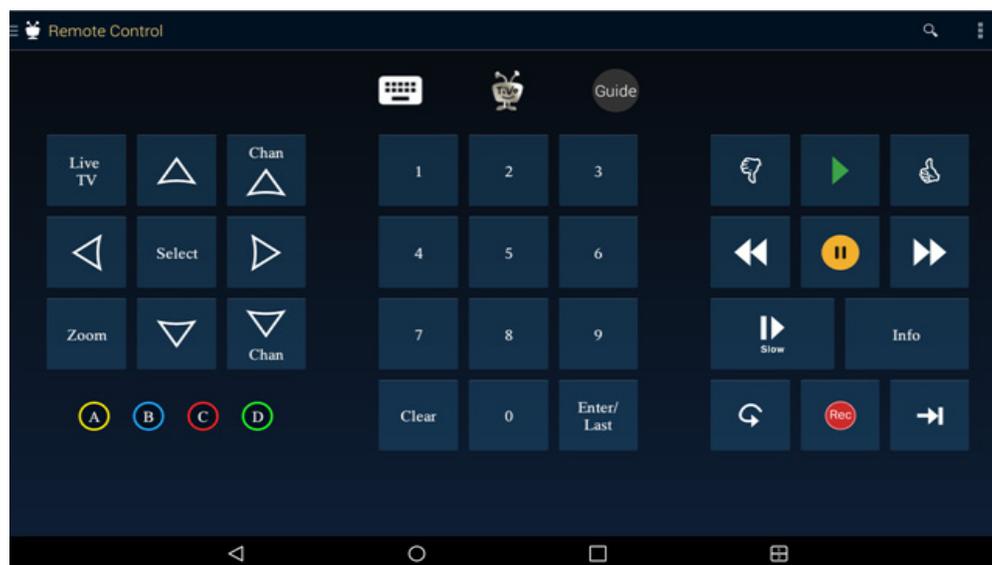
Figure 21–41: TiVo remote control (Android tablet)

1. Confirm that the TiVo DVR is connected to the wireless network.

2. Sign in using Local mode.

3. To use the remote control buttons, tap the **TiVo** icon, and then tap **Remote Control**.

    The buttons on the right of the screen are used to control playback (pause, rewind, fast forward, instant replay, slow motion, and 30-second advance). You can also give **Thumbs Up** or **Thumbs Down** ratings.

    The buttons on the left of the screen are used to navigate the TiVo menus.

    Tap the **Keyboard** icon to display the on-screen keyboard.

To use an Apple device as a remote control

This section describes how you can use your Apple device as a TiVo remote control (Figure 21–42).

Figure 21–42: TiVo remote control (iPad)

1. Confirm that the TiVo DVR is connected to the wireless network.

2. Sign in using Local mode.

3. Tap **Pause** on the top right of the screen to pause Live TV.

4. Tap the **Remote Control** icon on the top right of the screen.

    To hide the remote control, tap **Remote Control** again.

5. To use the remote control buttons, do one of the following:

    a. iPad—To show the remote control buttons, tap **Buttons.**

    The buttons on the right of the screen are used to control playback (pause, rewind, fast forward, instant replay, slow motion, and 30-second advance). You can also give **Thumbs Up** or **Thumbs Down** ratings.

    The buttons on the left of the screen are used to navigate the TiVo menus.

    b. iPhone or iPod touch—To show the remote control buttons for navigating the TiVo menus and controlling playback, tap **More** at the bottom of the screen, and then tap **Remote Control.**

    Use the remote control buttons for navigating the TiVo menus and controlling playback (pause, rewind, fast forward, instant replay, slow motion, and 30-second advance). You can also give **Thumbs Up** or **Thumbs Down** ratings.

6. Tap the **Keyboard** icon to display the on-screen keyboard.

7. To show the gesture pad areas, tap **Gestures** (Figure 21–43).

    Use touch-screen gestures to control the video. Tap **i** to display the available gestures.

8. To instantly jump to a particular point in the program, use the live cache status bar.

You can toggle between the **Buttons** and **Gestures** views on the iPad by tapping **Buttons** or **Gestures**.

Figure 21–43: Guidelines for gestures (iPad)

Troubleshooting issues with TiVo App

For details about troubleshooting issues, see the following Support articles on the TiVo Support website:

- TiVo App for Apple iOS: Troubleshooting
- TiVo App for Android Phones and Tablets Troubleshooting

Can't see the TiVo device

If you have problems seeing the TiVo DVR, make sure the following ports aren't blocked on the network:

- 80
- 443
- 1413
- 31339

If the ports aren't blocked and there are still problems seeing the TiVo DVR, you might need to use your computer to check for duplicate network Service Set Identifiers (SSIDs). An SSID is the public name of a wireless network. The instructions and software used to check SSIDs varies depending on the OS you use.

TiVo Desktop Plus for PC

22

Use TiVo Desktop Plus for PC to publish content so you can view your personal photos or listen to your personal music library on your TiVo device.

This chapter covers the following topics:

Note: This content is based on TiVo Desktop Plus version 2.8.2.

Note: License software keys are no longer available for purchase on www.tivo.com. Instead, video playback functionality is available using TiVo Online and the streaming/downloading features on mobile devices using TiVo App. Existing users who already use Desktop Plus will still be able to do so.

Features

TiVo Desktop Plus works with your Microsoft PC and network-connected TiVo device to allow you to:

- Publish a personal music library to the TiVo device for playback on the TV and home entertainment system.
- Publish a personal photo library to the TiVo device for viewing photos and slideshows on the TV.
- Transfer recorded shows from the TiVo device to the PC to view them there.
- Convert programs for playback on mobile devices.
- Transfer compatible web videos from the PC to the TiVo device for viewing on the TV.
- Create Really Simple Syndication (RSS) feeds and automatically download them.

Requirements

Minimum system requirements for TiVo Desktop Plus:

- Windows XP with Service Pack 2 or later, Windows Vista, Windows 7, or Windows 8
- 1 GHz P2 (or equivalent) processor
- 512 MB RAM
- Disk space—5 GB free disk space, plus an additional 5 GB for each hour of HD programming that you transfer
- QuickTime is required to support .mov files

Certain features of TiVo Desktop Plus might require more computing resources than the basic features. These include:

- Storage and playback of high-definition (HD) content
- Converting TiVo recordings to a mobile format
- Viewing web content on the TiVo device

If you plan to use these features, TiVo highly recommends the following PC specifications:

- 2.2 GHz P4 (or more powerful) processor
- RAM—1 GB RAM

See the Support articles on the TiVo Support website for the latest list of devices that work with TiVo Desktop Plus for PC.

Installing TiVo Desktop Plus

The instructions on the TiVo Support website are summarized here:

1. Purchase and download the latest version of TiVo Desktop Plus for PC.
2. Verify that you have full administrator privileges.
3. Double-click the **TiVo Desktop Plus** installer icon.
4. Read and agree to the License Agreement and follow the on-screen instructions to begin your installation.
5. Enter the Media Access Key (MAK).

   For details on finding the MAK, see *To obtain the MAK* on page 266.
6. Accept any changes to the network or firewall settings that the application asks you to accept during or immediately after the installation process, and then click **Finish**.
7. Repeat these steps for any other computers you're using TiVo Desktop Plus on.

   Note: You need to purchase a TiVo Desktop Plus license for each computer.

For detailed information about how to install TiVo Desktop Plus for PC, see the Support articles on the TiVo Support website.

Warning: Do not attempt to install or remove TiVo Desktop Plus by using the Windows Remote Desktop Plus feature. The TiVo Desktop Plus installation and removal programs do not support remote access functionality.

Using TiVo Desktop Plus

This section shows you how to perform some common tasks, such as transferring shows, playing transferred shows, converting recordings to a mobile format, and publishing music and photos.
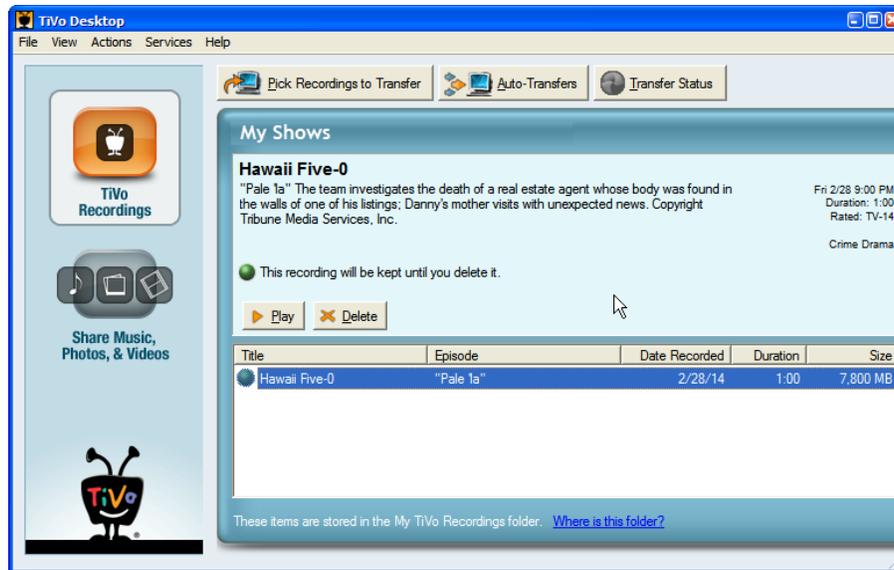
Figure 22–1: TiVo Desktop Plus main window

This section covers the following topics:

To adjust for a firewall

If you have a firewall installed on the computer, make sure it allows the following applications:

- `TiVoNotify.exe`
- `TiVoServer.exe`
- `TiVoTransfer.exe`
- `curl.exe`
- `Bonjour.exe` or `TiVoBeacon.exe`

Refer to the firewall software provider for information on how to prevent the firewall from blocking these programs.

To select a media player

If one is not already installed, install a supported media player to play the files transferred to the PC from the TiVo device. TiVo recommends Microsoft Windows Media Player 11 or later.

Note: You might be able to play files transferred to the PC by using the TiVoToGo feature in other media players, but you might experience video quality problems and other playback issues.

To obtain the MAK

The Media Access Key (MAK) restricts viewing of transferred digital content to only the household that obtained it. There is one MAK per subscriber account. The MAK is tied to any recording that is transferred by using TiVo Desktop Plus, so only a subscriber who has that MAK can play the shows that were transferred with that MAK.

The MAK is available in the following locations:

- On the TiVo device: from TiVo Central, choose **Settings & Messages > Account & System Info > Media Access Key**.
- Online: log in to My Account on www.tivo.com, and then click **View Media Access Key** on the upper right side of the screen.

All TiVo devices in your setup must have the same MAK value, which means they must be on the same account. If you have multiple TiVo devices that have different MAKs, those TiVo devices are not on the same subscriber account. For information about merging accounts, see *To combine accounts* on page 321.

To share specific TiVo devices

To set the TiVo Desktop Plus for PC software to share only with specific TiVo devices on the network (instead of all of them), choose **Services** > **TiVo Server Properties** > **Access Control**, and then choose a sharing level.

If there are issues trying to access a particular TiVo device, choose Automatic from the Access Control tab.

To upgrade legacy TiVo Desktop to TiVo Desktop Plus for PC

1. Choose **File** > **Desktop Plus Upgrade** (Figure 22–2).
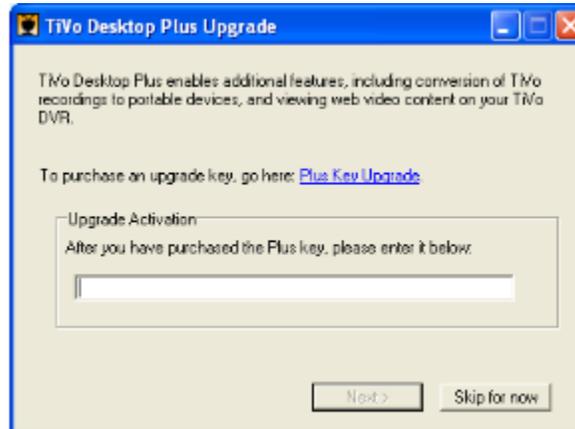
Figure 22–2: TiVo Desktop Plus Upgrade dialog

2. Enter the TiVo Desktop Plus key, and then click **Next**.

To transfer recordings to the PC

1. Choose **File** > **Pick Recordings to Transfer**, or click **Pick Recordings to Transfer** in the main TiVo Desktop Plus window.

2. Set up automatic transfers for a series by choosing the program, and then clicking **Auto-Transfers this Series**.

3. Choose **Start Transfer**.

4. To view the remaining time when transferring a recording, click **Transfer Status** or choose **View** > **Transfer Status**.

Digital copyright restrictions

Not all programs can be transferred using TiVo Desktop Plus, due to the use of copy protection mechanisms permitted under the FCC encoding rules. Some shows cannot be transferred because of the copy protection assigned them by the program provider. These shows usually are marked with a $\varnothing$ symbol.

Copy protection is displayed as CCI-bytes. For details on the CCI-byte values that affect digital content, see *TiVo box diagnostics* on page 325.

To summarize, a recording can be set to one of the following protection levels:

*   Copy-freely—Can be transferred
*   Copy-once—Cannot be transferred
*   Copy-never—Viewable for 90 minutes after transmission and not transferable

To play recordings transferred to the PC

To play transferred videos, go to the My Shows list in the main TiVo Desktop Plus window, select any title, and then click Play. If recordings are set to auto-transfer, then as soon as a transfer starts, you can watch the video immediately.

TiVo recordings are compressed using MPEG-2 format, and a computer needs a compatible MPEG-2 codec to use TiVo Desktop Plus files. However, not all MPEG-2 codecs play TiVo recordings properly.

To transfer videos from the PC to the TiVo device

When you transfer videos to a TiVo device, such as the TiVo T6 DVR, videos that are transferred display in My Shows.

1. From TiVo Desktop Plus, click **Share Music, Photos, & Videos**.

2. Select the **Video** tab, and then click **Add Video**.

3. Select the folder to add.

    The files can be home movies, videos downloaded from the web, or any other video files, as long as they are in one of the following file formats:

    - Windows Media Video (.wmv)
    - QuickTime Movie (.mov)
    - MPEG-4/H.264 (.mp4, .m4v, .mp4v)
    - MPEG-2 (.mpg, .mpeg, .mpe, .mp2, .mp2v, .mpv2)
    - DivX or Xvid (.avi, .divx, encoded with the DivX codec, version 4 or higher, or with the Xvid codec. No other video formats are supported within .avi files.)
    - `.tivo` files

    TiVo Desktop Plus can also recognize additional types of video, such as.mkv, based on other software installed on the system. For MKV files, install an MKV codec on the PC. See http://matroska.org to learn more and access the downloadable files.

4. To add the entire folder to your list for transfer, click **Add**.

    You cannot select individual videos in a folder.

5. On the Video Folder Properties popup window, set the folder properties, including:
    - Whether to auto-transfer videos from this folder to the TiVo device.
    - How many videos from this folder to keep on the TiVo device (if auto-transferring).
    - Which TiVo device gets videos from this folder (if auto-transferring).

6. To remove video files, select the files to remove, and then click **Remove**.

    These files will no longer be accessible from the TiVo device, but they remain on the computer.

To convert recordings for a mobile device

1. Choose **Actions** > **Convert For**.

2. Select the file format.

To publish and remove music

TiVo Desktop Plus works with music in the MP3 format, and with playlists in the following formats used by common PC music players: M3U, PLS, ASX, and B4S.

1. From TiVo Desktop Plus, click **Share Music, Photos, & Videos**.

2. Select the **Music** tab, and then click **Add Music**.

3. Navigate to the folder containing the playlist or folder of music to publish.

   When you choose a folder, any MP3 files in that folder are listed in the right frame of the Add Music window.

   Note: *Publishin*g music means making MP3 files available over the home network to the TiVo device. Publishing does not copy music files to the TiVo device, so published music doesn't use any space on the TiVo device.

4. To publish a whole folder of music, select the folder, and then click **Add**.

5. To publish individual MP3 files, select them from the list on the right, and then click **Add**.

6. To remove music files, select the files to remove, and then click **Remove**.

   These files will no longer be accessible from the TiVo device, but they remain on the computer.

To play music

You can play published music from the TiVo device through a TV or home entertainment system. After publishing music using TiVo Desktop Plus, your music library appears on the TiVo device.

1. From TiVo Central, choose **Music & Photos**.

   There are two options for how your music is named. If the computer name is My Computer and your user name is Jill, the options are called *Jill's Music on My Computer*. If the computer is not named, the options are called simply *Jill's Music*.

2. Choose the title you want to play from your music library, and then press **Play**.

   After the first song ends, the second song in the playlist or folder begins.

To publish and remove photos

TiVo Desktop Plus works with photos in the following formats: BMP, TIFF, DIB, GIF, JPG, and PNG.

1. From TiVo Desktop Plus, click **Share Music, Photos, & Videos**.

2. Select the **Photos** tab, and then click **Add Photos**.

3. Navigate to the folder containing the photos to publish.

When you choose a folder, any photo files in that folder are listed in the right frame of the Add Photos window.

Note: *Publishing* photos means making photo files available over the home network to the TiVo device. Publishing does not copy photo files to the TiVo device, so published photos doesn't use any space on the TiVo device.

4. To publish a whole folder of photos, select the folder, and then click **Add**.

5. To publish individual photo files, select them from the list on the right, and then click **Add**.

6. To remove photo files, select the files to remove, and then click **Remove**.

   These files are no longer accessible from the TiVo device, but they remain on the computer.

To enable photos

You can enable additional support for photos in TiVo Desktop Plus. Viewing and organizing options include the 4:3 aspect ratio and the 16:9 HD aspect ratio views for thumbnails, grids, full-screen photos, and slideshows. Slide Show options include fade transitions, persistent photo rotation, and more.

After enabling Photos 2.0, both the original Photos interface, as well as Photos 2.0 (marked with an icon that looks like a computer), are available.

Photos 2.0 requires Java JRE 1.6 or later. To check the version installed on a computer, go to Java http://java.com/en/download/installed.jsp and click **Verify Java Version**.

1. From TiVo Desktop Plus, choose **Services > TiVo Server Properties** (Figure 22–3).
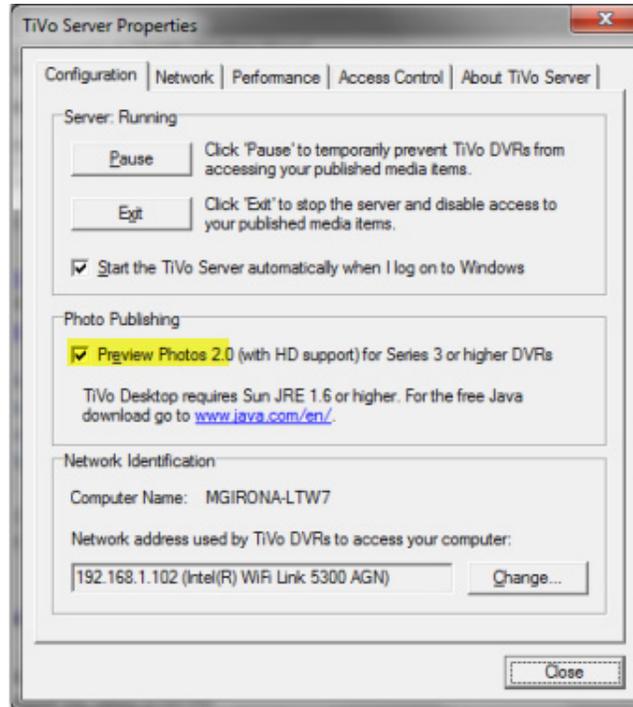
Figure 22–3: TiVo Server Properties dialog

2. Click the checkbox for **Preview Photos 2.0**.

3. You might be prompted to install the latest version of JRE if you do not already have it.

Note: When you first enable Preview Photos 2.0, TiVo Desktop Plus might restart and attempt to download the latest version of TiVo Desktop Plus.

To view photos

1. From TiVo Central, choose **Music & Photos**.

    There are two options for how your photos are named. If the computer name is My Computer and your user name is Jill, the options are called *Jill's Photos on My Computer*. If the computer is not named, the options are called simply *Jill's Photos*.

2. To view a slideshow, choose the folder and press **Play**.

3. To view individual photos, choose the folder, press **Select**, and then navigate to the photo and press **Select** again.

    Options for viewing the photo include rotation options and the option to view a slideshow of all photos in this folder.

To sort photos

To change how photos in the folder are sorted (by name or by date), press **Enter** and follow the on-screen instructions.

Troubleshooting issues with TiVo Desktop Plus

In addition to the Support articles on the TiVo Support website, the following information can assist in resolving issues using TiVo Desktop Plus.

Lost key

To retrieve the TiVo Desktop Plus key, log in to My Account on www.tivo.com, and then check **Order History**.

Poor system performance

If the TiVo Desktop Plus software slows down other applications on the PC, you might want to lower the Activity level. If the TiVo Desktop Plus software is sluggish, then you might want to increase the Activity level.

To change the Activity level:

1. Choose **File** > **Services** > **TiVo Server Properties** > **Performance.**

2. Select the appropriate Activity level.

Slow transfer speed

To improve transfer speed, consider the following:

- Try using a lower recording quality.
- Evaluate current network activity, such as other downloads or transfers occurring on the same network.
- If possible, remove other devices from the network, or at least network traffic during the time of the transfer.
- Check for interference from other devices, such as gaming consoles, computers, baby monitors, microwaves, and so on.
- On a laptop, make sure the computer does not sleep or hibernate during the transfer, and that the hard disk does not turn off as a power-saving measure.

TiVo Desktop Plus doesn't see a recording on the TiVo device

1. Check that both computer and TiVo device are on.

2. Check that the MAK is the same on both the TiVo device and the TiVo Desktop Plus software.

3. Check that file sharing is enabled.

4. Check that the computer and the TiVo device are on the same network.

   See the Support articles on the TiVo Support website for more information about network troubleshooting.

5. If a VPN is in use, disconnect from it.

6. See if antivirus or firewall software is in use. If it is, look for a setting that allows you to specify TiVo Desktop Plus as an approved program.

7. Confirm that there is free disk space for the recording.

TiVo Web Portal

23

The TiVo Web Portal delivers a CableCo-branded TiVo experience via a web browser.

This chapter covers the following topics:

- *About the TiVo Web Portal*
- *Logging in to the TiVo Web Portal* on page 277
- *Using the TiVo Web Portal* on page 278
- *Launching the Hulu embedded video player* on page 307

Note: This content is based on TiVo Web Portal version 19.

About the TiVo Web Portal

The TiVo Web Portal allows MSOs to bring their over-the-top video content to subscribers via the web application, integrating with TiVo search and discovery capabilities so that subscribers have one stop for content discovery and playback.

The TiVo Web Portal can be accessed from home or away, and does not require a specific software application. A subscriber can search and browse the TiVo Web Portal, and then link to the content provider's website to play the asset.

While providing the next generation TV platform for cable and IPTV networks, the TiVo Service is also available on Android and Apple iOS mobile devices. The TiVo Web Portal extends its reach beyond the TiVo DVR and brings a unified TiVo experience to tablets, smart phones, and web browsers.

Figure 23–1 provides a high-level functional view of the interactions among the components in the TiVo Web Portal.
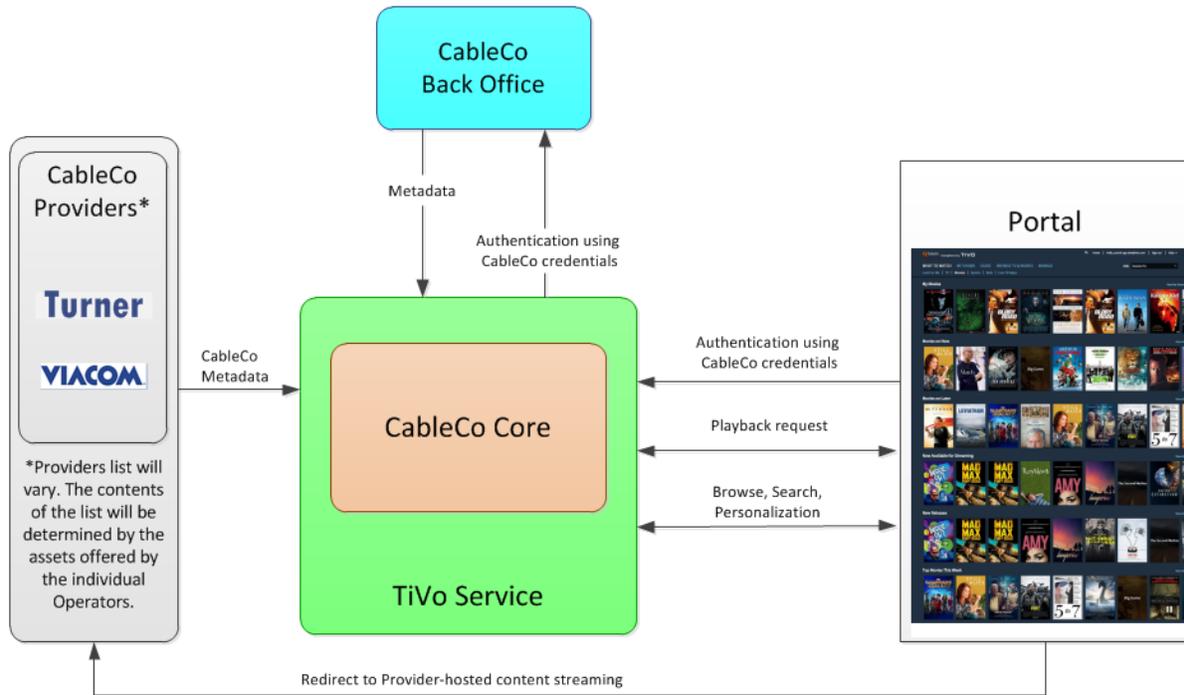
Figure 23–1: TiVo Web Portal component overview

When a subscriber logs in to the TiVo Web Portal, information about the subscriber, account, and TiVo devices is exchanged among the subscriber, the MSO, and the TiVo client application via the Security Assertion Markup Language (SAML 2.0) protocol. SAML protocol is integrated with the MSO's Identity Provider (IdP) system.

During login, the MSO authenticates credentials, performs TiVo account and device provisioning, and returns information associated with the session (such as token-authorizing account access) to TiVo Mind and the TiVo devices on the account.

Note: The TiVo Web Portal does not offer remote control of TiVo DVRs.

TiVo Web Portal user modes

The TiVo Web Portal is available to CableCo subscribers in a variety of different user modes. Some features are not available to all subscribers; the modes available depend on the CableCo-to-subscriber status. There are three modes:

- TiVo DVR user mode—Those who are CableCo-TiVo DVR video subscribers.

  DVR subscribers are CableCo subscribers with at least one TiVo DVR on their subscriber account. DVR subscribers can use the TiVo Web Portal with full functionality, which includes full access to What to Watch, My Shows, Guide, Browse, Manage, and Search.

- Non-TiVo DVR user mode—Those who are not CableCo-TiVo DVR video subscribers, including:
  - Non-video CableCo subscribers
  - Retail-TiVo DVR video subscribers

- Non-TiVo CableCo video subscribers
- CableCo-TiVo set-top box only video subscribers
- Anonymous user mode—Those who want to remain anonymous.

These user modes can't be changed or selected by the subscriber.

TiVo Web Portal supported browsers

Table 23–1 lists the browsers supported on the Windows OS.

Table 23–1: TiVo Web Portal browsers on Windows OS

Windows OS	TiVo browser support
Windows 7	Firefox 25.x+
Windows 7	Chrome 40.x+
Windows 7	Internet Explorer* 10.x, 11.x
Windows 8, 8.1	Firefox 25.x+
Windows 8, 8.1	Chrome 40.x+
Windows 8, 8.1	Internet Explorer* 10.x, 11.x

Note: * 32-bit browsers only

Table 23–2 lists the browsers supported on the Macintosh OS.

Table 23–2: TiVo Web Portal browsers on Mac OS

Macintosh OS	TiVo browser support
OS X 10.10.2	Safari 8.x+
OS X 10.10.2	Firefox 25.x+
OS X 10.10.2	Chrome 40.x+

Logging in to the TiVo Web Portal

If the subscriber has one or more TiVo DVRs on the same subscriber account, the TiVo Web Portal allows for control of the DVRs via the TiVo Service.

1. Go to the MSO-provided URL for the TiVo Web Portal.

2. Log in to the TiVo Web Portal using your authenticated user name and password.

Note: A TiVo Web Portal client application login session terminates when the subscriber explicitly logs off, exits the web browser (explicitly or via system shutdown), or after 30 minutes of inactivity. This parameter is not configurable by the subscriber or MSO.

Using the TiVo Web Portal

This section covers the following topics:

Action buttons

The TiVo Web Portal action buttons (Table 23–3) can help you learn more about the content, watch it now, record to watch later, create a OnePass, discover upcoming episodes, and much more.

Note: The TiVo Web Portal displays only the action buttons that are applicable to the functions available for the content in the Info pane.

Table 23–3: TiVo Web Portal action buttons

Button icon	Action
Watch now	Displayed if content is available through at least one content provider; if content is not available, the button is not visible.
	If there are multiple providers for an asset, the Watch now overlay displays, which allows you to play the asset from your preferred provider.
	When clicked, a new tab opens, which contains the player for the show or movie, and the program starts playing immediately.
Get this show	When clicked, gives you the option to create a OnePass, record this episode, or add this streaming video to My Shows.
Upcoming	Displayed if there is a broadcast of the episode within the next 14 days.
	When clicked, displays the Upcoming Episodes screen. On the Upcoming Episodes screen, you can either explore this show or set up individual recordings.
Record	Displayed if the show or movie is available to record and you have not yet scheduled an individual recording or a OnePass for the series.
	When clicked, displays the Recording Options screen where you can set the recording options you prefer.
Options	Displayed if you have scheduled a recording for the show or movie.
	When clicked, displays the Modify Recording Options screen where you can set the recording options you prefer.

Table 23–3: TiVo Web Portal action buttons (continued)

Button icon	Action
More options	Displayed if you have scheduled an individual recording or a OnePass for the series. When clicked, you can modify recording or OnePass options, or add this streaming video to My Shows.
Wish List	Displayed if the content is not available to record, or if you already have a WishList Search created. When clicked, displays the WishList Search screen where you can search for something specific with multiple criteria.
Edit	Displayed in the My Shows list or To Do List. When clicked, displays the **Delete** and **Done** buttons.
Delete	Displayed if one or more items in either My Shows or the To Do List can be selected. When clicked, deletes one or more items from either My Shows or the To Do List.
Done	When clicked, returns you to either the My Shows list or the To Do List.

What to Watch

What to Watch is the default home page for the TiVo Web Portal (Figure 23–2).
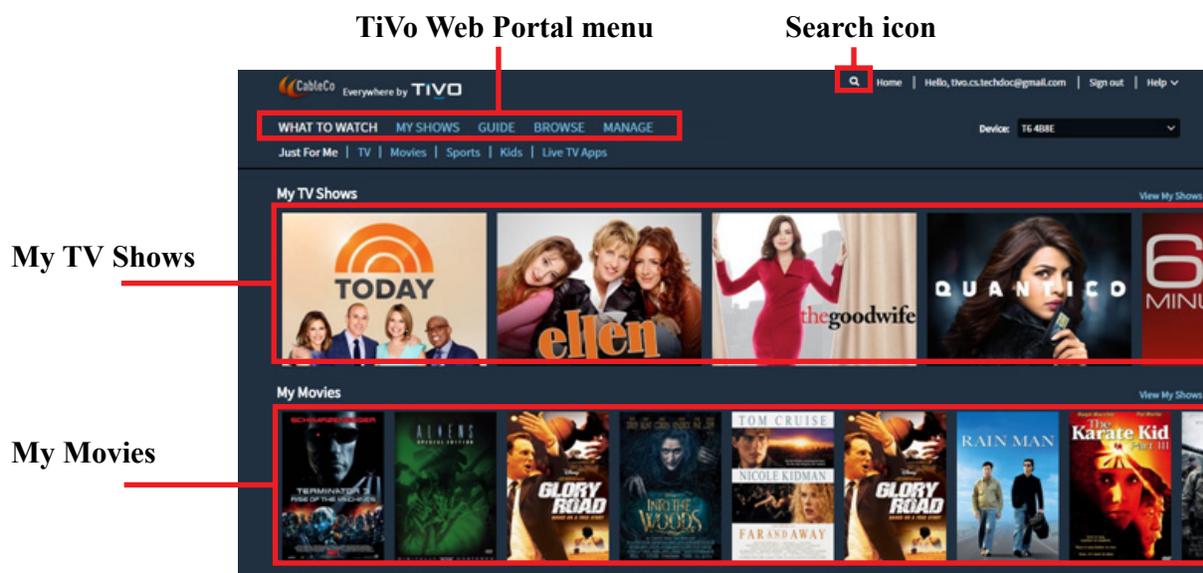
Figure 23–2: What to Watch

What to Watch has the following modules:

- Just For Me
- TV
- Movies
- Sports
- Kids
- Live TV Apps

Just For Me

The Just For Me module focuses on the video assets contained within My Shows (Figure 23–3).
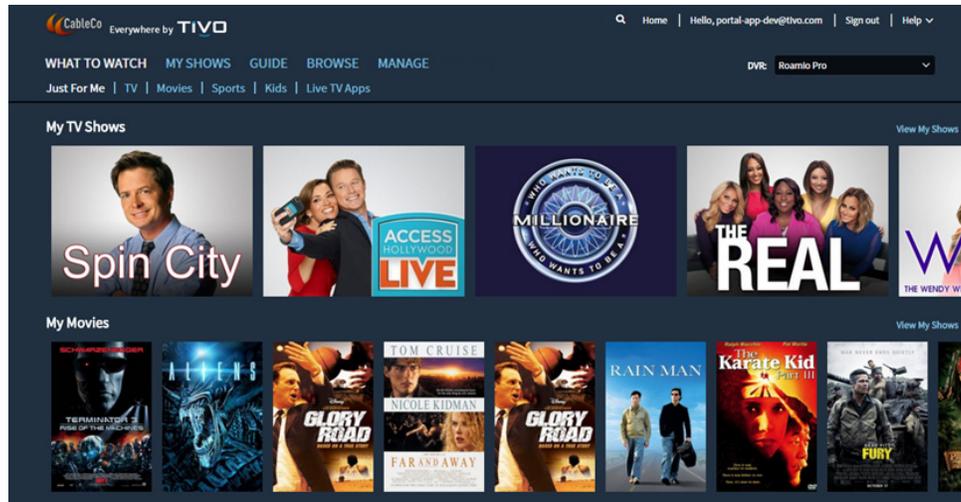
Figure 23–3: Just For Me module

Carousels in this module are:

- My TV Shows—Presents a filtered view of the episodic TV shows available in My Shows.

- My Movies—Presents a filtered view of the movies available in My Shows.

TV

The TV module focuses on episodic TV shows (Figure 23–4).
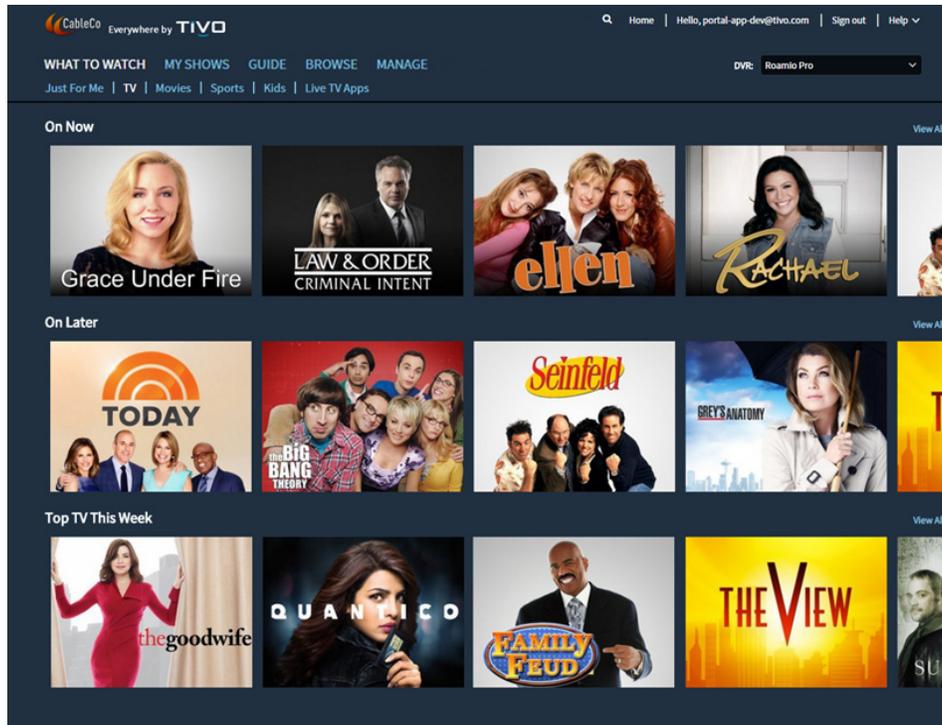
Figure 23–4: TV module

Carousels in this module are:

- On Now—Presents recommended TV shows that are currently airing.
- On Later—Presents recommended TV shows that will broadcast later today.
- Top TV This Week—Presents recommended TV shows that will broadcast later this week.

Movies

The Movies module focuses on movies (Figure 23–5).
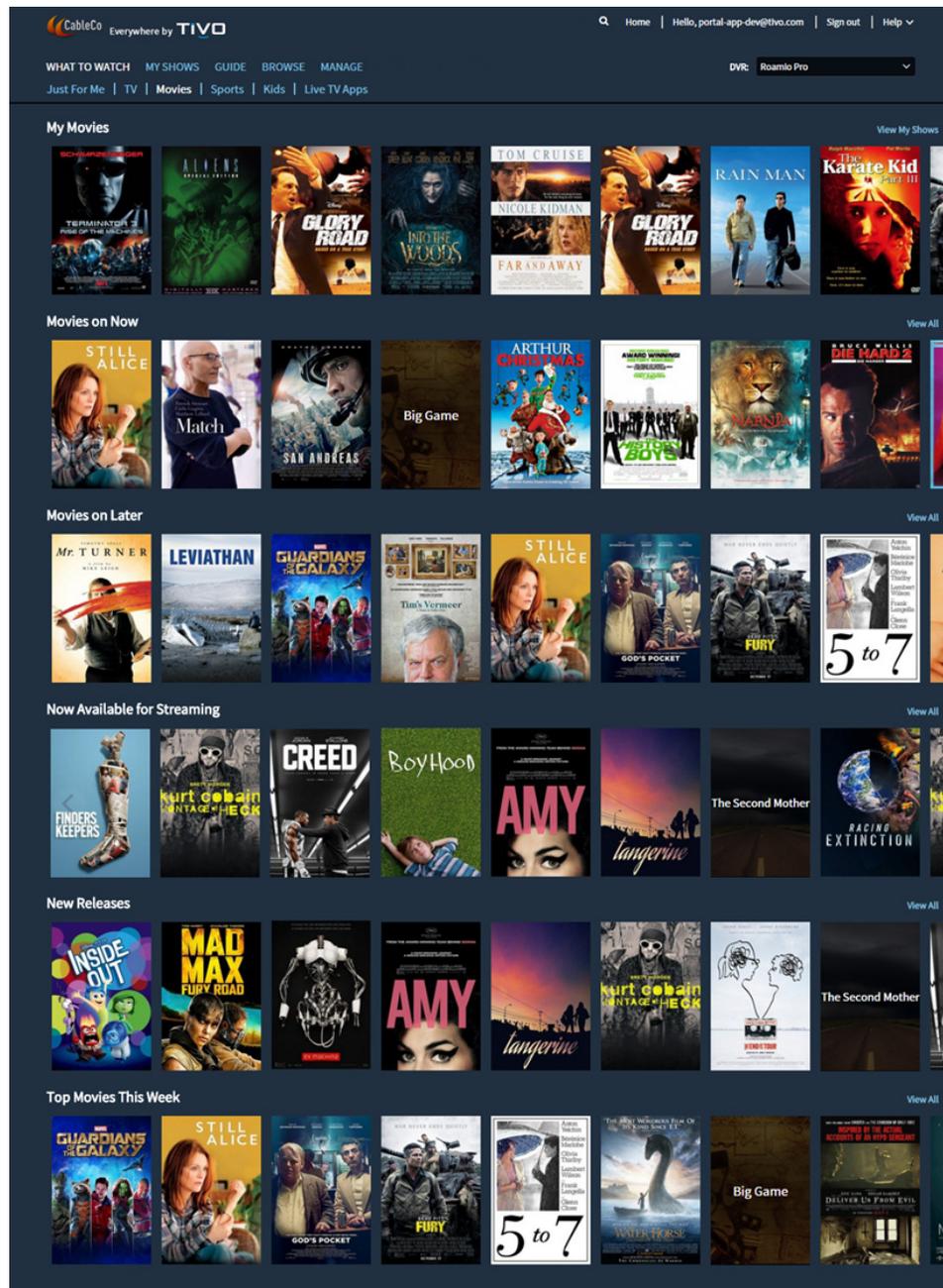
Figure 23–5: Movies module

Carousels in this module are:

- My Movies—Presents a filtered view of the movies available in My Shows.
- Movies on Now—Presents recommended movies that are currently airing.
- Movies on Later—Presents recommended movies that will broadcast later today.
- Now Available for Streaming—Presents recommended movies available on streaming services.
- New Releases—Presents recommended movies newly available on streaming services.

- Top Movies This Week—Presents recommended movies that will broadcast on TV later this week.

Sports

The Sports module focuses on sport programs, including live sports events (Figure 23–6).
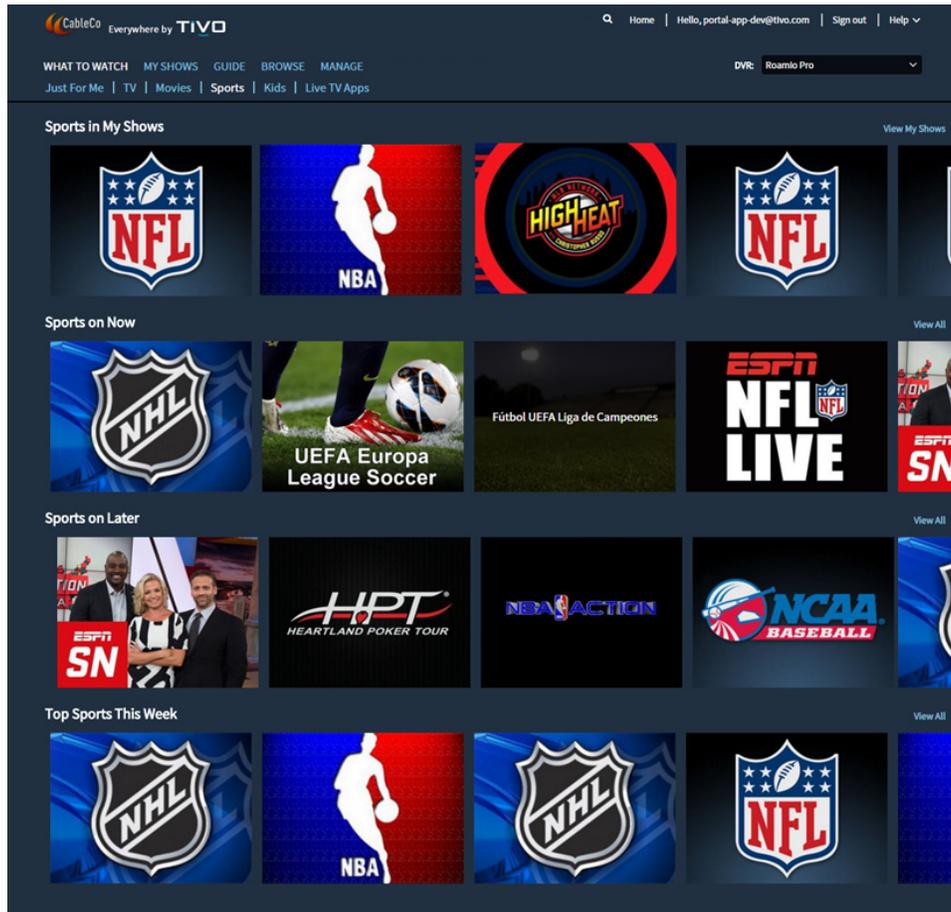
Figure 23–6: Sports module

Carousels in this module are:

- Sports in My Shows—Presents a filtered view of the sports programs available in My Shows.
- Sports on Now—Presents recommended sports programs that are currently airing.
- Sports on Later—Presents recommended sports programs that will broadcast later today.
- Top Sports This Week—Presents recommended sports programs that will broadcast on TV later this week.

Kids

The Kids module focuses on episodic TV shows and movies suitable for children (Figure 23–7).
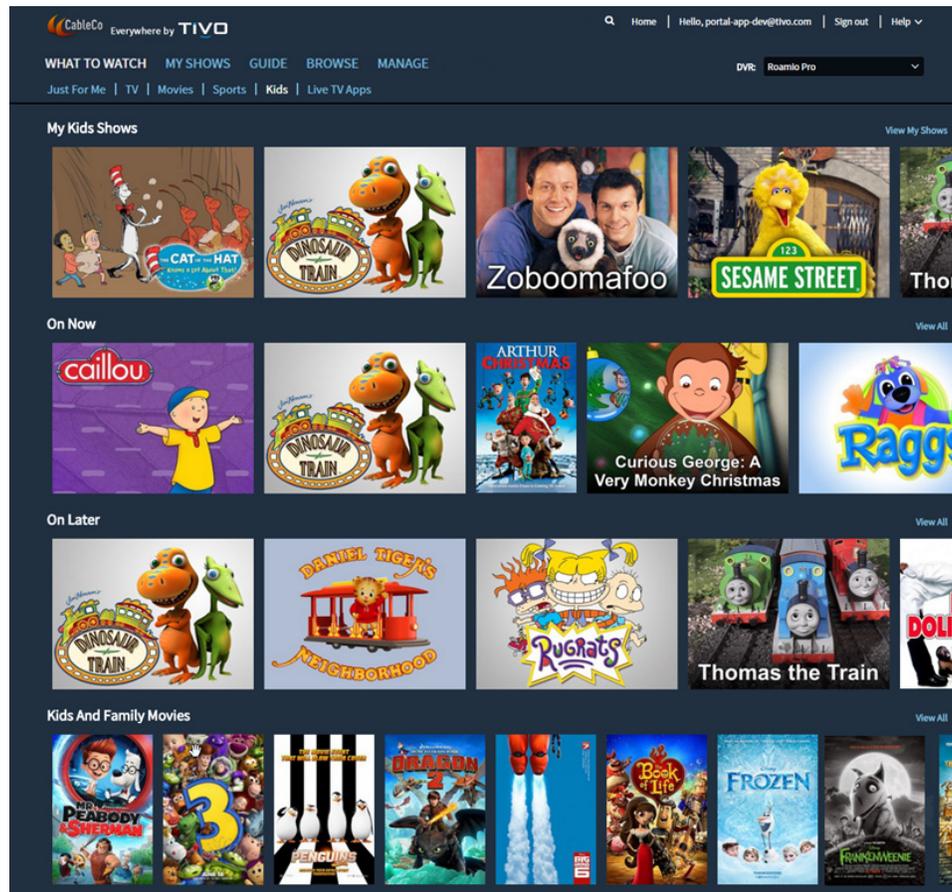
Figure 23–7: Kids module

Carousels in this module are:

- My Kids Shows—Presents a filtered view of the kids programs, both TV and movies, available in My Shows.

- On Now—Presents recommended kids programs, both TV and movies, that are currently airing.

- On Later—Presents recommended kids programs, both TV and movies, that will broadcast later today.

- Kids and Family Movies—Presents recommended kids movies that will broadcast on TV later this week.

Live TV Apps

The Live TV Apps module focuses on websites that provide a Live TV feed (Figure 23–8).
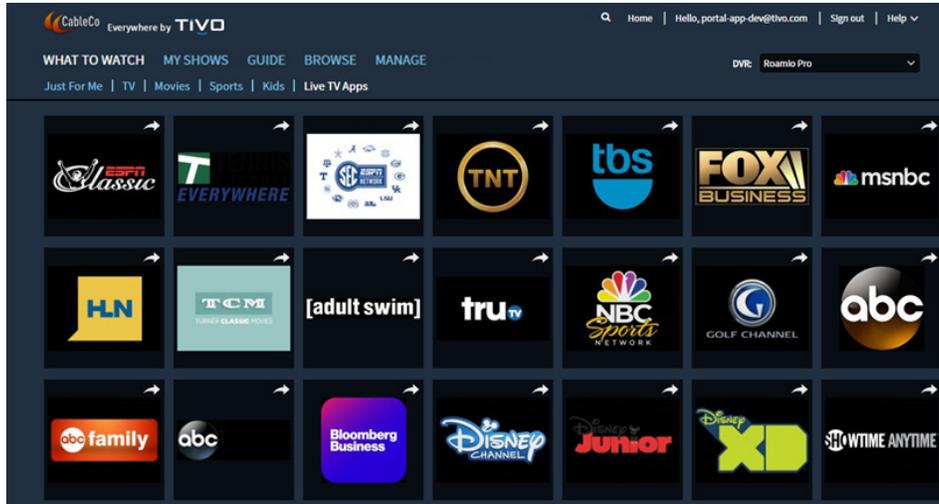
Figure 23–8: Live TV Apps module

This module presents shortcuts to websites that support live TV.

To display asset information

By default, the information related to the highlighted asset in What to Watch is displayed above the carousel (Figure 23–9).
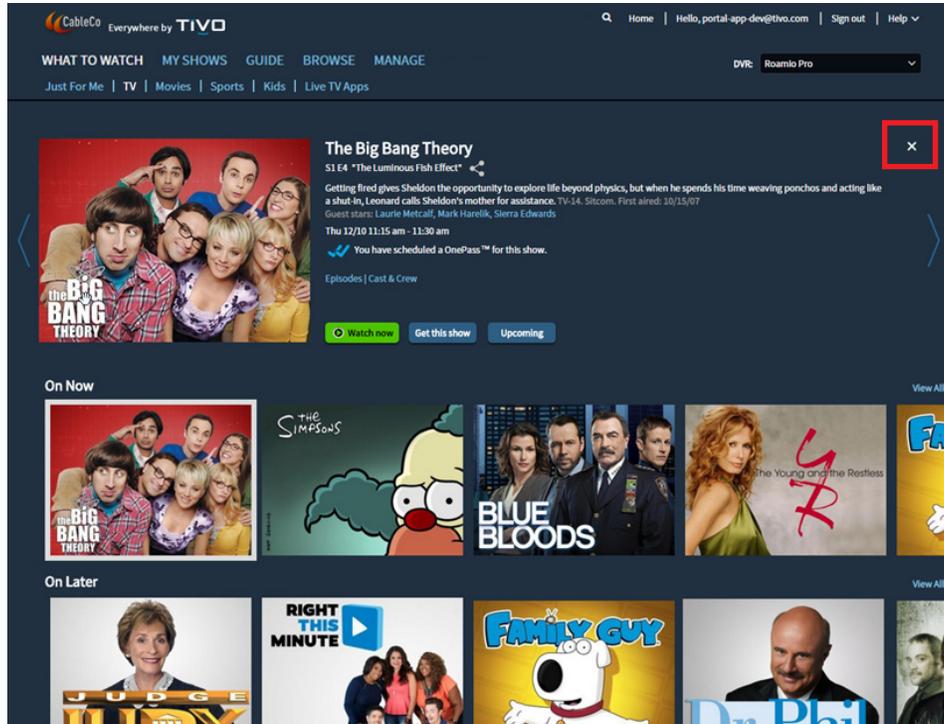
Figure 23–9: Asset information

The asset information shows additional details on the asset, such as the show title, episode title, first aired date (when available), episode description, genre, and network (when available). If you have previously scheduled a OnePass or recording for this show, that information is displayed. If you have rated this asset, the thumb rating is displayed as well. All available action buttons are displayed.

Note: Click the X to hide the asset information. Click the left and right arrows to navigate to additional selections, or select an asset in the carousel.

To watch now

Content in each of the What to Watch modules is populated by the TiVo Service.

Note: This content is not configurable by the MSO.

Both linear and Video On Demand (VOD) content is available on the TiVo Web Portal. Content is available from a variety of content providers through What to Watch, My Shows, Guide, Browse, Manage, and Search. This includes content that can be watched online directly from content providers, as well as content that can be watched on TV as part of your cable subscription.

All asset information screens, Guides, and search results provide the name of the content provider for each asset. If there is only one content provider for the asset, you are taken directly to that provider. If there are multiple content providers, the Watch Now overlay appears, which allows you to play the asset from your preferred provider (Figure 23–10).
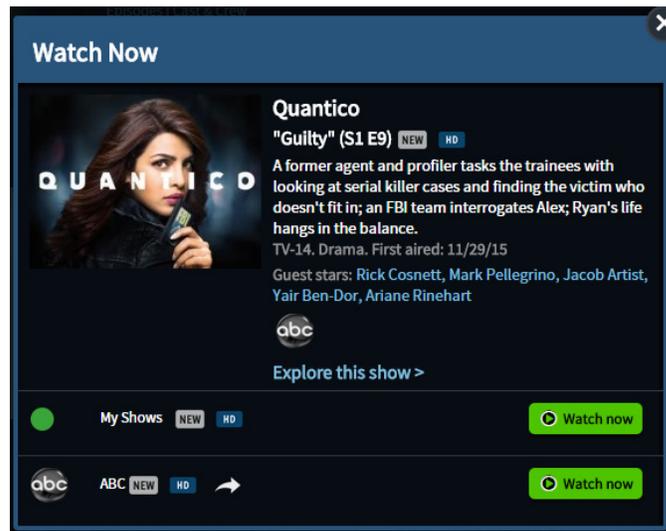
Figure 23–10: Watch Now overlay

If a show is available for playback from My Shows, streaming from the DVR is indicated. Otherwise, the **Watch now** button links you to asset playback on the content provider's website. When attempting playback, you might be required to log in again.

To record a show

1. Choose a show to record.

   Program information appears, which includes action buttons to get this show or see upcoming episodes.

2. Click **Get this show**.

   A sub-menu expands, which includes action buttons to create a OnePass, record this episode, or add streaming videos to My Shows (Figure 23–11).
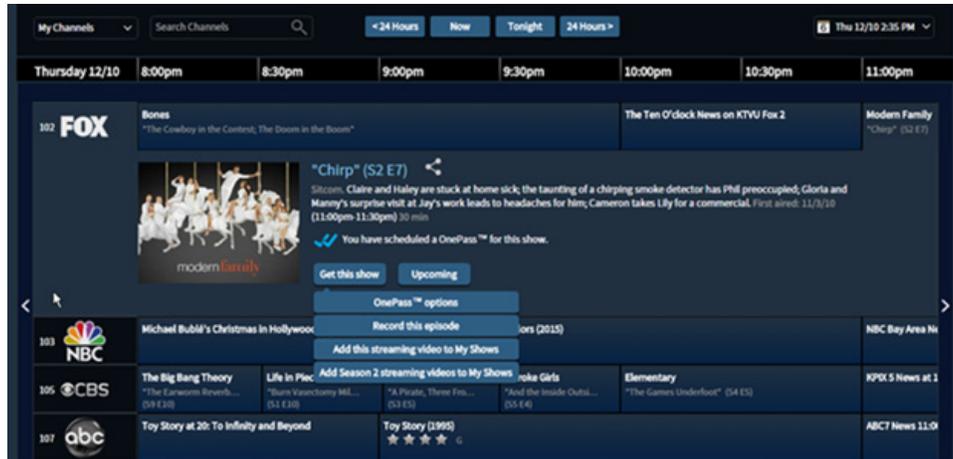
Figure 23–11: Program information

3. Click **Record this episode**.

   The Recording Options screen appears (Figure 23–12).
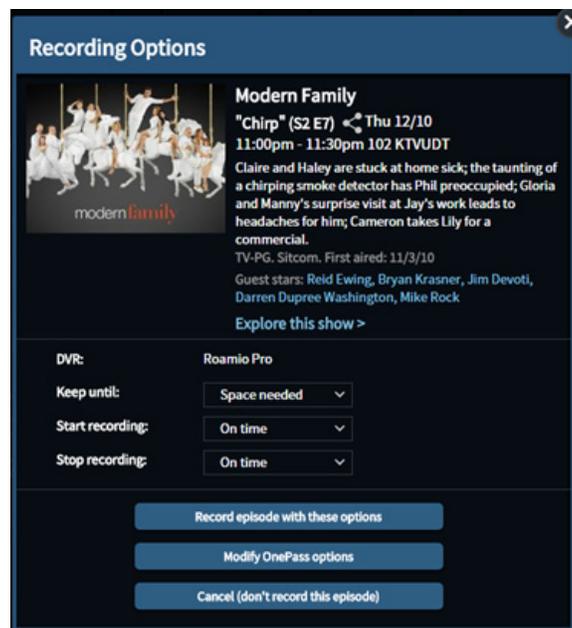
Figure 23–12: Recording Options screen

4. Set the recording options you prefer, and then click **Record episode with these options** to record the show on the selected TiVo DVR.

To create a OnePass

1. Choose a show to record.

   Program information appears, which includes action buttons to get this show or see upcoming episodes.

2. Click **Get this show**.

   A sub-menu expands, which includes action buttons to create a OnePass, record this episode, or add streaming videos to My Shows.

3. Click **Create OnePass**.

   The OnePass Options screen appears (Figure 23–12).

Figure 23–13: OnePass Options screen

4. Set the OnePass options you prefer, then click **Create OnePass with these options**.

   The OnePass feature finds and organizes content from all providers which allows you to watch your favorite shows in a unified experience across devices (DVRs, mobile, and online). You can also create OnePasses for new TV shows and off-season TV shows before they are available in the Guide.

Note: If there is a TiVo DVR in the household, OnePass is available only in the TiVo Web Portal after the selected TiVo DVR has OnePass enabled. If the selected TiVo DVR does not support OnePass, the TiVo Web Portal continues to use the Season Pass feature.

To add a stand-alone streaming video to My Shows

1. Choose a show to record.

   Program information appears, which includes action buttons to get this show or see upcoming episodes.

2. Click **Get this show**.

   A sub-menu expands, which includes action buttons to create a OnePass, record this episode, or add streaming videos to My Shows.

3. Click **Add this streaming video to My Shows**.

   A confirmation screen appears (Figure 23–14).

Figure 23–14: Added to My Shows screen

If this streaming video is currently available, it appears in My Shows. Movies appear in the Streaming Movies folder. Any video that is not available appears in the Not Currently Available folder.

Note: Unlike OnePass, the stand-alone streaming video feature does not record the show on the selected TiVo DVR.

To add a single season of a TV series to My Shows

1. Choose a show to record.

   Program information appears, which includes action buttons to get this show or see upcoming episodes.

2. Click **Get this show**.

   A sub-menu expands, which includes action buttons to create a OnePass, record this episode, or add streaming videos to My Shows.

3. Click **Add season *x* streaming videos to My Shows**.

   A confirmation screen appears.

   The selected season of episodes appears in My Shows.

My Shows

My Shows is where you can manage the recordings contained on the primary TiVo DVR on the same account, as well as streaming videos added to the My Shows list. Similar to the experience on the TiVo DVR, the TiVo Web Portal displays content sorted by series in folders that expand or collapse on selection.

The My Shows list (Figure 23–15) allows you to filter content based on categories, allowing you to find content faster.
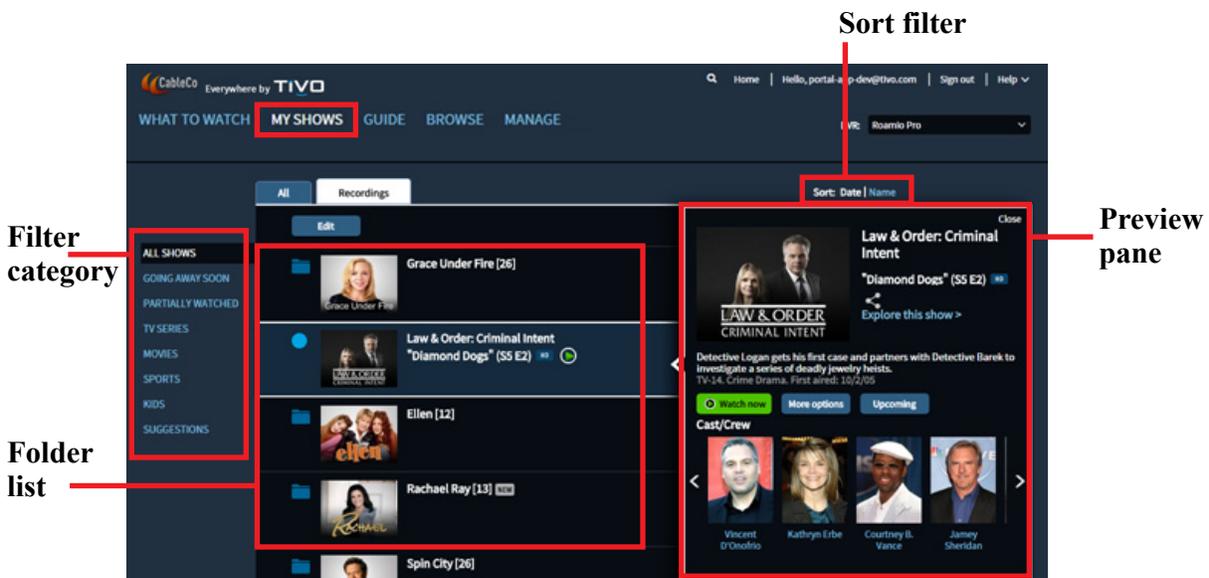
Figure 23–15: My Shows screen filtered

The My Shows sort filter allows you to sort the episodes by the date added or alphabetically. By default, content is sorted by date with the newest content displayed first.

The series title displays the [NEW] icon if the episode became available within the last 14 days.

The series title displays the HD icon if the episode is in HD.

To view your series folders in My Shows

Similar to OnePass on the TiVo DVR, there are three views (My Episodes, All Episodes, and Recordings) within each series folder. In addition to the three views, the TiVo Web Portal adds an additional Watch Online view, which highlights all episodes that are available to watch online, for a series independent of the OnePass created. The Watch Online view (Figure 23–16) is the default view when you enter a series folder for the first time.
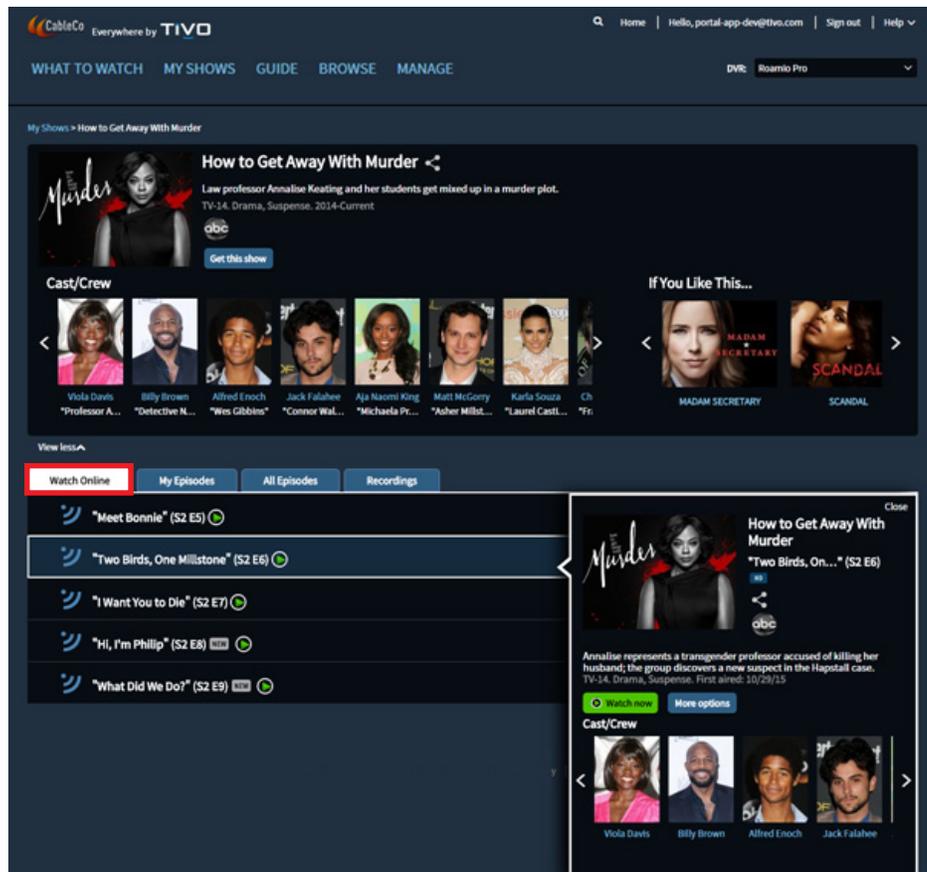
Figure 23–16: Watch Online view

To sort your recordings in My Shows

There are two sorting options in the Recordings view.

- Season—Episodes are sorted by season with the first available episode displaying on top. A season picker might display, allowing you to switch between seasons.
- Date—Episodes are sorted by date with the latest episode displaying on top.

To delete shows

You can delete recordings, streaming videos, and entire folders.

Deleting a show that is available both as a recording on a TiVo DVR and as an online asset on the TiVo Web Portal does not delete the show from the TiVo DVR.

1. Click **Edit** from the My Shows list.

2. Select the checkbox next to the episode or folder you want to delete.

   If a folder is selected, all items in that folder are deleted.

   The **Delete** button turns red (Figure 23–17).
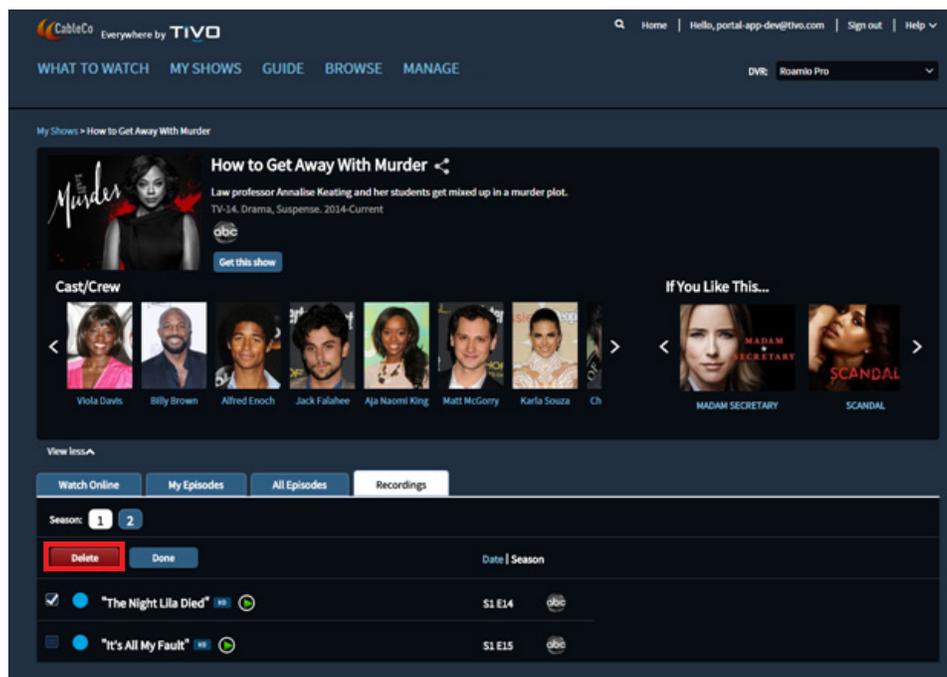
Figure 23–17: Select shows to delete

3. Click **Delete**.

4. In the Delete Show screen, click **Delete recording** or **Delete all** to continue with the deletion.

5. Click **Cancel** to cancel the deletion.

Guide

Guide shows a scrollable, chronological view of the program lineup for each channel in your channel lineup (Figure 23–18). Additionally, the Guide integrates the Info pane to display basic information about the selected content.
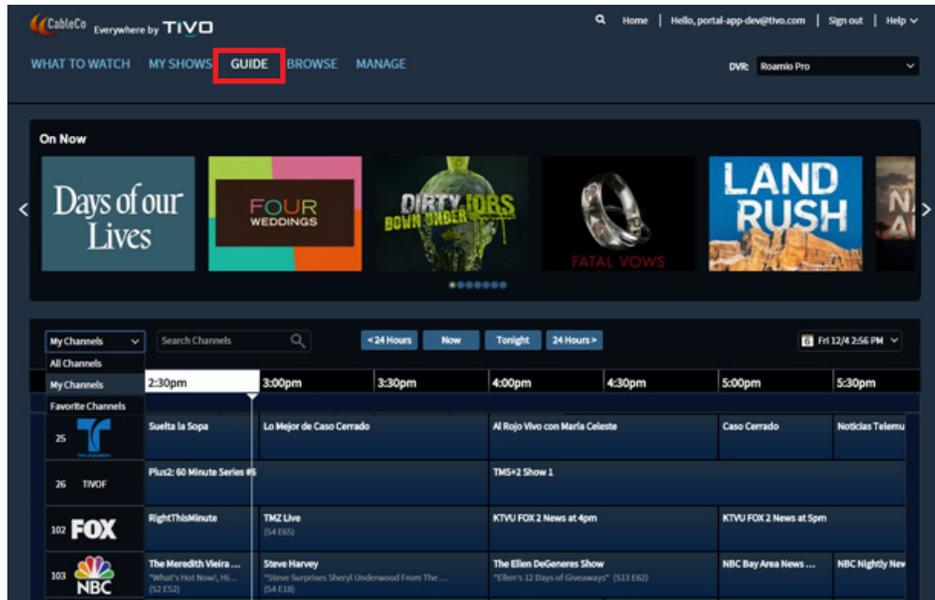
Figure 23–18: Guide

You can use the Guide to browse 14 days worth of programming. You can find shows that are currently on, schedule recordings and OnePasses, and find upcoming episodes.

On the TiVo Web Portal, you can only view shows that are available online. If a show is not available for online viewing, you can record it on the TiVo DVR.

On Now

The Guide contains an On Now module, which visually highlights programs (TV and movies) that are on now, allowing you to discover new content quickly (Figure 23–19).

Selecting an item from On Now takes you to that point in the Guide and presents you with options for recording or exploring. To navigate through the module, click the left and right arrows to see additional selections.
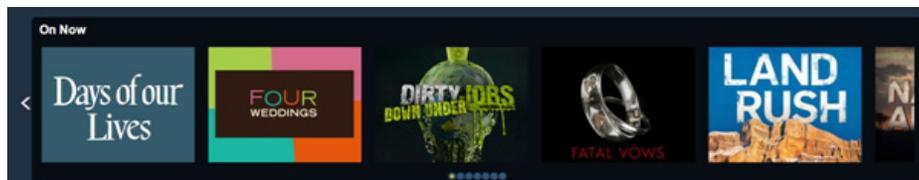
Figure 23–19: On Now

To navigate the Guide

The Guide navigation bar provides several ways for you to efficiently move through the Guide to find the channels and shows that interest you (Figure 23–20).
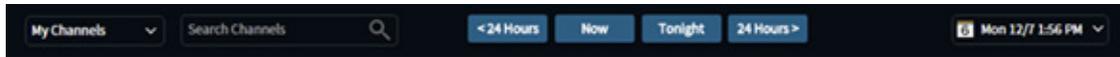
Figure 23–20: Guide navigation bar

To display by channel types

The Channel Type option allows you to filter content by All Channels (default), My Channels, or Favorite Channels (Figure 23–21).
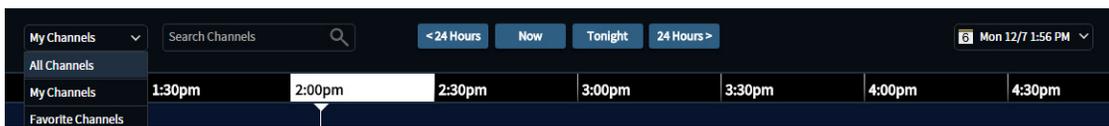
Figure 23–21: Channel selection options

When you choose My Channels or Favorite Channels, the Guide is refreshed with the appropriate channel information.

- My Channels—Displays the programming that only you are able to watch.
- Favorite Channels—Displays the favorite channels that are set up on the TiVo DVR.

If you haven't designated any favorite channels yet, you can do so as follows:

1. From TiVo Central, choose **Settings & Messages** > **Settings** > **Channels** > **Channel List**.

2. Indicate a favorite channel by selecting the channel in the Channel List and pressing **Thumbs Up**.

3. Repeat Step 2 for each channel you want to add to your Favorite Channels list.

4. When finished, press the right arrow to highlight **Done**, and then press **Select**.

Your favorite channels are now designated.

To search channels by name or number

When you type a channel name or number into the channel search bar, the matching channels are displayed.

For example, in Figure 23–22, **pbs** is entered in the channel search bar (the search bar is not case-sensitive) and all PBS channels are listed.
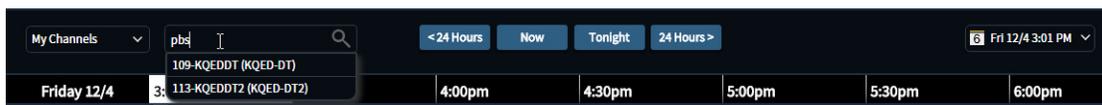
Figure 23–22: Channel search by name or number

When you choose the channel you want, the Guide brings the selected channel to the top of the Guide.

To display by day and time

If you want to know what will be on TV on a particular day at a particular time, the Calendar filter allows you to go to a specific date seven days before the current date or 14 days after the current date. Clicking a date and time shifts the Guide to that particular date and time, and displays the related information (Figure 23–23).
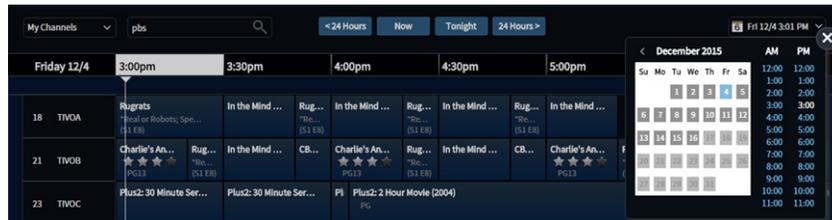
Figure 23–23: Calendar search by day

To jump one day back or one day forward

The Guide provides a way to quickly see what's on tomorrow and subsequent days, as well as a way to move back to see what was on 24 hours ago (Figure 23–24).
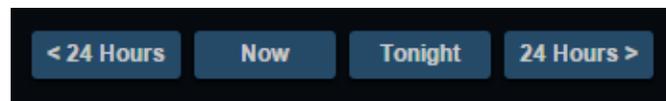
Figure 23–24: Quick Jump feature

With the Quick Jump feature, you can:

- Click **< 24 Hours** to see what was playing 24 hours ago.
- Click **Now** to see what's on now.
- Click **Tonight** to see what's showing this evening.
- Click **24 Hours >** to see what's going to be playing tomorrow at the same time.

Program information

When you select a show within the Guide, additional information about the program is displayed (Figure 23–25).
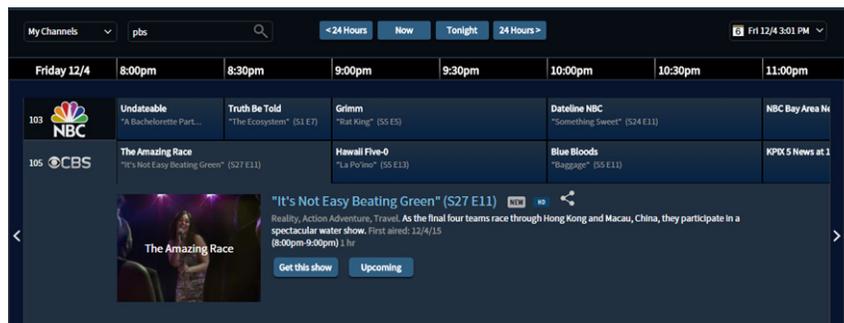
Figure 23–25: Program information

Program information provides action buttons (Table 23–3 on page 278) that help you learn more about the content, watch the program now, record to watch later, create a OnePass, or discover upcoming episodes.

The following program information is available when you select a TV episode:

- Series title and episode title—The episode title includes information about which season and episode this episode appears in.

  The series title displays the NEW icon if the episode became available within the last 14 days.

  The series title displays the HD icon if the episode is in HD.

- Description—A brief description of the episode, including the episode's duration.
- First aired date (when available)—Indicates when the episode first aired.

The following information is available when you select a movie:

- Movie title—The movie title includes the rating.
- Description—A brief description of the movie, including the movie's duration.

Browse

Browse allows you to find the programs that are of interest to you.

When you click **Browse**, the **TV** screen appears first (Figure 23–26).
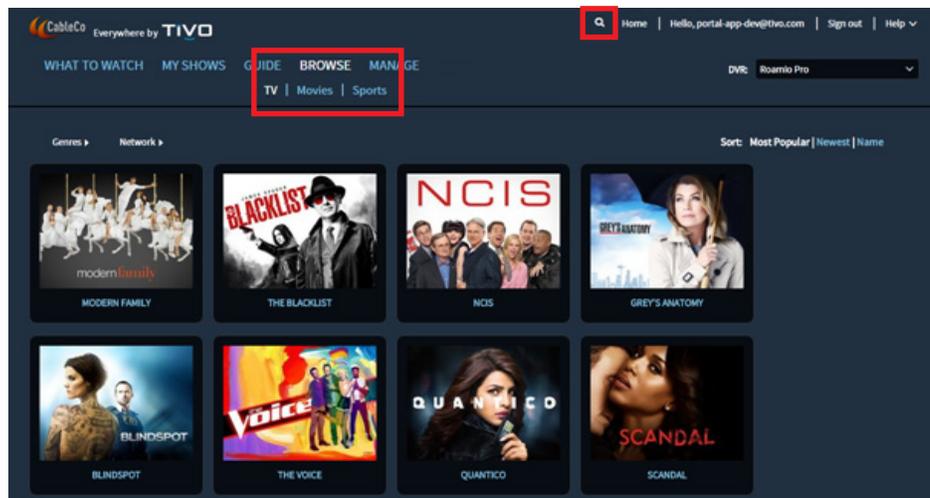
Figure 23–26: Browse TV

To display asset information

When you hover the mouse pointer over the asset you want, the **Info** and **Play** buttons appear (Figure 23–27).
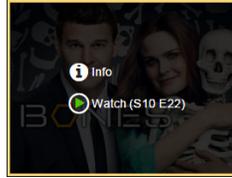
Figure 23–27: Info and Play buttons

- Click the **Play** button to go to the content provider's website where the asset will be played. When attempting playback, you might be required to sign in again.

- Click the **Info** button to explore the show, create a OnePass, add the streaming video, and so on (Figure 23–9).

Figure 23–28: Asset information overlay

The asset information shows additional details on the asset, such as the show title, episode title, first aired date (when available), episode description, genre, and network (when available). If you have previously scheduled a OnePass or recording for this show, that information is displayed. If you have rated this asset, the thumb rating is displayed as well. All available action buttons are displayed.

To sort assets

Browse allows you to choose from the following sort options:

- Most Popular—Displays the shows rated most popular to least popular (default).

  Popularity is based on rankings within the TiVo Service, and is gathered from information such as OnePass settings and other usage data captured by TiVo.

- Newest—Displays the newest show based on the first-aired date.
- Name—Displays the shows in alphabetical order.

You can also filter assets by Genre or Network.

To browse TV by genres

When you choose **Genres** from the **TV** screen, a list of genres appears (Figure 23–29).
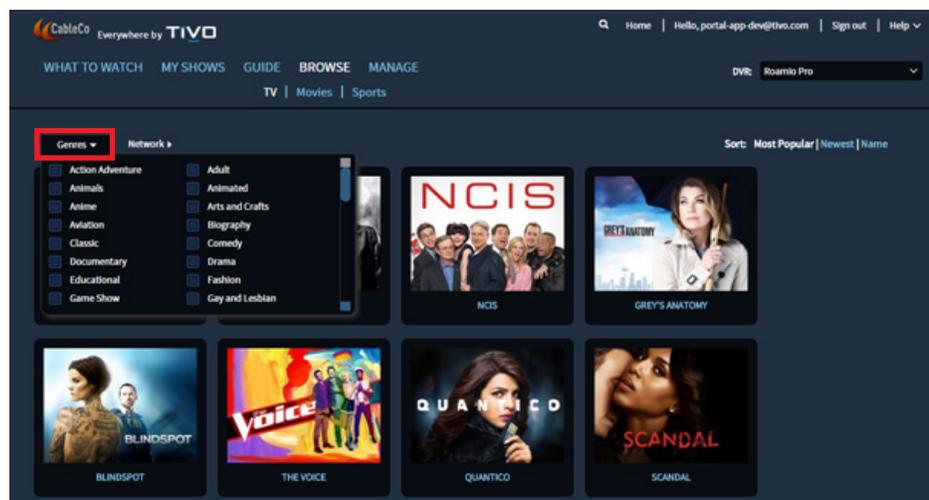
Figure 23–29: Browse TV by genres

1. Scroll through the list and select the genre of interest.

   Posters for shows in the selected genre are displayed.

2. Choose the show you want to view.

To browse TV by network

When you choose **Network** from the **TV** screen, a list of available TV networks appears (Figure 23–30).
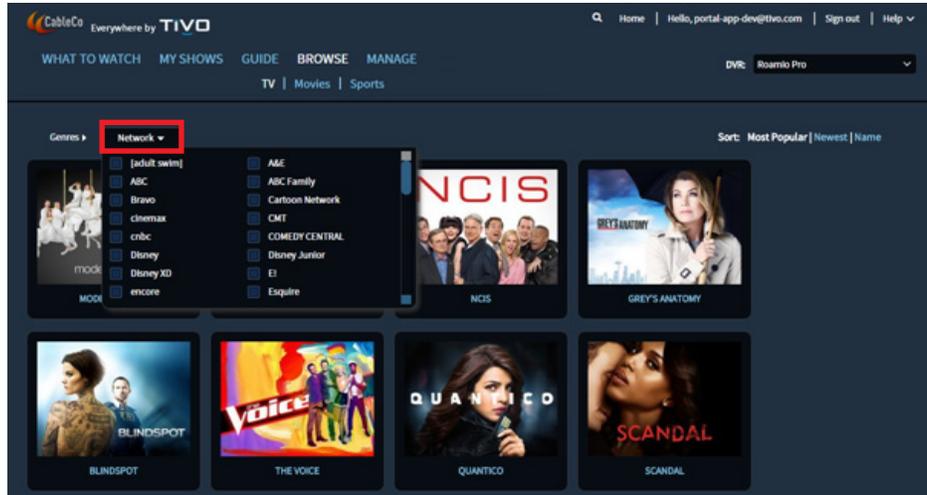
Figure 23–30: Browse TV by network

1. Scroll through the list and select the network name.

    Posters for programs on the selected network are displayed.

2. Choose the show you want to view.

To browse movies

1. To browse for movies, choose **Browse** > **Movies** (Figure 23–31).
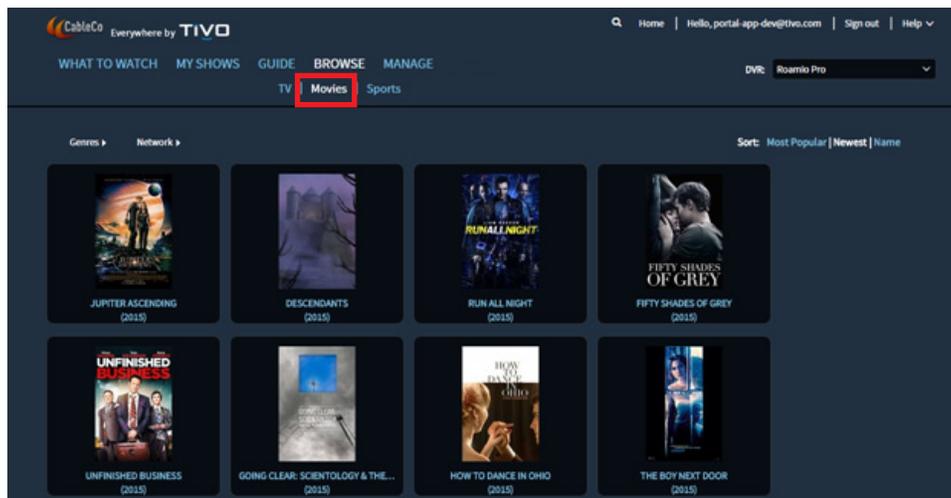
Figure 23–31: Browse Movies

2. Choose the movie you want to view.

You can also filter movies by Genre or Network.

To browse sports

1. To browse for sports programs, choose **Browse** > **Sports** (Figure 23–32).
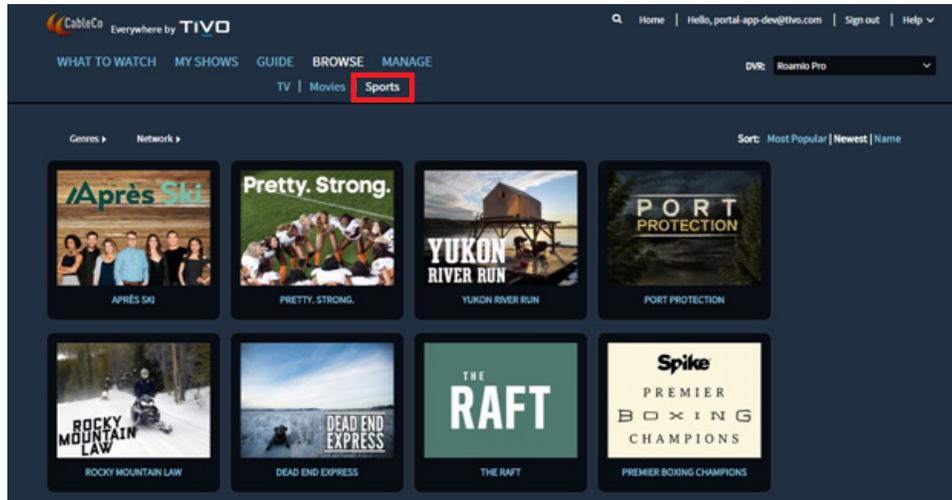
Figure 23–32: Browse Sports

2. Choose the sports program you want to view.

You can also filter sports by Genre or Network.

Manage

You can use the TiVo Web Portal to remotely manage OnePasses and recordings of the selected TiVo DVR. Any changes made in the TiVo Web Portal are immediately reflected on the TiVo DVR.

Status of the selected TiVo DVR is displayed in **Manage > OnePass Manager**, indicating how much storage is available on its hard disk drive.

To change the priority of a OnePass

1. Choose **Manage > OnePass Manager** (Figure 23–33).
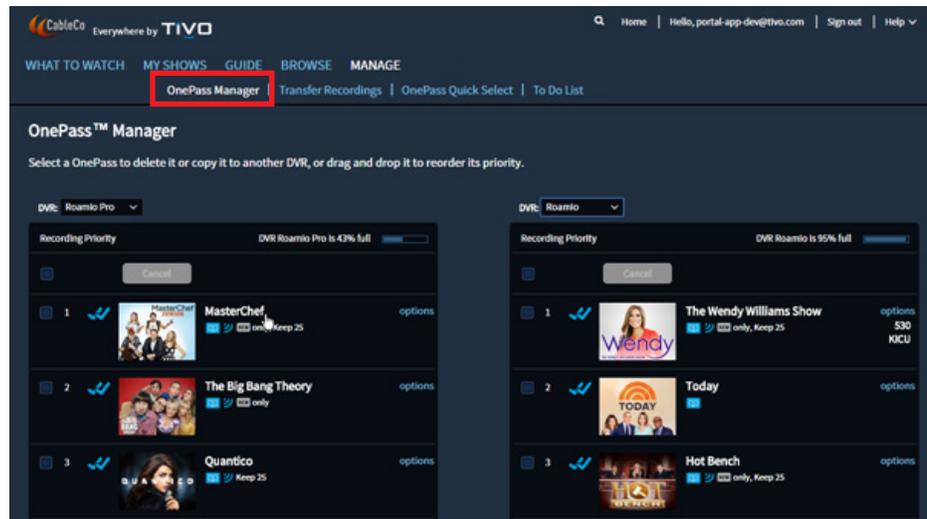
Figure 23–33: OnePass Manager

2. Choose a OnePass to re-prioritize.
3. Drag and drop to change the priority of the OnePass.

To transfer recordings in bulk

1. Choose **Manage > Transfer Recordings** (Figure 23–34).
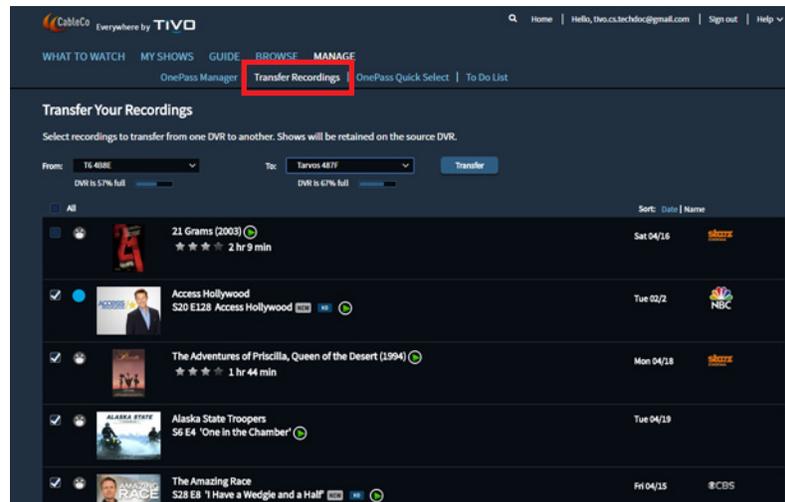
Figure 23–34: Transfer Recordings

2. Choose which TiVo DVR to transfer from.

   A list of recordings on the selected TiVo DVR appears, sorted by the date added or alphabetically.

3. Choose a single recording, multiple recordings, or all recordings to transfer.

4. Choose which TiVo DVR to transfer to.

5. Click **Transfer**.

   A confirmation screen appears to indicate your recordings are being transferred.

   Note: The transfers are limited to recordings that are marked as copy-freely and complete. The following recordings can not be transferred:

   - Recordings currently in progress (highlighted with a red recording icon)
   - Recordings of programs marked as copy-once or copy-never, such as premium content (HBO)

To create OnePasses with one click

1. Choose **Manage > OnePass Quick Select** (Figure 23–35).
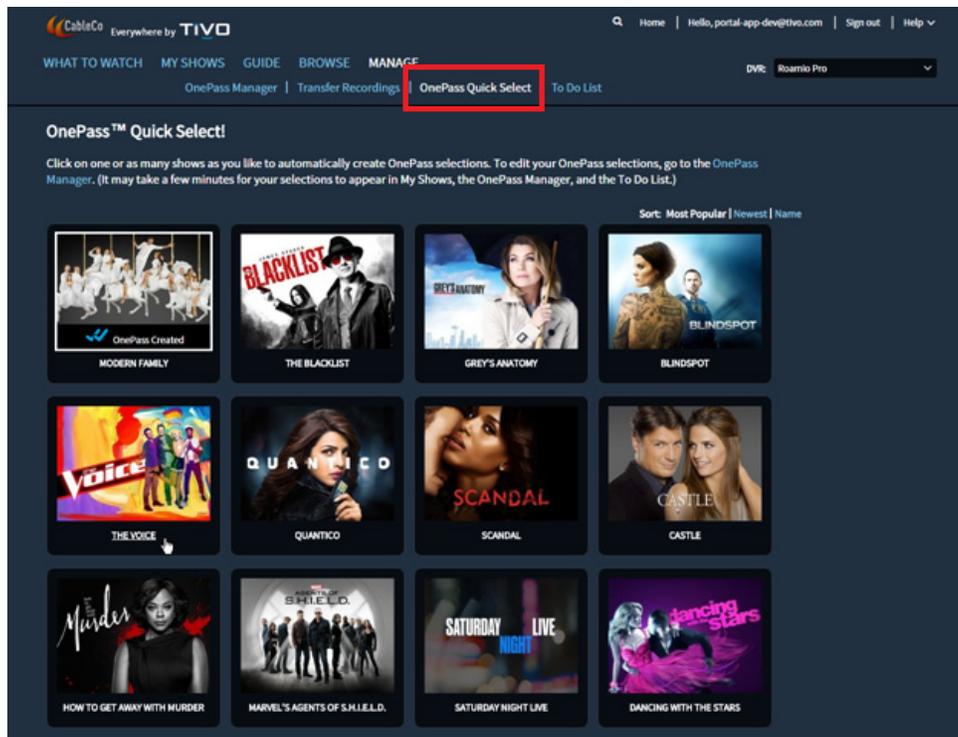
Figure 23–35: OnePass Quick Select

2. Hover over the poster art to create a OnePass with default options.

3. Select the checkbox next to the **Get a OnePass** option.

The OnePass is now created. You can then manage or delete the OnePasses through the OnePass Manager.

To manage the To Do List

1. Choose **Manage > To Do List**.

2. Click **Edit**.

3. Select the checkbox next to the episodes you want to delete.

   The **Delete** button turns red (Figure 23–36).
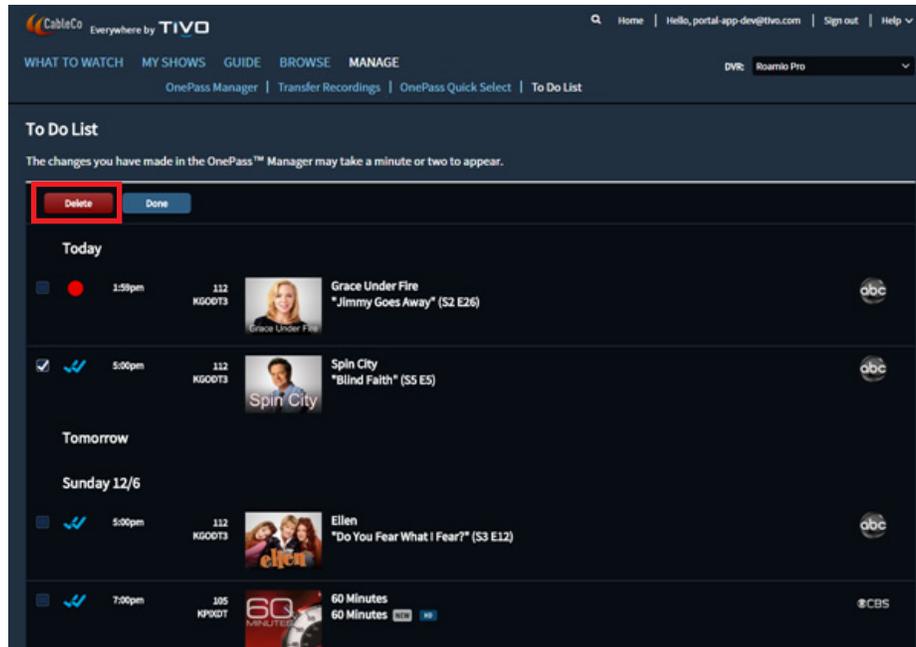
Figure 23–36: To Do List

4. Click **Delete**.

5. In the Cancel Recording screen, click **Yes, cancel this recording** to continue with the deletion.

Search

On every screen of the TiVo Web Portal, the search icon is located in the right corner (Figure 23–37).
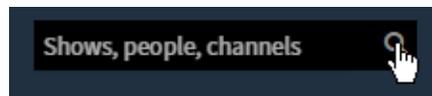
Figure 23–37: Search bar

As you enter information into the search bar, the TiVo Web Portal provides real-time, predictive search results across linear TV and VOD assets. You can search on fields such as show title, episode title, channel name, and person name (actor, director, and so on).

Search results are presented in a list that displays information on each asset that matches the search criteria, including poster art, title, and description. The search criteria is highlighted in each search result. For example, in Figure 23–38, **big** is entered in the search bar. The results of the search include TV shows, movies, and names that contain **big** within the description or title.
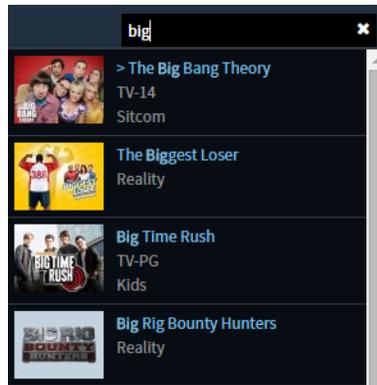
Figure 23–38: Partial search results

If there are no matches, the `No search results for: search_criteria` message appears.

To create a WishList Search

If an episode, series, or movie is not available to record, you can create a WishList Search to find and automatically record the selection when it is available.

1. From either search results or Browse, choose the item that you want to create a WishList Search for.

    The asset information includes the **WishList** button (Figure 23–39).
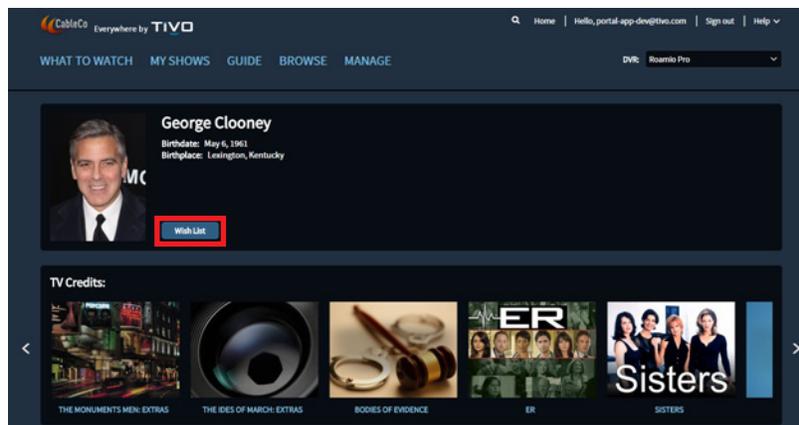
Figure 23–39: WishList Search

2. Click **WishList**.

    A confirmation screen appears.

    The selected WishList Search has been created.

Launching the Hulu embedded video player

The TiVo Web Portal provides an integrated playback experience for the Hulu embedded video player. The Hulu embedded player supports free Hulu content that launches the content directly from **Watch now** rather than linking to the content provider's website. With the embedded Hulu player, you click **Watch now** only once to begin playing an asset. An overlay displays on the screen (Figure 23–40) and the asset begins to play immediately. The overlay includes asset information, such as asset title, season and episode, first aired date, description, genre, and cast and crew information.
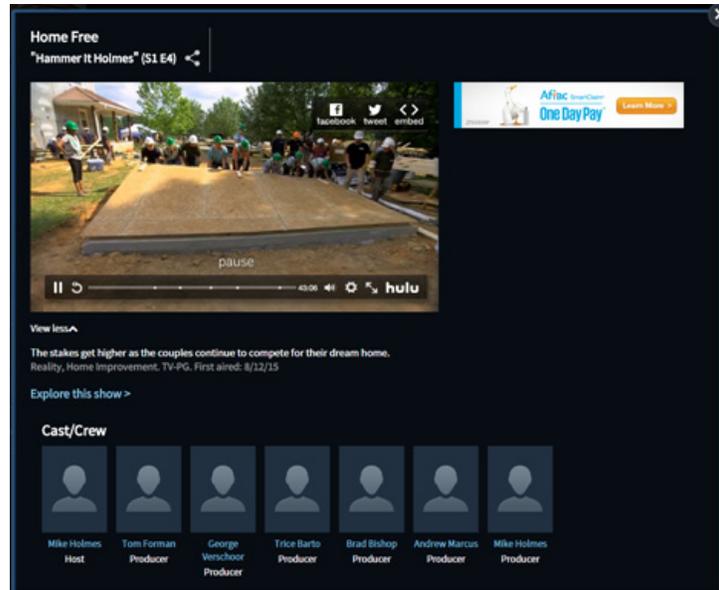
Figure 23–40: Overlay of Hulu embedded player

Hovering over the player causes playback controls to appear at the bottom of the screen. Playback can be paused, restarted, resumed, or viewed in full-screen mode using the controls. Playback can be stopped by closing the overlay.

Chapter 23 — TiVo Web Portal

TiVo Service and Support

Online Account Management

You can manage many aspects of your account online by using My Account on www.tivo.com. These changes are *not* reported back to the MSO billing system, so they don't affect your cable or broadband account record. These changes are applied to the TiVo account and are visible in the TiVo support ticketing system.

This chapter provides an overview of the most-commonly used My Account features.

Managing My Account

To access **My Account**, select it from the My Account tab on www.tivo.com (Figure 24–1).
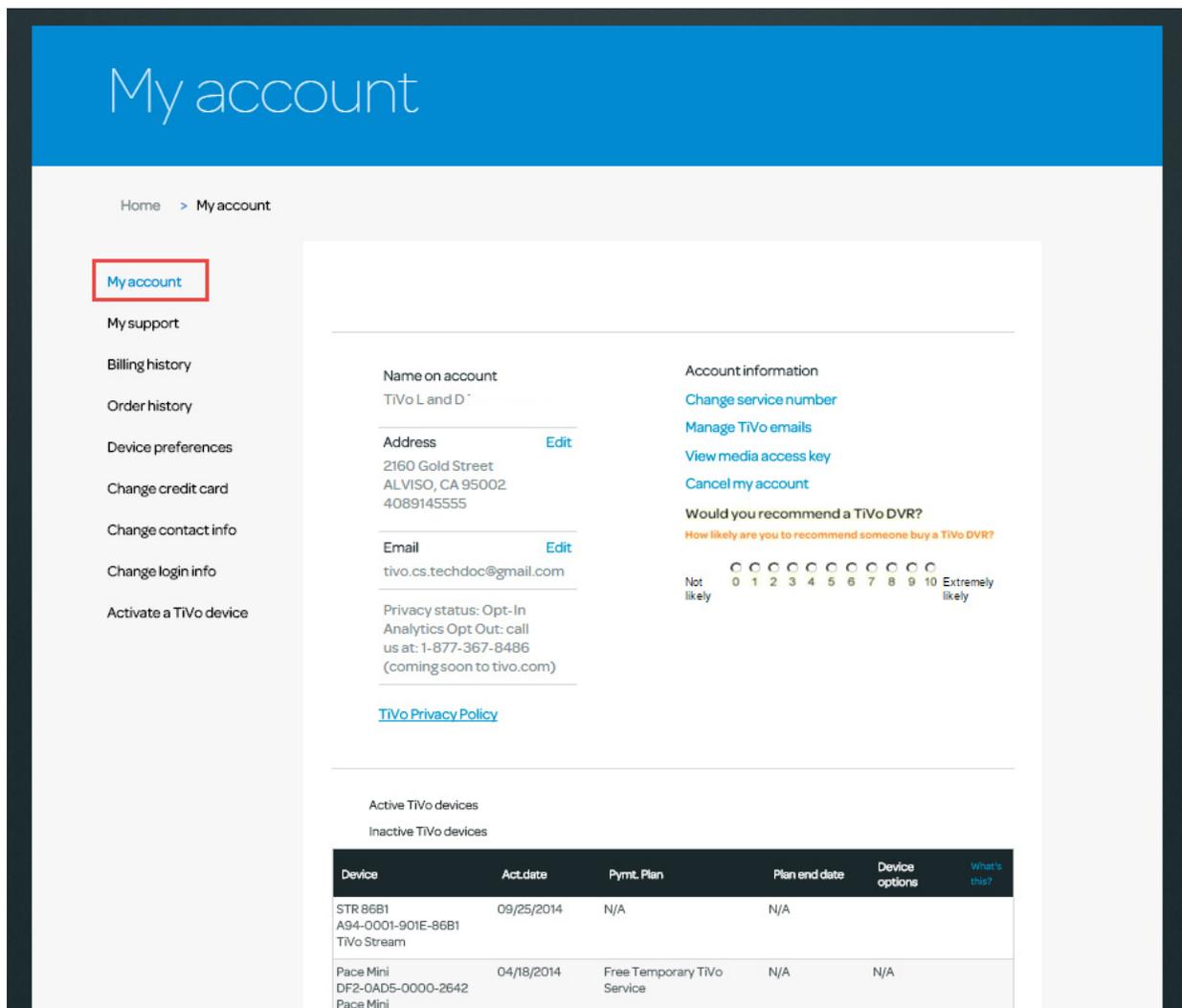
Figure 24–1: My Account home page

To create a new account

1. Go to www.tivo.com/myaccount and click **Register**.

2. Enter the requested information: email address, TiVo Service Number (TSN), ZIP code, and phone number.

    Note: The TSN is a 15-digit alphanumeric found on a label on the back of the TiVo device. You can also locate the TSN by navigating from TiVo Central, choose **Settings & Messages > Account & System Info > System Information**.

3. Confirm receipt of the email (sent to the email address provided on the website).

4. Wait up to one hour and then check your messages on the TiVo device.

    A new message provides the pass phrase.

5. Enter the pass phrase to generate an email with a temporary password.

6. Log in using the temporary password, and then set up a new password for the account.

This process confirms that you own the email address and have access to the TiVo device with the TSN you entered.

To name a TiVo device

To name your TiVo device, or to choose download and transfer settings, choose **Device preferences** in the left navigation pane, and then enter the new information (Figure 24–2).
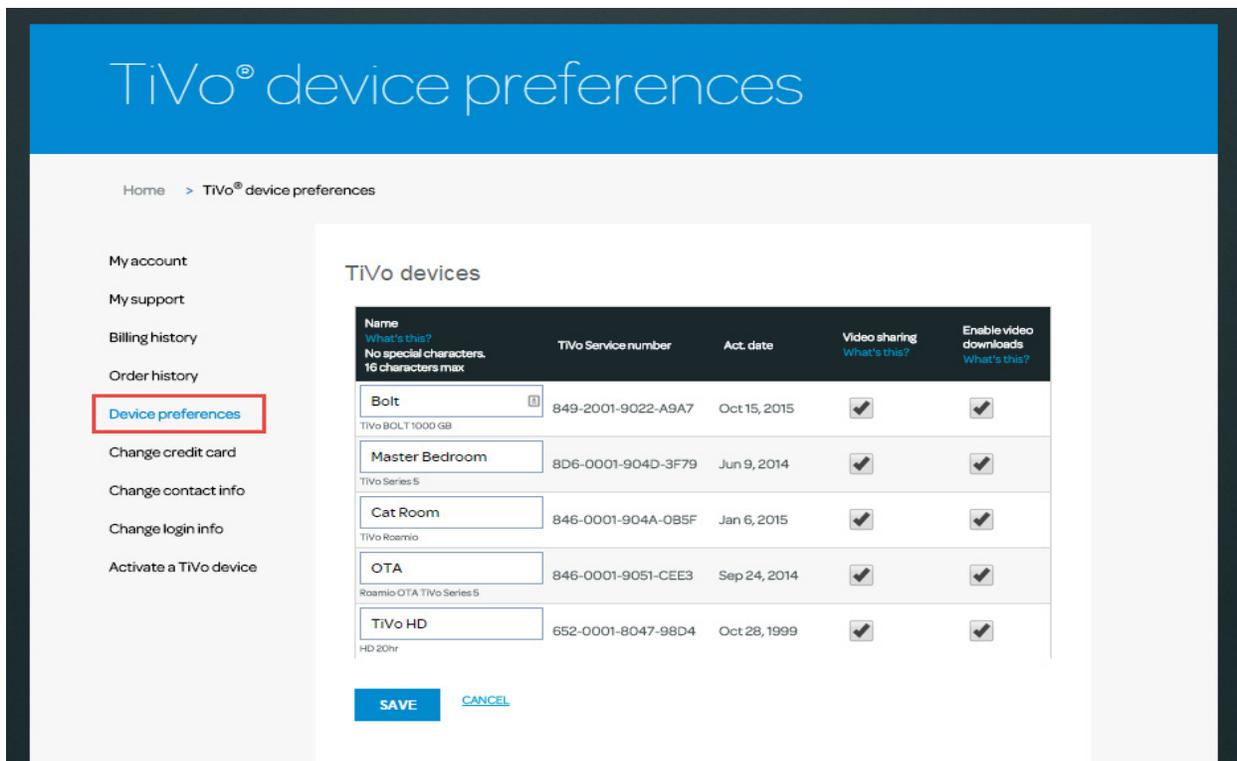
Figure 24–2: TiVo device preferences screen

To change contact information

To change the name, address, or phone number on the TiVo Service account record, choose **Change contact info** in the left navigation pane, and then enter the new information (Figure 24–3).

Figure 24–3: Change contact information screen

To change your password or email address

1. Log in using your authorized email address and a password.

2. Choose **Change login info** in the left navigation pane, and then enter the new information (Figure 24–4).
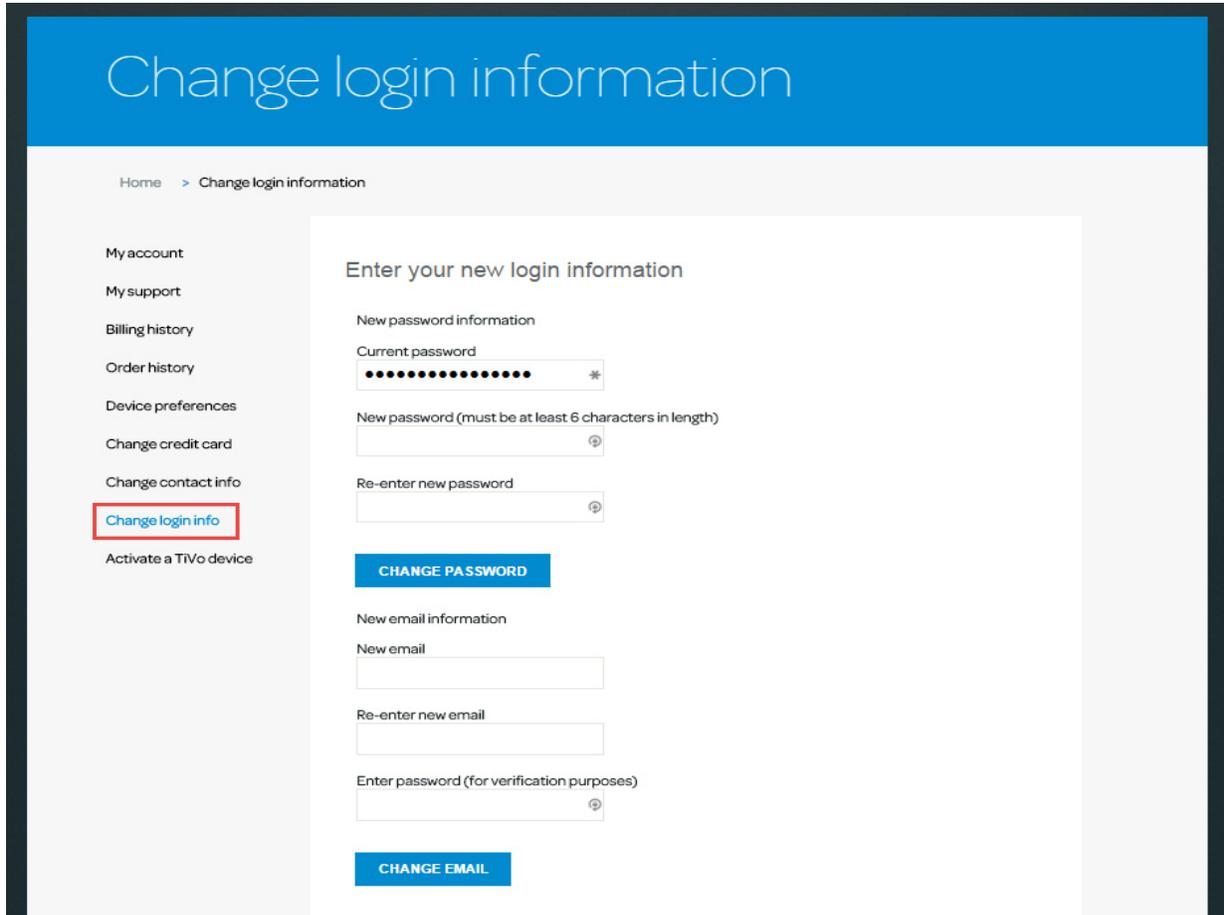
Figure 24–4: Change login information screen

To set up mobile scheduling

If you are on the go, you can use your tablet or your browser-enabled phone to schedule recordings using a simplified interface; see *TiVo App* on page 229.

Working with the TiVo Service 25

This chapter describes the basics of the TiVo Service. This chapter covers the following topics:

The TiVo Service lifecycle

The following terms are used when discussing the TiVo Service lifecycle:

- Staging—A process that happens at the MSO site, before the TiVo device is sent to the subscriber site.
- Activation—The process of placing the TiVo device into service at the subscriber site.
- Service states—States, represented by numbers, that govern whether the TiVo device is set up and can be used, whether the account is in good standing, and whether the TiVo device is in an unready state, such as new, staging, or testing.

The TiVo Service enables the connection between TiVo and the TiVo devices in the field:

- Daily service connection—The TiVo device contacts TiVo (typically at night) and downloads the latest Program Guide Data (PGD) including show titles, descriptions, and so on. It also downloads software updates, updates the clock time, and performs other housekeeping tasks. The information sent and received during the daily service connection can be used to troubleshoot problems.
- Notifications for transfers of online scheduling requests.
- Data transfers for Discovery Bar, browse, collections, and menu items for special features such as Video on Demand (VOD).

Preparing a TiVo device for another subscriber

If you are preparing a TiVo device that has already been with one subscriber so that another subscriber can receive it, make sure to clear and delete everything. From TiVo Central, choose **Settings & Messages > Help > Restart or Reset > Clear & Delete Everything**. This clears the Parental Controls PIN, passwords to any subscription services (such as Pandora), and any information revealed by a previous subscriber's recording choices.

Service states

The service states described in Table 25–1 are a subset of retail TiVo Service states. For any service state number not listed, contact TiVo Customer Support.

Table 25–1: Service states

Service state number	Account standing	Description	Service state trigger
3	Account in good standing	Indicates the device has been correctly activated. The DVR is assigned to a subscriber and has full functionality.	• An activation following installation. • A reinstatement of service following a non-payment downgrade. • A reinstatement of service following a disconnection.
7	Suspended	Indicates a provisioning issue or expiration of the Grace period (service state 22). The subscriber sees numerous prompts to activate service. The device does not have full functionality and displays a message that prompts the subscriber to activate service.	Automatically given to a device by the TiVo Service following the grace period expiration.
8	Canceled	The device no longer receives PGD and most TiVo functionality is disabled. The subscriber sees numerous prompts to activate service.	• Subscriber disconnects voluntarily. • Device is suspended due to non-payment of bill.
22	Grace period	The TiVo device has been staged and all functionality can be tested. Initial service state after manufacturing. The device is granted a grace period that the MSO and TiVo agree on. Alternatively, the MSO can set the grace period. During the grace period, the device functions as a provisioned device in service state 3. However, after expiration of the grace period, the device goes into service state 7 (Suspended). Continued on next page.	The initial connection to the TiVo Service. This service state is sent when a reset is issued by the device provisioning engine, indicating that the device is being provisioned by the MSO. The grace period duration is managed by the TiVo Service and not the TiVo device itself.

Table 25–1: Service states (continued)

Service state number	Account standing	Description	Service state trigger
22	Grace period	The TiVo Service sends an automated pre-TiVoCentral message (PTCM) that the device is in Grace period and service will be discontinued in a certain number of days. Each MSO can enable or disable the message, and each MSO can customize the message content (which can include MSO contact information).	

Figure 25–5 illustrates the complete lifecycle of the service states.
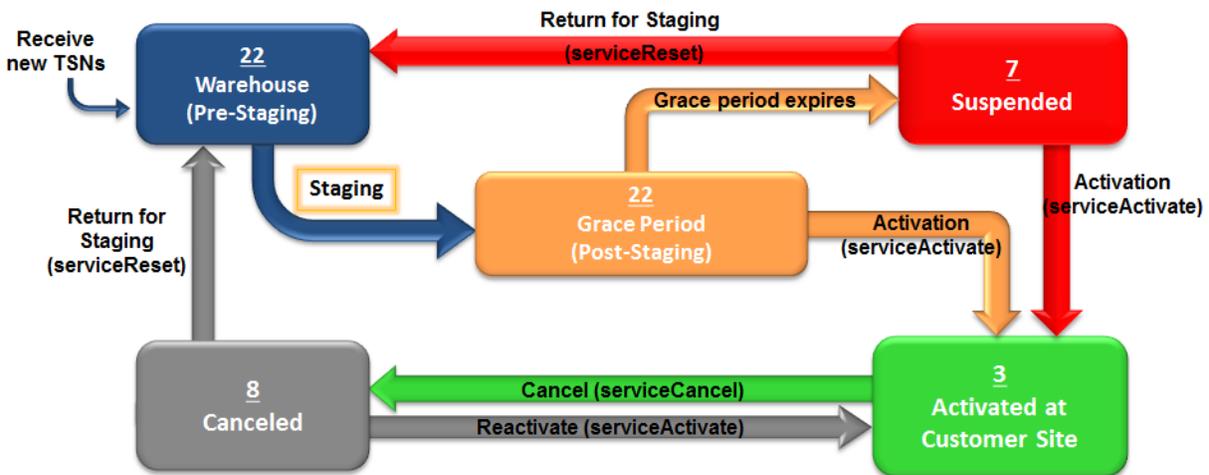
Figure 25–5: Service State Lifecycle

Functionality associated with service states

This section describes the features that are available and not available in each service state and other useful information about the service states.

Service state functionality with the Program Guide Data (PGD)

Table 25–2 lists the functionality available in each service state, and the impact if the network is not available but the PGD is available.

Table 25–2: Service state functionality with the PGD

Function	3 (Active)	7 (Suspended)	8 (Canceled)	22 (Grace period)	Impact if network is not available
Playback recordings	Yes	Yes	Yes	Yes	No impact.
Watch Live TV	Yes	Yes	Yes	Yes	No impact.
Browse VOD	Yes	No	No	Yes	No access to VOD.
Purchase new VOD asset	Yes	No	No	Yes	No access to VOD.
View previously purchased VOD asset within purchase window	Yes	No	No	Yes	No access to VOD.
Stream videos	Yes	No	No	Yes	Cannot stream.
PGD refreshed	Yes	No	No	Yes	No PGD refresh.
Access OnePass Manager	Yes	No	No	Yes	No impact.
Discovery Bar	Yes	No	No	Yes	No Discovery Bar.
Launch interactive applications	Yes	No	No	Yes	Interactive applications not available.
View TiVo Help application	Yes	Yes	Yes	Yes	Help application not available.

Service state functionality without the Program Guide Data (PGD)

Table 25–3 lists the functionality available in each service state, and the impact if neither the network nor the PGD are available.

Table 25–3: Service state functionality without the PGD

Function	3 (Active)	7 (Suspended)	8 (Canceled)	22 (Grace period)	Impact if network is not available or no PGD
View TV Guide (PGD)	Yes	Yes	Yes	Yes	If the network is not available, PGD decreases until nothing remains. At that time, a generic PGD is shown with no program information.
Search and Browse (all types)	Yes	No	No	Yes	If the network is not available or there is no PGD, Search and Browse is not available. If there is no PGD, a message appears.
Record from the Guide, WishList, or Live TV	Yes	No	No	Yes	No impact other than reduced PGD. If there is no PGD, there is no recording capability.
Rate content	Yes	No	No	Yes	If the network is not available, rating data is not available, and new ratings are not captured.
WishList functions	Yes	No	No	Yes	If there is no PGD, a message appears and WishList doesn't work.
TiVo Suggestions	Yes	No	No	Yes	If there is no PGD, a message appears instead of TiVo Suggestions.

Managing service states

Account management is handled through the IT Device Web Service API. Documentation about the API has been provided to your application development team. Consult them to learn about the web portal and the features they built into the portal.

This section contains additional information about the API that can be integrated into your process for provisioning TiVo devices. Most of these tools deal with changing the service state of the device.

TiVo provides web portal access for the following features:

- *To find the current service state* on page 320
- *To set a device to service state 3* on page 321
- *To combine accounts* on page 321
- *To reset a device back to service state 22* on page 321

To find the current service state

On the System Information screen, the TiVo device lists its current service state in the TiVo Service Account Status field. From TiVo Central, choose **Settings & Messages > Account & System Info > System Information** (Figure 25–6).
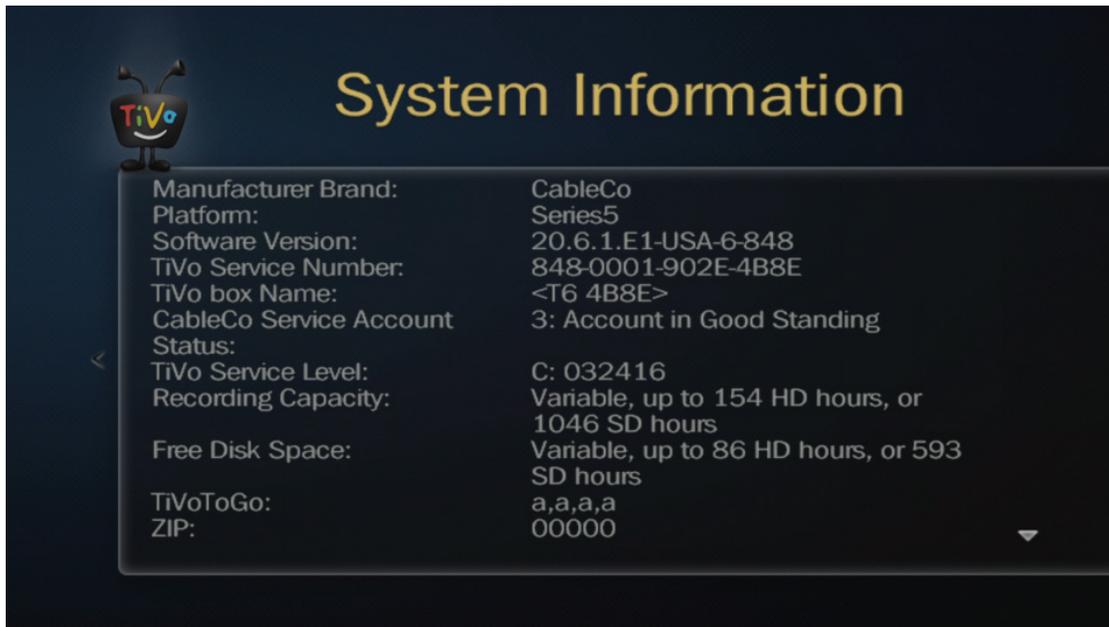
Figure 25–6: System Information screen

For details about the System Information fields, see *System information* on page 221.

To set a device to service state 3

When a TiVo device is shipped to the warehouse, it is in service state 22 (Grace period). This grace period allows the warehouse staff to pre-stage and test the device (particularly VOD) before it is distributed to a subscriber.

When the TiVo device is added to the subscriber's account, use the Activation Web Tool to change the device to service state 3 (Account in good standing).

To combine accounts

MSO-TiVo devices and retail TiVo devices must be on the same TiVo account before they can interact with each other. This is because devices on the same account have the same Sharing group and Media Access Key (MAK), which are essential for sharing shows using Multi-Room Viewing, Multi-Room Streaming, and Live TV Streaming. For more information about these features, see *Multi-Room Features* on page 189.

- When you are activating a TiVo device and you provide an email address that matches an existing retail account, the accounts are automatically combined, and the subscriber can transfer programs between TiVo DVRs.

- When activating additional TiVo devices for the same subscriber, you must supply the same subscriber name and email address that were supplied when you activated the first TiVo device.

  The customer identifier depends on the billing system and how the web service is configured to interact with the TiVo billing system. If the subscriber is not sure, ask the web service developer.

- If an email address was not supplied during the activation of a TiVo device, and the subscriber wants to combine this account with a TiVo account, contact TiVo Customer Support to have the two accounts merged or deduped.

- TiVo agents can merge one TiVo retail account with one TiVo account. The MSO must combine multiple MSO accounts, if needed, because TiVo agents do not have access to an MSO's billing system.

To reset a device back to service state 22

If the subscriber decides to cancel the TiVo Service (or the MSO decides to cancel it), a technician uses the Cancel Tool to change the device to service state 8 (Canceled).

In service state 8, the subscriber has no service and cannot do anything with the TiVo device.

When the TiVo device is received by the MSO, the Reset Tool can be used to change the service state back to 22 (Grace period). The device is then ready to be restaged for the next subscriber.

Resetting a forgotten PIN

TiVo subscribers who have forgotten their PIN need to contact TiVo Customer Support for information on how to reset it.

MSOs should use a `resetPin` API call, which is defined in the *TiVo Provisioning Web Services Guide*. The operation provides a temporary PIN for unlocking either Parental Controls or Purchase Controls. The new PIN is valid until 12:00 A.M. GMT (4:00 P.M. PST). If the PIN can't be entered before 4:00 P.M. PST, the subscriber should call back later to get another PIN.

Note: This is not a true PIN reset: if the subscriber remembers his or her original PIN, it will work.

Troubleshooting issues with installation and activation

Table 25–4 describes some common scenarios that can occur during installation and activation, and how to troubleshoot or resolve them.

Table 25–4: Common installation and activation troubleshooting issues

Scenario	Subscriber reports	State reported by TiVo Service	State reported by TiVo device	Resolution
TiVo device fails to call back. Installer can't get past Guided Setup.	Device is stuck in setup.	22	Can't access screens	Verify TiVo Service is operational; exchange the device.
TiVo device fails to call back. Installer performs successful provisioning.	Subscriber sees nothing unusual until PGD runs low.	3	22	Troubleshoot for networking issue, then force connection to the TiVo Service so the device can pick up its new service state.
Provisioning request failed or did not occur. Installer leaves before connection is complete, and the provisioning request fails.	Subscriber sees nothing unusual until PGD runs low.	22	22	Try to set to service state 3 with another provisioning request.

Table 25–4: Common installation and activation troubleshooting issues (continued)

Scenario	Subscriber reports	State reported by TiVo Service	State reported by TiVo device	Resolution
Provisioning request failed or did not occur. API call never succeeds and the countdown expires.	Subscriber sees Suspended message.	7	7	Try to set to service state 3 with another provisioning request.
TiVo device moves to Canceled state because of non-payment or subscriber disconnect.	Subscriber sees Canceled message.	8	8	Have subscriber pay bill or activate TiVo device. Reset to service state 3.
Subscriber calls after paying bill because they still see Canceled message.	Subscriber sees Canceled message.	3	8	Troubleshoot for networking issue, then force connection so device can pick up its new service state.

Diagnostics

This chapter provides a set of diagnostic tools, tips, and information to help you in diagnosing and resolving problems with a TiVo device.

This chapter covers the following topics:

- *TiVo box diagnostics* on page 325
- *CAL diagnostics* on page 331
- *Checking the signal strength* on page 343
- *Network diagnostics* on page 343
- *Checking the daily TiVo Service connection* on page 347
- *Checking the CableCARD (MMI)* on page 347
- *Checking the tuning adapter (MMI)* on page 348

Additional useful information can be found in *System information* on page 221, *Troubleshooting* on page 349, and the TiVo Support website.

TiVo box diagnostics

TiVo box diagnostics information can be used to confirm the tuner state, to diagnose signal strength issues, to see what channel the tuner is tuned to, and more.

From TiVo Central, choose **Settings & Messages > Account & System Info > TiVo box Diagnostics** (Figure 26–1).
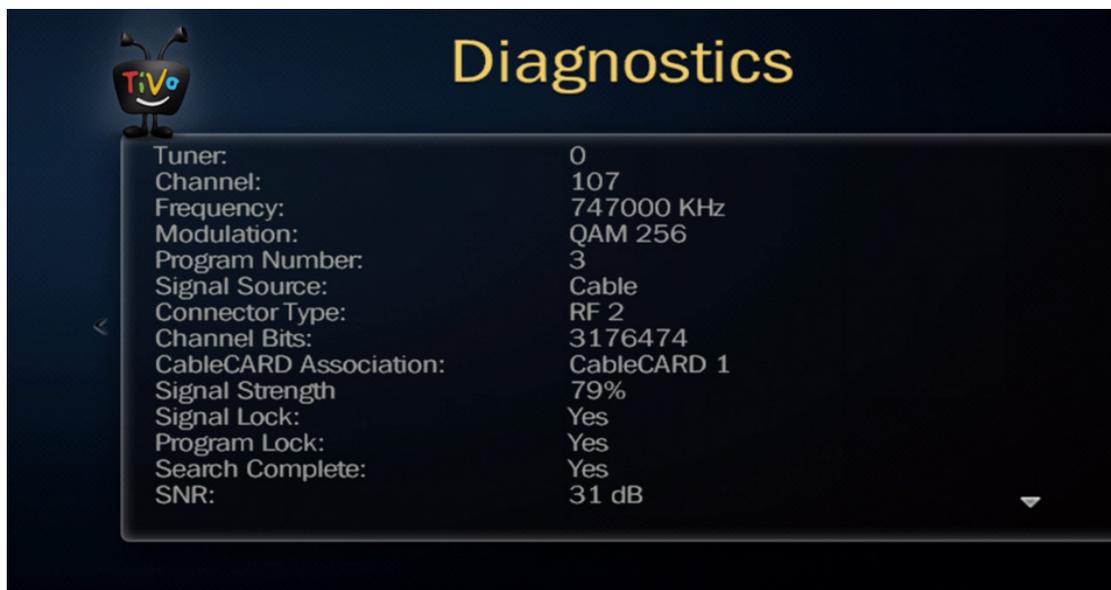
Figure 26–1: TiVo box Diagnostics screen

TiVo box diagnostics

The read-only TiVo box diagnostic information is displayed on multiple screens. Use the up and down arrows to scroll through the fields.

- Tuner—Indicates which tuner you are viewing. The first page shows diagnostics for Tuner 0, the next page shows diagnostics for Tuner 1, and so on.

- Channel—The currently-selected channel.

- Frequency—The current frequency in KHz.

- Modulation—The current modulation, typically QAM 256 or QAM 64.

- Program Number—The currently-selected program.

- Signal Source—Always Cable.

- Connector Type—Values include: RF, RF 2, Composite, Composite 2, SVideo, SVideo 2, Firewire, SCART, or Unknown.

- Channel Bits—A 32-bit field, where each bit is described in the `TvNpkChannelBit` field. These bits describe various characteristics of the channel, such as whether it is a Favorite, whether TiVo discovered it, whether it's digital, and so on. This is information shared between the video distribution network porting kit (NPK) and the users of the Unified Channel List (UCL), and is exposed here for triage purposes.

- CableCARD Association—CableCARD identifier. Always zero on current generation devices.

- Signal Strength—The signal strength of your antenna/digital cable channels. See the TiVo Support website for details about minimum and maximum values.

- Signal Lock—Yes or No. Yes indicates a signal for the channel has been detected.

- Program Lock—Yes or No. Yes indicates the signal for the channel has been locked.

- Search Complete—Yes or No. Yes indicates the TiVo device has tried to tune every possible frequency variation at least once. This is applicable where multiple channel plans and modulations are available to satisfy a given request.

- SNR (Signal Noise Ratio)—A higher SNR reading indicates that the video signal is stronger relative to the noise level on the line. If the SNR value is lower than the minimum, test and improve the signal on the cable line. For details about minimum and maximum values, see the TiVo Support website.

- RS Uncorrected—A value in this field indicates there are signal errors that the TiVo device was unable to correct. This value resets to 0 when the channel is changed.

- RS Corrected—This value indicates there were errors but the TiVo device was able to correct them. An RS Corrected value that is increasing indicates the signal is problematic. This value resets to 0 when the channel is changed.

- RC State—Value should always be Available.

- Current Tuning Status—Value is typically Tuned: Success. The other possible value is Not Tuned, which indicates the tuner is not on a valid channel.

- Tune State—In Progress indicates that the tuner is currently tuned to a channel. Other options are Not Tuned or Unknown.

- Last Used Channel Plan—Only applies to analog tuning. This information comes from the CableCARD and is not generally used in troubleshooting.

- CCI Byte—Determines the level of copy protection on the current channel.
    - No copy protection is 0x00 (copy-freely). You can transfer shows to your computer using TiVo Desktop Plus or use the Multi-Room Viewing feature to transfer them to another TiVo DVR.
    - Other possible values include:
        - Copy no more (0x01) and copy-once (0x02)—Treated the same by the TiVo software. You cannot use Multi-Room Viewing but you can use the Multi-Room Streaming feature to view shows on another TiVo device, because no copy is made on the target device.
        - Copy-never (0x03)—Also known as NC90, records the show to the TiVo device but automatically erases it after 90 minutes. This level of copy protection is only appropriate for Pay Per View.
- Time Since Tune Start—Elapsed time in seconds since the tuner was tuned to the current channel.
- Time Since Signal Lock—Elapsed time in seconds since the tuner was signal locked on the current channel.
- PCR PID—Program Clock Reference Packet ID (PID). This ID provides a highly accurate time base that is used to synchronize audio and video streams.
- Video PID—Indicates where PID in the stream the video is available for the show on the current channel.
- Available Audio PIDs—Indicates where PID in the stream the audio is available for the show on the current channel.
- Last Selected Audio PID—The PID for the audio stream last used.
- Resolution Status—TiVo internal use. Applies to Switched Digital Video (SDV) channels. If the feature for native SDV support has been enabled, you might see these additional values.
    - Not Required—Not tuned to an SDV channel.
    - Required—Need to contact the SDV server before tuning can complete.
    - Required (MC Tuning Active)—Need to contact the SDV server but was able to acquire tuning parameters from the Mini Carousel.
    - Response Pending—SDV server has been messaged and is awaiting response.
    - Success—SDV server has indicated that the channel is available and has provided tuning parameters.
    - Channel not available—SDV server has indicated that the channel is not available at this time.
    - Channel not available (Safe)—SDV server has indicated that the channel is not available at this time and has provided tuning parameters for a safe channel.
    - Channel not defined (Tuning Adapters only)—The requested channel is not defined.
    - Illegal channel number (Tuning Adapters only)—The requested channel is not defined.
    - Invalid LTSID (Tuning Adapters only)—Initialization error.
    - Invalid Signature (Tuning Adapters only)—Initialization error.

- Unknown `SourceId` Params (Tuning Adapters only)—The requested `SourceId` is not defined.
  - Invalid `TunerUseStatus` (Tuning Adapters only)—Initialization error.
- Resolution Time—The time of the last message from the Switched Digital Video (SDV) server or Tuning Adapter (TA).
- TA/SDV Message—When connected to a Tuning Adapter (TA) or a Switched Digital Video (SDV) server, the device can generate informational messages to be displayed locally. In this field, a description of how the NPK reacted to the most recent message appears:
  - Displayed Message
  - Responded EAS Active (Emergency Alert System)
  - Responded In Standby
  - Responded Not Visible
  - Responded No Reason
  - Responded with auto-key press
- TA/SDV Time—Bound to the TA/SDV Message field, this is the time stamp shown when the NPK responded to the most recent message.
- Pending Tune Status—No tune pending or Tune pending. No tune pending indicates the tuner is staying on the current channel. An error condition occurs when this flashes between No tune pending and Tune pending.
- CableCARD—Indicates which CableCARD you are viewing, as older devices may contain multiple CableCARDs.
- Module State—The current state, typically Operating Normally.
- Module Mode—S-Mode or M-Mode. S-Mode is for early devices that only decode one stream. M-Mode devices decode multiple streams.
- Decrypt RecordChannels—The outer number is the number of programs that can be decrypted concurrently. The inner number is which RecordChannels are currently associated with the CableCARD, and have programs actively decoding.
- Channel List Received—Yes or No. Yes indicates the channel list has been received.
- VCT ID—Defines what Virtual Channel Table (VCT) the CableCARD is to pass to the TiVo box. The CableCARD can receive multiple VCTs, so this defines which one is used.
- OOB Signal Lock—Yes or No. Yes indicates the Out of Band (OOB) signal has locked. OOB is used to communicate with devices like CableCARDs and Tuning Adapters. OOB is bi-directional (that is, the non-video data comes from the CableCo headend to the TiVo device, and from the TiVo device to the CableCo headend).
- OOB Frequency—The frequency in KHz used to communicate data to the CableCARD, typically 75.250 MHz.
- OOB Data Rate—The data rate (Kbps) used for OOB communication.
- OOB Spectral Inversion—On or Off. This setting affects the modulation of the OOB signal.
- OOB SNR—The Signal Noise Ratio of the OOB signal. A higher SNR reading indicates that the signal is stronger relative to the noise level on the line.

- Time Since OOB Tune Start—Elapsed time in seconds since the CableCARD was tuned to the OOB frequency.

- Firmware Upgrade—Upgrading or Not Upgrading. An indication of the current state of the CableCARD.

- Card Serial Number (H)—The high bits of the CableCARD serial number.

- Card Serial Number (L)—The low bits of the CableCARD serial number.

- Manufacturer ID—CableCARD manufacturer:
  - 0: Motorola
  - 1: Cisco
  - 2: NDS
  - 3: Conax
  - 4: Nagravision
  - 5-255: Reserved for future use

- Firmware Version—The CableCARD firmware version.

- Host ID—How the CableCARD identifies the host. It is derived from data provided to the CableCARD by the host. Useful in pairing.

- Unit Address—How the CableCARD is addressed from the CableCo headend on some systems. Not applicable for all cards. Useful in pairing.

- CableCARD ID—How the CableCARD identifies itself. Useful in pairing.

- Data ID—A value calculated by the CableCARD that represents the currently active host/CableCARD pair. Useful in pairing.

- MAC Address—How the CableCARD is addressed from the CableCo headend on some systems. Not applicable for all cards. Useful in pairing.

- Paired—Yes or No. Yes indicates the CableCARD is paired with the host.

- Network Controller ID—The ID of the Network Controller that the CableCARD talks to.

- Network VCT ID—The VCT used to talk to the Network Controller. The TiVo box uses the Network VCT ID and the Network Controller ID values to connect to the VOD server.

- Switched Digital Video—If the feature for native SDV support has been enabled, you might see these additional values:
  - Tuning Adapter—External tuning adapter in use (retail only). Most of the remaining fields are blank.
  - Internal SDV-MC Tuning—The device has not established a connection to the SDV server.
  - Internal SDV-CCP Tuning—The device has registered with the SDV server.

- Connection State—Details on the attempt to connect with the Tuning Adapter or the SDV server.

- Registration Time—The time when the TA/SDV server registration is completed.

- App Flags—All three (Sdv:, SdvHttp:, and Link:) should be On.

- SDV Configuration Received—Yes or No. Yes if SDV Configuration information has been provided by the service.

- Marker Frequency—The frequency in KHz used to tag channels as SDV channels.
- Homing Frequencies—The frequencies in KHz from which the device attempts to acquire the Mini Carousel.
- Channel List Received—Yes or No. Yes if a channel list has been provided by an external tuning adapter. If the Channel List is provided by the CableCARD, then any channel whose frequency matches the marker Frequency (typically 999Mhz) is considered an SDV channel. The total number of channels with that marker frequency relative to the total number of channels defined by the CableCARD is displayed as "*n* SDV channels out of *x*."
- Currently Homing—Yes or No. Yes if the device is currently trying to collect a Mini Carousel.
- Mini Carousel Received—Yes or No. Yes if a Mini Carousel has ever been collected.
- SDV Server IP and Port—When to contact the SDV server from the Mini Carousel.
- Service Group Id—The Service Group from the Mini Carousel.
- Link Status—The status of the VPN connection back to the SDV server. Up indicates the VPN has been established.

Any additional fields are CableCARD-specific values that are set up by your development team.

Table 26–5 shows sample SDV diagnostic fields and values.

Table 26–5: SDV diagnostic fields and values

Field	SDV Not Active	TA Attached	Internal SDV-MC	Internal SDV-CCP
Switch Digital Video	Tuning Adapter	Tuning Adapter	Internal SDV-MC Tuning	Internal SDV-CCP Tuning
Connection State	Not Connected	Ready	Registering	Registered
Registration Time	[blank]	[blank]	[blank]	04/30/2015 11:17:07
App Flag: Sdv, SdvHttp, Link	Off, Off, Off	Off, Off, Off	Off, Off, On	On, On, On
SDV Configuration Received	No	No	Yes	Yes
Marker Frequency	[blank]	[blank]	435000 KHz	435000 KHz
Homing Frequencies	[blank]	[blank]	513000KHz-QAM 256	513000KHz-QAM 256
Channel List Received	No	Yes	12 SDV channels out of 561	12 SDV channels out of 561
Currently Hosting	[blank]	[blank]	No	No
Mini Carousel Received	[blank]	[blank]	04/29/2015 14:40:11	04/29/2015 14:40:11

Table 26–5: SDV diagnostic fields and values (continued)

Field	SDV Not Active	TA Attached	Internal SDV-MC	Internal SDV-CCP
SDV Server IP and Port	[blank]	[blank]	192.168.0.311111	192.168.0.311111
Service Group Id	[blank]	[blank]	1	1
Link Status	[blank]	[blank]	Up, tap0	Up, tap0

CAL diagnostics

The Conditional Access Menu (Figure 26–2) can be used to check the status of the Conditional Access Library (CAL) software on the set-top box, to display the in-band data, and to access other information that might be needed to resolve possible activation issues.

From TiVo Central, choose **Settings & Messages > Account & System Info > Conditional Access Menu**.
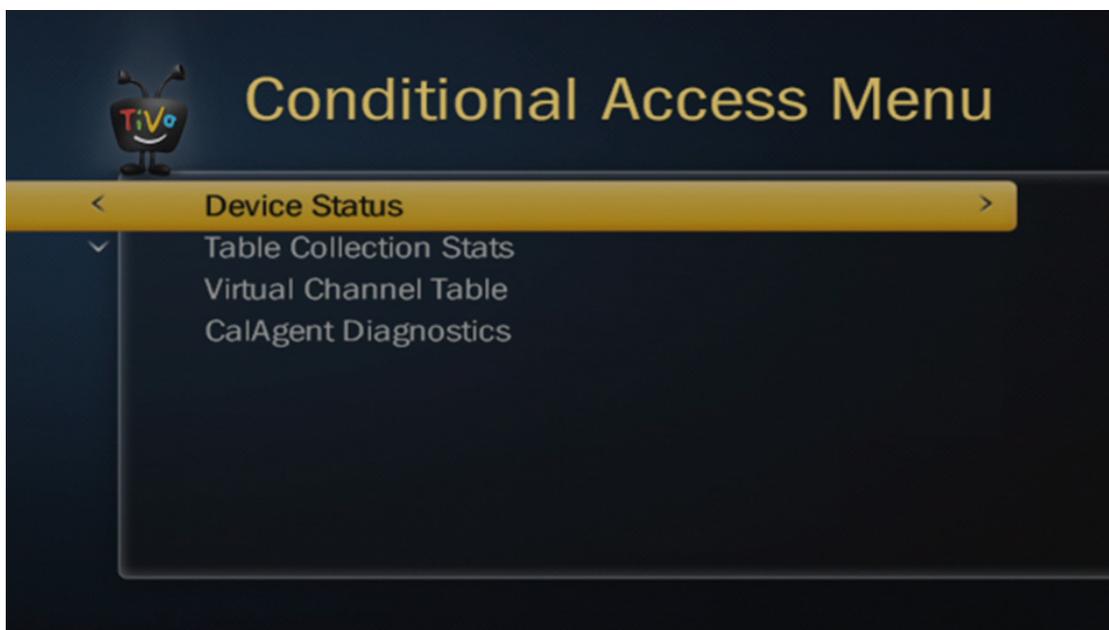
Figure 26–2: Conditional Access Menu screen

The first three options are available to anyone with access to the set-top box. The last option, CalAgent Diagnostics, is intended for installers only. To access, press **Thumbs Down**, **Rewind**, **Fast Forward**, **Thumbs Up** on the remote control.

The following sections describe the CAL diagnostics available on the TiVo-Evolution IP Hybrid set-top box:

- *Device Status* on page 332
- *Table Collection Stats* on page 333

CAL diagnostics

Device Status

The Device Status screen (Figure 26–3) indicates the status of the CAL software on the set-top box.
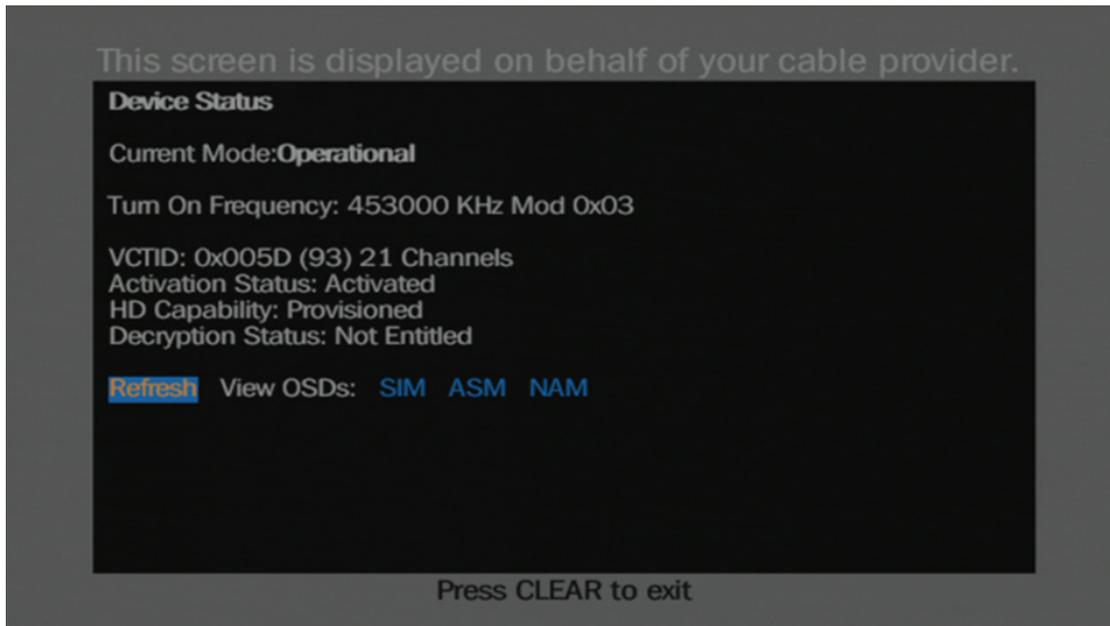
Figure 26–3: Device Status screen

The Device Status screen has the following fields:

- Current Mode—How far the network porting kit (NPK) has been able to get in the CAL startup process. Possible modes:
  - Booting—Early in the NPK startup process; CAL is not yet initialized.
  - Hunting—NPK is working with CAL to locate a frequency containing a Conditional Access Table (CAT), and to collect a Virtual Channel Table (VCT). While in Hunting mode, you might see these additional values:
    - Current Frequency—[Frequency] KHz Mod [Modulation]
    - Signal Locked—Yes or No. Yes indicates the signal has locked.
    - CAT acquired—Yes or No. Yes indicates the CAT has been acquired.
    - VCT acquired—Yes or No. Yes indicates the VCT has been acquired.
  - Operational—CAL has been initialized and has successfully processed a CAT. CAL might send additional activation and decryption status messages.
- Turn On Frequency—The frequency that the CAT was found on during the last hunting effort. This is the first frequency that is tested during the next start up. The possible values of modulation being used include:
  - Analog modulation—Mod 0x01
  - QAM 64 modulation—Mod 0x02
  - QAM 256 modulation—Mod 0x03

- VCTID—Defines which VCT the headend is using to transmit the Channel List to the set-top box. The value is shown in both hexadecimal and decimal (in parenthesis), and includes the number of channels that are present in the Channel List.

- Activation Status—Activated or Not Activated. Activated indicates that the set-top box with the CAL software has received the correct Entitlement Control Messages (ECM) and Entitlement Management Messages (EMM) from the headend to allow the set-top box to be activated.

- HD Capability—Provisioned or Not Provisioned. Provisioned indicates that the set-top box has been provisioned for HD.

- Decryption Status—Entitled or Not Entitled. Entitled indicates that the CAL software has been set up to allow the encryption of incoming video signals.

- Virtual buttons
  - Refresh—Refreshes the information on the screen.
  - SIM (OSD)—The SIM On Screen Display (OSD) is required for CAL certification.
  - ASM (OSD)—The ASM OSD is required for CAL certification.
  - NAM (OSD)—The NAM OSD is required for CAL certification.

Table Collection Stats

The Table Statistics screen (Figure 26–4) displays the in-band data carried in the CAT.
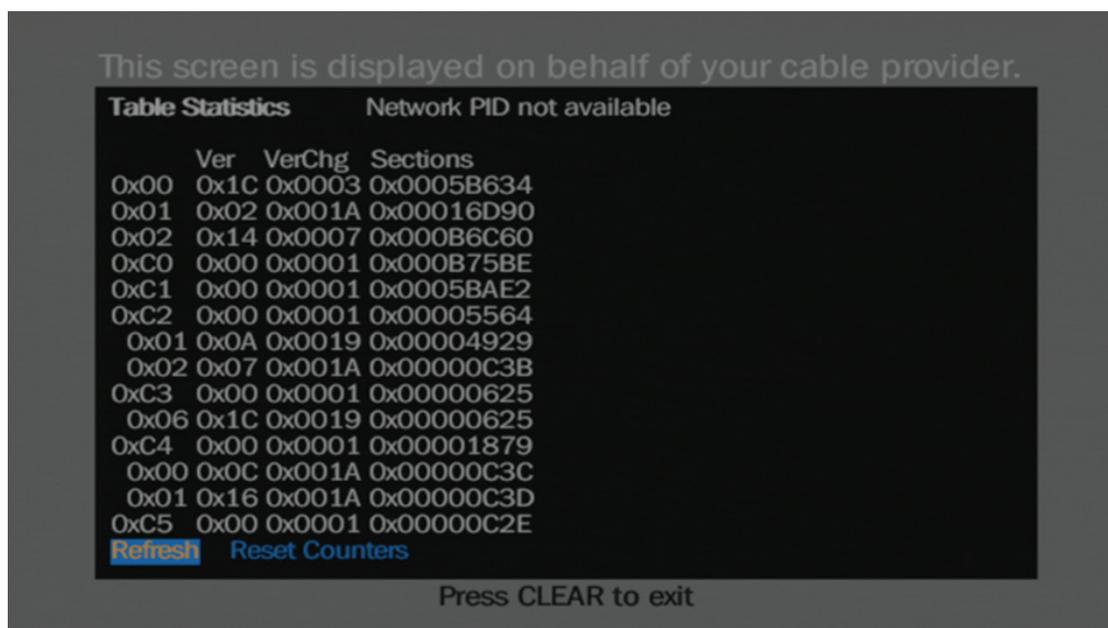
Figure 26–4: Table Statistics screen

The Table Statistics screen has the following fields:

- Ver—The version number of the CAT. Each time the CAT is updated, the version number is incremented.

- VerChg—The number of version changes the set-top box has made to the CAT.

- Sections—The number of times the CAT has been received by the set-top box.

Note: Select **Refresh** to see whether table data continues to be received by the set-top box.
Select **Reset Counters** to reset all values to 0.

Virtual Channel Table

The VCT screen (Figure 26–5) displays the tuning details that the headend is transmitting to the set-top box for every channel in the Channel List.

Figure 26–5: VCT screen

The VCT screen has the following fields:

- VCT-ID—Defines which VCT the headend is using to transmit the Channel List to the set-top box. The value is shown in both hexadecimal and decimal (in parenthesis), and includes the number of channels (and pages) that are present in the Channel List.

- VCN—The channel number that is displayed on the set-top box.

- SrcId—A value that identifies a specific channel, such as KGO-DT, regardless of what channel number is assigned. Although these are unique values, it is possible for two channels with different channel numbers (such as, SD versus HD) to share the same sourceID.

- KHz—The channel frequency used to broadcast the channel. Because there can be multiple programs sent on the same frequency using Multiple Program Transport Stream (MPTS), some of the values are repeated. For example, KPIX-DT, KGO-DT, and KGO-DT2 are all on 747 MHz (747000 KHz), which means they are part of the same stream.

- Mod—The modulation scheme for the channel. The possible values include:
    - Analog modulation—Mod 0x01
    - QAM 64 modulation—Mod 0x02
    - QAM 256 modulation—Mod 0x03

- Prog—The program number of this channel in the MPTS.

● Name—The name of the channel as shown in the set-top box Guide.

CalAgent Diagnostics

Generated by the CAL software, the CalAgent Diagnostics menu (Figure 26–6) displays information that installers might need to resolve possible activation issues.
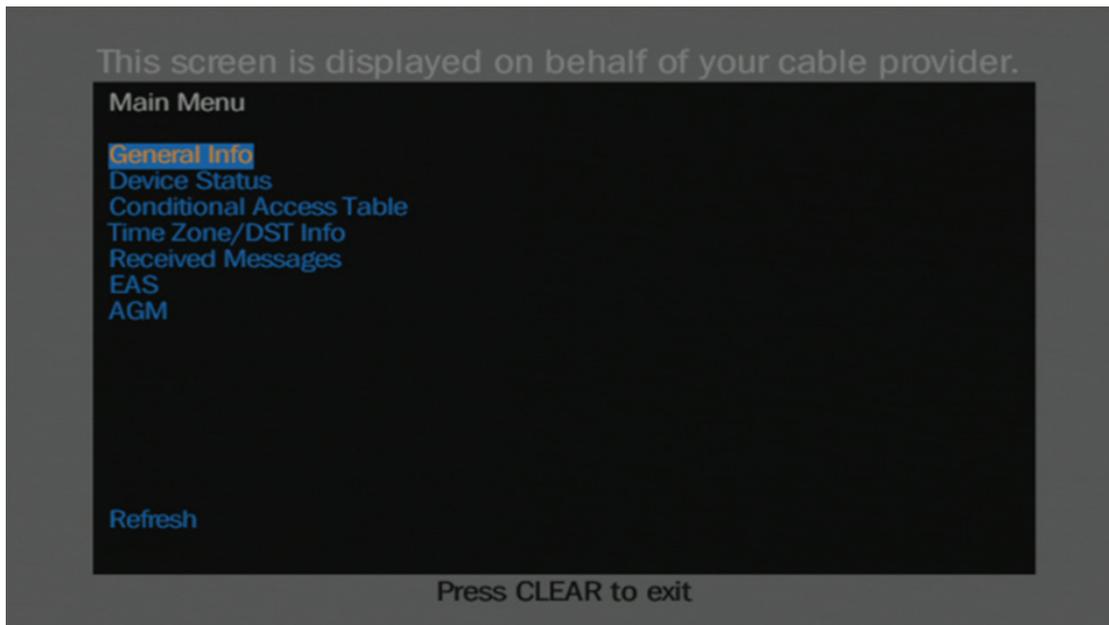
Figure 26–6: CalAgent Diagnostics menu

The options on the CalAgent Diagnostics menu are described in the following sections.

General Info

The General Info screen (Figure 26–7) displays general information for the set-top box.
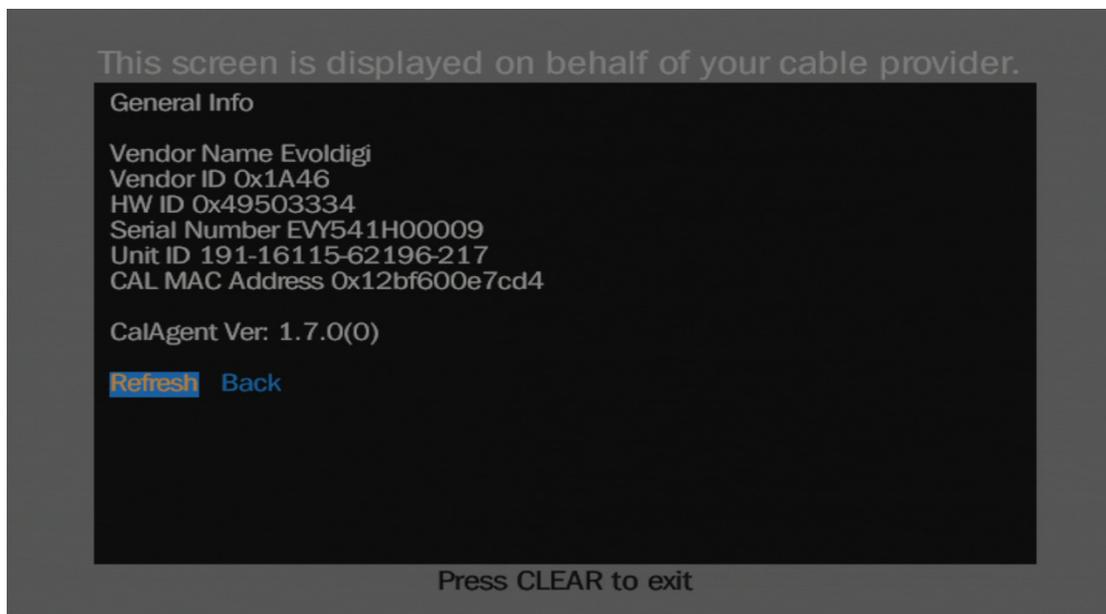
Figure 26–7: General Info screen

The General Info screen has the following fields:

- Vendor Name—The name of the company that manufactured the set-top box. In this case, Evoldigi is Evolution Digital.

- Vendor ID—The ID of the vendor. This value must be non-zero.

- HW ID—The hardware version of the set-top box. This is helpful if there are known issues with specific hardware versions of the set-top box.

- Serial Number—The hardware's serial number, not to be confused with the TiVo Service Number (TSN).

- Unit ID—The unit ID of the set-top box.

- CAL MAC Address—The MAC address used to identify the set-top box in a networked environment.

- CalAgent Ver—The version of the CalAgent software installed on the set-top box.

Device Status

The Device Status screen (Figure 26–8) indicates the status of the CAL software on the set-top box.
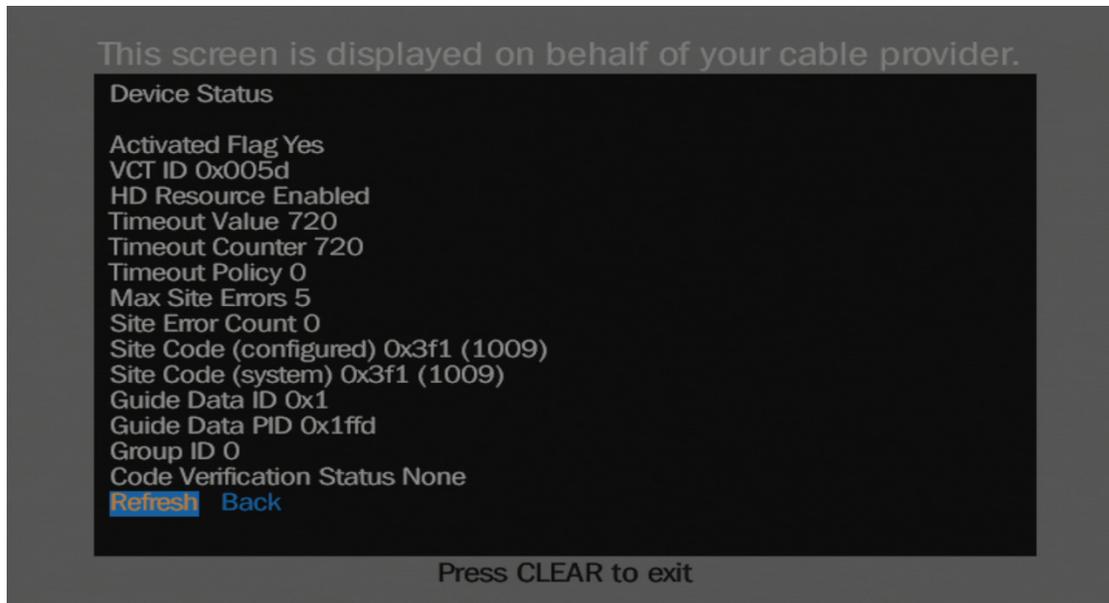
Figure 26–8: Device Status screen

The Device Status screen has the following fields:

- Activated Flag—Yes or No. Yes indicates that the headend has sent the activation messages and the set-top box can be activated. This does not imply that the set-top box is fully functioning. Because the connection from the headend is only one way (headend to set-top box), there is no communication back to the headend to indicate that the set-top box has been activated and is functioning correctly.

- VCT ID—Defines which VCT the headend is using to transmit the Channel List to the set-top box. The value is shown in hexadecimal and must be a non-null value.

- HD Resource—Enabled or Disabled. Enabled indicates that HD channels will display for this set-top box. Although most devices have HD enabled, some headends set this value to Disabled.

- Timeout Value—Defines how many hours the set-top box operates without receiving a CAT message before it disables itself. The set-top box expects to receive CAT messages on a regular basis (around 1 per second). The value of 720 hours (above) is roughly 4.2 weeks (or a little over a month).

- Timeout Counter—The current number of hours left before the set-top box disables itself. Normally the Timeout Value and Timeout Counter are the same. If they are different, it means that the set-top box is not receiving any CAT messages, which might imply that there is a problem.

- Timeout Policy—1 or 0.

- Max Site Errors—The number of site errors that occur before the set-top box deactivates itself.

- Site Error Count—The current number of site errors the set-top box has detected. If this count reaches the Max Site Errors value, the set-top box deactivates. Ideally, this value is 0.

- Site Code (configured)—The site code that was configured into the set-top box when it was activated.

- Site Code (system)—The site code that was most recently sent by the headend. Ideally, this value is the same as the configured value.

- Guide Data ID—Used for CAL certification. Not relevant for MSOs.

- Guide Data PID—Used for CAL certification. Not relevant for MSOs.

- Group ID—Used for CAL certification. Not relevant for MSOs.

- Code Verification Status—Used for CAL certification. Not relevant for MSOs.

Conditional Access Table

The Conditional Access Table screen (Figure 26–9) displays the CAT information that the set-top box should be receiving from the headend.

This screen is displayed on behalf of your cable provider.

Conditional Access Table

CAT Present Yes
CA System ID 0x4749
EMM PID 0x1ff0
EMM Provider ID 0x0004

Refresh Back

Press CLEAR to exit
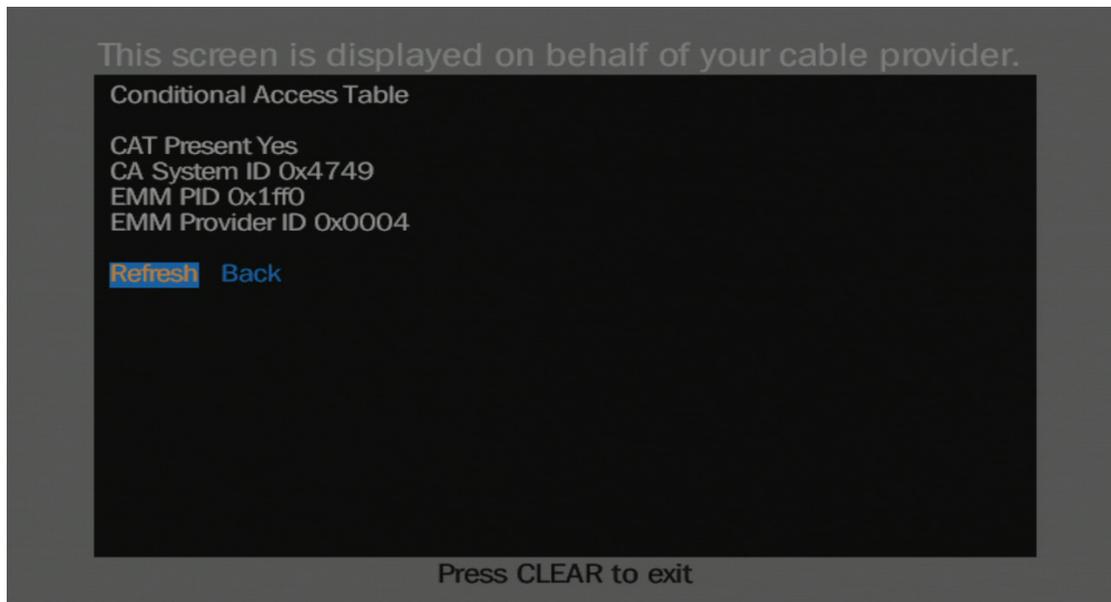
Figure 26–9: Conditional Access Table screen

The Conditional Access Table screen has the following fields:

- CAT Present—Yes or No. Yes indicates that the CalAgent software running on the set-top box has detected the presence of a CAT in the incoming data stream. No implies that the set-top box is not getting CAT information, possibly due to a lack of connection to the headend (for example, if the coaxial cable is disconnected).

- CA System ID—The ID of the system sending the CAT information. This value must be non-zero.

- EMM PID—The PID for the EMM messages that are being sent from the headend. The value of this field is not crucial in determining whether the set-top box is correctly configured. This value must be non-zero.

- EMM Provider ID—The Provider ID of the system generating the EMM messages. Like the EMM PID field, the specific value is not important for determining overall operations, but must be non-zero.

Time Zone/DST Info

The Time Zone/DST Info screen (Figure 26–10) displays information about the time zone and Daylight Saving Time (DST) that the set-top box is located in.
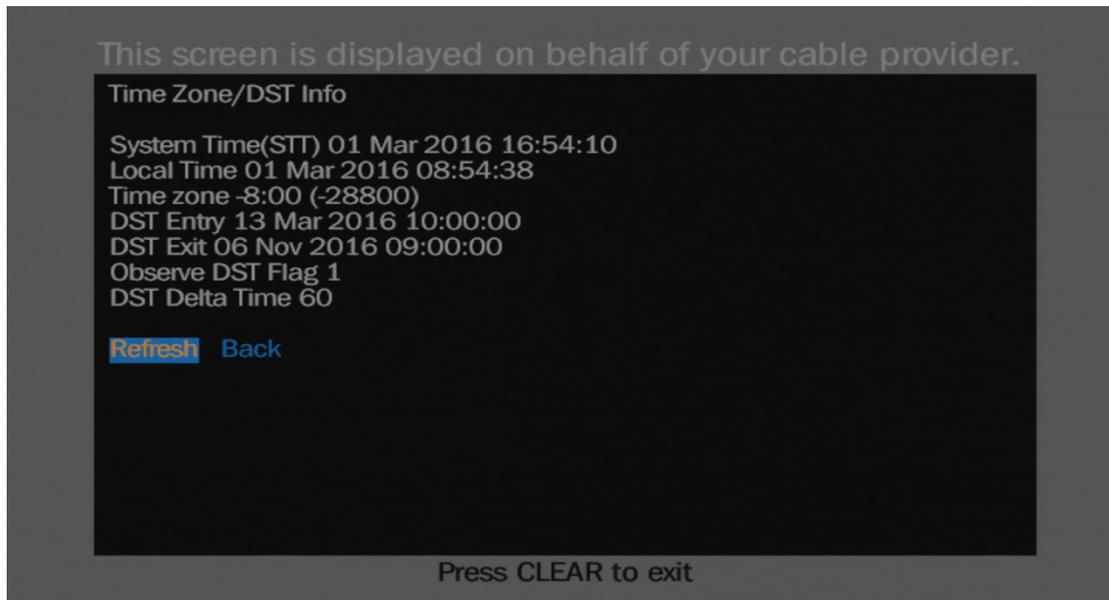
Figure 26–10: Time Zone/DST Info screen

The Time Zone/DST Info screen has the following fields:

- System Time (STT)—The system time for the set-top box. Displayed as a Coordinated Universal Time (UTC), it will differ from local time by a number of hours.
- Local Time—The adjusted local time that is based on the geographical location of the set-top box and headend.
- Time zone—The number of hours between UTC and local time. The number in parenthesis is the number of seconds difference between UTC and local time.
- DST Entry—The date and local time that DST starts for this region.
- DST Exit—The date and local time that DST ends for this region.
- Observe DST—1 or 0. 1 indicates the region observes DST, 0 indicates no observance.
- DST Delta Time—The number of minutes offset between Standard Time and DST.

Received Messages

The Received Messages screen (Figure 26–11) displays information about what headend messages the set-top box has received. Very useful when trying to determine if a set-top box is currently receiving the CAL information.
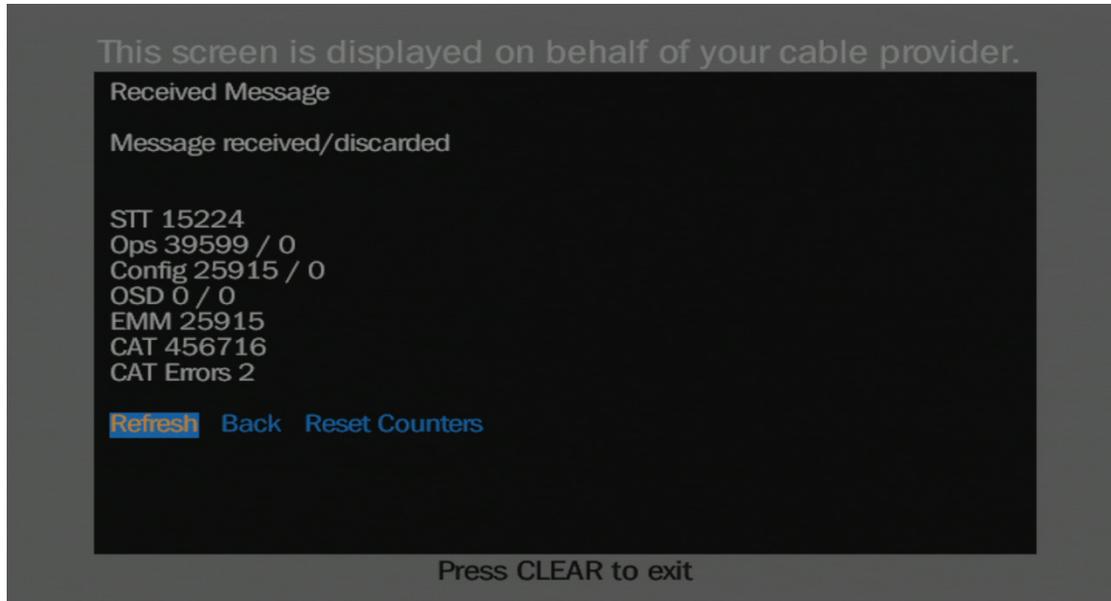
Figure 26–11: Received Message screen

The Received Message screen has the following fields:

- STT—The number of STT messages the set-top box has received since the set-top box powered up, or since the last time the counters were reset.

- Ops—The number of Ops messages the set-top box has received since the set-top box powered up, or since the last time the counters were reset. The value after the slash (/) is the number of messages that have been discarded.

- Config—The number of Config messages the set-top box has received since the set-top box powered up, or since the last time the counters were reset. The value after the slash (/) is the number of these messages that have been discarded.

- OSD—The number of OSD messages the set-top box has received since the set-top box powered up, or since the last time the counters were reset. The value after the slash (/) is the number of these messages that have been discarded.

- EMM—The number of EMM messages the set-top box has received since the set-top box powered up, or since the last time the counters were reset.

- CAT—The number of CAT messages the set-top box has received since the set-top box powered up, or since the last time the counters were reset.

- CAT Errors—The number of CAT messages the set-top box has received that had errors since the set-top box powered up, or since the last time the counters were reset.

EAS

The EAS screen (Figure 26–12) displays information related to the Emergency Alert System (EAS).

CAL diagnostics
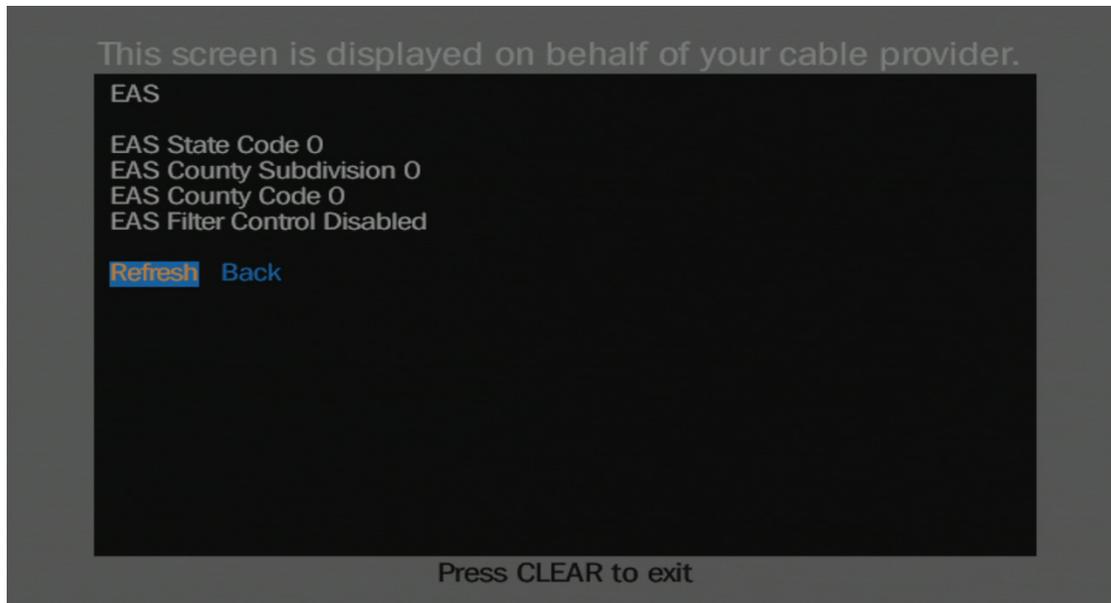
Figure 26–12: EAS screen

The EAS screen has the following fields:

- EAS State Code—The State code used to identify which state EAS messages are passed along to the set-top box.
- EAS County Subdivision—The County Subdivision code used to identify which state EAS messages are passed along to the set-top box.
- EAS County Code—The County code used to identify which state EAS messages are passed along to the set-top box.
- EAS Filter Control—Enabled or Disabled. Enabled indicates that only those EAS messages that meet the criteria of State, County, and County Subdivision are passed along to the set-top box.

AGM

The AGM screen (Figure 26–13) displays information related to Application Gateway Messages (AGM) that a headend might send.

CAL diagnostics
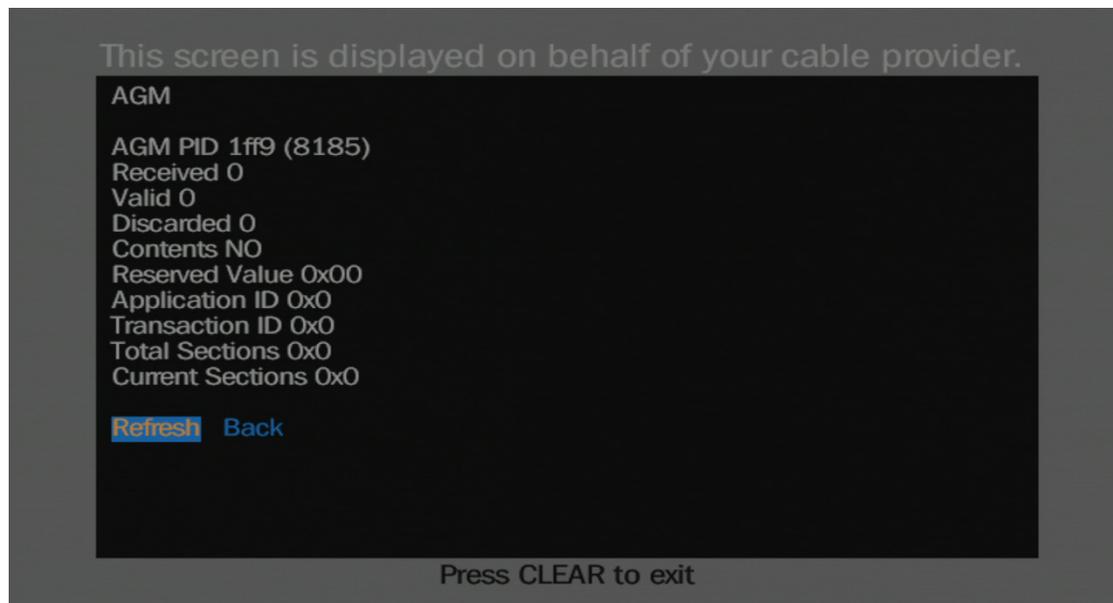
Figure 26–13: AGM screen

The AGM screen has the following fields:

- AGM PID—Used for CAL certification. Not relevant for MSOs.

- Received—Used for CAL certification. Not relevant for MSOs.

- Valid—Used for CAL certification. Not relevant for MSOs.

- Discarded—Used for CAL certification. Not relevant for MSOs.

- Contents—Used for CAL certification. Not relevant for MSOs.

- Reserved Value—Used for CAL certification. Not relevant for MSOs.

- Application ID—Used for CAL certification. Not relevant for MSOs.

- Transaction ID—Used for CAL certification. Not relevant for MSOs.

- Total Sections—Used for CAL certification. Not relevant for MSOs.

- Current Sections—Used for CAL certification. Not relevant for MSOs.

Checking the signal strength

If you can't see video, or you see a poor quality picture on some or all of the channels, use the Signal Strength Meter to determine whether the TiVo device is receiving a signal, and if the signal has sufficient strength to provide a good picture. This is useful for diagnosing macro-blocking problems.

The TiVo device can display a Signal Strength Meter over the video of the current channel. You can key in the specific channel number, or use the **Channel Up** and **Channel Down** buttons to check the signal strength on various channels.

Note: Displaying the Signal Strength Meter stops all recordings that are in progress and erases the buffer on both tuners.

From TiVo Central, choose **Settings & Messages > Settings > Channels > Signal Strength** (Figure 26–14).

Note: Read the on-screen warning before pressing **OK, access this setting**.

The Signal Strength option indicates either Antenna or Cable, depending on the device setup.

Figure 26–14: Signal Strength Meter

The value the meter displays is specific to the channel that is being tuned.

Network diagnostics

The following sections describe the network diagnostics available on the TiVo device:

- *Network connection* on page 344
- *Network status* on page 344
- *Network diagnostics* on page 346

Network connection

The Network Connection screens display information that can be used to diagnose problems with the network, to change network settings, or to force an immediate connection to the TiVo Service.

The network settings shown vary depending on whether you are using wired or wireless network. These settings are configured automatically but you can edit them if needed.

From TiVo Central, choose **Settings & Messages > Settings > Network** (Figure 26–15).
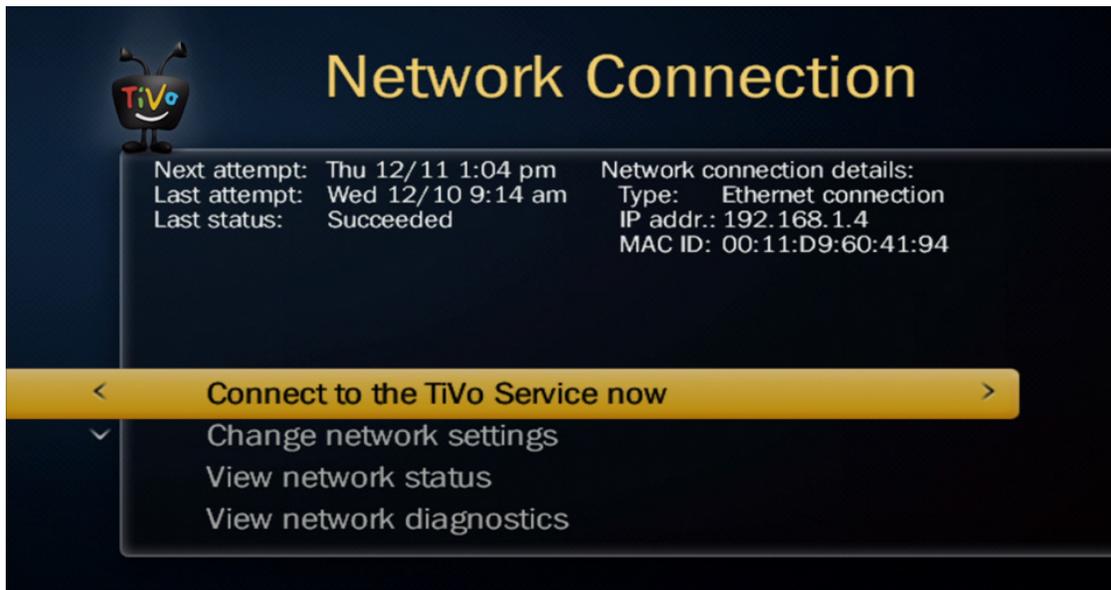
Figure 26–15: Network Connection menu

- **Connect to the TiVo Service now**—Forces an *immediate* connection to the TiVo Service.

  Note: This process starts automatically when you click the option, and can take several minutes to complete.

- **Change network settings**—Lets you specify how to obtain an IP address for the DVR.
  - Modify Ethernet settings
  - Connect using MoCA
  - Connect using wireless
  - Use this DVR to create a MoCA network
- **View network status**—Shows details about the network connection status.
- **View network diagnostics**—See *Network diagnostics* on page 346.

Network status

From TiVo Central, choose **Settings & Messages > Settings > Network > View network status** (Figure 26–16).
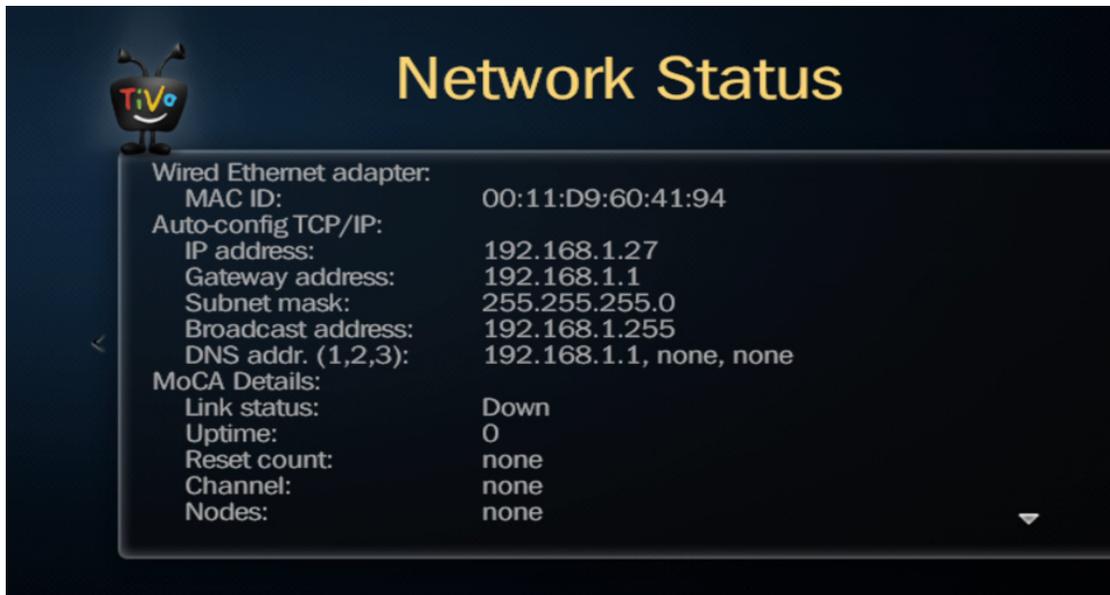
Figure 26–16: Network Status screen

The read-only Network Status information is displayed on multiple screens. Use the up and down arrows to scroll through the fields.

- **Wired Ethernet / Wireless adapter**
  - MAC ID—The MAC (hardware) address.
- **Wireless Network**
  - Mode—Mixed or Infrastructure.
  - SSID (name)—The public name of a wireless network.
  - Channel—The wireless signal channel name.
  - Signal strength—The wireless signal strength.
  - Wireless security—The type of encryption security.
- **Auto-config TCP/IP**
  - IP address—The IP address of the TiVo device.
  - Gateway address—The IP address of the network gateway, which provides an entry point and an exit point in the network and connects the internal networks and the outside network (Internet).
  - Subnet mask—The subnet mask of the TCP/IP address.
  - Broadcast address—The TCP/IP network's broadcast address.
  - DNS address (1,2,3)—Domain name system addresses 1, 2, and 3.
- **MoCA Details**
  - Link status—Indicates whether the MoCA link is Up or Down.
  - Uptime—Indicates MoCA link uptime in days, hours, minutes, and seconds.
  - Reset count—The number of times the MoCA chip has been reset. The reset count usually corresponds to the MoCA Link History field (the last five entries are saved).

- Channel—MoCA channels are centered at multiples of 25 MHz in 800 to 1,000 MHz and multiples of 50 MHz in 1150 to 1500 MHz. They are numbered 1 to 29 (not all numbers are used).
- Nodes—Number of MoCA devices in the network.
- Network version—The version of MoCA in use.
- Coordinator MAC—The MAC address of the control device on the MoCA network (admits new nodes, controls communications, manages the encryption, and so on).
- TX Power—MoCA node or device transmission power in decibels (dB).
- Packets transmitted—Packets sent by the MoCA network.
- Packets received—Packets received by the MoCA network.
- Bad packets received—Total number of packets received from the MoCA network and then discarded due to an error.
- MoCA Link History—Related to Reset count. Shows the reasons for the resets of the chip.

Network diagnostics

The Network Diagnostics screens display information for diagnosing problems with the network, viewing the transfer history, seeing port configuration test results, viewing DNS resolution test results, or testing the connection to the TiVo Service.

From TiVo Central, choose **Settings & Messages > Settings > Network > View network diagnostics** (Figure 26–17).
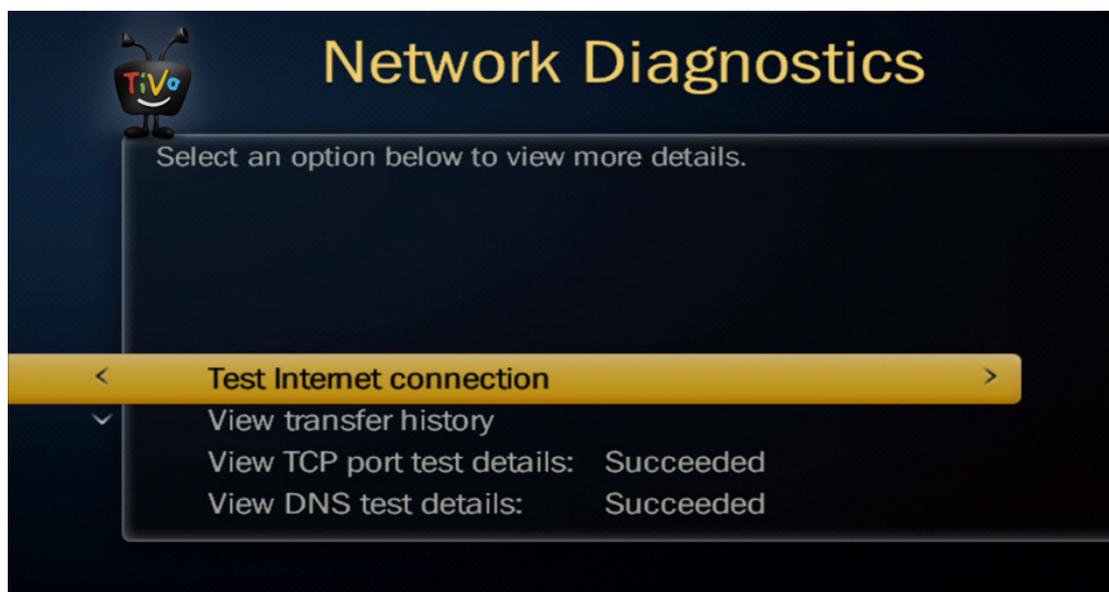
Figure 26–17: Network Diagnostics menu

- **Test Internet connection**—Disconnects and connects your TiVo DVR to the Internet to test the connection.

- **View transfer history**—Provides details about videos copied to or from a remote device, an incoming or outgoing DVR transfer, video downloads, and YouTube video downloads.
- **Port configuration test**—Confirms that the needed ports are not being blocked by the router, firewall, or Internet Service Provider (ISP). See *Port configuration test* on page 352.
- **DNS resolution test**—Confirms that the DNS server can be accessed. See *DNS resolution test* on page 352.

Checking the daily TiVo Service connection

The daily TiVo Service connection occurs when each TiVo device contacts TiVo (typically at night) and downloads the latest Program Guide Data (PGD) that includes show titles, descriptions, and so on. Software updates and other system data are also downloaded, and the clock time is updated. The information sent and received during the daily service connection can be used to troubleshoot problems.

The information captured in the daily TiVo Service connection is a snapshot of the state of the TiVo device at the beginning of the connection. Updates to the TiVo device don't show up until the next connection.

Checking the CableCARD (MMI)

You can check to see if a CableCARD is correctly activated or is subscribed to a certain channel.

You can also check to see if the CableCARD is paired to the slot in the DVR by checking the screens that are generated by the CableCARD and displayed by the TiVo DVR. These screens are Man-Machine Interface (MMI) screens. Each CableCARD manufacturer controls the content of their MMI screens, and the information varies with the CableCARD firmware version.

From TiVo Central, choose **Settings & Messages > Settings > Remote, CableCARD, & Devices > CableCARD Decoder** (Figure 26–18).

Figure 26–18: CableCARD Decoder menu

As a cable provider, you are presumed to be an expert in troubleshooting CableCARD issues.

Note: When appropriate, the TiVo DVR displays CableCARD error messages. The most common CableCARD errors are 161-X errors, which are defined in the CableLabs specification at:

http://www.cablelabs.com/specifications/OC-SP-CCIF2.0-I18-090508.pdf.

Checking the tuning adapter (MMI)

If a Switched Digital Video (SDV) tuning adapter is attached, the TiVo device displays the Tuning Adapter Man-Machine Interface (MMI) screens, in compliance with the CableLabs specification.

From TiVo Central, choose **Settings & Messages > Account & System Info > Tuning Adapter**.

Contact the manufacturer of the tuning adapter for descriptions of the information displayed.

Troubleshooting

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This chapter begins by describing some of the tools that are available for troubleshooting issues with TiVo devices, such as system information, diagnostic screens, configuration tests, and the IT Device Web Service API. Next, information that applies to general categories, such as audio or networking, is provided.

- *Using System Information screens for troubleshooting* on page 350
- *Using Diagnostic screens for troubleshooting* on page 351
- *Using the port configuration and DNS resolution tests* on page 352
- *Using the IT Device Web Service API* on page 352
- *Audio issues* on page 353
- *Download, copy, or transfer issues* on page 353
- *Freeze or restart issues* on page 353
- *Group issues* on page 355
- *Lineup issues* on page 356
- *Macroblocking, tiling, and pixelation issues* on page 357
- *Network connection issues* on page 358
- *Program Guide Data issues* on page 359
- *OnePass issues* on page 360
- *Software upgrade issues* on page 361

Feature-specific troubleshooting information is included in many of the chapters of this handbook. If you don't find what you need in this general troubleshooting chapter, one of the following might contain what you need:

- *Troubleshooting issues with the DVR expander* on page 76
- *Troubleshooting issues with the Wireless G adapter* on page 78
- *Troubleshooting issues with the Wireless N adapter* on page 81
- *Troubleshooting issues with the TiVo remote control* on page 101
- *Troubleshooting issues with VOD* on page 175
- *Troubleshooting issues with iPPV* on page 186
- *Troubleshooting multi-room issues* on page 204
- *Troubleshooting issues with TiVo App* on page 261
- *Troubleshooting issues with TiVo Desktop Plus* on page 272
- *Troubleshooting issues with installation and activation* on page 322

In addition to the material in this handbook, TiVo provides extensive information in the articles on the TiVo Support website.

Using System Information screens for troubleshooting

The fields on the System Information screens are described in *System information* on page 221.

To access the System Information screen, from TiVo Central, choose **Settings & Messages > Account & System Info > System Information**.

The following fields are particularly helpful in isolating a problem:

- TiVo Service Number (TSN)—The 15-digit alphanumeric that uniquely identifies a TiVo DVR. The TSN code is what TiVo uses to attach a service plan to any TiVo DVR.

  The TSN is embedded electronically in a chip on the motherboard of each TiVo DVR. It is also printed on the back of each device on a label that usually surrounds the power supply, and is available in the System Information for the device.

- DVR Name—Your name for the TiVo DVR.

- TiVo Service Account Status—Service state of the DVR. After installation, this service state should always be 3 (Account in good standing). Any other value causes a problem. The DVR functions correctly in service state 22 (Grace Period), however, within a specific amount of days (defined by CableCo), the DVR reverts to service state 8 (Suspended).

- ZIP Code—Used to determine the channel lineup.

- Cable Provider—Your CableCo name. The cable provider selected during Guided Setup.

- Cable Lineup—The cable lineup selected during Guided Setup, typically digital.

- Program Information To—The last date for which Program Guide Data (PGD) exists, usually 10 to 14 days beyond today's date. If the expire date is closer to the current date than 10 days, the DVR has failed to make daily service connections, or might be stuck trying to download a software update.

- Service Connection—Dates of the last successful and last attempted service connections.

- Dial-in Configuration Code—A value of 000 indicates that the DVR is calling in to production servers.

- Remote Address—The TiVo remote control address that is configured on this device. For example, it is set up to have IR codes for 0-9. 0 (zero) is a universal mode, and 1-9 is specifically paired.

- Opt Status—If the value is OptedIn or OptedDefault, there's full subscriber access to the TiVo feature set. If the value is OptedOut, some features aren't available.

  Note: For more information about the opt choices, see the TiVo Privacy Policy.

Using Diagnostic screens for troubleshooting

TiVo provides DVR and network information that is described in *Diagnostics* on page 325.

To access the specific diagnostics screens:

- DVR diagnostics—From TiVo Central, choose **Settings & Messages > Account & System Info > TiVo box Diagnostics**.

- Network diagnostics—From TiVo Central, choose **Settings & Messages > Settings > Network > View network diagnostics**.

The following fields are particularly helpful in isolating a problem:

- Tuner—Indicates which tuner you are viewing. The first page shows diagnostics for Tuner 0, the next page shows diagnostics for Tuner 1, and so on.

- Channel—The currently-selected channel.

- Frequency—The current frequency in KHz.

- Modulation—The current modulation, typically QAM 256 or QAM 64.

- Program Number—The currently-selected program.

- Signal Strength—See Troubleshooting Digital Cable Signals on TiVo T6 DVR series devices on the TiVo Support website for details about minimum and maximum values.

- Signal Lock—Either Yes or No. If No, see Troubleshooting Digital Cable Signals on TiVo T6 DVR series devices on the TiVo Support website.

- Program Lock—Either Yes or No. If No, see My TiVo box is displaying a gray or black screen in Live TV on the TiVo Support website.

- SNR (Signal Noise Ratio)—A higher SNR reading means that the video signal is stronger relative to the noise level on the line. If the SNR value is lower than the minimum, test and improve the signal on the cable line. For details about minimum and maximum values, see Troubleshooting Digital Cable Signals on TiVo T6 DVR series devices on the TiVo Support website.

- Current Tuning Status—Value is typically Tuned: Success. The other possible value is Not Tuned which means the tuner is not on a valid channel.

- CCI Byte—The value displayed in a Diagnostics screen that shows the level of copy protection on the current channel. If there is copy protection, certain features might be restricted, such as video transfer. Common values include 0x00 (copy-freely), 0x02 (copy-once), and 0x03 (copy-never).

- Time Since Tune Start—Elapsed time in seconds since the tuner was tuned to the current channel.

- Time Since Signal Lock—Elapsed time in seconds since the tuner was signal locked on the current channel.

Using the port configuration and DNS resolution tests

If the TiVo DVR is having problems communicating with the TiVo servers, the PC, or other TiVo devices, these tests can help you diagnose the problem.

Port configuration test

During the port configuration test, the TiVo Service reads the configuration of the TiVo DVR and tests the ports that are needed for the features on that DVR to work. The port configuration test checks that ports are not being blocked by the router, firewall, or Internet Service Provider (ISP).

For a list of all ports that are used by the TiVo Service, see Which network ports and IP addresses do I need open when using my TiVo box? on the TiVo Support website.

DNS resolution test

A Domain Name System (DNS) server allows websites to be accessed by a domain name instead of by the IP address. If the DNS resolution test indicates failure, try to access several web pages by using a computer on the same network. If the computer is unable to access the web pages, the DNS setting might be incorrect, or there might be an issue with the ISP's DNS server. Contact the ISP for further troubleshooting assistance.

A DNS problem might also be an issue with the router settings. Check the router documentation for how to troubleshoot router issues.

Using the IT Device Web Service API

This section provides some tips for using the information available to you through the IT Device Web Services API. The information available to you depends on which API calls your development team has implemented. Because your development team determines what information is exposed, you must find out if, or where, this information is presented, so it can be integrated into the tools you already use. The IT Device Web Service API provides the ability to send commands to the TiVo DVR and to collect data from the DVR.

In addition to the tools available on the TiVo DVR, web application developers can use the IT Device Web Service API to create a web portal that provides and displays information collected from the TiVo DVR each time it makes its regular connection to the TiVo Service.

TiVo DVRs connect to the TiVo Service at least once a day to refresh the Program Guide Data (PGD) and perform various housekeeping duties, such as synchronizing the clock to the TiVo Service clock. The TiVo Service collects the following information during each connection:

- The time the connection was made
- Whether the DVR added new software
- The software version the DVR is currently running
- Whether the broadband connection is wireless or wired

The portal that your organization develops becomes the primary tool used by your support agents to remotely check the status of the TiVo DVR.

Audio issues

If you hear sounds but don't hear Live TV, check that the MSO DVR is not muted, and check the cable connections. For additional information, see I can hear TiVo sounds, but I am unable to hear Live TV sounds on the TiVo Support website.

A TiVo DVR, like many TVs, has a Secondary Audio Program (SAP) option. If set incorrectly, this can cause unexpected audio effects.

1. To check the SAP setting on the TiVo DVR, from TiVo Central, choose **Settings & Messages > Settings > Audio > Alternate Audio > Default Audio Program**.

2. If a SAP option has been selected, deselect it.

    If a SAP option has not been selected, or if you change the setting and the problem persists, check the TV settings as well (refer to the TV manual for instructions). This is described in Audio and Video are Out of Sync on the TiVo Support website.

For information on general audio and video issues, as well as instructions for checking the cables and signal strength, see Audio and video troubleshooting on the TiVo Support website.

Download, copy, or transfer issues

If problems occur in the following areas, check the Download Manager:

- Copying videos to or from a remote device
- Transferring shows to or from a TiVo DVR
- VOD downloads
- YouTube video downloads

Freeze or restart issues

After installing new software, a TiVo DVR restarts itself. This is normal, and usually occurs around 2:00 A.M. to avoid disrupting viewing and recording. If the TiVo DVR is stuck on a startup screen, or doing multiple restarts after a software download, allow the DVR to restart twice.

If the network connection is faulty, the HD menus might seem to stop responding because the menus are fetching images and information from the TiVo Service in real time. A green circle indicates that the DVR is busy and nothing is wrong. This should clear up within seconds. If it doesn't, troubleshoot the network connection.

The TiVo DVR might appear to be frozen if the remote control is not working, or if you use a remote control that isn't compatible with the DVR.

Hard drive errors can cause restarts or failures.

- *TiVo DVR is frozen on an image* on page 354
- *TiVo DVR is frozen on a Welcome or Almost There screen* on page 354
- *TiVo DVR is frozen on a green screen with Severe Error* on page 354
- *TiVo menu is frozen on an HDUI screen (TiVo Preview only)* on page 355

TiVo DVR is frozen on an image

1. Use the remote control to look at something else, such as a different channel, then return to the selection you were viewing.

2. Check the power source.

    If you are using a power strip, try plugging directly into the wall.

3. Check the program source by disconnecting and then reconnecting cable or satellite connections.

    If there are still problems, try plugging directly into the TV.

This issue is described in My DVR is frozen on an image.... on the TiVo Support website.

TiVo DVR is frozen on a Welcome or Almost There screen

1. Unplug the power cord from the back of the TiVo DVR, and disconnect the USB network adapter or Ethernet cable.

    If a DVR expander is attached to the TiVo DVR, unplug it.

2. Wait 15 seconds, then reconnect the power cord on the DVR expander (if applicable), and then the power cord on the TiVo DVR.

3. After you see the Welcome! Starting up screen, at least wait five minutes for the startup process to continue.

    You should soon see the Almost there screen.

4. After you see TiVo Central, reconnect the USB network adapter or Ethernet cable.

Note: If the hard drive on the TiVo DVR is nearly full or the DVR just received a software update, it might take up to three restarts to restore functionality. After that, the TiVo DVR should function normally.

This issue is described in My TiVo DVR is stuck on a Welcome screen…. on the TiVo Support website.

TiVo DVR is frozen on a green screen with Severe Error

When you see a green screen with the `Severe Error` message, it means the TiVo DVR is in the process of performing system checks and attempting to repair corrupted data on the hard drive. In most cases, the repairs work, and the TiVo DVR recovers from this condition without troubleshooting. However, the process can take several hours, during which time the TiVo DVR doesn't function at all (for example, it cannot complete scheduled recordings).

If you see this screen after three hours, follow these steps:

1. Remove the power cord and the network adapter or Ethernet cable from the back of the TiVo DVR.

2. If a DVR expander is attached to the TiVo DVR, unplug it.

3. Wait 15 seconds, and then plug in the components in the following order:

a. DVR expander (if applicable)

b. TiVo DVR

c. Network adapter or Ethernet cable

If the TiVo DVR restarts successfully, it is ready for use.

4. If you reconnected a DVR expander, run diagnostics on it to make sure the DVR expander is not causing the issue.

For instructions, go to the General Performance Issues section of DVR Expander Troubleshooting on the TiVo Support website.

5. If you still see the green screen after the TiVo DVR restarts, or if you have seen the green screen several times already, exchange the TiVo DVR.

This issue is described in Green screen with a severe error message on the TiVo Support website.

TiVo menu is frozen on an HDUI screen (TiVo Preview only)

This procedure applies only to TiVo Preview. The other TiVo devices do not have SDUI, so there is no **Choose TiVo Menus** selection.

1. If the yellow LED flashes when a button is pressed on the TiVo remote control, press this sequence of keys: **Thumbs Down**, **Thumbs Up**, **Play**, **Play**.

This restarts the TiVo HDUI, which is a Flash application. After a few seconds, the screen should go dark.

A few seconds later, TiVo Central should appear.

2. If this doesn't work, press **Thumbs Down**, **Thumbs Up**, **Pause**, **Pause**.

After a few seconds, the screen should go dark, a short video plays (press **Clear** to interrupt it), and you should see the SD version of TiVo Central.

3. To return to the HDUI version of TiVo Central, choose **Settings & Messages > Settings > Displays > Choose TiVo Menus > TiVo with HD Menus (Widescreen)**.

4. If the LED doesn't light when a button is pressed, or the DVR doesn't respond to either of the remote key sequences above, remove the power cord and plug it in again to restart the TiVo DVR.

Group issues

Many TiVo features are provisioned by assigning the TiVo DVR to certain groups. Devices are automatically provisioned by TiVo with the correct groups. These groups enable or disable features to customize the TiVo experience for customers. For example, the AP_cds group enables video downloads from providers, such as Amazon.

You don't normally have to do anything with groups. However, here are a few things to be aware of:

1. If you change DVR Preferences in My Account, you might inadvertently change some of the group settings. If you disable these options, some features might not be available, as follows:

- Disabling Enable Video Downloads means you can no longer download videos from third-party sources, such as Amazon (`AP_cds`).

- Disabling Allow Transfers turns off Multi-Room Viewing and the ability to transfer video between a computer and the TiVo DVR using TiVo Desktop Plus (`AP_inhomeviewing` group, `AP_ttg` group, and `AP_ttcb`group).

2. All TiVo devices must be members of the same Sharing group to use Multi-Room Streaming and Multi-Room Viewing. If you have a combination of retail TiVo devices and MSO-TiVo devices, the MSO-TiVo devices must be added to your retail account.

3. When new MSO-TiVo devices are activated, the same email address must be used to make sure that the new devices are assigned to the correct Sharing group.

   To learn how to merge MSO-TiVo devices into the same account, see *To combine accounts on page 321*.

Lineup issues

Lineup issues occur if the Program Guide Data (PGD) doesn't match the channels on the DVR, or if you aren't getting the channels you expect. This causes problems when you try to schedule recordings or view Live TV. For examples, see My CableCARD Channels and Program Guide Data Do Not Match on the TiVo Support website.

Lineup issues in the field should be extremely rare or nonexistent, because your MSO-branded TiVo DVRs are pre-provisioned in the warehouse and checked by the installer.

If an error is discovered onsite, follow these steps:

1. Check the System Information screen to verify that the ZIP code is correct.

   To find the ZIP code, from TiVo Central, choose **Settings & Messages > Account & System Info > System Information**.

   During Guided Setup, the DVR prompts for the ZIP code and displays the list of providers that serve that ZIP code. The DVR then uses the provider/ZIP code pairing to choose the headend. DVRs that are pre-provisioned in the warehouse have been run through Guided Setup in an automatic process. However, the subscriber can manually run Guided Setup in the home, and might inadvertently enter the wrong ZIP code. This can be corrected by repeating Guided Setup and entering the correct ZIP code. To repeat Guided Setup, see Repeating Guided Setup on the TiVo Support website.

2. If the ZIP code is correct and you have two headends that serve that ZIP code, make sure the DVR is connecting to the correct headend.

   You might be able to see the headend and the ZIP code by using your own tools if your development team provides that data from the web service portal.

3. If the ZIP code and headend are correct, but the correct channels are not showing, make sure there are no billing or CableCARD provisioning issues:

   a. Check the billing system to make sure the account is authorized for the channels.

b. Check the channel list to make sure the channel is selected (checked). An incomplete channel list can happen when you upgrade to a package that includes premium channels. The channels need to be manually selected.

c. If the billing system information is correct, check the CableCARD MMI screens to make sure that the card is activated and paired, and that the card has the correct channel map.

CableCARD Troubleshooting: Accessing MMI Screens on the TiVo support website has examples of MMI screens for different CableCARD brands.

Macroblocking, tiling, and pixelation issues

Digital cable provides a clearer, more detailed picture than analog cable, but when the digital cable signal is too low, or there is a lot of interference on the cable line (noise), the result can be much worse than the snow seen on analog stations.

If blocks of color appear instead of a smooth image (this is called macroblocking or pixelation), or you cannot see video at all on one or more of the digital channels, use the following procedures to determine what is causing the problem:

- Check the cable connections and input settings.
- Check the signal lock and signal strength.
- Check the signal quality.

When a signal is too weak, you might see picture quality issues, or you might not be able to see video at all. The reverse is also true: a signal that is too strong can cause interference between channels or can overload some of the components in the TiVo DVR, which also causes pixelation or macroblocking.

If you can't see video or see a poor-quality picture on some or all of the channels, use the Signal Strength Meter on the TiVo DVR to determine if the TiVo DVR is receiving a signal and if the signal has sufficient strength for a good picture. To access the Signal Strength Meter, from TiVo Central choose **Settings & Messages > Settings > Channels > Signal Strength**.

If the TiVo DVR is receiving a strong signal, but there is pixelation or macroblocking, check the signal-to-noise ratio (SNR), RS Uncorrected, and RS Corrected values to determine whether the issues are caused by poor signal quality.

For details about troubleshooting this issue and checking the connections and settings, see Troubleshooting Digital Cable Signals on the TiVo Support website.

Network connection issues

The TiVo DVR should be connected to the network after you have verified that the modem, router, and PC are communicating correctly with your Internet Service Provider (ISP).

You should also make sure that any security measures installed on the network are configured to allow the TiVo DVR to exchange information with the TiVo Service over the Internet. If you suspect a network problem, testing the TiVo Service connection can provide information, such as an error message.

This section covers the following topics:

- *To troubleshoot wired connection issues* on page 358
- *To adjust network settings* on page 359
- *To obtain an IP address for the DVR* on page 359
- *To set up a static IP address* on page 359

To troubleshoot wired connection issues

1. Determine whether the router is new or has changed settings. If settings have changed, you might need to also change the network settings on the TiVo DVR.

2. Verify that the network cable is connected between the router and the TiVo DVR.

3. Power cycle the cable modem and the router. Wait 60 seconds and then try to connect to the TiVo Service again.

4. Check other devices on the network to see if they can connect to the router.

   If the computer or other networked device can't connect, go to the support site for the router manufacturer for instructions on troubleshooting issues with the router.

5. If other devices can connect to the router, but the TiVo DVR still cannot connect, check the network settings and see General Network Troubleshooting Tips on the TiVo Support website.

   For details on error messages N02 or N07, see Error message N02/C102/C202 or N07/C107/C2 on the TiVo Support website.

6. If you see an N13 error, check the ports listed in Which network ports and IP addresses do I need open when using my TiVo box?

   If the router is blocking these ports, the TiVo DVR might be physically connected correctly, but still unable to see the TiVo Service.

For information and guidance on network error situations, see Network error messages on the TiVo Support website.

For information about general network troubleshooting, see General Network Troubleshooting Tips on the TiVo Support website.

To adjust network settings

Network settings are configured automatically, but you can adjust them if necessary.

Note: Don't change the network settings unless network issues arise.

From TiVo Central, choose **Settings & Messages > Settings > Network > Change network settings**.

To obtain an IP address for the DVR

Most networks are set up to have the router automatically assign IP addresses to each device on the network. This ensures that each device has a unique IP address without the need to track these addresses.

From TiVo Central, choose **Settings & Messages > Settings > Network > Change Network Settings > Modify Ethernet Settings**.

You can obtain an IP address for the TiVo DVR in any one of three ways:

- Get automatically from a DHCP server (typical)
- Let me specify a static IP address
- Let the DVR assign itself an IP address

For more information, see the information provided to CableCo about provisioning TiVo devices.

To set up a static IP address

The TiVo software allows the subscriber to give the TiVo DVR a static IP address. To use a static IP address, choose an address that is not in the range of the DHCP server. The range information is available from the router.

For more information about connecting or setting up a static IP address, see How to configure network settings on your TiVo device on the TiVo Support website.

Program Guide Data issues

The Program Guide Data (PGD) contains the channel number and call sign for each channel in the lineup, plus up to two weeks of data about TV shows on these channels, including titles, show times, and descriptions of every show. The PGD is sent through the daily service connection to the TiVo DVR.

PGD issues suggest network connection problems or, less commonly, hard drive issues.

Missing Program Guide Data

A problem with missing PGD is indicated when instead of seeing the PGD, you see `To be announced` on the banner and in the Guide, or a message on the TiVo DVR stating that it is out of PGD. On the TiVo DVR, the System Information screen displays the date when the device will run out of PGD in the **Program Information To** field.

Alternatively, you might be able to diagnose this remotely by using data that is exposed via API calls to the IT Device Web Service portal.

Program Guide Data is out of date

To prevent the PGD from being out of date, make sure the service state is set to 3 (Account in good standing). A TiVo DVR in service state 8 (Suspended) can't receive the PGD.

If the service state is 3 (Active), follow these steps:

1. Force a connection to the TiVo Service: from TiVo Central, choose **Settings & Messages > Settings > Network > Connect to the TiVo service now**.

2. If the TiVo DVR is not getting PGD after forcing a connection, check the connection history in the IT Device Web Service portal.

   The TiVo DVR might be having difficulty downloading software (see *Software upgrade issues* on page 361). This is evidenced by many very short daily connections (indicating that the network connection is dropping), or not connecting at all (also indicating a network issue).

Program Guide Data has run out

After connecting with the TiVo Service, if any of the following messages appear, try restarting the TiVo DVR:

- Make a Service Connection
- Program Info is Running Low
- Program Info Has Run Out

On the TiVo Support website, additional information is available in the articles for each of these messages.

If a restart doesn't resolve the problem, a different lineup might be necessary.

Program Guide Data and channel map data do not match

CableCARDs get program information from two sources: the channel map and the PGD. When the channel map data and the PGD do not match, there is a problem with the lineup selected. See My CableCARD Channels and Program Guide Data Do Not Match on the TiVo Support website.

OnePass issues

- If a recordings-only OnePass doesn't record an episode, there are a number of possible causes:
  - A recording conflict occurred and someone chose to cancel a particular recording.
  - The episode conflicted with another OnePass that had higher priority.
  - The missed episode was a repeat, and the OnePass was set for New only.

Check the Recording History to see why an episode wasn't recorded.

- Even if you set up a OnePass for New only, all episodes might be recorded. When this happens, the broadcaster has not assigned unique IDs to the episodes, so the TiVo software cannot distinguish first-run episodes from repeats. To be safe, it records them all.

- Some series, especially those with multiple seasons, run on multiple channels (for example, first runs are on one channel and reruns are showing in syndication on another channel). You might need to set up a OnePass recording to get all episodes from any channel on which they air.

Software upgrade issues

For the TiVo DVR to get software updates whenever TiVo releases new software, the **Authorized for Software upgrade** value (`swUpgradeAuthorized=Yes`) must be Yes. (This field usually equals No only during tests.)

TiVo software upgrades are controlled by two factors: the software map, and whether or not the TiVo DVR is authorized for a software upgrade.

- The software map defines which version of software is assigned to the TiVo DVR. TiVo creates different released software maps for each retail platform. CableCo has its own software map. There are also maps for different alpha and beta test populations.

- The TiVo DVR gets a software update each time one is available for the TiVo DVR's software map. Except under unusual conditions, TiVo DVRs are always authorized to get software upgrades (`swUpgradeAuthorized=Yes`). The software is released on the cycle dictated by the software map.

An MSO's software map is different from the map assigned to retail TiVo DVRs. For example. DVRs on both are authorized for a software update, but when software is released to the retail software map, TiVo DVRs are not updated. Retail TiVo DVRs deployed by CableCo are updated when other retail TiVo DVRs are updated.

After software is received, you must restart the TiVo DVR to install the new software. When the DVR tries to make a daily service connection, the DVR must download the software and restart to install it before the DVR can make an additional connection to get the PGD. For this reason, if you see a message that the DVR is running low on PGD or is out of PGD, it might be caused by problems downloading and installing software.

Note: If a TiVo DVR is stuck on startup or is in a restart loop, allow it to restart up to three times to see if it can resolve the problem before initiating a service call.