



International Telecommunication Union  
International Multimedia Telecommunications Consortium



# IP Set Top Boxes Past, Present and Future

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# STB Evolution



## o 1995

- < 1 MIPS
- ~ 2 Mbytes
- 0 GB Hard Disk
- SD
  
- 1 Channel
- MPEG-2 Video  
MP, AC-3, MPEG-2  
Audio

## o 2005

- > 300 MIPS
- 32 - 64 MB
- 160 GB
- SD, HD, SIF, PIP
  
- ~ 2 Channels
- MPEG-2 Video,  
AVC/H.264, AC-3,  
MPEG-2 Audio, MP-3,  
AAC, AC-3+, AAC+
- Encoding (PVR)

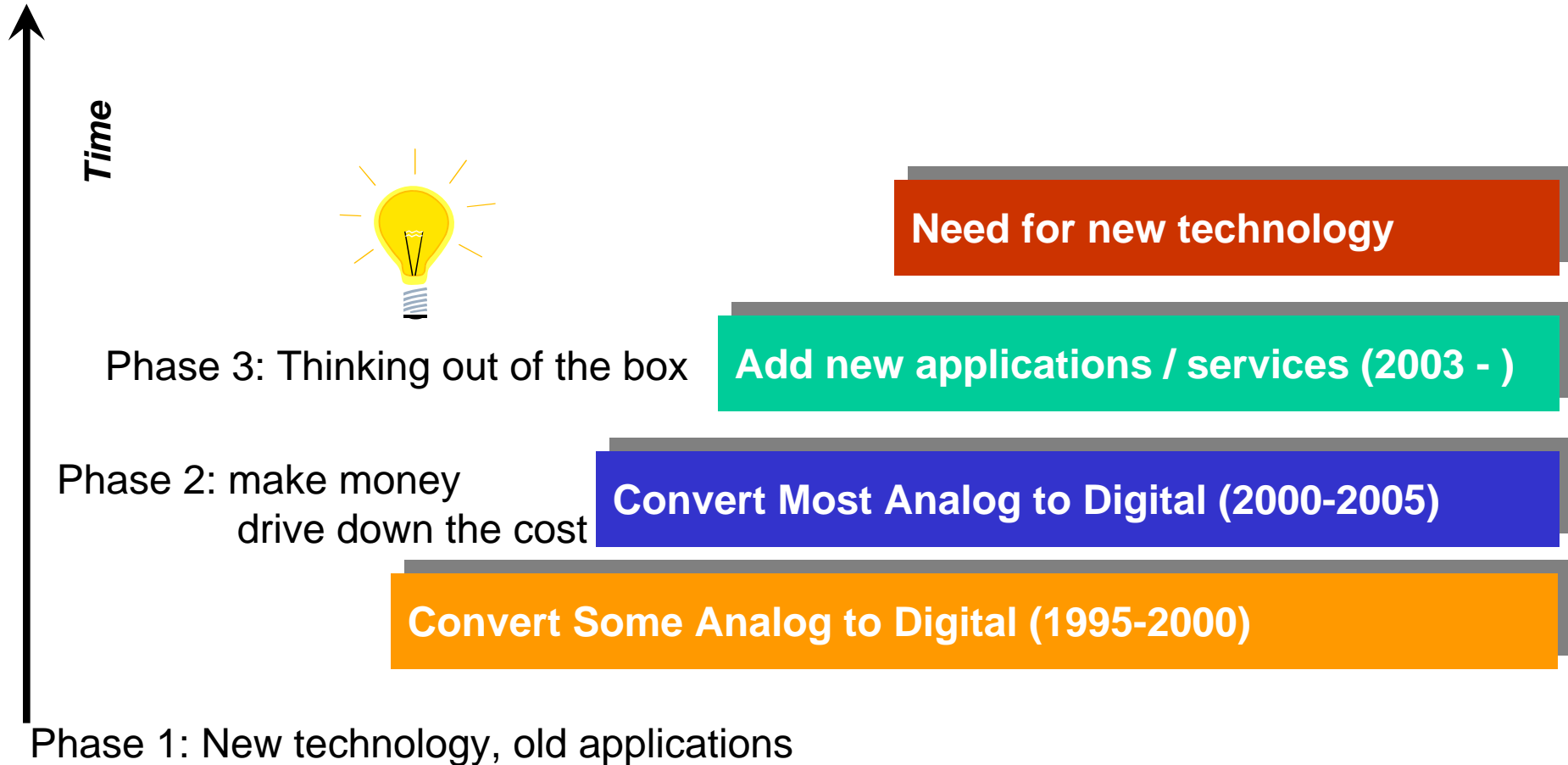
## o 2010+

- > 1 GIPS
- > 512 MB
- > 1 Tera Bytes
- Super HD  
(1920x1080x60p, D-  
Cinema)
- Multiple Channels
- Next Gen
  
- Transcoding

# *Set Top Box*

*Not your father's Set Top Box*

# Analog to Digital Transition- Phases



**New Capability**

- 4X compression efficiency in last 15 years
- Higher BW Networks
- Video Storage

**New Apps**

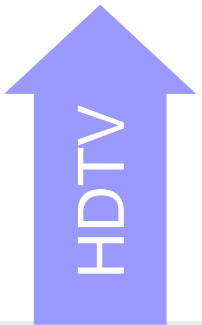
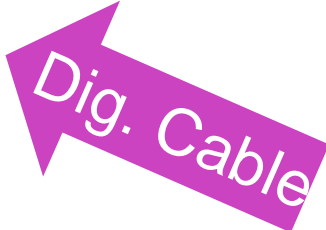
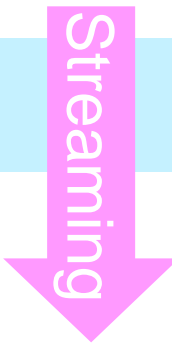
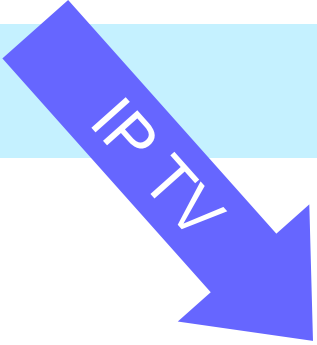
**New Technology**

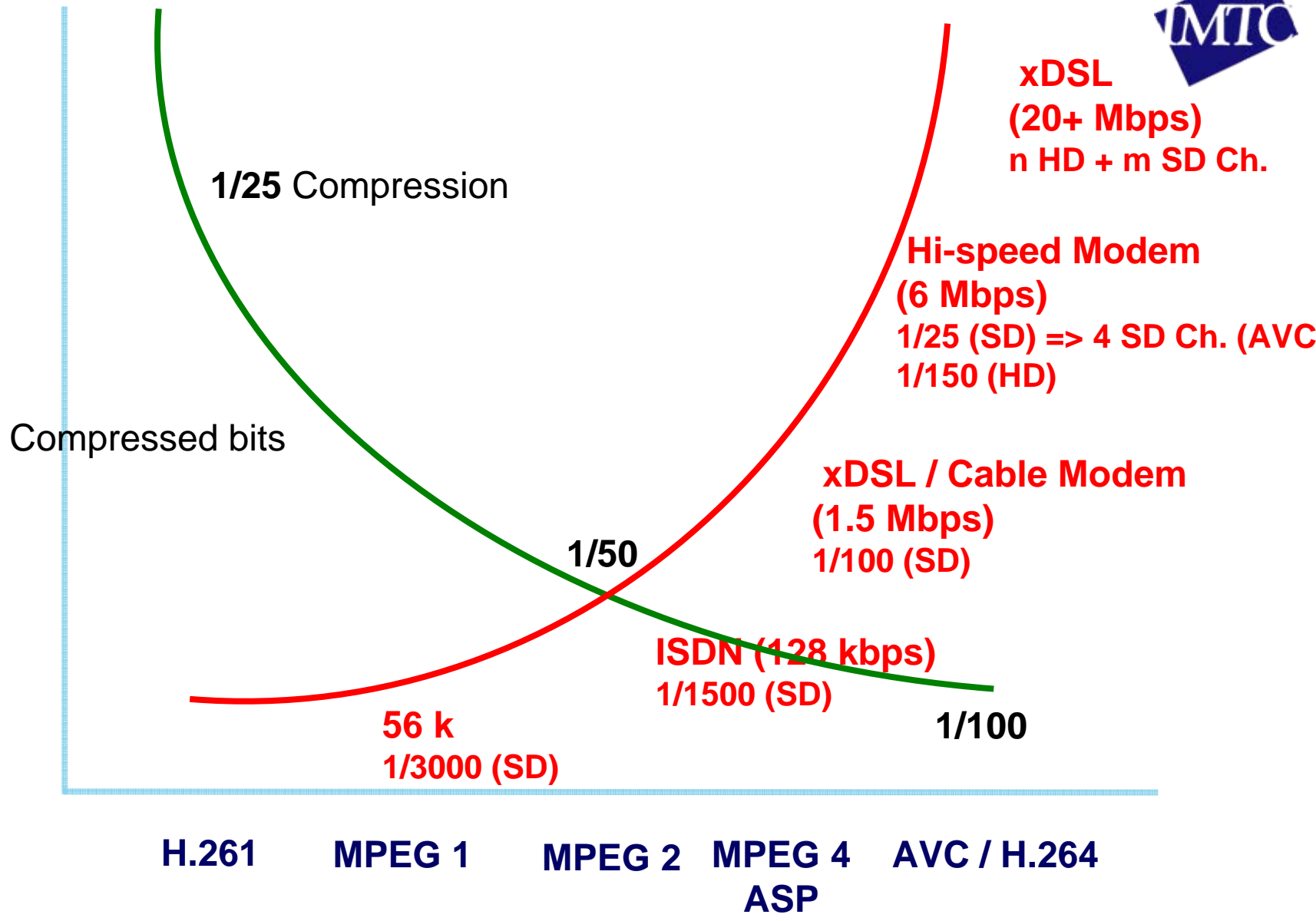
- High Level of Integration
- High MIPS/\$
- High MB/\$

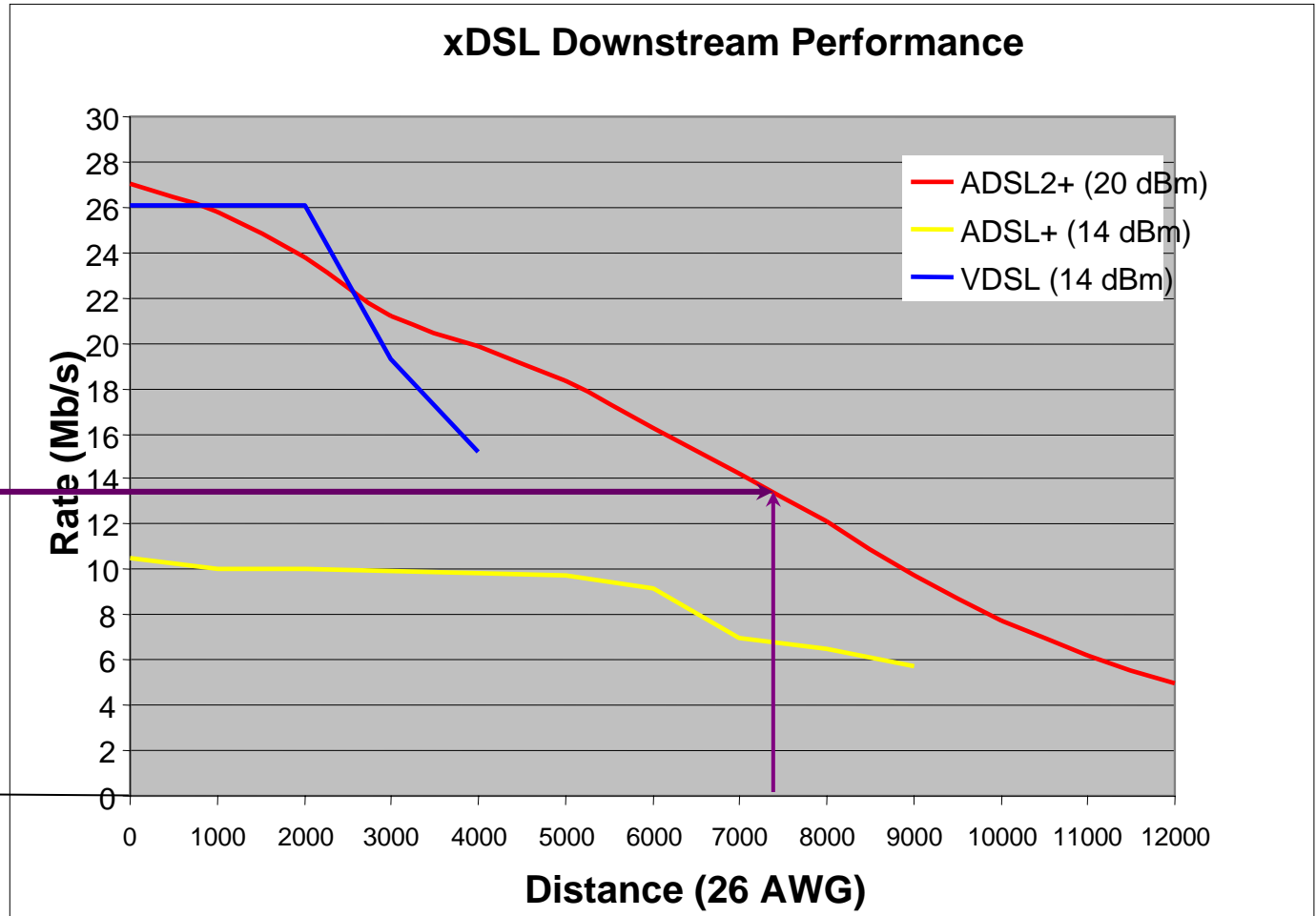
**New Demand**



STB







- High Speed Data
- Standard Definition
- Standard Definition
- Standard Definition
- High Definition



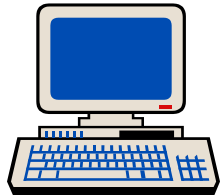


# IP STB Evolution



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2000



- o x86
- o SD, SIF
- o 1 Channel
- o MPEG-4 ASP
- o Video, MP-3

2003



- o DSP
  - 300 MHz
- o 16-32 MB
- o 0 GB
- o SD, SIF
- o 1 channel
- o MPEG-4 ASP,
- o AVC, MP-3

2006

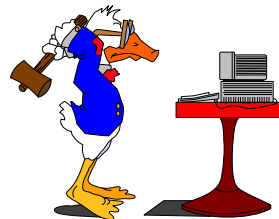


- o CPU+Decoders
  - 400+ MIPS
- o 32 - 128 MB
- o 80 - 160 GB
- o HD, SD, SIF
- o ~ 2 Channels
- o AVC, MP-3, AAC,
- o AAC+, AC-3, AC-3+

2009+



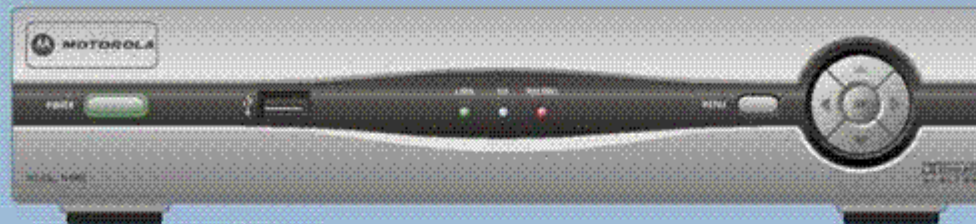
- o CPU+Decoders
  - > 1 GIPS
- o > 512 MB
- o > 1 Tera Bytes
- o Super HD  
(1920x1080x60p, D-Cinema)
- o Multiple Channels
- o Next Gen
- o Transcoding



# Motorola VIP Product Line

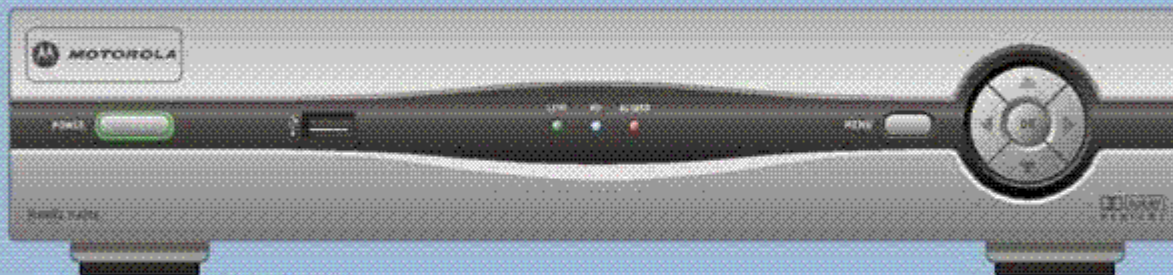
VIP ID FAMILY

VIP 1X00



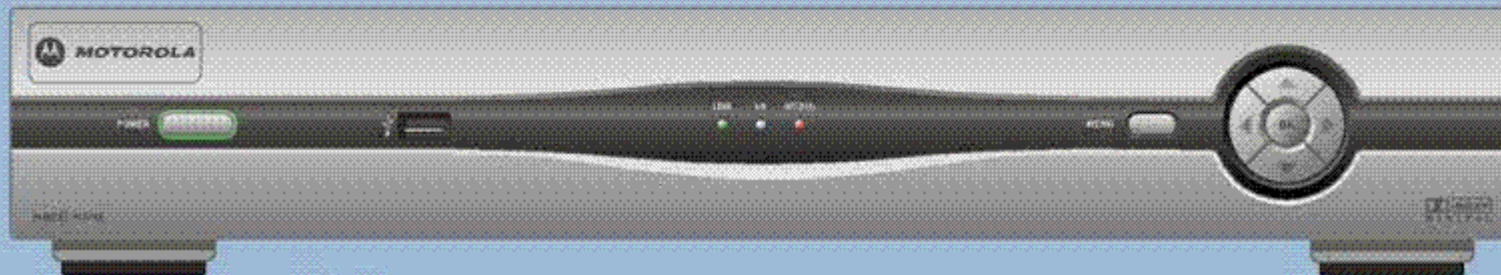
10w x 2.3h x 7.5d

VIP 1200



12w x 2.75h x 11d

VIP 3200



15.35w x 2.75h x 12d

# VIP12xx

## Single TV HD/SD + DVR Advanced IP set-top



The VIP12xx Advanced IP Set-Top has a built-in Hard-Disk Drive (HDD) for DVR functionality. It supports applications like Multicast, VOD and DVR (watch and record).

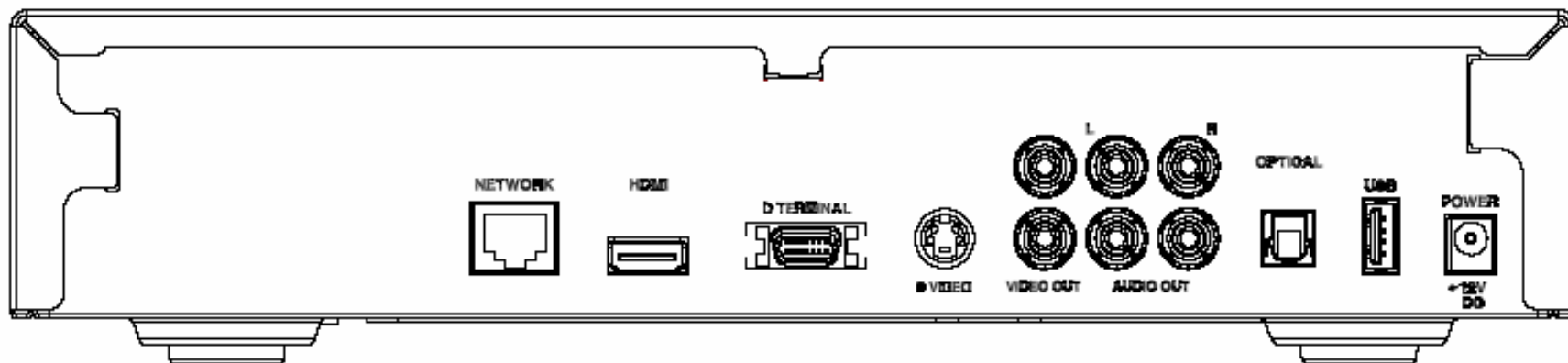
The VIP12xx supports High Def. or Standard Def. (HD/SD) high-quality digital video. It also can support whole home DVR

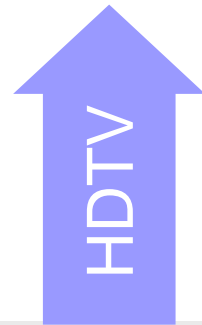
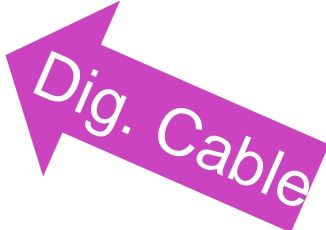
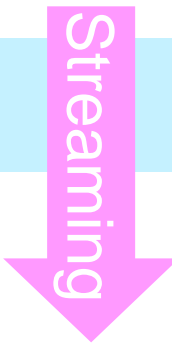
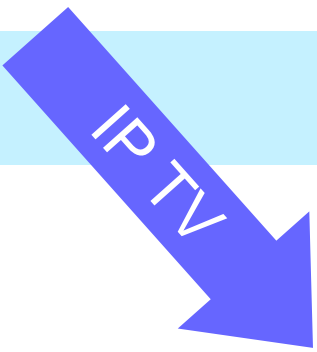
\* Interfaces shown are for North-American models

Memory / Performance	
DRAM	128 MB
Flash	Option
CPU (MIPS)	400+
Front Panel Interfaces	
Power	✓
Status LEDs	✓ (3)
Control Buttons	✓ (7)
Remote Control	IR

Rear Panel Interfaces*	
Ethernet	✓
USB 2.0	✓
Composite Video	✓ (2)
L/R Audio	✓ (2)
S-Video	✓
Optical SPDIF	✓
RF (ch. 3/4)	✓
YPbPr	✓
HDMI	✓
HPNA v.3	✓
Power Supply	External
Integrated HDD	80/160 GB

# VIP12xx Back-Panel







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# What is IPTV / IP STB



- o TV / STB with IP Address

IP

TV/STB

Connectivity

Entertainment Grade Content



# IP STB New Applications

IP Network

- Place Shifting
  - Transcoding
  - Protocols
- Video Phone / VoIP
  - Encoding
  - Echo Cancellation
  - Voice Recognition



➢Transcoding

- New Phy Layer
- Protocols
- Transcoding

Home Network

o 2000

- On demand
  - Unicast

o 2005

- On Demand
- Watch TV
  - Multicast
- Record TV

o 2010+

- On Demand
- Watch TV
- Record TV
- 2 Go TV
  - To (and from) other devices in Home
  - To other places
- Mobile TV
- Interactive TV
- and Additional Non-TV stuff
  - Video/AudioTel.
  - Home Monitoring
  - ...





# *Set Top Box*

*Not your father's Set Top Box*

*Not even your Set Top Box  
you had when you left home*

